TOWN OF ERIE
1874

Town Of Erie
Planning Commission Regular Meeting
Wednesday, July 15, 2015
6:30 P.M.
Board Room, Erie Town Hall, 645 Holbrook, Erie, CO 80516

I. CALL TO ORDER & PLEDGE OF ALLEGIANCE TO THE FLAG

II. ROLL CALL

III. APPROVAL OF THE AGENDA

IV. APPROVAL OF MINUTES

Approval of the May 20, 2015, Planning Commission Regular Meeting Minutes

V. PUBLIC COMMENTS (This agenda item provides the public an opportunity to discuss items other than items that are on the agenda. The Planning Commission is not prepared to decide on matters brought up at this time, but it warranted, will place them on a future agenda.)

VI. RESOLUTIONS (This agenda item is for all matters that should be decided by resolutions.)

1. **Public Hearing – Vista Ridge F-14 Minor Subdivision Plat**

Purpose: Consideration of Minor Subdivision Plat
Project File #: MS-14-00049
Request: Consideration of Resolution P15-19, A Resolution Regarding The Minor Subdivision Plat Of Vista Ridge Filing No. 14, Adopting Certain Findings Of Fact And Conclusions Favorable To The Minor Subdivision Plat.
Location: NW Corner of Sheridan Blvd. and CO Highway 7
Applicants: Montex (Brownlee)
(Staff Planner: Todd Bjerkaas)

2. **Public Hearing – Vista Ridge F-14 Site Plan**

Purpose: Consideration of Site Plan
Project File #: SP-14-00050
Request: Consideration of Resolution P15-20, A Resolution making Certain Findings Of Fact And Conclusions Favorable To The Site Plan For Vista Ridge Filing no. 14, Town of Erie, County of Weld, State of Colorado.
Location: NW Corner of Sheridan Blvd. and CO Highway 7
Applicants: Montex (Brownlee)
(Staff Planner: Todd Bjerkaas)

3. **Public Hearing – Vista Ridge F-2, 1st Amendment Preliminary Plat**

Purpose: Consideration of Preliminary Plat
Project File #: PP-000055-2014
Request: Consideration of Resolution P15-21, A Resolution Regarding The Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat, Adopting Certain Findings Of Fact And Conclusions Favorable To The Preliminary Plat.
Location: North of Ridge View Drive between the Primrose School and Vista Academy
Applicants: Montex (Vista Ridge, LLC)
(Staff Planner: Marty Ostholthoff)

4. Public Hearing – Vista Ridge F-2, 1st Amendment Site Plan

Purpose: Consideration of Site Plan
Project File #: SP-000054-2014
Request: Consideration of Resolution P15-22, A Resolution Making Certain Findings Of Fact And Conclusions Favorable To The Site Plan For Vista Ridge Filing No. 2, 1st Amendment, Town Of Erie, County Of Weld, State Of Colorado.
Location: North of Ridge View Drive between the Primrose School and Vista Academy
Applicants: Montex (Vista Ridge, LLC)
(Staff Planner: Marty Ostholthoff)

5. Public Hearing – Canyon Creek Planned Development Amendment No. 9

Purpose: Consideration of Planned Development Amendment No. 9 for Canyon Creek
Project File #: PDA-000544-2015
Request: Consideration of Resolution P15-23, A Resolution Regarding The Hearing On Canyon Creek PD Amendment No. 9, Adopting Certain Findings Of Fact And Conclusions Favorable To The PD Amendment.
Location: SW Corner of Erie Parkway & County Line Road
Applicants: Erie Commercial Ventures, LLLP
(Staff Planner: Deborah Bachelder)

6. Public Hearing – Comprehensive Plan Amendment - TO BE CONTINUED TO AUGUST 19TH

Purpose: Consideration of a Comprehensive Plan Amendment
Project File #: CPA-000195-2015
Request: Consideration of Resolution P15-__,
Location: N/A
Applicants: N/A
(Staff Planner: Marty Ostholthoff)

VII. GENERAL BUSINESS (This agenda item is reserved for matters that are ready for Commission action, and do not fit into other categories, i.e. resolutions)

1. Canyon Creek F-10 Sketch Plan

Purpose: Consider proposed sketch plan
Project File #: SK-000206-2015
Request: Consider and comment on proposed sketch plan
Location: SW Corner of Erie Parkway & County Line Road
Zoning: Canyon Creek Planned Development
Applicants: Erie Commercial Ventures, LLLP
(Staff Planner: Deborah Bachelder)

STAFF REPORTS (This agenda items is reserved for specific items from Staff requiring Commission direction or just relaying important information.)

VIII. COMMISSIONER REPORTS AND DISCUSSION ITEMS (This agenda item is for all Planning Commission reports and items of information as well as Commission discussion items, not listed on the agenda.)

IX. ADJOURNMENT

FOR MORE INFORMATION ON THE AGENDA ITEMS LISTED, PLEASE CONTACT THE COMMUNITY DEVELOPMENT OFFICE AT 645 HOLBROOK STREET, 303-926-2770

Town of Erie
Planning Commission Regular Meeting
Wednesday, May 20, 2015
6:30 p.m.
Board Room, Erie Town Hall, 645 Holbrook, Erie, Co 80516

I. CALL MEETING TO ORDER & PLEDGE OF ALLEGIANCE

Chairman Bottenhorn called the Regular Meeting of the Erie Planning Commission to order at 6:30 p.m.

II. ROLL CALL

Commissioner Bottenhorn - Present
Commissioner Burgard – Excused
Commissioner Campbell - Present
Commissioner Kemp - Absent
Commissioner Fraser - Present
Commissioner Gippe - Present
Commissioner Harrison - Absent

Staff Present: R. Martin Ostholthoff, Community Development Director;
Mark R. Shapiro, Town Attorney;
Todd Bjerkaas, Senior Planner; and
Hallie Sawyer, Secretary to the Commission

III. APPROVAL OF THE AGENDA

Commissioner Campbell moved to approve the May 20, 2015, Regular Meeting Agenda as submitted. The motion, seconded by Commissioner Gippe, carried with all voting in favor thereof.

IV. APPROVAL OF MINUTES

a. Minutes from the May 6, 2015, Regular Meeting.

Commissioner Campbell moved to approve the May 6, 2015, Minutes as submitted. The motion, seconded by Commissioner Gippe, carried with all voting in favor thereof.

V. PUBLIC COMMENTS

(This agenda item provides the public an opportunity to discuss items other than items that are on the agenda. The Planning Commission is not prepared to decide on matters brought up at this time, but it warranted, will place them on a future agenda.)

None.

VI. RESOLUTIONS

(This agenda item is for all matters that should be decided by resolutions.)

1. Proposed Text Amendments to Title 10 of the Town of Erie Municipal Code

Purpose: Consider Proposed Amendments
Request: Consideration of Resolution P15-18, A Resolution Recommending Approval Of Proposed Text Amendments To Title 10 Of The Town Of Erie Municipal Code.
Applicants: Town of Erie
(Staff Planner: Marty Ostholthoff)

John Sullivan, Special Counsel to the Board of Trustees for Oil & Gas Operations, presented the proposed code amendment which would allow operators to omit the current requirement for a Special Review Use and Site Plan for sites that are covered by an Operations Agreement with the Town. Commissioner questions covered the agreement challenging COGCC rules; the negotiator for the Town; MOU inclusion in the agreement; will the agreements be time specific; will the agreements be site specific or operator specific; can the Town still control access, fencing and equipment color; is there an arbitration clause; recourse for enforcement; and will this become a staff review process.

Commissioner Campbell moved approval of Resolution P15-18, A Resolution Recommending Approval Of Proposed Text Amendments To Title 10 Of The Town Of Erie Municipal Code. The motion, seconded by Commissioner Gippe, carried with all voting in favor thereof.

2. Public Hearing – Colliers Hill Filing No. 3A

Purpose: Approve plat changes from Preliminary Plat.
Project File #: FP-000064-2014
Request: Consider approval of Resolution P15-14, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3A, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat.
Location: Between Erie Parkway and Colliers Parkway, west of Erie High School
Applicants: Community Development Group of Erie
(Staff Planner: Todd Bjerkaas)

Chairman Bottenhorn opened the Public Hearings at 6:48 p.m. Todd Bjerkaas, Senior Planner, presented the applications for the Colliers Hill Filings 3A, 3B, 3C and 3D Final Plats, entered the documents into evidence and presented the staff recommendations for approval of the four resolutions.

Jon R. Lee, 2500 Arapahoe St., Boulder, master developer of the property was available to answer any questions.

There was no public to comment.

Commissioner questions and concerns covered changes in the number of dwelling units; how much of the area was covered in the Preliminary Plat; setback changes to existing wells; clarification of regulations for development around existing oil and gas wells; who would install the spine trail; preservation of the trail/view corridor shown on the master plat; school site location; and identity of builders.

Chairman Bottenhorn closed the public hearing at 7:11 p.m. There was no additional comment from the Commission.

Commissioner Campbell moved approval of Resolution P15-14, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3A, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat. The motion, seconded by Commissioner Fraser, carried with all voting in favor thereof.

3. Public Hearing – Colliers Hill Filing No. 3B

Purpose: Approve plat changes from Preliminary Plat.
Project File #: FP-000065-2014
Request: Consider approval of Resolution P15-15, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3B, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat.
Location: Between Erie Parkway and Colliers Parkway, west of Erie High School
Applicants: Community Development Group of Erie
(Staff Planner: Todd Bjerkaas)

Commissioner Campbell moved approval of Resolution P15-15, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3B, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat. The motion, seconded by Commissioner Gippe, carried with all voting in favor thereof.

4. Public Hearing – Colliers Hill Filing No. 3C

Purpose: Approve plat changes from Preliminary Plat.
Project File #: FP-000066-2014
Request: Consider approval of Resolution P15-16, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3C, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat.
Location: Between Erie Parkway and Colliers Parkway, west of Erie High School
Applicants: Community Development Group of Erie

(Staff Planner: Todd Bjerkaas)

Commissioner Campbell moved approval of Resolution P15-16, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3C, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat. The motion, seconded by Commissioner Fraser, carried with all voting in favor thereof.

5. Public Hearing – Colliers Hill Filing No. 3D

Purpose: Approve plat changes from Preliminary Plat.
Project File #: FP-000067-2014
Request: Consider approval of Resolution P15-17, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3D, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat.
Location: Between Erie Parkway and Colliers Parkway, west of Erie High School
Applicants: Community Development Group of Erie

(Staff Planner: Todd Bjerkaas)

Commissioner Campbell moved approval of Resolution P15-17, A Resolution Regarding The Final Plat Of Colliers Hill Filing No. 3D, Adopting Certain Findings Of Fact And Conclusions Favorable To The Final Plat. The motion, seconded by Commissioner Gippe, carried with all voting in favor thereof.

VII. STAFF REPORTS (This agenda items is reserved for specific items from Staff requiring Commission direction or just relaying important information.)

Memorial Day Services on Monday, May 25th.

VIII. COMMISSIONER REPORTS AND DISCUSSION ITEMS (This agenda item is for all Planning Commission reports and items of information as well as Commission discussion items, not listed on the agenda)

None.

IX. ADJOURNMENT

There being no further business to come before the Commission, Chairman Bottenhorn adjourned the May 20, 2015, Regular Meeting of the Planning Commission at 7:13 p.m.

Respectfully Submitted,

By: _____
Hallie S. Sawyer, Secretary

Town of Erie Planning Commission

By: _____
J. Eric Bottenhorn, Chair

TOWN OF ERIE
PLANNING COMMISSION MEETING
July 15, 2015

SUBJECT: **PUBLIC HEARING:**

Consideration of Resolution P15-19: A Resolution Regarding The Minor Subdivision Plat Of Vista Ridge Filing No. 14, Adopting Certain Findings Of Fact And Conclusions Favorable To The Minor Subdivision Plat.

PURPOSE: Consideration of a Minor Subdivision Plat for 6 commercial lots and 1 future development tract.

PROJECT FILE NO: FP-000051-2014

LOCATION: Northwest corner of State Highway 7 and Sheridan Boulevard

ZONING: PD – Vista Ridge Planned Development

CODE: Title 10 - UDC

APPLICANT: King Soopers
Drew Warot
65 Tejon Street
Denver, Colorado, 80223

OWNER: Montex (Brownlee) LLC
Andy Chaikovsky

DEPARTMENT: Community Development
Todd Bjerkaas PLA, Senior Planner

STAFF RECOMMENDATION

Staff recommends approval of the Vista Ridge Filing No. 14 Minor Subdivision Plat application. Staff has provided Resolution P15-19, for the Planning Commission consideration, recommending approval of the application to the Board of Trustees with the following conditions:

a. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until an avigation easement for the Brownlee portion of the property is signed and recorded.

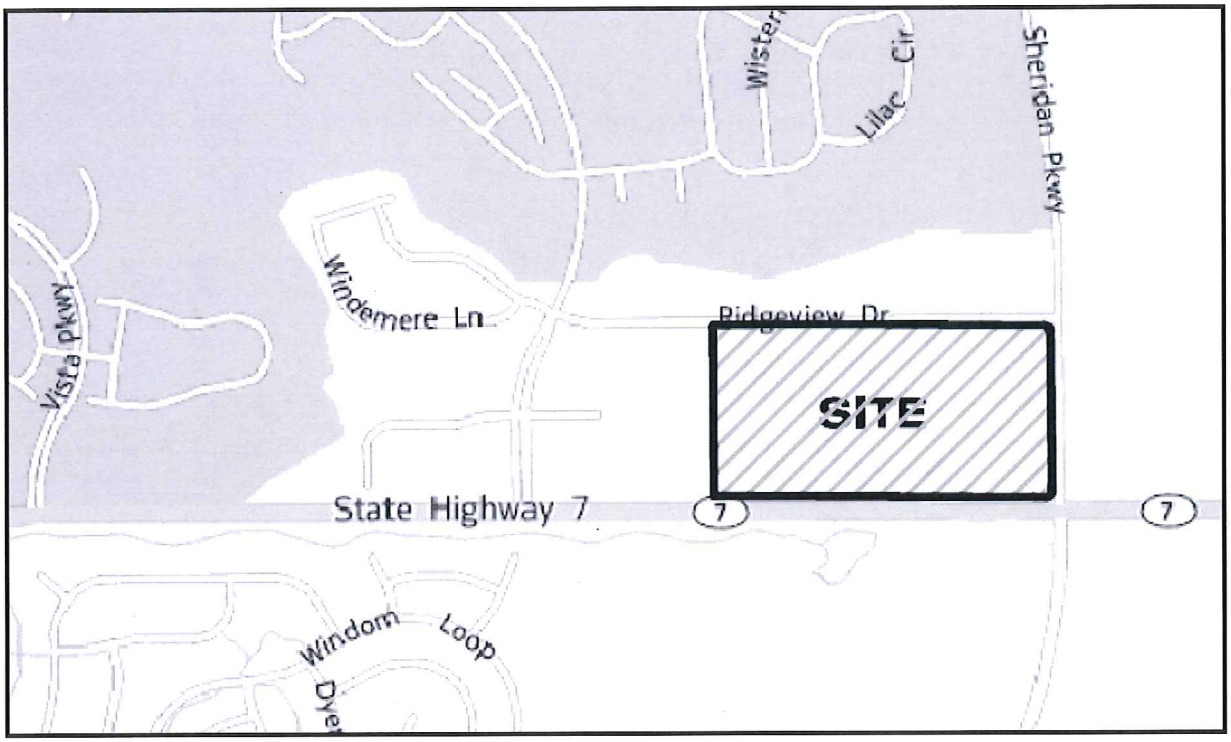
b. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until a Shared Parking Agreement is signed and recorded.

c. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.

d. Prior to recordation of the minor subdivision plat, technical corrections to the plat and associated construction plans shall be made to the Town's satisfaction.

BACKGROUND INFORMATION:

Property Location:
The property is located on the northwest corner of State Highway 7 and Sheridan Boulevard.



Project Process and Summary:

Minor subdivision plats for non-residential lots require Board of Trustee approval with public hearings before the Planning Commission and Board of Trustees. Town staff has reviewed the Vista Ridge Filing No. 14 minor subdivision plat and construction drawings for Vista Ridge Filing No. 14 and have found them to be in compliance with the Town Municipal Code and the Standards and Specifications for the Design and Construction of Public Improvements.

Project Description:
The Vista Ridge Filing No. 14 minor subdivision plat consists of 6 commercial lots and 1 future development tract. The plat includes the unplatted Parcels 1 & 2 of Subdivision Exemption No. 977 (Brownlee) and a replat of Parcels 33 & 34 of the Vista Ridge Master Final Plat. Approximately 13 acres of the western portion of this filing will be further subdivided.

Site Specific Information:

- Minor Subdivision Plat Size: 33.30 acres
- Number of Commercial Lots: 6 lots
- Number of Future Development Tracts: 1 tract

Current Land Use and Zoning:
Current Land Use: Vacant Land
Current Zoning: PD – Vista Ridge Planned Development

Adjacent Land Use and Zoning:

	ZONING	LAND USE
NORTH	Vista Ridge PD – Planned Development	Institutional (Vista Ridge Academy)
EAST	Broomfield PUD – Planned Unit Development	Single Family Residential /Vacant
SOUTH	Broomfield PUD – Planned Unit Development	Single Family Residential /Vacant
WEST	Vista Ridge PD – Planned Development	Vacant

STAFF REVIEW AND ANALYSIS

Staff finds the application is consistent with the Minor Subdivision Plat – Non-Residential Parcels approval criteria in Municipal Code, Section 10.7.7.F.10, as outlined below

a. **The Minor Subdivision is generally consistent with the Town's Comprehensive Master Plan;**

Staff comment: The application is in Compliance with the Land Use designations on the 2005 Comprehensive Plan, Land Use Plan Map. The layout and size of lots, access, circulation, and utilities is consistent with commercial developments as identified in the RC – Regional Commercial land use designation of the Comprehensive Plan.

b. **The Minor Subdivision is generally consistent with and implements the intent of the specific zoning district in which it is located;**

Staff comment: The commercial lots proposed fall within Planning Areas 7-3 and 7-5 of the Vista Ridge Development Plan. Planning Areas 7-3 and 7-5 are designated as Commercial and the proposed subdivision layout meets the requirements for commercial subdivisions.

c. **As applicable, the Minor Subdivision is generally consistent with the terms and conditions of any previously approved development Plan;**

Staff comment: The commercial lots proposed fall within Planning Areas 7-3 and 7-5 of the Vista Ridge Development Plan. Planning Areas 7-3 and 7-5 are designated as Commercial and the proposed subdivision layout meets the requirements for commercial subdivisions.

d. **The Minor Subdivision complies with all applicable use, development, and design standards set forth in Chapters 3, 5 and 6 of this UDC that have not otherwise been modified or waived pursuant to this Chapter. Applicants shall refer to the Development Standards in Chapter 5 of this UDC and shall consider them in the layout of the subdivision in order to avoid creating lots or patterns of lots in the subdivision that will make compliance with such development and design standards difficult or infeasible;**

Staff comment: The design of the minor subdivision plat takes into account applicable use, Development and Design Standards of Chapters 3, 5, and 6 of Municipal Code Title 10.

e. **The Minor Subdivision complies with all applicable regulations, standards, requirements, or plans of the Federal or State governments and other relevant jurisdictions, including but not limited to wetlands, water quality, erosion control, and wastewater regulations;**

Staff comment: The minor subdivision plat complies with applicable regulations, standards and requirements of Federal, State and local governments and agencies.

f. **The Minor Subdivision will not result in significant adverse impacts on the natural environment, including air, water, noise, storm water management, wildlife, and vegetation, or such impacts will be substantially mitigated;**

Staff comment: Significant impacts are not anticipated for the natural environment that cannot be substantially mitigated.

g. **The Minor Subdivision shall be integrated and connected, where appropriate, with adjacent development through street connections, sidewalks, trails, and similar features;**

Staff comment: The minor subdivision plat provides vehicular and pedestrian connections to adjacent roadways and properties and future filings within the proposed development.

h. **The Minor Subdivision will not result in significant adverse impacts on adjacent properties, or such impacts will be substantially mitigated;**

Staff comment: The minor subdivision plat will not have significant adverse impacts on adjacent properties.

i. **Adequate and sufficient public safety, transportation, utility facilities and services, recreation facilities, parks, and schools are available to serve the subject property, while maintaining sufficient levels of service to existing development;**

Staff comment: Adequate services and facilities currently exist.

j. **As applicable, the proposed phasing plan for development of the subdivision is rational in terms of available infrastructure capacity.**

Staff comment: Adequate infrastructure capacity is available for the phasing of development for Vista Ridge Filing No. 14.

NEIGHBORHOOD MEETING:

As required by the Municipal Code a Neighborhood Meeting was held on April 22, 2015 at 5:30 p.m. at the Vista Ridge Community Center. The required notice for the Neighborhood Meeting was provided and a copy of the minutes and sign-in sheet are attached.

PUBLIC NOTICE

Notice of this Public Hearing has been provided as follows:

Published in the Longmont Times Call:	June 30, 2015
Property Posted as required:	June 30, 2015
Letters to Adjacent Property Owners:	June 26, 2015

STAFF RECOMMENDATION

Staff recommends approval of the Vista Ridge Filing No. 14 Minor Subdivision Plat application. Staff has provided Resolution P15-19, for the Planning Commission consideration, recommending approval of the application to the Board of Trustees with the following conditions:

a. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until an avigation easement for the Brownlee portion of the property is signed and recorded.

b. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until a Shared Parking Agreement is signed and recorded.

c. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.

d. Prior to recordation of the minor subdivision plat, technical corrections to the plat and associated construction plans shall be made to the Town's satisfaction.

Approved by:

R. Martin Ostholthoff
Community Development Director

ATTACHMENTS:

A. Resolution No. P15-19
B. Vista Ridge Filing No. 14 Minor Subdivision Plat
C. Vista Ridge Filing No. 14 application materials
D. Vista Ridge Development Plan – Planning Areas Map

ATTACHMENT A

RESOLUTION NO. P15-19

A RESOLUTION REGARDING THE MINOR SUBDIVISION PLAT OF VISTA RIDGE FILING NO. 14, ADOPTING CERTAIN FINDINGS OF FACT AND CONCLUSIONS FAVORABLE TO THE MINOR SUBDIVISION PLAT.

WHEREAS, the Planning Commission of the Town of Erie, Colorado, considered the Minor Subdivision Plat of Vista Ridge Filing No. 14 on Wednesday, July 15, 2015, on the application of King Soopers, 65 Tejon Street, Denver, Colorado, 80223 representing the owner of the following real property; to wit:

Parcels 1 & 2, Subdivision Exemption No. 977; Parcels 33 & 34, Vista Ridge Master Final Plat.

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE TOWN OF ERIE, COLORADO, as follows:

Section 1. Findings of Fact.

1. The applicant's application and supporting documents are in substantial compliance with Section 7.7.F.10 (Minor Subdivision Plat – Non-Residential Parcels) of Title 10, Town of Erie Municipal Code.

2. The Minor Subdivision Plat as proposed, subject to the following conditions, will preserve the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado.

    a. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until an avigation easement for the Brownlee portion of the property is signed and recorded.

    b. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until a Shared Parking Agreement is signed and recorded.

    c. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.

    d. Prior to recordation of the minor subdivision plat, technical corrections to the plat and associated construction plans shall be made to the Town's satisfaction.

Section 2. Conclusions and Order Recommending Approval of the Minor Subdivision Plat of Vista Ridge Filing No. 14.

1. The applicant's application and supporting documents are in substantial compliance with Section 7.7.F.10 (Minor Subdivision Plat – Non-Residential Parcels) of Title 10, Town of Erie Municipal Code.

2. The Minor Subdivision Plat as proposed, subject to the following conditions, will preserve the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado.

    a. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until an avigation easement for the Brownlee portion of the property is signed and recorded.

    b. The Vista Ridge Filing No. 14 minor subdivision plat shall not be recorded until a Shared Parking Agreement is signed and recorded.

    c. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.

    d. Prior to recordation of the minor subdivision plat, technical corrections to the plat and associated construction plans shall be made to the Town's satisfaction.

INTRODUCED, READ, SIGNED AND APPROVED this 15th day of July, 2015.

TOWN OF ERIE, PLANNING COMMISSION

By: _____
J. Eric Bottenhorn, Chair

ATTEST:

By: _____
Hallie S. Sawyer, Secretary

ATTACHMENT B

VISTA RIDGE FILING NO. 14

A REPLAT OF PARCELS 1 & 2 OF SUBDIVISION EXEMPTION NO. 977 AND PARCELS 33 & 34, VISTA RIDGE MASTER FINAL PLAT
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
33.3018 ACRES - 6 COMMERICAL LOTS & 1 TRACT
FP-000051-2014

DEDICATION STATEMENT

KNOW BY ALL MEN THESE PRESENTS THAT THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, OR LIEN HOLDERS OF CERTAIN LANDS IN THE TOWN OF ERIE, COUNTY OF WELD, COLORADO, DESCRIBED AS FOLLOWS:

A PARCEL OF LAND SITUATED IN THE S 1/2 OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., BEING PARCELS 1 AND 2 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624 AND PARCELS 33 & 34, VISTA RIDGE MASTER FINAL PLAT RECORDED NOVEMBER 26, 2001 AT RECEPTION NO. 2953870, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE S ¼ CORNER OF SAID SECTION 33;
THENCE N00°06'16"E ALONG THE EAST LINE OF THE SW ¼ OF SAID SECTION 33 A DISTANCE OF 75.00 FEET TO THE NORTH RIGHT OF WAY LINE OF COLORADO STATE HIGHWAY 7, SAID POINT BEING THE POINT OF BEGINNING;
THENCE N89°39'37"W ALONG THE SAID NORTH RIGHT OF WAY LINE A DISTANCE OF 1568.76 FEET TO THE SOUTHEAST CORNER OF TRACT A, VISTA RIDGE FILING NO. 12;
THENCE N00°12'01"W ALONG THE EASTERLY LINE OF SAID TRACT A, A DISTANCE OF 604.01 FEET TO THE NORTHEAST CORNER OF SAID TRACT A, SAID POINT LYING ON THE SOUTHERLY RIGHT OF WAY LINE OF RIDGE VIEW DRIVE;
THENCE N89°59'05"E ALONG SAID SOUTHERLY RIGHT OF WAY LINE A DISTANCE OF 316.22 FEET;
THENCE S09°31'46"E, CONTINUING ALONG SAID SOUTHERLY RIGHT OF WAY LINE A DISTANCE OF 1328.14 FEET TO A POINT OF CURVE;
THENCE ALONG A CURVE TO THE RIGHT WHOSE CHORD BEARS S45°03'17"E A DISTANCE OF 42.24 FEET, SAID CURVE HAVING A CENTRAL ANGLE OF 85°5'733", A RADIUS OF 30.00 FEET, AN ARC LENGTH OF 46.57 FEET TO A POINT OF TANGENT ON THE WESTERLY RIGHT OF WAY LINE OF SHERIDAN BOULEVARD;
THENCE S09°34'46"E ALONG SAID WESTERLY RIGHT OF WAY LINE A DISTANCE OF 604.76 FEET TO A POINT OF CURVE;
THENCE ALONG A CURVE TO THE RIGHT WHOSE CHORD BEARS S44°43'10"W A DISTANCE OF 42.77 FEET, SAID CURVE HAVING A CENTRAL ANGLE OF 90°50'32", A RADIUS OF 30.00 FEET, AN ARC LENGTH OF 47.61 FEET TO A POINT OF TANGENT ON SAID NORTH RIGHT OF WAY LINE OF STATE HIGHWAY 7;
THENCE N89°39'54"W ALONG SAID NORTH RIGHT OF WAY LINE A DISTANCE OF 62.20 FEET TO THE POINT OF BEGINNING, CONTAINING (1,450,627 SQUARE FEET) 33.3018 ACRES.

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS, TRACTS AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISION OF VISTA RIDGE FILING NO. 14. THE EASEMENTS SHOWN HEREON ARE DEDICATED AND CONVEYED TO THE TOWN OF ERIE, COLORADO, IN FEE SIMPLE ABSOLUTE, WITH MARKETABLE TITLE, FOR PUBLIC USES AND PURPOSES AS SHOWN HEREON.

OWNER

_____

BY: _____

ATTEST: _____
SECRETARY/TREASURER

STATE OF _____)
) ss.
COUNTY OF _____)

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20____
BY _____ AS _____.

WITNESS MY HAND AND OFFICIAL SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

TITLE VERIFICATION CERTIFICATE

WE HERITAGE TITLE COMPANY AS AGENT FOR COMMONWEALTH LAND TITLE INSURANCE COMPANY, DO HEREBY CERTIFY THAT WE HAVE EXAMINED THE TITLE OF ALL LAND PLATTED HEREON AND THAT TITLE TO SUCH LANDS IS IN THE DEDICATOR FREE AND CLEAR OF ALL LIENS, TAXES AND ENCUMBRANCES, EXCEPT AS FOLLOWS:

HERITAGE TITLE COMPANY

BY: _____ DATE _____

NAME: _____

TITLE: _____

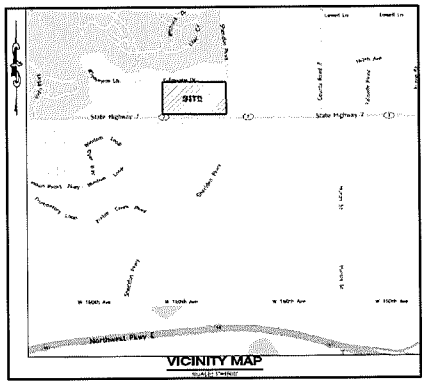
STATE OF _____)
) ss.
COUNTY OF _____)

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20____
BY _____ AS _____.

WITNESS MY HAND AND OFFICIAL SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____



VICINITY MAP

SCALE: 1"=1000'

LAND SUMMARY CHART		
TYPE	AREA	% OF TOTAL AREA
COMMERICAL LOTS	862,212 SQ. FT.	59.4%
TRACTS	588,415 SQ. FT.	30.2%
TOTAL	1,450,627 SQ. FT.	100.0%

TRACT SUMMARY CHART				
TRACT	AREA	USE	OWNERSHIP	MAINTENANCE
A	588,415 SQ. FT.	FUTURE COMMERICAL	OWNER	OWNER

GENERAL NOTES

1. THIS SURVEY WAS BASED ON TITLE COMMITMENT NUMBER 451-H0411791-266-ED4 AMENDMENT NO. 5 PREPARED BY HERITAGE TITLE COMPANY AS AGENT FOR COMMONWEALTH LAND TITLE INSURANCE COMPANY, WITH AN EFFECTIVE DATE OF JUNE 12, 2015 AT 7:00 A.M., AND DOES NOT CONSTITUTE A TITLE SEARCH BY THIS SURVEYOR FOR OTHER EASEMENTS AND/OR EXCEPTIONS OF RECORD.
2. BY GRAPHIC PLOTTING ONLY THE SUBJECT PROPERTY IS SITUATED IN FLOOD ZONE "X" AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN ACCORDING TO FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 08013C0444J (PANEL NOT PRINTED), NO OFFICE CALCULATIONS OR FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS INFORMATION.
3. BEARINGS ARE BASED ON THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY NO. 7 BEARING N89°39'37"W AS REFERENCED AND BOUNDED BY THE MONUMENTS SHOWN HEREON.
4. DUE TO THE PROXIMITY OF THE PROPERTY TO THE ERIE MUNICIPAL AIRPORT, THERE WILL BE AIRCRAFT PASSING OVER THE PROPERTY. AIRCRAFT PASSAGE MAY RESULT IN NOISE AND OTHER IMPACTS ON THE PROPERTY. AIRCRAFT MAY CROSS PROPERTY AT LOW ALTITUDE IN ACCORDANCE WITH FAA REGULATIONS. THE FREQUENCY OF AIRCRAFT PASSING OVER THE PROPERTY MAY INCREASE IN THE FUTURE. THE OWNERS, THEIR HEIRS, SUCCESSORS AND ASSIGNS SPECIFICALLY ACKNOWLEDGE THE RIGHT OF PASSAGE OVER THE PROPERTY FOR AIRCRAFT AND AGREE TO HOLD HARMLESS THE TOWN OF ERIE FOR AIRCRAFT OPERATIONS.
5. ALL UNITS ARE U.S. SURVEY FEET.
6. LOTS 3 THROUGH 6 DO NOT HAVE DIRECT ACCESS TO STATE HIGHWAY 7 OR SHERIDAN PARKWAY.
7. MAINTENANCE DEFINITION: MAINTENANCE IS THE PROCESS OF PRESERVING CAPITAL IMPROVEMENTS, STRUCTURES, DEVELOPMENT, OR SYSTEMS TO MEET ITS FUNCTION OR ORIGINAL INTENT OF THE FACILITY. THIS IS THE PRESERVATION, CONSERVATION, KEEPING IN GOOD CONDITIONS, OPERATING SAFELY, OPERATING EFFICIENTLY, TESTING, INSPECTION, SERVICING, REPAIRING, GRADING, CLEANING, PICKING UP TRASH AND DEBRIS, PEST CONTROL, PAINTING, MOWING, PRUNING, AND PROLONGING OF THESE FACILITIES. MAINTENANCE ALSO INCLUDES THE PROVISION OF FINANCIAL SUPPORT TO MAINTAIN THE FACILITIES. FACILITIES INCLUDE BUT ARE NOT LIMITED TO: LANDSCAPING, OPEN AREAS, GRASS, SHRUBS, TREES, PLAYGROUNDS, SITE FURNITURE AND FIXTURES, RETAINING WALLS, SIGNS, SIDEWALKS, DRAINAGE STRUCTURES SUCH AS PONDS, SWALES, DRAIN PANS, INLETS, AND OUTLET STRUCTURES.

SURVEYOR'S CERTIFICATE

I, CHARLES N. BECKSTROM, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON SEPTEMBER 29, 2014, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:50,000 (SECOND ORDER); AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISIONS OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 20____

_____
CHARLES N. BECKSTROM
COLORADO REGISTERED PROFESSIONAL
LAND SURVEYOR NO. 33202

NOTICE

ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

ANY PERSON WHO KNOWINGLY REMOVES, ALTERS, OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT, LAND BOUNDARY MONUMENT, OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR, PURSUANT TO STATE STATUTE 18-4-508 OF THE COLORADO REVISED STATUTES.

BOARD OF TRUSTEES APPROVAL CERTIFICATE

THIS PLAT IS TO BE KNOWN AS VISTA RIDGE FILING NO. 14 AND IS APPROVED AND ACCEPTED BY RESOLUTION NO. _____ PASSED AND ADOPTED AT THE REGULAR MEETING OF THE BOARD OF TRUSTEES OF ERIE, COLORADO.

HELD ON THE _____ DAY OF _____, 20____.

_____
MAYOR

ATTEST: _____
TOWN CLERK

COMMUNITY DEVELOPMENT AND PUBLIC WORKS APPROVAL CERTIFICATE

THIS PLAT IS HEREBY APPROVED BY THE TOWN OF ERIE COMMUNITY DEVELOPMENT DIRECTOR AND PUBLIC WORKS DIRECTOR ON THIS ____ DAY OF _____, 20____.

_____
COMMUNITY DEVELOPMENT DIRECTOR

_____
PUBLIC WORKS DIRECTOR

CLERK & RECORDER CERTIFICATE

STATE OF COLORADO)
) ss.
COUNTY OF WELD)

I HEREBY CERTIFY THAT THIS PLAT WAS FILLED IN MY OFFICE ON THIS _____ DAY OF _____, 20____ A.D. AND WAS RECORDED AT RECEPTION NUMBER _____.

_____
COUNTY CLERK AND RECORDER

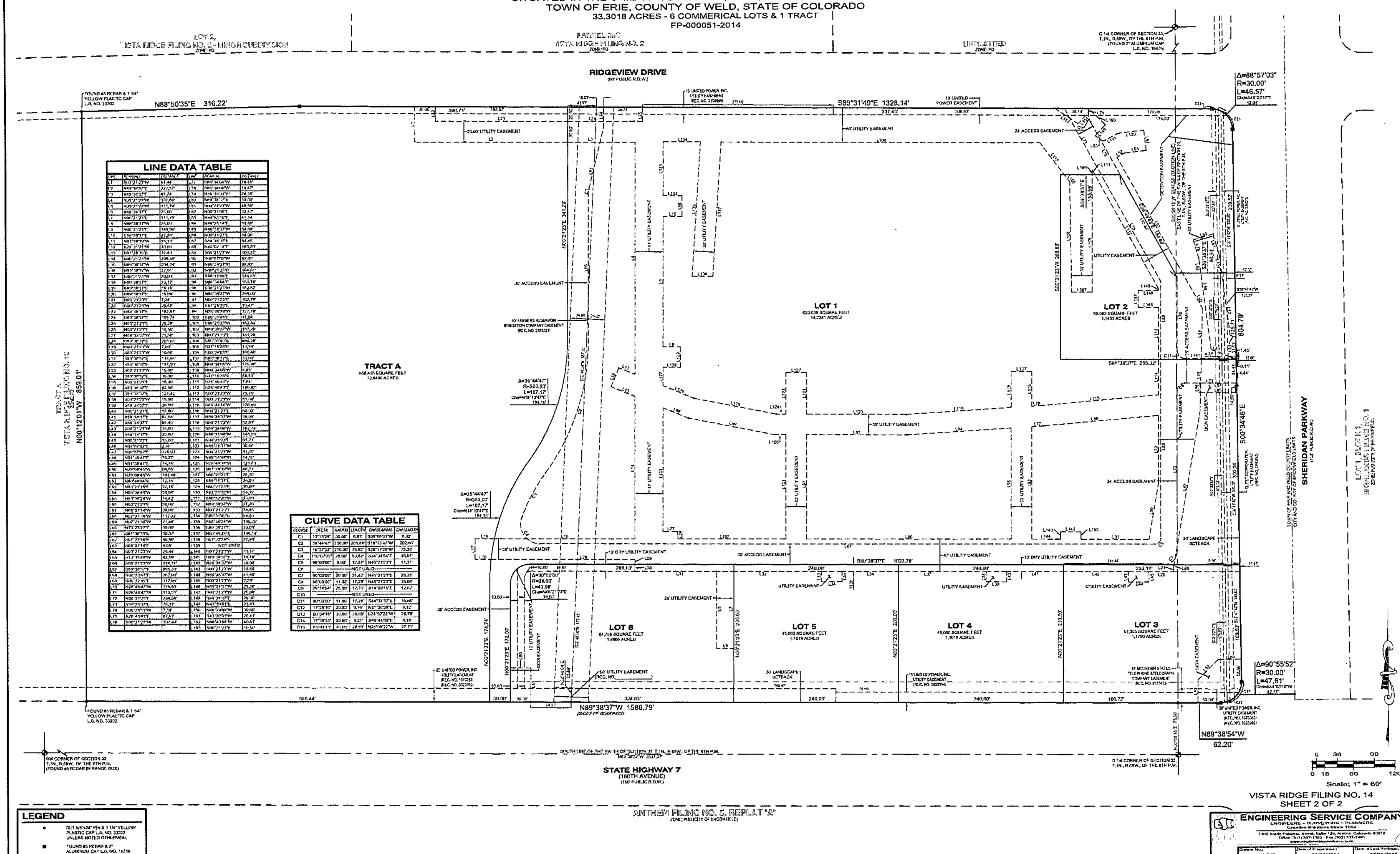
VISTA RIDGE FILING NO. 14
SHEET 1 OF 2

ENGINEERING SERVICE COMPANY
ENGINEERS - SURVEYORS - PLANNERS
1300 South Sherman Street, Suite 201, Aurora, Colorado 80012
Office: (303) 337-1393 Fax: (303) 337-7481
www.engineeringservicecompany.com

Drawing No.:	Date of Preparation:	Date of Last Revision:
F-747	11/21/2014	07/05/2016

VISTA RIDGE FILING NO. 14

A REPLAT OF PARCELS 1 & 2 OF SUBDIVISION EXEMPTION NO. 977 AND PARCELS 33 & 34, VISTA RIDGE
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
33.3018 ACRES - 6 COMMERICAL LOTS & 1 TRACT
FP-000051-2014



LINE DATA TABLE

LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	S00°21'23"W	61.44'	L77	S00°34'04"W	16.66'
L2	S89°38'37"E	227.57'	L78	S00°34'04"W	14.47'
L3	S89°38'37"E	87.74'	L79	N10°30'13"W	28.35'
L4	S00°21'23"W	337.66'	L80	S89°38'37"E	30.00'
L5	S00°21'23"W	111.74'	L81	S00°21'23"W	49.50'
L6	S89°38'37"E	25.00'	L82	N00°21'08"E	33.47'
L7	N00°21'23"E	111.71'	L83	N44°53'10"E	41.14'
L8	N89°38'37"W	25.00'	L84	N89°25'14"E	33.05'
L9	N00°21'23"E	189.94'	L85	N89°38'37"W	54.08'
L10	S89°38'37"E	27.28'	L86	N00°21'21"E	14.00'
L11	N87°28'10"W	25.10'	L87	S89°38'37"E	54.49'
L12	S27°31'21"W	30.00'	L88	N89°07'14"E	188.20'
L13	S87°28'10"E	37.40'	L89	S00°21'23"W	100.37'
L14	S00°21'23"W	208.49'	L90	S89°57'02"W	87.00'
L15	N89°38'37"W	204.24'	L91	N89°38'37"W	98.97'
L16	N89°38'37"W	37.51'	L92	N00°21'23"E	164.61'
L17	S00°21'23"W	30.00'	L93	S89°31'44"E	146.66'
L18	S89°38'37"E	25.17'	L94	N86°34'04"E	151.78'
L19	S89°38'37"E	35.70'	L95	S00°21'23"W	182.62'
L20	S89°38'37"E	25.99'	L96	N89°38'37"W	295.00'
L21	N00°21'23"E	7.24'	L97	N00°21'23"E	162.78'
L22	S00°21'23"W	20.69'	L98	S67°26'30"E	39.47'
L23	S89°38'37"E	182.57'	L99	N78°40'30"W	127.38'
L24	S89°38'37"E	165.74'	L100	S89°31'48"E	17.04'
L25	N00°21'23"E	28.28'	L101	S00°21'23"W	182.84'
L26	N00°21'23"E	10.82'	L102	N89°38'37"W	187.29'
L27	N89°38'37"W	21.24'	L103	N00°21'23"E	181.20'
L28	S89°38'37"E	203.03'	L104	S89°31'48"E	464.28'
L29	S00°21'23"W	7.00'	L105	S67°18'30"E	13.38'
L30	S00°21'23"W	10.00'	L106	S00°34'09"E	160.40'
L31	S89°38'37"E	118.60'	L107	S89°38'37"E	30.00'
L32	S89°38'37"E	137.50'	L108	N00°34'05"W	170.88'
L33	S00°21'23"W	16.00'	L109	N89°34'05"W	8.85'
L34	S89°38'37"E	30.00'	L110	S17°10'30"E	68.50'
L35	N00°21'23"E	15.00'	L111	S29°40'43"E	7.84'
L36	S89°38'37"E	82.00'	L112	S28°40'43"E	189.82'
L37	S89°38'37"E	127.42'	L113	S00°21'23"W	76.76'
L38	S00°21'23"W	15.00'	L114	S00°21'23"W	51.84'
L39	S89°38'37"E	30.00'	L115	S88°07'14"W	170.88'
L40	N00°21'23"E	15.00'	L116	N00°21'23"E	50.92'
L41	S89°38'37"E	82.56'	L117	N89°38'37"W	30.00'
L42	S89°38'37"E	84.40'	L118	S00°21'23"W	57.01'
L43	S00°21'23"W	15.00'	L119	S00°34'04"W	162.74'
L44	S89°38'37"E	30.00'	L120	N89°31'48"W	145.56'
L45	N00°21'23"E	15.00'	L121	N00°21'23"E	61.21'
L46	N03°57'02"E	2.80'	L122	N89°38'37"W	30.00'
L47	N00°57'02"E	226.93'	L123	S00°21'23"W	61.16'
L48	N01°38'47"E	70.27'	L124	S89°31'48"W	14.10'
L49	N01°38'47"E	74.76'	L125	N78°40'30"W	121.60'
L50	N29°08'45"W	88.68'	L126	N67°26'30"W	48.77'
L51	N29°08'45"W	103.66'	L127	N00°21'23"E	20.20'
L52	N80°41'04"E	12.16'	L128	S89°38'37"E	28.00'
L53	N61°21'10"E	32.18'	L129	N00°21'23"E	30.00'
L54	N80°38'40"W	30.00'	L130	S61°21'10"W	28.12'
L55	N61°30'24"W	14.42'	L131	S89°52'20"W	23.36'
L56	N00°21'23"E	30.00'	L132	N89°38'37"W	27.26'
L57	N88°01'14"W	39.00'	L133	N00°21'23"E	78.46'
L58	N07°23'38"W	112.22'	L134	S89°31'48"E	54.03'
L59	N07°23'38"W	21.46'	L135	S60°40'24"W	190.20'
L60	N73°23'27"E	30.00'	L136	S89°38'37"E	30.00'
L61	S61°38'37"E	30.37'	L137	N60°40'24"E	196.14'
L62	S07°23'38"E	80.59'	L138	N07°23'38"E	77.88'
L63	S88°01'14"E	8.00'	L139	NOT USED	
L64	S00°21'23"W	29.44'	L140	S00°21'23"W	33.17'
L65	S13°19'40"W	82.59'	L141	S89°38'37"E	74.78'
L66	S00°21'23"W	214.14'	L142	N89°38'37"W	30.00'
L67	S89°38'37"E	895.36'	L143	S00°21'23"W	19.86'
L68	N00°20'47"E	262.60'	L144	N89°38'37"W	41.80'
L69	N00°22'05"E	112.00'	L145	S00°21'21"W	7.20'
L70	N28°40'43"W	178.80'	L146	N89°38'37"W	21.30'
L71	N28°40'43"W	110.27'	L147	S00°21'21"W	25.00'
L72	N00°21'23"E	234.60'	L148	S89°38'37"E	29.30'
L73	S89°38'37"E	76.37'	L149	N43°30'51"E	21.87'
L74	S00°28'11"W	7.14'	L150	N46°29'09"W	10.00'
L75	S28°40'43"E	87.87'	L151	S43°30'51"W	20.41'
L76	S00°21'23"W	107.42'	L152	N88°47'56"W	40.51'
			L153	N00°21'23"E	10.50'

CURVE DATA TABLE

COURSE	DELTA	RADIUS	LENGTH	CH BEARING	CH LENGTH
C1	13°13'28"	30.00'	6.93'	S06°58'31"W	6.92'
C2	35°44'47"	330.00'	205.88'	S18°13'47"W	202.56'
C3	15°37'23"	270.00'	73.62'	S28°17'20"W	73.39'
C4	110°07'25"	28.00'	53.82'	S34°34'54"E	45.91'
C5	90°00'00"	8.00'	12.57'	N45°21'23"E	11.31'
C6	NOT USED				
C7	90°00'00"	20.00'	31.42'	N45°21'23"E	28.28'
C8	90°00'00"	11.00'	17.28'	N45°21'23"E	15.56'
C9	29°14'54"	25.00'	12.76'	S14°09'16"E	12.62'
C10	NOT USED				
C11	90°00'00"	11.00'	17.28'	S44°38'37"E	15.56'
C12	17°29'18"	30.00'	9.16'	N81°30'28"E	9.12'
C13	50°04'18"	30.00'	26.02'	S24°02'23"W	25.79'
C14	17°38'33"	30.00'	9.24'	S80°44'02"E	9.18'
C15	55°01'13"	30.00'	28.81'	N28°06'22"W	27.71'

VISTA RIDGE FILING NO. 14
SHEET 2 OF 2

LEGEND
- SET 5/8"x24" PIN & 1 1/4" YELLOW PLASTIC CAP L.S. NO. 33202 UNLESS NOTED OTHERWISE
- FOUND #5 REBAR & 2" ALUMINUM CAP L.S. NO. 16316

ENGINEERING SERVICE COMPANY
ENGINEERS - SURVEYORS - PLANNERS

Drawing No.	Date of Preparation	Date of Last Revision
F-747	11/21/2014	07/06/2015

ATTACHMENT C

Print Form

TOWN OF ERIE
Community Development Department – Planning Division
645 Holbrook Street – PO Box 750 – Erie, CO 80516
Tel: 303.926.2770 – Fax: 303.926.2706 – Web: www.erieco.gov

LAND USE APPLICATION

Please fill in this form completely. Incomplete applications will not be processed.

STAFF USE ONLY

FILE NAME:

FILE NO: DATE SUBMITTED: FEES PAID:

PROJECT/BUSINESS NAME: King Soopers #129

PROJECT ADDRESS: NWC of Sheridan Pkwy & Hwy 7

PROJECT DESCRIPTION: Approximately 30 acre parcel to be subdivided into various lots for commercial development. Lots 1-6 will be part of the initial phase and will include a 123K SF King Soopers Marketplace, a 12,100 SF retail building next to the King Soopers, and a 9 MPD King Soopers fueling station.

LEGAL DESCRIPTION *(attach legal description if Metes & Bounds)*

Subdivision Name: Vista Ridge Filing No. 13

Filing #: 13 Lot #: 1-6 Block #: Section: 33 Township: 1N Range: 68W

OWNER *(attach separate sheets if multiple)*

Name/Company: Montex(Brownlee) LLC & Montex (Vista Ridge) LLC

Contact Person: Andy Chaikovsky

Address:

City/State/Zip:

Phone: Fax:

E-mail:

AUTHORIZED REPRESENTATIVE

Company/Firm: King Soopers

Contact Person: Drew Warot

Address: 65 Tejon Street

City/State/Zip: Denver, CO 80223

Phone: (303) 778-2052 Fax:

E-mail: Drew.Warot@kingsoopers.com

MINERAL RIGHTS OWNER *(attach separate sheets if multiple)*

Name/Company: See Title Commitment

Address:

City/State/Zip:

MINERAL LEASE HOLDER *(attach separate sheets if multiple)*

Name/Company:

Address:

City/State/Zip:

LAND-USE & SUMMARY INFORMATION

Present Zoning: PD

Proposed Zoning: PD

Gross Acreage: ~ 29.85 acres (both phases), 20.25 (Phase 1)

Gross Site Density (du/ac):

Lots/Units Proposed: 9 (both phases), 1-6 (Phase 1)

Gross Floor Area: Lot 1-123Ksf, Lot 2-12,100sf, Lot 5-175sf

SERVICE PROVIDERS

Electric: United Power

Metro District: Vista Ridge

Water *(if other than Town)*:

Gas: Xcel

Fire District: Mountain View Fire Rescue

Sewer *(if other than Town)*:

PAGE TWO MUST BE SIGNED AND NOTARIZED

DEVELOPMENT REVIEW FEES

ANNEXATION		SUBDIVISION	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☐ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☑ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☐ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☑ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☐ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: _____ Date: _____

Owner: _____ Date: _____

Applicant: _____ Date: 11-26-14

STATE OF COLORADO)
) ss.
County of Denver)

The foregoing instrument was acknowledged before me this 26 day of November 2014, by Rhonda Remy.

My commission expires: 10-27-18
Witness my hand and official seal.

RHONDA REMY
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144041674
MY COMMISSION EXPIRES OCTOBER 27, 2018

R Remy
Notary Public

November 26, 2014

Mr. Marty Ostholthoff,
Community Development Director
Town of Erie
PO Box 750
Erie, CO 80516

Re: Letter of Authorization for Vista Ridge Montex and Brownlee Properties – Minor Subdivision and Site Development Plan

Dear Mr. Ostholthoff,

The attached Statement of Authority authorizes Mr. Drew Warot, Real Estate Specialist King Soopers/City Market, 65 Tejon Street, Denver, CO 80223 or such other designated representative of King Soopers/City Market to represent the various land owner's interest with respect to the Land Use Applications to the Town of Erie for Minor Subdivision and Site Development Plan for the properties described below.

Said Land Use Applications shall apply to the following described properties, located west of Sheridan Boulevard and north of Highway 7 (Baseline):

Parcel 1:
Legal Description
Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624 and more particularly described as follows:
A parcel of land located in the South Half of Section 33, Township 1 North, Range 68 West of the 6th P.M., more particularly described as follows:
Commencing at the South Quarter Corner of said Section 33;
Thence North 00° 06' 16" East, 75.00 feet along the West line of the Southeast Quarter to the Point of Beginning; Thence North 89° 38'37" West, 498.22 feet along the North right of way line of Colorado State Highway 7; Thence North 00° 06' 16" East, 865.79 feet along the Easterly line of Vista Ridge Master Plat Parcel 34; Thence along the Southerly right of way of Ridge View Drive the following two courses: 1)S89°31'49"E, 551.15 feet; 2)46.57 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 88° 57'03" and a chord bearing S45° 03'17"E, 42.04 feet; Thence along the Westerly right of way line of Sheridan Boulevard the following two courses: 1) S00° 34'46" B, 804.80 feet, 2)47.61 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 90° 55'52" and a chord bearing S44° 53' 10"W, 42.77 feet; Thence North 89° 38'54"W 62.20 feet along the North right of way of Colorado State Highway 7 to the Point of Beginning, County of Weld, State of Colorado.

Parcel 2:
Legal Description:
Parcels 33 and 34, Vista Ridge Master Final Flat, County of Weld, State of Colorado

Sincerely,

Andy Chaikovsky, Manager
Montex(Brownlee) LLC
Montex (Vista Ridge) LLC

Enclosures:
Statement of Authority, Montex (Brownlee) LLC
Statement of Authority, Montex (Vista Ridge) LLC

After Recording Return to:

_____

_____

_____

STATEMENT OF AUTHORITY

Pursuant to C.R.S. §38-30-172, the undersigned hereby executes this Statement of Authority on behalf of MONTEX (VISTA RIDGE), LLC, a Colorado limited liability company an entity other than an individual, capable of holding title to real property (the "Entity"), and states as follows:

The name of the Entity is: DILLON COMPANIES, INC

The Entity is a: Kansas corporation
(state type of entity and state, country or other government authority under whose laws such entity was formed)

The mailing address for the Entity is: 65 Tejon Street, Denver, Colorado 80223

The name or position of the person(s) authorized to execute instruments conveying, encumbering, or otherwise affecting title to real property on behalf of the Entity is:

Drew Warot, Real Estate Specialist - King Soopers/City Market or such other designated representative

The limitations upon the authority of the person named above or holding the position described above to bind the Entity are as follows: NONE
(If no limitations insert "NONE")

The instrument and recording information, including the County, of the document by which title was acquired is:

Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624; and a part of parcels 33 and 34, Vista Ridge Master Final Plat, County of Weld, State of Colorado.

Other matters concerning the manner in which the Entity deals with any interest in real property are:

(If no matters, leave this section blank)

EXECUTED this 26th Day of November, 2014

By: _____

Andy Chalkovsky, Manager
Name/Title

STATE OF ~~COLORADO~~ Florida }ss:
COUNTY OF Sarasota

The foregoing instrument was acknowledged before me this 26th day of November, 2014
By Andy Chalkovsky as Manager of Montex (Vista Ridge), LLC, a Colorado limited liability company

Witness my hand and official seal.
My commission expires: 06/09/2018

_____

Alexander Poland
State of Florida
My Commission Expires 06/09/2018
Commission No. FF 130873
Bonded through Western Surety Company

After Recording Return to:

_____

_____

_____

STATEMENT OF AUTHORITY

Pursuant to C.R.S. §38-30-172, the undersigned hereby executes this Statement of Authority on behalf of MONTEX (BROWNLEE), LLC, **a** Colorado limited liability company **an entity other than an individual, capable of holding title to real property (the "Entity"), and states as follows:**

The name of the Entity is: DILLON COMPANIES, INC

The Entity is a: Kansas corporation
(state type of entity and state, country or other government authority under whose laws such entity was formed)

The mailing address for the Entity is: 65 Tejon Street, Denver, Colorado 80223

The name or position of the person(s) authorized to execute instruments conveying, encumbering, or otherwise affecting title to real property on behalf of the Entity is:

Drew Warot, Real Estate Specialist - King Soopers/City Market or such other designated representative

The limitations upon the authority of the person named above or holding the position described above to bind the Entity are as follows: NONE
(if no limitations insert "NONE")

The instrument and recording information, including the County, of the document by which title was acquired is:

Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624; and a part of parcels 33 and 34, Vista Ridge Master Final Plat, County of Weld, State of Colorado.

Other matters concerning the manner in which the Entity deals with any interest in real property are:

(if no matters, leave this section blank)

EXECUTED this 26th day of November, 2014

By: _____

Andy Chalkovsky, Manager
Name/Title

STATE OF ~~COLORADO~~ Florida }ss:
COUNTY OF Sarasota

The foregoing instrument was acknowledged before me this 26th day of November, 2014
By Andy Chalkovsky as Manager of Montex (Brownlee), LLC, a Colorado limited liability company

Witness my hand and official seal.
My commission expires: 06/09/2018

_____

Alexander Poland
State of Florida
My Commission Expires 06/09/2018
Commission No. FF 130873
Bonded through Western Surety Company

Heritage Title Company
Making Transactions Personal
Commonwealth

4582 South Ulster St Pkwy,
Denver, CO 80237
Phone: (303) 476-5800
Fax: (303) 628-1671

DATE: November 25, 2014
FILE NUMBER: 451-H0411791-266-ES4, Amendment No. 1
PROPERTY ADDRESS: Vista Ridge, Erie, CO 99999
BUYER/BORROWER:
OWNER(S):
YOUR REFERENCE NUMBER:
ASSESSOR PARCEL NUMBER:

PLEASE TAKE NOTE OF THE FOLLOWING REVISED TERMS CONTAINED HEREIN:

None.

WIRED FUNDS ARE REQUIRED ON ALL CASH PURCHASE TRANSACTIONS. FOR WIRING INSTRUCTIONS, PLEASE CONTACT YOUR ESCROW OFFICE AS NOTED ON THE TRANSMITTAL PAGE OF THIS COMMITMENT.

TO:	**King Soopers** **65 Tejon Street** **Denver, CO 80223**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Drew Warot** **(303) 778-2052** **(303) 715-4546** **drew.warot@kingsoopers.com**
TO:	**Denver Title-Commercial Title Only Escrow** **4582 South Ulster St Pkwy** **Denver, CO 80237**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Eric Stearns** **(303) 476-5800** **(303) 628-1671** **estearns@heritagetco.com**

END OF TRANSMITTAL

Commonwealth Land Title Insurance Company
COMMITMENT

SCHEDULE A

Commitment No: **451-H0411791-266-ES4, Amendment No. 1**

1. **Effective Date:** **November 18, 2014 at 7:00 A.M.**

2. **Policy or policies to be issued:**

	Proposed Insured	Policy Amount
(a)	ALTA Owners Policy 6-17-06	$0.00
(b)	None	$0.00
		$

3. **The estate or interest in the land described or referred to in this Commitment is:**

   A Fee Simple

4. **Title to the estate or interest in the land is at the Effective Date vested in:**

   Montex (Brownlee), LLC, a Colorado limited liability company as to Parcel 1

   And

   Montex (Vista Ridge), LLC, a Colorado limited liability company as to Parcel 2

5. **The land referred to in this Commitment is described as follows:**

   See Attached Legal Description

(for informational purposes only) Vista Ridge, Erie, CO 99999

PREMIUMS:

Informational Commitment : $ 550.00
Owners Policy : $ TBD

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Attached Legal Description

Parcel 1:

Legal Description

Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624 and more particularly described as follows:

A parcel of land located in the South Half of Section 33, Township 1 North, Range 68 West of the 6th P.M., more particularly described as follows:

Commencing at the South Quarter Corner of said Section 33;

Thence North 00° 06' 16" East, 75.00 feet along the West line of the Southeast Quarter to the Point of Beginning;

Thence North 89° 38'37" West, 498.22 feet along the North right of way line of Colorado State Highway 7;

Thence North 00° 06' 16" East, 865.79 feet along the Easterly line of Vista Ridge Master Plat Parcel 34;

Thence along the Southerly right of way of Ridge View Drive the following two courses:
1)S89°31'49"E, 551.15 feet;

2)46.57 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 88° 57'03" and a chord bearing S45° 03'17"E, 42.04 feet; Thence along the Westerly right of way line of Sheridan Boulevard the following two courses:

1) S00° 34'46" B, 804.80 feet,

2)47.61 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 90° 55'52" and a chord bearing S44° 53' 10"W, 42.77 feet;

Thence North 89° 38'54"W 62.20 feet along the North right of way of Colorado State Highway 7 to the Point of Beginning, County of Weld, State of Colorado.

Parcel 2:

Legal Description:

Parcels 33 and 34, Vista Ridge Master Final Flat, County of Weld, State of Colorado

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SCHEDULE B – Section 1

Requirements

The following requirements must be met:

a. Pay the agreed amounts for the interest in the land and/or for the mortgage to be insured.

b. Pay us the premiums, fees and charges for the policy.

c. Obtain a certificate of taxes due from the county treasurer or the county treasurer's authorized agent.

d. Deed sufficient to convey the fee simple estate or interest in the Land described or referred to herein, to the Proposed Insured Purchaser.

e. The Company will require that an Owner's Affidavit be completed by the party(s) named below before the issuance of any policy of title insurance.

Party(s): Montex (Brownlee), LLC, a Colorado limited liability company and
Montex (Vista Ridge), LLC, a Colorado limited liability company

The Company reserves the right to add additional items or make further requirements after review of the requested Affidavit.

f. Furnish to the Company an ALTA/ACSM Land Title Survey in form, content and certification to Commonwealth Land Title Insurance Company and Heritage Title Company, Inc..

Note: Exception may be made to any adverse matters disclosed by the ALTA/ACSM Land Title Survey.

END OF REQUIREMENTS

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SCHEDULE B – Section 2

Exceptions

Any policy we issue will have the following exceptions unless they are taken care of to our satisfaction:

1. Any facts, rights, interests or claims that are not shown by the Public Records but which could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

2. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

3. Any encroachments, encumbrances, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by Public Records.

4. Any lien or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the effective date hereof but prior to the date the proposed Insured acquires of record for the value the estate or interest or mortgage thereon covered by this Commitment.

   NOTE: The above exception will not appear on policies where closing and settlement has been performed by the Company.

6. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof, (c) water rights, claims of title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

7. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

8. All taxes and assessments, now or heretofore assessed, due or payable.

9. Any existing leases or tenancies, and any and all parties claiming by, through or under said lessees.

10. Any boundary discrepancy due to the location of fence lines and the effect of any right, title or interest that may be claimed due to any said discrepancy.

11. Reservations by the Union Pacific Railroad Company (now known as Union Pacific Resources Company) of (1) oil, coal and other minerals underlying the land, (2) the exclusive right to prospect for, mine and remove oil, coal and other minerals, and (3) the right of ingress and egress and regress to prospect for, mine and remove oil, coal and other minerals, all as contained in Deed recorded June 4, 1902 in Book 201 at Page 16.

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12. Mineral Deed to Champlin Petroleum Company recorded November 30, 1972 in Book 681 at Reception No. 1602712.

13. Relinquishment and Quit Claim as to the surface entry only, for minerals exclusive of oil, gas and associated liquid hydrocarbons, to Vista Ridge Development Corporation, recorded August 21, 2000 at Reception No. 2788395.

14. Surface Use Agreement by and between Union Pacific Resources Company and Vista Ridge Development Corporation recorded August 21, 2000 at Reception No. 2788394 and amendment recorded November 15, 2004 at Reception No. 3235488.

15. Request for Notification of Surface Development by RME Petroleum and RME Land Corp. recorded May 28, 2002 at Reception No. 2954455.

16. Excluding and excepting from the transfer by these presents "All Mineral Lands" should any such be found to exist in the tracts described in the foregoing, but this exclusion and exception, according to the terms of the statute,. "shall not be construed to include coal and iron land" by the Patent recorded July 9, 1902 in Book 201 at Page 66.

17. Terms, conditions, provisions, agreements and obligations specified under the Oil and Gas Lease, executed by Champlin Petroleum Company nka Union Pacific Railroad Company and Pan American Petroleum Corporation recorded November 30, 1972 in Book 681 at Reception No. 1602713. Notice recorded December 7, 2000 at Reception No. 2811882.

18. An easement for right of way and incidental purposes granted to Mountain States Telephone and Telegraph Company by the instrument recorded November 18, 1986 in Book 1135 at Reception No. 2077413.

19. The effect of a document entitled "Certificate of Organization for the Northwest Parkway Public Highway Authority" recorded June 30, 1999 at Reception No. 2703636 and re-recorded November 19, 1999 at Reception No. 2733705.

20. Any tax fee lien or assessment by reason of inclusion in of Vista Ridge Metropolitan District, as disclosed by the instrument recorded January 8, 2001 at Reception No. 2817763.

21. Any tax fee lien or assessment by reason of inclusion in North Metro Fire Protection District by Order recorded October 30, 2001 at Reception No. 2895963.

22. Any tax fee lien or assessment by reason of inclusion of subject property within Northern Colorado Water Conservancy District by Order recorded December 14, 2001 at Reception No. 2908972, 2908971, 2908970 and 2908969.

23. The effect of Vista Ridge Development Plan recorded September 15, 2000 at Reception No. 2793940.

24. General Development Plan Minor Amendment No. 1 recorded February 27, 2002 at Reception No. 2928673.

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25. An easement for electric and communication facilities and incidental purposes granted to United Power, Inc. by the instrument recorded in Adams County December 20, 2002 at Reception No. 1070363 and in Weld County January 15, 2003 at Reception No. 3023992.

26. An easement for electric facilities and incidental purposes granted to United Power, Inc. by the instrument recorded January 15, 2003 at Reception No. 3023994.

27. The effect, if any, of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624.

28. An easement for right of way and incidental purposes granted to United Power, Inc. by the instrument recorded May 22, 2003 at Reception No. 3065313.

29. The effect of Request for Notification (Mineral Estate Owner) recorded December 21, 2007 at Reception No. 3525268.

30. Terms, agreements, provisions, conditions and obligations of a Oil and Gas Lease (Paid Up), executed by United States Exploration, Inc., a Colorado corporation, as Lessee(s), recorded December 4, 2007 at Reception No. 3521379.

31. An easement granted to Qwest Corporation by the instrument recorded October 10, 2001 at Reception No. 2890895.

32. An easement granted to United Power by the instrument recorded September 4, 2002 at Reception No. 2984585.

33. An easement granted to Public Service Company by the instrument recorded October 8, 2002 at Reception No. 2994217.

34. Ordinance Zoning the Vista Ridge Annexation to Planned Development (PD), recorded August 30, 2000 at Reception No. 2790549.

35. The effect of a document entitled "Certificate of Organization for the Northwest Parkway Public Highway Authority" recorded June 30, 1999 at Reception No. 2703636 and re-recorded November 19, 1999 at Reception No. 2733705.

36. Ordinance Annexing Vista Ridge into the Town of Erie recorded August 30, 2000 at Reception No. 2790550.

37. Terms, conditions, provisions, agreements and obligations specified under the Vista Ridge Annexation Agreement by and between Vista Ridge Development Corporation, et al and The Town of Erie, Colorado recorded September 15, 2000 at Reception No. 2793930 and re-recorded December 8, 2000 at Reception No. 2812291.

38. Easement and Right-of-Way granted to Farmers Reservoir and Irrigation Company for a non-exclusive easement for an underground water pipeline and appurtenances recorded October 22, 2001 at Reception No. 2893921.

39. Terms, Conditions and Provisions of Master Declaration of Covenants, Conditions and Restrictions for Vista Ridge recorded December 14, 2001 at Reception No. 2909244 and amended January 28, 2003 at Reception No. 3027600.

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40. Terms, Conditions, Provisions and obligations as set forth in Development Agreement between the Town of Erie, Vista Ridge Metropolitan District and Vista Ridge Development Corporation, a Colorado Corporation recorded December 4, 2001 at Reception No. 2905896.

    Note: Notice in connection with the above District and Development Fees recorded June 14, 2006 at Reception No. 3396125.

41. Easements, Notes, Conditions, as shown on the plat of Vista Ridge Master Final Plat recorded September 06, 2001 at Reception No. 2903870 as Subdivision No. 12220.

42. The effect of Vista Ridge Development Plan recorded September 15, 2000 at Reception No. 2793940 and the General Development Plan Minor Amendment No. 1 recorded February 27, 2002 at Reception No. 2928673.

43. Terms, conditions, provisions, agreements and obligations specified under the Declaration of Golf Play Covenants by Vista Ridge Development Corporation recorded July 7, 2003 at Reception No. 3080606.

44. An easement for electrical facilities and incidental purposes granted to United Power, Inc. by the instrument recorded September 22, 2003 at Reception No. 3108688.

45. Terms, conditions, provisions, agreements and obligations contained in the Title Companies and other Interested Parties: Please be on Notice That: recorded June 14, 2006 at Reception No. 3396125, and as also recorded September 20, 2010 at Reception No. 3719463, and also recorded March 16, 2012 at Reception No. 3832301, and as also recorded May 21, 2013 at Reception No. 3933756, and as also recorded March 18 2014 at Reception No. 4002991, and as also recorded August 20, 2014 at Reception No. 4039682, and Recorded November 14, 2014 at Reception No. 4061805.

46. Covenants, conditions and restrictions, which do not include a forfeiture or reverter clause, set forth in the instrument recorded November 19, 2008 at Reception No. 3590556. Provisions regarding race, color, creed, and national origin, if any, are deleted.

47. The effect of Annexation Map recorded September 15, 2000 at Reception No. 2793937.

48. Deed of Easement granted to the Town of Erie, for passage of aircraft in the airspace above subject property as recorded November 28, 2001 at Reception No. 2903864.

49. Terms, agreements, provisions, conditions and obligations of a Oil and Gas Lease (Paid Up), executed by United States Exploration, Inc., a Colorado corporation, as Lessee(s), recorded December 4, 2007 at Reception No. 3521379.

50. ALTA / ACSM Survey Vista Ridge Commercial East Recorded January 28, 2010 at Reception No. 3672682.

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51. Terms, agreements, provisions, conditions and obligations of Sheridan – Highway 7 Commercial Center Annextion Agreement Recorded March 3, 2011 at Reception No. 3753953, and Annexation Map Recorded March 3, 2011 at Reception No. 3753952, Ordinance No. 30.2010 in connection to said Annexation Recorded March 3, 2011 at Reception No. 3753954, and Ordinance No. 31.2010 in connection to said Annexation Recorded March 3, 2011 at Reception No. 3753955.

52. Terms, agreements, provisions, conditions and obligations of the Vista Ridge Development Plan Amendment No. 5 as Recorded November 26, 2012 at Reception No. 3890727 and Vista Ridge Development Plan Amendment No. 6 as Recorded November 25, 2013 at Reception No. 3980214.

END OF EXCEPTIONS

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PROJECT NARRATIVE
November 28, 2014

KINGS SOOPERS #129 - VISTA RIDGE MARKETPLACE
VISTA RIDGE FILING NO. 13,
ERIE, COLORADO

A. General Project Concept

King Soopers, Inc., located at 65 Tejon Street, Denver, CO 80223, is proposing to develop a 20.25 acre parcel of vacant land located at the NWC of Sheridan Parkway and Hwy 7, in Erie, CO. Galloway and Company, Inc. is the authorized representative and design consultant for King Soopers for the purpose of obtaining Town of Erie Site Plan approval and permits for construction of the proposed grocery anchored development.

An overall property boundary of approximately 33.3018 acres encompassing portions of the existing Parcel 33 and 34 of the Vista Ridge Final Plat the existing Brownlee property will be subdivided into various lots and tracts. Of that proposed subdivision, approximately 20.25 acres will contain the first phase of the commercial development of which the proposed site plan has been prepared. The site plan contains a total of 6 lots and a water quality/detention Tract. The Site Plans include a King Soopers Marketplace on Lot 1 with a building footprint of ~119,459 S.F., plus a second floor mezzanine, for a total of 123,000SF. A drive-thru pharmacy, Fred Meyer Jewelry store, Little Clinic and Starbucks Coffee are also included within the proposed building footprint. Lot 2 will be a 12,000 SF retail building adjacent to the King Soopers. The parking for the retail uses on Lot 2 will be constructed along with the parking required for the King Soopers on Lot 1. Lot 5 is proposed to be a 9 dispenser fuel site for the King Soopers. Lots 3, 4, and 6 will be overlot graded with utilities stubbed into them for future commercial development.

The development will be served by five major access points, two along Hwy 7, one along Sheridan Parkway, and two along Ridge View Road. A Traffic Impact Study prepared by Kimley-Horn & Associates has been included with the submittal packet.

Pedestrian access has been provided to the proposed development from both Sheridan Parkway via connection to the existing sidewalk along the west side of Sheridan. Sidewalks area also planned to be constructed along Ridge View and Hwy 7 along the frontage of the property.

Town of Erie public works will serve the proposed lot for water and sewer. United Power is the service provider for electric and Xcel Energy is the service provider for natural gas. All utilities are available and currently serving the site. Mountain View Fire Protection District will also serve this proposed development.

A conceptual drainage plan and report has been included in this submittal package for Town review. The plan proposes a water quality and detention pond located at the northeast corner of the proposed King Soopers site, within Tract A of the proposed Final Plat.

B. Compliance with Five Approval Criteria of MC Title 10-UDC

1. *Meets land use designation for commercial use. The project will also be integrated into the existing and proposed roadway network outlined in the comp. plan.*
2. *The site plan and final plat are consistent with the boundaries outlined for this general commercial portion of the Vista Ridge master plan. The proposed site plan has been designed to coordinate internal drive lanes and access points that will work with the remaining undeveloped portions of this retail area to the west of the property. Thus creating the ability to establish an overall cohesive commercial center from Mountain View Blvd. to Sheridan Parkway.*
3. *The site plan has been prepared in general conformance with the Town of Erie Zoning regulations and design standards. Setbacks, landscape %'s, parking layouts, etc. have been evaluated. Parking quantities may require a variance for the King Soopers Lot 1.*
4. *No adverse impacts from the proposed development are anticipated.*
5. *The proposed development will be compatible with the surrounding land uses as this site is bound on both the west and east by future commercial areas and on the north by a school, which provides a buffer from the residential development further north.*

C. Architecture

By utilizing the craftsman style of architecture as well as materials and finishes similar to surrounding buildings, the King Soopers Marketplace store and adjacent retail will provide a visually interesting addition to the Town of Erie and the Vista Ridge commercial district. Exposed wood framing and trellises have been incorporated into the design, and canopies and awnings have been used to provide visual interest at the scale of the pedestrian. Changes in wall height and pilasters have been utilized to reduce the monolithic appearance of the walls.

D. Project Schedule

Construction of the proposed development is anticipated to begin in the Spring of 2015 with construction completing in the Spring of 2016. The full 20.25 acres of on-site improvements and all related short term off-site improvements are intended to be construction in a single phase.

E. Business Data

- *The King Soopers Marketplace size is approximately 119,459 S.F., plus a second floor mezzanine, for a total of 123,000SF.*
- *The Store will employ a total of 150 to 170 employees. We expect to have 70 to 90 employees on-site per day.*
- *The King Soopers Marketplace site will be open 24 hours per day, 7 days per week. Employees will be present 24 hours as well.*
- *Typical Vehicles - 67' tractor/trailers; panel/delivery vans/customer cars from small economy care to large SUV's will access the site. 2-5 primary deliveries with a WB67 truck are anticipated daily, along with additional vendor truck traffic.*
- *Lot 1 – KS Building – 13.1679 Ac, Lot 2 – Retail – 1.4749 Ac, Lot 5 – Fuel Facility – 0.9839 Ac.*

F. Residential Units (N/A)

G. Ownership/Maintenance of public/common areas

King Soopers will own all 20.25 acres initially including Tract A. A separate Common Area Maintenance Agreement will be established by King Soopers and future Lot owners and tenant space leases. All necessary easements are shown on the proposed plat and will be granted by plat or separate documents for utilities, signs, drainage tracts, etc.

Covenants and Restrictions – King Soopers will be developing at Real Estate Covenants and Restrictions agreement that will cover the proposed entire subdivided property.

H. Mineral Rights Status

Mineral rights are currently encumbering the site per the latest Title Commitment. King Soopers is currently working with the seller and the sellers representative to clean up the title in order to relinquish these mineral rights.

NOTES CORRESPONDING TO SCHEDULE B – SECTION 2 OF TITLE COMMITMENT:

(9) ANY EXISTING LEASES OR TENANCIES, AND ANY AND ALL PARTIES CLAIMING BY, THROUGH OR UNDER SAID LESSEES. (THIS ITEM IS NOT ADDRESSED BY THIS SURVEYOR)

(10) ANY BOUNDARY DISCREPANCY DUE TO THE LOCATION OF FENCE LINES AND THE EFFECT OF ANY RIGHT, TITLE OR INTEREST THAT MAY BE CLAIMED DUE TO ANY SAID DISCREPANCY. (ALL FENCE LINES ARE SHOWN AS LOCATED BY SURVEY)

(11) RESERVATIONS BY THE UNION PACIFIC RAILROAD COMPANY (NOW KNOWN AS UNION PACIFIC RESOURCES COMPANY) OF (1) OIL, COAL AND OTHER MINERALS UNDERLYING THE LAND, (2) THE EXCLUSIVE RIGHT TO PROSPECT FOR, MINE AND REMOVE OIL, COAL AND OTHER MINERALS, AND (3) THE RIGHT OF INGRESS AND EGRESS AND REGRESS TO PROSPECT FOR, MINE AND REMOVE OIL, COAL AND OTHER MINERALS, ALL AS CONTAINED IN DEED RECORDED JUNE 4, 1907 IN BOOK 201 AT PAGE 16. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(12) MINERAL DEED TO CHAMPLIN PETROLEUM COMPANY RECORDED NOVEMBER 30, 1977 IN BOOK 681 AT RECEPTION NO. 1802712. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(13) RELINQUISHMENT AND QUIT CLAIM AS TO THE SURFACE ENTRY ONLY, FOR MINERALS EXCLUSIVE OF OIL, GAS AND ASSOCIATED LIQUID HYDROCARBONS, TO VISTA RIDGE DEVELOPMENT CORPORATION, RECORDED AUGUST 21, 2000 AT RECEPTION NO. 2788395. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY WITH THE EXCEPTION OF PARCEL 2 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(14) SURFACE USE AGREEMENT BY AND BETWEEN UNION PACIFIC RESOURCES COMPANY AND VISTA RIDGE DEVELOPMENT CORPORATION RECORDED AUGUST 21, 2000 AT RECEPTION NO. 2788394 AND AMENDMENT RECORDED NOVEMBER 10, 2004 AT RECEPTION NO. 3235488. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. A DRILL SITE IS SHOWN WITHIN THE BOUNDARY OF PARCEL 34, VISTA RIDGE MASTER FINAL PLAT, COUNTY OF WELD, STATE OF COLORADO. HOWEVER, IT IS NOT PLOTTABLE)

(15) REQUEST FOR NOTIFICATION OF SURFACE DEVELOPMENT BY RME PETROLEUM AND RME LAND CORP. RECORDED MAY 28, 2002 AT RECEPTION NO. 2954400. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(16) EXCLUDING AND EXCEPTING FROM THE TRANSFER BY THESE PRESENTS "ALL MINERAL LANDS" SHOULD ANY SUCH BE FOUND TO EXIST IN THE TRACTS DESCRIBED IN THE FOREGOING, BUT THIS EXCLUSION AND EXCEPTION, ACCORDING TO THE TERMS OF THE STATUTE, "SHALL NOT BE CONSTRUED TO INCLUDE COAL AND IRON LAND" BY THE PATENT RECORDED JULY 9, 1902 IN BOOK 201 AT PAGE 66. (THIS ITEM DOES NOT APPEAR TO AFFECT THE SUBJECT PROPERTY)

(17) TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS SPECIFIED UNDER THE OIL AND GAS LEASE, EXECUTED BY CHAMPLIN PETROLEUM COMPANY NKA UNION PACIFIC RAILROAD COMPANY AND PAN AMERICAN PETROLEUM CORPORATION RECORDED NOVEMBER 30, 1972 IN BOOK 681 AT RECEPTION NO. 1602713. NOTICE RECORDED DECEMBER 7, 2000 AT RECEPTION NO. 2811002. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(18) AN EASEMENT FOR RIGHT OF WAY AND INCIDENTAL PURPOSES GRANTED TO MOUNTAIN STATES TELEPHONE AND TELEGRAPH COMPANY BY THE INSTRUMENT RECORDED NOVEMBER 18, 1980 IN BOOK 1135 AT RECEPTION NO. 2077415. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND IS PLOTTED HEREON)

(19) THE EFFECT OF A DOCUMENT ENTITLED "CERTIFICATE OF ORGANIZATION FOR THE NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY" RECORDED JUNE 30, 1999 AT RECEPTION NO. 2703636 AND RE-RECORDED NOVEMBER 19, 1999 AT RECEPTION NO. 2733706. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(20) ANY TAX FEE LIEN OR ASSESSMENT BY REASON OF INCLUSION IN OF VISTA RIDGE METROPOLITAN DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED JANUARY 8, 2001 AT RECEPTION NO. 2817703. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(21) ANY TAX FEE LIEN OR ASSESSMENT BY REASON OF INCLUSION IN NORTH METRO FIRE PROTECTION DISTRICT BY ORDER RECORDED OCTOBER 30, 2001 AT RECEPTION NO. 2896963. (THIS ITEM DOES NOT APPEAR TO AFFECT THE SUBJECT PROPERTY)

(22) ANY TAX FEE LIEN OR ASSESSMENT BY REASON OF INCLUSION OF SUBJECT PROPERTY WITHIN NORTHERN COLORADO WATER CONSERVANCY DISTRICT BY ORDER RECORDED DECEMBER 14, 2001 AT RECEPTION NO. 2908072, 2908071, 2908070 AND 2908069. . (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624 SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(23) THE EFFECT OF VISTA RIDGE DEVELOPMENT PLAN RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793940. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(24) GENERAL DEVELOPMENT PLAN MINOR AMENDMENT NO. 1 RECORDED FEBRUARY 27, 2002 AT RECEPTION NO. 2928073. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(25) AN EASEMENT FOR ELECTRIC AND COMMUNICATION FACILITIES AND INCIDENTAL PURPOSES GRANTED TO UNITED POWER, INC. BY THE INSTRUMENT RECORDED IN ADAMS COUNTY DECEMBER 20, 2002 AT RECEPTION NO. 1070363 AND IN WELD COUNTY JANUARY 16, 2003 AT RECEPTION NO. 3023992. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND IS PLOTTED HEREON)

(26) AN EASEMENT FOR ELECTRIC FACILITIES AND INCIDENTAL PURPOSES GRANTED TO UNITED POWER, INC. BY THE INSTRUMENT RECORDED JANUARY 16, 2003 AT RECEPTION NO. 3023994. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND IS PLOTTED HEREON)

(27) THE EFFECT, IF ANY, OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. (THIS ITEM DOES AFFECT PARCEL 1 AND PARCEL 2 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624 AS SHOWN HEREON. HOWEVER, IT CONTAINS NO OTHER PLOTTABLE ITEMS)

(28) ANY EASEMENT FOR RIGHT OF WAY AND INCIDENTAL PURPOSES GRANTED TO UNITED POWER, INC. BY THE INSTRUMENT RECORDED MAY 22, 2003 AT RECEPTION NO. 3068313. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND IS PLOTTED HEREON)

(29) THE EFFECT OF REQUEST FOR NOTIFICATION (MINERAL ESTATE OWNER) RECORDED DECEMBER 21, 2007 AT RECEPTION NO. 3525268. (THIS ITEM DOES AFFECT PARCEL 2 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624 AS SHOWN HEREON. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(30) TERMS, AGREEMENTS, PROVISIONS, CONDITIONS AND OBLIGATIONS OF A OIL AND GAS LEASE (PAID UP), EXECUTED BY UNITED STATES EXPLORATION, INC., A COLORADO CORPORATION, AS LESSEE(S), RECORDED DECEMBER 4, 2007 AT RECEPTION NO. 3521379. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(31) AN EASEMENT GRANTED TO QWEST CORPORATION BY THE INSTRUMENT RECORDED OCTOBER 10, 2001 AT RECEPTION NO. 2890805. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND IS PLOTTED HEREON)

(32) AN EASEMENT GRANTED TO UNITED POWER BY THE INSTRUMENT RECORDED SEPTEMBER 4, 2002 AT RECEPTION NO. 2984066. (THIS ITEM DOES NOT AFFECT THE SUBJECT PROPERTY AS IT IS SITUATED IN PUBLIC RIGHT-OF-WAY. HOWEVER IT IS PLOTTED HEREON FOR REFERENCE)

(33) AN EASEMENT GRANTED TO PUBLIC SERVICE COMPANY BY THE INSTRUMENT RECORDED OCTOBER 8, 2002 AT RECEPTION NO. 2994217. (THIS ITEM DOES NOT AFFECT THE SUBJECT PROPERTY AS IT IS SITUATED IN PUBLIC RIGHT-OF-WAY. HOWEVER IT IS PLOTTED HEREON FOR REFERENCE)

(34) ORDINANCE ZONING THE VISTA RIDGE ANNEXATION TO PLANNED DEVELOPMENT (PD), RECORDED AUGUST 30, 2000 AT RECEPTION NO. 2790549. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(35) THE EFFECT OF A DOCUMENT ENTITLED "CERTIFICATE OF ORGANIZATION FOR THE NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY" RECORDED JUNE 30, 1999 AT RECEPTION NO. 2703636 AND RE-RECORDED NOVEMBER 19, 1999 AT RECEPTION NO. 2733706. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(36) ORDINANCE ANNEXING VISTA RIDGE INTO THE TOWN OF ERIE RECORDED AUGUST 30, 2000 AT RECEPTION NO. 2790008. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(37) TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS SPECIFIED UNDER THE VISTA RIDGE ANNEXATION AGREEMENT BY AND BETWEEN VISTA RIDGE DEVELOPMENT CORPORATION, ET AL AND THE TOWN OF ERIE, COLORADO RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793930 AND RE-RECORDED DECEMBER 8, 2000 AT RECEPTION NO. 2812291. (THIS ITEM AFFECTS PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(38) EASEMENT AND RIGHT-OF-WAY GRANTED TO FARMERS RESERVOIR AND IRRIGATION COMPANY FOR A NON-EXCLUSIVE EASEMENT FOR AN UNDERGROUND WATER PIPELINE AND APPURTENANCES RECORDED OCTOBER 22, 2001 AT RECEPTION NO. 2893921. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND IS PLOTTED HEREON)

(39) TERMS, CONDITIONS AND PROVISIONS OF MASTER DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS FOR VISTA RIDGE RECORDED DECEMBER 14, 2001 AT RECEPTION NO. 2909244 AND AMENDED JANUARY 28, 2003 AT RECEPTION NO. 3027600. (THIS ITEM DOES AFFECT PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(40) TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS AS SET FORTH IN DEVELOPMENT AGREEMENT BETWEEN THE TOWN OF ERIE, VISTA RIDGE METROPOLITAN DISTRICT AND VISTA RIDGE DEVELOPMENT CORPORATION, A COLORADO CORPORATION RECORDED DECEMBER 4, 2001 AT RECEPTION NO. 2905090. NOTE: NOTICE IN CONNECTION WITH THE ABOVE DISTRICT AND DEVELOPMENT FEES RECORDED JUNE 14, 2006 AT RECEPTION NO. 3396125. (THIS ITEM DOES AFFECT PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(41) EASEMENTS, NOTES, CONDITIONS, AS SHOWN ON THE PLAT IF VISTA RIDGE MASTER FINAL PLAT RECORDED SEPTEMBER 06, 2001 AT RECEPTION NO. 2903870 AS SUBDIVISION NO. 12220. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(42) THE EFFECT OF VISTA RIDGE DEVELOPMENT PLAN RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793940 AND THE GENERAL DEVELOPMENT PLAN MINOR AMENDMENT NO. 1 RECORDED FEBRUARY 27, 2002 AT RECEPTION NO. 2928073. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PROPERTY EXCEPT PARCEL 1 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(43) TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS SPECIFIED UNDER THE DECLARATION OF GOLF PLAY COVENANTS BY VISTA RIDGE DEVELOPMENT CORPORATION RECORDED JULY 7, 2003 AT RECEPTION NO. 3080006. (THIS ITEM AFFECTS PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(44) AN EASEMENT FOR ELECTRICAL FACILITIES AND INCIDENTAL PURPOSES GRANTED TO UNITED POWER, INC. BY THE INSTRUMENT RECORDED SEPTEMBER 22, 2003 AT RECEPTION NO. 3108088. (THIS ITEM DOES AFFECT THE SUBJECT PROPERTY AND ITS APPROXIMATE LOCATION IS PLOTTED HEREON DUE TO ITS LOCATION IS NOT FULLY DEFINED)

(45) TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE TITLE COMPANIES AND OTHER INTERESTED PARTIES: PLEASE BE ON NOTICE THAT: RECORDED JUNE 14, 2006 AT RECEPTION NO. 3396125, AND AS ALSO RECORDED SEPTEMBER 20, 2010 AT RECEPTION NO. 3719403, AND ALSO RECORDED MARCH 16, 2012 AT RECEPTION NO. 3832301, AND AS ALSO RECORDED MAY 21, 2013 AT RECEPTION NO. 3933760, AND AS ALSO RECORDED MARCH 18, 2014 AT RECEPTION NO. 4002001, AND AS ALSO RECORDED AUGUST 20, 2014 AT RECEPTION NO. 4039082. (THIS ITEM DOES AFFECT PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(46) COVENANTS, CONDITIONS AND RESTRICTIONS, WHICH DO NOT INCLUDE A FORFEITURE OR REVERTER CLAUSE, SET FORTH IN THE INSTRUMENT RECORDED NOVEMBER 19, 2008 AT RECEPTION NO. 3590550. PROVISIONS REGARDING RACE, COLOR, CREED, AND NATIONAL ORIGIN, IF ANY, ARE DELETED. (THIS ITEM DOES AFFECT PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(47) THE EFFECT OF ANNEXATION MAP RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793937. (THIS ITEM DOES AFFECT PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

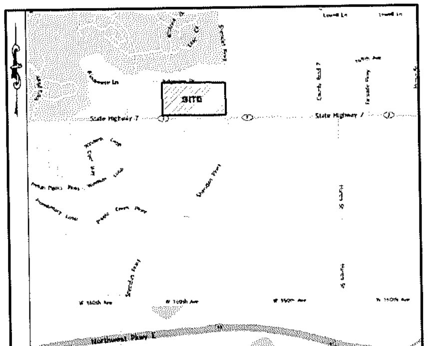
(48) DEED OF EASEMENT GRANTED TO THE TOWN OF ERIE, FOR PASSAGE OF AIRCRAFT IN THE AIRSPACE ABOVE SUBJECT PROPERTY AS RECORDED NOVEMBER 28, 2001 AT RECEPTION NO. 2903864. (THIS ITEM DOES AFFECT PARCEL 2 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(49) TERMS, AGREEMENTS, PROVISIONS, CONDITIONS AND OBLIGATIONS OF A OIL AND GAS LEASE (PAID UP), EXECUTED BY UNITED STATES EXPLORATION, INC., A COLORADO CORPORATION, AS LESSEE(S), RECORDED DECEMBER 4, 2007 AT RECEPTION NO. 3521379. (THIS ITEM DOES AFFECT THE ENTIRE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(50) ALTA / ACSM SURVEY VISTA RIDGE COMMERCIAL EAST RECORDED JANUARY 28, 2010 AT RECEPTION NO. 3672682. (THIS ITEM AFFECTS PARCEL 1 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(51) TERMS, AGREEMENTS, PROVISIONS, CONDITIONS AND OBLIGATIONS OF SHERIDAN – HIGHWAY 7 COMMERCIAL CENTER ANNEXATION AGREEMENT RECORDED MARCH 3, 2011 AT RECEPTION NO. 3753953, AND ANNEXATION MAP RECORDED MARCH 3, 2011 AT RECEPTION NO. 3753952, ORDINANCE NO. 30,2010 IN CONNECTION TO SAID ANNEXATION RECORDED MARCH 3, 2011 AT RECEPTION NO. 3753954, AND ORDINANCE NO. 31,2010 IN CONNECTION TO SAID ANNEXATION RECORDED MARCH 3, 2011 AT RECEPTION NO. 3753955. (THIS ITEM DOES AFFECT PARCEL 1 OF THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)

(52) TERMS, AGREEMENTS, PROVISIONS, CONDITIONS AND OBLIGATIONS OF THE VISTA RIDGE DEVELOPMENT PLAN AMENDMENT NO. 5 AS RECORDED NOVEMBER 26, 2012 AT RECEPTION NO. 3890727 AND VISTA RIDGE DEVELOPMENT PLAN AMENDMENT NO. 6 AS RECORDED NOVEMBER 25, 2013 AT RECEPTION NO. 3980214. (THIS ITEM DOES AFFECT THE SUBJECT PREMISES. HOWEVER, IT CONTAINS NO PLOTTABLE ITEMS)



VICINITY MAP

LEGAL DESCRIPTION

PARCEL 1:

PARCELS 1 AND 2 OF SUBDIVISION EXEMPTION NO. 977 RECORDED JUNE 9, 2003 AT RECEPTION NO. 3070624 AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 33;

THENCE NORTH 00° 06' 16" EAST, 75.00 FEET ALONG THE WEST LINE OF THE SOUTHEAST QUARTER TO THE POINT OF BEGINNING;

THENCE NORTH 89° 38' 37" WEST, 498.22 FEET ALONG THE NORTH RIGHT OF WAY LINE OF COLORADO STATE HIGHWAY 7;

THENCE NORTH 00° 06'16" EAST, 865.79 FEET ALONG THE EASTERLY LINE OF VISTA RIDGE MASTER PLAT PARCEL 34;

THENCE ALONG THE SOUTHERLY RIGHT OF WAY OF RIDGE VIEW DRIVE THE FOLLOWING TWO COURSES:

1) S89°31'46"E, 551.15 FEET;
2) 46.57 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID ARC SUBTENDED BY A RADIUS OF 30.00 FEET, A CENTRAL ANGLE OF 88°57'03" AND A CHORD BEARING S45°03'17"E, 42.04 FEET; THENCE ALONG THE WESTERLY RIGHT OF WAY LINE OF SHERIDAN BOULEVARD THE FOLLOWING TWO COURSES:

1) S00°34'46"B, 604.00 FEET;
2) 47.61 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID ARC SUBTENDED BY A RADIUS OF 30.00 FEET, A CENTRAL ANGLE OF 90°55'52" AND A CHORD BEARING S44°53'10"W, 42.77 FEET;

THENCE NORTH 89° 38' 54" W, 62.20 FEET ALONG THE NORTH RIGHT OF WAY OF COLORADO STATE HIGHWAY 7 TO THE POINT OF BEGINNING, COUNTY OF WELD, STATE OF COLORADO.

PARCEL 2:

PARCELS 33 AND 34, VISTA RIDGE MASTER FINAL PLAT, COUNTY OF WELD, STATE OF COLORADO.

SURVEYOR'S CERTIFICATION:

TO MONTEX (BROWNLEE), LLC, MONTEX (VISTA RIDGE), LLC, DILLON COMPANIES, INC., AND HERITAGE TITLE COMPANY AS AGENT FOR COMMONWEALTH LAND TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6(A), 7(A), 7(B.1), 7(C), 8, 9, AND 11(B) OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON SEPTEMBER 20, 2014.

CHARLES N. BECKSTROM
PROFESSIONAL L.S. NO. 33202

Email: cbeckstrom@engineeringserviceco.com

COLORADO REGISTERED PROFESSIONAL LAND SURVEYOR CHARLES N. BECKSTROM 33202

NOTICE:

ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

ANY PERSON WHO KNOWINGLY REMOVES, ALTERS, OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT, LAND BOUNDARY MONUMENT, OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR, PURSUANT TO STATE STATUTE 18-4-508 OF THE COLORADO REVISED STATUTES.

GENERAL NOTES:

1. THIS SURVEY WAS BASED ON TITLE COMMITMENT NUMBER 451-H0411701-266-CS4 PREPARED BY HERITAGE TITLE COMPANY AS AGENT FOR COMMONWEALTH LAND TITLE INSURANCE COMPANY, WITH AN EFFECTIVE DATE OF SEPTEMBER 10, 2014 AT 7:00 A.M., AND DOES NOT CONSTITUTE A TITLE SEARCH BY THIS SURVEYOR FOR OTHER EASEMENTS AND/OR EXCEPTIONS OF RECORD.
2. BY GRAPHIC PLOTTING ONLY THE SUBJECT PROPERTY IS SITUATED IN FLOOD ZONE "X" AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN ACCORDING TO FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 08013C444J (PANEL NOT PRINTED). NO OFFICE CALCULATIONS OR FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS INFORMATION.
3. BEARINGS ARE BASED ON THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY NO. 7 BEARING N89°38'37"W AS REFERENCED AND BOUNDED BY THE MONUMENTS SHOWN HEREON.
4. THE LOCATION OF ALL UNDERGROUND UTILITY LINES, IF SHOWN HEREON, ARE BASED ON FIELD LOCATION OF VISIBLE EVIDENCE AND MARKINGS AND MAPPING PROVIDED BY A UTILITY LOCATION SERVICE AND ARE TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. ALL UNDERGROUND UTILITIES SHOULD BE FIELD VERIFIED PRIOR TO ANY CONSTRUCTION.
5. BENCHMARK: CITY OF AND COUNTY OF BROOMFIELD BM "LUCY" ELEVATION: 5707.00 FEET (NAVD 1988 DATUM)
6. THERE 0 PARKING SPACES ON THE SURVEYED PROPERTY.
7. NO BUILDINGS EXISTING ON THE SURVEYED PROPERTY.
8. THERE WAS NO VISIBLE EVIDENCE OF CEMETERIES, GRAVESITES OR BURIAL GROUNDS LOCATED ON THE SUBJECT PROPERTY.
9. ALL UNITS ARE U.S. SURVEY FEET.

ALTA/ACSM LAND TITLE SURVEY

PARCELS 33 & 34, VISTA RIDGE AND BEING A PART OF AND SITUATED IN THE SW 1/4 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M. TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

NW CORNER OF STATE HIGHWAY 7 & SHERIDAN PARKWAY

Prepared For:

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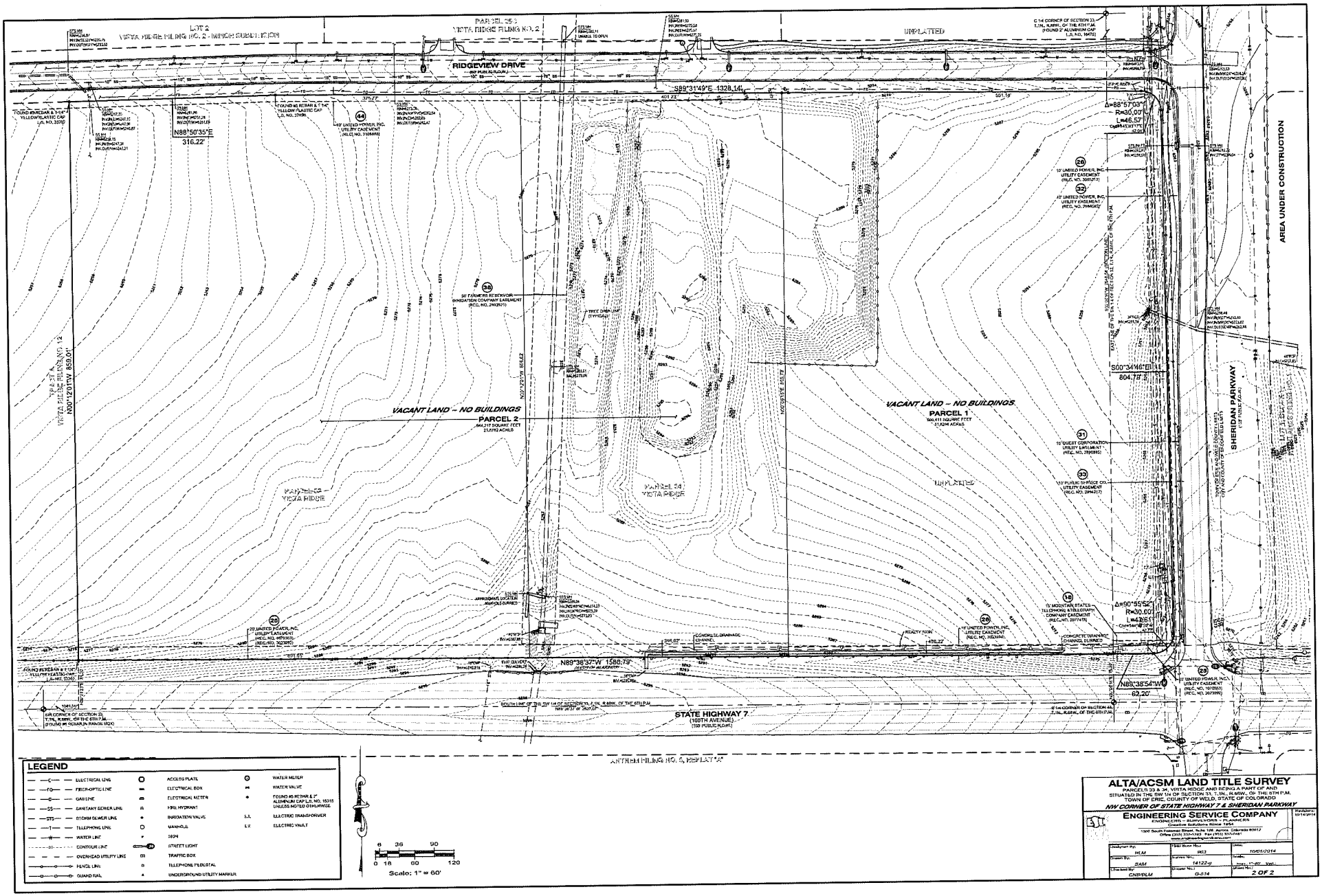
Designed By: RLM	Field Book No.: 903	Date: 10/01/2014	Revisions: 10/14/2014
Drawn By: SAM	Survey No.: 14122-0	Scale: Horz.: 1"=80' Vert.:	
Checked By: DLM/CNB	Drawer No.: O-514	Sheet No.: 1 OF 2	


RIDGEVIEW DRIVE
S89°31'49"E 1328.14'
N88°50'35"E
316.22'
VACANT LAND – NO BUILDINGS
PARCEL 2
644,217 SQUARE FEET
21.0152 ACRES
VACANT LAND – NO BUILDINGS
PARCEL 1
564,411 SQUARE FEET
21.4294 ACRES
UNPLATTED
UNPLATTED
AREA UNDER CONSTRUCTION
SHERIDAN PARKWAY
S00°34'46"E
804.78'
N89°36'37"W 1580.79'
N89°38'54"W
62.20'
STATE HIGHWAY 7
(100TH AVENUE)
ANTHEM FILING NO. 5, REPLAT "A"
Δ=88°57'03"
R=30.00'
L=46.57'
Δ=90°55'52"
R=30.00'
L=42.65'
N00°12'01"W 650.01'
LOT 2
VISTA RIDGE FILING NO. 2 - MINOR SUBDIVISION
PARCEL 35
VISTA RIDGE FILING NO. 2
PARCEL 34
VISTA RIDGE
PARCEL 33
VISTA RIDGE
SOUTH LINE OF THE SW 1/4 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
N89°36'37"W 2627.57'
(SW CORNER OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M. (FOUND #6 REBAR IN RANGE BOX))
C 1/4 CORNER OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M. (FOUND 2" ALUMINUM CAP L.S. NO. 19472)
(C 1/4 CORNER OF SECTION 4, T.1N., R.68W., OF THE 6TH P.M.)
FOUND #5 REBAR & 1" YELLOW PLASTIC CAP L.S. NO. 33710
FOUND #5 REBAR & 1" YELLOW PLASTIC CAP L.S. NO. 37636
FOUND #5 REBAR & 1" YELLOW PLASTIC CAP L.S. NO. 19472
FOUND #5 REBAR & 1" YELLOW PLASTIC CAP L.S. NO. 21240
(44) 10' UNITED POWER, INC. UTILITY EASEMENT (REC. NO. 3108680)
(36) 30' FARMERS RESERVOIR IRRIGATION COMPANY EASEMENT (REC. NO. 2942571)
(20) 10' UNITED POWER, INC. UTILITY EASEMENT (REC. NO. 3065213)
(21) 10' UNITED POWER, INC. UTILITY EASEMENT (REC. NO. 2946425)
(31) 10' QWEST CORPORATION UTILITY EASEMENT (REC. NO. 2950892)
(33) 10' PUBLIC SERVICE CO. UTILITY EASEMENT (REC. NO. 2944217)
(19) 10' MOUNTAIN STATES TELEPHONE & TELEGRAPH COMPANY EASEMENT (REC. NO. 3077478)
(28) 10' UNITED POWER, INC. UTILITY EASEMENT (REC. NO. 3023094)
(22) 20' UNITED POWER, INC. UTILITY EASEMENT (REC. NO. 3023895)
(29) 10' UNITED POWER, INC. UTILITY EASEMENT (REC. NO. 3078501)
(REC. NO. 2973995)
TREE DRIP LINE (TYPICAL)
CONCRETE DRAINAGE CHANNEL
CONCRETE TRIANGULAR CHANNEL (BURIED)
REALTY SIGN
APPROXIMATE LOCATION ANHYDRITE BURIED
TOP/FO BY MONUMENT
BW/ GW/ FO BY MONUMENT
LEGEND
ELECTRICAL LINE
FIBER-OPTIC LINE
GAS LINE
SANITARY SEWER LINE
STORM SEWER LINE
TELEPHONE LINE
WATER LINE
CONTOUR LINE
OVERHEAD UTILITY LINE
FENCE LINE
GUARD RAIL
ACCESS PLATE
ELECTRICAL BOX
ELECTRICAL METER
FIRE HYDRANT
IRRIGATION VALVE
MANHOLE
SIGN
STREET LIGHT
TRAFFIC BOX
TELEPHONE PEDESTAL
UNDERGROUND UTILITY MARKER
WATER METER
WATER VALVE
FOUND #5 REBAR & 1" ALUMINUM CAP L.S. NO. 15315 UNLESS NOTED OTHERWISE
ELECTRIC TRANSFORMER
ELECTRIC VAULT
0 18 36 60 90 120
Scale: 1" = 60'
ALTA/ACSM LAND TITLE SURVEY
PARCELS 33 & 34, VISTA RIDGE AND BEING A PART OF AND SITUATED IN THE SW 1/4 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
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Field Book No.: 903
Survey No.: 14122-g
Drawing No.: G-014
Date: 10/01/2014
Scale: 1" = 60' Vert.
Sheet No.: 2 OF 2

ATTACHMENT D

VISTA RIDGE

Development Plan Amendment No. 6

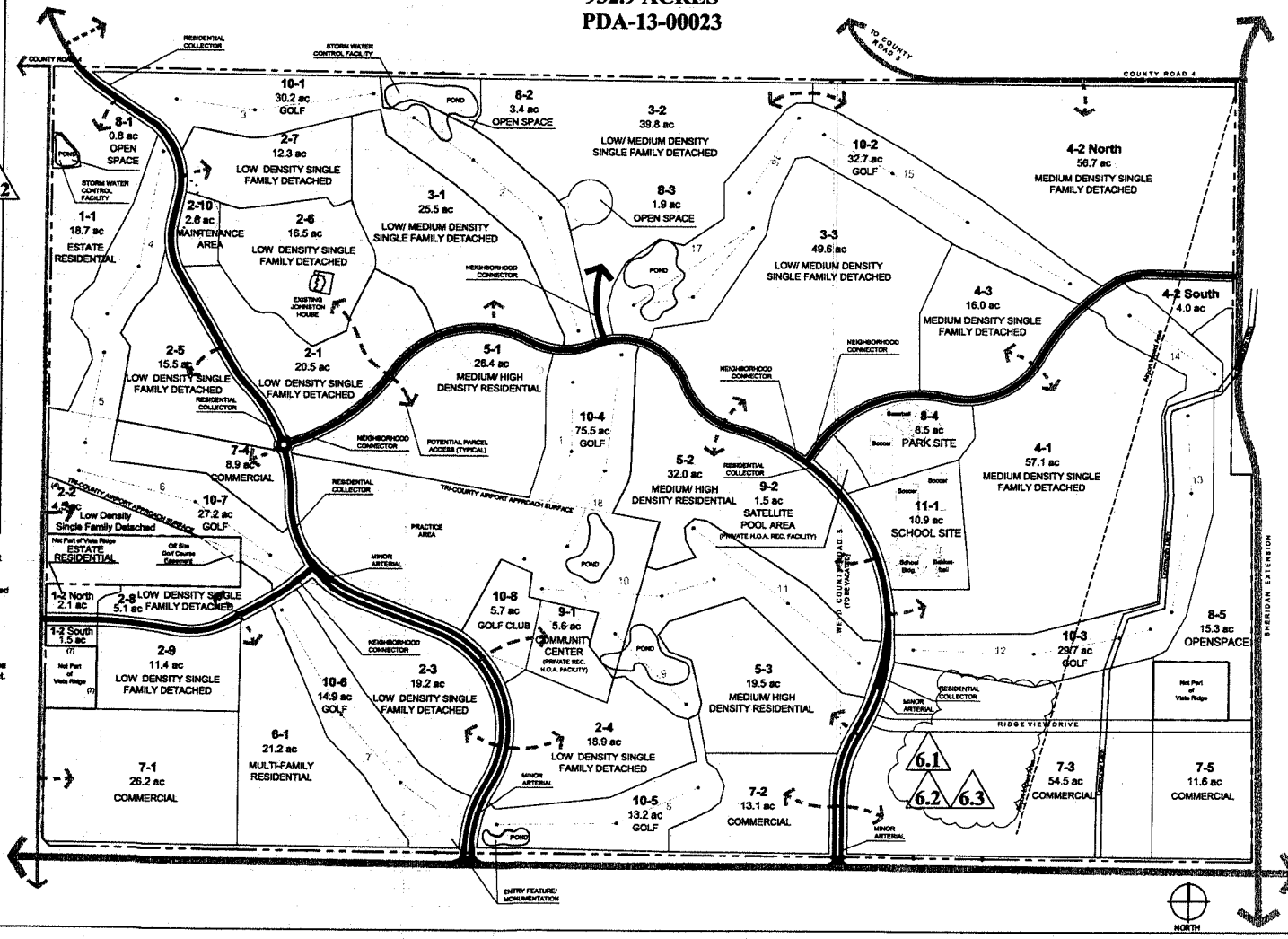
PORTIONS OF SECTIONS 32 & 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
932.9 ACRES
PDA-13-00023

LAND USE		Net Acre	Du/Ac	Units
Estate Residential				(1)
1-1		18.7	2	33(6)
1-2 North		2.1	2	4
1-2 South		1.5	2	3
	Total	22.3		40
Low Single Family Detached				
2-1		20.5	3	72(6)
2-2 (see note 4 below re: units)		4.5	3	14
2-3		19.2	3	48(6)
2-4		18.9	3	48(6)
2-5		15.5	3	34(6)
2-6		16.5	3	50
2-7		12.3	3	43(6)
2-8		5.1	3	16
2-9		11.4	3	41(6)
	Total	126.5		346
Low / Medium Single Family Detached				
3-1		25.5	4	100(6)
3-2		39.8	4	143(6)
3-3		49.6	4	199(6)
	Total	114.9		442
Medium Single Family Detached				
4-1		57.1	5	238(6)
4-2 North		56.7	5	213(6)
4-2 South		4.0	5	10 (6)
4-3		16.0	5	52(6)
	Total	133.8		511
Medium / High Residential				
5-1		26.4	8	90(6)
5-2		32.0	8	152(6)
5-3		19.5	8	124(6)
	Total	77.9		376
Multi-Family Residential				
6-1		21.2	16	408
Commercial				
7-1		26.2		
7-2		13.1		
7-3		54.5		200(9)
7-4		8.9		
7-5		14.4		
	Total	117.1		200
	Development Totals	811.1		(3) (6)
Open Space				
8-1		0.8		
8-2		3.4		
8-3		1.9		
8-4		8.5		
8-5		15.5		
	Total	30.1		
9-1	**Community Center (H.O.A.)**	5.6		
9-2	**Satellite Pool (H.O.A.)**	1.5		
	Total	7.1		
Golf				
10-1		30.2		
10-2		32.7		
10-3		29.7		
10-4		75.5		
10-5		13.2		
10-6		14.9		
10-7		27.2		
10-8	(Golf Club)	5.7		
	Total	229.1		
11-1	**School Site**	10.9		
R.O.W. / Infrastructure		43.0		
	Other Acreage	338.1		
	Property Total	932.9		

(1) Units based on Net Area of Planning Area.
(2) Golf Layout is preliminary, location may require minor realignment at the time of final development plans.
(3) Maximum number of units is 2494.
(4) This parcel includes one additional residential unit plus 14 proposed units.
(5) Layout of school and park sites are illustrative and subject to change.
(6) The neighborhood connector roadway within planning area 1-2 shall be located a minimum of 150 feet north of the subject area southerly boundary.
(7) The minimum building setback of the southerly property line of area 1-2 and the westerly property line of area 2-9 shall be fifty (50) feet.
(8) Units approved on recorded final plat for each Planning Area.
(9) 200 units total for Planning Area 7-3.

REVISION BLOCK

6.1 1 - Added Medium/High Residential, High Density Residential and Multi-family Residential Uses as a Permitted Use to Planning Area 7-3 in two areas.
6.2 2 - Added 200 dwelling units to Planning Area 7-3.
6.3 3 - Medium/High Residential setbacks modified to Planning Area 7-3.
4 - Single Family Detached setbacks modified to Planning Area 7-3.



CIVIL ENGINEERING
PLANNING
SURVEYING
HURST
2596 Broadway
Suite B
Boulder, CO 80304
303.449.9105
www.hurst-assoc.com

APPLICANT/ PROPERTY OWNER: Vista Ridge Development Corporation, 2780 Vista Parkway, Suite 100, Erie, CO 80516, (303) 833-9400, (303) 833-9440 (fax), Contact: James Spehalski

VISTA RIDGE
DEVELOMENT PLAN AMENDMENT #6
Erie, Colorado

DRAWN BY: BTD
APPROVED BY: BTD
DATE: 11/07/2013
REVISIONS:

SHEET TITLE
DEVELOPMENT PLAN

SHEET NUMBER
SHEET 3 OF 3

TOWN OF ERIE
PLANNING COMMISSION MEETING
July 15, 2015

SUBJECT:	**PUBLIC HEARING:** **Consideration of Resolution P15-20:** A Resolution Making Certain Findings Of Fact And Conclusions Favorable To The Site Plan For Vista Ridge Filing No. 14, Town Of Erie, County Of Weld, State Of Colorado.
PURPOSE:	Consideration of a Site Plan for a grocery anchored development that includes a 123,000 sf grocery store, a 7,100 sf inline retail building, and a fueling station within Vista Ridge Filing No. 14.
PROJECT NO.:	SP-000052-2014
CODE:	Erie Municipal Code, Title 10
DEPARTMENT:	Community Development
PRESENTER:	Todd Bjerkaas PLA, Senior Planner

STAFF RECOMMENDATION:

Staff finds the request for Alternative Equivalent Compliance for Vista Ridge Filing No. 14 in compliance with the Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the request for Alternative Equivalent Compliance.

Staff finds the request for Minor Modification for Vista Ridge Filing No. 14 in compliance with the Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the request for Minor Modification.

Staff finds the request for increases in sign area, height, and number for Vista Ridge Filing No. 14 in compliance with the Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the request for increases in sign area, height, and number.

Staff finds the Site Plan for the Vista Ridge Filing No. 14 in compliance with the Site Plan Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the Site Plan with the following conditions:

1. The Site Plan approval requires the Vista Ridge Filing No. 14 Minor Subdivision Plat be approved and recorded before the Site Plan is signed and put into effect.
2. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.
3. The Vegetation and Tree Protection Plan shall be completed, and the Landscape Plans shall be revised in accordance with Section 10.6.2.C of the Unified Development Code.
4. Staff may direct the consultants to make technical corrections to the documents.

SUMMARY AND BACKGROUND OF SUBJECT MATTER:

Applicant: King Soopers
Drew Warot
65 Tejon Street
Denver, Colorado, 80223

Owner: Montex (Brownlee) LLC
Andy Chaikovsky

Existing Conditions:

Location:
Vista Ridge Filing No. 14 is located on the northwest corner of State Highway 7 and Sheridan Boulevard.

Zoning: PD – Vista Ridge Planned Development

Project Size: 16.8699 Acres

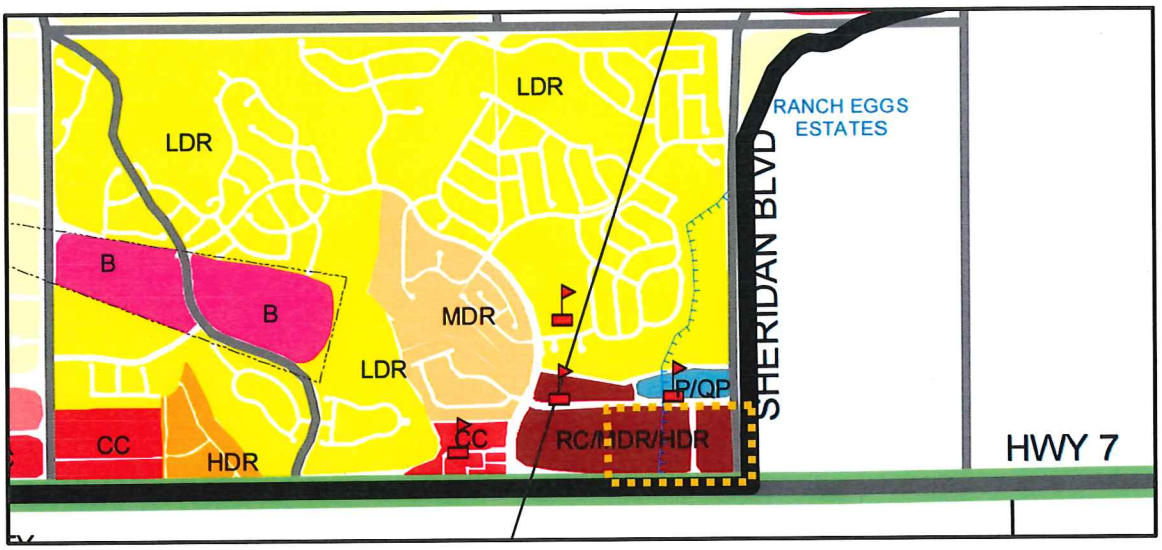
Existing Use: Vacant Lot

Adjacent Land-Use/Zoning:

	ZONING	LAND USE
NORTH	Vista Ridge PD – Planned Development	Institutional (Vista Ridge Academy)
EAST	Broomfield PUD – Planned Unit Development	Single Family Residential /Vacant
SOUTH	Broomfield PUD – Planned Unit Development	Single Family Residential /Vacant
WEST	Vista Ridge PD – Planned Development	Vacant

Compliance with Town of Erie Comprehensive Plan:

The 2005 Comprehensive Plan land use designation for Vista Ridge Filing 14 is RC/ MDR/ HDR-Regional Commercial/Medium Density Residential/High Density Residential as shown on the Land Use Plan Map. The proposed Site Plan is in compliance with the Regional Commercial land use designation.



Compliance with Vista Ridge PD:

The Vista Ridge Development Plan designates Planning Areas 7-3 and 7-5, which includes Vista Ridge Filing No. 14, as Commercial. In Section J. *Commercial Planning Area* of the Development Plan, commercial retail and food marts with gas pumps are permitted by right. The proposed Site Plan is in compliance with the PD regulations.

SITE SPECIFIC DEVELOPMENT INFORMATION:

The applicant is proposing to construct a grocery anchored commercial development consisting of a 123,000 sf grocery store, a 7,100 sf inline retail building, and a fueling station in Vista Ridge Filing No. 14. The improvements are proposed on Lots 1, 2, and 6 of the Proposed Vista Ridge Filing No. 14 Minor Subdivision Plat. The grocery anchor is located on the north end of Lot 1 with parking to the south and west. The inline retail is attached to the east wall of the grocery store with parking to its east and north. The fueling station is located on Lot 6 along State Highway 7 and is accessed by the primary north-south drive in the subdivision.

King Soopers Building (Lot 1):

- Lot Size: 13.17 acres
- Building footprint: 119,459 square feet
- Building floor area: 123,000 square feet
- Building Height: 42 feet 0 inches
- Total Employment: 150-170 employees
- Daily Employees: 70-90 employees
- Hours of Operation: 24 hours/day; 7 days/week
- Uses include the marketplace, drive-thru pharmacy, Fred Meyer Jewelry store, Little Clinic, Starbucks Coffee, and a ClickList pick up canopy.

- Masonry block wall construction with a variety of textures and colors. The wall base is accented with split face block and a capstone. 12" deep vertical stone pilasters break up the wall lengths along the perimeter of the building
- Two main entrances feature craftsman style gable roofs with timber brackets.
- The front elevations feature storefront windows with awnings, columns and timber brackets to provide a pedestrian scale adjacent to the building.
- Flat roof with parapet walls and EIFS cornices.

Inline Retail Building (Lot 2):

- Lot Size: 1.47 acres
- Building footprint: 7,100 square feet
- Building Height: 22 feet 8 inches
- Tenant Spaces: 4
- Masonry block construction with stone columns and fiber cement siding. The wall base is accented with split face block and a capstone. 12" deep vertical stone pilasters break up the wall lengths on the side and rear.
- The front elevations feature storefront windows with awnings, columns and timber brackets to provide a pedestrian scale adjacent to the building.
- Flat roof with parapet walls and EIFS cornices.

Fueling Station (Lot 6):

- Lot Size: 1.32 acres
- Kiosk footprint: 175 square feet
- Canopy footprint: 6,880 square feet
- Building Height: 11 feet 1 inch
- Canopy Height: 19 feet 0 inches
- 18 Fuel Dispensers
- Kiosk matches materials of the King Soopers building with a stone base and brick veneer wall. The canopy columns are wrapped with stone and brick for the full height of the column.

Architecture:

- Architectural review of the grocery anchor, inline retail, and fueling station is in compliance with the Town of Erie UDC Development and Design Standards and Vista Ridge Architectural Guidelines. The applicant is requesting Alternative Equivalent Compliance for several UDC requirements; which are outlined in detail below.
- The Vista Ridge Commercial District – Design Review Committee approved the architecture in conformance with the Vista Ridge Commercial Design Standards and Guidelines.

Service Areas:

- The trash enclosure is located on the northeast corner of the building. It is an enclosed structure that uses the buildings materials.
- The service and loading areas are located to the north of the building. The loading berths are screened by an 14'-0" masonry wall that matches the building design and materials and the loading areas are screened by evergreen and deciduous shrubs and trees along Ridge View Drive.

- The mechanical equipment area is located to the north of the building between the loading bays. The mechanical area is screened by an 8'-0" masonry wall that matches the building design and materials and additionally screened by evergreen and deciduous shrubs and trees along Ridge View Drive.

Vehicular Access:

- One three-quarter access is proposed on State Highway 7, one full-movement access is proposed on Sheridan Boulevard, and two-full-movement accesses are proposed on Ridge View Drive.
- A cross access easement is provided in the Vista Ridge No. 14 Minor Subdivision Plat for access to Lots 2-6 across Lot 1.
- Cross access easements to future commercial lots to the west are provided for in the Vista Ridge No. 14 Minor Subdivision Plat.

Parking:

- Town of Erie required parking: 651 parking spaces
- Parking provided on site: 658 parking spaces
- On-street parking is not allowed on State Highway 7, Sheridan Boulevard, and Ridge View Drive

Pedestrian Access:

- Applicant will construct a new sidewalk along its frontage on Ridge View Drive and State Highway 7.
- There is an existing sidewalk on Sheridan Boulevard.
- The applicant will construct a pedestrian walkway between the new sidewalks on Ridgeview Drive and State Highway 7 along the major north-south internal drive aisle.
- An east-west sidewalk is provided between the internal drive and Sheridan Boulevard along the entire frontage of the grocery anchor and in-line retail building.
- Sidewalk stubs are provided along the north sides of Lots 3 and 6 to provide future pedestrian connectivity to development in Lots 3 - 5.
- Bicycle parking is provided at both entries of the grocery anchor and at the in-line retail building.

Lighting:

- New street lights are located at each entrance into the site.
- The parking lot will be lit with 35 foot tall poles with cut off light fixtures.
- The fueling station canopy will be illuminated underneath with recessed can lights.
- The wall mounted lighting fixture types are cut-off fixtures.
- The proposed monument signs will be internally lit with possible accent uplighting on the architectural columns.

Landscaping:

- 30 foot landscape buffer is provided on State Highway 7 and Sheridan Boulevard in addition to landscaping within the right of way.
- Landscaping of the site on Lots 1, 2, and 6 has met the UDC requirements.

- Because of the presence of an active red-tailed hawk nest on site, a Vegetation and Tree Protection Survey and Plan was not conducted. Following abandonment of the nest, the applicant will conduct the survey and revise the landscape plan in accordance with Section 10.6.2.C for any qualifying trees not retained on site.

Utilities:

- The applicant will be constructing a detention pond in the northeast portion of Lot 1.
- Town of Erie water and sanitary sewer mains will be constructed in Lot 1 and 2. The mains are located in easements shown in the proposed Vista Ridge Filing No. 14.

Ecological Resources:

- An active red-tailed hawk nest and perch exist in the cottonwoods located on site. The applicant's consultant, Kumar & Associates, Inc., conducted a Migratory Bird Nesting Survey on the property. Per the consultant's recommendation, any construction and/or habitat alteration should commence in the calendar month of August or later to allow adequate time for the red-tailed hawk and nestlings to abandon the nesting site.

REQUESTS FOR ALTERNATIVE EQUIVALENT COMPLIANCE:

Pursuant to Municipal Code 10.6.1.C "Alternative Equivalent Compliance", the procedure permits a site-specific plan that is equal to or better than the strict application of a design standard. The following "Alternative Equivalent Compliance" requests, listed below after the Code citation being altered, are being requested for approval. Please also reference the letter addressing each Alternative Equivalent Compliance request included in the attachment that follows this memo.

a. Roofs:

Code Requirement:

Municipal Code Section 10.6.8.C.6.b. requirements for parapet walls is identified below with the portion of the Code that is being requested for alternative equivalent compliance highlighted in yellow:

"Where flat roofs are used, a parapet wall at least 18 inches in height shall be used on all sides of the structure. The design or height of the parapet shall include at least 1 change in setback or height of at least 3 feet along each 60 lineal feet of façade."

Request for Alternative Equivalent Compliance:

The parapet walls that do not meet the maximum 60 foot length between parapet height changes include:

1. South Elevation: The lower parapet to the left of the left entrance; the taller central area between the two entrances; and higher parapet of the anchor building right of the right entrance.
2. West Elevation: The right side of the higher parapet of the elevation above the Pharmacy Drive-thru canopy.

3. North Elevation: The higher parapet on the right side the elevation.

The consultant's justification for the request is included in the attached letter. Staff has determined that a parapet change every 60' for a building the size and scale of the King Soopers building (length of 460', depth of 255', and height of 42') can disrupt the proportions of the building in some cases. While the design is able to meet the 60' maximum length for a majority of the building, the increased building heights at the main entrances on the south elevation and the desire for increased height at the corners of the building causes some parapet lengths in between to exceed 60'.

The applicant has added an EIFS cornice to provide detail, relief, and dimension to the parapet. In addition, a 12" architectural stone pilaster is located at each change in parapet height to provide an added level of detail and relief and break up the parapet lengths. Staff has determined that these additions exceed the UDC requirements for variety in parapet.

b. Rooftop Mechanical Equipment:

Code Requirement:

Municipal Code Section 10.6.4.G.6. requirements for rooftop mechanical equipment are identified below with the portion of the Code that is being requested for alternative equivalent compliance highlighted in yellow:

"Rooftop mechanical equipment, including HVAC equipment and utility equipment that serves the structure, shall be screened. Screening shall be accomplished through the use of parapet walls or a sight-obscuring enclosure around the equipment constructed of 1 of the primary materials used on the primary facades of the structure, and that is an integral part of the building's architectural design. The parapet or screen shall completely surround the rooftop mechanical equipment to an elevation equal to or greater than the highest portion of the rooftop mechanical equipment being screened. In the event such parapet wall does not fully screen all rooftop equipment, then the rooftop equipment shall be enclosed by a screen constructed of 1 of the primary materials used on the primary facade of the building so as to achieve complete screening."

Request for Alternative Equivalent Compliance:

The consultant has identified the parapet as the means of meeting the UDC requirement to screen all rooftop mechanical equipment; however, in the elevations, some rooftop equipment exceeds the height of the parapet.

The applicant's justification for the request is attached. The applicant has provided site line studies to show that given the size and depth of the roof, the proposed parapets meet the intent of the UDC in screening rooftop equipment from adjacent properties, particularly from residential properties to the north. Staff has determined that the parapet as designed meets the UDC requirements for rooftop equipment screening.

c. Wall Articulation:

Code Requirement:

Municipal Code Section 10.6.8.C.4.b. requirements for wall articulation are identified below with the portion of the Code that is being requested for alternative equivalent compliance highlighted in yellow:

"Primary structures having single walls exceeding 40 feet in length shall incorporate 3 or more of the following features at least every 40 feet in length:

i. Changes in color, graphical patterning, changes in texture, or changes in material;

ii. Projections, recesses, and reveals, expressing structural bays or other aspects of the architecture with a minimum change of plan of 12 inches;

iii. Windows and fenestrations;

iv. Awnings; or,

v. Gable projections or other projecting architectural features."

Request for Alternative Equivalent Compliance:

Some walls on the north side of the grocery anchor have not incorporated 3 or more of the features listed above into the wall at least every 40 feet of length. Below is a list of each of the walls:

1. North Elevation: The right bay at the end of the façade has two of the required three elements of articulation (material change, 12" deep pilaster) and exceeds 40' in length between articulations.
2. North Elevation: The wall recessed between the two loading areas has two elements of articulation (material change, 12" deep pilaster).

The consultant's justification for the request is attached. Given the size and movement of vehicles in the loading areas, utilization of projecting elements such as awnings or projecting architectural features can disrupt the operations of the business and cause damage to vehicles and the building. The applicant has proposed additional detailing on the parapets of these wall sections and is requesting that the screen walls located approximately 30-40' in front of these wall sections be credited towards the articulation of the north façade. Staff has determined that the added cornice and masonry screen walls at the docks and mechanical area meet the UDC requirements for wall articulation.

ALTERNATIVE EQUIVALENT COMPLIANCE ANALYSIS:

The requests for Alternative Equivalent Compliance, listed above, were reviewed for conformance with Municipal Code 10.6.1.C.5. Approval Criteria. Staff finds the requests in compliance with the Approval Criteria listed below.

a. The proposed alternative achieves the intent of the subject design standard to the same or better degree than the subject standard.

   Staff: The alternative achieves the intent of the standard.

b. The proposed alternative achieves the goals and policies of the Town's Comprehensive Master Plan to the same or better degree than the subject standard.

Staff: The proposed alternative achieves the goals and policies of the Town's Comprehensive Master Plan.

c. The proposed alternative results in benefits to the community that are equivalent to or better than compliance with the subject design standard.

Staff: The proposed alternatives benefit the community by providing equivalent or better compliance than the design standard in a way that compliments a retail building of the size and scale of King Soopers.

REQUESTS FOR MINOR MODIFICATIONS:

Pursuant to Municipal Code 10.7.8 "Minor Modifications", the procedure permits a site plan that contains minor deviations from otherwise applicable standards. Minor Modifications are to be used when the small size of the modification requested, and the unlikelihood of any adverse effects on nearby properties or the neighborhood, make it unnecessary to complete a formal Variance process. The Planning Commission may approve Minor modifications of up to a maximum of 10 percent for certain development and zoning district standards including quantitative development standards set forth in Chapter 6. The following "Minor Modification" request, listed below after the Code citation being altered, is being requested for approval. Please also reference the letter addressing the Minor Modification request included in the attachment that follows this memo.

a. Parking Dimensions:

Code Requirement:

Municipal Code Section 10.6.6.H. requirements for parking dimensions is identified below with the portion of the Code that is being requested for minor modification highlighted in yellow:

"The parking configuration stated in the following Table 6.6-4 shall apply to all required off-street parking." Parking at a 60 degree angle shall have a bay width of 64 feet.

Request for Modification:

The diagonal parking areas south of the King Soopers building shows bay widths of 61.2' consisting of 18.6' stall lengths and 24' drive aisles. The UDC requires bay widths for 60 degree angled parking to be 64' wide consisting of 21' stall lengths and 22' drive aisles. The modification is 4.4 percent narrow than the UDC requirement and is within the 10 percent allowance of the minor modification process.

The consultant's justification for the request is included in the attached letter. Staff has determined that given the size of the lot and scale of the King Soopers building, meeting the Town's parking ratio is paramount to bay width dimensions. Also, the applicant has exceeded the curb length (stall width) requirements of the UDC from the required 10.5' to 10.97'. This increased space between parked vehicles provides greater area for the navigation of shopping carts, the opening of doors, and the loading of groceries and goods into vehicles. The parking

layout and dimensions are proven in the applicant's other developments of similar size and scope.

MINOR MODIFICATION ANALYSIS:

The request for Minor Modification, listed above, was reviewed for conformance with Municipal Code 10.7.8.D. Approval Criteria. Staff finds the requests in compliance with the Approval Criteria listed below.

a. The requested modification is generally consistent with the Town's Comprehensive Master Plan and the stated purpose of this UDC;

   Staff: The proposed modification achieves the goals and policies of the Town's Comprehensive Master Plan by providing adequate parking at commercial retailers.

b. The requested modification meets all other applicable building and safety codes;

   Staff: The proposed modification meets all other applicable building safety codes.

c. The requested modification does not encroach into a recorded easement;

   Staff: The proposed modification does not affect the function or use of any easement differently than parking that meets the UDC's dimensional requirements.

d. The requested modification will have no significant adverse impact on the health, safety, or general welfare of surrounding property owners or the general public, or such impacts will be substantially mitigated; and

   Staff: The proposed modification has no significant adverse impact.

e. The requested modification is necessary to either: (a) compensate for some practical difficulty or some unusual aspect of the site of the proposed development not shared by landowners in general; or (b) accommodate an alternative or innovative design practice that achieves to the same or better degree the objective of the existing design standard to be modified. In determining if "practical difficulty" exists, the approval criteria for Variances in Section 7.9 shall be considered.

   Staff: The proposed modification compensates for the relatively shallow depth of the lot and the high parking ratio requirements of a 123,000 sf grocer. The proposed modification also provides for a curb length (stall width) of 10.97' which is greater than the 10.5' required in the UDC. While the alternative provides a narrower area for navigating vehicles, a larger area between vehicles is provided for the navigation of shopping carts and the loading of groceries and goods into vehicles. The alternative benefits the community by providing equivalent or better compliance than the design standard in a way that compliments a retail building of the size and scale of King Soopers.

REQUESTS FOR INCREASES IN SIGN AREA, HEIGHT, AND AREA:

Pursuant to Municipal Code 10.6.12 "Signs", the procedure permits a site plan that contains requests for increases in sign area (10.6.12.D.1.c), height (10.6.12.D.3.b), and number (10.6.12.F.4.a.ii) from otherwise applicable standards. The Planning Commission may approve such sign requests as part of a Site Plan. The following sign requests, listed below after the Code citation being altered, are being requested for approval. Please also reference the letter addressing the Increase requests included in the attachment that follows this memo.

a. Sign Area:

Code Requirement:

Municipal Code Section 10.6.12.D.1.a requirements for sign area is identified below with the portion of the Code that is being requested for increases highlighted in yellow:

"The permitted sign area in each zoning district shall be as follows: v) NMU (outside of Old Town), CMU, PLI, LI, AP CC, RC and B Districts: 1 square foot for each lineal foot of tenant frontage. The maximum allowable gross surface area for a principle wall sign shall be 100 square feet. Secondary wall signs and monument signs shall be limited to 32 square feet per face."

Request for Increase:

The south façade of the King Soopers building is 460' long with a maximum height of 42'. The applicant has proposed several primary signs on the south façade (King Soopers, The Little Clinic, Fred Meyers Jewelers, and Starbucks). Given the size of the building and its distance from State Highway 7, 100 sf principal wall signs and 32 sf secondary wall signs are proportionally small on the building façade. The applicant is requesting increases in wall sign area for four of the signs:

1) King Soopers primary sign from 100 sf to 253.3 sf.
2) King Soopers secondary sign from 32 sf to 99.2 sf.
3) The Little Clinic sign from 32 sf to 49 sf.
4) Fred Meyers Jewelers sign from 32 sf to 42 sf.

The consultant's justification for the request is included in the attached letter. Staff has determined that given the scale of the King Soopers building, the lack of signage otherwise permitted on the east, north, and west building elevations, and the modest size of the proposed signs in proportion to the south elevation, the increases in sign area are warranted.

b. Sign Height:

Code Requirement:

Municipal Code Section 10.6.12.D.3.a requirements for sign height is identified below with the portion of the Code that is being requested for increases highlighted in yellow:

"Sign height shall be measured from average ground level at the base of or below the sign to the highest element of the sign. The maximum height of a sign

in each zoning district shall be as follows: iii) NMU (outside of Old Town), CMU, PLI, RC, CC, B, LI, and AP Districts: Monument signs shall not exceed 10 feet in height."

Request for Increase:

The pad lots (Lots 3-6) north of State Highway 7 sit below the adjacent roadway. Lot 6 which includes the fueling station is located 12 feet below the State Highway 7. The top of a 10' tall monument sign for the fueling station that sits 21' back from the property line would only be 2' to 4' above the adjacent roadway. The applicant has proposed constructing a stone veneer and landscaped retaining wall around the monument sign to bring up the adjacent grade (Sheet 21 of the Site Plan). The applicant has requested an increase to the sign height requirement of 10' to the proposed 13'. This increase would allow the monument sign to be 10' tall relative to the adjacent roadway elevation.

The consultant's justification for the request is included in the attached letter. Staff has determined that given the unique grade separation between Lot 6 and the adjacent State Highway 7, the increase in sign height is warranted to achieve a realized sign height of 10' relative to the roadway.

c. Development Identification Sign Number:

Code Requirement:

Municipal Code Section 10.6.12.F.4.a requirements for Development Identification Signs quantity is identified below with the portion of the Code that is being requested for increases highlighted in yellow:

"Development Identification signs shall be permitted and be permitted to identify the development and the developments tenants. One Development Identification sign shall be permitted per arterial roadway or state highway frontage."

Request for Increase:

Both Sheridan Boulevard and State Highway 7 are classified as arterials and allow for Development Identification signs on each street frontage. The applicant has proposed a Development Identification sign at the Sheridan Boulevard entrance and a Development Identification sign at the State Highway 7 entrance (Sheet 21). As a part of the Brownlee Annexation Agreement, the owner/applicant is obligated to construct a Town of Erie entry monument sign on the northwest corner of Sheridan Boulevard and State Highway 7. The design of this sign is included on Sheet 22.

The consultant's justification for the request is included in the attached letter. Because Filing 14 is the easternmost property on State Highway 7 within the Town of Erie municipal boundary and is a primary gateway to the Town of Erie, staff supports an increase in the number of Development Identification signs from 2 to 3 to provide for a Town of Erie gateway monument sign.

INCREASE IN SIGN AREA, HEIGHT, AND NUMBER ANALYSIS:

The requests for increases in sign area, height, and number listed above, were reviewed for conformance with Municipal Code 10.7.12.F.9. Approval Criteria. Staff finds the requests in compliance with the Approval Criteria listed below.

a. The Site Plan is generally consistent with the Town's Comprehensive Master Plan;

   Staff: The signs included in the Site Plan are generally consistent with the Town's Comprehensive Master Plan.

b. The Site Plan is generally consistent with any previously approved subdivision plat, planned development, or any other precedent plan or land use approval as applicable;

   Staff: The signs included in the Site Plan are consistent with the proposed Vista Ridge Filing No. 14 Minor Subdivision Plat and the Vista Ridge PD Development Plan.

c. The Site Plan complies with all applicable development and design standards set forth in this Code, including but not limited to the provisions in Chapter 2, Chapter 3, Chapter 4, and Chapter 6;

   Staff: The signs included in the Site Plan comply with all applicable development and design standards set forth in the UDC. The applicant is requesting increases to sign area, height, and number for certain signs as provided for in Section 10.6.12 of the UDC.

d. Any significant adverse impacts reasonably anticipated to result from the use will be mitigated or offset to the maximum extent practicable; and

   Staff: Significant adverse impacts are not anticipated.

e. The development proposed on the Site Plan and its general location is or will be compatible with the character of surrounding land uses.

   Staff: The development proposed is compatible with the character of the surrounding land uses.

SITE PLAN ANALYSIS:

The Site Plan for the commercial development within Vista Ridge Filing No. 14 was reviewed for conformance with Municipal Code, Title 10, Section 7.12.F.9 Approval Criteria. Staff finds the Site Plan in compliance with the Site Plan Approval Criteria as listed below.

a. The Site Plan is generally consistent with the Town's Comprehensive Master Plan;

   Staff: The Site Plan is generally consistent with the Town's Comprehensive Master Plan.

b. The Site Plan is generally consistent with any previously approved subdivision plat, planned development, or any other precedent plan or land use approval as applicable;

   Staff: The Site Plan is consistent with the proposed Vista Ridge Filing No. 14 Minor Subdivision Plat and the Vista Ridge PD Development Plan.

c. The Site Plan complies with all applicable development and design standards set forth in this Code, including but not limited to the provisions in Chapter 2, Chapter 3, Chapter 4, and Chapter 6;

Staff: The Site Plan complies with all applicable development and design standards set forth in the UDC.

d. Any significant adverse impacts reasonably anticipated to result from the use will be mitigated or offset to the maximum extent practicable; and

Staff: Significant adverse impacts are not anticipated.

e. The development proposed on the Site Plan and its general location is or will be compatible with the character of surrounding land uses.

Staff: The development proposed is compatible with the character of the surrounding land uses.

STAFF RECOMMENDATION:

Staff finds the request for Alternative Equivalent Compliance for Vista Ridge Filing No. 14 in compliance with the Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the request for Alternative Equivalent Compliance.

Staff finds the request for Minor Modification for Vista Ridge Filing No. 14 in compliance with the Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the request for Minor Modification.

Staff finds the request for increases in sign area, height, and number for Vista Ridge Filing No. 14 in compliance with the Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the request for increases in sign area, height, and number.

Staff finds the Site Plan for the Vista Ridge Filing No. 14 in compliance with the Site Plan Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-20 approving the Site Plan with the following conditions:

1. The Site Plan approval requires the Vista Ridge Filing No. 14 Minor Subdivision Plat be approved and recorded before the Site Plan is signed and put into effect.
2. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.
3. The Vegetation and Tree Protection Plan shall be completed, and the Landscape Plans shall be revised in accordance with Section 10.6.2.C of the Unified Development Code.
4. Staff may direct the consultants to make technical corrections to the documents.

NEIGHBORHOOD MEETING:

As required by the Municipal Code a Neighborhood Meeting was held on April 22, 2015 at 5:30 p.m. at the Vista Ridge Community Center. The required notice for the Neighborhood Meeting was provided and a copy of the minutes and sign-in sheet are attached.

PUBLIC NOTICE:

Notice of this Public Hearing has been provided as follows:

Published in the Longmont Times Call:	June 30, 2015
Property Posted as required:	June 30, 2015
Letters to Adjacent Property Owners:	June 26, 2015

Approved by:

R. Martin Ostholthoff
Community Development Director

Attachments:

A. Resolution P15-20
B. Site Plan
C. Application Materials
D. Alternative Equivalent Compliance Requests
E. Minor Modification Request
F. Sign Requests
G. Neighborhood Meeting Exhibits

ATTACHMENT A

RESOLUTION NO. P15-20

A RESOLUTION MAKING CERTAIN FINDINGS OF FACT AND CONCLUSIONS FAVORABLE TO THE SITE PLAN FOR VISTA RIDGE FILING NO. 14, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission of the Town of Erie, Colorado, has received and considered the Site Plan for the anchor grocery store, inline retail building, and fueling station in Vista Ridge Filing No. 14, on Wednesday, July 15, 2015, on the application of the King Soopers, 65 Tejon Street, Denver, Colorado for the following real property; to wit:

Parcels 1 & 2, Subdivision Exemption No. 977; Parcels 33 & 34, Vista Ridge Master Final Plat; and

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE TOWN OF ERIE, COLORADO, as follows:

Section 1. Findings of Fact.

1. The applicant's application and supporting documents are in substantial compliance with the Town of Erie Municipal Code, Title 10.

2. The Site Plan has met Municipal Code, Title 10, Section 7.12.F.9 Approval Criteria:

    a. The Site Plan is generally consistent with the Town's Comprehensive Master Plan;

    b. The Site Plan is consistent with any previously approved subdivision plat, planned development, or any other precedent plan or land use approval as applicable;

    c. The Site Plan complies with all applicable development and design standards set forth in this Code, including but not limited to the provisions in Chapter 2, Chapter 3, Chapter 4, and Chapter 6;

    d. Any significant adverse impacts reasonably anticipated to result from the use will be mitigated or offset to the maximum extent practicable; and

    e. The development proposed on the Site Plan and its general location is or will be compatible with the character of surrounding land uses.

3. The Site Plan as proposed, with the following conditions, preserves the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado:

    a. The Site Plan approval requires the Vista Ridge Filing No. 14 Minor Subdivision Plat be approved and recorded before the Site Plan is signed and put into effect.

b. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.

c. The Vegetation and Tree Protection Plan shall be completed, and the Landscape Plans shall be revised in accordance with Section 10.6.2.C of the Unified Development Code.

d. Staff may direct the consultants to make technical corrections to the documents.

4. Municipal Code 10.6.1.C "Alternative Equivalent Compliance", permits a site-specific plan that contains design standards equal to or better than the strict application of the design standards contained in the Municipal Code. The following requested changes to the design standards, listed below after the Code citation being altered, is found to be equal to or better than the strict application of the design standards and are granted approval:

   a. Municipal Code Section 10.6.8.C.6.b "Where flat roofs are used, a parapet wall at least 18 inches in height shall be used on all sides of the structure. The design or height of the parapet shall include at least 1 change in setback or height at least 3 feet along each 60 lineal feet of facade."

      i. Alternative Equivalent Compliance: Allow the building on Lot 1 of Vista Ridge Filing No. 14 to include lengths between parapet height changes to exceed 60 feet in length. The design provides a 12" architectural stone pilaster at each change in parapet height and uses an EIFS cornice to provide increased interest and detail to the parapet.

   b. Municipal Code Section 10.6.4.G.6 "Rooftop mechanical equipment, including HVAC equipment and utility equipment that serves the structure, shall be screened." "The parapet or screen shall completely surround the rooftop mechanical equipment to an elevation equal to or greater than the highest portion of the rooftop mechanical equipment being screened."

      i. Alternative Equivalent Compliance: Allow the building on Lot 1 of Vista Ridge Filing No. 14 to include parapet heights that do not equal and are not greater than the highest portion of the rooftop equipment. The site line studies provided show that the parapet as designed screens the rooftop equipment from view of adjacent properties.

   c. Municipal Code Section 10.6.8.C.4.b "Primary structures having single walls exceeding 40 feet in length shall incorporate 3 or more of the following features at least every 40 feet in length: i) Changes in color, graphical patterning, changes in texture, or changes in material; ii) Projections, recesses, and reveals, expressing structural bays or other aspects of the architecture with a minimum change of plan of 12 inches; iii) Windows and fenestrations; iv) Awnings; or, v) Gable projections or other projecting architectural features."

      i. Alternative Equivalent Compliance: Allow the building on Lot 1 of Vista Ridge Filing No. 14 to include two articulations spaced at a distance

exceeding 40' on the western bay of the north elevation and two articulations on the wall between the two loading bays on the north façade. The design provides an EIFS cornice to provide increased articulation to the north façade. Screen walls for the loading docks and mechanical equipment are of the same material and design of the principal structure and provide additional depth and articulation to these areas.

5. The design standards that have been granted approval for "Alternative Equivalent Compliance", listed above, have met Erie Municipal Code, Title 10, Section 6.1.C. Approval Criteria for "Alternative Equivalent Compliance":

    a. The proposed alternative achieves the intent of the subject design standard to the same or better degree than the subject standard;

    b. The proposed alternative achieves the goals and policies of the Town's Comprehensive Master Plan to the same or better degree than the subject standard;

    c. The proposed alternative results in benefits to the community that are equivalent to or better than compliance with the subject design standard;

6. Municipal Code 10.7.8 "Minor Modifications" permits a site-specific plan that contains minor deviations from otherwise applicable standards that may be approved by the Planning Commission. Minor Modifications are to be used when the small size of the modification requested, and the unlikelihood of any adverse effects on nearby properties or the neighborhood, makes it unnecessary to complete a formal Variance process. The Planning Commission may approve Minor modifications of up to a maximum of 10 percent for certain development and zoning district standards including quantitative development standards set forth in Chapter 6:

    a. Municipal Code Section 10.6.6.H "The parking configuration stated in the following Table 6.6-4 shall apply to all required off-street parking." Parking at a 60 degree angle shall have a bay width of 64 feet.

        ii. Minor Modification: Allow the parking bay width for diagonal parking on Lot 1 of Vista Ridge Filing No. 14 to be 61.2 feet. The modification is 4.4 percent narrower than the UDC requirement of 64 feet. The design has increased the curb length from 10.5 feet to 10.97 feet. Modified parking dimensions are proven for the retail grocery store use.

7. The design standards that have been granted approval for "Minor Modification", listed above, have met Erie Municipal Code, Title 10, Section 7.8. Approval Criteria for "Minor Modifications":

    a. The requested modification is generally consistent with the Town's Comprehensive Master Plan and the stated purpose of this UDC;

    b. The requested modification meets all other applicable building and safety codes;

c. The requested modification does not encroach into a recorded easement;

d. The requested modification will have no significant adverse impact on the health, safety, or general welfare of surrounding property owners or the general public, or such impacts will be substantially mitigated; and

e. The requested modification is necessary to either: (a) compensate for some practical difficulty or some unusual aspect of the site of the proposed development not shared by landowners in general; or (b) accommodate an alternative or innovative design practice that achieves to the same or better degree the objective of the existing design standard to be modified. In determining if "practical difficulty" exists, the approval criteria for Variances in Section 7.9 shall be considered.

8. Municipal Code 10.6.12 "Signs", permits a site-specific plan that contains requests for increases in sign area (10.6.12.D.1.c), height (10.6.12.D.3.b), and number (10.6.12.F.4.a.ii) from otherwise applicable standards. The Planning Commission may approve such sign requests as part of a Site Plan review:

   a. Municipal Code Section 10.6.12.D.1.a. "The permitted sign area in each zoning district shall be as follows: v) NMU (outside of Old Town), CMU, PLI, LI, AP CC, RC and B Districts: 1 square foot for each lineal foot of tenant frontage. The maximum allowable gross surface area for a principle wall sign shall be 100 square feet. Secondary wall signs and monument signs shall be limited to 32 square feet per face."

      i. Increase: Allow the following allowances in sign areas given the size and scale of the development:

         a. King Soopers primary sign from 100 sf to 253.3 sf.

         b. King Soopers secondary sign from 32 sf to 99.2 sf.

         c. The Little Clinic sign from 32 sf to 49 sf.

         d. Fred Meyers Jewelers sign from 32 sf to 42 sf.

   b. Municipal Code Section 10.6.12.D.3.a. "Sign height shall be measured from average ground level at the base of or below the sign to the highest element of the sign. The maximum height of a sign in each zoning district shall be as follows: iii) NMU (outside of Old Town), CMU, PLI, RC, CC, B, LI, and AP Districts: Monument signs shall not exceed 10 feet in height."

      i. Increase: Allow the height of the fueling station monument sign to be 13' with a top of sign height not to exceed 10' above the adjacent elevation of State Highway 7. Lot 6 sits approximately 12' below the State Highway 7 roadway elevation.

   c. Municipal Code Section 10.6.12.F.4.a. "Development Identification signs shall be permitted and be permitted to identify the development and the developments tenants. One Development Identification sign shall be permitted per arterial roadway or state highway frontage."

i. Increase: Allow the number of Development Identification signs to be three to provide for a Town of Erie monument sign at the northwest corner of Sheridan Boulevard and State Highway 7, the eastern gateway into the Town of Erie.

9. The increases in design standards that have been granted approval for "Signs", listed above, have met Erie Municipal Code, Title 10, Section 7.12.F.9. Approval Criteria for "Site Plan":

   a. The Site Plan is generally consistent with the Town's Comprehensive Master Plan;

   b. The Site Plan is consistent with any previously approved subdivision plat, planned development, or any other precedent plan or land use approval as applicable;

   c. The Site Plan complies with all applicable development and design standards set forth in this Code, including but not limited to the provisions in Chapter 2, Chapter 3, Chapter 4, and Chapter 6;

   d. Any significant adverse impacts reasonably anticipated to result from the use will be mitigated or offset to the maximum extent practicable; and

   e. The development proposed on the Site Plan and its general location is or will be compatible with the character of surrounding land uses.

Section 2. Conclusions and Order Recommending Approval of the Site Plan for Vista Ridge Filing No. 14.

1. The applicant's application and supporting documents are in substantial compliance with the Town of Erie Municipal Code, Title 10.

2. The Site Plan has met Town of Erie Municipal Code, Title 10, Section 7.12.F.9 Approval Criteria.

3. The Site Plan as proposed, subject to the following conditions, will preserve the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado.

   a. The Site Plan approval requires the Vista Ridge Filing No. 14 Minor Subdivision Plat be approved and recorded before the Site Plan is signed and put into effect.

   b. If site development and disturbance of trees occurs between March 1 and July 31, a survey for active nests shall be conducted. Trees with an active nest shall not be removed until the nest is abandoned for the season.

   c. The Vegetation and Tree Protection Plan shall be completed prior, and the Landscape Plans shall be revised in accordance with Section 10.6.2.C of the Unified Development Code.

d. Staff may direct the consultants to make technical corrections to the documents.

4. Municipal Code 10.6.1.C "Alternative Equivalent Compliance", permits a site-specific plan that that contains design standards equal to or better than the strict application of the design standards contained in the Municipal Code. The requested changes to the design standards are found to be equal to or better than the strict application of the design standards and are granted approval.

5. The design standards that have been granted approval for "Alternative Equivalent Compliance" have met Erie Municipal Code, Title 10, Section 6.1.C Approval Criteria for "Alternative Equivalent Compliance".

6. Municipal Code 10.7.8 "Minor Modifications" permits a site-specific plan that contains minor deviations from otherwise applicable standards that may be approved by the Planning Commission. Minor Modifications are to be used when the small size of the modification requested, and the unlikelihood of any adverse effects on nearby properties or the neighborhood, makes it unnecessary to complete a formal Variance process. The requested modification is found to be within 10 percent of the quantitative development standard set forth in Chapter 6.

7. The design standards that have been granted approval for "Minor Modification" have met Erie Municipal Code, Title 10, Section 7.8. Approval Criteria for "Minor Modifications."

8. Municipal Code 10.6.12 "Signs", permits a site-specific plan that contains requests for increases in sign area (10.6.12.D.1.c), height (10.6.12.D.3.b), and number (10.6.12.F.4.a.ii) from otherwise applicable standards. The requested increases are found to be consistent with the scale, size, and type of commercial development.

9. The increases in design standards that have been granted approval for "Signs", listed above, have met Erie Municipal Code, Title 10, Section 7.12.F.9. Approval Criteria for "Site Plan."

INTRODUCED, READ, SIGNED AND APPROVED this 15th day of July, 2015.

TOWN OF ERIE, PLANNING COMMISSION

By: _____
J. Eric Bottenhorn, Chair

ATTEST:

By: _____
Hallie S. Sawyer, Secretary

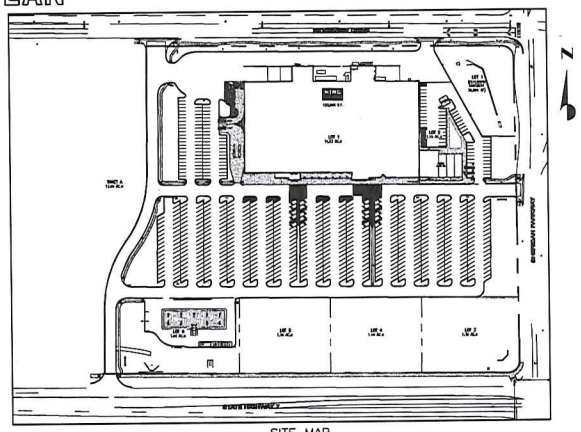
ATTACHMENT B

KING SOOPERS #129

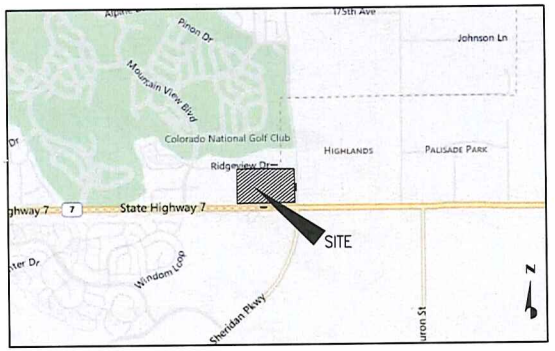
AT VISTA RIDGE MARKETPLACE
COLORADO STATE HIGHWAY 7
AND SHERIDAN PARKWAY
ERIE, COLORADO

SITE DEVELOPMENT PLAN

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



SITE MAP
SCALE: 1"=150'



VICINITY MAP
SCALE: 1" = 1500'

LIST OF CONTACTS

APPLICANT/DEVELOPER
KING SOOPERS, INC.
65 TEJON STREET
DENVER, COLORADO 80223
TEL: (303) 778-2052
CONTACT: LOWELL GOOD

OWNER
MONTEX (BROOMFIELD) LLC
MONTEX (VISTA RIDGE) LLC
CONTACT: ANDY CHICOVSKY, PRESIDENT

ENGINEER
GALLOWAY & COMPANY, INC.
8162 S. WILLOW DRIVE, SUITE 320
GREENWOOD VILLAGE, COLORADO 80111
TEL: (303) 770-8884
FAX: (303) 770-3636
CONTACT: BRANDON MCCRARY, P.E.
EMAIL: BrandonM@GallowayUS.com

LANDSCAPE ARCHITECT
GALLOWAY & COMPANY, INC.
8162 S. WILLOW DRIVE, SUITE 320
GREENWOOD VILLAGE, COLORADO 80111
TEL: (303) 770-8884
FAX: (303) 770-3636
CONTACT: JOSEPH WILSON, PLA
EMAIL: JoeWilson@GallowayUS.com

ARCHITECT
CH ARCHITECTURE
675 BROADWAY, SUITE 2480
DENVER, CO 80202
TEL: (303) 863-8100
CONTACT: CHARLIE CARROLL

SURVEYOR
ENGINEERING SERVICE COMPANY
1309 SOUTH POTOMAC STREET, SUITE 126
AURORA, COLORADO 80012
TEL: (303) 337-1393
FAX: (303) 337-7481
CONTACT: CHARLEY R. RICKSTROM
EMAIL: RickstromR@EngineeringServiceCo.com

GEOTECHNICAL ENGINEER
KUMAR & ASSOCIATES
2390 SOUTH LIPAN ST.
DENVER, CO 80223
TEL: (303) 742-0700
FAX: (303) 742-0988
CONTACT: JOSH BARKER
EMAIL: JBarker@KumarUSA.com

UTILITY CONTACTS

WATER, SANITARY, & STORM SEWER
TOWN OF ERIE
645 HOLBROOK ST.
ERIE, CO 80516
(303) 926-2700
CONTACT: MATT WERDEBSPAHN

FIRE
MOUNTAIN VIEW FIRE PROTECTION DISTRICT
3561 STAGECOACH ROAD
LONGMONT, CO 80504
(303) 772-0710
CONTACT: LUANN PENFOLD

ELECTRICAL
UNITED POWER COMPANY
PO BOX 929
500 COOPERATIVE WAY
BRIGHTON, COLORADO 80601
(303) 637-1234
CONTACT: KATHY A. ROTELLO

GAS
XCEL ENERGY
1123 WEST 3RD AVENUE
DENVER, CO 80223
(303) 571-3306
CONTACT: DONNA GEORGE
EMAIL: Donna.L.George@xcelenergy.com

TELEPHONE
CENTURY LINK COMMUNICATIONS
3722 AUTOMATION WAY, SUITE 108
FORT COLLINS, COLORADO 80525
(720) 490-7508
CONTACT: TERRY SPEER

IRRIGATION CHANNEL
FARMERS RESERVOIR & IRRIGATION COMPANY
80 SOUTH 27TH AVENUE
BRIGHTON, COLORADO 80601
(303) 659-7373
CONTACT: MOLLY LEONHART

LEGAL DESCRIPTION
LOTS 1, 2 & 6 OF VISTA RIDGE – FILING NO. 14 SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M. TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO SP-000052-2014

PARCEL CONTAINS (734,853 SQUARE FEET) 16.8699 ACRES.

BASIS OF BEARING
BEARINGS ARE BASED ON THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY No. 7 BEARING N89°38'27"W AS REFERENCED AND BOUNDED BY THE MONUMENTS SHOWN HEREON.

BENCHMARK
CITY AND COUNTY OF BROOMFIELD BM "LUCY"
ELEVATION = 5297.00 FEET (NAVD 1988 DATUM)

CAUTION – NOTICE TO CONTRACTOR
1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHODS. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

811 Know what's below. Call before you dig.

SOIL PREPARATION AND PAVEMENT DESIGN NOTE
SOIL PREPARATION AND PAVEMENT DESIGN SHALL BE PER RECOMMENDATIONS FROM A GEOTECHNICAL REPORT PREPARED FOR THIS SITE AS FOLLOWS:

GEOTECHNICAL ENGINEER: KUMAR & ASSOCIATES
REPORT NO: 14-3-155, DATED 03/06/2015

THE CONTRACTOR MUST FULLY REVIEW THIS REPORT PRIOR TO CONSTRUCTION. INFORMATION IN THE GEOTECHNICAL REPORT SUPERSEDES ANY CONFLICTING INFORMATION CONTAINED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS. REFER TO GENERAL STRUCTURAL NOTES FOR SPECIFIC SOIL PREPARATION AT SITE STRUCTURES.

SITE DATA SUMMARY CHART
ZONE DISTRICT PD

ITEM	SQUARE FOOTAGE	% OF GROSS SITE
GROSS SITE AREA: (LOTS 1, 2, & 6)	734,857 (16.87 AC.)	100
BUILDING FOOTPRINT (LOTS 1, 2, & 6 COMBINED)	130,275	18
PARKING / ROADS (INCLUDING PLANTED INTERIOR PARKING ISLANDS) (EXCLUDING FUTURE PARKING/ ROADS IN LOTS 3, 4, AND 5)	444,415	60
HARDSCAPE TOTAL (EXCLUDING FUTURE HARDSCAPE IN LOTS 3, 4, AND 5)	456,073	62
PLANTED AREA (EXCLUDING PLANTED INTERIOR PARKING ISLANDS)	130,304	18
LANDSCAPE TOTAL (EXCLUDING FUTURE LANDSCAPE IN LOTS 3, 4, AND 5)	148,509	20

ITEM	DESCRIPTION
BUILDING SIZE: 1 STORY + MEZZANINE	
KING SOOPERS	123,000 SQ / FT
RETAIL	7,100 SQ / FT
FUEL	175 SQ / FT
TOTAL	130,275 SQ / FT
PARKING:	
TOTAL REQUIRED LOT 1 (1/200 SQ/FT)	615
TOTAL REQUIRED LOT 2 (1/200 SQ/FT)	36
TOTAL PROVIDED LOT 1 (INCLUDING HANDICAP)	596
TOTAL PROVIDED LOT 2 (INCLUDING HANDICAP)	52
TOTAL HANDICAP	23
TOTAL CART CORRALS (NOT INCLUDED IN TOTAL PARKING COUNT)	10
TOTAL REQUIRED BICYCLE LOT 1 (1/20 SPACES)	30
TOTAL REQUIRED BICYCLE LOT 2 (1/20 SPACES)	3
TOTAL PROVIDED BICYCLE LOT 1	30
TOTAL PROVIDED BICYCLE LOT 2	5

SHEET INDEX

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SITE PLAN APPROVAL CERTIFICATE
THIS SITE PLAN HAS BEEN REVIEWED AND FOUND TO BE COMPLETE AND IN ACCORDANCE WITH APPLICABLE TOWN OF ERIE REGULATIONS.

DIRECTOR OF COMMUNITY DEVELOPMENT — DATE:

PLANNING COMMISSION CHAIR — DATE:

THE UNDERSIGN AS THE OWNER OR OWNER'S REPRESENTATIVE OF THE LANDS DESCRIBED HEREIN, HEREBY AGREES ON BEHALF OF HIMSELF/HERSELF, THEIR HEIRS, SUCCESSORS, AND ASSIGNS TO DEVELOP AND MAINTAIN THE PROPERTY DESCRIBED HEREON IN ACCORDANCE WITH THIS APPROVED SITE PLAN AND IN COMPLIANCE WITH THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE AND MUNICIPAL CODE.

(OWNER SIGNATURE) — (OWNER NAME PRINTED)

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20_____

BY_____ AS _____

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC

MY COMMISSION EXPIRES:_____

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

Galloway
Planning, Architecture, Engineering
8162 S. Willow Street, Suite 320
Greenwood Village, CO 80111
303.770.8884 P
www.gallowayUS.com

King Soopers
Attn: Lowell Good
65 Tejon Street
Denver, CO 80223-3553
Phone (303) 778-2052
Fax (303) 871-8922

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	#20000179.01
Sheet Scale:	AS NOTED
Designed By:	JAS
Drawn By:	JJA
Date:	JULY, 2015
Disk File:	#20129_P_01-Cover

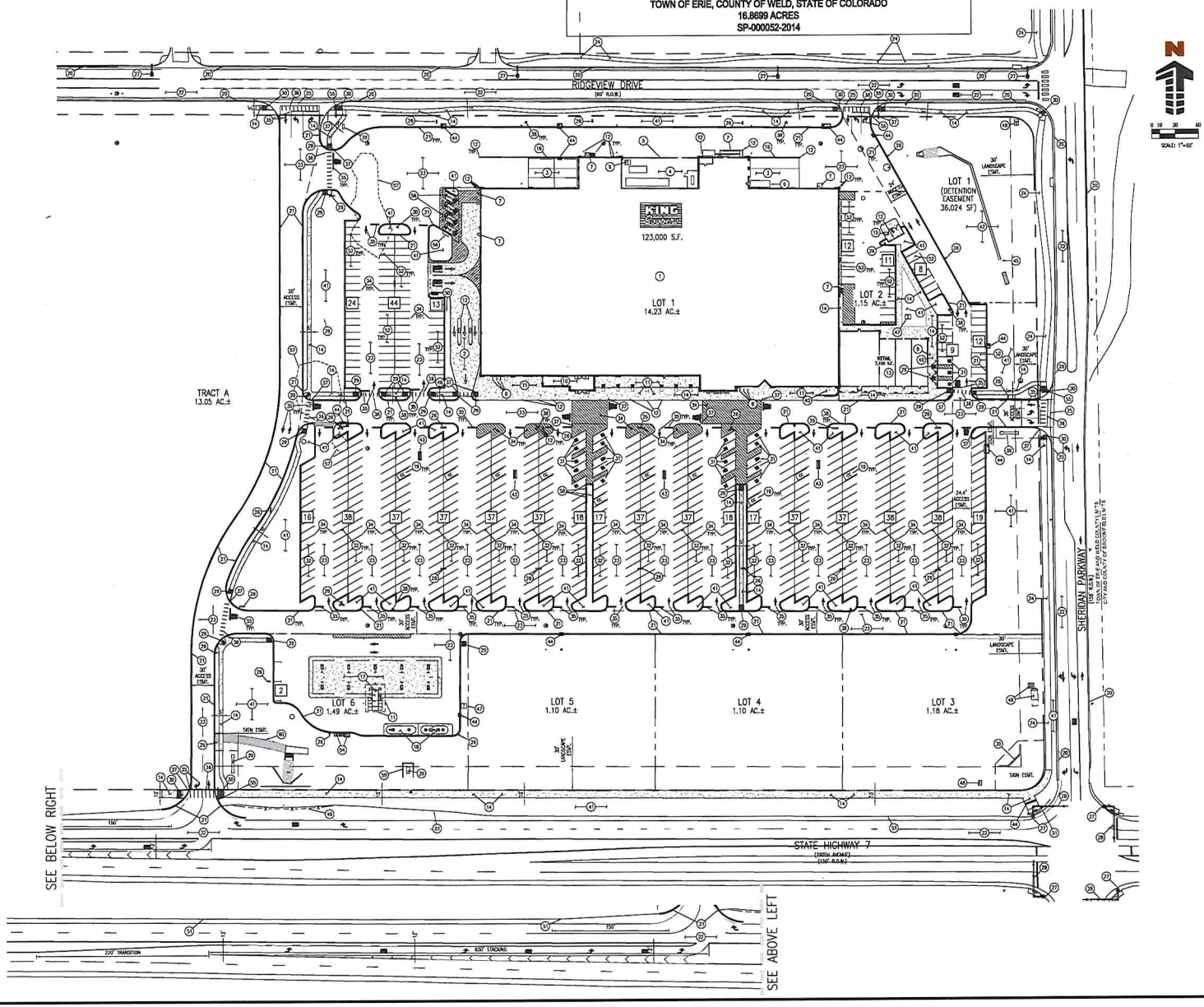
COVER SHEET

01

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



SITE LEGEND

- PROPERTY BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- EASEMENT BOUNDARY LINE
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- PROPOSED NEW
- EXISTING TRAFFIC POLE
- PROPOSED SITE LIGHTING
- EXISTING STREET LIGHT
- EXISTING WATER METER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING MANHOLE
- PROPOSED MANHOLE
- UTILITY PEDESTAL
- PROPOSED ELECTRICAL TRANSFORMER
- PROPOSED INLET
- TRAFFIC DIRECTION
- [1] PARKING COUNT
- [CC] CART CORRAL (APPROXIMATE LOCATION)

SCHEDULE

1. PROPOSED 123,000 SF KING SOOPERS MARKETPLACE STORE
2. PROPOSED PHARMACY DRIVE THRU CANOPY AND DRIVE LANES
3. PROPOSED CONCRETE LOADING DOCK
4. PROPOSED MECHANICAL ENCLOSURE AREA
5. PROPOSED SCREEN WALL AT MECHANICAL UNITS
6. PROPOSED TRASH COMPACTOR
7. PROPOSED EGRESS LANDING WITH STAIRS OR RAMP
8. PROPOSED BICYCLE RACK
9. PROPOSED KING SOOPERS TRANSFORMER
10. PROPOSED VESTIBULE
11. PROPOSED OUTDOOR SALES AREA
12. PROPOSED BOLLARD
13. PROPOSED 7,100 SF MULTI-TENANT RETAIL
14. PROPOSED CONCRETE SIDEWALK (SIZE AS SHOWN)
15. PROPOSED TRASH ENCLOSURE
16. PROPOSED MASONRY SCREEN WALL AT TRUCK DOCK
17. PROPOSED 43' X 160' FUEL CANOPY AND 175 SF KIOSK
18. PROPOSED FUEL TANKS AND CONCRETE SLAB
19. PROPOSED CART CORRAL (TYP. 10)
20. EXISTING CURB AND GUTTER TO REMAIN
21. PROPOSED CONCRETE CURB AND GUTTER
22. EXISTING ASPHALT PAVING TO REMAIN
23. PROPOSED ASPHALT PAVING
24. EXISTING CONCRETE SIDEWALK TO REMAIN
25. PROPOSED 8-FOOT WIDE CONCRETE CROSSPAN
26. PROPOSED SITE LIGHT
27. EXISTING STREET LIGHT TO REMAIN
28. EXISTING TRAFFIC SIGNAL TO REMAIN
29. PROPOSED ADA ACCESSIBLE RAMP
30. PROPOSED ADA ACCESSIBLE RAMP WITH DETECTABLE WARNINGS
31. PROPOSED ADA PARKING STALL WITH PAINTED ACCESS AISLE AND SIGNAGE (TYP. 23)
32. PROPOSED 9.5'x18.0' 60-DEGREE "ANGLED" PARKING STALL (TYP.)
33. PROPOSED 10'x25' 0-DEGREE "PARALLEL" PARKING STALL (TYP.)
34. PROPOSED PARKING STRIPING
35. PROPOSED STOP BAR AND TRAFFIC DIRECTIONAL FLOW ARROW
36. PROPOSED CROSSWALK
37. PROPOSED R1-1 STOP SIGN
38. PROPOSED FIRE HYDRANT
39. PROPOSED MONUMENT SIGN
40. PROPOSED OUTDOOR SEATING AREA
41. PROPOSED LANDSCAPING
42. PROPOSED DETENTION POND AND TRICKLE CHANNEL
43. PROPOSED AREA INLET
44. PROPOSED CURB INLET
45. PROPOSED OUTLET STRUCTURE
46. PROPOSED "DO NOT ENTER" SIGN
47. PROPOSED ELECTRICAL TRANSFORMER
48. EXISTING ELECTRICAL TRANSFORMER TO REMAIN (CONTRACTOR TO RAISE TO FINISHED GRADE)
49. EXISTING GUARD RAIL TO REMAIN
50. PROPOSED 3' WIDE SIDEWALK CHASE
51. EXISTING EDGE OF ASPHALT
52. PROPOSED 9'x20' 90-DEGREE "HEAD-IN" PARKING STALL (TYP.)
53. PROPOSED CONCRETE WHEEL STOP
54. PROPOSED PUBLIC AIR STAND, TELEPHONE, AND PROPANE TANK EXCHANGE CAGE
55. PROPOSED STREET LIGHT
56. PROPOSED 4 LANE CLICK-LIST GROCERY PICKUP WITH OVERHEAD CANOPY
57. EXISTING TREES TO BE REMOVED
58. PROPOSED "PARKING FOR THE LITTLE CLINIC ONLY" SIGN
59. PROPOSED RETAINING WALL (UNDER 4' IN HEIGHT)
60. PROPOSED 10' WIDE MAINTENANCE ACCESS ROAD

BASIS OF BEARING

BEARINGS ARE BASED ON THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY No. 7 BEARING N89°36'37"W AS REFERENCED AND BOUNDED BY THE MONUMENTS SHOWN HEREON.

BENCHMARK

CITY AND COUNTY OF BROOMFIELD BM "LUCY".
ELEVATION = 5297.00 FEET (NAVD 1988 DATUM)

CAUTION – NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

811 Know what's below. Call before you dig.

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	05/19/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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Phone: (303) 792-3553
Fax: (303) 861-4612

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KS00000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KS0129_P_02-Site

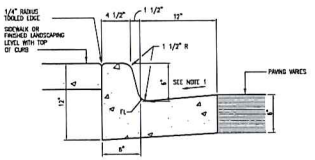
SITE PLAN

02

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

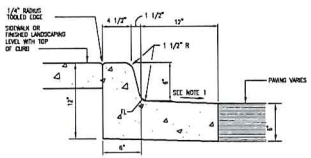
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014



NOTES:

1. GUTTER CROSS SLOPE SHALL BE 1/2 IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB.
2. BASE OF CURB SHALL REST ON COMPACTED FILL.
3. ALL EXPOSED CONCRETE SHALL HAVE A SACK FINISH.
4. CONTROL JOINTS SHALL BE INSTALLED AT 10 FOOT MAXIMUM INTERVALS AND AT THE END OF CURB RETURNS - SEE CURB CONTROL JOINT DETAIL.
5. EXPANSION JOINTS SHALL BE INSTALLED AT 500 FOOT MAXIMUM INTERVALS AND/OR TO MATCH LOCATION OF EXPANSION JOINTS IN PAVING - SEE CURB EXPANSION JOINT DETAIL.

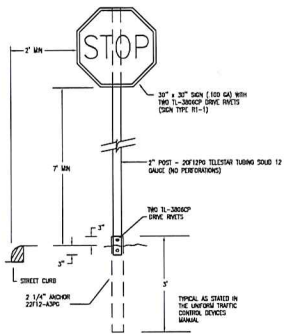
1 CATCH CURB AND 1' WIDE GUTTER
SCALE: 1 1/2" =1'-0"



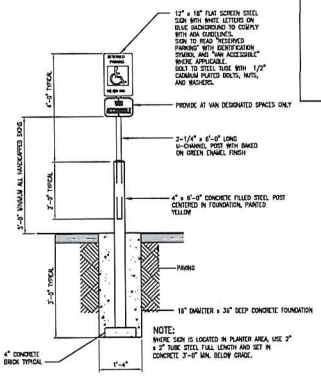
NOTES:

1. GUTTER CROSS SLOPE SHALL BE 1/2 IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB.
2. BASE OF CURB SHALL REST ON COMPACTED FILL.
3. ALL EXPOSED CONCRETE SHALL HAVE A SACK FINISH.
4. CONTROL JOINTS SHALL BE INSTALLED AT 10 FOOT MAXIMUM INTERVALS AND AT THE END OF CURB RETURNS - SEE CURB CONTROL JOINT DETAIL.
5. EXPANSION JOINTS SHALL BE INSTALLED AT 500 FOOT MAXIMUM INTERVALS AND/OR TO MATCH LOCATION OF EXPANSION JOINTS IN PAVING - SEE CURB EXPANSION JOINT DETAIL.

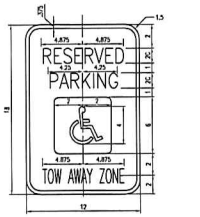
2 SPILL CURB AND 1' WIDE GUTTER
SCALE: 1 1/2" =1'-0"



3 STOP SIGN DETAIL
NOT TO SCALE

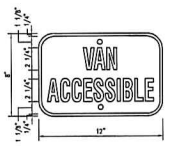


4 HANDICAP PARKING SIGN
NOT TO SCALE



MATERIAL: .080 ALUMINUM - WHITE BACKGROUND WITH BLUE COPY AND BORDER - SYMBOL HAS BLUE BACKGROUND, WHITE COPY WITH BLACK BORDER
1 1/2" RADIUS CORNERS WHITE 2 MOUNTING HOLES

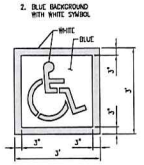
5 'PARKING ONLY' SIGN DETAIL
SCALE: NOT TO SCALE



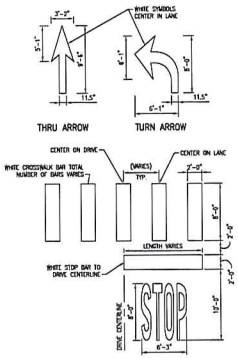
MATERIAL: .080 ALUMINUM - BLUE BACKGROUND WITH WHITE COPY AND BORDER
1 1/2" RADIUS CORNERS WHITE 2 MOUNTING HOLES

6 'VAN ACCESSIBLE' SIGN DETAIL
SCALE: NOT TO SCALE

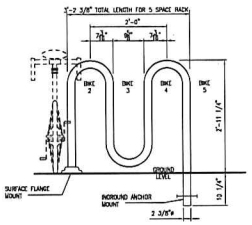
NOTE:
1. PROVIDE TWO COATS OF PAINT
2. BLUE BACKGROUND WITH WHITE SYMBOL



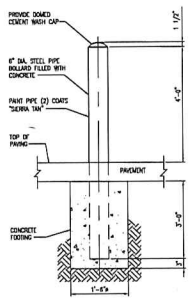
7 HANDICAPPED SYMBOL
SCALE: 1/2" = 1'-0"



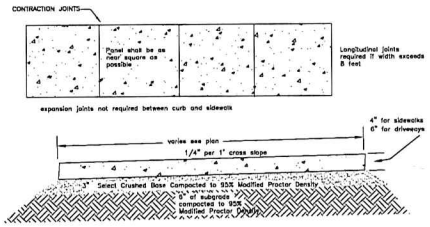
8 LANE STRIPING DETAILS
SCALE: 1/8" = 1'



9 BICYCLE RACK DETAIL
SCALE: 3/4" = 1'-0" (5 SPACE MINIMUM)



10 PIPE BOLLARD DETAIL (OTHER THAN AT FRONT SIDEWALK)
NOT TO SCALE



1. Contraction joints shall be spaced so as to form as near square panel as possible, no single panel shall exceed 8' on any side. Contraction joints shall be 3/4" deep.
2. Expansion joints of 1/2" mastic material shall be placed at the following locations:
   - P.C.s and P.T.s of curves
   - Grade breaks
   - At driveways
   - At other locations as specified by engineer
3. No sidewalk shall be placed without a final form inspection by the Engineer
4. Construction materials and procedures shall conform to existing City and State Standard Specifications.

11 CONCRETE SIDEWALK DETAIL
NOT TO SCALE

NO.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
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Fax (303) 778-1233

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

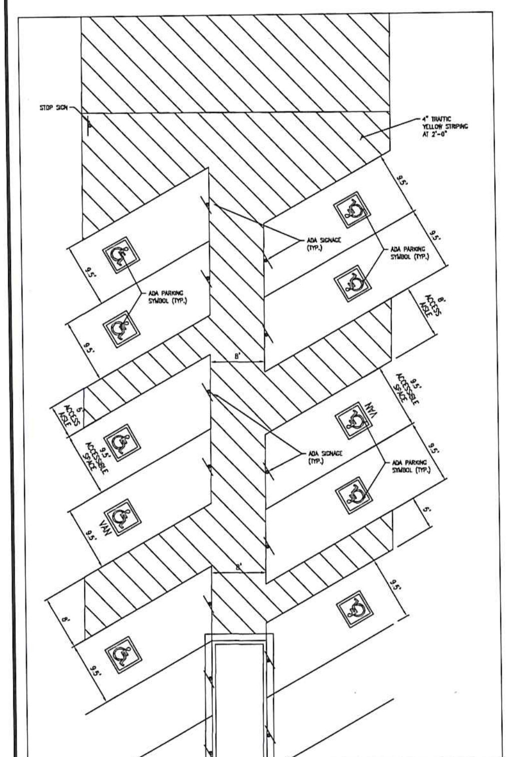
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSD000129.01
Sheet Scale:	AS NOTED
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KS0129_P_03-04-Site Deta

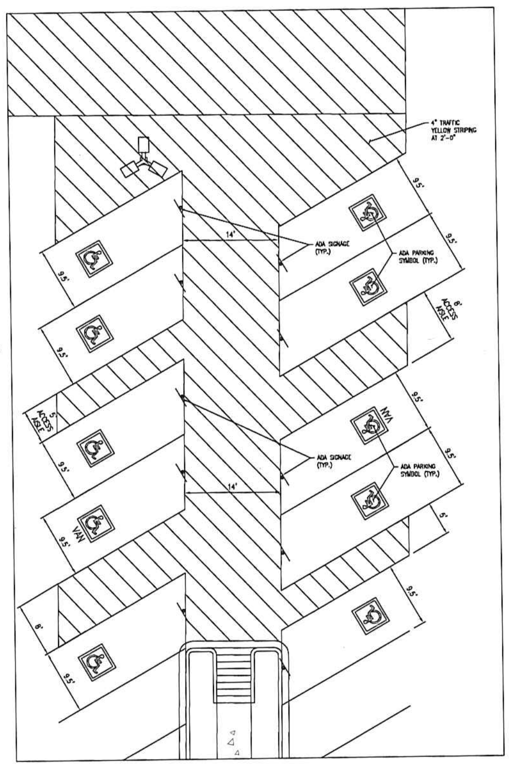
SITE DETAILS

03

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014

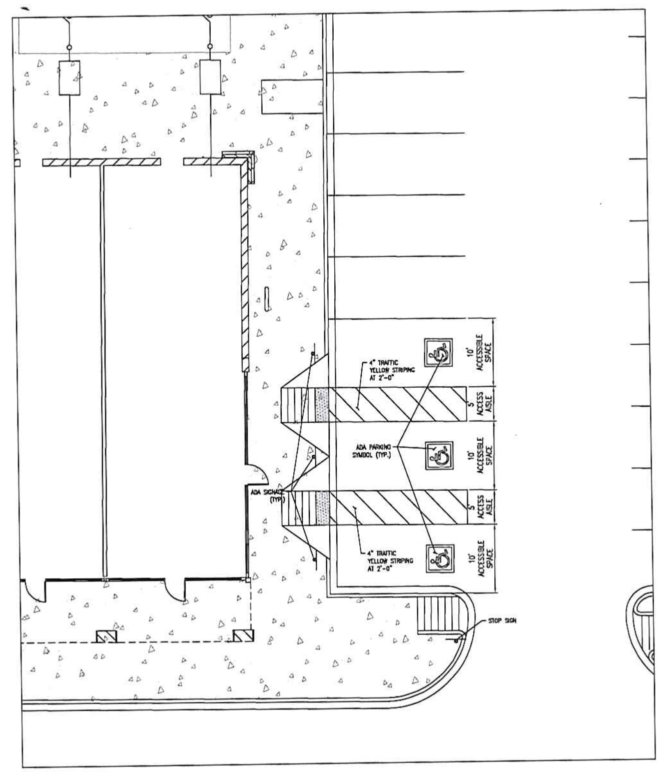


(A) PROPOSED KING SOOPERS WEST ENTRY
DETAIL "A" ACCESS & ADA PARKING
SCALE: 1"=10'

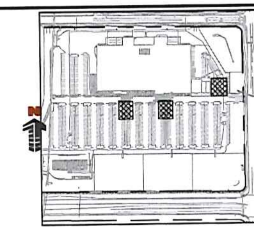


SCALE: 1"=10'

(B) PROPOSED KING SOOPERS EAST ENTRY
DETAIL "B" ACCESS & ADA PARKING
SCALE: 1"=10'



(C) DETAIL "C" ADA ACCESS & PARKING
SCALE: 1"=10'



KEY MAP
NOT TO SCALE

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
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4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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Fax (303) 871-9292

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	AS NOTED
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KSS129_P_03-04-Site Dets

SITE DETAILS

04

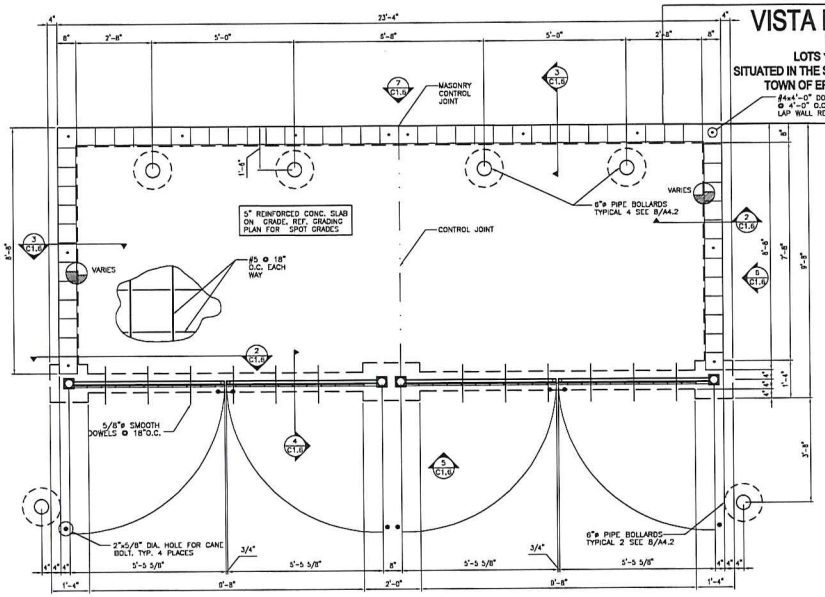
VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

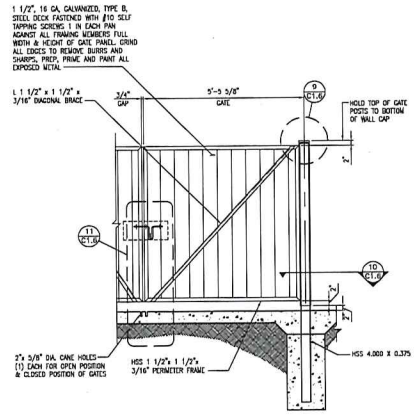
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

#4x4'-0" DOWELS @ 4'-0" O.C. MAX. LAP WALL REINF.

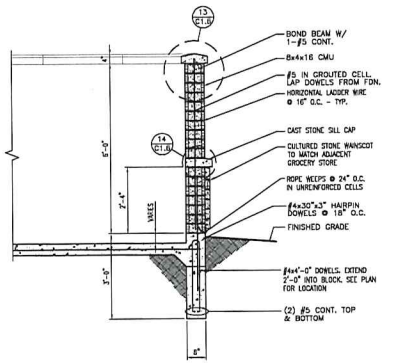
16.8699 ACRES
SP-000052-2014



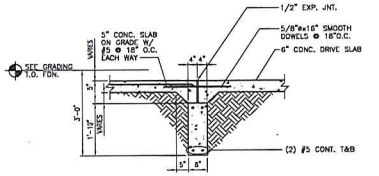
1 FOUNDATION PLAN
SCALE: 1/2" = 1'-0"



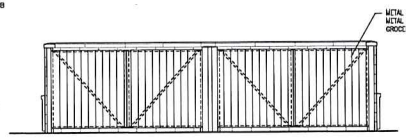
2 GATE ELEVATION – INSIDE FACE
SCALE: 1/2" = 1'-0"



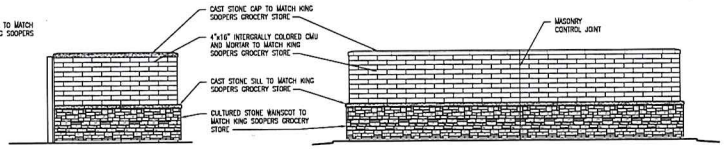
3 WALL SECTION
SCALE: 1/2" = 1'-0"



4 FOUNDATION SECTION
SCALE: 3/4" = 1'-0"

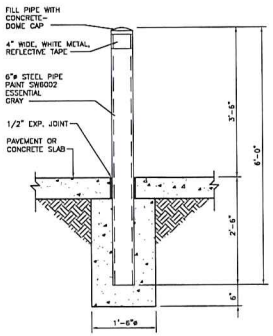


5 FRONT ELEVATION
SCALE: 1/4" = 1'-0"

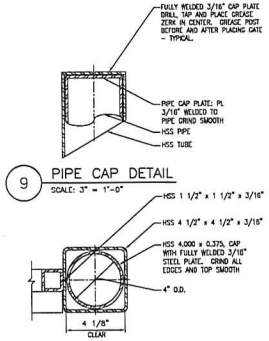


6 SIDE ELEVATION
SCALE: 1/4" = 1'-0"

7 REAR ELEVATION
SCALE: 1/4" = 1'-0"

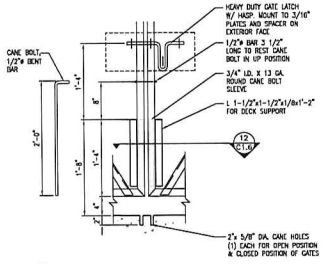


8 BOLLARD DETAIL
SCALE: 3/4" = 1'-0"

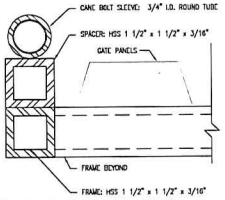


9 PIPE CAP DETAIL
SCALE: 3" = 1'-0"

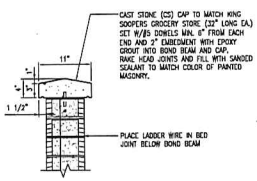
10 SECTION D-D
SCALE 3" = 1'-0"



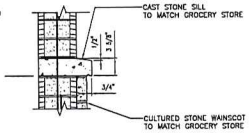
11 GATE DETAIL – INSIDE FACE
SCALE 1" = 1'-0"



12 FRAME AT CANE BOLT
HALF SIZE



13 WALL CAP DETAIL
SCALE 1" = 1'-0"



14 WAINSCOT SILL DETAIL
SCALE 1" = 1'-0"

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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King Soopers
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Englewood, CO 80112
Ph (303) 740-3033
Fax (303) 741-1612

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

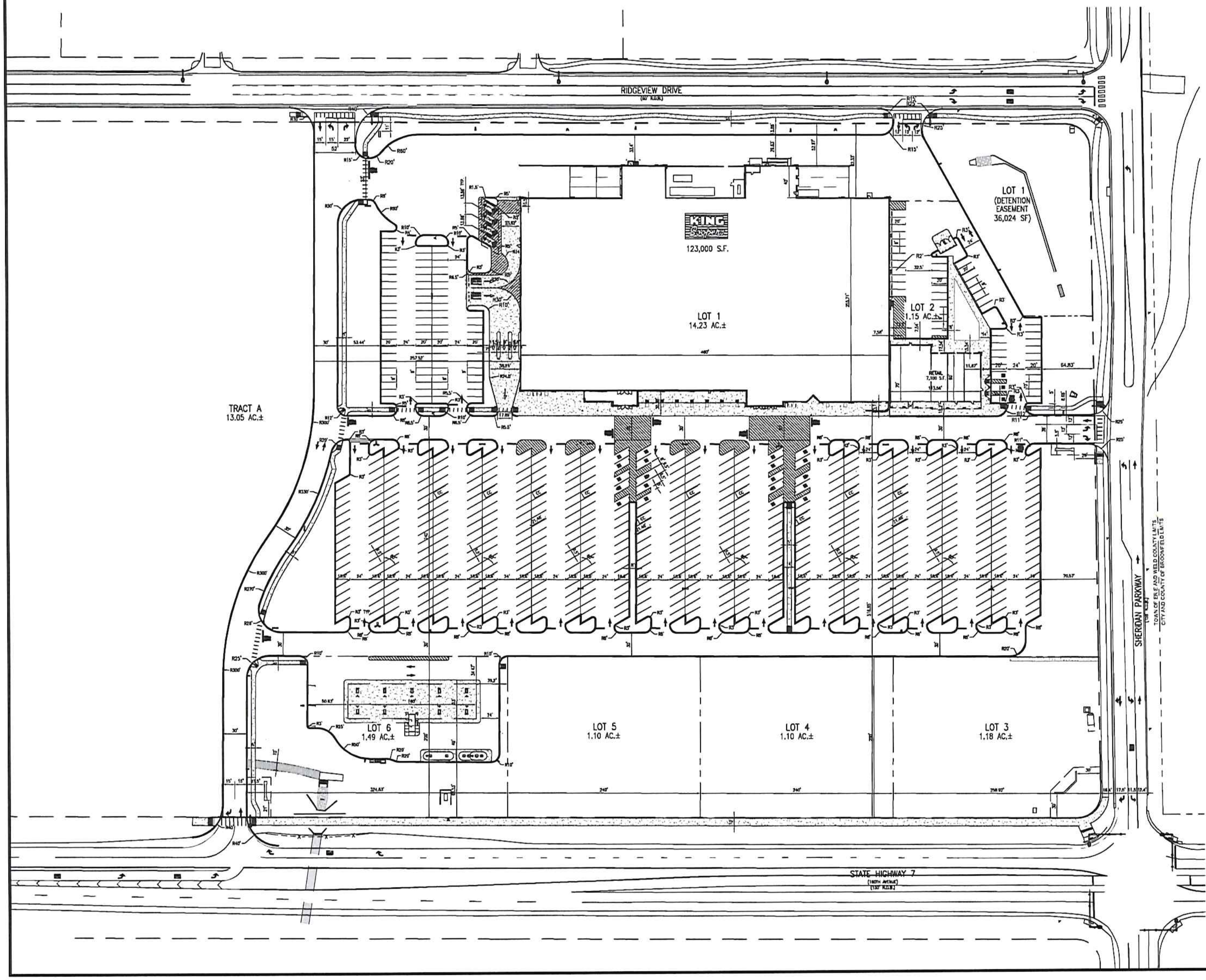
Project No:	KS20001291.01
Sheet Scale:	AS NOTED
Designed By:	DEM
Drawn By:	MDC
Date:	JULY 2015
Disk File:	KS1291_P_05-Trash Enc

TRASH ENCLOSURE PLAN & DETAILS

05

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014



N

0 10 30 60
SCALE: 1"=60'

SITE LEGEND

- PROPERTY BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- EASEMENT BOUNDARY LINE
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- PROPOSED NEW
- EXISTING TRAFFIC POLE
- PROPOSED SITE LIGHTING
- EXISTING STREET LIGHT
- TRAFFIC DIRECTION
- CC CART CORRAL (APPROXIMATE LOCATION)

ALL DIMENSIONS ARE TO FLOWLINE AND OUTSIDE BUILDING WALL UNLESS OTHERWISE NOTED.

BASIS OF BEARING

BEARINGS ARE BASED ON THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY No. 7 BEARING N89°38'37"W AS REFERENCED AND BOUNDED BY THE MONUMENTS SHOWN HEREON.

BENCHMARK

CITY AND COUNTY OF BROOMFIELD BM "LUCY".
ELEVATION = 5297.00 FEET (NAVD 1988 DATUM)

CAUTION – NOTICE TO CONTRACTOR

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811
Know what's below.
Call before you dig.

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
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4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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Fax (303) 871-9262

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

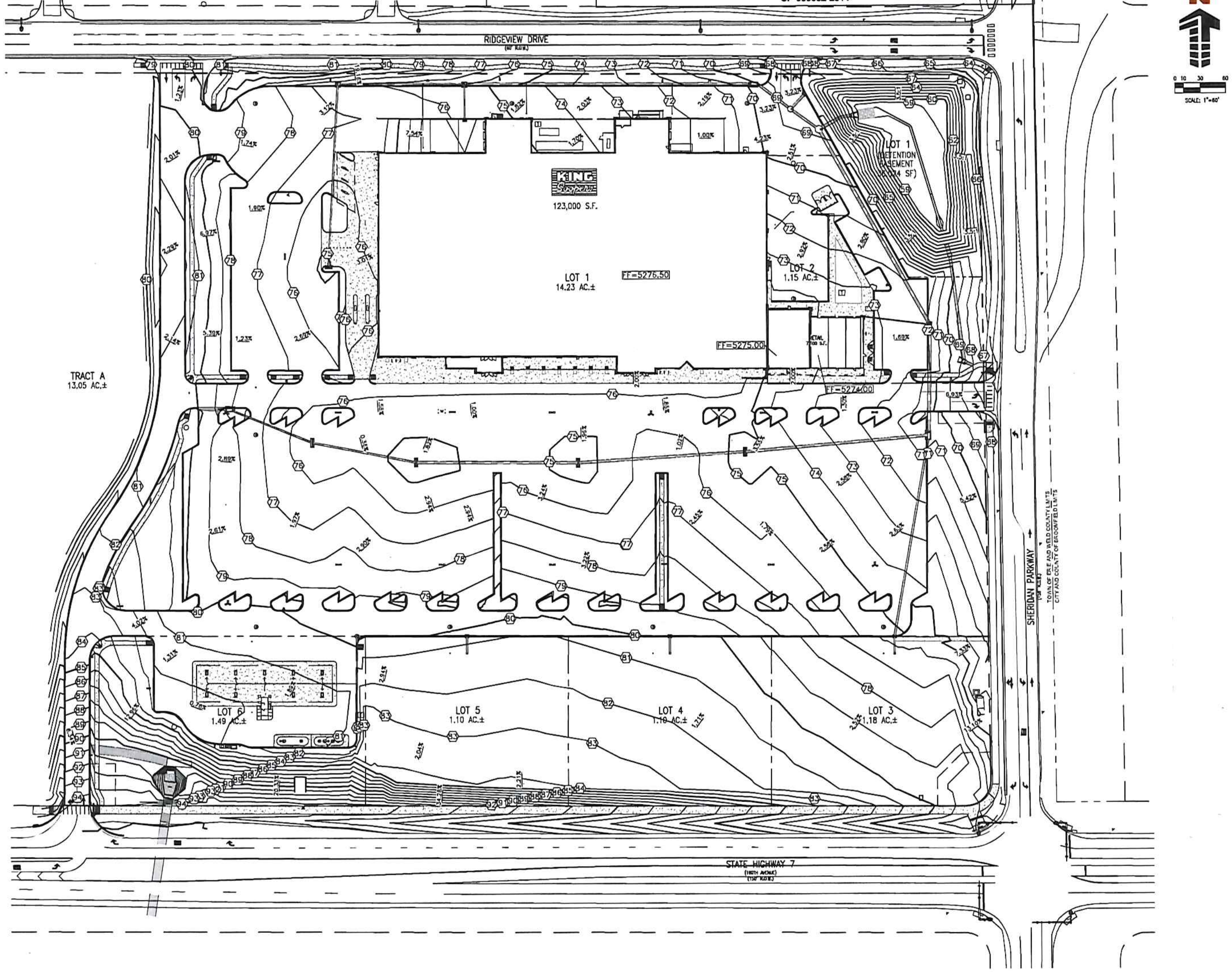
Project No:	KS000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KS5129_P_06-Horz

HORIZONTAL
CONTROL
PLAN

06

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
18.8899 ACRES
SP-000052-2014



GRADING LEGEND

Symbol	Description
——24——	EXISTING CONTOUR
—(24)—	PROPOSED CONTOUR
24.00	EXISTING SPOT ELEVATION
24.0	PROPOSED SPOT ELEVATION
24.5 / 24.0	PROPOSED TOP OF CURB ELEVATION / PROPOSED FLOWLINE ELEVATION
FF	FINISHED FLOOR
TOG	TOP OF GRATE
TC	TOP OF CURB
TOS	TOP OF SIDEWALK
FL	FLOWLINE
HP	HIGH POINT
LP	LOW POINT
ME	MATCH EXISTING
GB	GRADE BREAK
TOB	TOP OF BERM
CO	CURB OPENING
PC	POINT OF CURVE
FL INT	FLOWLINE INTERSECTION
PCR	POINT OF CURB RETURN
INV	INVERT ELEVATION
	EXISTING STORM SEWER
STS	PROPOSED STORM SEWER
	PROPOSED SITE LIGHTING
©	CATCH CURB AND GUTTER
Ⓢ	SPILL CURB AND GUTTER
	AREAS OF FILL

GRADING NOTES

CONTRACTOR TO ENSURE MAXIMUM 2% CROSS SLOPE AT ADA STALLS AND MAXIMUM 5% LONGITUDINAL SLOPE IN SIDEWALKS.

SOIL IMPORT NOTE:

IMPORTING FILL MATERIAL FROM AN OFF-SITE LOCATION WITHOUT PRIOR WRITTEN APPROVAL FROM THE KROGER PROJECT MANAGER IS STRICTLY PROHIBITED. IDENTIFICATION OF OFF-SITE BORROW LOCATIONS AND MATERIAL MUST BE COORDINATED AND DOCUMENTED WITH THE SWPPP. A KROGER APPROVED TESTING FIRM MUST VERIFY THE SUITABILITY OF ALL OFF-SITE MATERIAL. THIS INCLUDES AN ANALYSIS TO INSURE THAT NO ENVIRONMENTAL CONTAMINATION IS PRESENT. IF ANY MATERIAL IS BROUGHT ON SITE WITHOUT PRIOR WRITTEN APPROVAL OF THE KROGER PROJECT MANAGER, THE CONTRACTOR WILL BEAR ALL COSTS ASSOCIATED WITH REMOVING THE MATERIAL, TESTING AND CONTAMINATION, MONITORING THE CLEAN-UP OPERATION, DISPOSAL IN AN APPROVED LANDFILL, AND CERTIFYING THAT THE KROGER SITE IS ENVIRONMENTALLY CLEAN.

BASIS OF BEARING

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BENCHMARK

CITY AND COUNTY OF BROOMFIELD BM "LUCY".
ELEVATION = 5297.00 FEET (NAVD 1988 DATUM)

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KING SOOPERS #129 AT VISTA RIDGE MARKETPLACE SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KSS129_P_07-Overall Grad

OVERALL GRADING PLAN

07

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
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TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
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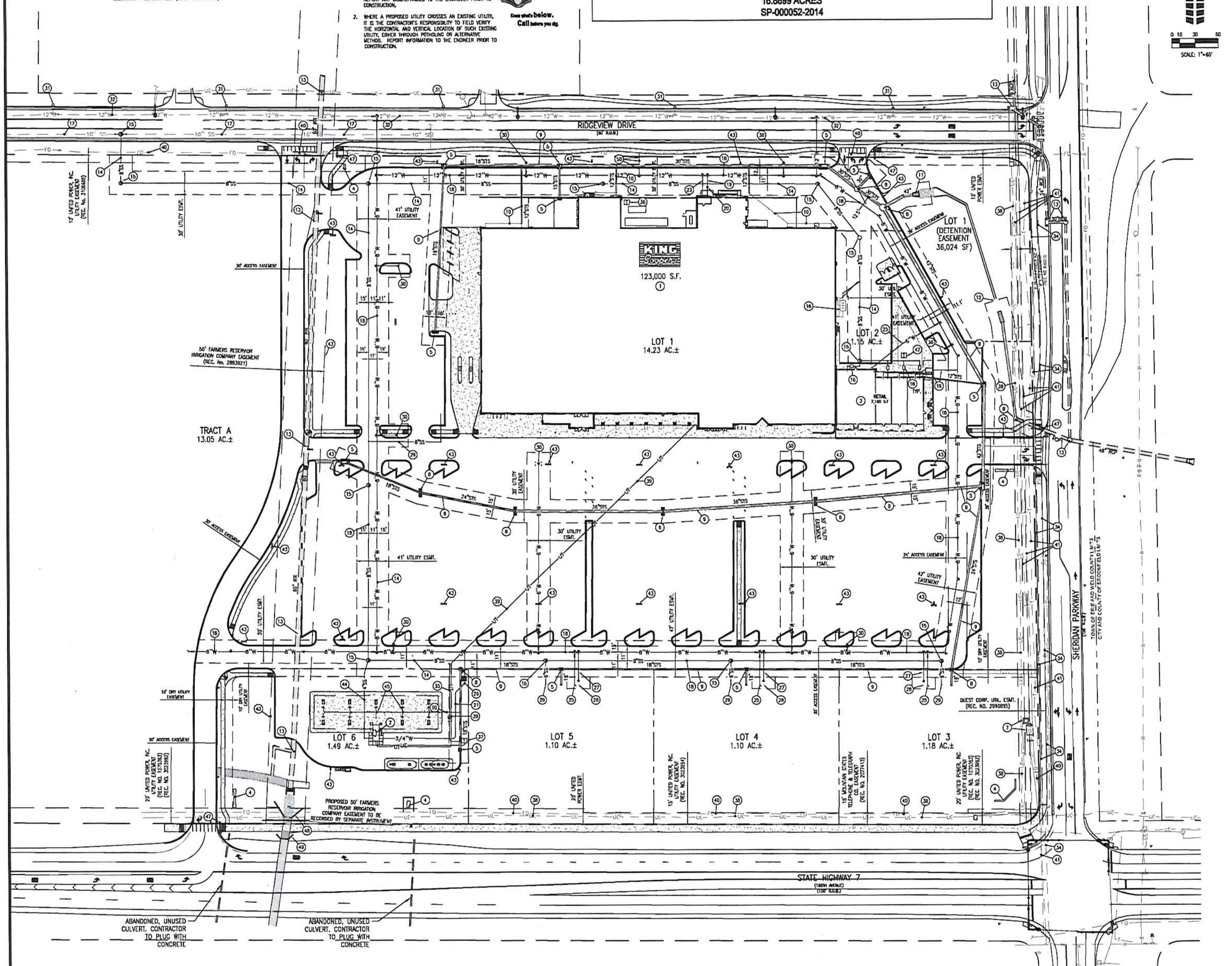

SITE LEGEND

- PROPERTY BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- SECTION LINE
- EASEMENT BOUNDARY LINE
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- PROPOSED NEW

UTILITY LEGEND

- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING STORM SEWER (LESS THAN 12")
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER (LESS THAN 12")
- EXISTING GAS LINE
- PROPOSED GAS LINE
- EXISTING UNDERGROUND ELECTRICAL
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING OVERHEAD ELECTRICAL
- EXISTING FIBER OPTIC
- EXISTING UNDERGROUND TELEPHONE
- PROPOSED UNDERGROUND TELEPHONE
- EXISTING WATER METER
- PROPOSED WATER METER
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- PROPOSED WATER BEND W/THRUST BLOCK
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED TEMPORARY BLOW-OFF
- EXISTING MANHOLE
- PROPOSED MANHOLE
- UTILITY PEDESTAL
- PROPOSED ELECTRICAL TRANSFORMER
- PROPOSED INLET
- PROPOSED SITE LIGHTING
- PROPOSED STREET LIGHT
- EXISTING TRAFFIC POLE
- EXISTING STREET LIGHT

UTILITY SCHEDULE

1. PROPOSED 123,000 S.F. KING SOOPERS STORE
2. PROPOSED 43-FOOT x 160-FOOT CANOPY AND 175 SQ. FT. KIOSK (BY OTHERS)
3. PROPOSED 7,100 S.F. MULTI-TENANT RETAIL
4. PROPOSED MONUMENT SIGN (BY OTHERS)
5. PROPOSED CURB INLET (PRIVATE) (SEE STORM PLAN & PROFILES)
6. PROPOSED AREA INLET(PRIVATE) (SEE STORM PLAN & PROFILES)
7. EXISTING UTILITY CABINETS TO REMAIN
8. PROPOSED STORM MANHOLE (SIZE AS NOTED) (PRIVATE) (SEE STORM PLAN & PROFILES)
9. PROPOSED STORM INFRASTRUCTURE (SIZE AS NOTED) (SEE STORM PLAN & PROFILES)
10. PROPOSED ROOF DRAIN (SIZE AS NOTED) (SEE STORM PLAN & PROFILES)
11. PROPOSED 48-INCH F.E.S. (PRIVATE)
12. PROPOSED WATER QUALITY/DETENTION POND OUTLET STRUCTURE (PRIVATE)
13. EXISTING STORM INFRASTRUCTURE TO REMAIN
14. PROPOSED SANITARY SEWER (SIZE AS NOTED) (PUBLIC) (SEE PLAN AND PROFILES)
15. PROPOSED SANITARY SEWER MANHOLE (PUBLIC) (SEE PLAN AND PROFILES)
16. PROPOSED GREASE INTERCEPTOR AND SAMPLING MANHOLE (PRIVATE) (SEE PLUMBING PLANS FOR DETAILS)
17. EXISTING SANITARY SEWER TO REMAIN
18. PROPOSED C900 PVC WATER MAIN (PUBLIC) (SEE WATER PLAN & PROFILE FOR DETAILS)
19. PROPOSED 2-INCH DOMESTIC WATER SERVICE (PRIVATE) AND MASTER METER VAULT
20. PROPOSED 2-INCH WATER METER WITH TRAFFIC-RATED LID
21. PROPOSED 3/4" FUEL CENTER DOMESTIC WATER SERVICE (BY OTHERS)
22. PROPOSED 4-INCH FIRE LINE STUB (PRIVATE)
23. PROPOSED 6-INCH FIRE LINE FOR KING SOOPERS BUILDING (PRIVATE)
24. PROPOSED 8-INCH FIRE LINE STUB (PRIVATE)
25. PROPOSED 6-INCH FIRE LINE FOR RETAIL BUILDING (PRIVATE)
26. PROPOSED 3/4-INCH WATER METER FOR FUEL CENTER
27. PROPOSED 1-1/2-INCH WATER METER
28. PROPOSED 1-1/2-INCH DOMESTIC WATER LINE (UP STREAM OF METER = PUBLIC, DOWN STREAM OF METER = PRIVATE)
29. PROPOSED 6-INCH SANITARY SEWER STUB (PRIVATE)
30. PROPOSED FIRE HYDRANT ASSEMBLY WITH 6-INCH GATE VALVE AND LINE (PUBLIC)
31. EXISTING FIRE HYDRANT TO REMAIN
32. EXISTING WATER LINE TO REMAIN
33. PROPOSED GAS SERVICE (SEE C4.4 FOR DETAILS)
34. EXISTING GAS LINE TO REMAIN
35. PROPOSED UNDERGROUND ELECTRICAL (SEE C4.4 FOR DETAILS)
36. PROPOSED ELECTRICAL TRANSFORMER (STORE) (SEE C4.4 FOR DETAILS)
37. PROPOSED ELECTRICAL TRANSFORMER (FUEL CENTER BY OTHERS)
38. EXISTING UNDERGROUND ELECTRICAL LINE TO REMAIN
39. PROPOSED UNDERGROUND TELEPHONE CONDUIT (SEE C4.4 FOR DETAILS)
40. EXISTING FIBER OPTIC LINE TO REMAIN
41. EXISTING UNDERGROUND TELEPHONE LINE TO REMAIN
42. PROPOSED ELECTRICAL TRANSFORMER (RETAIL)
43. PROPOSED SITE LIGHT. REFER TO PHOTOMETRIC PLAN AND ELECTRICAL PLAN FOR DETAILS (TYP.)
44. PROPOSED 4" FUEL CENTER SANITARY SEWER SERVICE (PRIVATE) (BY OTHERS)
45. PROPOSED FUELING CANOPY ROOF DRAINS (BY OTHERS)
46. PROPOSED IRRIGATION TAP. (SEE IRRIGATION PLANS FOR DETAILS)
47. PROPOSED STREET LIGHT PER TOWN STANDARDS
48. PROPOSED 6'x10' BOX CULVERT AND CONCRETE HEADWALL
49. EXISTING HEADWALL TO BE REMOVED
50. PROPOSED 2" IRRIGATION TAP, SERVICE, AND METER

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KSS129_P_08-Overall Util

OVERALL UTILITY PLAN

08

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
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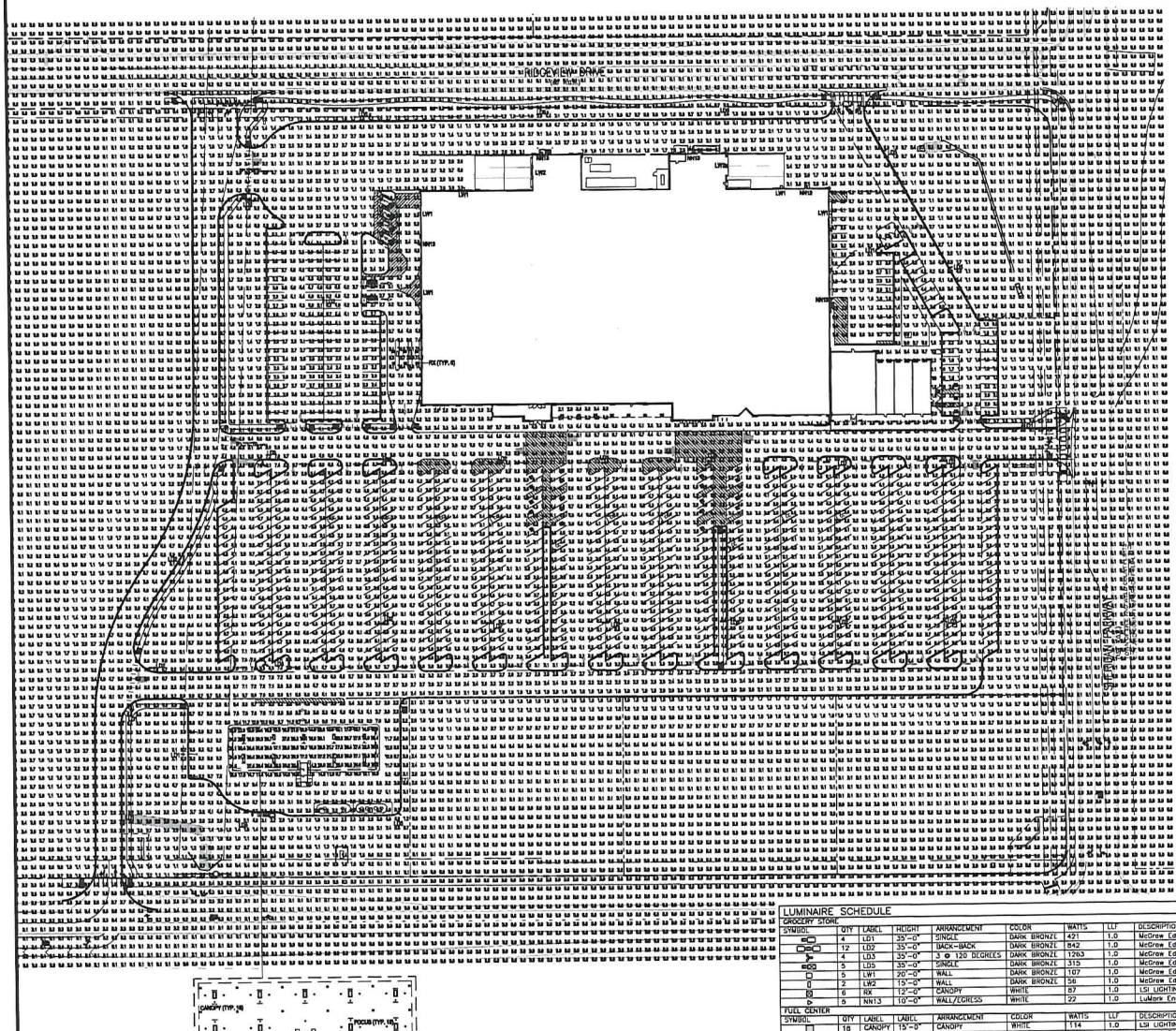

STATISTICAL AREA SUMMARY

GROCERY STORE					
LABEL	AVG	MAX	MIN	AVG/MIN	MAX/MIN
MAIN PARKING ZONE	4.22	8.1	2.0	2.11	4.05
FRONT DRIVE AISLE	4.76	7.0	3.5	1.36	2.00
ENTRY ZONE-SHERIDAN	3.89	5.8	1.7	2.35	3.29
ENTRY ZONE-HWY. 7	3.87	8.3	1.2	3.06	6.92
LIMITED PARKING-WEST	3.17	5.2	1.8	1.76	2.89
LIMITED PARKING-EAST	2.17	3.4	1.2	1.81	2.83
REAR PARKING	2.58	5.9	1.0	2.58	5.90
REAR DRIVE	2.88	7.7	1.0	2.88	7.70
FUEL CENTER					
LABEL	AVG	MAX	MIN	AVG/MIN	MAX/MIN
FUEL CENTER	5.78	12.8	1.8	3.61	8.00
CANOPY	21.81	32.0	7.6	2.87	4.21

LUMINAIRE SCHEDULE

GROCERY STORE								
SYMBOL	QTY	LABEL	HEIGHT	ARRANGEMENT	COLOR	WATTS	LLF	DESCRIPTION
	4	LD1	35'-0"	SINGLE	DARK BRONZE	421	1.0	McGraw Edison GLEON-AL-08-LED-E1-5WQ-EA/MA100BRZ/RTS9A395F-M1
	12	LD2	35'-0"	BACK-BACK	DARK BRONZE	842	1.0	McGraw Edison GLEON-AL-08-LED-E1-5WQ-EA/MA100BRZ/RTS9A395F-M2
	4	LD3	35'-0"	3 @ 120 DEGREES	DARK BRONZE	1263	1.0	McGraw Edison GLEON-AL-08-LED-E1-5WQ-EA/MA100BRZ/RTS9A395F-M3
	5	LD5	35'-0"	SINGLE	DARK BRONZE	315	1.0	McGraw Edison GLEON-AL-06-LED-E1-SL3/MA100BRZ/RTS9A395F-M1
	5	LW1	20'-0"	WALL	DARK BRONZE	107	1.0	McGraw Edison GLEON-AC-02-LED-E1-T3-WM
	2	LW2	15'-0"	WALL	DARK BRONZE	56	1.0	McGraw Edison GLEON-AC-01-LED-E1-T4FT-WM
	6	RX	19'-0"	CANOPY	WHITE	87	1.0	LSI LIGHTING XSL2-SA-LED-50-HO-CW
	5	NW13	10'-0"	WALL/EGRESS	WHITE	22	1.0	LuMark Energy Solutions XTOR2A
FUEL CENTER								
SYMBOL	QTY	LABEL	LABEL	ARRANGEMENT	COLOR	WATTS	LLF	DESCRIPTION
	18	CANOPY	15'-0"	CANOPY	WHITE	114	1.0	LSI LIGHTING CRUS-SC-LED-SS-CW-UC-WHT
	18	FOCUS	15'-0"	CANOPY	WHITE	37	1.0	LSI LIGHTING CRO3-FO-LED-30-350-CW-UC-WHT
	1	LD1	35'-0"	SINGLE	DARK BRONZE	421	1.0	McGraw Edison GLEON-AC-08-LED-E1-5WQ-EA/MA100BRZ/RTS9A395F-M1
	2	LD5	35'-0"	SINGLE	DARK BRONZE	315	1.0	McGraw Edison GLEON-AC-06-LED-E1-SL3/MA100BRZ/RTS9A395F-M1

ALL SITE/AREA LIGHTS ARE MOUNTED ON 32'-0" POLES WITH 2'-6" CONCRETE BASES. TOTAL MOUNTING HEIGHT = 35'-0"

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KS20001210.01
Sheet Scale:	1"=60'
Designed By:	JMC
Drawn By:	JMC
Date:	JULY 2015
Disk File:	KS1219_P_09-Lite

PHOTOMETRIC PLAN

09

VISTA RIDGE MARKETPLACE
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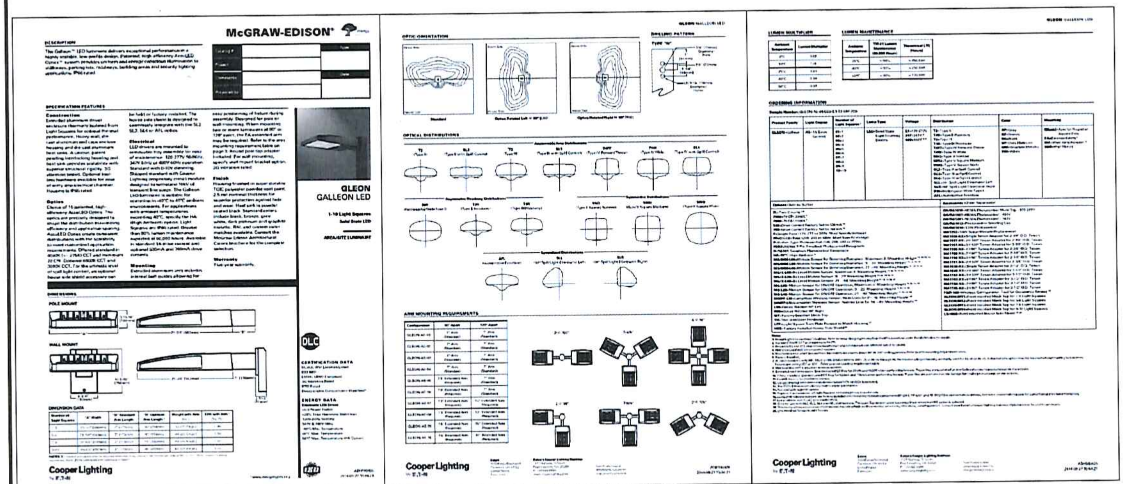
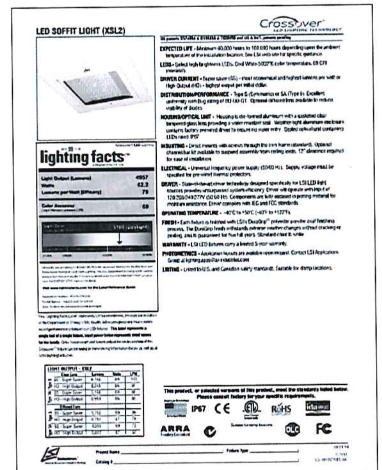
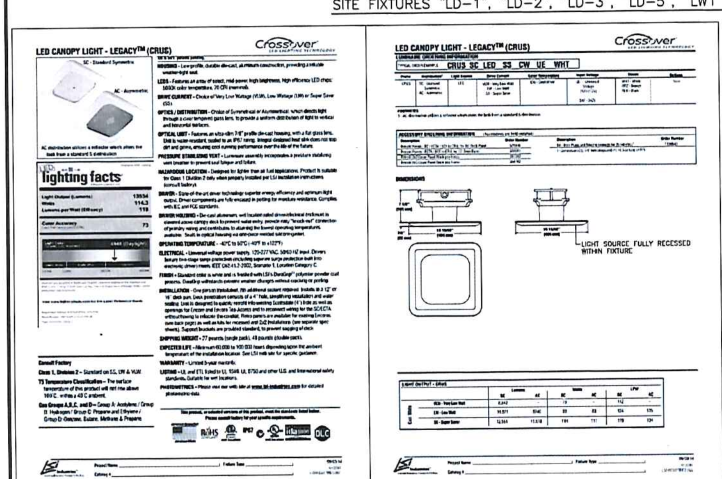


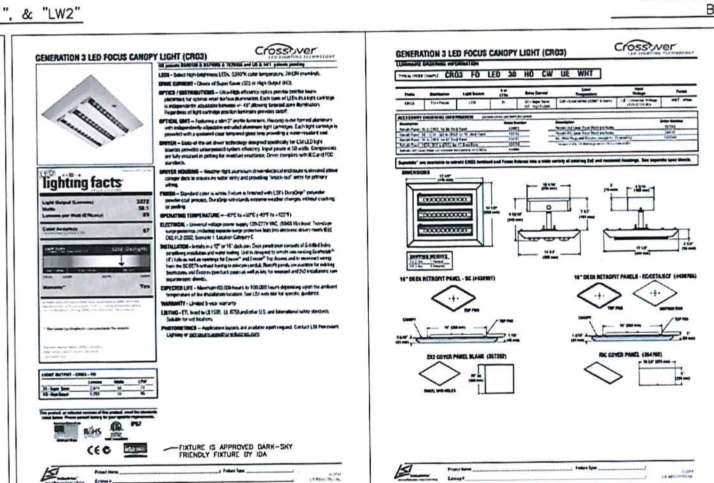
MANUFACTURER SPECIFICATION SHEET FOR
SITE FIXTURES "LD-1", "LD-2", "LD-3", "LD-5", "LW1", & "LW2"



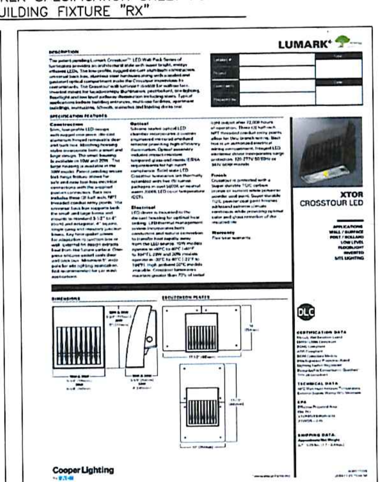
MANUFACTURER SPECIFICATION SHEET FOR
BUILDING FIXTURE "RX"



MANUFACTURER SPECIFICATION SHEET FOR
CANOPY FIXTURE "CANOPY"



MANUFACTURER SPECIFICATION SHEET FOR
CANOPY FIXTURE "FOCUS"



MANUFACTURER SPECIFICATION SHEET FOR
WALL/EGRESS FIXTURE "NN13"

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

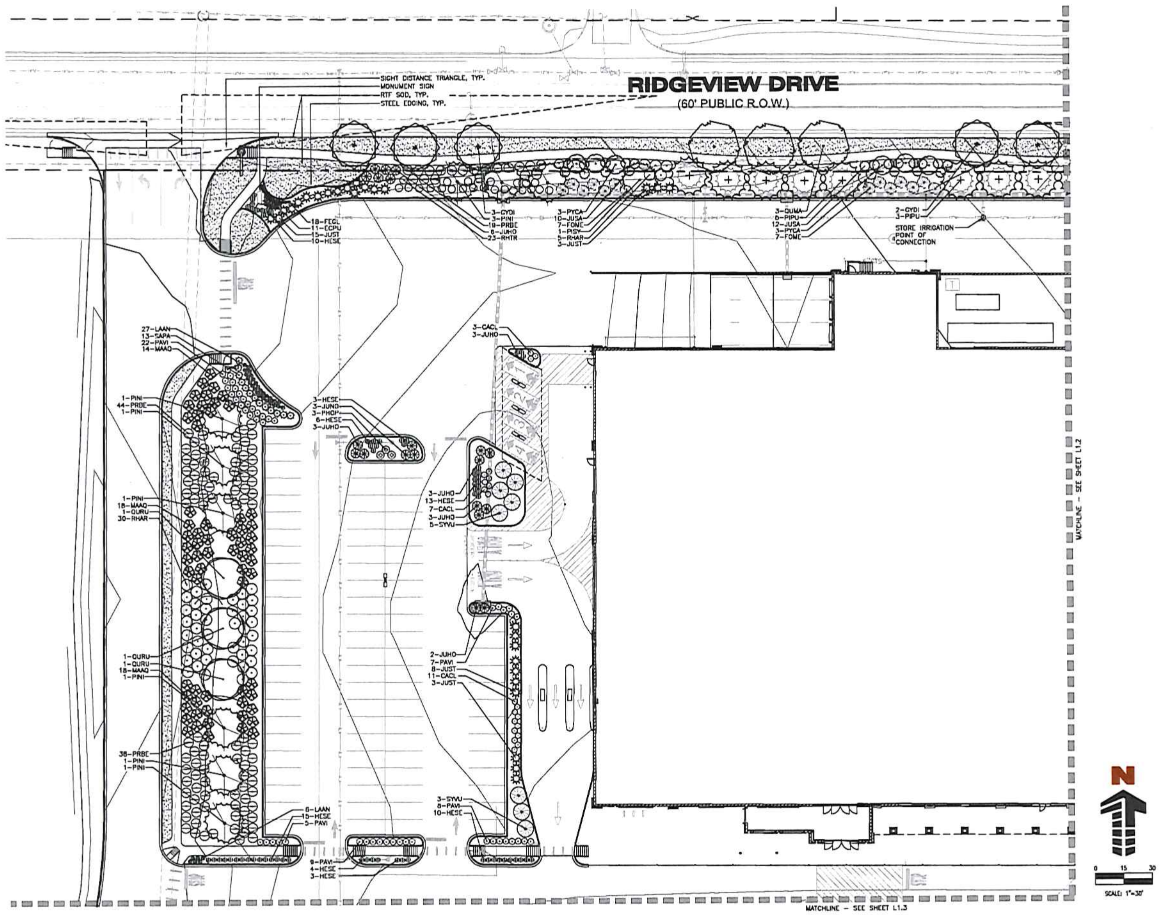
Project No:	KS3000129.01
Sheet Scale:	N/A
Designed By:	JAC
Drawn By:	JAC
Date:	JULY 2015
Disk File:	KS5129_P_10-Lite Dets

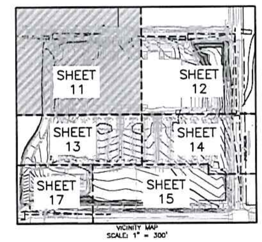
PHOTOMETRIC DETAILS

10

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014





PLANTING LEGEND

SYMBOL	BOTANIC NAME	COMMON NAME
OVERSTORY DECIDUOUS TREES		
GLTR	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER'	SHADEMASTER LOCUST
GYDI	GYMNOCLADUS DIOICA 'ESPRESSO'	ESPRESSO KENTUCKY COFFEETREE
QUMA	QUERCUS MACROCARPA	BUR OAK
QURU	QUERCUS RUBRA	NORTHERN RED OAK
TICO	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN
ORNAMENTAL DECIDUOUS TREES		
AMCA	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY
MASP	MALUS SPECIOSA	SPRING SNOW CRABAPPLE
PYCA	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR
EVERGREEN TREES		
PIPU	PICEA PUNGENS	COLORADO BLUE SPRUCE
PINI	PINUS NIGRA	AUSTRIAN PINE
PISY	PINUS SYLVESTRIS	SCOTCH PINE
DECIDUOUS SHRUBS		
ARCO	ARCTOSTAPHYLOS X COLORADENSIS 'CHIEFTAIN'	CHIEFTAIN MAZANITA
BETH	BERBERIS THUNBERGII 'MONLERS'	GOLDEN NUGGET BARBERRY
CACL	CARYOPTERIS X CLANDONENSIS	BLUE MIST SPIREA
FOME	FORESTIERA NEOMEXICANA	NEW MEXICO PRIVET
PEAT	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE
PHOP	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY'	LITTLE DEVIL NINEBARK
PRBE	PRUNUS BESSEYI 'PAWNEE BUTTES'	PAWNEE BUTTES SAND CHERRY
RHAR	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC
RHTR	RHUS TRILOBATA	THREE LEAF SUMAC
RIAL	RIBES ALPINUM	ALPINE CURRANT
SYVU	SYRINGA VULGARIS	COMMON PURPLE LILAC
EVERGREEN SHRUBS		
JUHO	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER
JUME	JUNIPERUS X MEDIA	SEA GREEN JUNIPER
JUSA	JUNIPERUS SABINA 'BUFFALO'	BUFFALO JUNIPER
MAAQ	MAHONIA AQUIFOLIUM COMPACTA	COMPACT OREGON GRAPE HOLLY
JUST	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAMMY JUNIPER
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NOTE:

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LANDSCAPE PLAN

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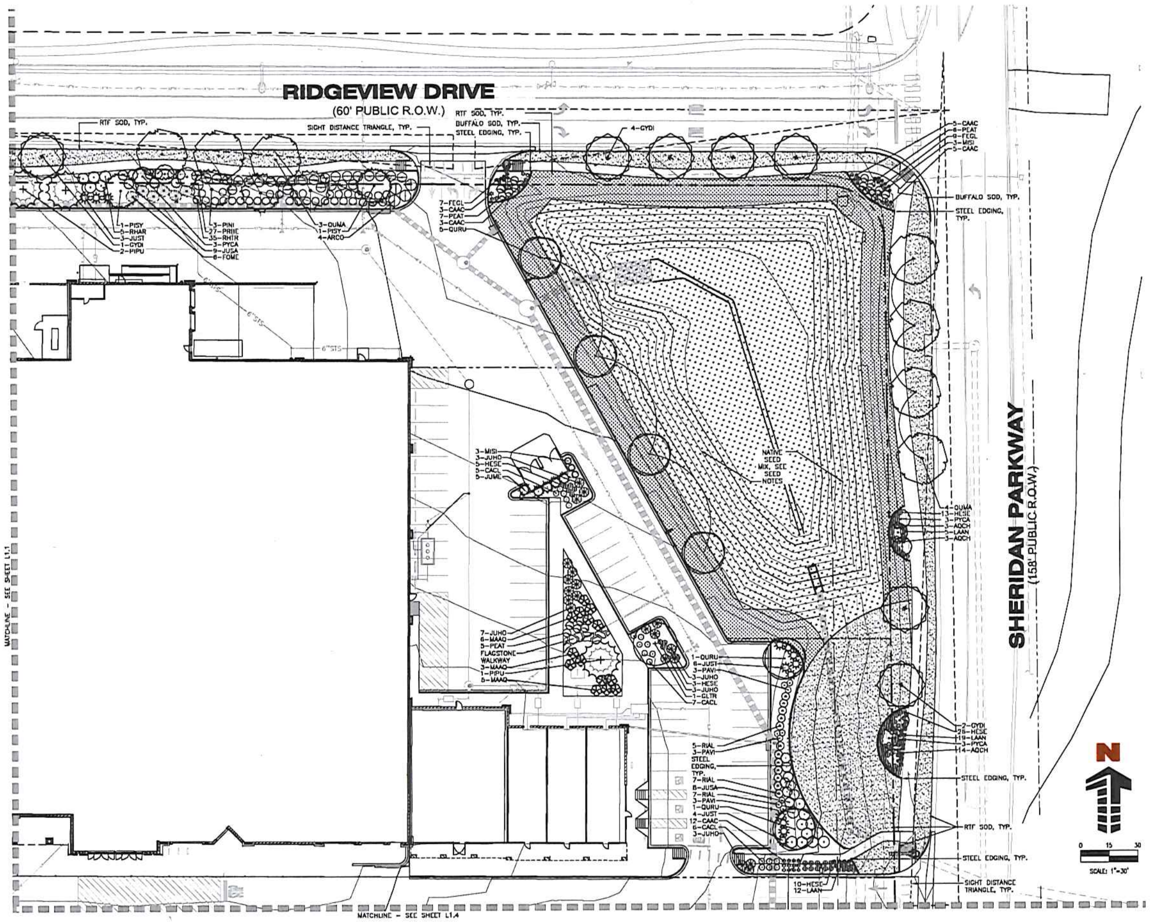

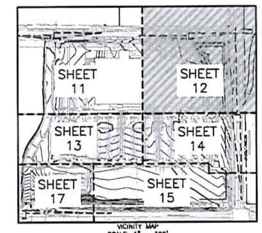

VICINITY MAP
SCALE: 1" = 300'

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NOTE:

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LANDSCAPE PLAN

12

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

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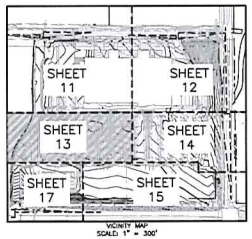
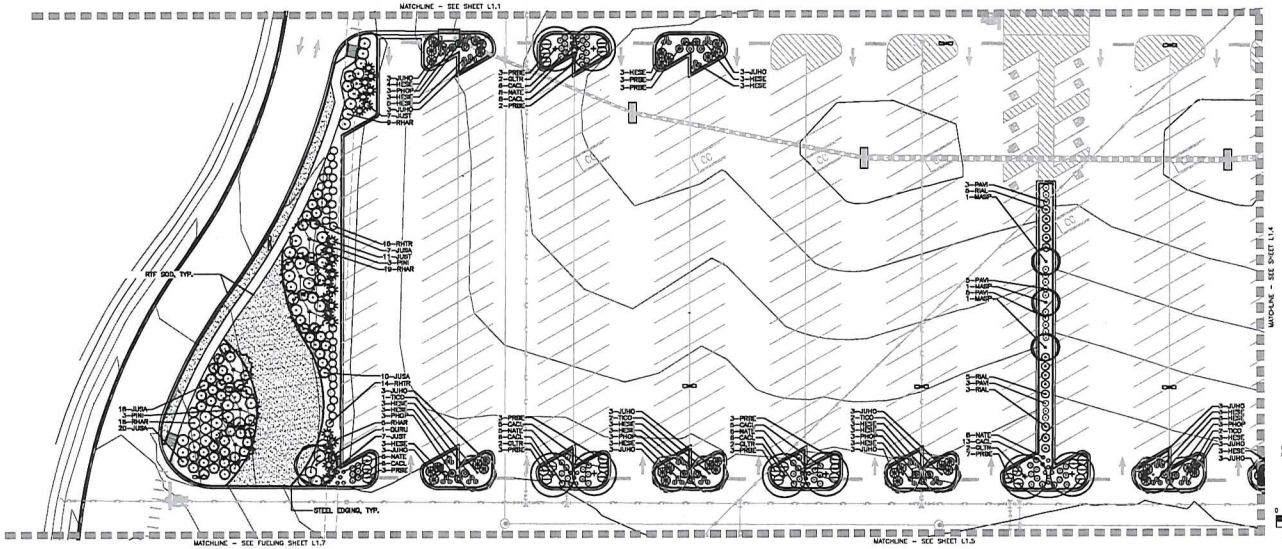


VICINITY MAP
SCALE: 1" = 300'



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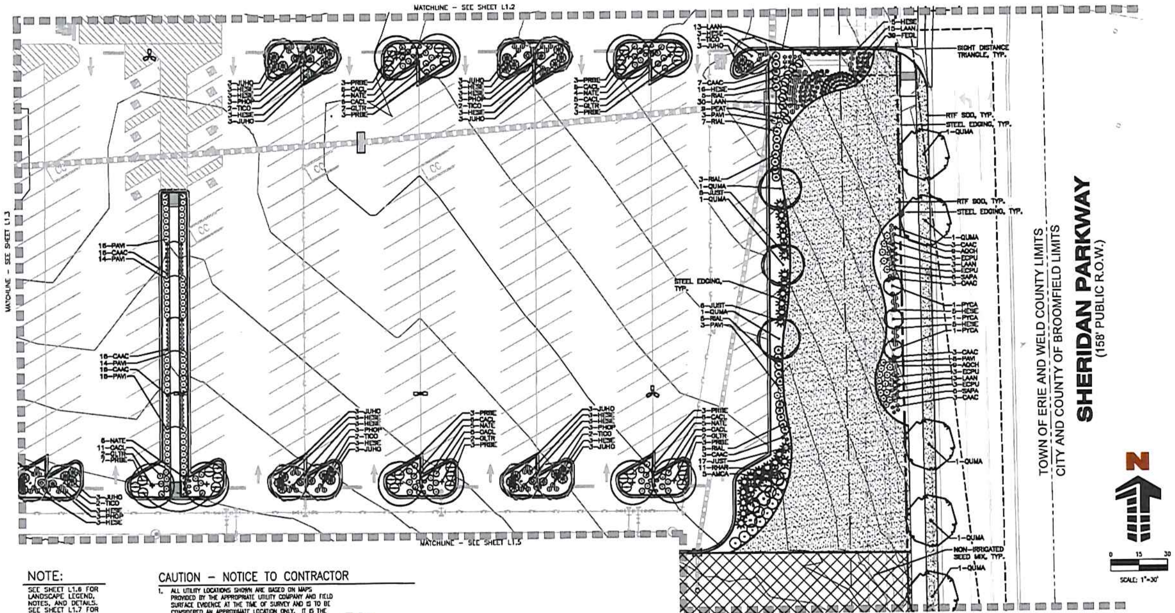

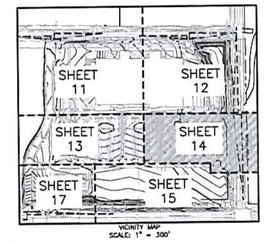

VICINITY MAP
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FOME	FORESTIERA MEOMEXICANA	NEW MEXICO PRIVET
PEAT	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE
PHOP	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY'	LITTLE DEVIL NINEBARK
PRBE	PRUNUS BESSEYI 'PAWNEE BUTTES'	PAWNEE BUTTES SAND CHERRY
RHAR	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC
RHTR	RHUS TRILOBATA	THREE LEAF SUMAC
RIAL	RIBES ALPINUM	ALPINE CURRANT
SYVU	SYRINGA VULGARIS	COMMON PURPLE LILAC
EVERGREEN SHRUBS		
JUHO	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER
JUME	JUNIPERUS X MEDIA	SEA GREEN JUNIPER
JUSA	JUNIPERUS SABINA 'BUFFALO'	BUFFALO JUNIPER
MAAQ	MAHONIA AQUIFOLIUM COMPACTA	COMPACT OREGON GRAPE HOLLY
JUST	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAMMY JUNIPER
ORNAMENTAL GRASSES		
CAAC	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS
FEGL	FESTUCA GLAUCA 'ELIJAH BLUE'	BLUE FESCUE
HESE	HELICTOTRICHON SEMPERVIRENS	BLUE AVENA GRASS
MISI	MISCANTHUS SINENSIS	MAIDEN GRASS
NATE	NASSELA TENUISSIMA	MEXICAN FEATHER GRASS
PAVI	PANICUM VIRGATUM 'SHANADOAH'	RED SWITCH GRASS
PERENNIALS		
AQCH	AQUILEGIA CHRYSANTHA 'PAPRIKA'	PINK YARROW
CETO	CERASTIUM TOMENTOSUM	SNOW-IN-SUMMER
ECPU	ECHINACEA PURPUREA 'ALBA'	WHITE CONEFLOWER
LAAN	LAVANDULA ANGUSTIFOLIA 'MUNSTEAD'	ENGLISH LAVENDER
SAPA	SALVIA PACHYPHYLLA	MOJAVE SAGE
TURF AND SEED		
TURF	RTF TALL FESCUE GRASS, SEE SOD NOTE, SHEET 16	FESCUE SOD
TURF	BUFFALO GRASS, SEE SOD NOTE, SHEET 16	BUFFALO GRASS/SOD
SEED	DRYLAND SEED MIX W/ WILDFLOWERS, SEE SEED NOTES, SHEET 16	GRASS SEED
SEED	NON-IRRIGATED OVERLOT DRYLAND SEED MIX	GRASS SEED
MULCH	2" - 6" DIA. MULTI - COLOR COBBLE ROCK MULCH W/ SHREDDED BARK MULCH RING, SEE MULCH NOTES	ROCK MULCH
STEEL EDGING	STEEL EDGING	

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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KING SOOPERS #129 AT VISTA RIDGE MARKETPLACE SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS0129.01
Sheet Scale:	N/A
Designed By:	JLW
Drawn By:	DTT
Date:	JULY 2015
Disk File:	KSS129_P_11-17-Land

LANDSCAPE PLAN

NOTE:

SEE SHEET L1.6 FOR LANDSCAPE LEGEND, NOTES, AND DETAILS. SEE SHEET L1.7 FOR THE FUELING CENTER LANDSCAPE DESIGN.

CAUTION – NOTICE TO CONTRACTOR

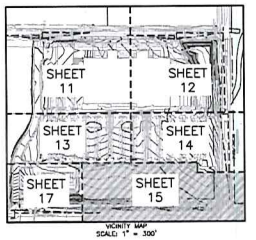
1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

811 Know what's below. Call before you dig.

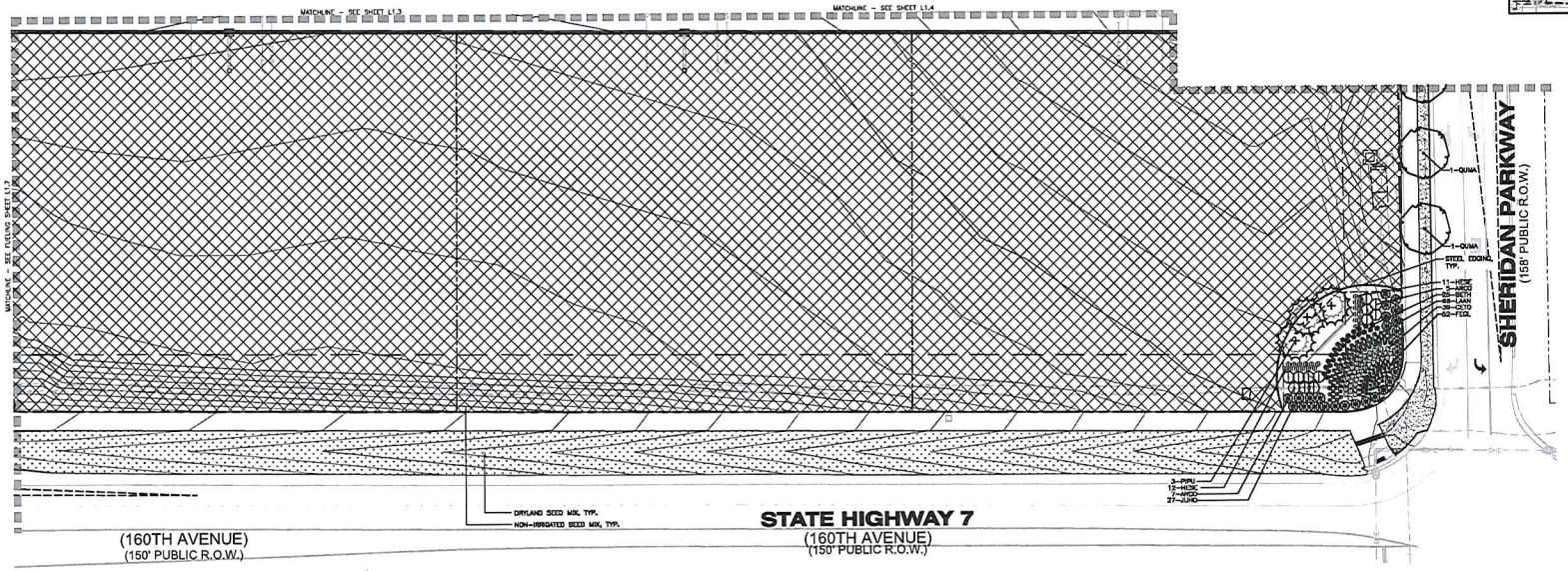
VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014



VICINITY MAP
SCALE: 1" = 300'



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0 15 30
SCALE: 1"=30'

PLANTING LEGEND

SYMBOL	BOTANIC NAME	COMMON NAME
OVERSTORY DECIDUOUS TREES		
GLTR	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER'	SHADEMASTER LOCUST
GYDI	GYMNOCLADUS DIOICA 'ESPRESSO'	ESPRESSO KENTUCKY COFFEETREE
QUMA	QUERCUS MACROCARPA	BUR OAK
QURU	QUERCUS RUBRA	NORTHERN RED OAK
TICO	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN
ORNAMENTAL DECIDUOUS TREES		
AMCA	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY
MASP	MALUS SPECIOSA	SPRING SNOW CRABAPPLE
PYCA	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR
EVERGREEN TREES		
PIPU	PICEA PUNGENS	COLORADO BLUE SPRUCE
PINI	PINUS NIGRA	AUSTRIAN PINE
PISY	PINUS SYLVESTRIS	SCOTCH PINE
DECIDUOUS SHRUBS		
ARCO	ARCTOSTAPHYLOS X COLORADENSIS 'CHEETAH'	CHEETAH MAZANITA
BETH	BERBERIS THUNBERGII 'MONLER'	GOLDEN NUGGET BARBERRY
CACL	CARYOPTERIS X CLANDONENSIS	BLUE MIST SPIREA
FOME	FORESTIERA MEDWEXICANA	NEW MEXICO PRIVET
PEAT	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE
PHOP	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY'	LITTLE DEVIL NINEBARK
PRBE	PRUNUS BESSEYI 'PAWNEE BUTTES'	PAWNEE BUTTES SAND CHERRY
RHAR	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC
RHTR	RHUS TRILOBATA	THREE LEAF SUMAC
RIAL	RIBES ALPINUM	ALPINE CURRANT

SYMBOL	BOTANIC NAME	COMMON NAME
EVERGREEN SHRUBS		
JUHO	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER
JUME	JUNIPERUS X MEDIA	SEA GREEN JUNIPER
JUSA	JUNIPERUS SABINA 'BUFFALO'	BUFFALO JUNIPER
MAAQ	MAHONIA AQUIFOLIUM COMPACTA	COMPACT OREGON GRAPE HOLLY
JUST	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAMAY JUNIPER
ORNAMENTAL GRASSES		
CAAC	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS
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HESE	HELICTOTRICHON SEMPERVIRENS	BLUE AVENA GRASS
MISI	MISCANTHUS SINENSIS	MAIDEN GRASS
NATE	NASSELLA TENUISSIMA	MEXICAN FEATHER GRASS
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PERENNIALS		
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CETO	CERASTIUM TOMENTOSUM	SNOW-IN-SUMMER
ECPU	ECHINACEA PURPUREA 'ALBA'	WHITE CONEFLOWER
LAAN	LAVANDULA ANGUSTIFOLIA 'MUNSTEAD'	ENGLISH LAVENDER
SAPA	SALVIA PACHYPHYLLA	MOJAVE SAGE
TURF AND SEED		
TURF	RTF TALL FESCUE GRASS, SEE SOD NOTE, SHEET 16	FESCUE SOD
TURF	BUFFALO GRASS, SEE SOD NOTE, SHEET 16	BUFFALO GRASS/SOD
SEED	DRYLAND SEED MIX W/ WILDFLOWERS, SEE SEED NOTES, SHEET 15	GRASS SEED
SEED	NON-IRRIGATED OVERLOT DRYLAND SEED MIX	GRASS SEED
MULCH	2" – 6" DIA. MULTI – COLOR COBBLE ROCK MULCH W/ SHREDDED BARK MULCH RING, SEE MULCH NOTES	ROCK MULCH
STEEL EDGING	STEEL EDGING	

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KS00129.01
Sheet Scale:	N/A
Designed By:	AJR
Drawn By:	DTT
Date:	JULY 2015
Dwk File:	KS0129_P_11-17-Land

LANDSCAPE PLAN

PLANTING NOTES

GENERAL

1. ALL LANDSCAPE NOTES SHALL BE COORDINATED WITH ALL APPLICABLE KROGER PROJECT MANUAL SECTIONS UNDER 32 90 00 "PLANTING." THE SPECIFICATIONS SHALL TAKE PRECEDENCE OVER THE GENERAL PLANTING NOTES. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH WORK.
2. ALL WORK SHALL CONFORM TO ALL APPLICABLE STATE AND LOCAL CODES, STANDARDS, AND SPECIFICATIONS.
3. LANDSCAPE DESIGN IS DIAGRAMMATIC IN NATURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN TAKEOFFS AND QUANTITY CALCULATIONS. IN THE EVENT OF A DISCREPANCY BETWEEN THE PLAN AND THE LANDSCAPE LEGEND, THE PLANT QUANTITY AS SHOWN ON THE PLAN SHALL TAKE PRECEDENCE AND NOTIFY THE LANDSCAPE ARCHITECT OF THESE DISCREPANCIES. MINOR ADJUSTMENTS TO THE LANDSCAPE MATERIAL AND LOCATIONS MAY BE PROPOSED FOR CITY CONSIDERATION AT THE CONSTRUCTION DOCUMENT STAGE TO RESPOND TO MARKET AND FIELD CONDITIONS. HOWEVER, THERE SHALL BE NO REDUCTION IN THE NUMBER AND SIZE OF MATERIALS.
4. THE CONTRACTOR SHALL MAKE HIMSELF AWARE OF THE LOCATIONS OF EXISTING AND PROPOSED UTILITIES, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE UTILITIES AND/OR ANY INJURY TO ANY PERSON.
5. ALL UTILITY EASEMENTS SHALL REMAIN UNOBSTRUCTED AND FULLY ACCESSIBLE ALONG THEIR ENTIRE LENGTH FOR MAINTENANCE EQUIPMENT.
6. THE CONTRACTOR SHALL TAKE EXTREME CARE NOT TO DAMAGE ANY EXISTING PLANTS INDICATED AS "TO REMAIN". ANY SUCH PLANTS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED WITH THE SAME SPECIES, SIZE, AND QUANTITY AT THE CONTRACTOR'S OWN EXPENSE, AND AS ACCEPTABLE TO THE OWNER. REFER TO THE TREE PROTECTION NOTES ON THE PLANS (AS APPLICABLE).
7. LANDSCAPE CONTRACTOR SHALL EXAMINE THE SITE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND NOTIFY THE GENERAL CONTRACTOR IN WRITING OF UNSATISFACTORY CONDITIONS. IF SITE CONDITIONS OR PLANT AVAILABILITY REQUIRE CHANGES TO THE PLAN, THEN AN APPROVAL WILL BE OBTAINED FROM THE CITY. DO NOT PROCEED UNTIL CONDITIONS HAVE BEEN CORRECTED.
8. ALL CONSTRUCTION DEBRIS AND MATERIAL SHALL BE REMOVED AND CLEANED OUT PRIOR TO INSTALLATION OF TOPSOIL, TREES, SHRUBS, AND TURF.
9. FOR ALL INFORMATION ON SURFACE MATERIAL OF WALKS, DRIVES, AND PARKING LOTS, SEE THE SITE PLAN. SEE PHOTOMETRIC PLAN FOR FREE STANDING LIGHTING INFORMATION.
10. THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT ONE WEEK PRIOR TO BEGINNING CONSTRUCTION.
11. WINTER WATERING SHALL BE AT THE EXPENSE OF THE CONTRACTOR UNTIL SUCH TIME AS FINAL ACCEPTANCE IS RECEIVED.
12. ALL LANDSCAPE CONSTRUCTION PRACTICES, WORKMANSHIP, AND ETHICS SHALL, BE IN ACCORDANCE WITH INDUSTRY STANDARDS SET FORTH IN THE CONTRACTORS HANDBOOK PUBLISHED BY THE COLORADO LANDSCAPE CONTRACTORS ASSOCIATION.
13. LANDSCAPE AND IRRIGATION WORK SHALL BE COMPLETED PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY.

FINISH GRADING AND SOIL PREPARATION

14. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN FINISH GRADES AS RECOMMENDED BY THE GEOTECHNICAL REPORT. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE AWAY FROM STRUCTURES AT THE MINIMUM SLOPE SPECIFIED IN THE REPORT, AND AREAS OF POTENTIAL PONDING SHALL BE REGRADED TO BLEND IN WITH THE SURROUNDING GRADES AND ELIMINATE PONDING POTENTIAL. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GEOTECHNICAL REPORT, THE GRADING PLANS, THESE NOTES, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT AND OWNER.
15. AFTER FINISH GRADES HAVE BEEN ESTABLISHED, IT IS RECOMMENDED THAT THE CONTRACTOR SHALL HAVE SOIL SAMPLES TESTED BY AN ESTABLISHED SOIL TESTING LABORATORY FOR THE FOLLOWING: GENERAL SOIL FERTILITY, PH, ORGANIC MATTER CONTENT, SALT (CEC), LIME, SODIUM ADSORPTION RATIO (SAR) AND BORON CONTENT. EACH SAMPLE SUBMITTED SHALL CONTAIN NO LESS THAN ONE QUART OF SOIL. CONTRACTOR SHALL ALSO SUBMIT THE PROJECT'S PLANT LIST TO THE LABORATORY ALONG WITH THE SOIL SAMPLES. THE SOIL REPORT PRODUCED BY THE LABORATORY SHALL CONTAIN RECOMMENDATIONS FOR THE FOLLOWING (AS APPROPRIATE): GENERAL SOIL PREPARATION AND BACKFILL MIXES, PRE-PLANT FERTILIZER APPLICATIONS, AND ANY OTHER SOIL RELATED ISSUES. THE REPORT SHALL ALSO PROVIDE A FERTILIZER PROGRAM FOR THE ESTABLISHMENT PERIOD AND FOR LONG-TERM MAINTENANCE.
16. THE CONTRACTOR SHALL REQUIRE INSTALLATION OF SOIL AMENDMENTS AND FERTILIZERS PER THE SOILS REPORT FOR THE THE OWNER/OWNER'S REPRESENTATIVE CONSIDERATION.
17. PER TOWN OF ERIE STANDARDS AND SPECIFICATIONS, SECTION 1000, 1034.04, USE SHORTGRASS PRAIRIE NATIVE SEED MIX AT ACCEPTABLE RATE. ALSO USE TOWN OF ERIE APPROVED MOIST SWALE SEED MIX AT ACCEPTABLE RATE IN THE BASIN OF THE DETENTION POND AND TRICKLE AREA. NO MANURE OR ANIMAL-BASED PRODUCTS SHALL BE USED FOR ORGANIC AMENDMENTS.

PLANTING

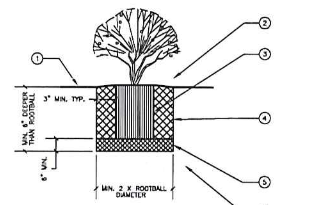
18. ALL DECIDUOUS TREES SHALL HAVE FULL, WELL-SHAPED HEADS/ALL EVERGREENS SHALL BE UNSHEARED AND FULL TO THE GROUND; UNLESS OTHERWISE SPECIFIED. TREES WITH CENTRAL LEADERS WILL NOT BE ACCEPTED IF LEADER IS DAMAGED OR REMOVED. PRUNE ALL DAMAGED TWIGS AFTER PLANTING.
19. ALL PLANTS WITHIN A SPECIES SHALL HAVE SIMILAR SIZE, AND SHALL BE OF A FORM TYPICAL FOR THE SPECIES. ANY PLANT DEEMED UNACCEPTABLE BY THE LANDSCAPE ARCHITECT SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND SHALL BE REPLACED WITH AN ACCEPTABLE PLANT OF LIKE TYPE AND SIZE AT THE CONTRACTOR'S OWN EXPENSE. ANY PLANTS APPEARING TO BE UNHEALTHY, EVEN IF DETERMINED TO STILL BE ALIVE, SHALL NOT BE ACCEPTED. THE LANDSCAPE ARCHITECT SHALL BE THE SOLE JUDGE AS TO THE ACCEPTABILITY OF PLANT MATERIAL.
20. ALL TREES SHALL BE GUYED AND WOOD STAKED AS PER DETAILS. NO 'T-STAKES' SHALL BE USED FOR TREES.
21. ALL PLANT MATERIALS SHALL BE TRUE TO TYPE, SIZE, SPECIES, QUALITY, AND FREE OF INJURY, BROKEN ROOT BALLS, PESTS, AND DISEASES, AS WELL AS CONFORM TO THE MINIMUM REQUIREMENTS DESCRIBED IN THE "AMERICAN STANDARD FOR NURSERY STOCK". FOLLOW GREENCO TREE PLANTING RECOMMENDATIONS FOR MINIMUM QUALITY REQUIREMENTS FOR TREES.
22. ALL TREE AND SHRUB BED LOCATIONS ARE TO BE STAKED OUT ON SITE FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
23. ALL TREES PLANTED ADJACENT TO PUBLIC AND/OR PEDESTRIAN WALKWAYS SHALL BE PRUNED CLEAR OF ALL BRANCHES BETWEEN GROUND AND A HEIGHT OF EIGHT (8) FEET FOR THAT PORTION OF THE PLAN LOCATED OVER THE SIDEWALK AND/OR ROAD.
24. ALL TURF IS RECOMMENDED THROUGH GREEN VALLEY TURF COMPANY, 13159 N. US HIGHWAY 85, LITTLETON, CO 80125, (303) 798-6764. BUFFALO SOD HAS BEEN APPROVED IN MANY JURISDICTIONS TO BE A LOW-MODERATE HYDROZONE PLANT MATERIAL. RTF TALL FESCUE HAS BEEN APPROVED IN MANY JURISDICTIONS AS A LOW HYDROZONE PLANT MATERIAL. INSTALL AND MAINTAIN IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
25. ALL PLANT MATERIAL SHALL NOT BE PLANTED PRIOR TO INSTALLATION OF TOPSOIL.
26. ALL PLANT BEDS SHALL BE CONTAINED WITH STEEL EDGER. STEEL EDGER IS NOT REQUIRED ALONG CURBS, WALKS OR BUILDING FOUNDATIONS. ALL EDGING SHALL OVERLAP AT JOINTS A MINIMUM OF 6-INCHES, AND SHALL BE FASTENED WITH A MINIMUM OF 4 PINS PER EACH 10 FOOT SECTION. THE TOP OF ALL EDGING MATERIAL SHALL BE A ROLLED TOP AND 1/2 INCH ABOVE THE FINISHED GRADE OF ADJACENT LAWN OR MULCH AREAS. COLOR: GREEN.
27. THE DEVELOPER, HIS SUCCESSOR, OR ASSIGNEE SHALL BE RESPONSIBLE FOR ESTABLISHING AND CONTINUING A REGULAR PROGRAM OF MAINTENANCE FOR ALL LANDSCAPED AREAS. SEE LANDSCAPE GUARANTEE AND MAINTENANCE NOTE.
28. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF ALL FIRE HYDRANTS.
29. LANDSCAPE CONTRACTOR TO SUBMIT SAMPLES OF MISCELLANEOUS LANDSCAPING MATERIALS TO THE LANDSCAPE ARCHITECTS AND OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION, IE.; MULCH, EDGER, LANDSCAPE FABRIC, ETC.

MULCHING

30. ALL MULCH IS RECOMMENDED THROUGH SANTA FE SAND AND GRAVEL, 6601 S SANTA FE DRIVE, LITTLETON, CO 80120, (303) 794-5960
31. AFTER ALL PLANTING IS COMPLETE, THE CONTRACTOR SHALL INSTALL A MINIMUM 4" THICK LAYER OF MULCH AS SPECIFIED IN THE PLANTING LEGEND. INSTALL A 4" THICK RING OF DOUBLE SHREDDED CEDAR BARK MULCH AROUND ALL PLANT MATERIAL IN ROCK MULCH BEDS WHERE LANDSCAPING IS SHOWN ON THE PLANS. WOOD MULCH RING SIZE SHALL BE 1.5X THE CONTAINER SIZE OF THE SHRUBS, PERENNIALS, AND ORNAMENTAL GRASSES. TREE RING SIZE SHALL BE GREEN INDUSTRIES OF COLORADO INDUSTRY STANDARD WIDTH.
32. ALL MULCH SHALL BE HARVESTED IN A SUSTAINABLE MANNER FROM A LOCAL SOURCE.
33. INSTALL DEWITT PRO-5 WEED BARRIER FABRIC UNDER ALL ROCK MULCH SHRUB BEDS SPECIFIED ON THE PLANS ONLY. NO LANDSCAPE FABRIC SHALL BE USED IN WOOD MULCH AREAS. NO PLASTIC WEED BARRIERS SHALL BE SPECIFIED.
34. ABSOLUTELY NO EXPOSED GROUND SHALL BE LEFT SHOWING ANYWHERE ON THE PROJECT AFTER MULCH HAS BEEN INSTALLED.
35. ALL PLANTING AREAS WITH LESS THAN A 4:1 GRADIENT SHALL RECEIVE A LAYER OF MULCH, TYPE AND DEPTH PER PLANS. SUBMIT 1 CUBIC FOOT SAMPLE OF MULCH (ONE SAMPLE PER TYPE) TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. THE MULCH SHALL BE SPREAD EVENLY THROUGHOUT ALL PLANTING AREAS EXCEPT SLOPES 4:1 OR STEEPER, OR AS OTHERWISE DENOTED ON THE PLAN. ABSOLUTELY NO EXPOSED GROUND SHALL REMAIN IN AREAS TO RECEIVE MULCH AFTER MULCH HAS BEEN INSTALLED.
36. ALL PLANTING AREAS ON SLOPES OVER 4:1 SHALL RECEIVE COCONUT FIBER EROSION CONTROL NETTING FROM ROLLS. NETTING SHALL BE #CT-125, AS MANUFACTURED BY NORTH AMERICAN GREEN (OR EQUAL). INSTALL AND STAKE PER MANUFACTURER'S SPECIFICATIONS. SEE ALSO THE CIVIL ENGINEER'S EROSION CONTROL PLAN.

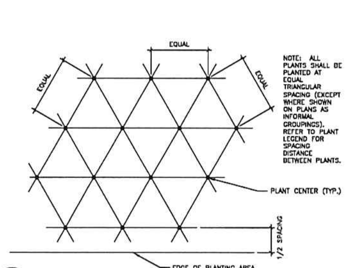
OVERALL TABLE OF LANDSCAPE REQUIREMENTS (STORE AND FUELING COMBINED)

REFERENCE REQUIREMENT	REQUIREMENT	QUANTITY	LANDSCAPE AREA REQUIRED	LANDSCAPE AREA PROVIDED	TREES REQUIRED	TREES PROVIDED	SHRUBS REQUIRED	SHRUBS PROVIDED
10-6-4E 1A	1 TREE PER 40 LF OF STREET FRONTAGE	HWY 7: 325 LF SHERIDAN: 831 LF RIDGEVIEW: 894 LF			HWY 7: 8 TREES SHERIDAN: 21 TREES RIDGEVIEW: 22 TREES	HWY 7: 8 TREES SHERIDAN: 22 TREES RIDGEVIEW: 22 TREES		
10-6-4E 7B	15% GROSS SITE AREA LANDSCAPED / NATIVE	734,857 SF	110,229 SF	148,509 SF				
10-6-4E 7C1	1 TREE PER 1,000 SF OF LANDSCAPE AREA	121,536 SF			122	140		
10-6-4E 7C2	1 SHRUB PER 150 SF OF LANDSCAPE AREA	121,536 SF					810	1152
10-6-4E 8E1	1 TREE PER 15 PARKING SPACES	648 SPACES			43	43		
10-6-4E 8E2	1 SHRUB PER PARKING SPACE	648 SPACES					648	648

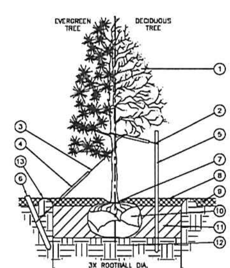


1. FINISH GRADE IN PLANTING AREA.
2. MULCH, TYPE AND DEPTH PER PLANS. PLACE NO MORE THAN 1" OF MULCH WITHIN 6" OF PLANT CENTER.
3. PLANT ROOT BALL. SET TOP ROOTBALL 2" ABOVE ADJACENT GRADE. IN BERMED AREAS SET ROOTBALL 3" ABOVE LOWER ADJACENT GRADE - INSTALL WATER RING (2 - 3" HT.)
4. BACKFILL MIX (PER PLANTING SPECIFICATIONS). AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS. JET BACKFILL WITH WATER TO ELIMINATE VOIDS.
5. COMPACTED BACKFILL MIX (75%).
6. UNDISTURBED NATIVE SOIL.

1 SHRUB AND PERENNIAL DETAIL
SCALE: NOT TO SCALE

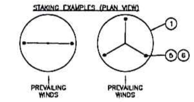


2 PLANT SPACING
SCALE: NTS



1. TREE CANOPY.
2. NYLON TREE STRAPS AT ENDS OF WIRES - SECURE TO STAKE OR DEADMEN WITH NAILS.
3. 12 GAUGE GALVANIZED WIRE. SECURE TO TRUNK JUST ABOVE LOWEST MAJOR BRANCHES.
4. 24" X 3/4" P.V.C. MARKERS OVER WIRES.
5. PRESSURE-TREATED WOOD STAKE, 2" DIA. EXTEND STAKES 12" MIN. INTO UNDISTURBED SOIL.
6. PRESSURE-TREATED WOOD DEADMEN, TWO PER TREE (MIN.). BURY OUTSIDE OF PLANTING PIT AND 18" MIN. INTO UNDISTURBED SOIL.
7. TRUNK FLARE.
8. WOOD MULCH TREE RING 3" DIA MIN. TYPE AND DEPTH PER PLANS. DO NOT PLACE MULCH WITHIN 3" OF TRUNK.
9. FINISH GRADE.
10. ROOT BALL-SEE NOTE 3, THIS DETAIL.
11. BACKFILL. AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS.
12. UNDISTURBED NATIVE SOIL.
13. 4" HIGH EARTHEN WATERING BASIN.

STAKING EXAMPLES (PLAN VIEW)



3 TREE PLANTING DETAIL
SCALE: NOT TO SCALE

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014

IRRIGATION CONCEPT

1. AN AUTOMATIC IRRIGATION SYSTEM SHALL BE INSTALLED AND OPERATIONAL BY THE TIME OF FINAL INSPECTION. THE ENTIRE IRRIGATION SYSTEM SHALL BE INSTALLED BY A QUALIFIED IRRIGATION CONTRACTOR.
2. THE IRRIGATION SYSTEM SHALL TAP OFF BUILDING'S POTABLE WATER SERVICE AFTER THE WATER METER, BEFORE BUILDING'S DOUBLE CHECK VALVE.
3. THE IRRIGATION SYSTEM WILL OPERATE ON POTABLE WATER, AND THE SYSTEM WILL HAVE APPROPRIATE BACKFLOW PREVENTION DEVICES INSTALLED TO PREVENT CONTAMINATION OF THE POTABLE SOURCE.
4. ALL NON-TURF/SEED PLANTED AREAS WILL BE DRIP IRRIGATED. TURF SOD/SEED SHALL RECEIVE POP-UP SPRAY IRRIGATION FOR HEAD TO HEAD COVERAGE.
5. ALL PLANTS SHARING SIMILAR HYDROZONE CHARACTERISTICS SHALL BE PLACED ON A VALVE DEDICATED TO PROVIDE THE NECESSARY WATER REQUIREMENTS SPECIFIC TO THAT HYDROZONE.
6. THE IRRIGATION SYSTEM SHALL BE DESIGNED AND INSTALLED, TO THE MAXIMUM EXTENT POSSIBLE, TO CONSERVE WATER BY USING THE FOLLOWING DEVICES AND SYSTEMS: MATCHED PRECIPITATION RATE TECHNOLOGY ON ROTOR AND SPRAY HEADS (WHEREVER POSSIBLE), RAIN SENSORS, AND SMART MULTI-PROGRAM COMPUTERIZED IRRIGATION CONTROLLERS FEATURING SENSORY INPUT CAPABILITIES.

TOWN OF ERIE NOTES

1. IF TRANSFORMERS, GROUND MOUNTED HVAC EQUIPMENT, UTILITY PEDESTALS, ETC. ARE NOT SHOWN ON THE SITE IMPROVEMENT PLAN, ADDITIONAL LANDSCAPING/SCREENING MAY BE REQUIRED BASED UPON FIELD CONDITIONS DISCOVERED VIA THE SITE INSPECTION BY STAFF, MADE PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY, OR FINAL INSPECTION AS APPLICABLE.
2. NOTE: IN THE EVENT OF A DISCREPANCY BETWEEN THE PAN GRAPHIC AND THE LANDSCAPE LEGEND, THE PLANT MATERIAL QUANTITY AS DETERMINED BY THE PLAN GRAPHIC SHALL TAKE PRECEDENCE.

LANDSCAPE MAINTENANCE NOTES

LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN A NEAT, CLEAN AND HEALTHY CONDITION BY THE OWNER. THIS SHALL INCLUDE PROPER PRUNING, MOWING AND AERATION OF LAWNS, REPLACEMENT OF MULCH, WEEDING, REMOVAL OF LITTER AND THE REGULAR WATERING OF ALL PLANTINGS. IRRIGATION SHALL BE MAINTAINED TO MAXIMIZE WATER CONSUMPTION. SHOULD ANY PLANT MATERIAL DIE, THE OWNER, SUCCESSOR, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT(S) WITHIN ONE PLANTING SEASON. REPLACEMENT OF PLANT MATERIALS SHALL OCCUR AT THE FOLLOWING RATE.

TYPE	PLANT REPLACEMENT WITHIN	
	1 YEAR	2 YEAR
TREE-DECIDUOUS	INCREASE CALIPER BY 1"	INCREASE CALIPER BY 1.5"
TREE-CONIFEROUS	INCREASE HEIGHT BY 1.5'	INCREASE HEIGHT BY 2'
SHRUB	REPLACE PLANTS OF AT LEAST ½ MATURE SIZE	REPLACE WITH PLANTS OF AT LEAST ½ MATURE SIZE

LANDSCAPE GUARANTEE AND MAINTENANCE

1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL TREES, SHRUBS, PERENNIALS, SOD, SEEDED AREAS, AND IRRIGATION SYSTEMS FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE OWNER'S ACCEPTANCE. THE CONTRACTOR SHALL REPLACE, AT HIS OWN EXPENSE, ANY PLANTS WHICH DIE IN THAT TIME, OR REPAIR ANY PORTIONS OF THE IRRIGATION SYSTEM WHICH OPERATE IMPROPERLY.
2. THE LANDSCAPE CONTRACTOR SHALL MAINTAIN THE LANDSCAPE IN A NEAT, CLEAN, AND HEALTHY CONDITION FOR A PERIOD OF 90 DAYS. THIS SHALL INCLUDE PROPER PRUNING, MOWING AND AERATION OF LAWNS, WEEDING, REPLACEMENT OF MULCH, REMOVAL OF LITTER, AND THE APPROPRIATE WATERING OF ALL PLANTINGS. IRRIGATION SHALL BE MAINTAINED IN PROPER WORKING ORDER, WITH SCHEDULING ADJUSTMENTS BY SEASON AND TO MAXIMIZE WATER CONSERVATION. IF SITE OPENS DURING WINTER, TO AVOID FREEZE DAMAGE ON PLANTINGS, THE 90 DAYS SHOULD BEGIN AFTER ACCEPTANCE OF THE WORK.
3. DURING THE LANDSCAPE MAINTENANCE PERIOD, THE LANDSCAPE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM STRUCTURES IN ALL LANDSCAPE AREAS AT THE MINIMUM SLOPE SPECIFIED IN THE GEOTECHNICAL REPORT. LANDSCAPE AREAS WHICH SETTLE AND CREATE THE POTENTIAL FOR PONDING SHALL BE REPAIRED TO ELIMINATE PONDING POTENTIAL AND BLEND IN WITH THE SURROUNDING GRADES. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GEOTECHNICAL REPORT, THE GRADING PLANS, THESE NOTES, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT AND OWNER.

PLANTING LEGEND

SYMBOL	LEGEND ABBREV.	BOTANIC NAME	COMMON NAME	QUANTITY	PLANTING SIZE	MATURE SIZE (HXW)	WATER USE (VL, L, M, H)
OVERSTORY DECIDUOUS TREES							
	GLTR	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER'	SHADEMASTER LOCUST	19	2.0" CAL. B&B	50'X35'	VERY LOW
	GYDI	GYMNOCLADUS DIOICA 'ESPRESSO'	ESPRESSO KENTUCKY COFFEETREE	12	2.0" CAL. B&B	50'X35'	LOW
	QUMA	QUERCUS MACROCARPA	BUR OAK	17	2.0" CAL. B&B	70'X50'	LOW
	QURU	QUERCUS RUBRA	NORTHERN RED OAK	13	2.0" CAL. B&B	45'X35'	LOW
	TICO	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	18	2.0" CAL. B&B	40'X30'	MODERATE
ORNAMENTAL DECIDUOUS TREES							
	AMCA	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	5	5' HT./1.5" CAL. MULTI STEM B&B	15'X10'	LOW
	MASP	MALUS SPECIOSA	SPRING SNOW CRABAPPLE	3	5' HT./1.5" CAL. B&B	15'X15'	LOW
	PYCA	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	16	5' HT./1.5" CAL. B&B	40'X15'	LOW
EVERGREEN TREES							
	PIPU	PICEA PUNGENS	COLORADO BLUE SPRUCE	14	8' HT. B&B	60'X30'	MODERATE
	PINI	PINUS NIGRA	AUSTRIAN PINE	18	8' HT. B&B	50'X30'	LOW
	PISY	PINUS SYLVESTRIS	SCOTCH PINE	3	8' HT. B&B	40'X25'	LOW
DECIDUOUS SHRUBS							
	ARCO	ARCTOSTAPHYLOS X COLORADENSIS 'CHIEFTAIN'	CHIEFTAIN MAZANITA	16	5 GALLON 18"	2'X6'	VERY LOW
	BETH	BERBERIS THUNBERGII 'MONLERS'	GOLDEN NUGGET BARBERRY	25	5 GALLON 12"-15"	1'X1.5'	LOW
	CACL	CARYOPTERIS X CLANDONENSIS	BLUE MIST SPIREA	148	5 GALLON 18"-24"	3'X3'	LOW
	FOME	FORESTIERA MEOMEXICANA	NEW MEXICO PRIVET	20	5 GALLON 18"-24"	8'X6'	VERY LOW
	PEAT	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE	27	5 GALLON 18"-24"	4'X4'	LOW
	PHOP	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY'	LITTLE DEVIL NINEBARK	37	5 GALLON 12"-15"	4'X4'	LOW
	PRBE	PRUNUS BESSEYI 'PAWNEE BUTTES'	PAWNEE BUTTES SAND CHERRY	200	5 GALLON 18"	1.5'X5'	LOW
	RHAR	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC	129	5 GALLON 12"-15"	2'X6'	VERY LOW
	RHTR	RHUS TRILOBATA	THREE LEAF SUMAC	87	5 GALLON 18"-24"	4'X4'	VERY LOW
	RIAL	RIBES ALPINUM	ALPINE CURRANT	47	5 GALLON 18"-24"	4'X4'	LOW
	SYVU	SYRINGA VULGARIS	COMMON PURPLE LILAC	8	5 GALLON 18"-24"	8'X8'	LOW
EVERGREEN SHRUBS							
	JUHO	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	136	5 GALLON 8"-12"	1'X5'	LOW
	JUME	JUNIPERUS X MEDIA	SEA GREEN JUNIPER	5	5 GALLON 18"-24"	8'X5'	LOW
	JUSA	JUNIPERUS SABINA 'BUFFALO'	BUFFALO JUNIPER	94	5 GALLON 8"-12"	1'X5'	LOW
	MAAQ	MAHONIA AQUIFOLIUM COMPACTA	COMPACT OREGON GRAPE HOLLY	78	5 GALLON 12"-15"	3'X5'	LOW
	JUST	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAMMY JUNIPER	95	5 GALLON 12"-15"	3'X3'	LOW
ORNAMENTAL GRASSES							
	CAAC	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	98	1 GALLON	4.5'X2'	LOW
	FEGL	FESTUCA GLAUCA 'ELIJAH BLUE'	BLUE FESCUE	125	1 GALLON	1'X1'	LOW
	HESE	HELICTOTRICHON SEMPERVIRENS	BLUE AVENA GRASS	283	1 GALLON	2.5'X2.5'	LOW
	MISI	MISCANTHUS SINENSIS	MAIDEN GRASS	6	1 GALLON	5'X3'	LOW
	NATE	NASSELA TENUISSIMA	MEXICAN FEATHER GRASS	55	1 GALLON	4.5'X2'	LOW
	PAVI	PANICUM VIRGATUM 'SHANADOAH'	RED SWITCH GRASS	150	1 GALLON	3.5'X2.5'	LOW
PERENNIALS							
	AQCH	AQUILEGIA CHRYSANTHA 'PAPRIKA'	PINK YARROW	38	1 GALLON	2'X2'	VERY LOW
	CETO	CERASTIUM TOMENTOSUM	SNOW-IN-SUMMER	39	1 GALLON	1'X2.5'	LOW
	ECPU	ECHINACEA PURPUREA 'ALBA'	WHITE CONEFLOWER	23	1 GALLON	2.5'X1.5'	LOW
	LAAN	LAVANDULA ANGUSTIFOLIA 'MUNSTEAD'	ENGLISH LAVENDER	201	1 GALLON	1'X2'	VERY LOW
	SAPA	SALVIA PACHYPHYLLA	MOJAVE SAGE	23	1 GALLON	3'X3'	VERY LOW
TURF AND SEED							
	TURF	RTF TALL FESCUE GRASS, SEE SOD NOTE, THIS SHEET	FESCUE SOD	41,162 SF	SOD	- - -	MODERATE / LOW
	TURF	BUFFALO GRASS, SEE SOD NOTE, THIS SHEET	BUFFALO GRASS SOD	10,502 SF	SOD	- - -	LOW
	SEED	DRYLAND SEED MIX, SEE SEED NOTES, THIS SHEET	GRASS SEED	43,411 SF	SEED	- - -	LOW
	SEED	NON-IRRIGATED OVERLOT DRYLAND SEED MIX	GRASS SEED	143,623 SF	SEED	- - -	LOW
	MULCH	2"-8" DIA. MULTI-COLOR COBBLE ROCK MULCH WITH DOUBLE SHREDDED BARK MULCH RING, SEE MULCH NOTE	ROCK MULCH	60,111 SF	MULCH	- - -	XERIC
	STEEL EDGING	STEEL EDGING	PLANT BED EDGING	1,150 LF	STEEL EDGING	- - -	- - -

SEED NOTES

1) SEED MIXES CAN BE AVAILABLE THROUGH:
WESTERN NATIVE SEED COMPANY
P.O. BOX 188
COALDALE, CO 81222
(719) 942-3035

2) ALL SEED APPLICATIONS SHALL BE DRILL SEEDED, WITH HYDROSLURRY APPLIED OVER THE SEED BED AFTER SEEDING. THE SLURRY MIX SHALL CONTAIN THE FOLLOWING:

	LBS./1,000 SF
WOOD FIBER MULCH	46
15-15-15 ORGANIC FERTILIZER	9
ORGANIC BINDER	4

'SHORTGRASS PRAIRIE NATIVE SEED MIX'
SEEDING RATE: 30 LBS/ACRE

PLS/AC	SCIENTIFIC NAME	COMMON NAME
10	BUCHLOE DACTYLIODES	BUFFALO GRASS
8	CHONDROSUM GRACILE	BLUE GAMA
4	SPOROBOLUS CRYPTANDRUS	SAND DROPSEED
4	LOELERIA MACRANTHA	PRAIRIE JUNEGRASS
4	FESTUCA BREVIPILA	HARD FESCUE

'MOIST SWALE SEED MIX'
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0.5	CAREX LANUGINOSA	WOOLY SEDGE
0.1	CAREX NEBRASCENSIS	NEBRASKA SEDGE
1.5	CHONDROSUM GRACILE	BLUE GAMA
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0.5	DISTICHLIS STRICTA	ISLAND SALTGRASS
0.1	JUNCUS BALTICUS	BALTIC RUSH
1	SPARTINA PECTINATA	PRAIRIE CORDGRASS
3	SPOROBOLUS AIROIDES	ALKALI SACATON
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5	PASCOPYRUM SMITHII	WESTERN WHEATGRASS

SEED ESTABLISHMENT NOTES

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2. FOR PROPER ESTABLISHMENT, SEED SHALL BE INSTALLED WHEN AT LEAST THREE MONTHS REMAIN IN THE GROWING SEASON. IF LESS THAN THREE MONTHS REMAIN IN THE GROWING SEASON AT THE TIME OF SEEDING, THE LANDSCAPE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE LANDSCAPE ARCHITECT AND OWNER. THE IRRIGATION SYSTEM FOR SEEDED AREAS SHALL BE FULLY OPERATIONAL AT THE TIME OF SEEDING.
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No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	05/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

Galloway
Planning. Architecture. Engineering.

King Soopers

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS129.01
Sheet Scale:	N/A
Designed By:	JLB
Drawn By:	DTT
Date:	JULY 2015
Disk File:	KSS129_P_11-17-Land

LANDSCAPE NOTES AND DETAILS

16

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014

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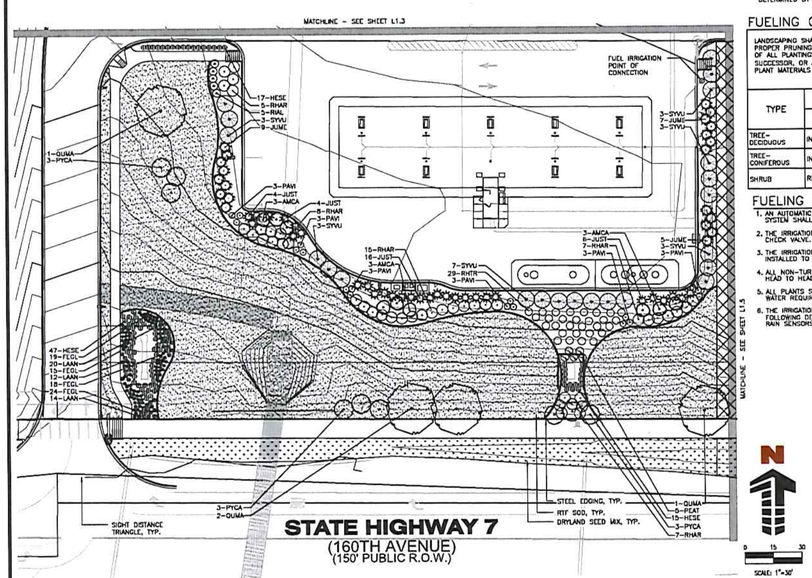

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FUELING CENTER LANDSCAPE MAINTENANCE NOTES

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TYPE	PLANT REPLACEMENT WITHIN	
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TREE-DECIDUOUS	INCREASE CALIPER BY 1"	INCREASE CALIPER BY 1.5"
TREE-CONIFEROUS	INCREASE HEIGHT BY 1.5'	INCREASE HEIGHT BY 2'
SHRUB	REPLACE PLANTS OF AT LEAST ½ MATURE SIZE	REPLACE WITH PLANTS OF AT LEAST ½ MATURE SIZE

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SEED NOTES

1) SEED MIXES ARE AVAILABLE AS FOLLOWS:
50%-"FOOTHILLS GRASS MIX", 50%-"XERISCAPE WILDFLOWER MIX"
WESTERN NATIVE SEED COMPANY
P.O. BOX 188
COALDALE, CO 81222
(719) 942-3935

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	LBS./1,000 SF
WOOD FIBER MULCH	48
15-15-15 ORGANIC FERTILIZER	9
ORGANIC BINDER	4

'MOIST SWALE SEED MIX'

SEEDING RATE: 15.2 POUNDS PLS / ACRE

PLS/AC	SCIENTIFIC NAME	COMMON NAME
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'SHORTGRASS PRAIRIE NATIVE SEED MIX'

SEEDING RATE: 30 LBS/ACRE

PLS/AC	SCIENTIFIC NAME	COMMON NAME
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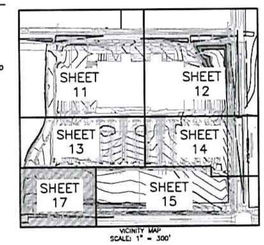
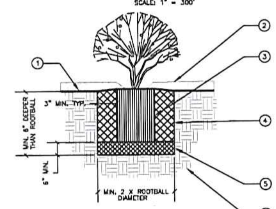
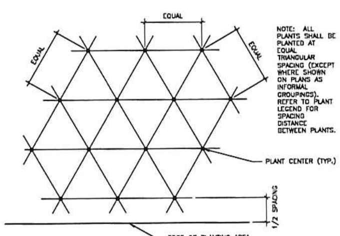


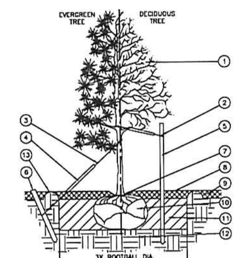


1. FINISH GRADE IN PLANTING AREA.
2. MULCH, TYPE AND DEPTH PER PLANS. PLACE NO MORE THAN 1" OF MULCH WITHIN 6" OF PLANT CENTER.
3. PLANT ROOT BALL. SET TOP ROOTBALL 2" ABOVE ADJECENT GRADE. IN BERMED AREAS SET ROOTBALL 2" ABOVE LOWER ADJECENT GRADE - INSTALL WATER RING (2 - 3" HT.)
4. BACKFILL MIX (PER PLANTING SPECIFICATIONS), AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS. JET BACKFILL WITH WATER TO ELIMINATE VOIDS.
5. COMPACTED BACKFILL MIX (75%).
6. UNDISTURBED NATIVE SOIL.

1 — SHRUB AND PERENNIAL DETAIL
SCALE: NOT TO SCALE



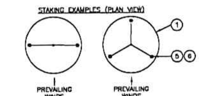
2 — PLANT SPACING
SCALE: NTS



1. TREE CANOPY.
2. NYLON TREE STRAPS AT ENDS OF WIRES - SECURE TO STAKE OR DEADMEN WITH NAILS.
3. 12 GAUGE GALVANIZED WIRE. SECURE TO TRUNK JUST ABOVE LOWEST MAJOR BRANCHES.
4. 24" X 3/4" P.V.C. MARKERS OVER WIRES.
5. PRESSURE-TREATED WOOD STAKE, 2" DIA. EXTEND STAKES 12" MIN. INTO UNDISTURBED SOIL.
6. PRESSURE-TREATED WOOD DEADMEN, TWO PER TREE (MIN.). BURY OUTSIDE OF PLANTING PIT AND 18" MIN. INTO UNDISTURBED SOIL.
7. TRUNK FLARE.
8. WOOD MULCH TREE RING 3' DIA MIN. TYPE AND DEPTH PER PLANS. DO NOT PLACE MULCH WITHIN 3" OF TRUNK.
9. FINISH GRADE.
10. ROOT BALL-SEE NOTE 3, THIS DETAIL
11. BACKFILL. AMEND AND FERTILIZE ONLY AS RECOMMENDED IN SOIL FERTILITY ANALYSIS.
12. UNDISTURBED NATIVE SOIL.
13. 4" HIGH EARTHEN WATERING BASIN.

NOTES:
1. SCARIFY SIDES OF PLANTING PIT PRIOR TO SETTING TREE.
2. REMOVE EXCESS SOIL APPLIED ON TOP OF THE ROOTBALL THAT COVERS THE ROOT FLARE. THE PLANTING HOLE DEPTH SHALL BE SUCH THAT THE ROOTBALL RESTS ON UNDISTURBED SOIL, AND THE ROOT FLARE IS 3"-5" ABOVE FINISH GRADE.
3. CUT OFF BOTTOM 1/3 OF WIRE BASKET BEFORE PLACING TREE IN HOLE, CUT OFF AND REMOVE REMAINDER OF BASKET AFTER TREE IS SET IN HOLE. REMOVE ALL NYLON TIES, TWINE, ROPE, AND OTHER PACKING MATERIAL. REMOVE ALL BURLAP FROM AROUND ROOTBALL.
4. TREE WRAP IS NOT TO BE USED ON ANY NEW PLANTINGS, EXCEPT IN LATE FALL PLANTING SITUATIONS, AND ONLY THEN AFTER CONSULTATION WITH THE LANDSCAPE ARCHITECT. WHEN WRAPPING TREE, WRAP FROM TRUNK FLARE TO LOWEST MAJOR BRANCH.
5. REMOVE ALL NURSERY STAKES AFTER PLANTING.
6. FOR TREES OVER 3" CALIPER, USE THREE STAKES OR DEADMEN (AS APPROPRIATE), SPACED EVENLY AROUND TREE.

STAKING EXAMPLES (PLAN VIEW)



3 — TREE PLANTING DETAIL
SCALE: NOT TO SCALE

FUELING CENTER PLANTING LEGEND

SYMBOL	LEGEND ABBREV.	BOTANIC NAME	COMMON NAME	QUANTITY	PLANTING SIZE	MATURE SIZE (HXW)	WATER USE (VL, L, M, H)
OVERSTORY DECIDUOUS TREES							
	QUMA	QUERCUS MACROCARPA	BUR OAK	4	2.0" CAL. B&B	70'X50'	LOW
ORNAMENTAL DECIDUOUS TREES							
	AMCA	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	9	5' HT./1.5" CAL. MULTI STEM B&B	15'X10'	LOW
	PYCA	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	9	5' HT./1.5" CAL. B&B	40'X15'	LOW
DECIDUOUS SHRUBS							
	PEAT	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE	5	5 GALLON 18"-24"	4'X4'	LOW
	RHAR	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC	42	5 GALLON 12"-18"	2'X8'	VERY LOW
	RHTR	RHUS TRILOBATA	THREE LEAF SUMAC	29	5 GALLON 18"-24"	4'X4'	VERY LOW
	RIAL	RIBES ALPINUM	ALPINE CURRANT	5	5 GALLON 18"-24"	4'X4'	LOW
	SYVU	SYRINGA VULGARIS	COMMON PURPLE LILAC	22	5 GALLON	8'X8'	LOW
EVERGREEN SHRUBS							
	JUME	JUNIPERUS X MEDIA	SEA GREEN JUNIPER	21	5 GALLON 18"-24"	8'X5'	LOW
	JUST	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAMMY JUNIPER	30	5 GALLON 12"-18"	3'X3'	LOW
ORNAMENTAL GRASSES							
	FEGL	FESTUCA GLAUCA 'ELIJAH BLUE'	BLUE FESCUE	78	1 GALLON	1'X1'	LOW
	HESE	HELICTOTRICHON SEMPERVIRENS	BLUE AVENA GRASS	79	1 GALLON	2.5'X2.5'	LOW
	PAVI	PANICUM VIRGATUM 'SHANADOAH'	RED SWITCH GRASS	18	1 GALLON	3.5'X2.5'	LOW
PERENNIALS							
	LAAN	LAVANDULA ANGUSTIFOLIA 'MUNSTEAD'	ENGLISH LAVENDER	48	1 GALLON	1'X2'	VERY LOW
TURF AND SEED							
	TURF	RTF TALL FESCUE GRASS, SEE SOD NOTE, THIS SHEET	FESCUE SOD	24,498 SF	SOD	- - -	MODERATE / LOW
	SEED	DRYLAND SEED MIX, SEE SEED NOTES, THIS SHEET	GRASS SEED	4,019 SF	SEED	- - -	LOW
	MULCH	2"-6" DIA. MULTI-COLOR COBBLE ROCK MULCH WITH DOUBLE SHREDDED BARK MULCH RING, SEE MULCH NOTE	ROCK MULCH	8,900 SF	MULCH	- - -	XERIC
	STEEL EDGING	STEEL EDGING	PLANT BED EDGING	525 LF	STEEL EDGING	- - -	- - -

PLANTING NOTES

GENERAL

1. ALL LANDSCAPE NOTES SHALL BE COORDINATED WITH ALL APPLICABLE KROGER PROJECT MANUAL SECTIONS UNDER 32 90 00 "PLANTING." THE SPECIFICATIONS SHALL TAKE PRECEDENCE OVER THE GENERAL PLANTING NOTES. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH WORK.
2. ALL WORK SHALL CONFORM TO ALL APPLICABLE STATE AND LOCAL CODES, STANDARDS, AND SPECIFICATIONS.
3. LANDSCAPE DESIGN IS DIAGRAMMATIC IN NATURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN TAKEOFFS AND QUANTITY CALCULATIONS. IN THE EVENT OF A DISCREPANCY BETWEEN THE PLAN AND THE LANDSCAPE LEGEND, THE PLANT QUANTITY AS SHOWN ON THE PLAN SHALL TAKE PRECEDENCE AND NOTIFY THE LANDSCAPE ARCHITECT OF THESE DISCREPANCIES. MINOR ADJUSTMENTS TO THE LANDSCAPE MATERIAL AND LOCATIONS MAY BE PROPOSED FOR CITY CONSIDERATION AT THE CONSTRUCTION DOCUMENT STAGE TO RESPOND TO MARKET AND FIELD CONDITIONS. HOWEVER, THERE SHALL BE NO REDUCTION IN THE NUMBER AND SIZE OF MATERIALS.
4. THE CONTRACTOR SHALL MAKE HIMSELF AWARE OF THE LOCATIONS OF EXISTING AND PROPOSED UTILITIES, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE UTILITIES AND/OR ANY INJURY TO ANY PERSON.
5. ALL UTILITY EASEMENTS SHALL REMAIN UNOBSTRUCTED AND FULLY ACCESSIBLE ALONG THEIR ENTIRE LENGTH FOR MAINTENANCE EQUIPMENT.
6. THE CONTRACTOR SHALL TAKE EXTREME CARE NOT TO DAMAGE ANY EXISTING PLANTS INDICATED AS "TO REMAIN". ANY SUCH PLANTS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED WITH THE SAME SPECIES, SIZE, AND QUANTITY AT THE CONTRACTOR'S OWN EXPENSE, AND AS ACCEPTABLE TO THE OWNER. REFER TO THE TREE PROTECTION NOTES ON THE PLANS (AS APPLICABLE).
7. LANDSCAPE CONTRACTOR SHALL EXAMINE THE SITE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND NOTIFY THE GENERAL CONTRACTOR IN WRITING OF UNSATISFACTORY CONDITIONS. IF SITE CONDITIONS OR PLANT AVAILABILITY REQUIRE CHANGES TO THE PLAN, THEN AN APPROVAL WILL BE OBTAINED FROM THE CITY. DO NOT PROCEED UNTIL CONDITIONS HAVE BEEN CORRECTED.
8. ALL CONSTRUCTION DEBRIS AND MATERIAL SHALL BE REMOVED AND CLEANED OUT PRIOR TO INSTALLATION OF TOPSOIL, TREES, SHRUBS, AND TURF.
9. FOR ALL INFORMATION ON SURFACE MATERIAL OF WALKS, DRIVES, AND PARKING LOTS, SEE THE SITE PLAN. SEE PHOTOMETRIC PLAN FOR FREE STANDING LIGHTING INFORMATION.
10. THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT ONE WEEK PRIOR TO BEGINNING CONSTRUCTION.
11. WINTER WATERING SHALL BE AT THE EXPENSE OF THE CONTRACTOR UNTIL SUCH TIME AS FINAL ACCEPTANCE IS RECEIVED.
12. ALL LANDSCAPE CONSTRUCTION PRACTICES, WORKMANSHIP, AND ETHICS SHALL BE IN ACCORDANCE WITH INDUSTRY STANDARDS SET FORTH IN THE CONTRACTORS HANDBOOK PUBLISHED BY THE COLORADO LANDSCAPE CONTRACTORS ASSOCIATION.
13. LANDSCAPE AND IRRIGATION WORK SHALL BE COMPLETED PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY.

FINISH GRADING AND SOIL PREPARATION

14. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN FINISH GRADES AS RECOMMENDED BY THE GEOTECHNICAL REPORT. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE AWAY FROM STRUCTURES AT THE MINIMUM SLOPE SPECIFIED IN THE REPORT, AND AREAS OF POTENTIAL PONDING SHALL BE REGRADED TO BLEND IN WITH THE SURROUNDING GRADES AND ELIMINATE PONDING POTENTIAL. SHOULD ANY CONFLICTS AND/OR DISCREPANCIES ARISE BETWEEN THE GEOTECHNICAL REPORT, THE GRADING PLANS, THESE NOTES, AND ACTUAL CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY BRING SUCH ITEMS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT AND OWNER.
15. AFTER FINISH GRADES HAVE BEEN ESTABLISHED, IT IS RECOMMENDED THAT THE CONTRACTOR SHALL HAVE SOIL SAMPLES TESTED BY AN ESTABLISHED SOIL TESTING LABORATORY FOR THE FOLLOWING: GENERAL SOIL FERTILITY, PH, ORGANIC MATTER CONTENT, SALT (CEC), LIME, SODIUM ADSORPTION RATIO (SAR) AND BORON CONTENT. EACH SAMPLE SUBMITTED SHALL CONTAIN NO LESS THAN ONE QUART OF SOIL. CONTRACTOR SHALL ALSO SUBMIT THE PROJECT'S PLANT LIST TO THE LABORATORY ALONG WITH THE SOIL SAMPLES. THE SOIL REPORT PRODUCED BY THE LABORATORY SHALL CONTAIN RECOMMENDATIONS FOR THE FOLLOWING (AS APPROPRIATE): GENERAL SOIL PREPARATION AND BACKFILL MIXES, PRE-PLANT FERTILIZER APPLICATIONS, AND ANY OTHER SOIL RELATED ISSUES. THE REPORT SHALL ALSO PROVIDE A FERTILIZER PROGRAM FOR THE ESTABLISHMENT PERIOD AND FOR LONG-TERM MAINTENANCE.
16. THE CONTRACTOR SHALL REQUIRE INSTALLATION OF SOIL AMENDMENTS AND FERTILIZERS PER THE SOILS REPORT FOR THE THE OWNER/OWNER'S REPRESENTATIVE CONSIDERATION.
17. PER TOWN OF ERIE STANDARDS AND SPECIFICATIONS, SECTION 1000, 1034.04, USE SHORTGRASS PRAIRIE NATIVE SEED MIX AT ACCEPTABLE RATE. ALSO USE TOWN OF ERIE APPROVED MOIST SWALE SEED MIX AT ACCEPTABLE RATE IN THE BASIN OF THE DETENTION POND AND TRICKLE AREA. NO MANURE OR ANIMAL-BASED PRODUCTS SHALL BE USED FOR ORGANIC AMENDMENTS.

PLANTING

18. ALL DECIDUOUS TREES SHALL HAVE FULL, WELL-SHAPED HEADS/ALL EVERGREENS SHALL BE UNSHEARED AND FULL TO THE GROUND; UNLESS OTHERWISE SPECIFIED. TREES WITH CENTRAL LEADERS WILL NOT BE ACCEPTED IF LEADER IS DAMAGED OR REMOVED. PRUNE ALL DAMAGED TWIGS AFTER PLANTING.
19. ALL PLANTS WITHIN A SPECIES SHALL HAVE SIMILAR SIZE, AND SHALL BE OF A FORM TYPICAL FOR THE SPECIES. ANY PLANT DEEMED UNACCEPTABLE BY THE LANDSCAPE ARCHITECT SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND SHALL BE REPLACED WITH AN ACCEPTABLE PLANT OF LIKE TYPE AND SIZE AT THE CONTRACTOR'S OWN EXPENSE. ANY PLANTS APPEARING TO BE UNHEALTHY, EVEN IF DETERMINED TO STILL BE ALIVE, SHALL NOT BE ACCEPTED. THE LANDSCAPE ARCHITECT SHALL BE THE SOLE JUDGE AS TO THE ACCEPTABILITY OF PLANT MATERIAL.
20. ALL TREES SHALL BE GUYED AND WOOD STAKED AS PER DETAILS. NO 'T-STAKES' SHALL BE USED FOR TREES.
21. ALL PLANT MATERIALS SHALL BE TRUE TO TYPE, SIZE, SPECIES, QUALITY, AND FREE OF INJURY, BROKEN ROOT BALLS, PESTS, AND DISEASES, AS WELL AS CONFORM TO THE MINIMUM REQUIREMENTS DESCRIBED IN THE "AMERICAN STANDARD FOR NURSERY STOCK". FOLLOW GREENCO TREE PLANTING RECOMMENDATIONS FOR MINIMUM QUALITY REQUIREMENTS FOR TREES.
22. ALL TREE AND SHRUB BED LOCATIONS ARE TO BE STAKED OUT ON SITE FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
23. ALL TREES PLANTED ADJACENT TO PUBLIC AND/OR PEDESTRIAN WALKWAYS SHALL BE PRUNED CLEAR OF ALL BRANCHES BETWEEN GROUND AND A HEIGHT OF EIGHT (8) FEET FOR THAT PORTION OF THE PLAN LOCATED OVER THE SIDEWALK AND/OR ROAD.
24. ALL TURF IS RECOMMENDED THROUGH GREEN VALLEY TURF COMPANY, 13159 N. US HIGHWAY 85, LITTLETON, CO 80125, (303) 798-6764. BUFFALO SOD HAS BEEN APPROVED IN MANY JURISDICTIONS TO BE A LOW-MODERATE HYDROZONE PLANT MATERIAL. RTF TALL FESCUE HAS BEEN APPROVED IN MANY JURISDICTIONS AS A LOW HYDROZONE PLANT MATERIAL. INSTALL AND MAINTAIN IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
25. ALL PLANT MATERIAL SHALL NOT BE PLANTED PRIOR TO INSTALLATION OF TOPSOIL.
26. ALL PLANT BEDS SHALL BE CONTAINED WITH STEEL EDGER. STEEL EDGER IS NOT REQUIRED ALONG CURBS, WALKS OR BUILDING FOUNDATIONS. ALL EDGING SHALL OVERLAP AT JOINTS A MINIMUM OF 6-INCHES, AND SHALL BE FASTENED WITH A MINIMUM OF 4 PINS PER EACH 10 FOOT SECTION. THE TOP OF ALL EDGING MATERIAL SHALL BE A ROLLED TOP AND 1/2 INCH ABOVE THE FINISHED GRADE OF ADJACENT LAWN OR MULCH AREAS. COLOR: GREEN.
27. THE DEVELOPER, HIS SUCCESSOR, OR ASSIGNEE SHALL BE RESPONSIBLE FOR ESTABLISHING AND CONTINUING A REGULAR PROGRAM OF MAINTENANCE FOR ALL LANDSCAPED AREAS. SEE LANDSCAPE GUARANTEE AND MAINTENANCE NOTE.
28. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF ALL FIRE HYDRANTS.
29. LANDSCAPE CONTRACTOR TO SUBMIT SAMPLES OF MISCELLANEOUS LANDSCAPING MATERIALS TO THE LANDSCAPE ARCHITECTS AND OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION, IE.; MULCH, EDGER, LANDSCAPE FABRIC, ETC.

MULCHING

30. ALL MULCH IS RECOMMENDED THROUGH SANTA FE SAND AND GRAVEL, 6601 S SANTA FE DRIVE, LITTLETON, CO 80120, (303) 794-5960
31. AFTER ALL PLANTING IS COMPLETE, THE CONTRACTOR SHALL INSTALL A MINIMUM 4" THICK LAYER OF MULCH AS SPECIFIED IN THE PLANTING LEGEND. INSTALL A 4" THICK RING OF DOUBLE SHREDDED CEDAR BARK MULCH AROUND ALL PLANT MATERIAL IN ROCK MULCH BEDS WHERE LANDSCAPING IS SHOWN ON THE PLANS. WOOD MULCH RING SIZE SHALL BE 1.5X THE CONTAINER SIZE OF THE SHRUBS, PERENNIALS, AND ORNAMENTAL GRASSES. TREE RING SIZE SHALL BE GREEN INDUSTRIES OF COLORADO INDUSTRY STANDARD WIDTH.
32. ALL MULCH SHALL BE HARVESTED IN A SUSTAINABLE MANNER FROM A LOCAL SOURCE.
33. INSTALL DEWITT PRO-5 WEED BARRIER FABRIC UNDER ALL ROCK MULCH SHRUB BEDS SPECIFIED ON THE PLANS ONLY. NO LANDSCAPE FABRIC SHALL BE USED IN WOOD MULCH AREAS. NO PLASTIC WEED BARRIERS SHALL BE SPECIFIED.
34. ABSOLUTELY NO EXPOSED GROUND SHALL BE LEFT SHOWING ANYWHERE ON THE PROJECT AFTER MULCH HAS BEEN INSTALLED.
35. ALL PLANTING AREAS WITH LESS THAN A 4:1 GRADIENT SHALL RECEIVE A LAYER OF MULCH, TYPE AND DEPTH PER PLANS. SUBMIT 1 CUBIC FOOT SAMPLE OF MULCH (ONE SAMPLE PER TYPE) TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. THE MULCH SHALL BE SPREAD EVENLY THROUGHOUT ALL PLANTING AREAS EXCEPT SLOPES 4:1 OR STEEPER, OR AS OTHERWISE DENOTED ON THE PLAN. ABSOLUTELY NO EXPOSED GROUND SHALL REMAIN IN AREAS TO RECEIVE MULCH AFTER MULCH HAS BEEN INSTALLED.
36. ALL PLANTING AREAS ON SLOPES OVER 4:1 SHALL RECEIVE COCONUT FIBER EROSION CONTROL NETTING FROM ROLLS. NETTING SHALL BE #CT-125, AS MANUFACTURED BY NORTH AMERICAN GREEN (OR EQUAL). INSTALL AND STAKE PER MANUFACTURER'S SPECIFICATIONS. SEE ALSO THE CIVIL ENGINEER'S EROSION CONTROL PLAN.

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
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4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS0129.01
Sheet Scale:	N/A
Designed By:	JLW
Drawn By:	DTT
Date:	JULY 2015
Disk File:	KSS129_P_11-17-Land

FUELDING CENTER
LANDSCAPE
PLAN

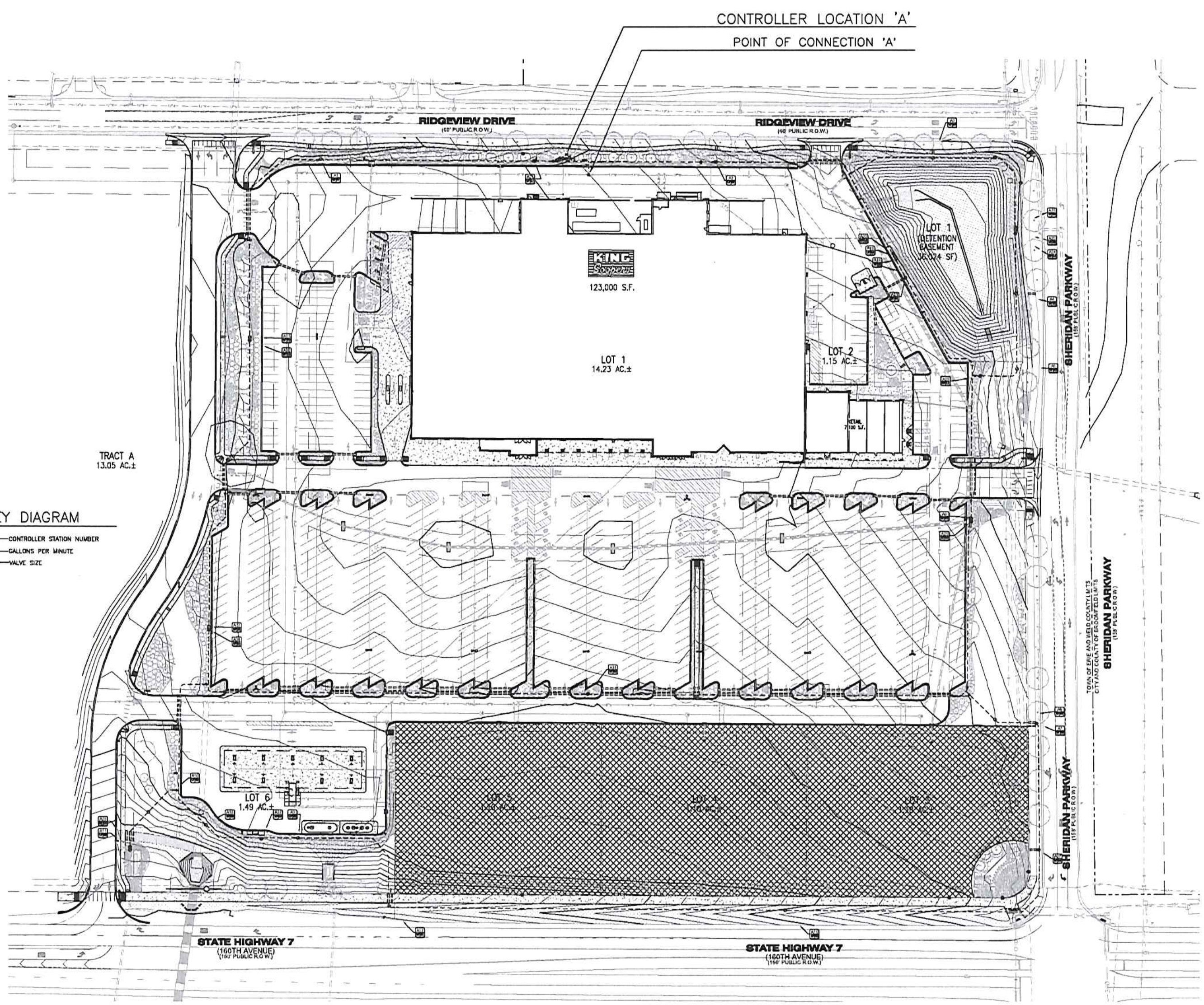
17

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014

MAIN LINE & SLEEVES LEGEND

- 3" PRESSURIZED PVC MAINLINE - CLASS 200 R.T. PVC PIPE
- IRRIGATION SLEEVE, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED, ONE SLEEVE PER PIPE
- CONTROL WIRING SLEEVE, 2" SCH. 40 PVC (SEE SLEEVE/WIRING NOTE BELOW)



VALVE KEY DIAGRAM

- X — CONTROLLER STATION NUMBER
- XX — GALLONS PER MINUTE
- XX — VALVE SIZE

N

SCALE: 1"=60'

CAUTION - NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

811 Know what's below. Call before you dig.

Certified Irrigation Designer — CID — Irrigation Association

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS0129.01
Sheet Scale:	N/A
Designed By:	JLW
Drawn By:	JLW
Date:	JULY 2015
Disk File:	KSS129_P_18-irr

OVERALL IRRIGATION MAINLINE PLAN

18

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
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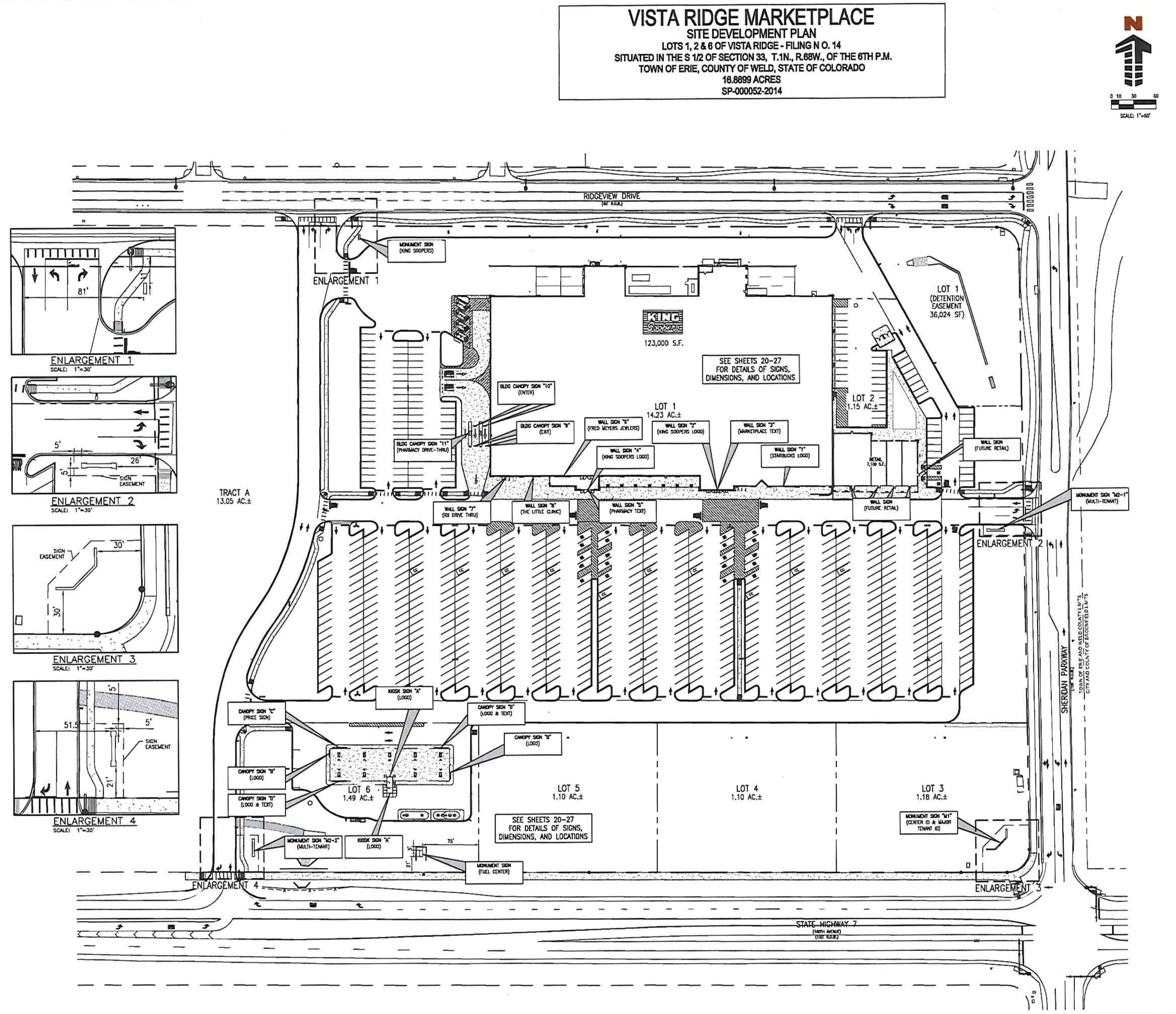

SIGN SCHEDULE

CITY OF ERIE SIGN CODE FOR ZONE RC (REGIONAL COMMERCIAL) SHALL APPLY, NOTWITHSTANDING THE FOLLOWING SHEETS 20–27.

OVERALL PROJECT MONUMENTATION

JOINT IDENTIFICATION SIGNAGE SHALL CONSIST OF THREE TYPES – TWO DIFFERENT JOINT TENANT MONUMENT SIGNS AND ONE CENTER IDENTIFICATION MONUMENT SIGN.

CENTER IDENTIFICATION MONUMENT SIGN M1
- NUMBER ALLOWED: ONE, LOCATED AT THE INTERSECTION OF SHERIDAN PARKWAY AND HIGHWAY 7
- SIGN AREA (MAXIMUM): AS SHOWN
- SIGN CABINET HEIGHT: 3'-7"
- OVERALL MONUMENT HEIGHT: 10'-6"
- SETBACK: AS SHOWN

JOINT TENANT MONUMENT SIGN M2-1
- NUMBER ALLOWED: TWO, LOCATED AT THE SHERIDAN PARKWAY ACCESS, AND AT THE RIDGEVIEW DRIVE ACCESS
- SIGN AREA (MAXIMUM): 150 SQUARE FEET/FACE
- SIGN CABINET HEIGHT: 7'-4"
- OVERALL MONUMENT HEIGHT: 10'-8"
- SETBACK: AS SHOWN

JOINT TENANT MONUMENT SIGN M2-2
- NUMBER ALLOWED: ONE, LOCATED AT THE HIGHWAY 7 WEST ACCESS
- SIGN AREA (MAXIMUM): 150 SQUARE FEET/FACE
- SIGN CABINET HEIGHT: 7'-4"
- OVERALL MONUMENT HEIGHT: 10'-8"
- SETBACK: AS SHOWN

DIRECTIONAL SIGNS

DIRECTIONAL SIGNAGE WILL BE ALLOWED THROUGHOUT THE PROJECT PER THE TOWN ERIE SIGN CODE.

KING SOOPERS BUILDING WALL SIGNAGE SCHEDULE

SIGN	DESCRIPTION	AREA*
1	STARBUCKS LOGO	19.6 S.F.
2	KING SOOPERS LOGO (LARGE)	161.3 S.F.
3	MARKETPLACE TEXT	92.0 S.F.
4	KING SOOPERS LOGO (SMALL)	77.9 S.F.
5	PHARMACY TEXT	21.3 S.F.
6	FRED MEYER JEWELERS TEXT	42.0 S.F.
7	RX DRIVE-THRU	33.3 S.F.
8	THE LITTLE CLINIC	49.0 S.F.
	TOTAL	496.4 S.F.

KING SOOPERS BUILDING CANOPY SIGNAGE SCHEDULE

SIGN	DESCRIPTION	AREA*
9	EXIT	3.6 S.F. EACH
10	ENTER	5.1 S.F. EACH
11	PHARMACY DRIVE-THRU	34.7 S.F.

KING SOOPERS FUELING CANOPY SIGNAGE SCHEDULE

SIGN	DESCRIPTION	AREA+
A	KIOSK LOGO	4.68 S.F.
B	CANOPY LOGO	6.74 S.F.
C	PRICE SIGN	45.5 S.F.
D	LOGO WITH KING SOOPERS TEXT	17.37 S.F.

MONUMENT SIGN SCHEDULE

SIGN	DESCRIPTION	AREAx
M1	CENTER ID MONUMENT SIGN	AS SHOWN
M2-1	MULTI-TENANT MONUMENT SIGN	122.22 S.F.
M2-2	MULTI-TENANT MONUMENT SIGN	122.22 S.F.

* SEE SIGNAGE DETAIL SHEETS FOR DIMENSIONS AND AREA CALCULATIONS
+ SEE FUEL ELEVATION SHEETS FOR DIMENSIONS AND AREA CALCULATIONS
x SEE MONUMNET SIGN DETAIL SHEETS FOR DIMENSIONS AND AREA CALCULATIONS

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

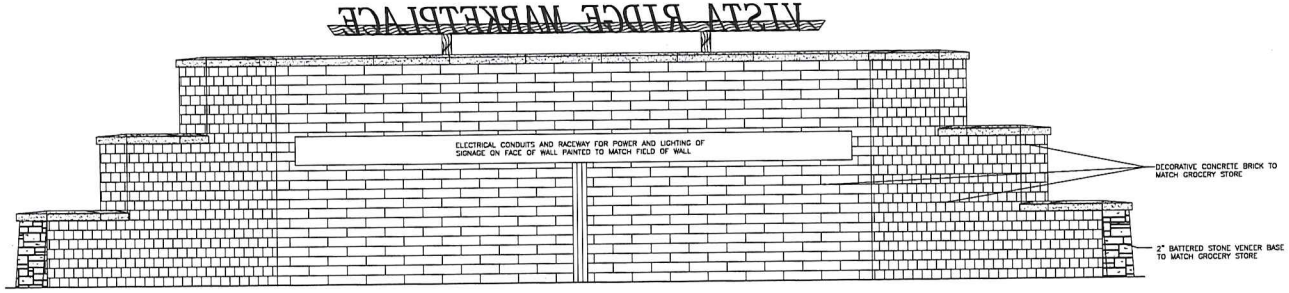
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KSS129_P_19-Overall Sign

OVERALL SIGNAGE PLAN AND NOTES

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
LOTS 1, 2 & 8 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014

FRONT ELEVATION 'M1'
SCALE: 1/2" = 1'



REAR ELEVATION 'M1'
SCALE: 1/2" = 1'

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

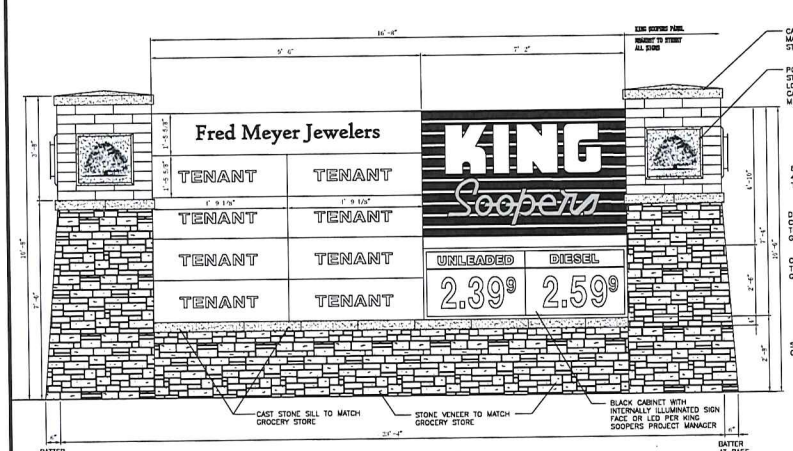
Project No:	K2S000129.01
Sheet Scale:	AS NOTED
Designed By:	BSM
Drawn By:	EVR
Date:	JULY 2015
Plot Date:	7/7/2015 9:20:21 AM

CENTER SIGN ELEVATIONS

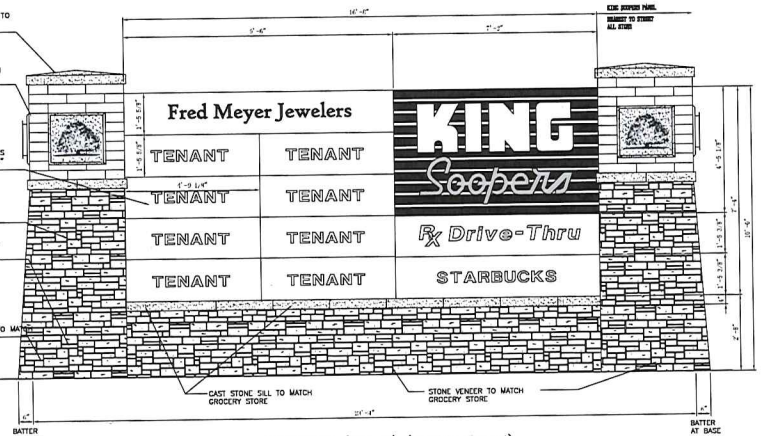
VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014

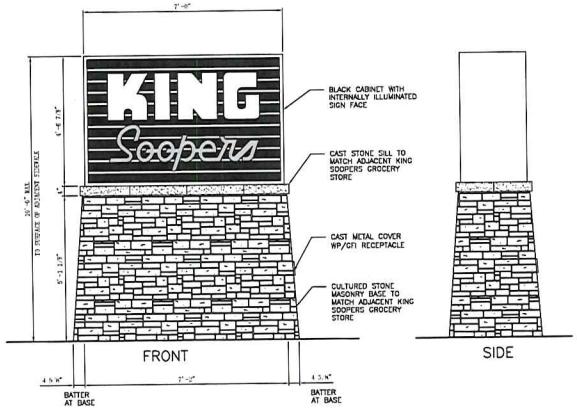


ELEVATION 'M2-1' (double faced)
SCALE: 1/2" = 1'

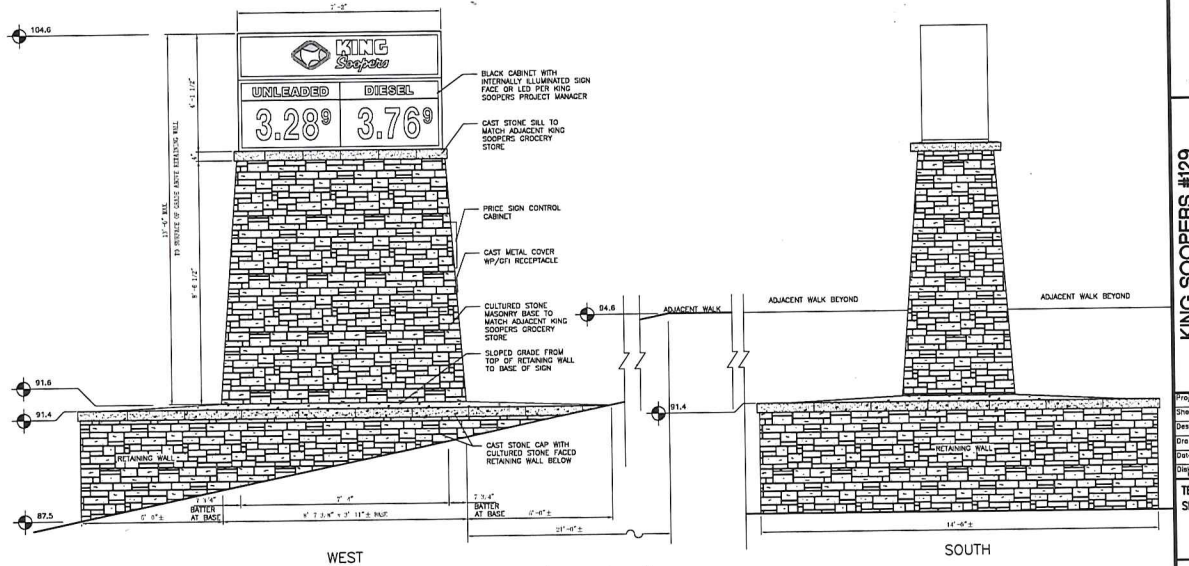


ELEVATION 'M2-2' (double faced)
SCALE: 1/2" = 1'

TYPICAL END ELEVATION
SCALE: 1/2" = 1'



ELEVATION KING SOOPERS MONUMENT (double faced)
SCALE: 1/2" = 1'



ELEVATION FUEL CENTER MONUMENT (double faced)
SCALE: 1/2" = 1'

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	05/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

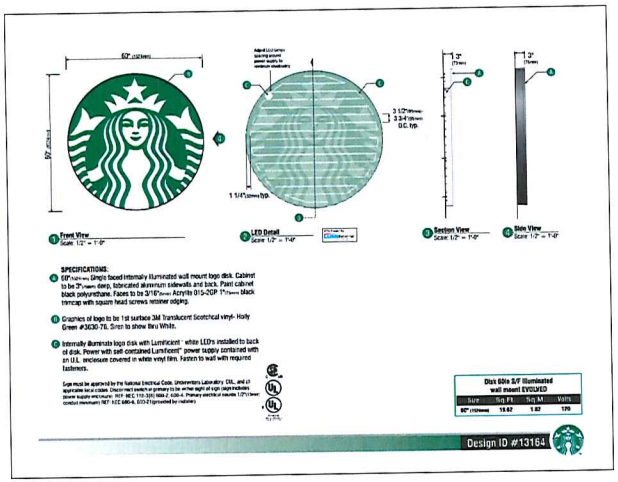
Project No:	KS1000129.01
Sheet Scale:	AS NOTED
Designed By:	RWM
Drawn By:	EWI
Date:	JULY 2015
Disc - File:	KS1129_P_20-21-Monument Dets

TENANT MONUMENT SIGN ELEVATIONS

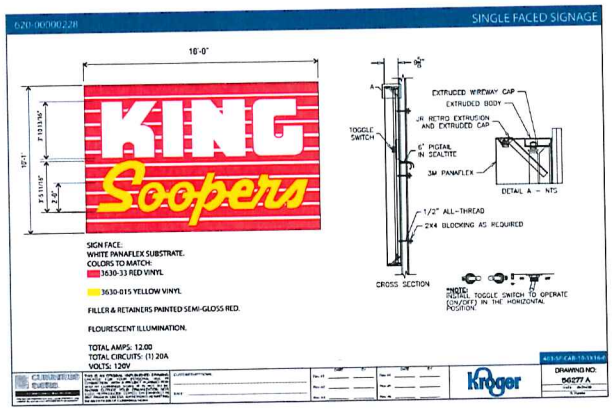
VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

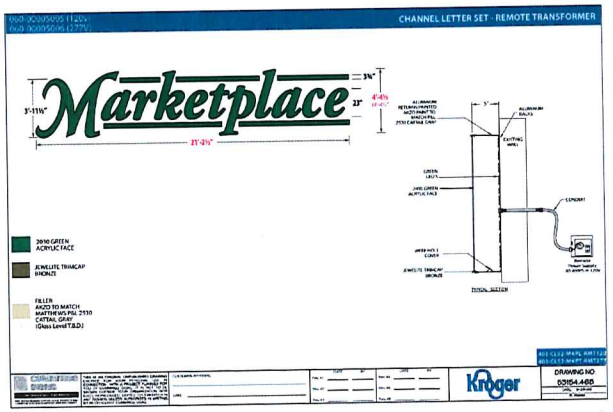
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014



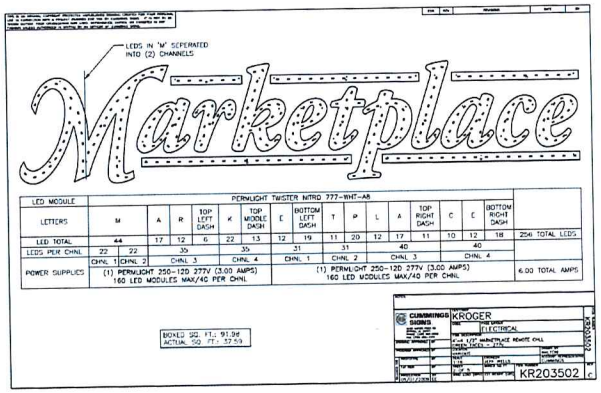
1 'STARBUCKS' WALL SIGN (19.6 TOTAL S.F.)
SCALE: NTS



2 LARGE 'KING SOOPERS' WALL SIGN (161.3 TOTAL S.F.)
SCALE: NTS



3 'MARKETPLACE' WALL SIGN (92.0 TOTAL S.F.)
SCALE: NTS



No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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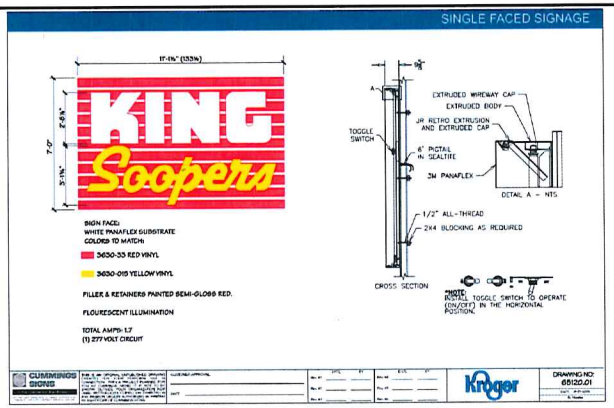
KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

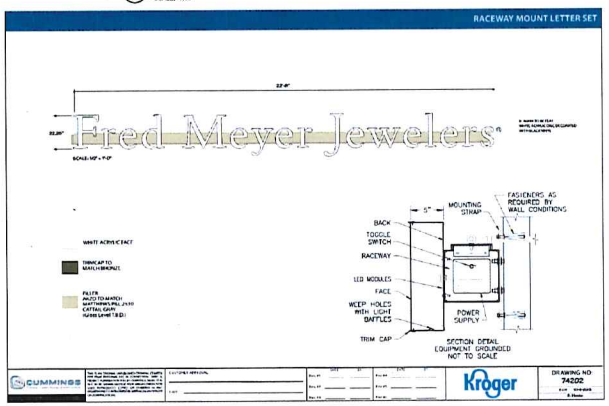
Project No:	KS000129.01
Sheet Scale:	N/A
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KS0129_P_22-24-KS Sgn

KING SOOPERS
SIGN DETAILS

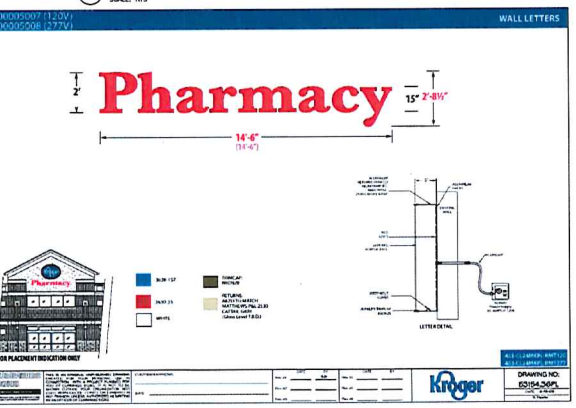
VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8899 ACRES
SP-000052-2014



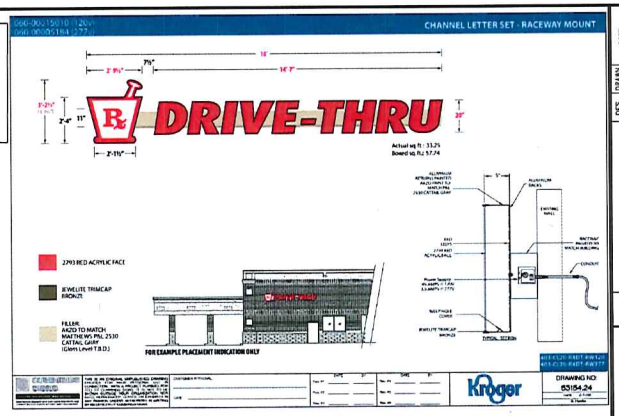
4 SMALL 'KING SOOPERS' WALL SIGN (77.9 TOTAL S.F.)
SCALE: NTS

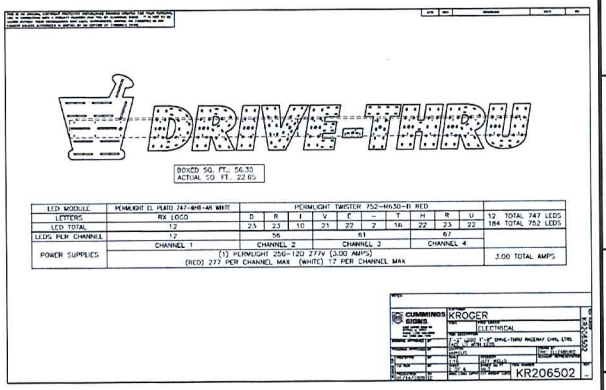


6 'FRED MEYER JEWELERS' WALL SIGN (42.0 TOTAL S.F.)
SCALE: NTS

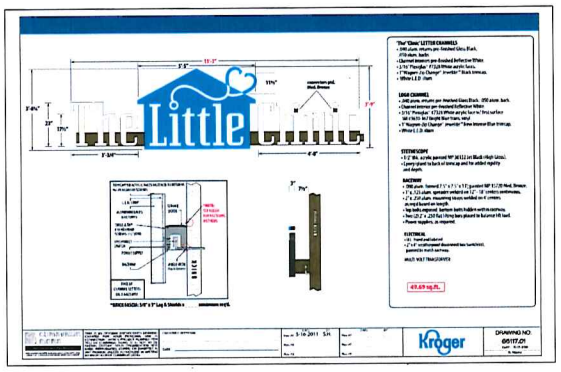


5 'PHARMACY' WALL SIGN (21.3 TOTAL S.F.)
SCALE: NTS





7 'DRIVE-THRU' WALL SIGN (33.3 TOTAL S.F.)
SCALE: NTS



8 'THE LITTLE CLINIC' WALL SIGN (49.0 TOTAL S.F.)
SCALE: NTS

No.	REVISION	DATE	DRAWN BY	CHECKED BY
1	1ST PLANNING SUBMITTAL	12/27/14	JJA	JAS
2	2ND PLANNING SUBMITTAL	03/24/15	JJA	JAS
3	3RD PLANNING SUBMITTAL	05/09/15	JJA	JAS
4	4TH PLANNING SUBMITTAL	07/06/15	JJA	JAS

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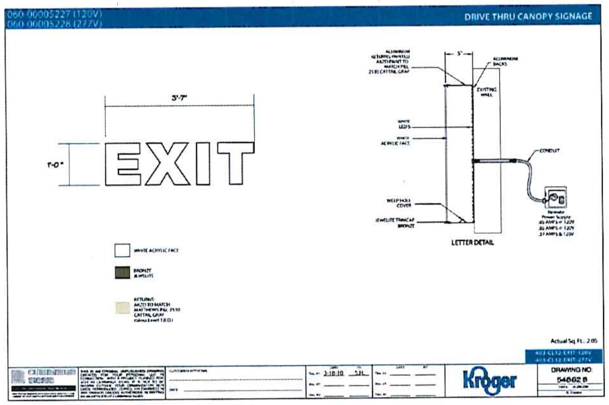
KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

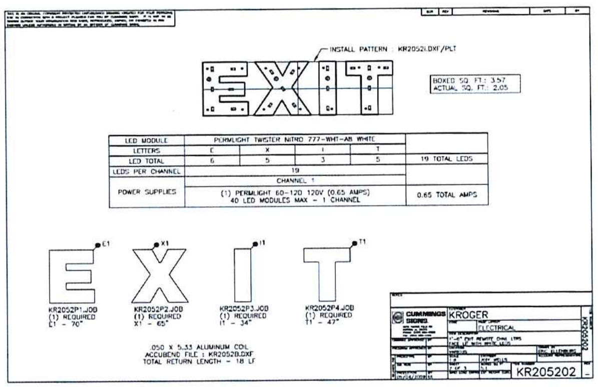
Project No:	KS000129.01
Sheet Scale:	N/A
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KS0129_P_22-24-K5 Sign

KING SOOPERS
SIGN DETAILS

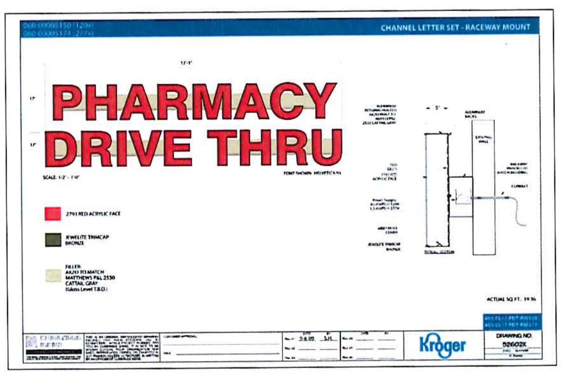
VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
18.8899 ACRES
SP-000052-2014

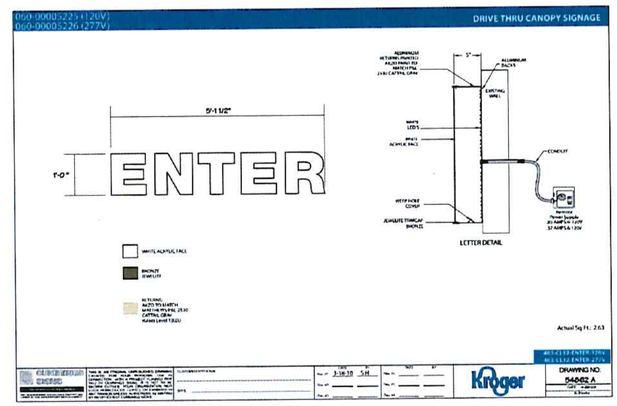


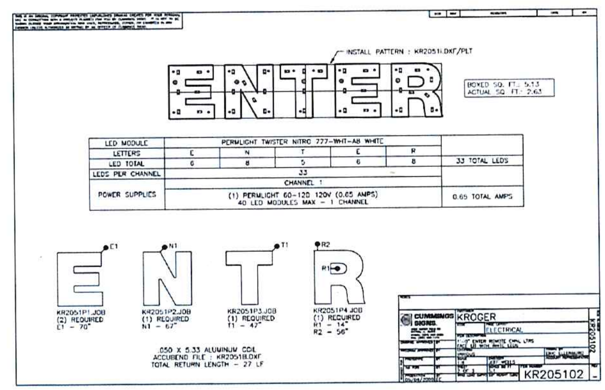


(8) 'EXIT' CANOPY SIGN (3.6 TOTAL S.F.)
SCALE: NTS



(11) 'PHARMACY DRIVE-THRU' CANOPY SIGN (34.7 TOTAL S.F.)
SCALE: NTS





(9) 'ENTER' CANOPY SIGN (5.1 TOTAL S.F.)
SCALE: NTS

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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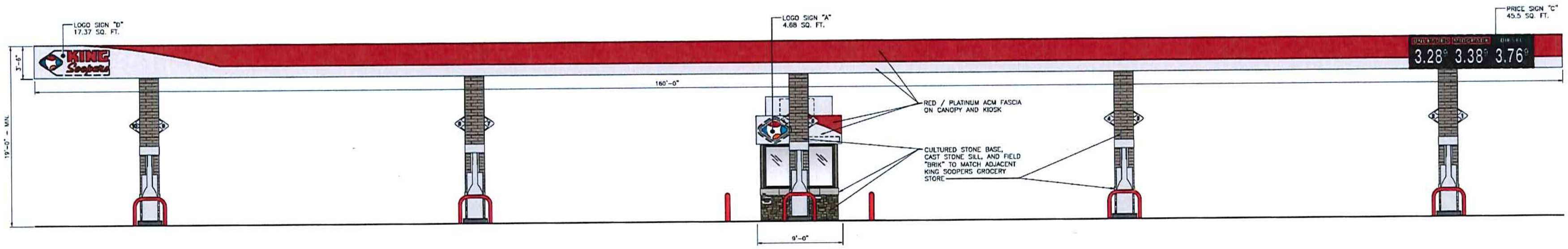
KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

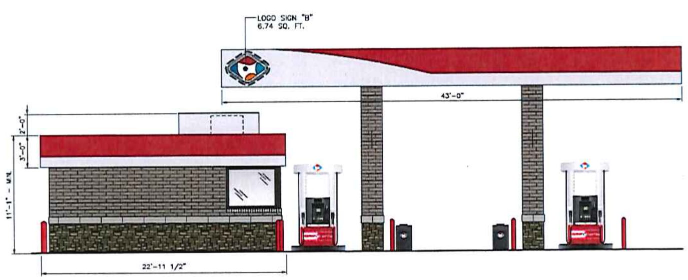
Project No:	KSS000129.01
Sheet Scale:	N/A
Designed By:	JAS
Drawn By:	JJA
Date:	JULY 2015
Disk File:	KSS129_P_22-24-KS Sign

KING SOOPERS
SIGN DETAILS

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014

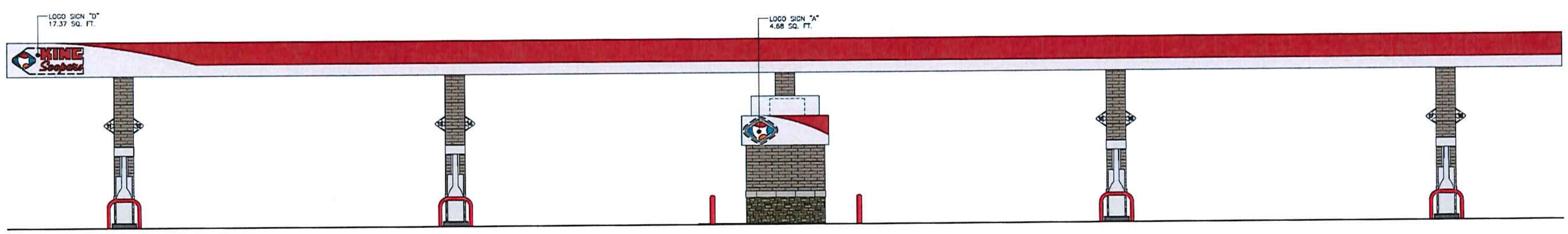


1 NORTH ELEVATION
SCALE: 3/16"=1'-0"



2 EAST ELEVATION
SCALE: 3/16"=1'-0"

3 WEST ELEVATION
SCALE: 3/16"=1'-0"



4 SOUTH ELEVATION
SCALE: 3/16"=1'-0"

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

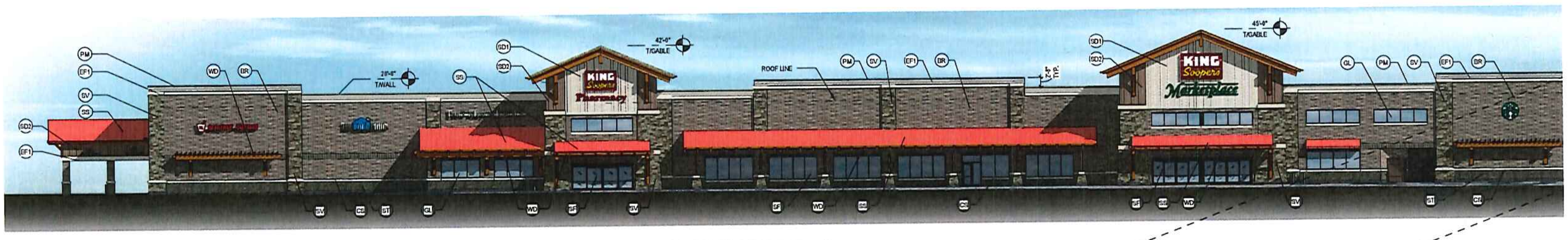
Project No:	KSS000129.01
Sheet Scale:	AS NOTED
Designed By:	MDC
Drawn By:	MDC
Date:	JULY 2015
Disk File:	KSS129_P_25-Fuel Elev

FUEL CENTER ELEVATIONS AND SIGN DETAILS

25

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

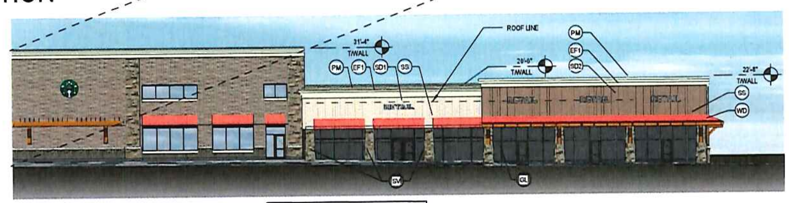
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING NO.14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N.,R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



ALL PILASTERS ON SOUTH ELEVATION ARE 12" MIN.

PARTIAL SOUTH ELEVATION

1/16"=1'-0" 0 4' 8' 16'



ALL PILASTERS ON SOUTH ELEVATION ARE 12" MIN.

PARTIAL SOUTH ELEVATION

1/16"=1'-0" 0 4' 8' 16'

3D VIEW 1

3D VIEW 2

3D VIEW 3

FINISH SCHEDULE

- (ST) Split-face CMU
- (PM) Prefinished Metal
- (PW) Prefinished Metal Wall Panels
- (SF) Dark Bronze Aluminum
- (CS) Cast Stone
- (GL) Glazing
- (SV) Stone Veneer
- (BR2) Masonry-Accent Color
- (MT) Exposed Metal Paint to match "pm"
- (BR) Masonry
- (SS) Standing Seam Metal Roof
- (EF) E.I.F.S.
- (OH) Overhead Door, Match AS-01
- (WD) Exposed Wood Timber
- (SD) Fiber Cement Siding

THE BUILDING ELEVATIONS SHOWN AND APPROVED HEREON ARE INTENDED TO DEMONSTRATE HOW ALL HVAC AND OTHER MECHANICAL EQUIPMENT SHALL BE SCREENED ACCORDING TO TOWN OF ERIE, UNIFIED DEVELOPMENT CODE REQUIREMENTS. IT IS THE APPLICANT'S RESPONSIBILITY TO ENSURE THAT THIS APPROVED SCREENING OCCURS IN THE FIELD AS DEMONSTRATED BY THESE PLANS, REGARDLESS OF CURB REQUIREMENTS, MECHANICAL PLAN CHANGES, OR OTHER CIRCUMSTANCES. FAILURE TO PROVIDE APPROVED SCREENING MAY RESULT IN DELAY OF FINAL INSPECTIONS AND/OR ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/19/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/05/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

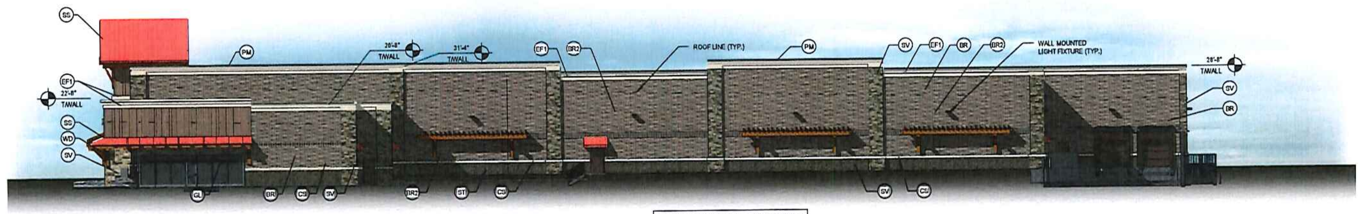
Project No:	515029
Sheet Scale:	
Designed By:	
Drawn By:	
Date:	JULY 2015
Disk File:	KSS129_A1.2-KS Elevations

KING SOOPERS ELEVATIONS

26

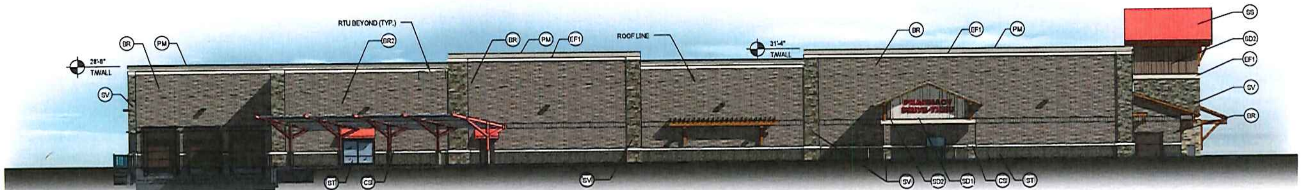
VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING NO.14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N.,R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



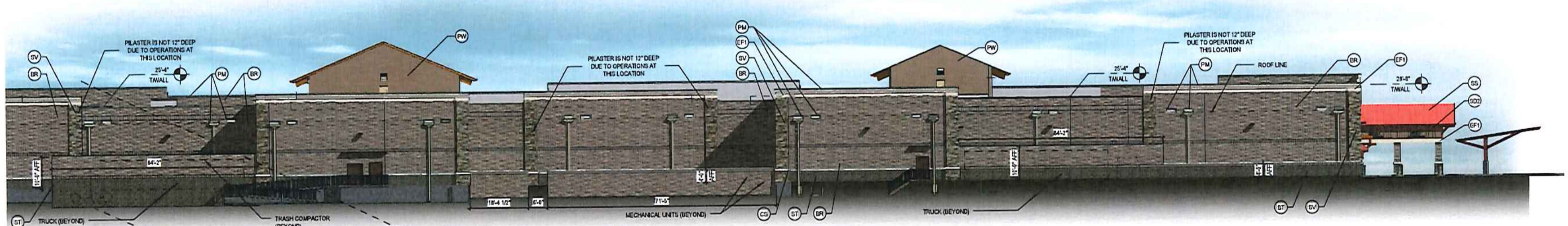
ALL PILASTERS ON EAST ELEVATION ARE 12" MIN.

EAST ELEVATION



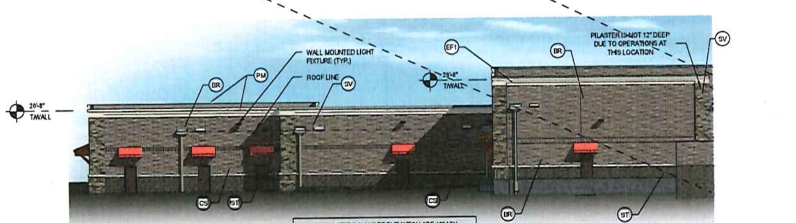
ALL PILASTERS ON WEST ELEVATION ARE 12" MIN.

WEST ELEVATION



ALL PILASTERS ON NORT ELEVATION ARE 12" MIN. EXCEPT AT THE DOCK WELLS AND AT THE MECHANICAL COURTYARD AS NOTED ON THE ELEVATION

PARTIAL NORTH ELEVATION



ALL PILASTERS ON NORT ELEVATION ARE 12" MIN. EXCEPT AT THE DOCK WELLS AND AT THE MECHANICAL COURTYARD AS NOTED ON THE ELEVATION

PARTIAL NORTH ELEVATION

1/16"=1'-0" 0 4' 8' 16'

THE BUILDING ELEVATIONS SHOWN AND APPROVED HEREON ARE INTENDED TO DEMONSTRATE HOW ALL HVAC AND OTHER MECHANICAL EQUIPMENT SHALL BE SCREENED ACCORDING TO TOWN OF ERIE, UNIFIED DEVELOPMENT CODE REQUIREMENTS. IT IS THE APPLICANT'S RESPONSIBILITY TO ENSURE THAT THIS APPROVED SCREENING OCCURS IN THE FIELD AS DEMONSTRATED BY THESE PLANS, REGARDLESS OF CURB REQUIREMENTS, MECHANICAL PLAN CHANGES, OR OTHER CIRCUMSTANCES. FAILURE TO PROVIDE APPROVED SCREENING MAY RESULT IN DELAY OF FINAL INSPECTIONS AND/OR ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

FINISH SCHEDULE

- (ST) Split-face CMU
- (PM) Prefinished Metal
- (PW) Prefinished Metal Wall Panels
- (SF) Dark Bronze Aluminum
- (CS) Cast Stone
- (GL) Glazing
- (SV) Stone Veneer
- (BR2) Masonry-Accent Color
- (MT) Exposed Metal Paint to match "pm"
- (BR) Masonry
- (SS) Standing Seam Metal Roof
- (EF) E.I.F.S.
- (OH) Overhead Door, Match AS-01
- (WD) Exposed Wood Timber
- (SD) Fiber Cement Siding

No.	REVISION	DES BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/19/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	05/05/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/05/15

CR architecture + design

King Soopers

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

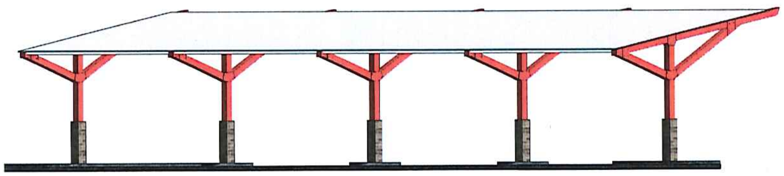
Project No:	515029
Sheet Scale:	
Designed By:	
Drawn By:	
Date:	JULY 2015
Disk File:	KSS129_A1.2-KS Elevations

KING SOOPERS ELEVATIONS

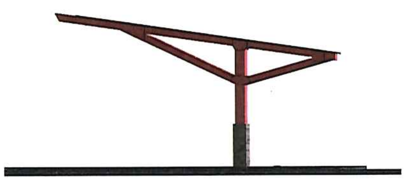
27

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

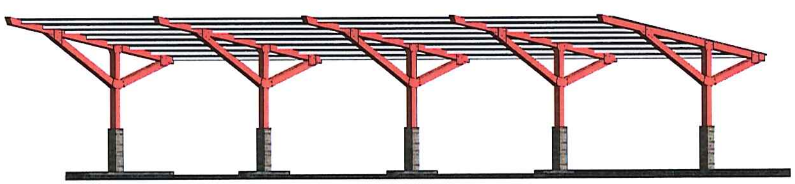
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING NO.14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N.,R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



1/28 East Elevation
SCALE 3/16" = 1'-0"



4/28 South Elevation
SCALE 3/16" = 1'-0"



2/28 West Elevation
SCALE 3/16" = 1'-0"

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/19/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	05/05/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	515029
Sheet Scale:	
Designed By:	
Drawn By:	
Date:	JULY 2015
Disk File:	KSS129_A1.2-KS Elevations

CLICKLIST

28

ATTACHMENT C

Print Form

TOWN OF ERIE
Community Development Department – Planning Division
645 Holbrook Street – PO Box 750 – Erie, CO 80516
Tel: 303.926.2770 – Fax: 303.926.2706 – Web: www.erieco.gov

LAND USE APPLICATION

Please fill in this form completely. Incomplete applications will not be processed.

STAFF USE ONLY

FILE NAME:

FILE NO: DATE SUBMITTED: FEES PAID:

PROJECT/BUSINESS NAME: King Soopers #129

PROJECT ADDRESS: NWC of Sheridan Pkwy & Hwy 7

PROJECT DESCRIPTION: Approximately 30 acre parcel to be subdivided into various lots for commercial development. Lots 1-6 will be part of the initial phase and will include a 123K SF King Soopers Marketplace, a 12,100 SF retail building next to the King Soopers, and a 9 MPD King Soopers fueling station.

LEGAL DESCRIPTION *(attach legal description if Metes & Bounds)*

Subdivision Name: Vista Ridge Filing No. 13

Filing #: 13 Lot #: 1-6 Block #: Section: 33 Township: 1N Range: 68W

OWNER *(attach separate sheets if multiple)*

Name/Company: Montex(Brownlee) LLC & Montex (Vista Ridge) LLC
Contact Person: Andy Chaikovsky
Address:
City/State/Zip:
Phone: Fax:
E-mail:

AUTHORIZED REPRESENTATIVE

Company/Firm: King Soopers
Contact Person: Drew Warot
Address: 65 Tejon Street
City/State/Zip: Denver, CO 80223
Phone: (303) 778-2052 Fax:
E-mail: Drew.Warot@kingsoopers.com

MINERAL RIGHTS OWNER *(attach separate sheets if multiple)*

Name/Company: See Title Commitment
Address:
City/State/Zip:

MINERAL LEASE HOLDER *(attach separate sheets if multiple)*

Name/Company:
Address:
City/State/Zip:

LAND-USE & SUMMARY INFORMATION

Present Zoning: PD
Proposed Zoning: PD
Gross Acreage: ~ 29.85 acres (both phases), 20.25 (Phase 1)
Gross Site Density (du/ac):
Lots/Units Proposed: 9 (both phases), 1-6 (Phase 1)
Gross Floor Area: Lot 1-123Ksf, Lot 2-12,100sf, Lot 5-175sf

SERVICE PROVIDERS

Electric: United Power
Metro District: Vista Ridge
Water *(if other than Town):*
Gas: Xcel
Fire District: Mountain View Fire Rescue
Sewer *(if other than Town):*

PAGE TWO MUST BE SIGNED AND NOTARIZED

DEVELOPMENT REVIEW FEES			
ANNEXATION		**SUBDIVISION**	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☐ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☑ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☐ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☑ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☐ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00
*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*			

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: _____ Date: _____

Owner: _____ Date: _____

Applicant: _____ Date: 11-26-14

STATE OF COLORADO)
) ss.
County of Denver)

The foregoing instrument was acknowledged before me this 26 day of November, 2014, by Rhonda Remy.

RHONDA REMY
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144041674
MY COMMISSION EXPIRES OCTOBER 27, 2018

My commission expires: 10-27-18
Witness my hand and official seal.

_____
Notary Public

November 26, 2014

Mr. Marty Ostholthoff,
Community Development Director
Town of Erie
PO Box 750
Erie, CO 80516

Re: Letter of Authorization for Vista Ridge Montex and Brownlee Properties – Minor Subdivision and Site Development Plan

Dear Mr. Ostholthoff,

The attached Statement of Authority authorizes Mr. Drew Warot, Real Estate Specialist King Soopers/City Market, 65 Tejon Street, Denver, CO 80223 or such other designated representative of King Soopers/City Market to represent the various land owner's interest with respect to the Land Use Applications to the Town of Erie for Minor Subdivision and Site Development Plan for the properties described below.

Said Land Use Applications shall apply to the following described properties, located west of Sheridan Boulevard and north of Highway 7 (Baseline):

Parcel 1:
Legal Description
Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624 and more particularly described as follows:
A parcel of land located in the South Half of Section 33, Township 1 North, Range 68 West of the 6th P.M., more particularly described as follows:
Commencing at the South Quarter Corner of said Section 33;
Thence North 00° 06' 16" East, 75.00 feet along the West line of the Southeast Quarter to the Point of Beginning; Thence North 89° 38'37" West, 498.22 feet along the North right of way line of Colorado State Highway 7; Thence North 00° 06' 16" East, 865.79 feet along the Easterly line of Vista Ridge Master Plat Parcel 34; Thence along the Southerly right of way of Ridge View Drive the following two courses: 1)S89°31'49"E, 551.15 feet; 2)46.57 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 88° 57'03" and a chord bearing S45° 03'17"E, 42.04 feet; Thence along the Westerly right of way line of Sheridan Boulevard the following two courses: 1) S00° 34'46" B, 804.80 feet, 2)47.61 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 90° 55'52" and a chord bearing S44° 53' 10"W, 42.77 feet; Thence North 89° 38'54"W 62.20 feet along the North right of way of Colorado State Highway 7 to the Point of Beginning, County of Weld, State of Colorado.

Parcel 2:
Legal Description:
Parcels 33 and 34, Vista Ridge Master Final Flat, County of Weld, State of Colorado

Sincerely,

Andy Chajkovsky, Manager
Montex(Brownlee) LLC
Montex (Vista Ridge) LLC

Enclosures:
Statement of Authority, Montex (Brownlee) LLC
Statement of Authority, Montex (Vista Ridge) LLC

After Recording Return to:

_____

_____

_____

STATEMENT OF AUTHORITY

Pursuant to C.R.S. §38-30-172, the undersigned hereby executes this Statement of Authority on behalf of MONTEX (VISTA RIDGE), LLC, a Colorado limited liability company **an entity other than an individual, capable of holding title to real property (the "Entity"), and states as follows:**

The name of the Entity is: DILLON COMPANIES, INC

The Entity is a: Kansas corporation
(state type of entity and state, country or other government authority under whose laws such entity was formed)

The mailing address for the Entity is: 65 Tejon Street, Denver, Colorado 80223

The name or position of the person(s) authorized to execute instruments conveying, encumbering, or otherwise affecting title to real property on behalf of the Entity is:

Drew Warot, Real Estate Specialist - King Soopers/City Market or such other designated representative

The limitations upon the authority of the person named above or holding the position described above to bind the Entity are as follows: NONE
(if no limitations insert "NONE")

The instrument and recording information, including the County, of the document by which title was acquired is:

Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624; and a part of parcels 33 and 34, Vista Ridge Master Final Plat, County of Weld, State of Colorado.

Other matters concerning the manner in which the Entity deals with any interest in real property are:

(if no matters, leave this section blank)

EXECUTED this 26th Day of November, 2014

By: _____

Andy Chaikovsky, Manager
Name/Title

STATE OF ~~COLORADO~~ Florida
COUNTY OF Sarasota } ss:

The foregoing instrument was acknowledged before me this 26th day of November, 2014
By Andy Chaikovsky as Manager of Montex (Vista Ridge), LLC, a Colorado limited liability company

Witness my hand and official seal.
My commission expires: 06/09/2018

_____

Alexander Poland
State of Florida
My Commission Expires 06/09/2018
Commission No. FF 130873
Bonded through Western Surety Company

After Recording Return to:

_____

_____

_____

STATEMENT OF AUTHORITY

Pursuant to C.R.S. §38-30-172, the undersigned hereby executes this Statement of Authority on behalf of MONTEX (BROWNLEE), LLC, a Colorado limited liability company **an entity other than an individual, capable of holding title to real property (the "Entity"), and states as follows:**

The name of the Entity is: DILLON COMPANIES, INC

The Entity is a: Kansas corporation
(state type of entity and state, country or other government authority under whose laws such entity was formed)

The mailing address for the Entity is: 65 Tejon Street, Denver, Colorado 80223

The name or position of the person(s) authorized to execute instruments conveying, encumbering, or otherwise affecting title to real property on behalf of the Entity is:

Drew Warot, Real Estate Specialist - King Soopers/City Market or such other designated representative

The limitations upon the authority of the person named above or holding the position described above to bind the Entity are as follows: NONE
(if no limitations insert "NONE")

The instrument and recording information, including the County, of the document by which title was acquired is:

Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624; and a part of parcels 33 and 34, Vista Ridge Master Final Plat, County of Weld, State of Colorado.

Other matters concerning the manner in which the Entity deals with any interest in real property are:

(if no matters, leave this section blank)

EXECUTED this 26th day of November, 2014

By: _____

Andy Chaikovsky, Manager
Name/Title

STATE OF ~~COLORADO~~ Florida }ss:
COUNTY OF Sarasota

The foregoing instrument was acknowledged before me this 26th day of November, 2014,
By Andy Chaikovsky as Manager of Montex (Brownlee), LLC, a Colorado limited liability company

Witness my hand and official seal.

My commission expires: 06/09/2018

_____

Alexander Poland
State of Florida
My Commission Expires 06/09/2018
Commission No. FF 130873
Bonded through Western Surety Company

Heritage Title Company
Making Transactions Personal
Commonwealth Land Title Insurance Company

4582 South Ulster St Pkwy,
Denver, CO 80237
Phone: (303) 476-5800
Fax: (303) 628-1671

DATE: November 25, 2014
FILE NUMBER: 451-H0411791-266-ES4, Amendment No. 1
PROPERTY ADDRESS: Vista Ridge, Erie, CO 99999
BUYER/BORROWER:
OWNER(S):
YOUR REFERENCE NUMBER:
ASSESSOR PARCEL NUMBER:

PLEASE TAKE NOTE OF THE FOLLOWING REVISED TERMS CONTAINED HEREIN:

None.

WIRED FUNDS ARE REQUIRED ON ALL CASH PURCHASE TRANSACTIONS. FOR WIRING INSTRUCTIONS, PLEASE CONTACT YOUR ESCROW OFFICE AS NOTED ON THE TRANSMITTAL PAGE OF THIS COMMITMENT.

TO:	**King Soopers** **65 Tejon Street** **Denver, CO 80223**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Drew Warot** **(303) 778-2052** **(303) 715-4546** **drew.warot@kingsoopers.com**
TO:	**Denver Title-Commercial Title Only Escrow** **4582 South Ulster St Pkwy** **Denver, CO 80237**	**ATTN:** **PHONE:** **FAX:** **E-MAIL:**	**Eric Stearns** **(303) 476-5800** **(303) 628-1671** **estearns@heritagetco.com**

END OF TRANSMITTAL

Commonwealth Land Title Insurance Company
COMMITMENT

SCHEDULE A

Commitment No: **451-H0411791-266-ES4, Amendment No. 1**

1. **Effective Date:** **November 18, 2014 at 7:00 A.M.**

2. **Policy or policies to be issued:**

	Proposed Insured	Policy Amount
(a)	ALTA Owners Policy 6-17-06	$0.00
(b)	None	$0.00
		$

3. **The estate or interest in the land described or referred to in this Commitment is:**

   A Fee Simple

4. **Title to the estate or interest in the land is at the Effective Date vested in:**

   Montex (Brownlee), LLC, a Colorado limited liability company as to Parcel 1

   And

   Montex (Vista Ridge), LLC, a Colorado limited liability company as to Parcel 2

5. **The land referred to in this Commitment is described as follows:**

   See Attached Legal Description

(for informational purposes only) Vista Ridge, Erie, CO 99999

PREMIUMS:

Informational Commitment : $ 550.00
Owners Policy : $ TBD

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AMERICAN LAND TITLE ASSOCIATION

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AMERICAN LAND TITLE ASSOCIATION

Attached Legal Description

Parcel 1:

Legal Description

Parcels 1 and 2 of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624 and more particularly described as follows:

A parcel of land located in the South Half of Section 33, Township 1 North, Range 68 West of the 6th P.M., more particularly described as follows:

Commencing at the South Quarter Corner of said Section 33;

Thence North 00° 06' 16" East, 75.00 feet along the West line of the Southeast Quarter to the Point of Beginning;

Thence North 89° 38'37" West, 498.22 feet along the North right of way line of Colorado State Highway 7;

Thence North 00° 06' 16" East, 865.79 feet along the Easterly line of Vista Ridge Master Plat Parcel 34;

Thence along the Southerly right of way of Ridge View Drive the following two courses:
1)S89°31'49"E, 551.15 feet;

2)46.57 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 88° 57'03" and a chord bearing S45° 03'17"E, 42.04 feet; Thence along the Westerly right of way line of Sheridan Boulevard the following two courses:

1) S00° 34'46" B, 804.80 feet,

2)47.61 feet along the arc of a tangent curve to the right, said arc subtended by a radius of 30.00 feet, a central angle of 90° 55'52" and a chord bearing S44° 53' 10"W, 42.77 feet;

Thence North 89° 38'54"W 62.20 feet along the North right of way of Colorado State Highway 7 to the Point of Beginning, County of Weld, State of Colorado.

Parcel 2:

Legal Description:

Parcels 33 and 34, Vista Ridge Master Final Flat, County of Weld, State of Colorado

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AMERICAN LAND TITLE ASSOCIATION

SCHEDULE B – Section 1

Requirements

The following requirements must be met:

a. Pay the agreed amounts for the interest in the land and/or for the mortgage to be insured.

b. Pay us the premiums, fees and charges for the policy.

c. Obtain a certificate of taxes due from the county treasurer or the county treasurer's authorized agent.

d. Deed sufficient to convey the fee simple estate or interest in the Land described or referred to herein, to the Proposed Insured Purchaser.

e. The Company will require that an Owner's Affidavit be completed by the party(s) named below before the issuance of any policy of title insurance.

Party(s): Montex (Brownlee), LLC, a Colorado limited liability company and
Montex (Vista Ridge), LLC, a Colorado limited liability company

The Company reserves the right to add additional items or make further requirements after review of the requested Affidavit.

f. Furnish to the Company an ALTA/ACSM Land Title Survey in form, content and certification to Commonwealth Land Title Insurance Company and Heritage Title Company, Inc..

Note: Exception may be made to any adverse matters disclosed by the ALTA/ACSM Land Title Survey.

END OF REQUIREMENTS

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SCHEDULE B – Section 2

Exceptions

Any policy we issue will have the following exceptions unless they are taken care of to our satisfaction:

1. Any facts, rights, interests or claims that are not shown by the Public Records but which could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

2. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

3. Any encroachments, encumbrances, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by Public Records.

4. Any lien or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the effective date hereof but prior to the date the proposed Insured acquires of record for the value the estate or interest or mortgage thereon covered by this Commitment.

   NOTE: The above exception will not appear on policies where closing and settlement has been performed by the Company.

6. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof, (c) water rights, claims of title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

7. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

8. All taxes and assessments, now or heretofore assessed, due or payable.

9. Any existing leases or tenancies, and any and all parties claiming by, through or under said lessees.

10. Any boundary discrepancy due to the location of fence lines and the effect of any right, title or interest that may be claimed due to any said discrepancy.

11. Reservations by the Union Pacific Railroad Company (now known as Union Pacific Resources Company) of (1) oil, coal and other minerals underlying the land, (2) the exclusive right to prospect for, mine and remove oil, coal and other minerals, and (3) the right of ingress and egress and regress to prospect for, mine and remove oil, coal and other minerals, all as contained in Deed recorded June 4, 1902 in Book 201 at Page 16.

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AMERICAN LAND TITLE ASSOCIATION

12. Mineral Deed to Champlin Petroleum Company recorded November 30, 1972 in Book 681 at Reception No. 1602712.

13. Relinquishment and Quit Claim as to the surface entry only, for minerals exclusive of oil, gas and associated liquid hydrocarbons, to Vista Ridge Development Corporation, recorded August 21, 2000 at Reception No. 2788395.

14. Surface Use Agreement by and between Union Pacific Resources Company and Vista Ridge Development Corporation recorded August 21, 2000 at Reception No. 2788394 and amendment recorded November 15, 2004 at Reception No. 3235488.

15. Request for Notification of Surface Development by RME Petroleum and RME Land Corp. recorded May 28, 2002 at Reception No. 2954455.

16. Excluding and excepting from the transfer by these presents "All Mineral Lands" should any such be found to exist in the tracts described in the foregoing, but this exclusion and exception, according to the terms of the statute,. "shall not be construed to include coal and iron land" by the Patent recorded July 9, 1902 in Book 201 at Page 66.

17. Terms, conditions, provisions, agreements and obligations specified under the Oil and Gas Lease, executed by Champlin Petroleum Company nka Union Pacific Railroad Company and Pan American Petroleum Corporation recorded November 30, 1972 in Book 681 at Reception No. 1602713. Notice recorded December 7, 2000 at Reception No. 2811882.

18. An easement for right of way and incidental purposes granted to Mountain States Telephone and Telegraph Company by the instrument recorded November 18, 1986 in Book 1135 at Reception No. 2077413.

19. The effect of a document entitled "Certificate of Organization for the Northwest Parkway Public Highway Authority" recorded June 30, 1999 at Reception No. 2703636 and re-recorded November 19, 1999 at Reception No. 2733705.

20. Any tax fee lien or assessment by reason of inclusion in of Vista Ridge Metropolitan District, as disclosed by the instrument recorded January 8, 2001 at Reception No. 2817763.

21. Any tax fee lien or assessment by reason of inclusion in North Metro Fire Protection District by Order recorded October 30, 2001 at Reception No. 2895963.

22. Any tax fee lien or assessment by reason of inclusion of subject property within Northern Colorado Water Conservancy District by Order recorded December 14, 2001 at Reception No. 2908972, 2908971, 2908970 and 2908969.

23. The effect of Vista Ridge Development Plan recorded September 15, 2000 at Reception No. 2793940.

24. General Development Plan Minor Amendment No. 1 recorded February 27, 2002 at Reception No. 2928673.

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25. An easement for electric and communication facilities and incidental purposes granted to United Power, Inc. by the instrument recorded in Adams County December 20, 2002 at Reception No. 1070363 and in Weld County January 15, 2003 at Reception No. 3023992.

26. An easement for electric facilities and incidental purposes granted to United Power, Inc. by the instrument recorded January 15, 2003 at Reception No. 3023994.

27. The effect, if any, of Subdivision Exemption No. 977 recorded June 9, 2003 at Reception No. 3070624.

28. An easement for right of way and incidental purposes granted to United Power, Inc. by the instrument recorded May 22, 2003 at Reception No. 3065313.

29. The effect of Request for Notification (Mineral Estate Owner) recorded December 21, 2007 at Reception No. 3525268.

30. Terms, agreements, provisions, conditions and obligations of a Oil and Gas Lease (Paid Up), executed by United States Exploration, Inc., a Colorado corporation, as Lessee(s), recorded December 4, 2007 at Reception No. 3521379.

31. An easement granted to Qwest Corporation by the instrument recorded October 10, 2001 at Reception No. 2890895.

32. An easement granted to United Power by the instrument recorded September 4, 2002 at Reception No. 2984585.

33. An easement granted to Public Service Company by the instrument recorded October 8, 2002 at Reception No. 2994217.

34. Ordinance Zoning the Vista Ridge Annexation to Planned Development (PD), recorded August 30, 2000 at Reception No. 2790549.

35. The effect of a document entitled "Certificate of Organization for the Northwest Parkway Public Highway Authority" recorded June 30, 1999 at Reception No. 2703636 and re-recorded November 19, 1999 at Reception No. 2733705.

36. Ordinance Annexing Vista Ridge into the Town of Erie recorded August 30, 2000 at Reception No. 2790550.

37. Terms, conditions, provisions, agreements and obligations specified under the Vista Ridge Annexation Agreement by and between Vista Ridge Development Corporation, et al and The Town of Erie, Colorado recorded September 15, 2000 at Reception No. 2793930 and re-recorded December 8, 2000 at Reception No. 2812291.

38. Easement and Right-of-Way granted to Farmers Reservoir and Irrigation Company for a non-exclusive easement for an underground water pipeline and appurtenances recorded October 22, 2001 at Reception No. 2893921.

39. Terms, Conditions and Provisions of Master Declaration of Covenants, Conditions and Restrictions for Vista Ridge recorded December 14, 2001 at Reception No. 2909244 and amended January 28, 2003 at Reception No. 3027600.

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40. Terms, Conditions, Provisions and obligations as set forth in Development Agreement between the Town of Erie, Vista Ridge Metropolitan District and Vista Ridge Development Corporation, a Colorado Corporation recorded December 4, 2001 at Reception No. 2905896.

    Note: Notice in connection with the above District and Development Fees recorded June 14, 2006 at Reception No. 3396125.

41. Easements, Notes, Conditions, as shown on the plat of Vista Ridge Master Final Plat recorded September 06, 2001 at Reception No. 2903870 as Subdivision No. 12220.

42. The effect of Vista Ridge Development Plan recorded September 15, 2000 at Reception No. 2793940 and the General Development Plan Minor Amendment No. 1 recorded February 27, 2002 at Reception No. 2928673.

43. Terms, conditions, provisions, agreements and obligations specified under the Declaration of Golf Play Covenants by Vista Ridge Development Corporation recorded July 7, 2003 at Reception No. 3080606.

44. An easement for electrical facilities and incidental purposes granted to United Power, Inc. by the instrument recorded September 22, 2003 at Reception No. 3108688.

45. Terms, conditions, provisions, agreements and obligations contained in the Title Companies and other Interested Parties: Please be on Notice That: recorded June 14, 2006 at Reception No. 3396125, and as also recorded September 20, 2010 at Reception No. 3719463, and also recorded March 16, 2012 at Reception No. 3832301, and as also recorded May 21, 2013 at Reception No. 3933756, and as also recorded March 18 2014 at Reception No. 4002991, and as also recorded August 20, 2014 at Reception No. 4039682, and Recorded November 14, 2014 at Reception No. 4061805.

46. Covenants, conditions and restrictions, which do not include a forfeiture or reverter clause, set forth in the instrument recorded November 19, 2008 at Reception No. 3590556. Provisions regarding race, color, creed, and national origin, if any, are deleted.

47. The effect of Annexation Map recorded September 15, 2000 at Reception No. 2793937.

48. Deed of Easement granted to the Town of Erie, for passage of aircraft in the airspace above subject property as recorded November 28, 2001 at Reception No. 2903864.

49. Terms, agreements, provisions, conditions and obligations of a Oil and Gas Lease (Paid Up), executed by United States Exploration, Inc., a Colorado corporation, as Lessee(s), recorded December 4, 2007 at Reception No. 3521379.

50. ALTA / ACSM Survey Vista Ridge Commercial East Recorded January 28, 2010 at Reception No. 3672682.

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51. Terms, agreements, provisions, conditions and obligations of Sheridan – Highway 7 Commercial Center Annextion Agreement Recorded March 3, 2011 at Reception No. 3753953, and Annexation Map Recorded March 3, 2011 at Reception No. 3753952, Ordinance No. 30.2010 in connection to said Annexation Recorded March 3, 2011 at Reception No. 3753954, and Ordinance No. 31.2010 in connection to said Annexation Recorded March 3, 2011 at Reception No. 3753955.

52. Terms, agreements, provisions, conditions and obligations of the Vista Ridge Development Plan Amendment No. 5 as Recorded November 26, 2012 at Reception No. 3890727 and Vista Ridge Development Plan Amendment No. 6 as Recorded November 25, 2013 at Reception No. 3980214.

END OF EXCEPTIONS

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PROJECT NARRATIVE
November 28, 2014

KINGS SOOPERS #129 - VISTA RIDGE MARKETPLACE
VISTA RIDGE FILING NO. 13,
ERIE, COLORADO

A. General Project Concept

King Soopers, Inc., located at 65 Tejon Street, Denver, CO 80223, is proposing to develop a 20.25 acre parcel of vacant land located at the NWC of Sheridan Parkway and Hwy 7, in Erie, CO. Galloway and Company, Inc. is the authorized representative and design consultant for King Soopers for the purpose of obtaining Town of Erie Site Plan approval and permits for construction of the proposed grocery anchored development.

An overall property boundary of approximately 33.3018 acres encompassing portions of the existing Parcel 33 and 34 of the Vista Ridge Final Plat the existing Brownlee property will be subdivided into various lots and tracts. Of that proposed subdivision, approximately 20.25 acres will contain the first phase of the commercial development of which the proposed site plan has been prepared. The site plan contains a total of 6 lots and a water quality/detention Tract. The Site Plans include a King Soopers Marketplace on Lot 1 with a building footprint of ~119,459 S.F., plus a second floor mezzanine, for a total of 123,000SF. A drive-thru pharmacy, Fred Meyer Jewelry store, Little Clinic and Starbucks Coffee are also included within the proposed building footprint. Lot 2 will be a 12,000 SF retail building adjacent to the King Soopers. The parking for the retail uses on Lot 2 will be constructed along with the parking required for the King Soopers on Lot 1. Lot 5 is proposed to be a 9 dispenser fuel site for the King Soopers. Lots 3, 4, and 6 will be overlot graded with utilities stubbed into them for future commercial development.

The development will be served by five major access points, two along Hwy 7, one along Sheridan Parkway, and two along Ridge View Road. A Traffic Impact Study prepared by Kimley-Horn & Associates has been included with the submittal packet.

Pedestrian access has been provided to the proposed development from both Sheridan Parkway via connection to the existing sidewalk along the west side of Sheridan. Sidewalks area also planned to be constructed along Ridge View and Hwy 7 along the frontage of the property.

Town of Erie public works will serve the proposed lot for water and sewer. United Power is the service provider for electric and Xcel Energy is the service provider for natural gas. All utilities are available and currently serving the site. Mountain View Fire Protection District will also serve this proposed development.

A conceptual drainage plan and report has been included in this submittal package for Town review. The plan proposes a water quality and detention pond located at the northeast corner of the proposed King Soopers site, within Tract A of the proposed Final Plat.

B. Compliance with Five Approval Criteria of MC Title 10-UDC

1. *Meets land use designation for commercial use. The project will also be integrated into the existing and proposed roadway network outlined in the comp. plan.*
2. *The site plan and final plat are consistent with the boundaries outlined for this general commercial portion of the Vista Ridge master plan. The proposed site plan has been designed to coordinate internal drive lanes and access points that will work with the remaining undeveloped portions of this retail area to the west of the property. Thus creating the ability to establish an overall cohesive commercial center from Mountain View Blvd. to Sheridan Parkway.*
3. *The site plan has been prepared in general conformance with the Town of Erie Zoning regulations and design standards. Setbacks, landscape %'s, parking layouts, etc. have been evaluated. Parking quantities may require a variance for the King Soopers Lot 1.*
4. *No adverse impacts from the proposed development are anticipated.*
5. *The proposed development will be compatible with the surrounding land uses as this site is bound on both the west and east by future commercial areas and on the north by a school, which provides a buffer from the residential development further north.*

C. Architecture

By utilizing the craftsman style of architecture as well as materials and finishes similar to surrounding buildings, the King Soopers Marketplace store and adjacent retail will provide a visually interesting addition to the Town of Erie and the Vista Ridge commercial district. Exposed wood framing and trellises have been incorporated into the design, and canopies and awnings have been used to provide visual interest at the scale of the pedestrian. Changes in wall height and pilasters have been utilized to reduce the monolithic appearance of the walls.

D. Project Schedule

Construction of the proposed development is anticipated to begin in the Spring of 2015 with construction completing in the Spring of 2016. The full 20.25 acres of on-site improvements and all related short term off-site improvements are intended to be construction in a single phase.

E. Business Data

- *The King Soopers Marketplace size is approximately 119,459 S.F., plus a second floor mezzanine, for a total of 123,000SF.*
- *The Store will employ a total of 150 to 170 employees. We expect to have 70 to 90 employees on-site per day.*
- *The King Soopers Marketplace site will be open 24 hours per day, 7 days per week. Employees will be present 24 hours as well.*
- *Typical Vehicles - 67' tractor/trailers; panel/delivery vans/customer cars from small economy care to large SUV's will access the site. 2-5 primary deliveries with a WB67 truck are anticipated daily, along with additional vendor truck traffic.*
- *Lot 1 – KS Building – 13.1679 Ac, Lot 2 – Retail – 1.4749 Ac, Lot 5 – Fuel Facility – 0.9839 Ac.*

F. Residential Units (N/A)

G. Ownership/Maintenance of public/common areas

King Soopers will own all 20.25 acres initially including Tract A. A separate Common Area Maintenance Agreement will be established by King Soopers and future Lot owners and tenant space leases. All necessary easements are shown on the proposed plat and will be granted by plat or separate documents for utilities, signs, drainage tracts, etc.

Covenants and Restrictions – King Soopers will be developing at Real Estate Covenants and Restrictions agreement that will cover the proposed entire subdivided property.

H. Mineral Rights Status

Mineral rights are currently encumbering the site per the latest Title Commitment. King Soopers is currently working with the seller and the sellers representative to clean up the title in order to relinquish these mineral rights.

Traffic Impact Study

King Soopers #129
Erie, Colorado

Prepared for:

Galloway & Company

Kimley»Horn

T R A F F I C I M P A C T S T U D Y

Erie King Soopers #129

Erie, Colorado

Prepared for
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6162 S. Willow Drive
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Prepared by
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990 South Broadway
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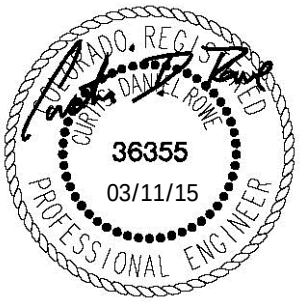
Denver, Colorado 80209
(303) 228-2300



March 2015

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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1.0 EXECUTIVE SUMMARY

Erie King Soopers #129, a grocery store anchored commercial development, is proposed to be located on the northwest corner of the State Highway 7 (SH-7) and Sheridan Parkway intersection in Erie, Colorado. The project includes a total of six (6) commercial lots and one larger 10-acre parcel for future commercial use (Phase II). A new 123,000 square foot King Soopers Marketplace grocery store is proposed within Lot 1. Approximately 11,028 square feet of retail space is proposed within Lot 2. A gas station with 18 fueling positions is proposed within Lot 6. The other lots are anticipated to include various retail uses. It was assumed that the other retail areas (Lot 3, 4, 5, and Tract B) would total approximately 145,000 square feet of commercial retail space based a retail floor area ratio (FAR) of 0.20 as is believed to be appropriate for the outparcel development and adjacent areas of Phase 2. Analysis was completed for build out of the development in 2016 as well as the 2035 long-term horizon to determine intersection and roadway configurations needed at both planning horizons.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following three key intersections were included for evaluation within this study:

- State Highway 7 and Mountain View Boulevard;
- State Highway 7 and Sheridan Parkway; and
- Ridge View Drive and Sheridan Parkway.

The proposed project access intersections along State Highway 7, Sheridan Parkway, and Ridge View Drive were also studied.

Regional access to the project will be provided by Interstate 25 and Northwest Parkway. Primary access to the proposed commercial development will be provided by State Highway 7 and Sheridan Parkway. Direct access is proposed at one access along State Highway 7, one access along Sheridan Parkway, and two accesses along Ridge View Drive. Two additional accesses are anticipated along Ridge View Drive to be constructed to serve the Phase II development. For purposes of this study, all four driveways along Ridge View Drive were evaluated with full build out. The access along State Highway 7 is proposed to be a three-

quarter movement access with restriction to exiting left turning movements. The access along Sheridan Parkway is proposed to allow full turning movements. All four access driveways along Ridge View Drive will allow full turning movements.

Full build out of the Erie King Soopers #129 commercial development project is expected to generate approximately 15,764 daily weekday driveway trips. Of these, 484 driveway trips are expected to occur during the morning peak hour, while 1,423 driveway trips are expected during the afternoon peak hour. Since the project is a commercial development, pass-by trips are expected. These pass-by trips are vehicles already on the street network that will be attracted to the site. The expected pass-by trips to the development results in an anticipated 10,018 weekday daily trips, of which 297 and 913 trips are anticipated to be new (non pass-by) during the weekday morning and afternoon peak hours, respectively.

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, demographic information, anticipated surrounding development areas, and the proposed access system for the project. Assignment of project traffic was based upon the trip generation described previously and the distributions developed. The traffic assignment was added to the background traffic volumes to determine future traffic with the project.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Erie King Soopers #129 project will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following recommendations:

2016 Year Improvement Recommendations

- Four accesses are proposed with the construction of the Erie King Soopers #129 development. One access is proposed along State Highway 7, one access along Sheridan Parkway, and two accesses along Ridge View Drive. Phase II will likely include two additional accesses along Ridge View Drive.
- It is recommended that the southbound left turn lane length at the SH-7/Sheridan Parkway intersection be reduced from 425 feet to 325 feet so that back-to-back left turn storage will be available along Sheridan Parkway between SH-7 and the proposed full

movement project access. This length is anticipated to be sufficient to accommodate future traffic volumes.

- It is recommended that the northbound left turn lane at the Ridge View Drive and Sheridan Parkway intersection also be reduced due to the proposed project access location along Sheridan Parkway. This left turn lane is recommended to be reduced from 350 feet to 150 feet. This turn bay length is anticipated to be sufficient to accommodate future traffic volumes.
- It is recommended that an eastbound left turn lane be designated within the full width striped median along SH-7 at the proposed three-quarter movement access. It is recommended that this left turn lane be designated with a length of 630 feet plus a 220-foot taper (850-foot total length).
- A continuous westbound auxiliary acceleration/deceleration lane exists along State Highway 7 between Sheridan Parkway and Mountain View Boulevard. This existing lane will serve as both an acceleration and deceleration lane for the proposed three-quarter SH-7 project access.
- At the proposed SH-7 three quarter movement access, it is recommended that a R3-2 No Left Turn sign be installed for the southbound approach for motorists exiting the development. This sign can be installed under the R1-1 “STOP” or R1-2 “YIELD” sign if desired.
- It is recommended that a 100-foot northbound left turn lane be designated along Sheridan Parkway for the proposed full movement access. Since there is approximately 450 feet of back-to-back available storage available between SH-7 and the project driveway, it is recommended that the taper between the left turn lanes be 25 feet to allow for the recommended 325-foot southbound left turn lane at SH-7.
- It is recommended that the full movement access on Sheridan Parkway be designated with stop control with a R1-1 “STOP” sign installed on the eastbound exiting approach. The eastbound exiting approach is recommended to be constructed with separate left and right turn lanes. The left turn lane length recommended is the standard driveway throat depth of 50 feet.
- All access approaches to Ridge View Drive are recommended to be designated with R1-1 “STOP” signs installed on the northbound approach out of the development. The eastern middle access is anticipated to receive the most traffic and is therefore recommended to have separate left and right lanes. All other access on Ridge View

Drive are believed to operate acceptably with shared northbound left turn/right turn lanes.

- It is recommended that the full lane width median along Ridge View Drive be restriped to include a two way left turn lane through the proposed project accesses. It is recommended that this be coordinated with Montex North and South developments to provide a coordinated plan for Ridge View Drive.

2035 Long Term Twenty Year Planning Horizon Improvement Recommendations

- State Highway 7 may need to be a six-lane roadway by 2035. It is believed that when this occurs, right turn movements to and from the driveways will occur from the third outside through lane along westbound SH-7. Sheridan Parkway may need to be a four-lane (or six-lane) roadway by 2035 as identified within the Amendment to the SH 7 Access Control Plan.
- The intersection of State Highway 7 with Sheridan Parkway is recommended to have dual left turn lanes on all approaches.
- Upon construction of the dual southbound left turn lanes at the SH-7 and Sheridan Parkway intersection, it is believed that the turn lane storage bay length can reduce to 200 feet. This will allow for a 150-foot northbound left turn lane at the proposed Sheridan Parkway access with a standard 100-foot taper between the back-to-back left turn lanes along Sheridan Parkway between the proposed full movement access and SH-7.

General Recommendations

- All on-site and off-site roadway improvements should be incorporated into the Civil Drawings, and conform to standards of the Town of Erie (as appropriate), American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, Institute of Transportation Engineers (ITE), and the Manual on Traffic Control Devices (MUTCD) – 2009 Edition.

2.0 INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared this report to document the results of a Traffic Impact Study of future traffic conditions associated with the proposed Erie King Soopers #129 project to be located on the northwest corner of State Highway 7 and Sheridan Parkway in Erie, Colorado. A vicinity map illustrating the project location with respect to the surrounding area is shown in **Figure 1**.

The project includes a total of six (6) commercial lots and one larger 10-acre parcel for future commercial use (Phase II). A new 123,000 square foot King Soopers Marketplace grocery store is proposed within Lot 1. Approximately 11,028 square feet of retail space is proposed within Lot 2. A gas station with 18 fueling positions is proposed within Lot 6. The other lots are anticipated to include various retail uses. It was assumed that the other retail areas (Lot 3, 4, 5, and Tract B) would total approximately 145,000 square feet of commercial retail space based a retail floor area ratio (FAR) of 0.20 as is believed to be appropriate for the outparcel development and adjacent areas of Phase 2. A site plan illustrating the proposed development is provided in **Appendix F**.

Analysis was completed for the anticipated build out of the development in 2016 as well as the 2035 long-term horizon to determine intersection and roadway configurations needed at both planning horizons. The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following three key intersections were included for evaluation within this study:

- State Highway 7 and Mountain View Boulevard;
- State Highway 7 and Sheridan Parkway; and
- Ridge View Drive and Sheridan Parkway.

The proposed project access intersections along State Highway 7, Sheridan Parkway and Ridge View Drive were also studied.

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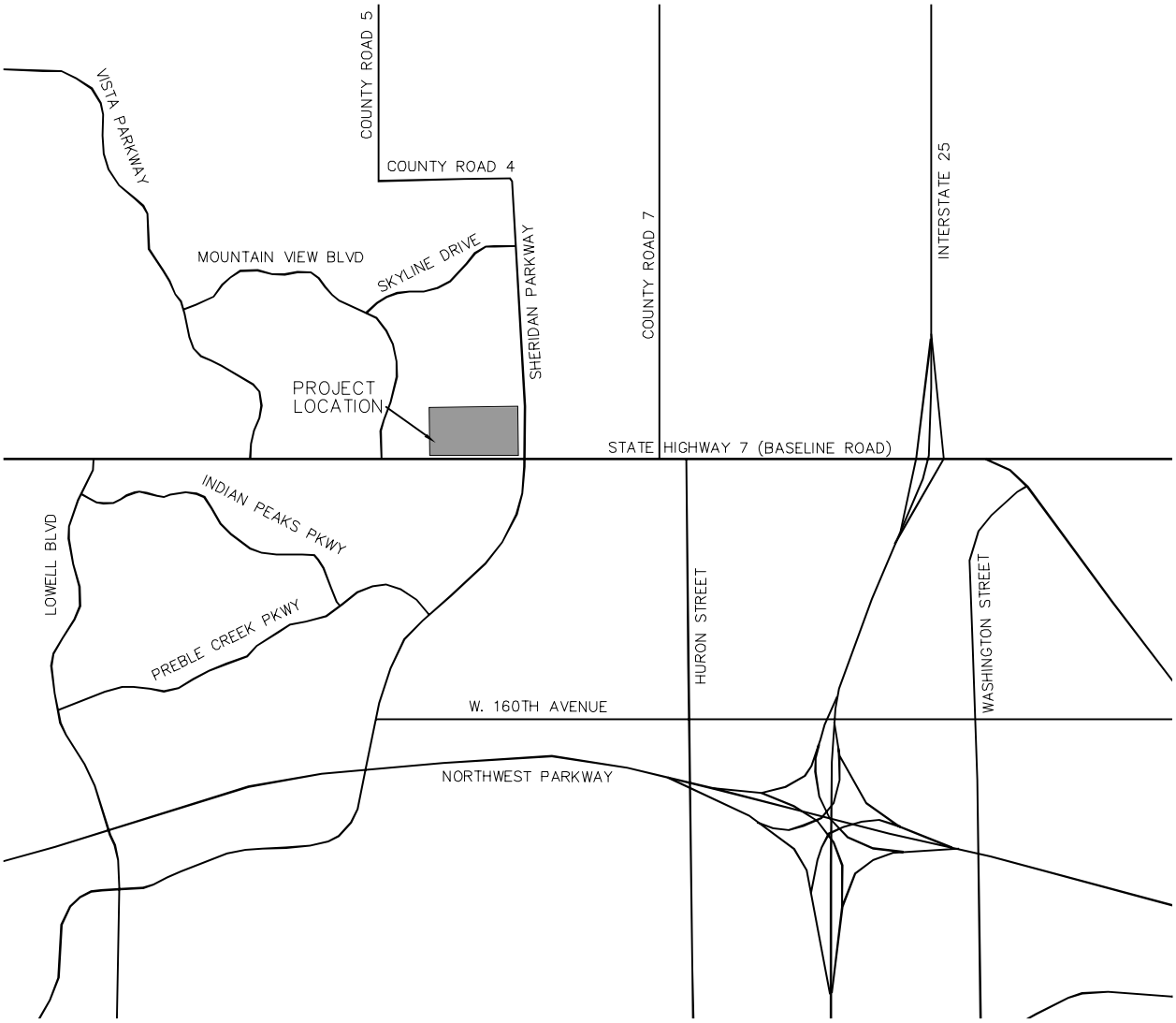

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
VICINITY MAP

FIGURE 1

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3.0 EXISTING CONDITIONS

The following sections outline existing conditions in the vicinity of the Erie King Soopers #129 development.

3.1 Existing Study Area

The existing project site consists of vacant, undeveloped land. The land directly west, south, and east of the project site is also currently vacant. Directly north of the project site is an existing school, Vista Ridge Academy, and vacant land. The land uses in the general surroundings of the site to the north and west are primarily residential and to the south are agricultural. Land uses to the east are currently mostly agricultural, but residential and commercial uses exist as well.

3.2 Existing Roadway Network

Regional access to the project will be provided by Interstate 25 and Northwest Parkway. Primary access to the proposed commercial development will be provided by State Highway 7 and Sheridan Parkway. The roadways adjacent to the proposed project are described within the following paragraphs.

State Highway 7

State Highway 7 is a four-lane roadway with a striped median and a 55 mile per hour speed limit adjacent to the site. This segment of the roadway runs east-west. Separate left turn and right turn lanes have been constructed along State Highway 7 at both signalized intersections with Mountain View Boulevard and Sheridan Parkway.

Sheridan Parkway

Sheridan Parkway is a two-lane roadway with a double yellow centerline and a 45 mile per hour speed limit adjacent to the site. This segment of the roadway runs north-south. The intersection with State Highway 7 is signalized and the intersection with Ridge View Drive operates with stop control on the eastbound Ridge View Drive approach.

Mountain View Boulevard

Mountain View Boulevard is a four-lane roadway with a landscaped median between State Highway 7 and Ridge View Drive. This segment of the roadway runs north-south and has a 35

mile per hour speed limit. The intersection with State Highway 7 is a signalized "T"-intersection. Mountain View Boulevard primarily provides residential access.

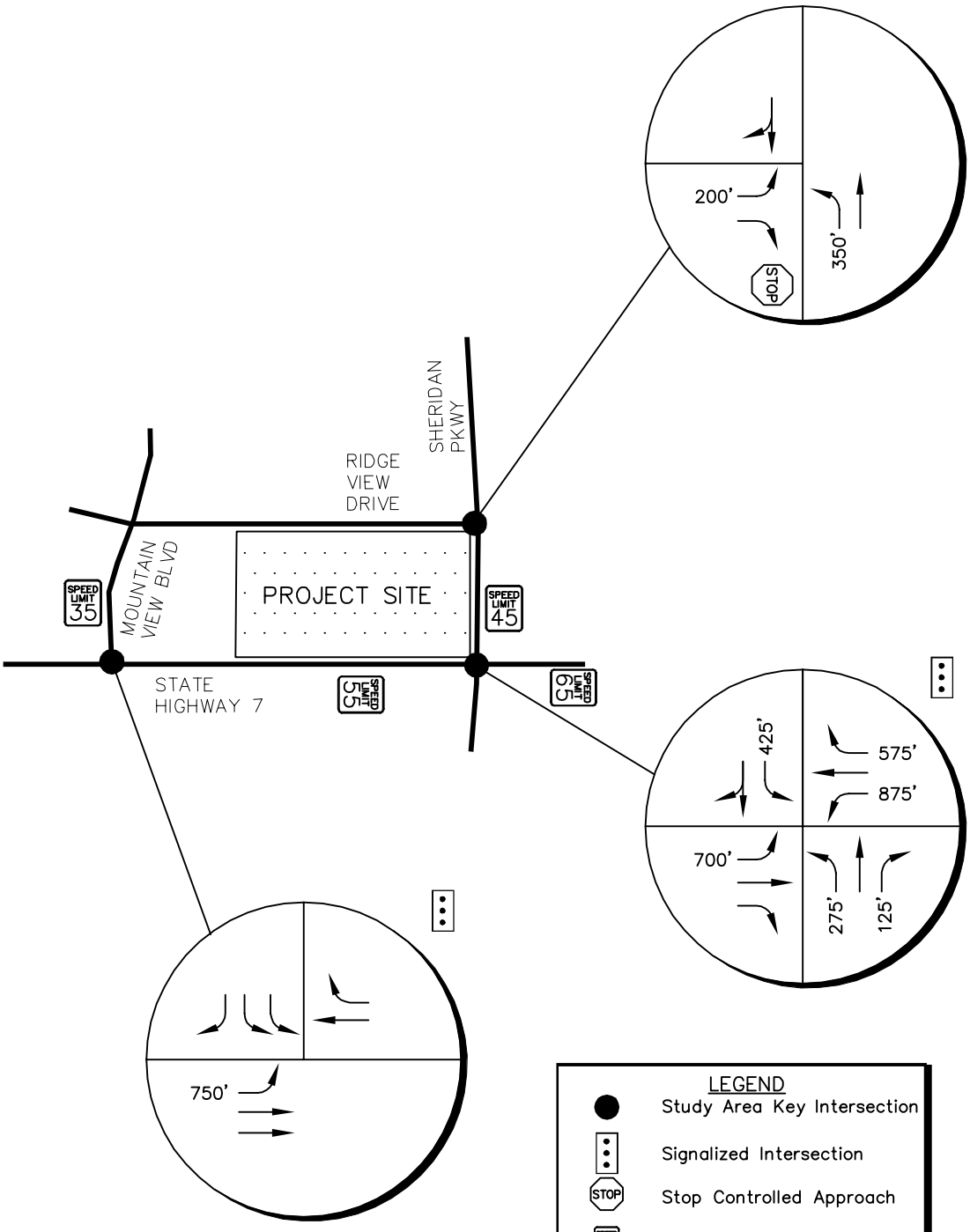
Ridge View Drive

Ridge View Drive is a two-lane roadway with a full lane width striped median and a 35 mile per hour speed limit adjacent to the site. This segment of the roadway runs east-west. The intersection with Sheridan Parkway is a "T"-intersection and operates with stop control on the eastbound approach.

Existing intersection lane configurations and control for the study area are shown in **Figure 2**.

3.3 Existing Traffic Volumes

Existing peak hour turning movement counts were conducted at the study key intersections on Wednesday, October 15, 2014 for the morning (AM) and afternoon (PM) peak hours. The counts were obtained in 15-minute intervals during the AM peak hour and PM peak hour of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively. The peak hour volumes from these counts are shown in **Figure 3** and the raw data count sheets are provided in **Appendix A**.



ERIE KING SOOPERS
STATE HIGHWAY 7 & SHERIDAN PKWY
EXISTING LANE CONFIGURATIONS

FIGURE 2

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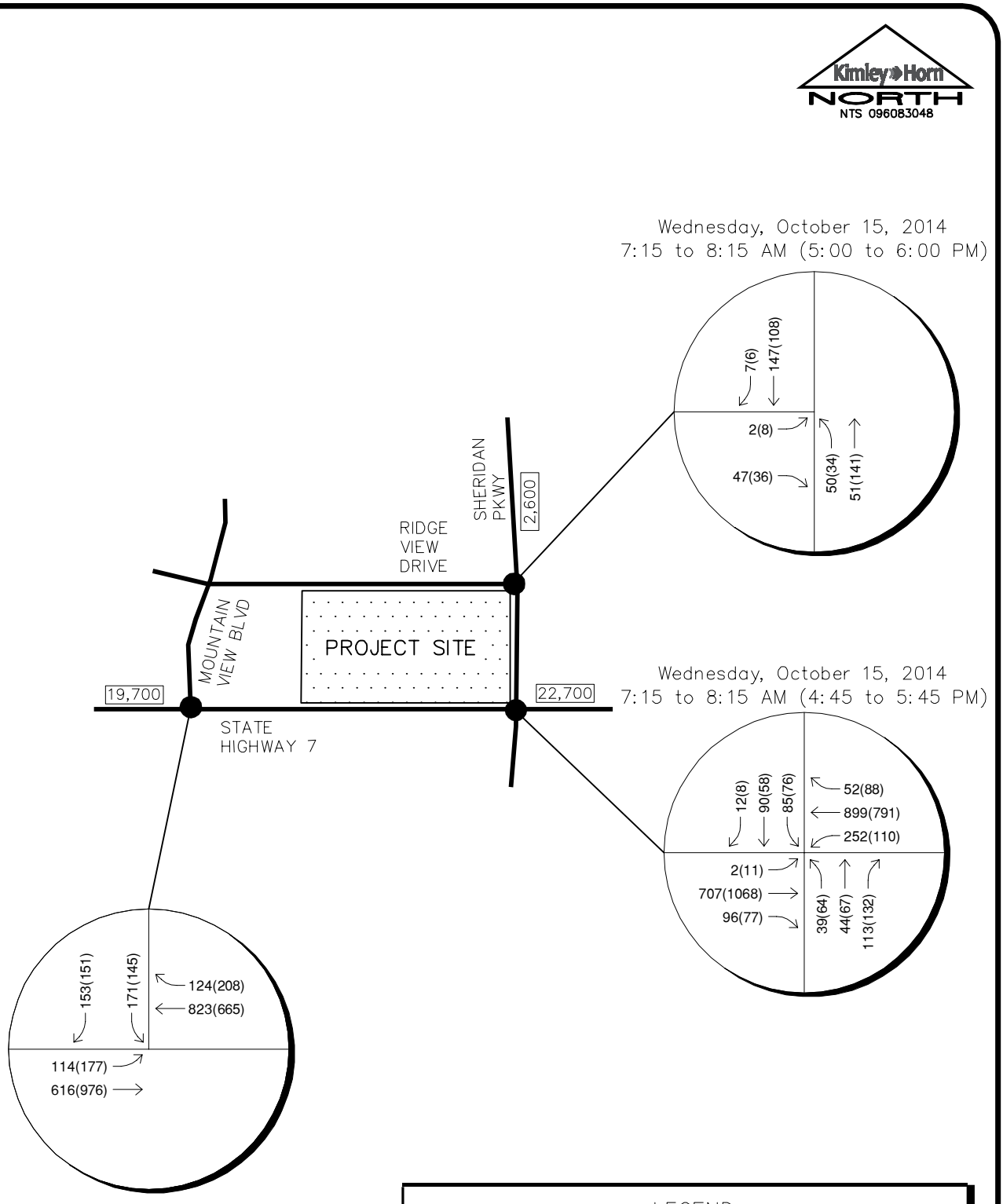


ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
EXISTING TRAFFIC VOLUMES

FIGURE 3

Kimley»Horn

4.0 FUTURE CONDITIONS

This section of the report details conditions that are expected with the development of the Erie King Soopers #129 project for both the build out (2016) and twenty-year (2035) horizon years.

4.1 Future Roadway Network

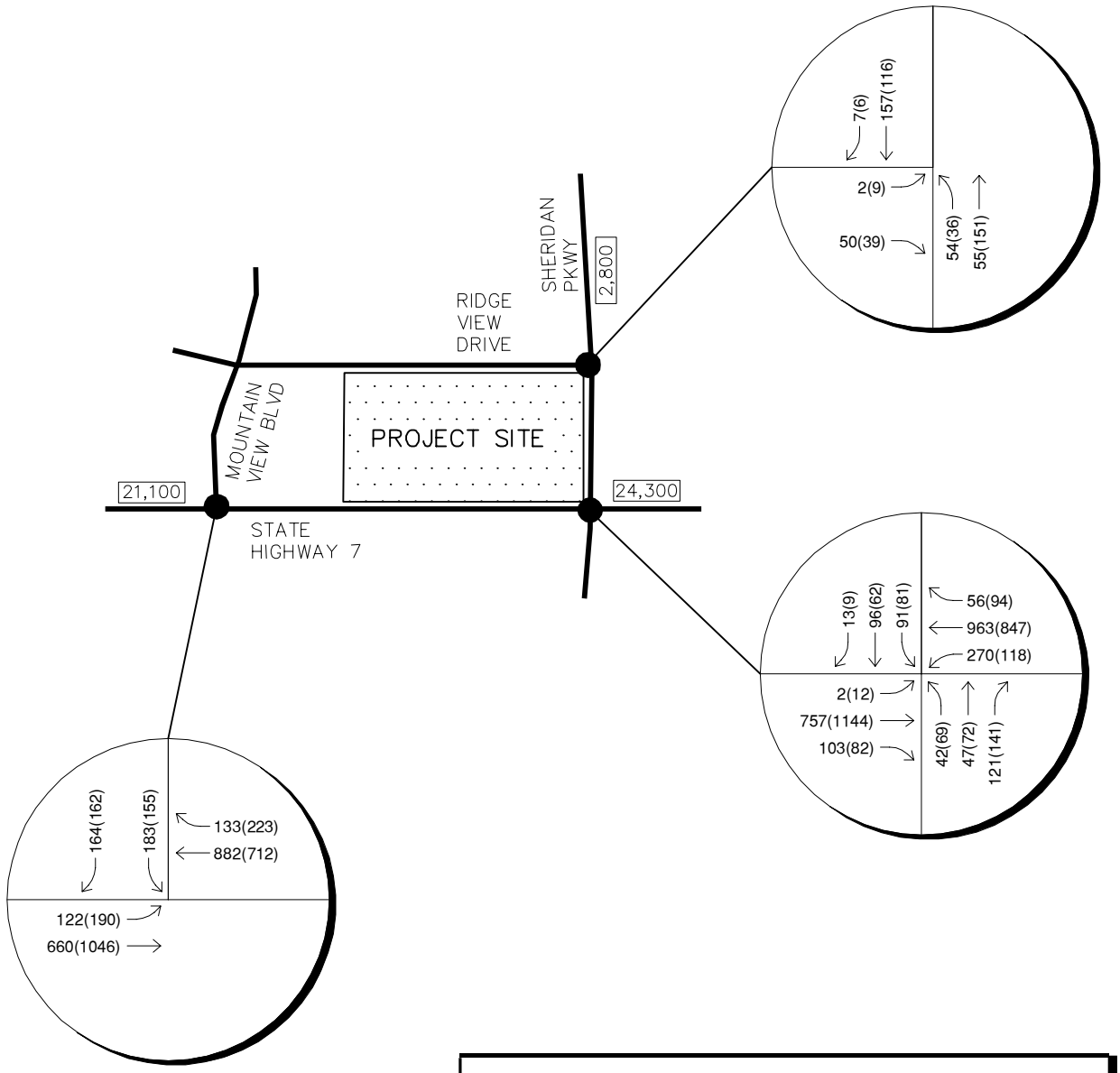
Both State Highway 7 and Sheridan Parkway are anticipated to be improved in the future. According to the Town of Erie's 2008 Transportation Master Plan, both roadways will need additional through lanes for increased capacity in the future. State Highway 7 was identified as a six-lane principal arterial with a raised median adjacent to the site on the Capacity Improvements Map (2030 to Build out) within the Transportation Master Plan. Sheridan Parkway was also identified as a six-lane principal arterial with a raised median.

4.2 Proposed Project Access

Direct access to the site is proposed from one access along State Highway 7, one access along Sheridan Parkway, and two accesses along Ridge View Drive. Two additional accesses are anticipated along Ridge View Drive to be constructed to serve the Phase II development. For purposes of this study, all four driveways along Ridge View Drive were evaluated with full build out. The access along State Highway 7 is proposed to be a three-quarter movement access with restriction to exiting left turning movements. The access along Sheridan Parkway is proposed to allow full turning movements. All four access driveways along Ridge View Drive will allow full turning movements.

4.3 Future Traffic Volumes

According to information provided on the website for the Colorado Department of Transportation, the 20-year growth factor along State Highway 7 adjacent to the site is 1.99. These values equate to an annual growth rate of approximately 3.5 percent. Also from this information, State Highway 7 carries approximately 9.5 percent heavy vehicle traffic. State Highway 7 traffic information from the CDOT Online Transportation Information System (OTIS) website is included in **Appendix B**. The annual growth rate was used to estimate near term 2016 and long term 2035 traffic volume projections at the study key intersections. These calculated background traffic volumes for both 2016 and 2035 are shown in **Figures 4** and **5**, respectively.



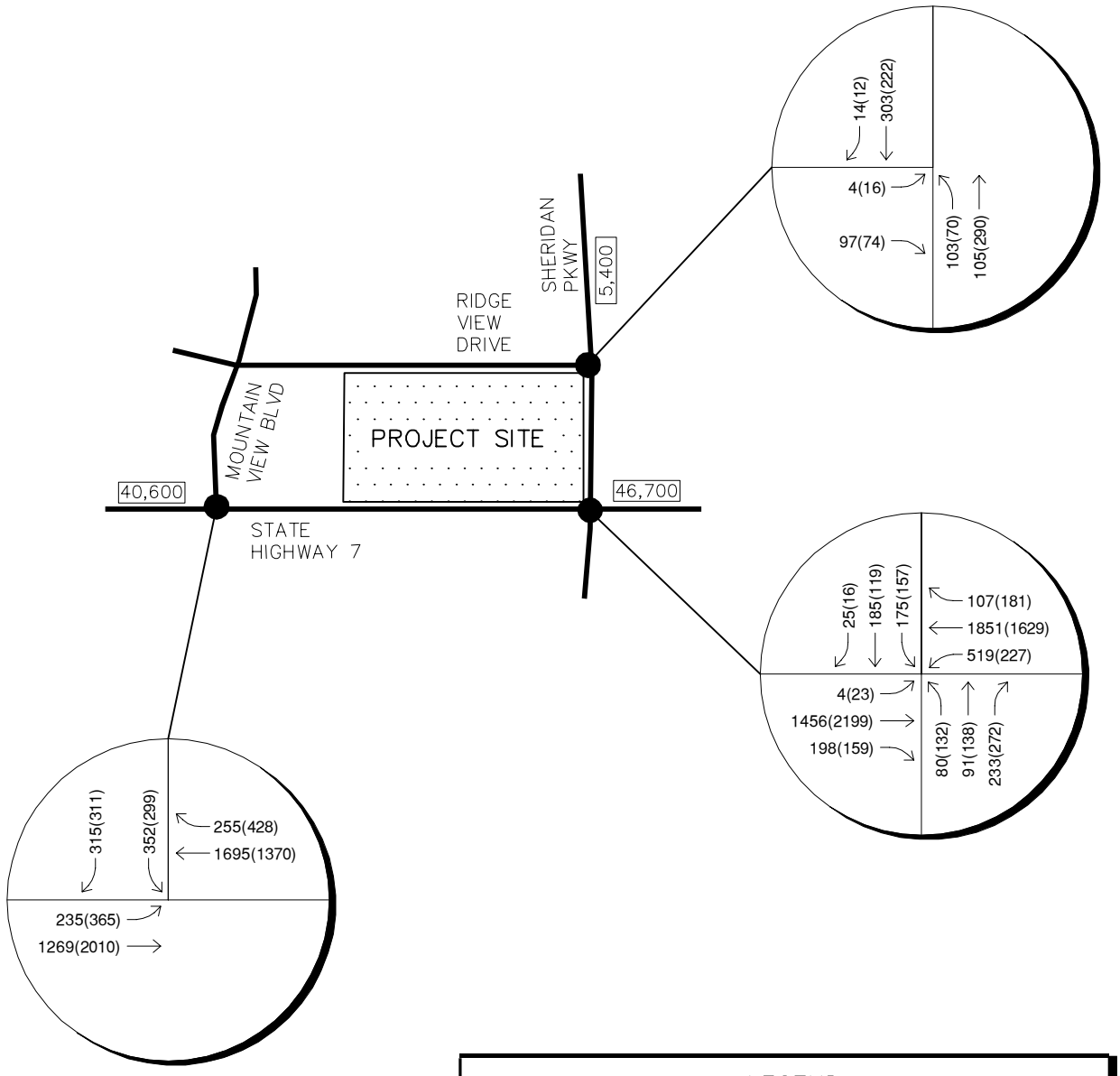
LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
2016 BACKGROUND TRAFFIC VOLUMES

FIGURE 4

Kimley»Horn



LEGEND

Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
2035 BACKGROUND TRAFFIC VOLUMES

FIGURE 5

Kimley»Horn

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation*[1] report published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, the ITE Trip Generation fitted curve and average trip rates that apply to Supermarket (ITE Land Use Code 850), Shopping Center (820) and Gas Station (944) were used to estimate traffic generated by the proposed development.

Since a mix of uses, supermarket, gas station, and shopping center (retail) is proposed within the same development, it is anticipated that traffic will be shared between each use. This internal trip generation, or capture, is most specifically expected to occur between the supermarket and shopping center (retail) uses. Therefore, the ITE internal capture procedure was used to determine the amount of traffic that may be shared between uses, which thereby determines the number of external trips. Based on this, the proposed development is expected to generate approximately 15,764 daily weekday driveway trips. Of these, 484 driveway trips are expected to occur during the morning peak hour, while 1,423 driveway trips are expected during the afternoon peak hour. Since the project is a commercial development, pass-by trips are expected. These pass-by trips are vehicles already on the street network that will be attracted to the site. The expected pass-by trips to the development results in an anticipated 10,018 weekday daily trips, of which 297 and 913 trips are anticipated to be new (non pass-by) during the weekday morning and afternoon peak hours, respectively. The internal capture methodology and procedure as well as the pass-by percentages for each use were obtained from the ITE “Trip Generation Manual, Ninth Edition Volume 1, Users Guide and Handbook” 2012. Of note, the afternoon peak hour internal capture and pass-by rates were applied to the morning peak hour and daily as these rates are anticipated to be similar throughout the day.

[1] Institute of Transportation Engineers, *Trip Generation: An Information Report*, Ninth Edition, Washington DC, 2012.

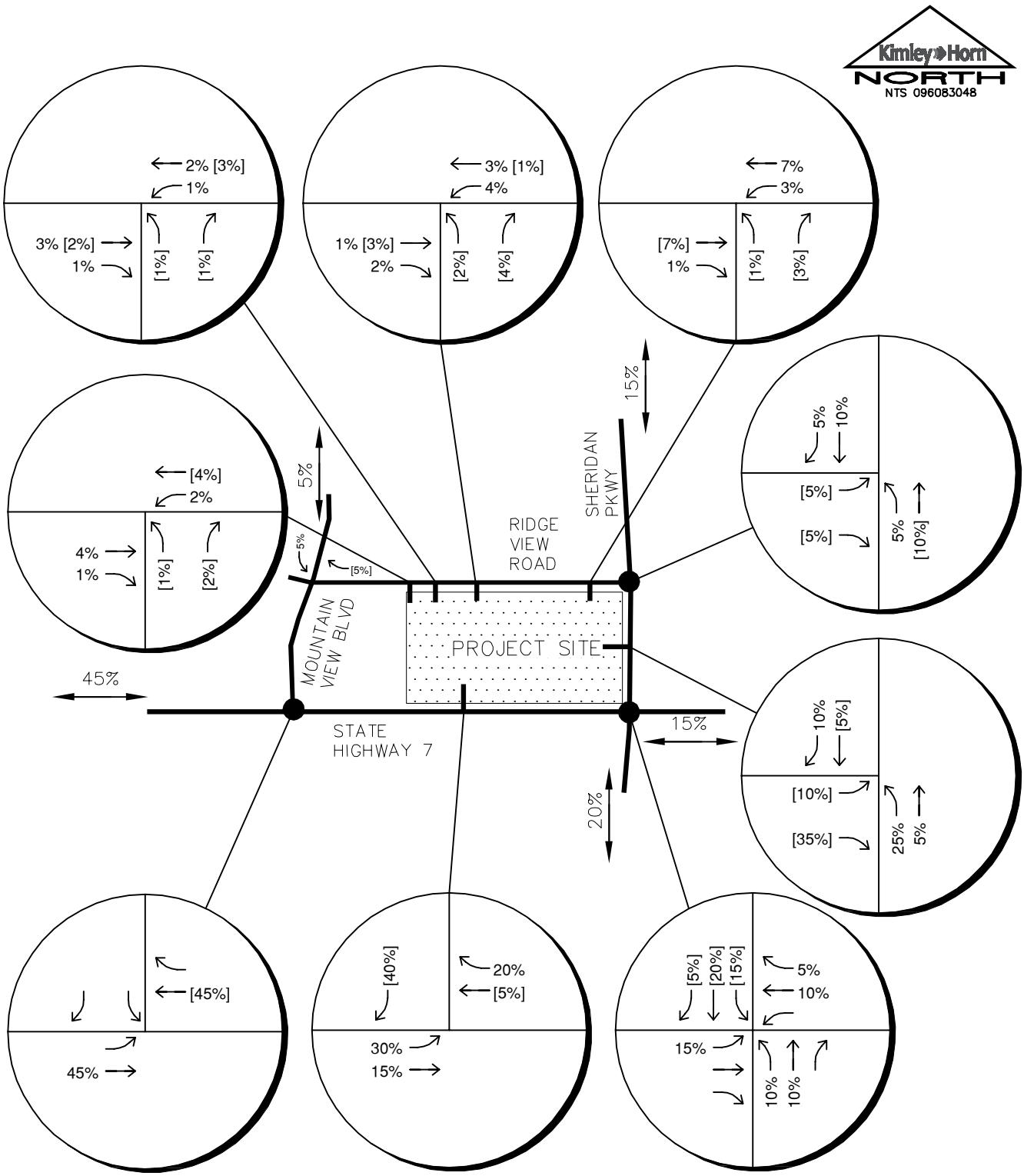
Table 1 summarizes the estimated traffic generation for proposed development. The trip generation worksheets are included in **Appendix C**. These calculations illustrate the equations used, directional distribution of trips, and number of daily trips based on the published ITE *Trip Generation Report*.

Table 1 – External Project Trip Generation

	Vehicles Trips						
	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Non Pass-By Trips							
Shopping Center (820)	3,514	41	22	63	180	196	377
Supermarket (850)	5,866	131	60	191	229	221	449
Gasoline Service Center (944)	638	24	18	43	44	44	87
Total	10,018	196	100	297	452	461	913
Pass-By Trips							
Shopping Center (820)	1,810	15	8	22	93	101	194
Supermarket (850)	3,298	73	34	107	129	124	253
Gasoline Service Center (944)	638	34	25	59	32	32	63
Total	5,746	122	66	188	253	257	510
Total Trips	**15,764**	**318**	**166**	**484**	**705**	**718**	**1,423**

5.2 Trip Distribution

Distribution of site traffic was based on the area street system characteristics, existing traffic patterns and volumes, existing demographic information, and the proposed access system for the project. The non-pass-by directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source direction. **Figure 6** illustrates the expected non pass-by trip distribution for the site. Due to the nature of the proposed uses, both new (non-pass-by) and pass-by trips are anticipated to be generated by this project. Pass-by distributions capture the route of the vehicle, which is a percentage of traffic driving by the site, arriving from a direction and then continuing in that original direction when leaving. Pass-by distributions are prepared directly based on existing traffic volume counts along the adjacent streets. **Figures 7** and **8**, illustrate the pass-by traffic, calculated separately for the morning and afternoon peak hours, respectively, due to the directional differences of traffic during the peak hours.



LEGEND

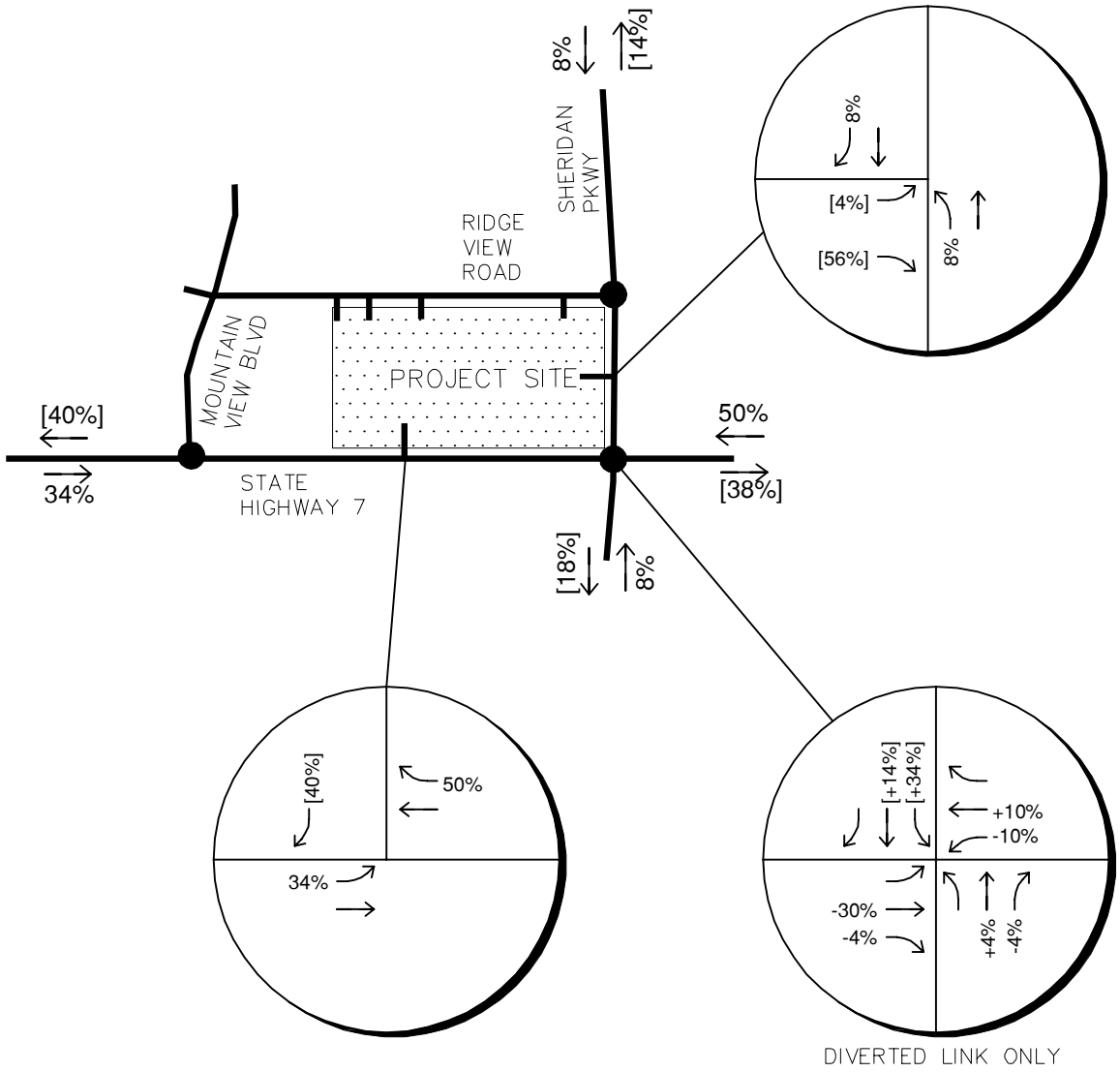
● Study Area Key Intersection

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
NON PASS-BY TRIP DISTRIBUTION

FIGURE 6

Kimley»Horn



LEGEND

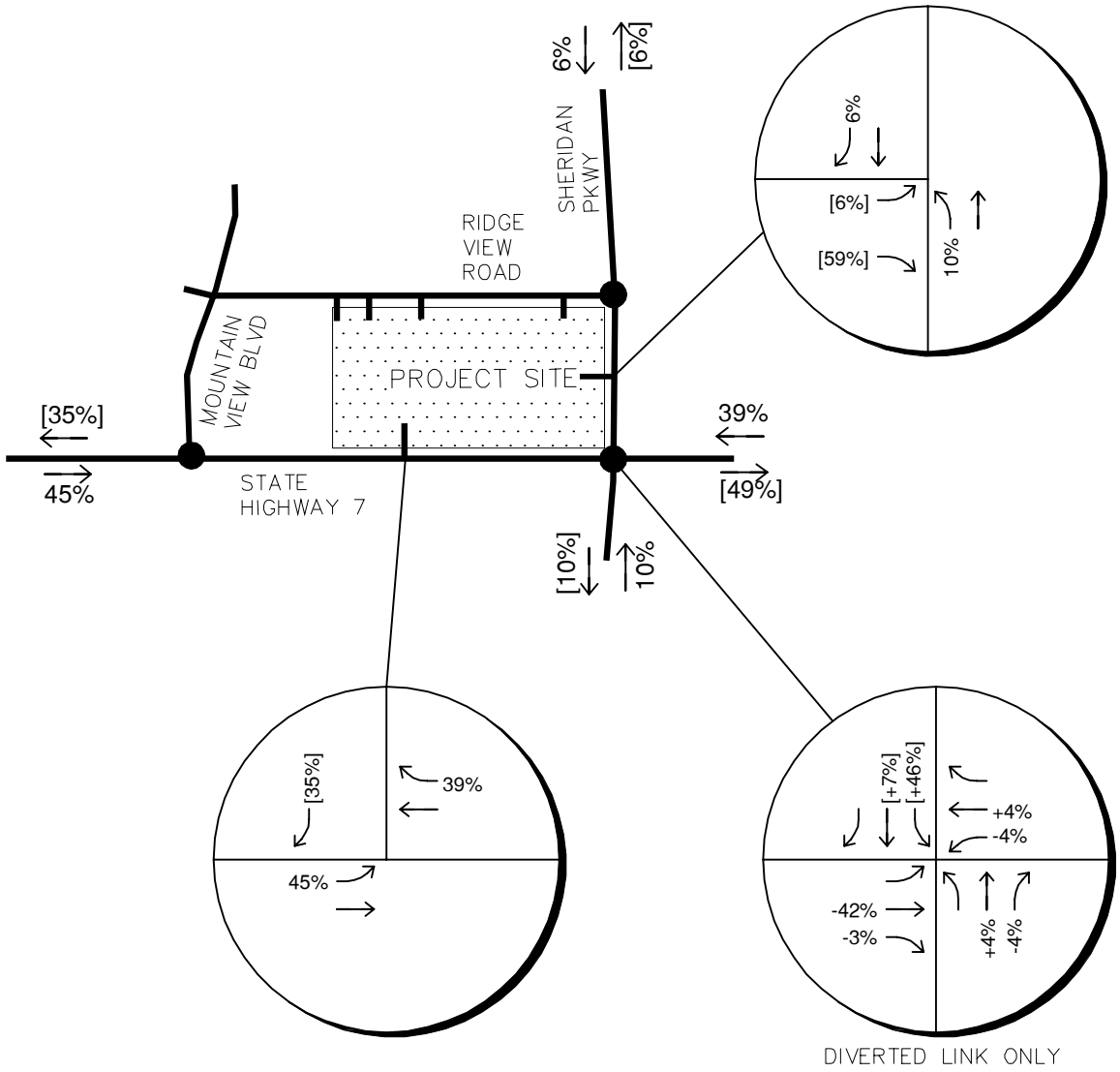
● Study Area Key Intersection

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
AM PEAK PASS-BY TRIP DISTRIBUTION

FIGURE 7

Kimley»Horn



ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
PM PEAK PASS-BY TRIP DISTRIBUTION

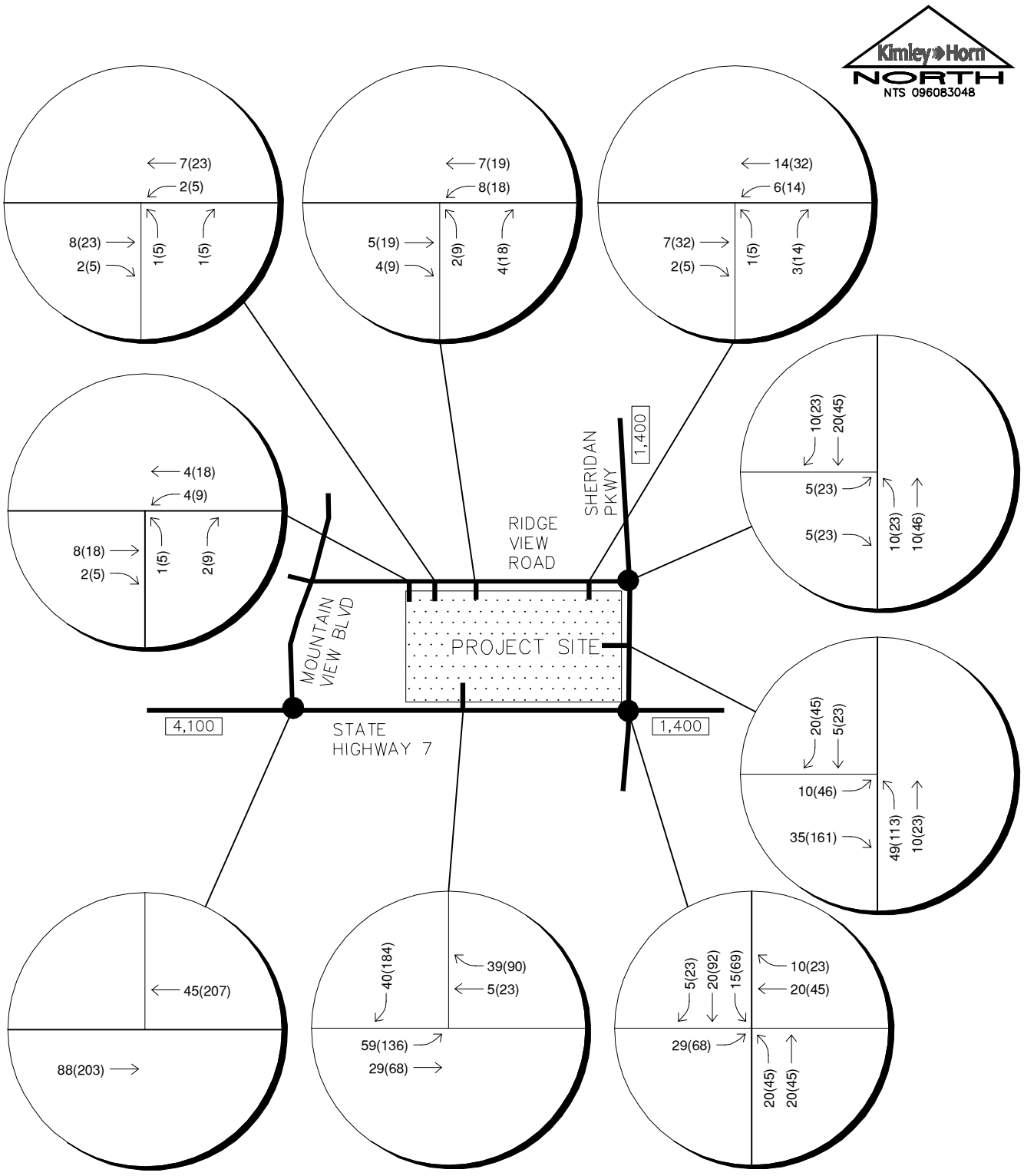
FIGURE 8

5.3 Traffic Assignment

Traffic assignment was obtained by applying the distributions from **Figures 6** through **8** to the estimated traffic generation of the project shown in **Table 1**. The non-pass-by traffic assignment is shown in **Figure 9**. Pass-by traffic assignment is shown in **Figure 10**.

5.4 Total (Background Plus Project) Traffic

The project traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2016 project build out horizon and long term 2035 horizon. **Figure 11** illustrates the background plus project traffic volumes for the 2016 horizon at the study key intersections and the access intersections proposed with the project. The 2035 background plus project traffic volumes are shown in **Figure 12**.



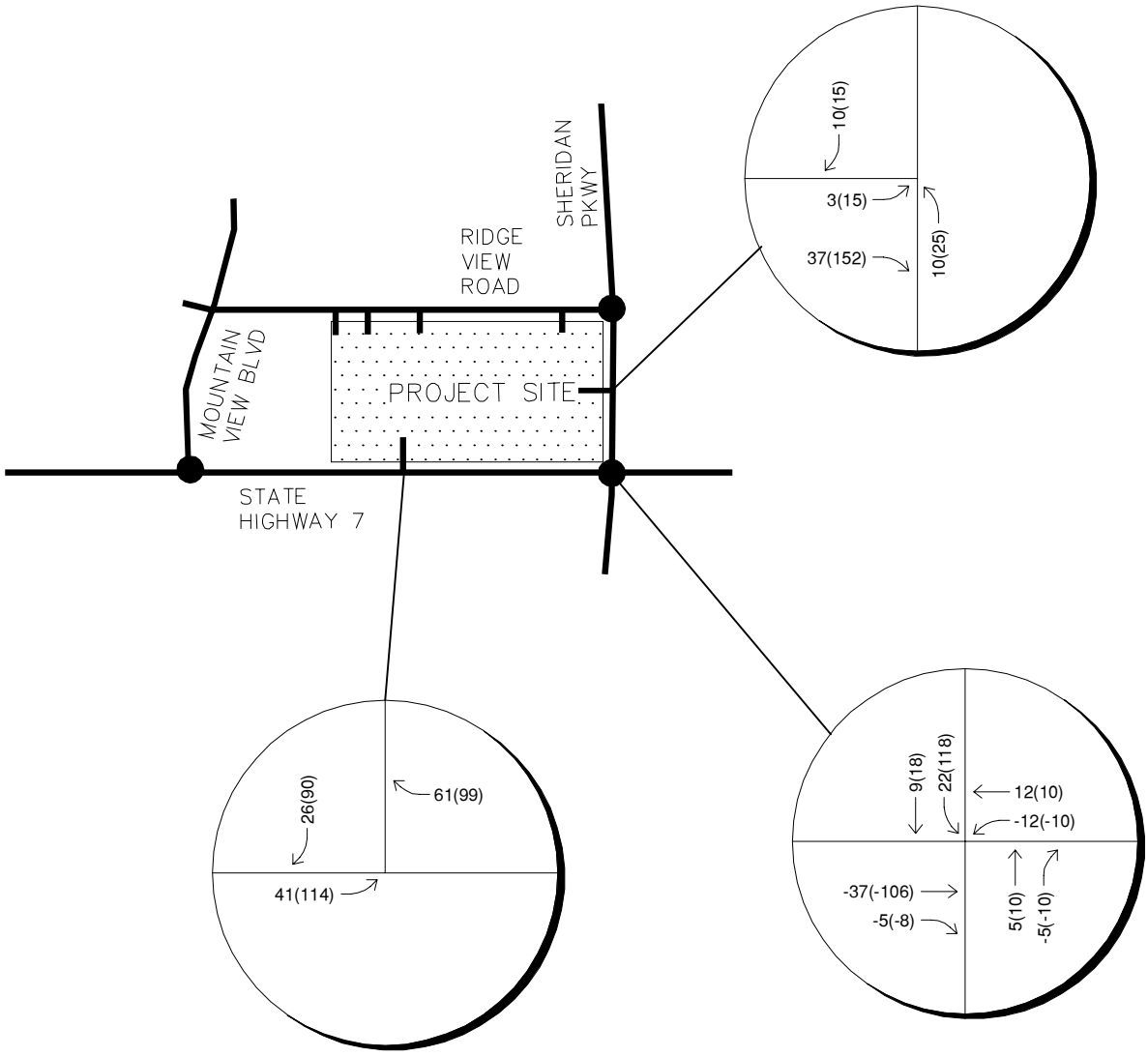
LEGEND

- ● Study Area Key Intersection
- XX(XX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
PROJECT TRAFFIC ASSIGNMENT

FIGURE 9

Kimley»Horn



LEGEND

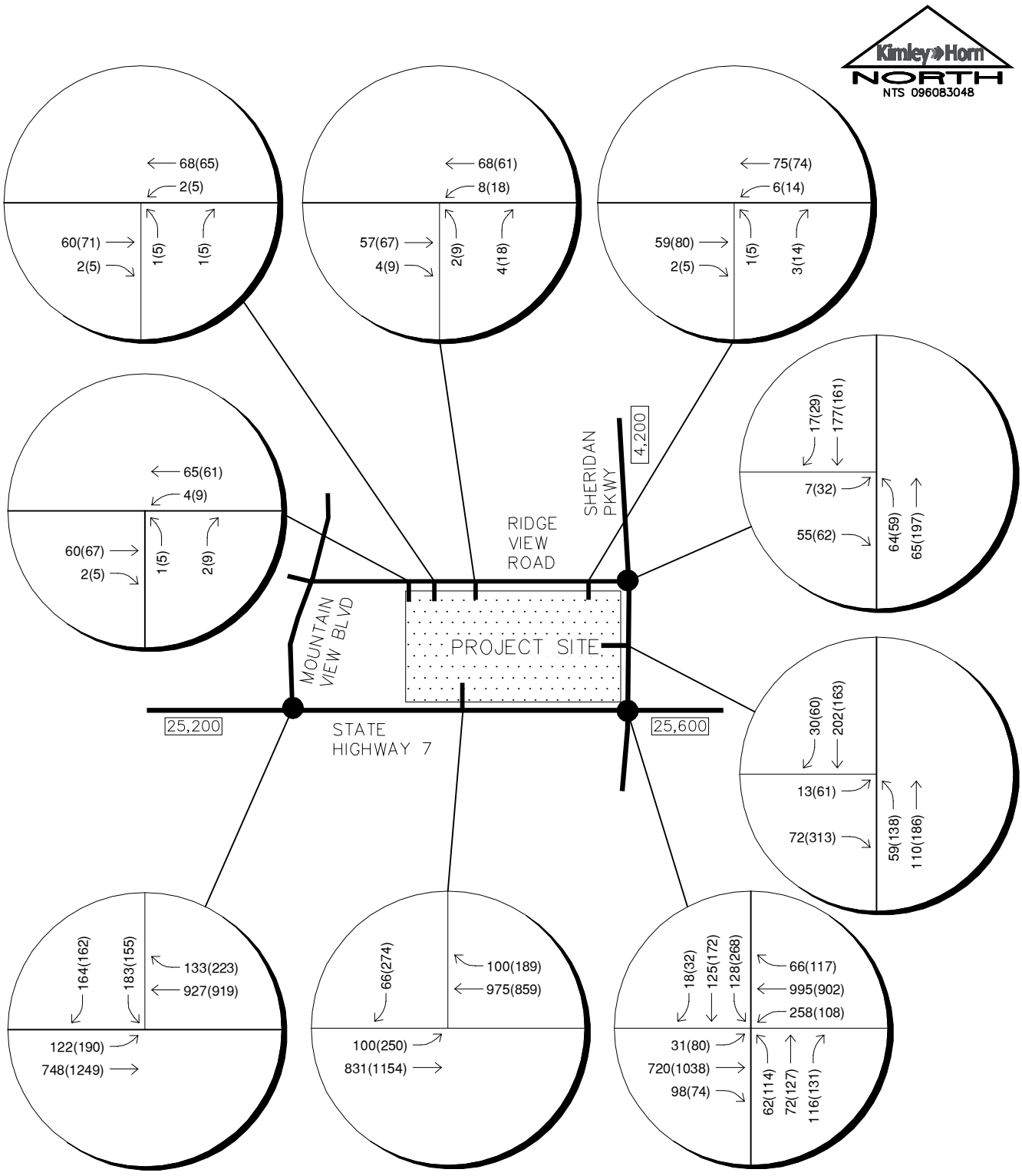
● Study Area Key Intersection

XX(XX) Weekday AM(PM) Peak Hour Traffic Volumes

ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
PASS-BY TRAFFIC ASSIGNMENT

FIGURE 10

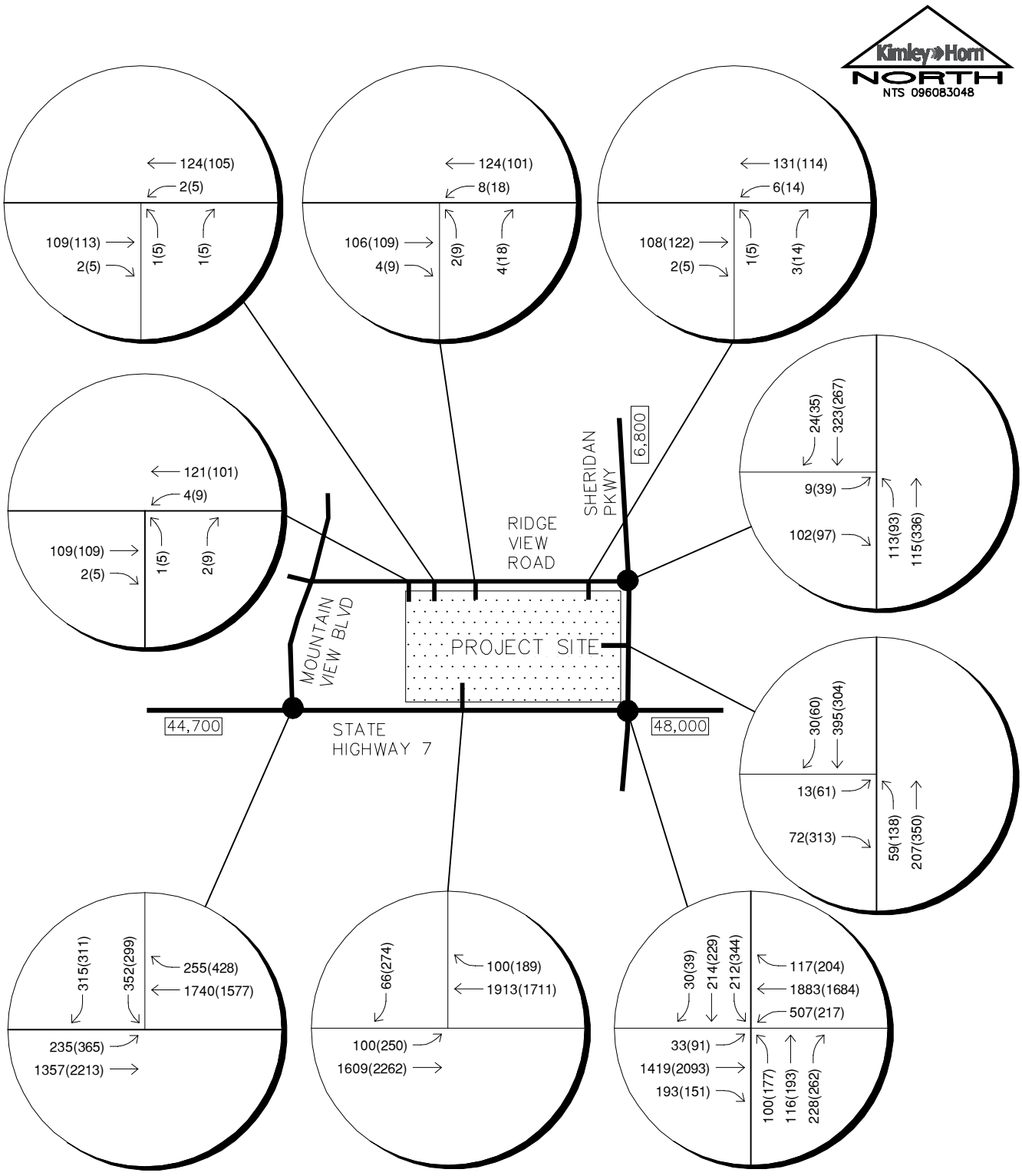
Kimley»Horn



ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
2016 BACKGROUND
PLUS PROJECT TRAFFIC VOLUMES

FIGURE 11

Kimley»Horn



ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
2035 BACKGROUND
PLUS PROJECT TRAFFIC VOLUMES

FIGURE 12

Kimley»Horn

6.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2016 and 2035 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual*[2].

6.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, common traffic engineering practice recommends intersection LOS D as the minimum desirable threshold for acceptable operations. **Table 2** shows the definition of LOS for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized and four-way stop controlled intersection is defined for each approach and for the intersection. The intersection analysis was conducted

[2] Transportation Research Board, *Highway Capacity Manual*, Special Report 209, Washington DC, 2010.

using Synchro software with the analysis results reported using the Highway Capacity Manual (HCM) procedure.

6.2 Intersection Operational Analysis

Calculations for the LOS at the study key intersections are provided in **Appendix D**. The LOS analyses are based on the lane geometry and intersection control shown in **Figure 2**. The LOS analyses determine what improvements may be needed at the intersections and proposed accesses to handle background traffic growth and project related traffic in the two study horizons.

State Highway 7 and Mountain View Boulevard

The existing "T"-intersection at State Highway 7 and Mountain View Boulevard operates with signal control and a 110 second cycle length. The southbound approach includes dual left turn lanes and a single right turn lane. The westbound approach contains separate through and right turn lanes. The eastbound approach has one designated left turn lane with protected permissive phasing and two through lanes. As such, the intersection operates acceptably for the morning and afternoon peak hours. In 2016, the intersection is anticipated to continue operating acceptably, with or without the addition of King Soopers #129 retail center project traffic.

By 2035, it is believed that State Highway 7 through this Mountain View Boulevard intersection would be improved to accommodate future traffic. The State Highway 7 Access Control Plan for Erie, Colorado identifies State Highway 7 to be improved to a six-lane roadway. With this configuration, the intersection is anticipated to continue operating acceptably through the 2035 horizon, with or without the addition of King Soopers #129 retail center project traffic. **Table 3** provides the results of the level of service analysis conducted at this intersection.

Table 3 – State Highway 7 and Mountain View Boulevard LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2014 Existing	8.0	A	13.1	B
2016 Background	16.4	B	13.1	B
2016 Background Plus Project	35.6	D	13.4	B
2035 Background	14.1	B	18.7	B
2035 Background Plus Project	16.8	B	25.2	C

State Highway 7 and Sheridan Parkway

The existing signalized intersection at State Highway 7 and Sheridan Parkway operates with traffic signal control and a 110-second cycle length. The eastbound, westbound, and northbound approaches have designated left turn, through, and right turn lanes with protected/permissive phasing for left turn movements. The southbound approach has a shared through/right turn lane and a designated left turn lane with protected/permissive phasing. With this configuration, the existing intersection operates acceptably at LOS B during the morning peak hour and LOS D during the afternoon peak hour. With the existing configuration, the intersection is anticipated to continue operating acceptably (LOS B and D) during the 2016 horizon prior to the addition of the proposed development traffic.

With the addition of the proposed development traffic in 2016, the intersection is anticipated to operate at a LOS C for the morning peak hour and LOS E for the afternoon peak hour. The through volume of traffic utilizing State Highway 7 is currently nearing capacity with just a single through lane in each direction prior to the addition of project traffic. The roadway will likely need to be improved by CDOT in the near term future to accommodate future traffic.

As previously described, it is anticipated that State Highway 7 will be improved to be six-lane roadway by the 2035 horizon. In addition, Sheridan Boulevard may be a four-lane roadway in the future. Dual left turn lanes are anticipated to exist on all approaches to the intersection. With this configuration, the intersection is anticipated to operate acceptably, with or without the addition of project traffic in 2035. **Table 4** provides the results of the LOS analysis conducted at this intersection.

Table 4 – State Highway 7 and Sheridan Parkway LOS Results

	AM Peak Hour		PM Peak Hour	
Scenario	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**
2014 Existing	17.4	B	36.2	D
2016 Background	19.8	B	48.7	D
2016 Background Plus Project	26.3	C	63.4	E
2035 Background	30.0	C	30.7	C
2035 Background Plus Project	32.2	C	37.2	D

Sheridan Parkway and Ridge View Drive

The existing intersection of Sheridan Parkway and Ridge View Drive operates with stop control on the eastbound approach. The intersection currently has all movements operating at a LOS B or better during the morning and afternoon peak hours. With the addition of project traffic through the build out 2016 horizon, this intersection is anticipated to continue to operate acceptably during the morning and afternoon peak hours with its existing configuration and control. By 2035, Sheridan Parkway is expected to have at least two through lanes of travel in each direction (possibly three through lanes in each direction as identified). With or without the addition of the project traffic through the 2035 horizon, this intersection is anticipated to operate acceptably during the morning and afternoon peak hours with stop control on the eastbound approach. Therefore, no improvements are anticipated to be needed at this intersection specific to this project. **Table 5** provides the results of the LOS analysis conducted at this intersection.

Table 5 – Sheridan Parkway and Ridge View Drive LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2014 Existing				
Northbound Left	7.7	A	7.5	A
Eastbound Left	11.2	B	11.3	B
Eastbound Right	9.5	A	9.1	A
2016 Background				
Northbound Left	7.8	A	7.6	A
Eastbound Left	11.5	B	11.6	B
Eastbound Right	9.6	A	9.1	A
2016 Background Plus Project				
Northbound Left	7.9	A	7.8	A
Eastbound Left	12.4	B	14.9	B
Eastbound Right	9.8	A	9.7	A
2035 Background				
Northbound Left	8.5	A	8.0	A
Eastbound Left	16.7	C	15.3	C
Eastbound Right	10.2	B	9.5	A
2035 Background Plus Project				
Northbound Left	8.7	A	8.3	A
Eastbound Left	18.6	C	21.6	C
Eastbound Right	10.4	B	10.0	B

6.3 Project Access Operational Analysis

An operational analysis was performed for the accesses proposed with this Erie King Soopers #129 project. The access along State Highway 7 is proposed to allow three-quarter movements, restricting the southbound left turn exit movement onto the highway. This access is proposed approximately 1,050 feet west of the SH-7/Sheridan Boulevard intersection. The proposed driveway along Sheridan Parkway will allow full turning movements and is located approximately 450 feet north of SH-7. The four proposed driveway accesses along Ridge View Drive are all anticipated to allow full turning movements. The location of the accesses along Ridge View Drive are as follows:

- East Access: 225 feet west of Sheridan Parkway
- Eastern Middle Access: 950 feet west of Sheridan Parkway
- Western Middle Access: 250 feet west of Eastern Middle Access (Future Phase II)
- West Access: 200 feet west of Western Middle Access (Future Phase II)

The operational analysis at the proposed driveways determines the lane and control improvements needed at each access. Of note, the proposed three-quarter movement access along SH-7 will use the existing westbound auxiliary lane for deceleration and acceleration for movements to and from the driveway. Results within the calculation sheets are provided for a stop control condition with the southbound right turn movement using a through lane instead of the existing receiving acceleration lane in the 2016 condition. Therefore, although the southbound right turn movement is showing long delays and poor level of service within the calculation sheet for the afternoon peak hour, it is expected to operate with very little or no delay and a LOS A. **Table 6** provides a summary of the operational analysis at the proposed project accesses in 2016 and 2035. Detailed results of the operational analysis are also provided in **Appendix D**.

Table 6 – Project Access Driveway Intersection LOS Results

Access and Movement	2016 Total Traffic				2035 Total Traffic			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
SH-7 Three-Quarter								
EB Left	11.6	B	12.8	B	194.7	F	620.2	F
SB Right	0.0 *	A *	0.0 *	A *	38.0	E	298.7	F
Sheridan Pkwy Full								
NB Left	7.9	A	8.1	A	8.5	A	8.6	A
EB Left	12.2	B	17.5	C	15.4	C	23.6	C
EB Right	10.0	B	12.3	B	10.2	B	12.6	B
East Ridge View Dr.								
Northbound Approach	8.8	A	9.1	A	9.1	A	9.3	A
Westbound Left	7.4	A	7.4	A	7.5	A	7.5	A
East Middle Ridge View								
Northbound Left	9.5	A	9.7	A	9.9	A	10.0	B
Northbound Right	8.6	A	8.7	A	8.9	A	9.0	A
Westbound Left	7.4	A	7.4	A	7.5	A	7.5	A
West Middle Ridge View								
Northbound Approach	9.0	A	9.1	A	9.4	A	9.4	A
Westbound Left	7.4	A	7.4	A	7.5	A	7.5	A
West Ridge View Dr.								
Northbound Approach	8.9	A	9.0	A	9.2	A	9.3	A
Westbound Left	7.4	A	7.4	A	7.5	A	7.5	A

* Free southbound right turn movement with acceleration lane

Recommendations from Access Operational Analysis

It is recommended that the proposed west three-quarter movement access on State Highway 7 have an eastbound left turn deceleration lane, a westbound right turn deceleration lane and southbound free right turn lane with a receiving acceleration lane along westbound SH-7. It is anticipated that the eastbound left turn movement at this intersection will operate acceptably during the 2016 horizon. In 2035, the eastbound left turn movement is anticipated to operate better than predicted by the effect of traffic metering from the upstream SH-7/Sheridan Boulevard signalized intersection. This left turn movement can be monitored by CDOT in the future as needed. The existing westbound auxiliary lane will be used for the deceleration and acceleration lane at this access. It is recommended that a R3-2 “No Left Turn” sign be installed for the southbound approach exiting the development at this access.

It is recommended that the proposed full movement access on Sheridan Parkway be designated with stop control with a R1-1 “STOP” sign installed on the eastbound approach out of the development. The northbound approach is recommended to have a designated left turn lane.

The southbound approach is recommended to have a shared through/right turn lane. With this configuration, the intersection is anticipated to have movements operate acceptably through the 2035 horizon.

The northbound approaches at all four proposed accesses along Ridge View Drive are recommended to be designated with stop control with R1-1 "STOP" signs. The eastern middle access is anticipated to receive the most traffic and is recommended to have separate northbound left and right turn lanes exiting the development. The three other accesses along Ridge View Drive are anticipated to operate acceptably with shared northbound left turn/right turn lanes. It is recommended that the accesses along Ridge View Drive be coordinated with Montex North and South developments as well as Vista Ridge Academy. It is also recommended that the existing striped median within Ridge View Drive be restriped as a two-way left-turn lane to accommodate left turn movements for the proposed access points and the existing accesses on the north side of the street. With this proposed configuration, all four proposed access driveways along Ridge View Drive are anticipated to operate acceptably through the 2035 horizon.

6.4 Turn Bay Length Analysis

It is recommended that auxiliary lanes along State Highway 7 adjacent to the project be constructed or designated in accordance with the current CDOT State Highway Access Code (SHAC). The State Highway Access Category Schedule categorizes the segment of State Highway 7 through the project study area as NR-A (Non-Rural Principal Highway). According to the SHAC, the following thresholds apply for category NR-A roadways:

- A left turn deceleration lane and taper with storage length is required for any access with a projected peak hour ingress turning volume greater than 10 vehicles per hour (vph). The taper length will be included within the required deceleration length.
- A right turn deceleration lane and taper is required for any access with a projected peak hour ingress turning volume greater than 25 vph. The taper length will be included within the required deceleration length.
- A right turn acceleration lane and taper is required for any access with a projected peak hour right turning volume greater than 50 vph when the posted speed on the highway is

greater than 40 mph. The taper length will be included within the required deceleration length.

Based on traffic projections and the above thresholds, auxiliary turn lane requirements were calculated for the proposed three-quarter movement access along State Highway 7. Immediately adjacent to the site, State Highway 7 provides primarily a single through lane of travel in each direction with a 55 mile per hour posted speed limit. A continuous auxiliary lane exists along westbound SH-7 adjacent to the site which is used as an acceleration lane from Sheridan Parkway and a deceleration lane for Mountain View Boulevard. Eastbound there are two through lanes to receive the southbound dual lefts from Mountain View Boulevard, with the outside lane being a forced drop right turn lane at Sheridan Boulevard. As such, turn lane requirements at the proposed site access along SH-7 are as follows:

Proposed Three-quarter Movement Unsignalized Access

- A westbound right turn deceleration lane is warranted with the build out of the project. It is recommended that the existing westbound auxiliary lane be used for this right turn lane. Per SHAC standards, this right turn lane should include a length of 600 feet which includes a 222-foot taper (18.5 to 1), assuming a 12-foot wide turn lane. An acceleration/deceleration lane already exists today along State Highway 7 adjacent to the site. It is recommended that the existing combination acceleration/deceleration lane remain between this three-quarter movement access and Sheridan Parkway, which are separated by approximately 1,050 feet. The combination acceleration (960 feet) and deceleration (600 feet) would include an auxiliary combination lane length of approximately 1,120 feet without the tapers. Therefore, it is believed this distance will be adequate for acceleration, deceleration, and weaving maneuvers along westbound SH-7 between the proposed three-quarter movement access and Mountain View Boulevard.
- An eastbound left turn deceleration lane is warranted with the build out of the project. The length of the left turn deceleration lane will include deceleration length plus storage. The maximum projected peak hour ingress turning volume is 249 vehicles per hour which equates to a storage length of 250 feet. It is recommended that the deceleration length be 380 feet plus a 220-foot taper (18.5 to 1), assuming a 12-foot wide lane. The overall left turn deceleration lane length is 630 feet plus a 220-foot taper.

- A westbound acceleration lane along State Highway 7 is warranted. The acceleration lane length needed is 960 feet which includes a 222-foot taper (18.5 to 1), assuming a 12-foot wide lane. It is recommended that the existing auxiliary lane be used as a combination acceleration/deceleration lane between the three-quarter movement access and Mountain View Boulevard. The combination acceleration (960 feet) and deceleration (600 feet) lane lengths would include an auxiliary combination lane length of approximately 1,120 feet without the two 220-foot tapers. There is approximately 1,550 feet between the proposed three-quarter movement access and Mountain View Boulevard which is greater than required. It is believed this distance will be adequate for acceleration, deceleration, and weaving maneuvers along westbound SH-7 between the proposed three-quarter movement access and Mountain View Boulevard.

In addition to CDOT SHAC turn lane requirements along SH-7, a queuing analysis was conducted for the SH-7 intersections with Mountain View Boulevard and Sheridan Parkway as well as the proposed accesses. Turn lanes are recommended to be constructed providing the recommended storage length based on the queuing analysis. Results were obtained from the 95th percentile queue lengths obtained from the Synchro analysis. Results are shown in the following **Table 7** with calculations provided within the level of service operational sheets of **Appendix D** for the unsignalized intersections and **Appendix E** for signalized intersections.

Table 7 – Left Turn Lane Length Analysis Results

Intersection Turn Lane	Existing Turn Lane Length (feet)	2016 Total Queue Length (feet)	2016 Recommended Turn Lane Length (feet)	2035 Total Queue Length (feet)	2035 Recommended Turn Lane Length (feet)
SH-7 & Mountain View Blvd					
Eastbound Left	750'	151'	750'	330'	750'
Southbound Left	325' DL	101' DL	325' DL	176' DL	325' DL
SH-7 & Sheridan Pkwy					
Eastbound Left	700'	50'	700'	19'	**450' DL**
Westbound Left	875'	153'	875'	188'	**650' DL**
Northbound Left	275'	133'	275'	76'	**200' DL**
Southbound Left	425'	318'	**325'**	163'	**200' DL**
Ridge View Dr. & Sheridan Pkwy					
Northbound Left	350'	25'	**150'**	25'	**150'**
Eastbound Left	200'	25'	**150'**	50'	**150'**
Sheridan Pkwy Access					
Northbound Left	DNE	25'	**100'**	25'	**150'**
Eastbound Left	DNE	25'	**50'**	25'	**50'**
East Ridge View Access					
Westbound Left	DNE	25'	**TWLTL**	25'	**TWLTL**
East Middle Ridge View Access					
Westbound Left	DNE	25'	**TWLTL**	25'	**TWLTL**
Northbound Left	DNE	25'	**25'**	25'	**25'**
West Middle Ridge View Access					
Westbound Left	DNE	25'	**TWLTL**	25'	**TWLTL**
West Ridge View Drive Access					
Westbound Left	DNE	25'	**TWLTL**	25'	**TWLTL**

DL = Dual Lefts
DNE = Does Not Exist
TWLTL = Two Way Left Turn Lane

SH-7 and Mountain View Boulevard Signalized Intersection

It is believed that the existing eastbound and southbound left turn lanes will be sufficient to accommodate future traffic volumes throughout the 2035 horizon. Based on this, no improvements or modifications are anticipated to be needed.

SH-7 and Sheridan Parkway Signalized Intersection

In 2016 all existing left turn storage bays are believed to be adequate to accommodate project traffic. It is recommended that the existing southbound left turn bay be reduced from the existing 425 feet to 325 feet. This will allow for designation of a northbound left turn lane at the proposed Sheridan Parkway access. In 2035 it is anticipated that all left turn lanes will be constructed as dual left turn lanes. With two lanes for storage, left turn requirements will decrease further.

Ridge View Drive and Sheridan Parkway

The existing northbound and eastbound left turn lanes are anticipated to be adequate to accommodate projected left turn queues. Based on planned access locations, both left turn bays are recommended to be reduced. The northbound left turn lane is recommended to be reduced from the existing 350 feet to 150 feet to accommodate the proposed access intersection along Sheridan Parkway so that a southbound left turn lane could be designated in the future for the development along the east side of Sheridan Parkway. The eastbound left turn lane is recommended to be reduced from 200 feet to 150 feet so that westbound left turn access can be accommodated at the project east driveway along Ridge View Drive.

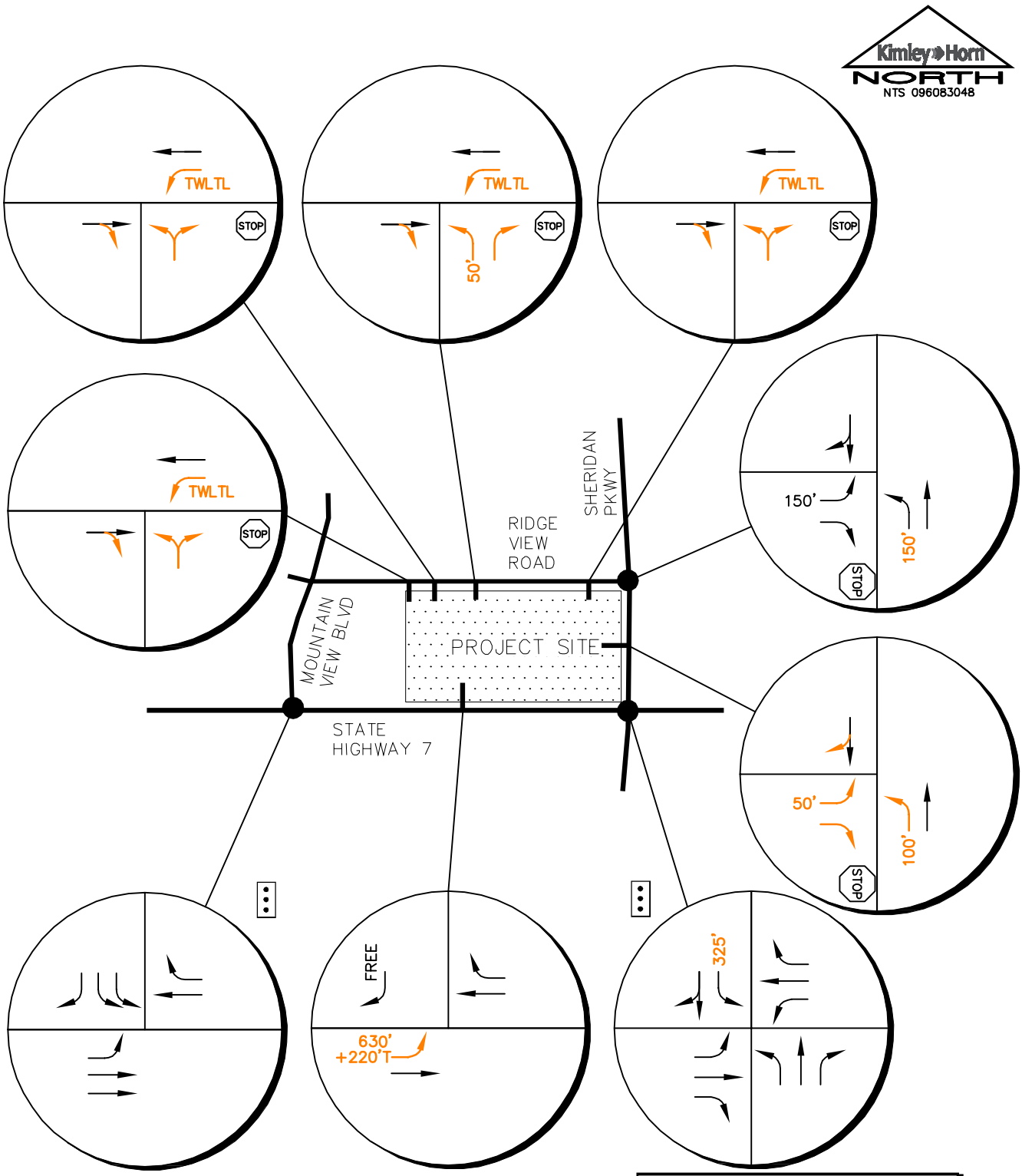
Sheridan Parkway Access

A full movement access is proposed along Sheridan Parkway, approximately halfway between SH-7 and Ridge View Drive. This full movement access will require a northbound left turn lane. In addition, it is recommended that the eastbound approach exiting the property contain separate left turn and right turn lanes. Since there is approximately 450 feet of back-to-back storage available along Sheridan Parkway for the southbound left turn at SH-7 and northbound left turn at the access, it is recommended that a 100-foot northbound left turn lane be designated. The southbound left turn lane at SH-7 is recommended for a length of 325 feet. These lengths can be accommodate with a 25-foot taper between. When dual southbound left turn lanes are constructed at the SH-7 and Sheridan Parkway intersection, it is recommended the back-to-back storage along Sheridan Parkway includes 200-foot southbound dual left turn lanes, a 100-foot taper, and a 150-foot northbound left turn lane at the access. The eastbound left turn out of the property was found to require one vehicle length of storage. Therefore it is recommended that 50 feet of storage be provided within the throat of this driveway.

Ridge View Drive Access

It is recommended that a two-way left-turn lane be designated on Ridge View Drive to accommodate the four driveways proposed with the project, as well as the existing driveways for the school on the north side of the roadway. The eastern middle access is recommended to include separate northbound left turn and right turn lanes exiting the property. One vehicle of storage was found to be needed, so a driveway throat depth of 50 feet should be sufficient.

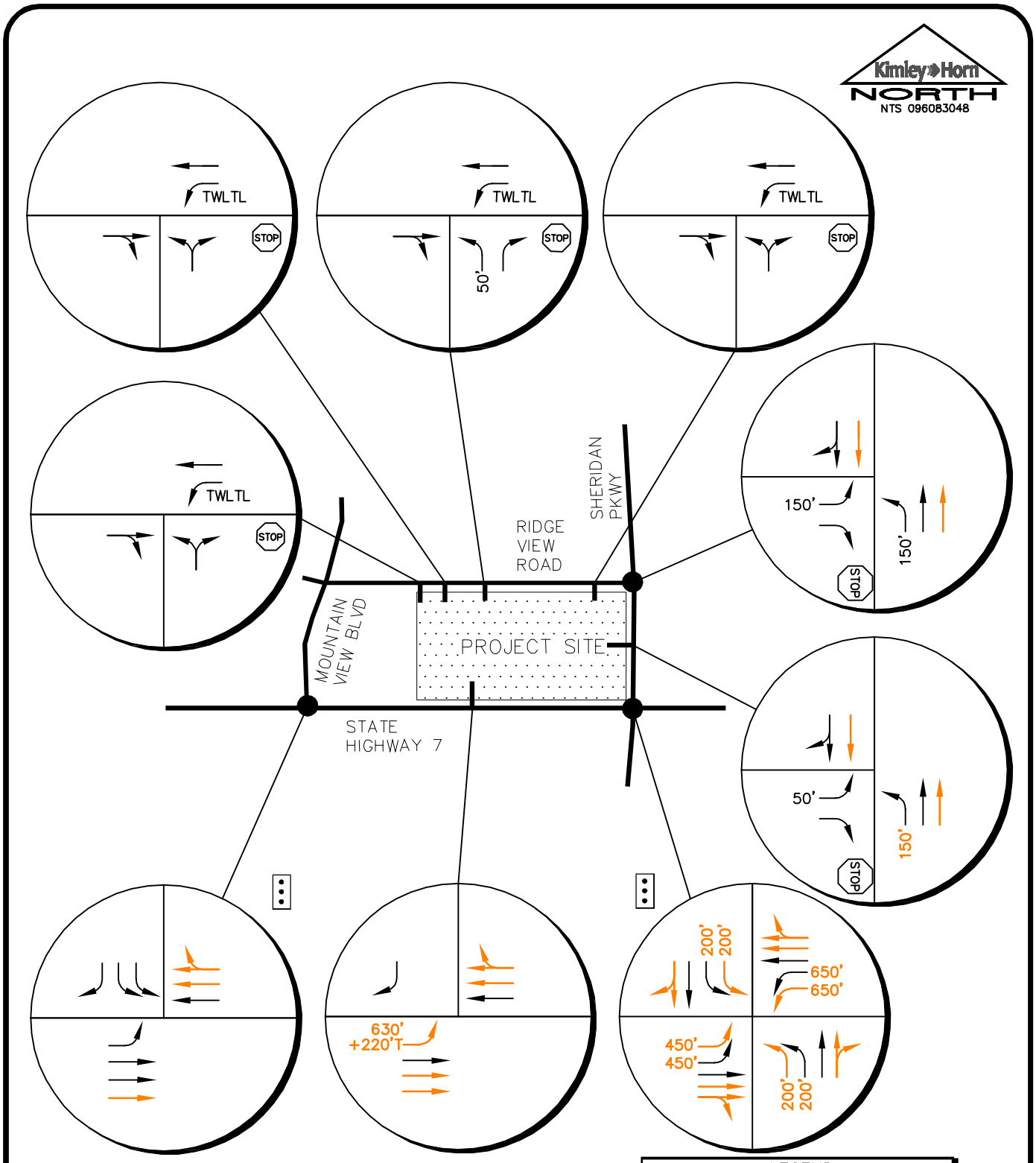
These improvements are illustrated in **Figure 13** for the 2016 horizon year and **Figure 14** for the 2035 horizon year.



ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
2016 RECOMMENDED LANE
CONFIGURATIONS AND CONTROL

FIGURE 13

Kimley»Horn



ERIE KING SOOPERS #129
STATE HIGHWAY 7 & SHERIDAN PKWY
2035 RECOMMENDED
LANE CONFIGURATIONS AND CONTROL

FIGURE 14

Kimley»Horn

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed Erie King Soopers #129 project will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following recommendations:

2016 Year Improvement Recommendations

- Four accesses are proposed with the construction of the Erie King Soopers #129 development. One access is proposed along State Highway 7, one access along Sheridan Parkway, and two accesses along Ridge View Drive. Phase II will likely include two additional accesses along Ridge View Drive.
- It is recommended that the southbound left turn lane length at the SH-7/Sheridan Parkway intersection be reduced from 425 feet to 325 feet so that back-to-back left turn storage will be available along Sheridan Parkway between SH-7 and the proposed full movement project access. This length is anticipated to be sufficient to accommodate future traffic volumes.
- It is recommended that the northbound left turn lane at the Ridge View Drive and Sheridan Parkway intersection also be reduced due to the proposed project access location along Sheridan Parkway. This left turn lane is recommended to be reduced from 350 feet to 150 feet. This turn bay length is anticipated to be sufficient to accommodate future traffic volumes.
- It is recommended that an eastbound left turn lane be designated within the full width striped median along SH-7 at the proposed three-quarter movement access. It is recommended that this left turn lane be designated with a length of 630 feet plus a 220-foot taper (850-foot total length).
- A continuous westbound auxiliary acceleration/deceleration lane exists along State Highway 7 between Sheridan Parkway and Mountain View Boulevard. This existing lane will serve as both an acceleration and deceleration lane for the proposed three-quarter SH-7 project access.
- At the proposed SH-7 three quarter movement access, it is recommended that a R3-2 No Left Turn sign be installed for the southbound approach for motorists exiting the

development. This sign can be installed under the R1-1 “STOP” or R1-2 “YIELD” sign if desired.

- It is recommended that a 100-foot northbound left turn lane be designated along Sheridan Parkway for the proposed full movement access. Since there is approximately 450 feet of back-to-back available storage available between SH-7 and the project driveway, it is recommended that the taper between the left turn lanes be 25 feet to allow for the recommended 325-foot southbound left turn lane at SH-7.
- It is recommended that the full movement access on Sheridan Parkway be designated with stop control with a R1-1 “STOP” sign installed on the eastbound exiting approach. The eastbound exiting approach is recommended to be constructed with separate left and right turn lanes. The left turn lane length recommended is the standard driveway throat depth of 50 feet.
- All access approaches to Ridge View Drive are recommended to be designated with R1-1 “STOP” signs installed on the northbound approach out of the development. The eastern middle access is anticipated to receive the most traffic and is therefore recommended to have separate left and right lanes. All other access on Ridge View Drive are believed to operate acceptably with shared northbound left turn/right turn lanes.
- It is recommended that the full lane width median along Ridge View Drive be restriped to include a two way left turn lane through the proposed project accesses. It is recommended that this be coordinated with Montex North and South developments to provide a coordinated plan for Ridge View Drive.

2035 Long Term Twenty Year Planning Horizon Improvement Recommendations

- State Highway 7 may need to be a six-lane roadway by 2035. It is believed that when this occurs, right turn movements to and from the driveways will occur from the third outside through lane along westbound SH-7. Sheridan Parkway may need to be a four-lane (or six-lane) roadway by 2035 as identified within the Amendment to the SH 7 Access Control Plan.
- The intersection of State Highway 7 with Sheridan Parkway is recommended to have dual left turn lanes on all approaches.
- Upon construction of the dual southbound left turn lanes at the SH-7 and Sheridan Parkway intersection, it is believed that the turn lane storage bay length can reduce to

200 feet. This will allow for a 150-foot northbound left turn lane at the proposed Sheridan Parkway access with a standard 100-foot taper between the back-to-back left turn lanes along Sheridan Parkway between the proposed full movement access and SH-7.

General Recommendations

- All on-site and off-site roadway improvements should be incorporated into the Civil Drawings, and conform to standards of the Town of Erie (as appropriate), American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, Institute of Transportation Engineers (ITE), and the Manual on Traffic Control Devices (MUTCD) – 2009 Edition.

APPENDICES

APPENDIX A

Intersection Count Sheets

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 1

Groups Printed- Unshifted

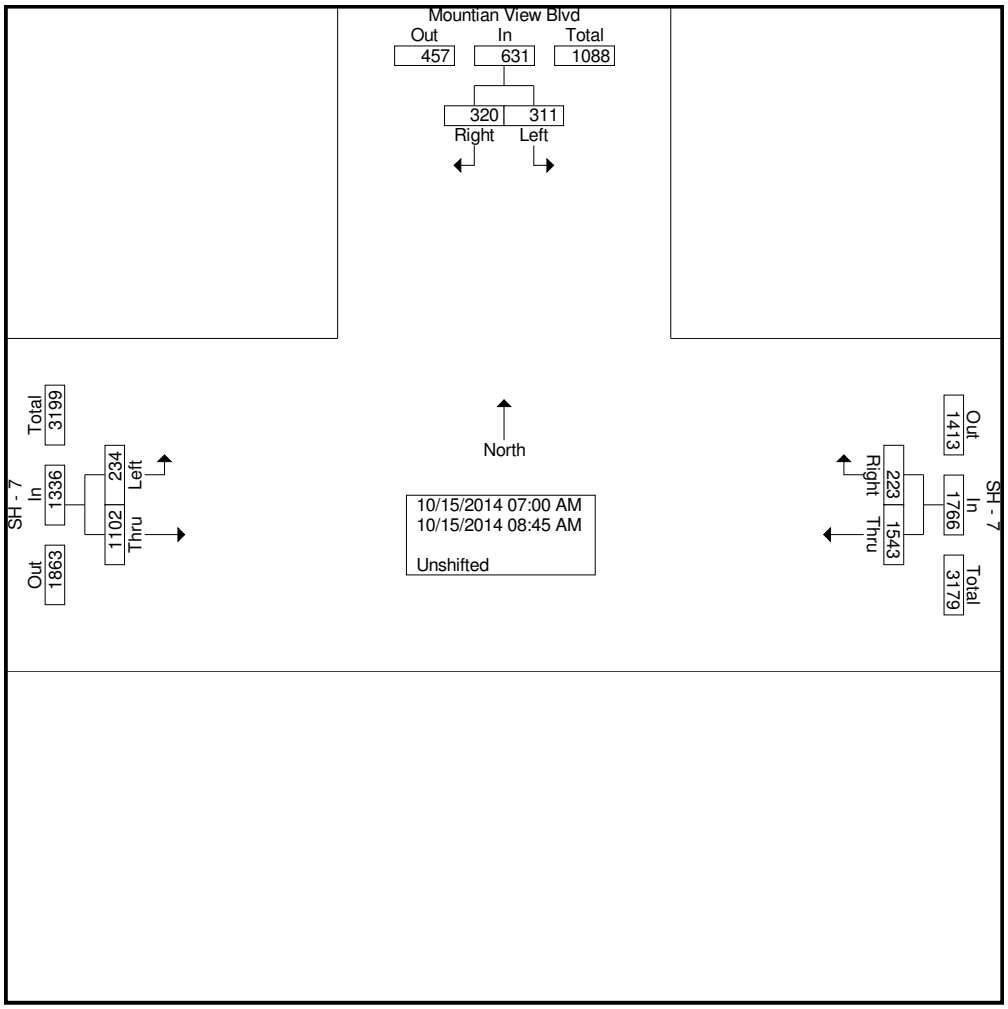
	SH - 7 Eastbound			SH - 7 Westbound			Mountian View Blvd Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	22	129	151	209	21	230	27	47	74	455
07:15 AM	17	153	170	234	23	257	39	42	81	508
07:30 AM	20	149	169	202	28	230	52	46	98	497
07:45 AM	36	150	186	202	34	236	35	26	61	483
Total	95	581	676	847	106	953	153	161	314	1943
08:00 AM	41	164	205	185	39	224	45	39	84	513
08:15 AM	27	112	139	172	25	197	35	41	76	412
08:30 AM	27	137	164	200	17	217	39	33	72	453
08:45 AM	44	108	152	139	36	175	39	46	85	412
Total	139	521	660	696	117	813	158	159	317	1790
Grand Total	234	1102	1336	1543	223	1766	311	320	631	3733
Apprch %	17.5	82.5		87.4	12.6		49.3	50.7		
Total %	6.3	29.5	35.8	41.3	6	47.3	8.3	8.6	16.9	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 2



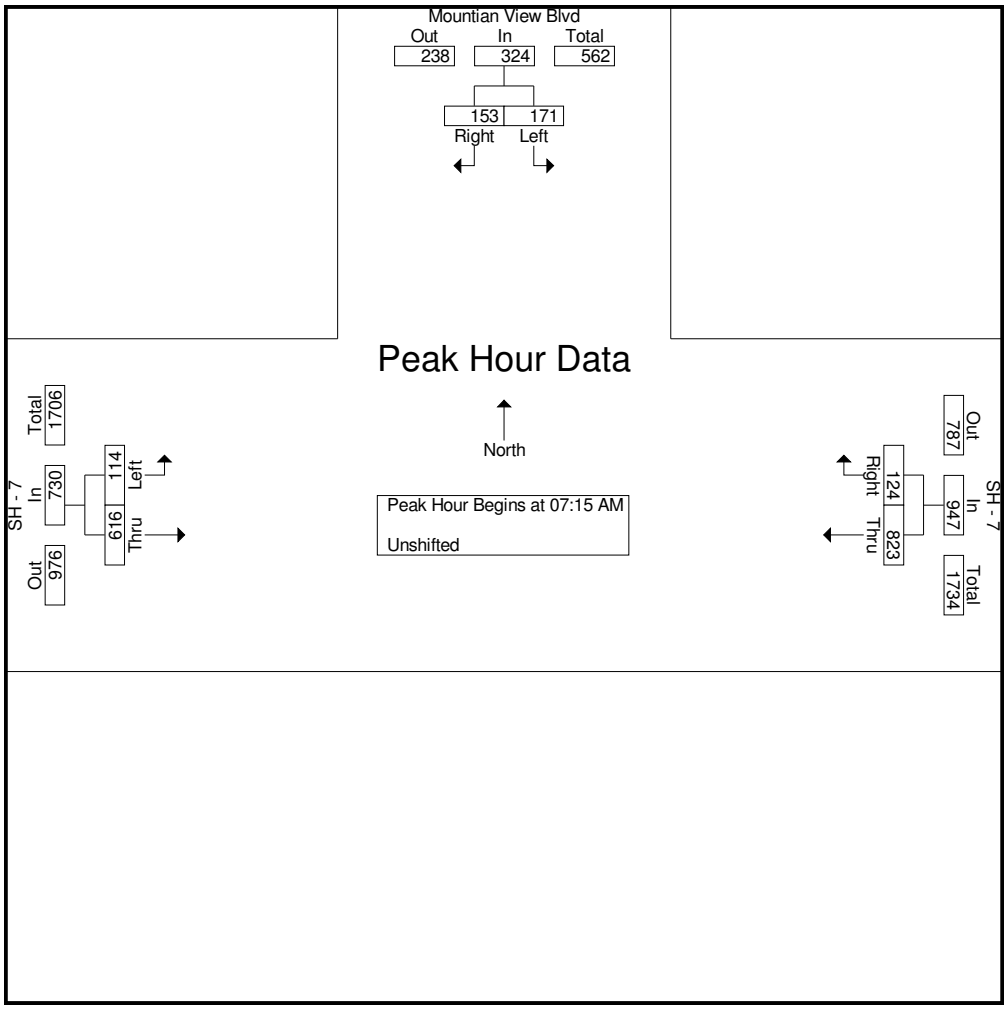
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 3

	SH - 7 Eastbound			SH - 7 Westbound			Mountian View Blvd Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	17	153	170	**234**	23	**257**	39	42	81	508
07:30 AM	20	149	169	202	28	230	**52**	**46**	**98**	497
07:45 AM	36	150	186	202	34	236	35	26	61	483
08:00 AM	**41**	**164**	**205**	185	**39**	224	45	39	84	**513**
Total Volume	114	616	730	823	124	947	171	153	324	2001
% App. Total	15.6	84.4		86.9	13.1		52.8	47.2		
PHF	.695	.939	.890	.879	.795	.921	.822	.832	.827	.975



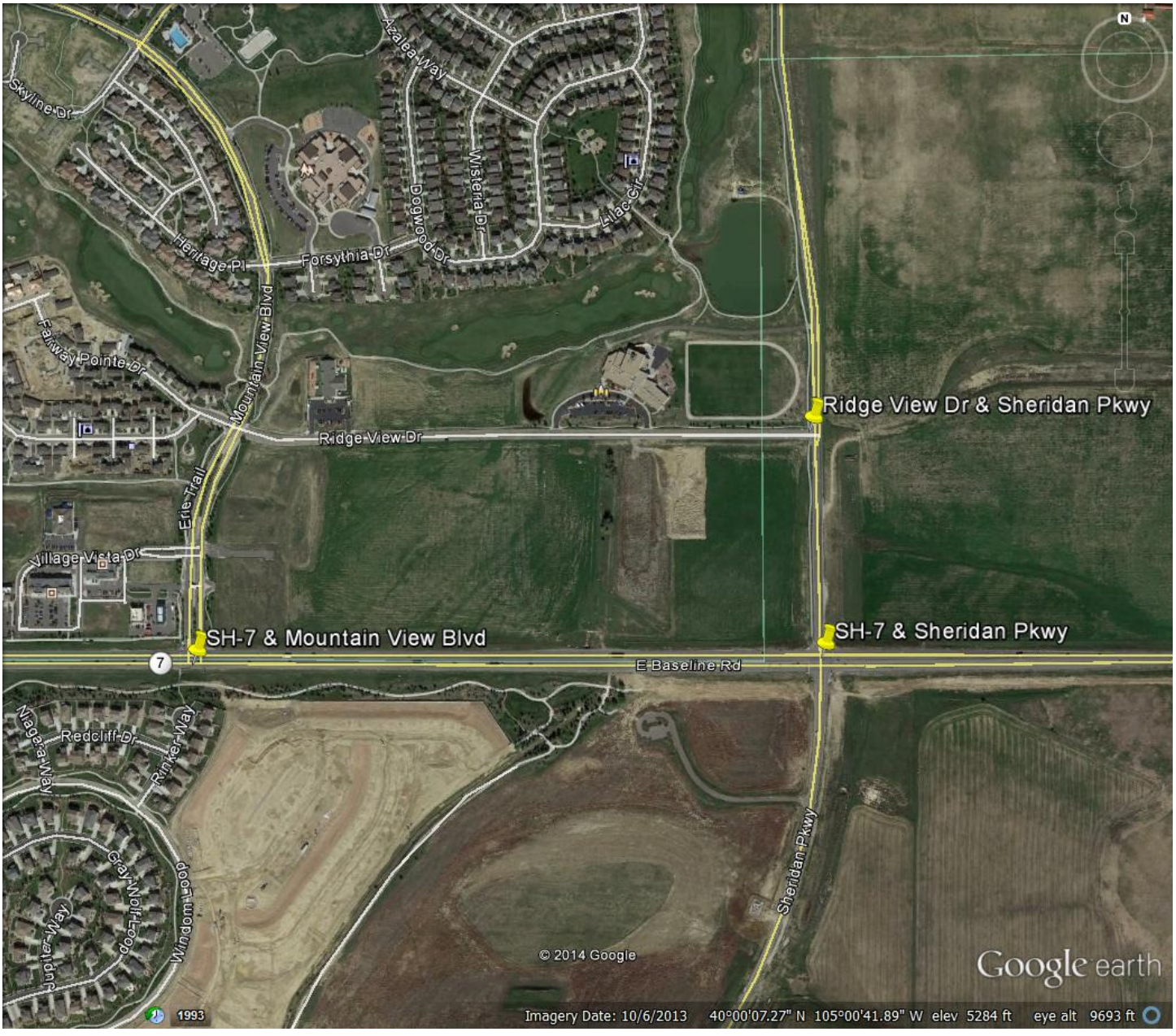
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 1

Groups Printed- Unshifted

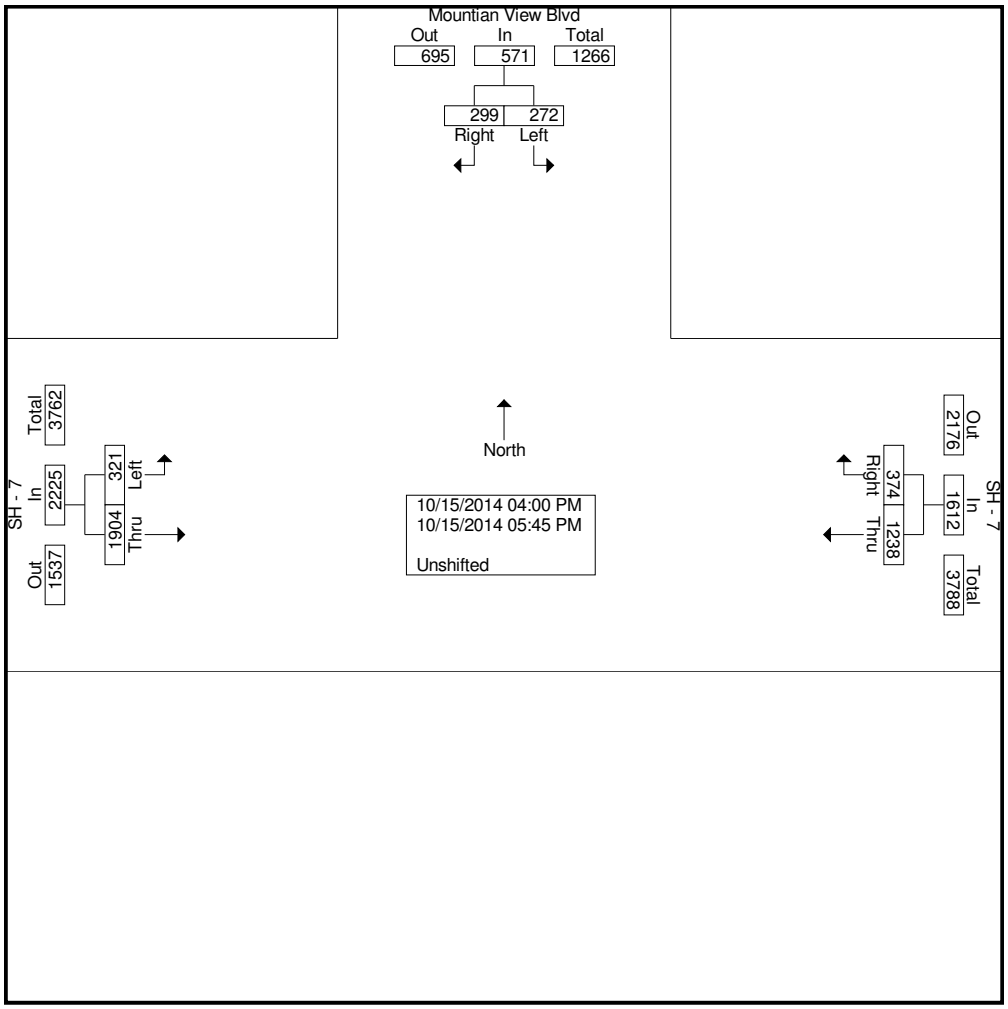
	SH - 7 Eastbound			SH - 7 Westbound			Mountian View Blvd Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	38	211	249	144	25	169	24	42	66	484
04:15 PM	34	251	285	150	44	194	24	41	65	544
04:30 PM	38	250	288	133	51	184	45	21	66	538
04:45 PM	30	259	289	154	41	195	24	41	65	549
Total	140	971	1111	581	161	742	117	145	262	2115
05:00 PM	48	250	298	180	53	233	41	27	68	599
05:15 PM	53	248	301	166	63	229	42	39	81	611
05:30 PM	46	219	265	165	51	216	38	44	82	563
05:45 PM	34	216	250	146	46	192	34	44	78	520
Total	181	933	1114	657	213	870	155	154	309	2293
Grand Total	321	1904	2225	1238	374	1612	272	299	571	4408
Apprch %	14.4	85.6		76.8	23.2		47.6	52.4		
Total %	7.3	43.2	50.5	28.1	8.5	36.6	6.2	6.8	13	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 2



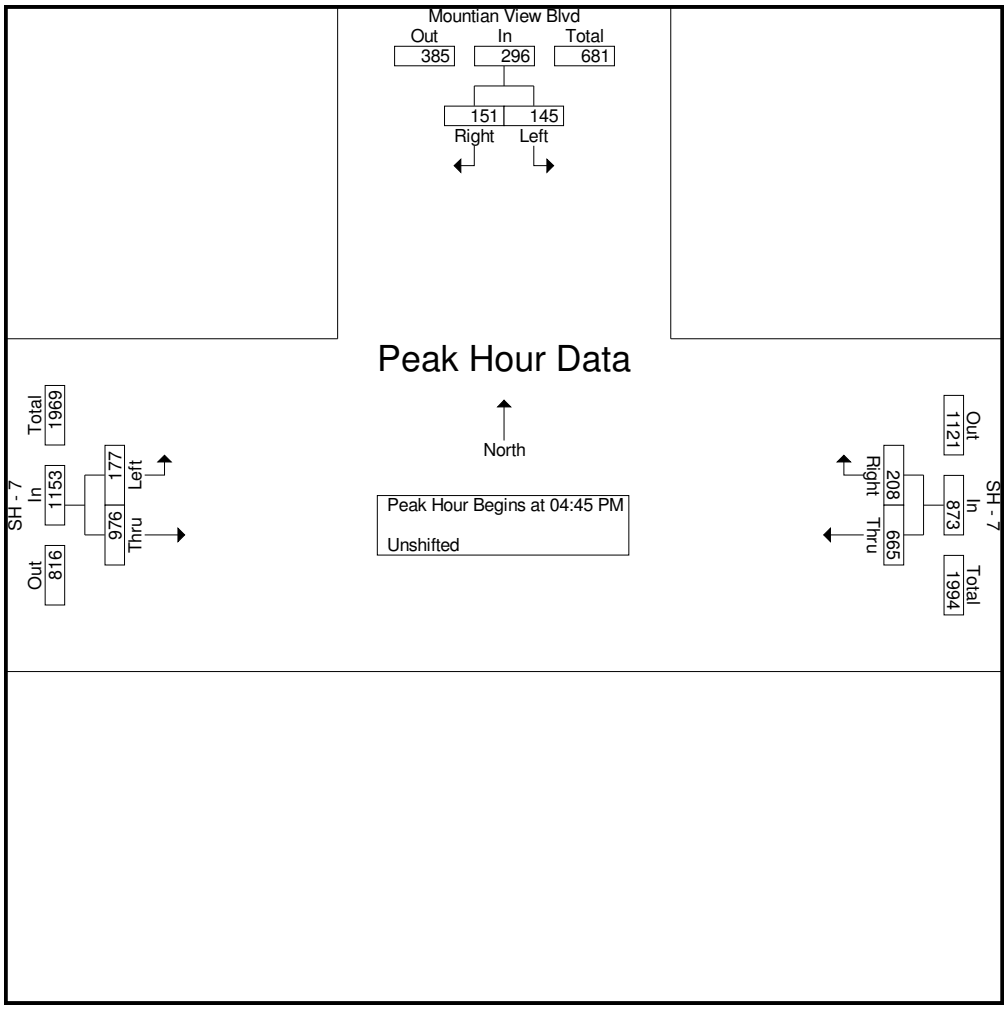
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 3

	SH - 7 Eastbound			SH - 7 Westbound			Mountian View Blvd Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	30	**259**	289	154	41	195	24	41	65	549
05:00 PM	48	250	298	**180**	53	**233**	41	27	68	599
05:15 PM	**53**	248	**301**	166	**63**	229	**42**	39	81	**611**
05:30 PM	46	219	265	165	51	216	38	**44**	**82**	563
Total Volume	177	976	1153	665	208	873	145	151	296	2322
% App. Total	15.4	84.6		76.2	23.8		49	51		
PHF	.835	.942	.958	.924	.825	.937	.863	.858	.902	.950



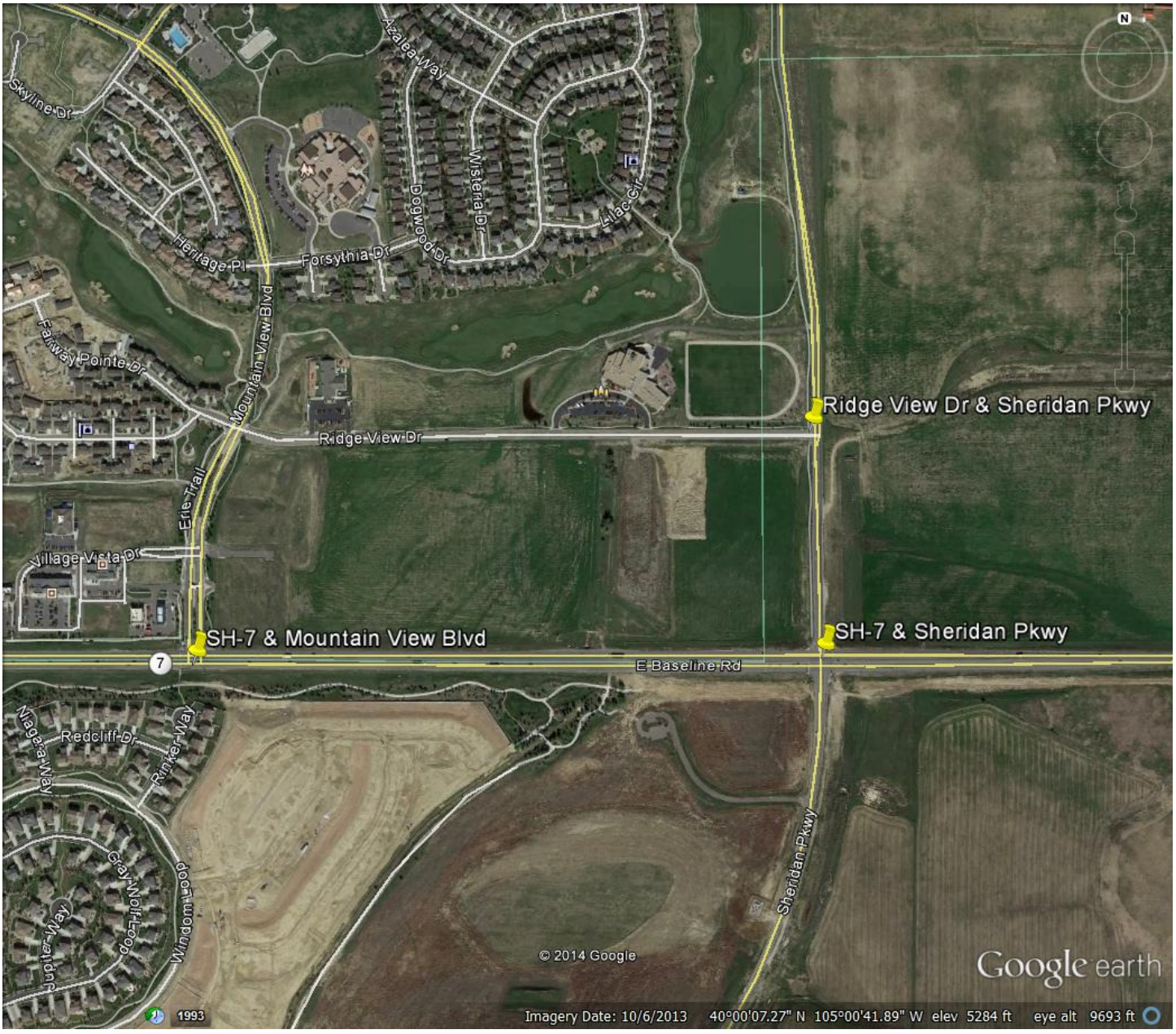
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Mountain View Blvd

File Name : SH7MountianViewPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 1

Groups Printed- Unshifted

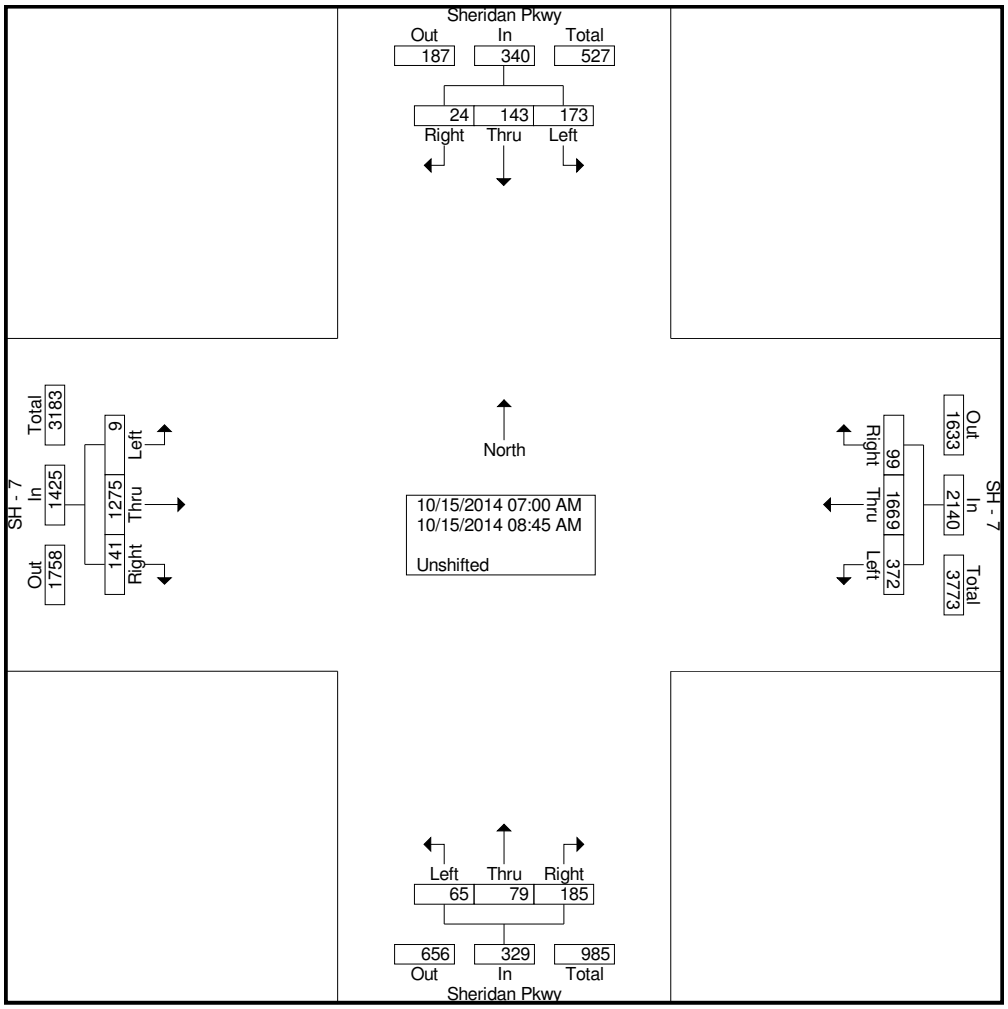
	SH - 7 Eastbound				SH - 7 Westbound				Sheridan Pkwy Northbound				Sheridan Pkwy Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	144	3	148	37	217	13	267	5	10	17	32	19	13	4	36	483
07:15 AM	1	174	10	185	50	257	15	322	4	10	22	36	28	18	3	49	592
07:30 AM	1	174	34	209	83	208	7	298	7	5	22	34	19	27	3	49	590
07:45 AM	0	174	34	208	73	211	19	303	20	17	42	79	17	24	4	45	635
Total	3	666	81	750	243	893	54	1190	36	42	103	181	83	82	14	179	2300
08:00 AM	0	185	18	203	46	223	11	280	8	12	27	47	21	21	2	44	574
08:15 AM	1	136	11	148	28	185	13	226	10	11	18	39	33	16	3	52	465
08:30 AM	1	142	18	161	31	205	10	246	3	12	19	34	18	16	2	36	477
08:45 AM	4	146	13	163	24	163	11	198	8	2	18	28	18	8	3	29	418
Total	6	609	60	675	129	776	45	950	29	37	82	148	90	61	10	161	1934
Grand Total	9	1275	141	1425	372	1669	99	2140	65	79	185	329	173	143	24	340	4234
Apprch %	0.6	89.5	9.9		17.4	78	4.6		19.8	24	56.2		50.9	42.1	7.1		
Total %	0.2	30.1	3.3	33.7	8.8	39.4	2.3	50.5	1.5	1.9	4.4	7.8	4.1	3.4	0.6	8	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 2



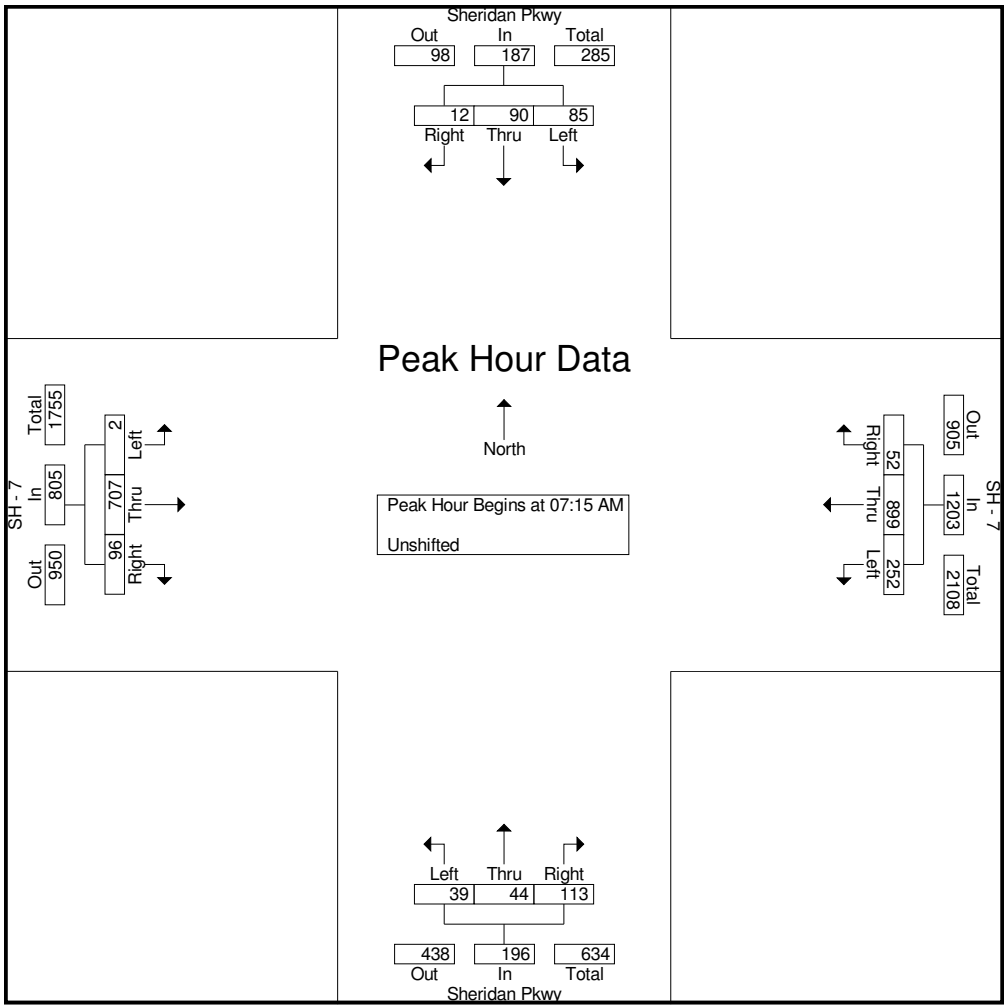
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 3

	SH - 7 Eastbound				SH - 7 Westbound				Sheridan Pkwy Northbound				Sheridan Pkwy Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**1**	174	10	185	50	**257**	15	**322**	4	10	22	36	**28**	18	3	**49**	592
07:30 AM	1	174	**34**	**209**	**83**	208	7	298	7	5	22	34	19	**27**	3	49	590
07:45 AM	0	174	34	208	73	211	**19**	303	**20**	**17**	**42**	**79**	17	24	**4**	45	**635**
08:00 AM	0	**185**	18	203	46	223	11	280	8	12	27	47	21	21	2	44	574
Total Volume	2	707	96	805	252	899	52	1203	39	44	113	196	85	90	12	187	2391
% App. Total	0.2	87.8	11.9		20.9	74.7	4.3		19.9	22.4	57.7		45.5	48.1	6.4		
PHF	.500	.955	.706	.963	.759	.875	.684	.934	.488	.647	.673	.620	.759	.833	.750	.954	.941



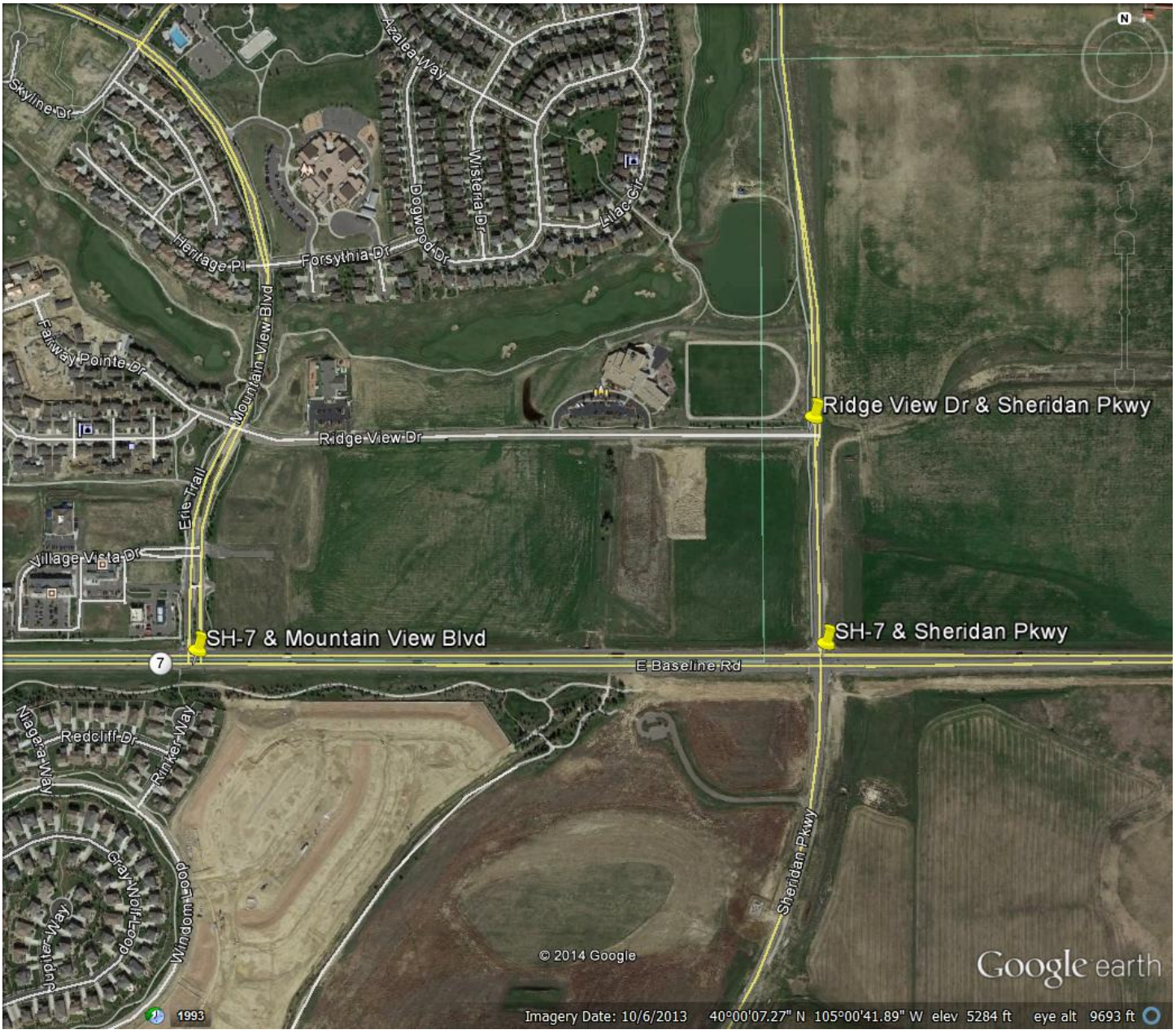
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 1

Groups Printed- Unshifted

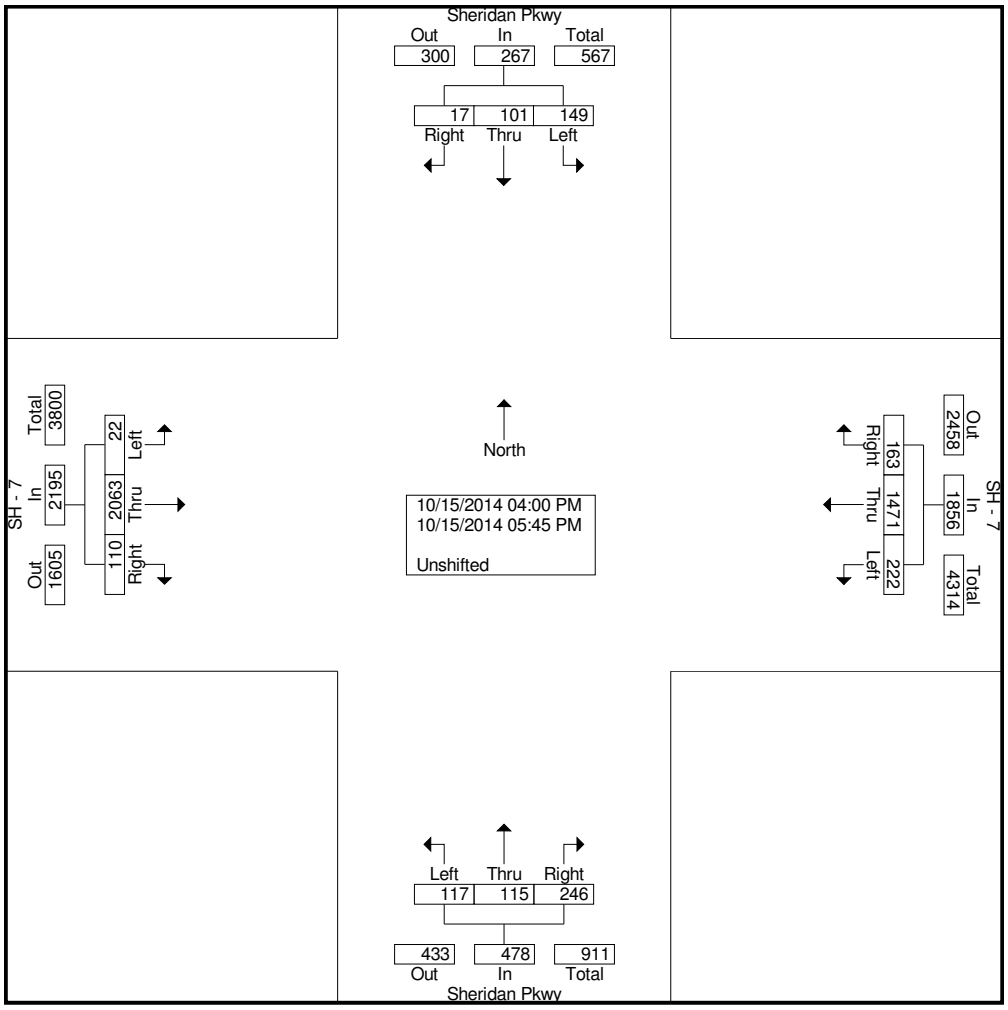
	SH - 7 Eastbound				SH - 7 Westbound				Sheridan Pkwy Northbound				Sheridan Pkwy Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	232	6	241	30	167	16	213	6	13	16	35	16	6	3	25	514
04:15 PM	2	255	8	265	28	178	18	224	17	7	37	61	17	9	3	29	579
04:30 PM	5	272	8	285	31	159	20	210	21	16	32	69	19	15	1	35	599
04:45 PM	2	279	16	297	26	178	16	220	13	16	28	57	13	14	0	27	601
Total	12	1038	38	1088	115	682	70	867	57	52	113	222	65	44	7	116	2293
05:00 PM	2	286	18	306	26	203	18	247	22	13	32	67	22	9	5	36	656
05:15 PM	2	259	30	291	30	212	26	268	14	21	42	77	22	18	3	43	679
05:30 PM	5	244	13	262	28	198	28	254	15	17	30	62	19	17	0	36	614
05:45 PM	1	236	11	248	23	176	21	220	9	12	29	50	21	13	2	36	554
Total	10	1025	72	1107	107	789	93	989	60	63	133	256	84	57	10	151	2503
Grand Total	22	2063	110	2195	222	1471	163	1856	117	115	246	478	149	101	17	267	4796
Apprch %	1	94	5		12	79.3	8.8		24.5	24.1	51.5		55.8	37.8	6.4		
Total %	0.5	43	2.3	45.8	4.6	30.7	3.4	38.7	2.4	2.4	5.1	10	3.1	2.1	0.4	5.6	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 2



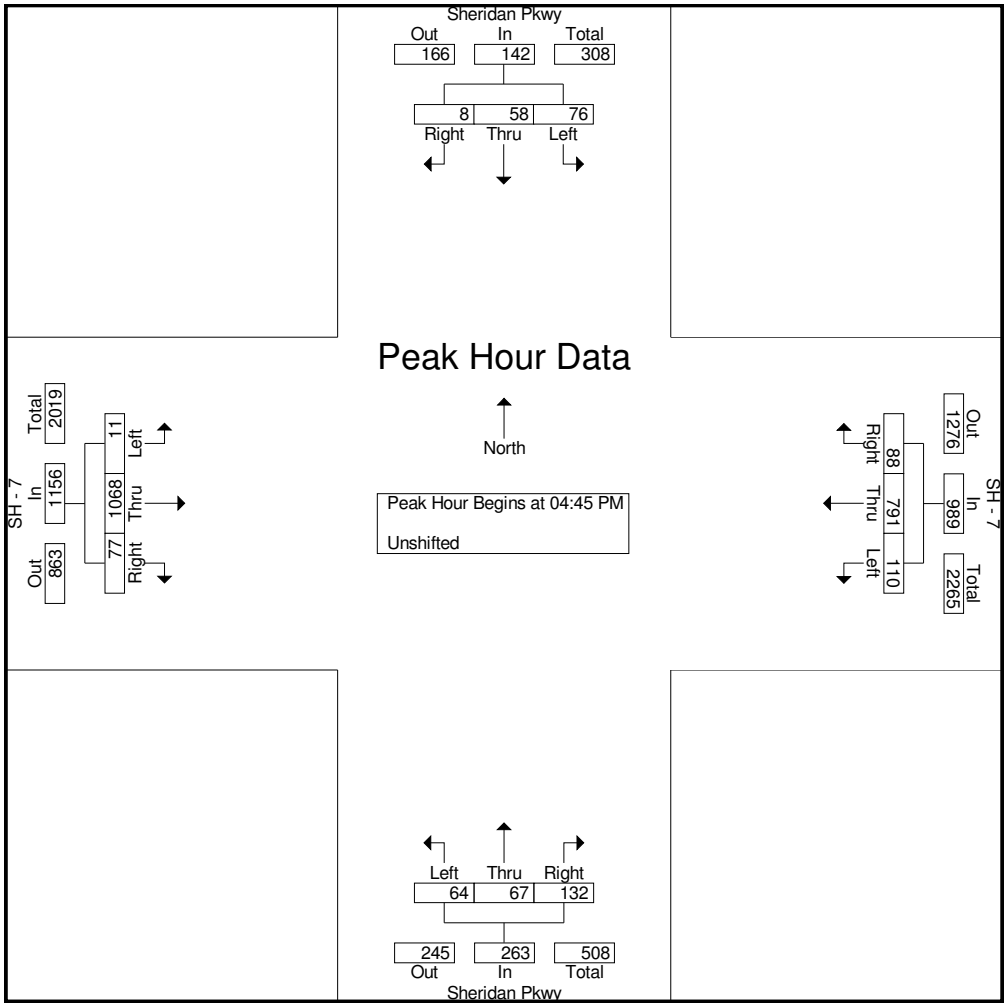
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 3

	SH - 7 Eastbound				SH - 7 Westbound				Sheridan Pkwy Northbound				Sheridan Pkwy Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	2	279	16	297	26	178	16	220	13	16	28	57	13	14	0	27	601
05:00 PM	2	**286**	18	**306**	26	203	18	247	**22**	13	32	67	**22**	9	**5**	36	656
05:15 PM	2	259	**30**	291	**30**	**212**	26	**268**	14	**21**	**42**	**77**	22	**18**	3	**43**	**679**
05:30 PM	**5**	244	13	262	28	198	**28**	254	15	17	30	62	19	17	0	36	614
Total Volume	11	1068	77	1156	110	791	88	989	64	67	132	263	76	58	8	142	2550
% App. Total	1	92.4	6.7		11.1	80	8.9		24.3	25.5	50.2		53.5	40.8	5.6		
PHF	.550	.934	.642	.944	.917	.933	.786	.923	.727	.798	.786	.854	.864	.806	.400	.826	.939



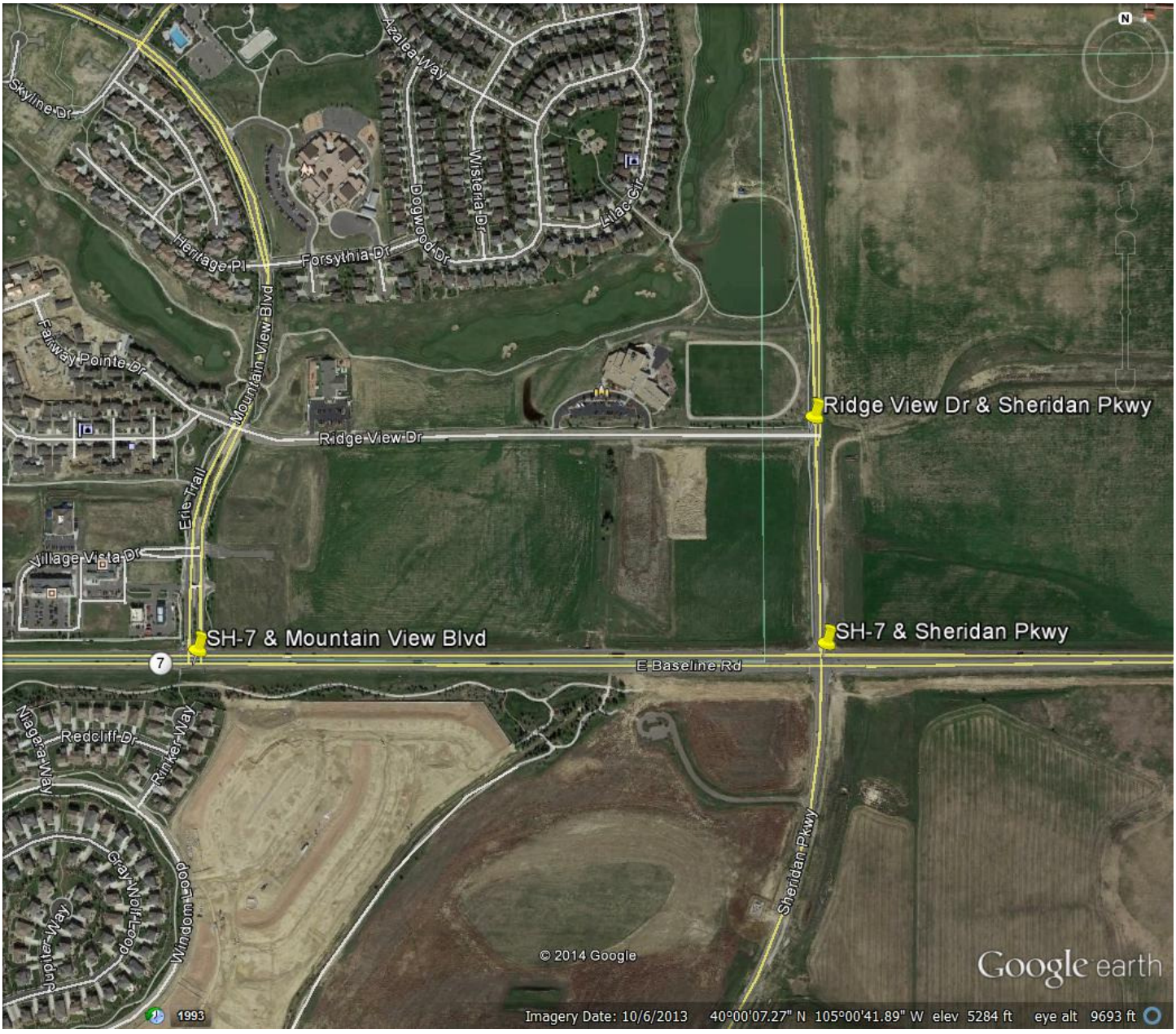
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
SH - 7 and Sheridan Pkwy

File Name : SH7SheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 1

Groups Printed- Unshifted

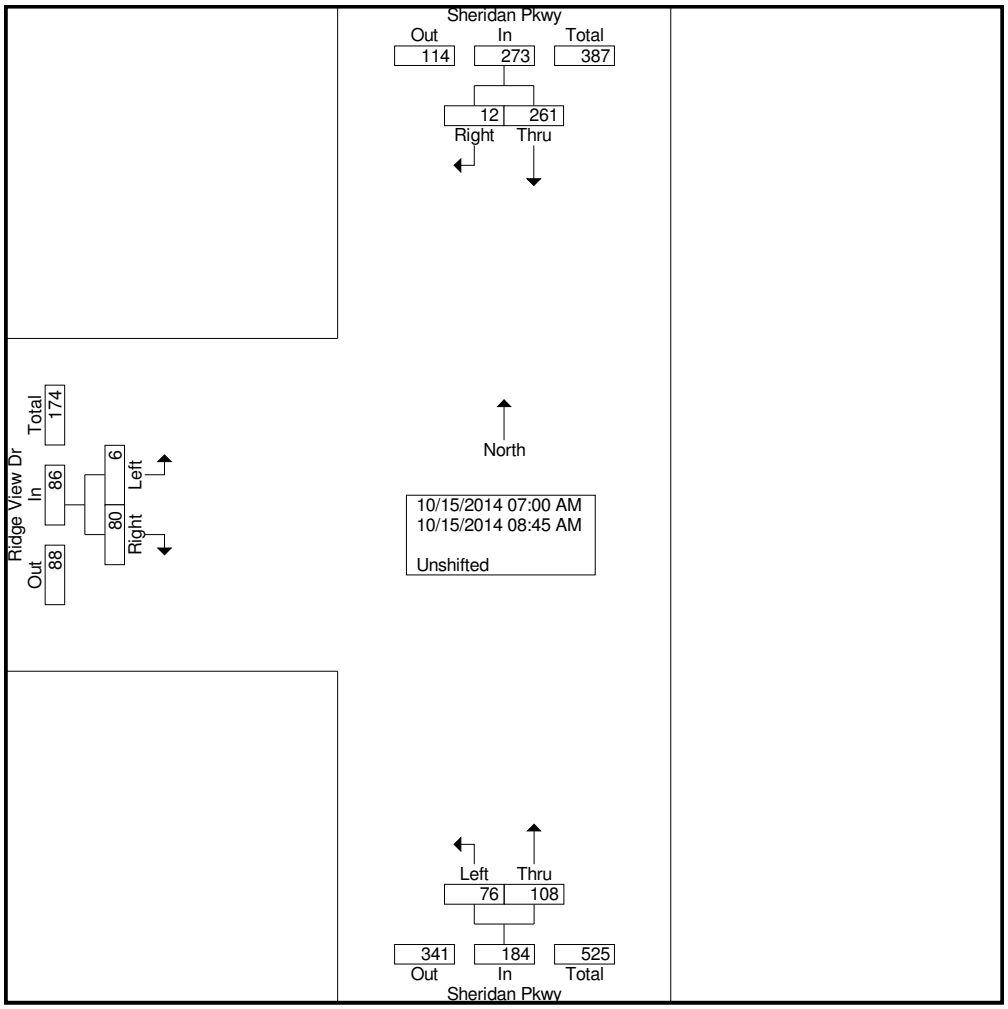
	Ridge View Dr Eastbound			Sheridan Pkwy Northbound			Sheridan Pkwy Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	8	8	7	15	22	25	1	26	56
07:15 AM	0	8	8	10	12	22	45	3	48	78
07:30 AM	0	14	14	8	8	16	35	1	36	66
07:45 AM	1	13	14	16	20	36	38	1	39	89
Total	1	43	44	41	55	96	143	6	149	289
08:00 AM	1	12	13	16	11	27	29	2	31	71
08:15 AM	3	11	14	12	11	23	34	3	37	74
08:30 AM	1	11	12	5	16	21	27	1	28	61
08:45 AM	0	3	3	2	15	17	28	0	28	48
Total	5	37	42	35	53	88	118	6	124	254
Grand Total	6	80	86	76	108	184	261	12	273	543
Apprch %	7	93		41.3	58.7		95.6	4.4		
Total %	1.1	14.7	15.8	14	19.9	33.9	48.1	2.2	50.3	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 2



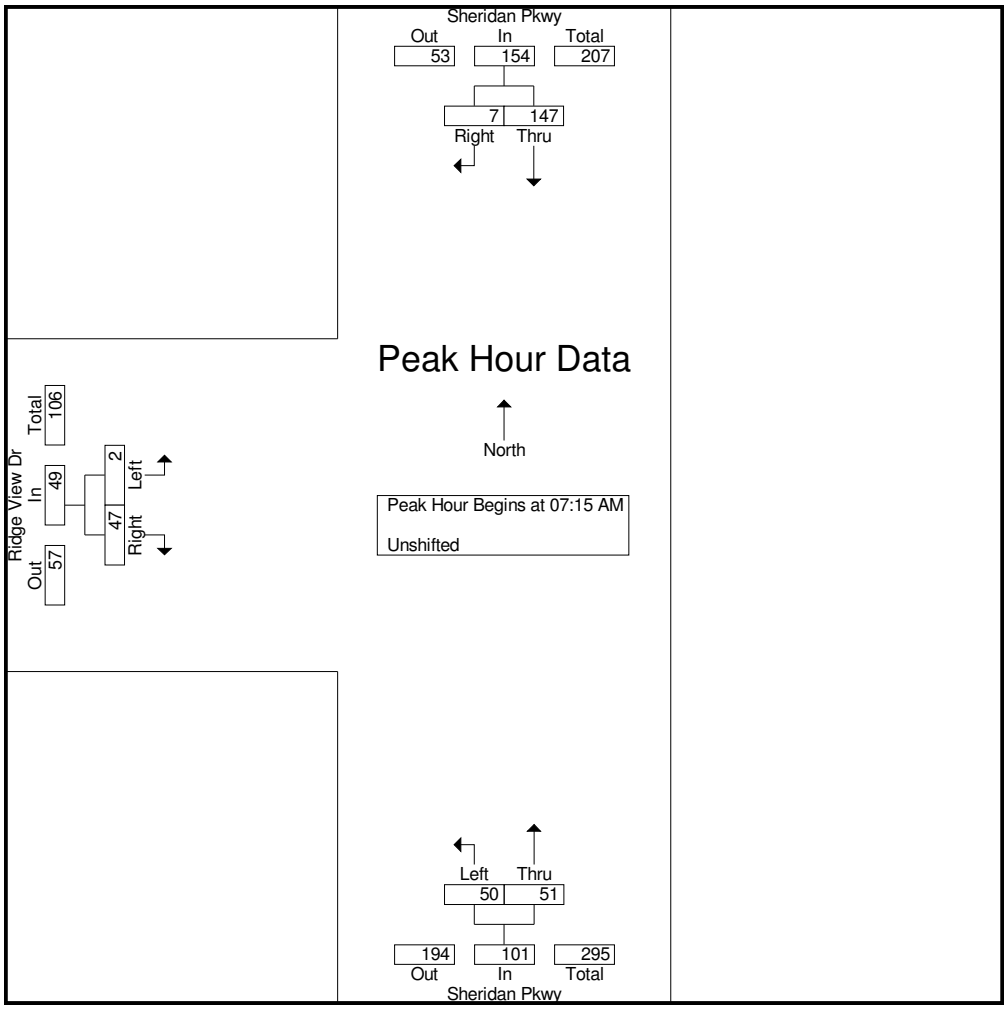
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 3

	Ridge View Dr Eastbound			Sheridan Pkwy Northbound			Sheridan Pkwy Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	8	8	10	12	22	**45**	**3**	**48**	78
07:30 AM	0	**14**	**14**	8	8	16	35	1	36	66
07:45 AM	**1**	13	14	**16**	**20**	**36**	38	1	39	**89**
08:00 AM	1	12	13	16	11	27	29	2	31	71
Total Volume	2	47	49	50	51	101	147	7	154	304
% App. Total	4.1	95.9		49.5	50.5		95.5	4.5		
PHF	.500	.839	.875	.781	.638	.701	.817	.583	.802	.854



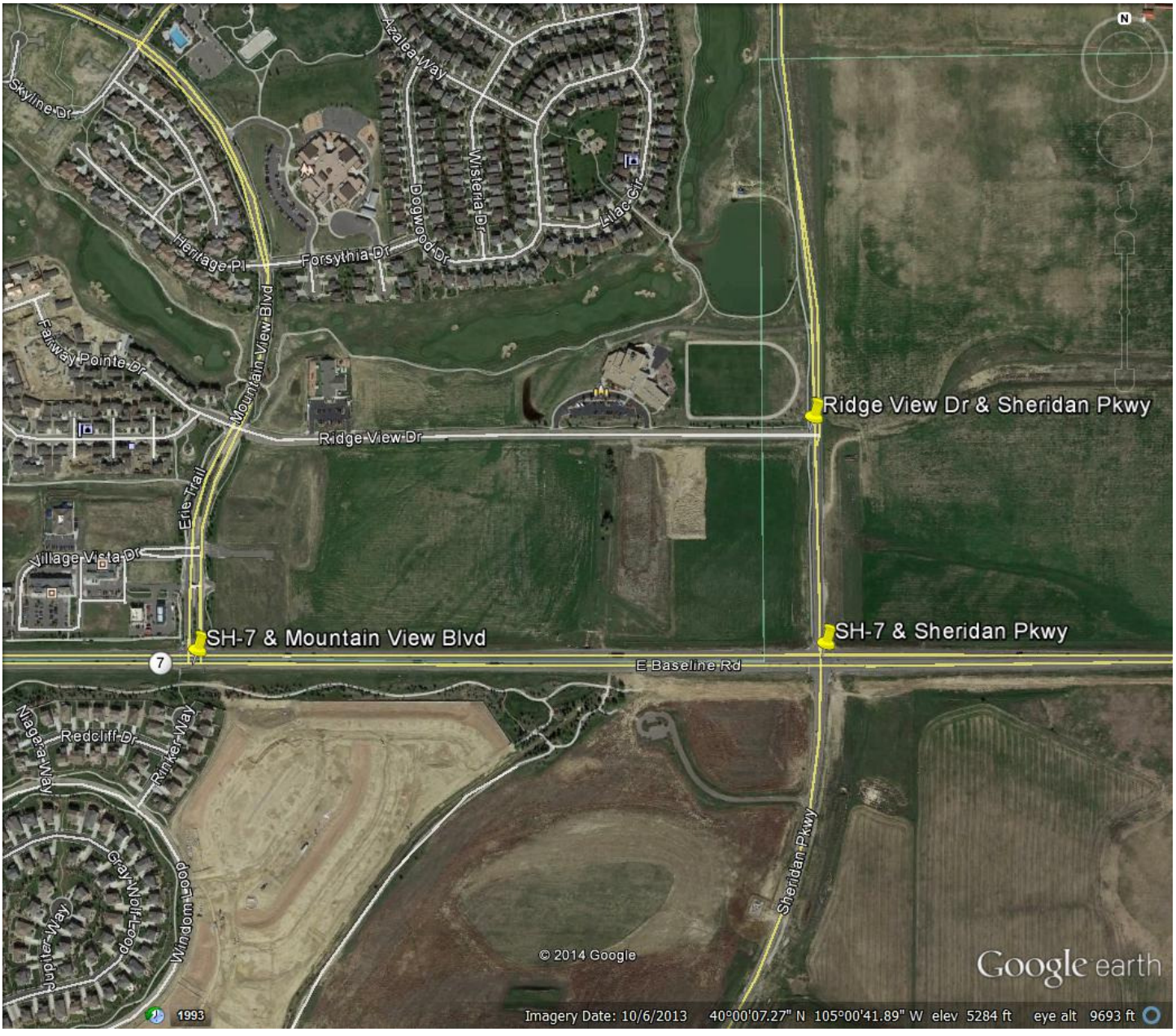
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
AM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanAM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 1

Groups Printed- Unshifted

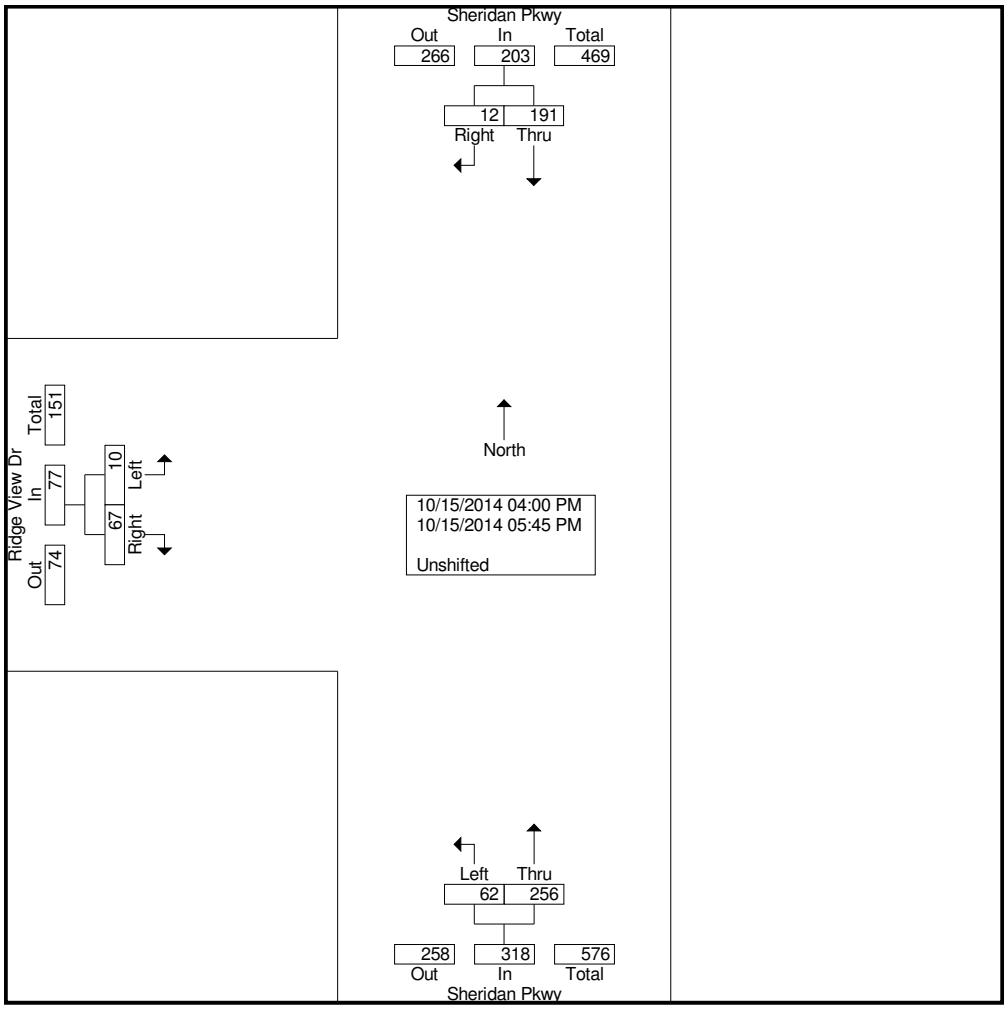
	Ridge View Dr Eastbound			Sheridan Pkwy Northbound			Sheridan Pkwy Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	8	8	6	26	32	16	2	18	58
04:15 PM	1	6	7	9	22	31	20	1	21	59
04:30 PM	0	9	9	5	41	46	29	2	31	86
04:45 PM	1	8	9	8	26	34	18	1	19	62
Total	2	31	33	28	115	143	83	6	89	265
05:00 PM	1	11	12	9	24	33	28	2	30	75
05:15 PM	4	6	10	12	40	52	29	1	30	92
05:30 PM	3	12	15	8	45	53	22	1	23	91
05:45 PM	0	7	7	5	32	37	29	2	31	75
Total	8	36	44	34	141	175	108	6	114	333
Grand Total	10	67	77	62	256	318	191	12	203	598
Apprch %	13	87		19.5	80.5		94.1	5.9		
Total %	1.7	11.2	12.9	10.4	42.8	53.2	31.9	2	33.9	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 2



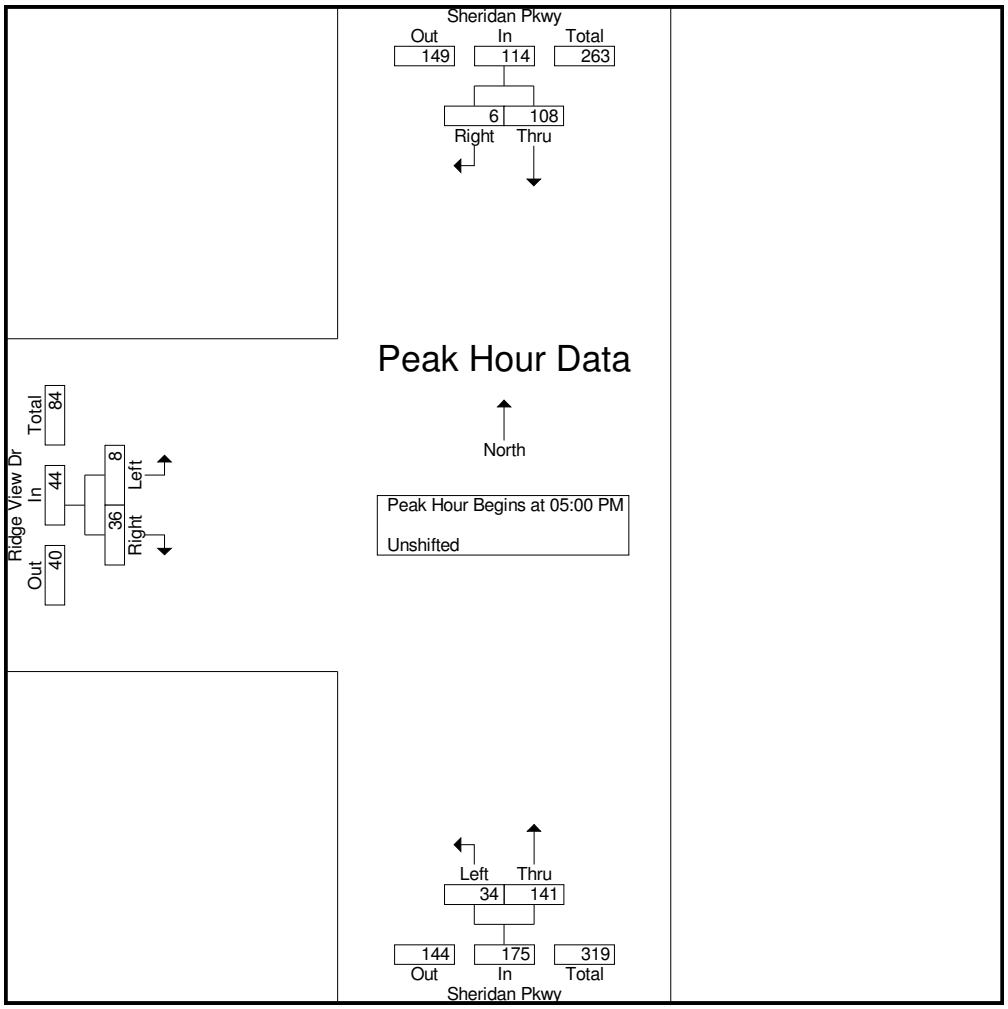
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 3

	Ridge View Dr Eastbound			Sheridan Pkwy Northbound			Sheridan Pkwy Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	1	11	12	9	24	33	28	**2**	30	75
05:15 PM	**4**	6	10	**12**	40	52	**29**	1	30	**92**
05:30 PM	3	**12**	**15**	8	**45**	**53**	22	1	23	91
05:45 PM	0	7	7	5	32	37	29	2	**31**	75
Total Volume	8	36	44	34	141	175	108	6	114	333
% App. Total	18.2	81.8		19.4	80.6		94.7	5.3		
PHF	.500	.750	.733	.708	.783	.825	.931	.750	.919	.905



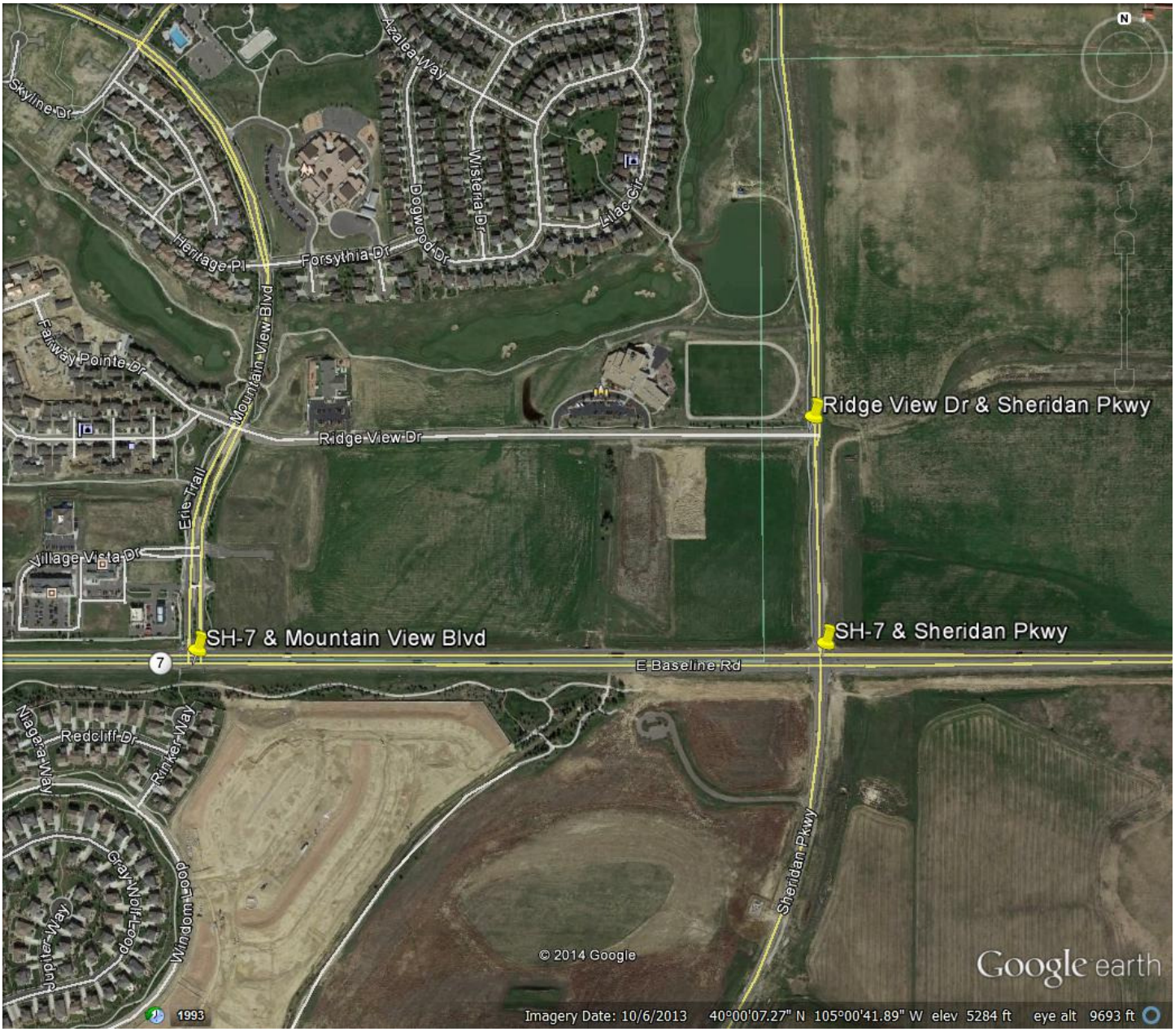
RDC
Ridgeview Data Collection

Morrison, CO 80465

Erie, CO
Erie King Soopers #129
PM Peak
Ridge View Dr and Sheridan Pkwy

File Name : RidgeViewSheridanPM
Site Code : IPO 60
Start Date : 10/15/2014
Page No : 4

Image 1



APPENDIX B

CDOT SH-7 Traffic Information

ROUTE	REFPT	ENDREFPT	AADT	AADTYR	YR20FACTOR	DHV	COUNTSTATIONID	LOCATION
007D	64.144	67.488	20000	2013	1.99	9.5	100447	ON SH 7 BASELINE RD E/O E COUNTY LINE RD CR 901 LAFAYETTE

APPENDIX C

Trip Generation Worksheets

Trip Generation Planner (ITE 9th Edition) - Summary Report

Kimley»Horn

Weekday Trip Generation
Trips Based on Average Rates/Equations

Project Name **Erie King Soopers #129**
Project Number **96083048**

ITE Code	Internal Capture Land Use	Land Use Description	Independent Variable	No. of Units	Avg Rate or Eq	Rates: Daily Rate	Rates: AM Rate	Rates: PM Rate	Total Trips: Daily Trips	Total Trips: AM Trips	Total Trips: PM Trips	Total Trips: AM Trips In	Total Trips: AM Trips Out	Total Trips: PM Trips In	Total Trips: PM Trips Out	Net Trips after Internal Capture: Daily Trips	Net Trips after Internal Capture: AM Trips	Net Trips after Internal Capture: PM Trips	Net Trips after Internal Capture: AM Trips In	Net Trips after Internal Capture: AM Trips Out	Net Trips after Internal Capture: PM Trips In	Net Trips after Internal Capture: PM Trips Out	Net Trips after Internal Capture & Pass-By: Daily Trips	Net Trips after Internal Capture & Pass-By: AM Trips	Net Trips after Internal Capture & Pass-By: PM Trips	Net Trips after Internal Capture & Pass-By: AM Trips In	Net Trips after Internal Capture & Pass-By: AM Trips Out	Net Trips after Internal Capture & Pass-By: PM Trips In	Net Trips after Internal Capture & Pass-By: PM Trips Out
820	Retail	Shopping Center	1,000 Sq Ft GLA	147.3	Eq	N/A	N/A	N/A	8736	197	777	122	75	373	404	5324	85	571	56	29	273	298	3514	63	377	41	22	180	196
850	Retail	Supermarket	1,000 Sq Ft	123	Avg	102.24	3.40	9.48	12576	418	908	259	159	463	445	9164	298	702	204	94	357	345	5866	191	449	131	60	229	221
944	Retail	Gasoline/Service Station	Fueling Position(s)	18	Avg	168.56	12.16	13.87	3036	219	250	112	107	125	125	1276	101	150	58	43	75	75	638	43	87	24	18	44	44
	Retail																												
								Totals	24348	834	1935	493	341	961	974	15764	484	1423	318	166	705	718	10018	297	913	196	100	452	461

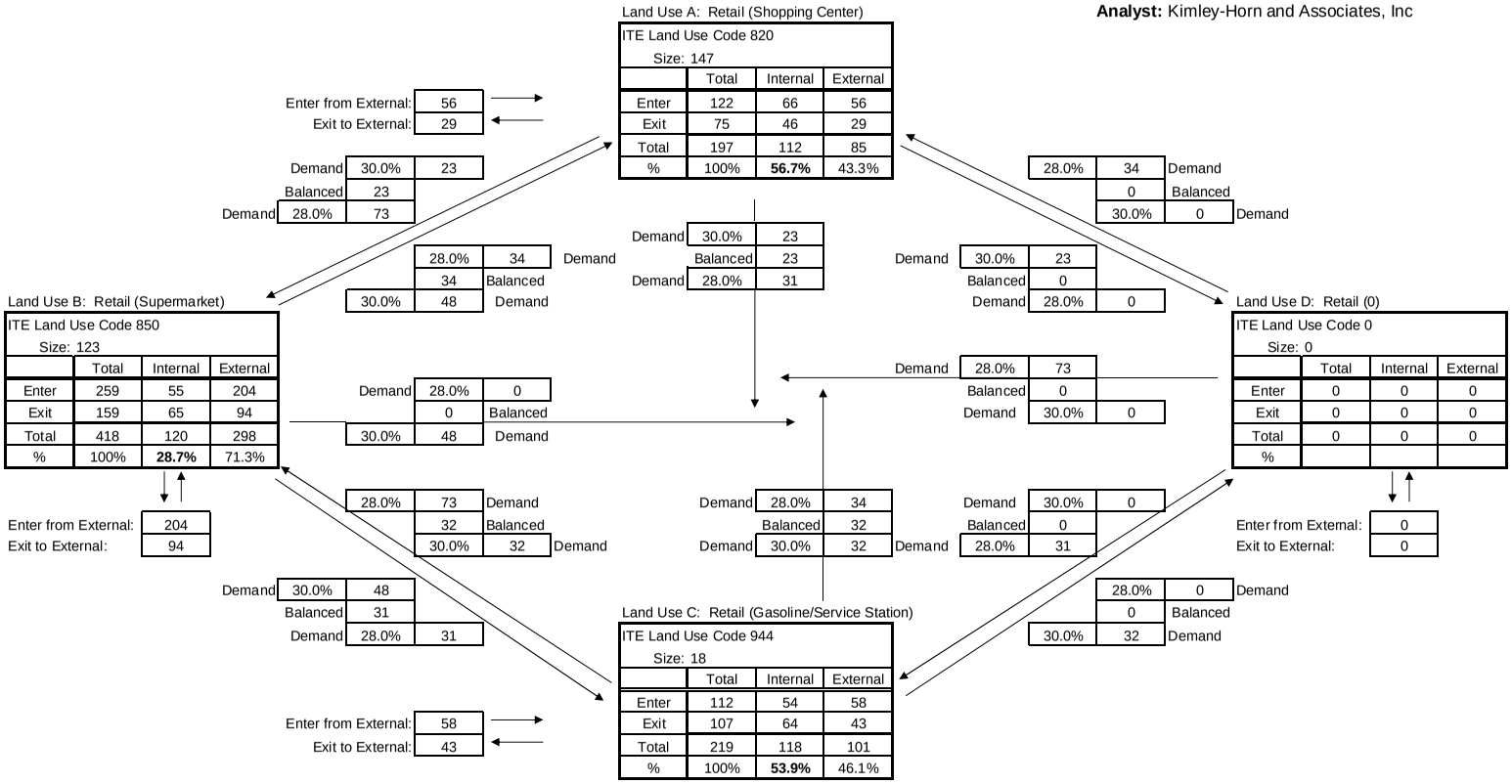
Notes:
(1) AM and/or PM rates correspond to peak hour of generator

A Trip Generation data from ITE *Trip Generation, 9th Edition*
B AM/PM rates correspond to peak of adjacent street traffic (if data available)
C Includes weekday rates only
D Total trips include pass-by trips w/ no internal capture
E Pass-by rates from ITE *Trip Generation Handbook, 2nd Edition*
F Internal capture rates from ITE *Trip Generation Handbook, 2nd Edition*
G Worksheet is intended as a planning tool. Verify results w/ ITE *Trip Generation 9th Edition*

ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET

(Source: Chapter 7, ITE *Trip Generation Handbook*, June 2004)

Project Number: 096083048
Project Name: Erie King Soopers #129
Scenario:
Analysis Period: AM Peak
Analyst: Kimley-Horn and Associates, Inc



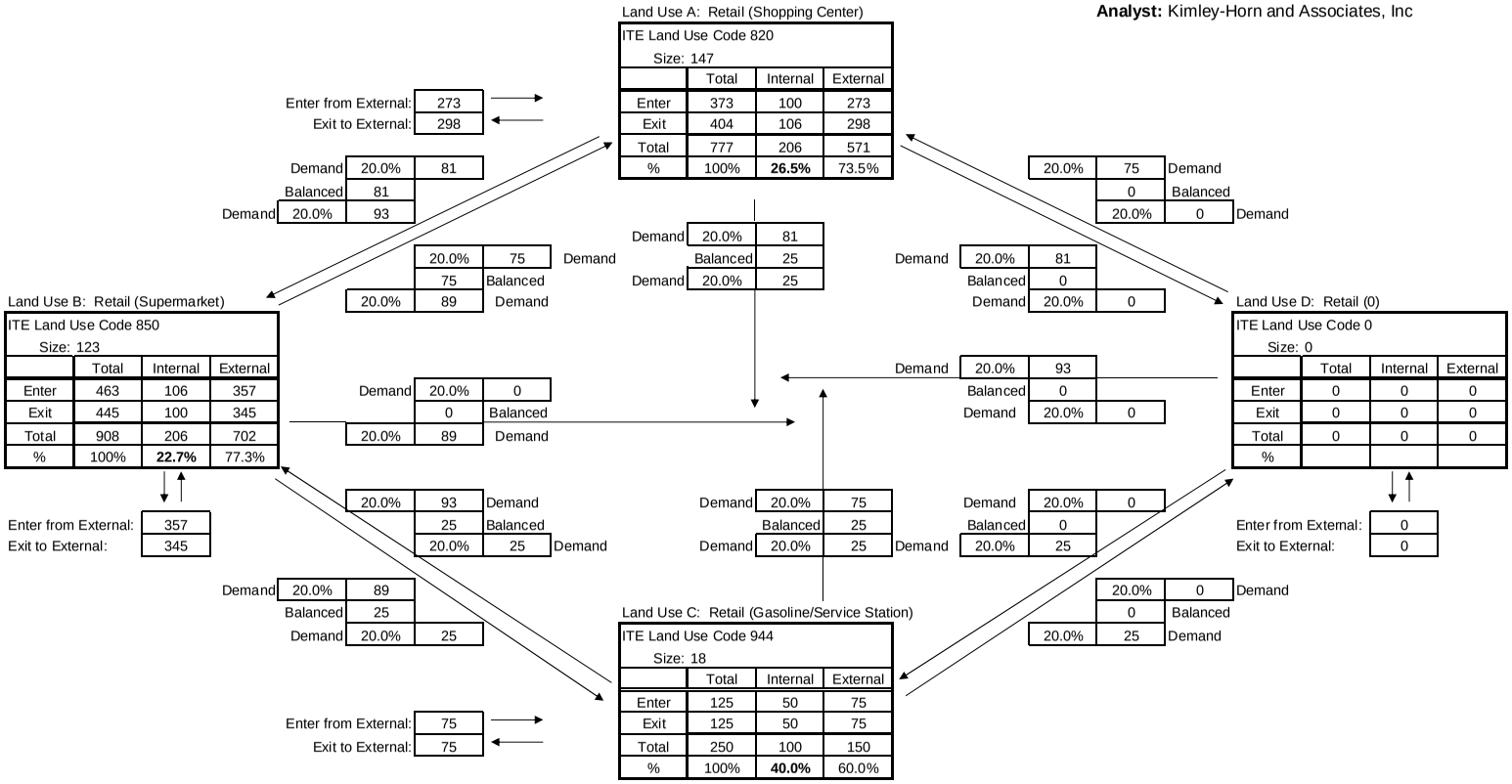
NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT					
	Land Use				
Category	A	B	C	D	Total
Enter	56	204	58	0	318
Exit	29	94	43	0	166
Total	85	298	101	0	**484**
Single Use Trip Gen Estimate	197	418	219	0	**834**

Overall Internal Capture = **41.94%**

ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET

(Source: Chapter 7, ITE *Trip Generation Handbook*, June 2004)

Project Number: 096083048
Project Name: Erie King Soopers #129
Scenario:
Analysis Period: PM Peak
Analyst: Kimley-Horn and Associates, Inc



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT

Category	Land Use A	Land Use B	Land Use C	Land Use D	Total
Enter	273	357	75	0	705
Exit	298	345	75	0	718
Total	571	702	150	0	**1,423**
Single Use Trip Gen Estimate	777	908	250	0	**1,935**

Overall Internal Capture = **26.47%**

Kimley»Horn

Project	Erie King Soopers				
Subject	Trip Generation for Shopping Center				
Designed by	Matt Farmen	*Date*	March 04, 2015	*Job No.*	096083048
Checked by	Curtis Rowe	*Date*	March 04, 2015	*Sheet No.*	1 *of* 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve Equations
Land Use Code - Shopping Center (820)
Independant Variable - 1000 Square Feet Gross Leasable Area (X)
Gross Leasable Area = 147,300 Square Feet
X = 147.300
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 1562)

Directional Distribution: 62% ent. 38% exit.
Ln(T) = 0.61 Ln(X) + 2.24 T = 197 Average Vehicle Trip Ends
Ln(T) = 0.61 * Ln(147) + 2.24 122 entering 75 exiting

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 1563)

Directional Distribution: 48% ent. 52% exit.
Ln(T) = 0.67 Ln(X) + 3.31 T = 777 Average Vehicle Trip Ends
Ln(T) = 0.67 * Ln(147) + 3.31 373 entering 404 exiting

Weekday (page 1561)

Daily Weekday Directional Distribution: 50% entering, 50% exiting
Ln(T) = 0.65 Ln(X) + 5.83 T = 8736 Average Vehicle Trip Ends
Ln(T) = 0.65 * Ln(147) + 5.83 4368 entering 4368 exiting

Saturday Peak Hour of Generator

Average Saturday Directional Distribution: 52% ent. 48% exit.
Ln(T) = 0.65 Ln(X) + 3.78 T = 1125 Average Vehicle Trip Ends
Ln(T) = 0.65 * Ln(147) + 3.78 585 entering 540 exiting

Non Pass-By Trip Volumes (Per ITE Trip Generation Handbook, June 2004)

PM Peak Hour = 34% Pass-by Saturday Peak Hour = 26% Pass-by

	IN	Out	Total	
AM Peak	91	56	147	*uses lesser of PM and Saturday pass-by rates (26%)
PM Peak	246	267	513	
Daily	2883	2883	5766	*uses PM peak hour pass-by rate
Saturday Peak	433	399	832	

Kimley»Horn

Project	Erie King Soopers				
Subject	Trip Generation for Supermarket				
Designed by	Matt Farmen	*Date*	October 22, 2014	*Job No.*	96083048
Checked by	Curtis Rowe	*Date*	October 22, 2014	*Sheet No.*	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve and Average Rate Equations

Land Use Code - Supermarket (850)

Independant Variable - 1000 Square Feet Gross Leasable Area (X)

Gross Leasable Area = 123,000 Square Feet
X = 123.000
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 1646)

Average Weekday
(T) = 3.40 (X)
(T) = 3.40 * 123.00

Directional Distribution: 62% ent. 38% exit.
T = 418 Average Vehicle Trip Ends
259 entering 159 exiting

259 + 159 = 418

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 1647)

Average Weekday
Ln(T) = 0.74 Ln(X) + 3.25
Ln(T) = 0.74 * Ln(123.000) + 3.25

Directional Distribution: 51% ent. 49% exit.
T = 908 Average Vehicle Trip Ends
463 entering 445 exiting

463 + 445 = 908

Weekday (page 1645)

Average Weekday
(T) = 102.24 (X)
(T) = 102.24 * 123.00

Directional Distribution: 50% entering, 50% exiting
T = 12576 Average Vehicle Trip Ends
6288 entering 6288 exiting

6288 + 6288 = 12576

Non Pass-by Trip Volumes (page 52 of ITE Trip Generation Handbook, 2nd Edition, June 2004)

PM Peak Hour = 36% Pass By

	IN	Out	Total
AM Peak	166	102	268
PM Peak	296	285	581
Daily	4024	4024	8048

* PM Pass By Rate Applied to AM Rate and Daily

Kimley»Horn

Project	Erie King Soopers				
Subject	Trip Generation for Gasoline Service Station				
Designed by	Matt Farmen	*Date*	October 22, 2014	*Job No.*	96083048
Checked by	Curtis Rowe	*Date*	October 22, 2014	*Sheet No.*	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Average Rate Equations
Land Use Code - Gasoline Service Station (944)
Independant Variable - Vehicle Fueling Positions (X)

Vehicle Fueling Positions= 18 Positions
X = 18
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 1985)

Directional Distribution: 51% ent. 49% exit.
T = 12.16 (X)
T = 12.16 * 18.000
T = 219 Average Vehicle Trip Ends
112 entering 107 exiting

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 1986)

Directional Distribution: 50% ent. 50% exit.
T = 13.87 (X)
T = 13.87 * 18.000
T = 250 Average Vehicle Trip Ends
125 entering 125 exiting

Weekday (page 1984)

Average Weekday
T = 168.56 (X)
T = 168.56 * 18.000
Directional Distribution: 50% entering, 50% exiting
T = 3036 Average Vehicle Trip Ends
1518 entering 1518 exiting

Non-Pass-by Trip Volumes (pages 73 and 74, Trip Generation Handbook, June 2004)

AM Peak Hour = 58% Pass By — Applied All Other Time Periods

	In	Out	Total	
AM Peak	47	45	92	
PM Peak	72	72	144	
Daily	759	759	1518	PM Peak Hour Rate Applied to Daily

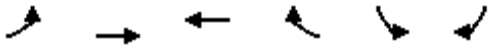
Pass-by Trip Volumes (page 73, ITE Trip Generation Handbook, December 2012)

AM Average Pass By Percentage: 58% Pass By
PM Average Pass By Percentage: 42% Pass By — Applied All Other Time Periods
Average Daily Pass By Percentage: 50%

	In	Out	Total
AM Peak	65	62	127
PM Peak	52	52	104
Daily	759	759	1518

APPENDIX D

Intersection Analysis Worksheets

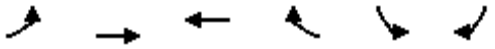


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	114	616	823	124	171	153
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1
Cap, veh/h	335	2414	973	827	808	371
Arrive On Green	0.07	0.65	1.00	1.00	0.23	0.23
Sat Flow, veh/h	1774	3725	1863	1583	3442	1583
Grp Volume(v), veh/h	165	655	935	155	209	184
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1721	1583
Q Serve(g_s), s	2.7	5.1	0.0	0.0	3.4	6.9
Cycle Q Clear(g_c), s	2.7	5.1	0.0	0.0	3.4	6.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	335	2414	973	827	808	371
V/C Ratio(X)	0.49	0.27	0.96	0.19	0.26	0.50
Avail Cap(c_a), veh/h	477	4698	1967	1672	808	371
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.44	0.44	1.00	1.00
Uniform Delay (d), s/veh	11.1	5.1	0.0	0.0	21.3	22.6
Incr Delay (d2), s/veh	1.1	0.1	3.5	0.0	0.8	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	1.4	1.0	0.0	1.4	0.5
Lane Grp Delay (d), s/veh	12.2	5.2	3.5	0.0	22.0	27.3
Lane Grp LOS	B	A	A	A	C	C
Approach Vol, veh/h		820	1090		393	
Approach Delay, s/veh		6.6	3.0		24.5	
Approach LOS		A	A		C	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	8.6	39.7	31.1			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	10.0	86.0	72.0			
Max Q Clear Time (g_c+I1), s	4.7	7.1	2.0			
Green Ext Time (p_c), s	0.2	16.7	16.6			

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Notes

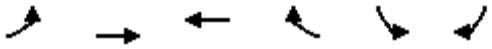


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	177	976	665	208	145	151
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	172.7	186.3	186.3	186.3
Lanes	1	2	1	1	2	1
Cap, veh/h	350	2327	951	871	791	364
Arrive On Green	0.07	0.67	0.55	0.55	0.23	0.23
Sat Flow, veh/h	1774	3455	1727	1583	3442	1583
Grp Volume(v), veh/h	213	1038	723	254	169	176
Grp Sat Flow(s),veh/h/ln	1774	1727	1727	1583	1721	1583
Q Serve(g_s), s	4.0	11.6	26.8	7.1	3.3	8.0
Cycle Q Clear(g_c), s	4.0	11.6	26.8	7.1	3.3	8.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	350	2327	951	871	791	364
V/C Ratio(X)	0.61	0.45	0.76	0.29	0.21	0.48
Avail Cap(c_a), veh/h	474	3467	1400	1283	791	364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.68	0.68	1.00	1.00
Uniform Delay (d), s/veh	13.7	6.3	14.4	10.0	25.8	27.6
Incr Delay (d2), s/veh	1.7	0.1	1.0	0.1	0.6	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.8	3.2	9.5	2.3	1.4	0.5
Lane Grp Delay (d), s/veh	15.5	6.4	15.4	10.1	26.4	32.1
Lane Grp LOS	B	A	B	B	C	C
Approach Vol, veh/h		1251	977		345	
Approach Delay, s/veh		8.0	14.0		29.3	
Approach LOS		A	B		C	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	10.2	59.7	49.5			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	12.0	83.0	67.0			
Max Q Clear Time (g_c+I1), s	6.0	13.6	28.8			
Green Ext Time (p_c), s	0.3	19.7	16.7			

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

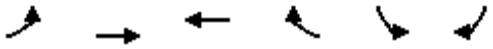


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	122	660	882	133	183	164
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1
Cap, veh/h	268	2696	1160	986	647	298
Arrive On Green	0.06	0.72	0.62	0.62	0.19	0.19
Sat Flow, veh/h	1774	3725	1863	1583	3442	1583
Grp Volume(v), veh/h	177	702	1002	166	223	198
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1721	1583
Q Serve(g_s), s	3.0	5.8	39.7	4.0	5.1	10.5
Cycle Q Clear(g_c), s	3.0	5.8	39.7	4.0	5.1	10.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	268	2696	1160	986	647	298
V/C Ratio(X)	0.66	0.26	0.86	0.17	0.34	0.67
Avail Cap(c_a), veh/h	364	3501	1462	1243	647	298
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.42	0.42	1.00	1.00
Uniform Delay (d), s/veh	19.2	4.3	13.9	7.2	31.9	34.1
Incr Delay (d2), s/veh	2.8	0.1	2.0	0.0	1.5	11.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.0	1.7	14.9	1.2	2.3	0.9
Lane Grp Delay (d), s/veh	21.9	4.3	16.0	7.2	33.4	45.3
Lane Grp LOS	C	A	B	A	C	D
Approach Vol, veh/h		879	1168		421	
Approach Delay, s/veh		7.9	14.7		39.0	
Approach LOS		A	B		D	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	9.1	69.5	60.3			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	10.0	85.0	71.0			
Max Q Clear Time (g_c+I1), s	5.0	7.8	41.7			
Green Ext Time (p_c), s	0.2	19.6	14.6			

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Notes

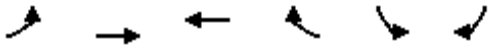


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	190	1046	712	223	155	162
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	172.7	186.3	186.3	186.3
Lanes	1	2	1	1	2	1
Cap, veh/h	348	2432	1005	921	693	319
Arrive On Green	0.07	0.70	0.58	0.58	0.20	0.20
Sat Flow, veh/h	1774	3455	1727	1583	3442	1583
Grp Volume(v), veh/h	229	1113	774	272	180	188
Grp Sat Flow(s),veh/h/ln	1774	1727	1727	1583	1721	1583
Q Serve(g_s), s	4.0	11.9	28.7	7.3	3.7	9.1
Cycle Q Clear(g_c), s	4.0	11.9	28.7	7.3	3.7	9.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	348	2432	1005	921	693	319
V/C Ratio(X)	0.66	0.46	0.77	0.30	0.26	0.59
Avail Cap(c_a), veh/h	489	3477	1391	1275	693	319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.60	0.60	1.00	1.00
Uniform Delay (d), s/veh	14.6	5.5	13.4	8.9	28.4	30.6
Incr Delay (d2), s/veh	2.1	0.1	1.1	0.1	0.9	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.4	3.1	10.0	2.3	1.6	0.7
Lane Grp Delay (d), s/veh	16.7	5.6	14.5	9.0	29.3	38.4
Lane Grp LOS	B	A	B	A	C	D
Approach Vol, veh/h		1342	1046		368	
Approach Delay, s/veh		7.5	13.0		33.9	
Approach LOS		A	B		C	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	10.3	63.4	53.1			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	13.0	85.0	68.0			
Max Q Clear Time (g_c+I1), s	6.0	13.9	30.7			
Green Ext Time (p_c), s	0.3	22.9	18.5			

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

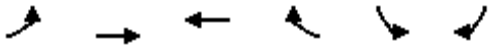


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	122	748	927	133	183	164
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1
Cap, veh/h	419	2328	913	776	878	404
Arrive On Green	0.07	0.62	0.98	0.98	0.26	0.26
Sat Flow, veh/h	1774	3725	1863	1583	3442	1583
Grp Volume(v), veh/h	177	796	1053	166	223	198
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1721	1583
Q Serve(g_s), s	3.0	6.8	32.6	0.2	3.4	7.1
Cycle Q Clear(g_c), s	3.0	6.8	32.6	0.2	3.4	7.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	419	2328	913	776	878	404
V/C Ratio(X)	0.42	0.34	1.15	0.21	0.25	0.49
Avail Cap(c_a), veh/h	526	4753	2013	1711	878	404
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.0	6.0	0.7	0.3	19.8	21.1
Incr Delay (d2), s/veh	0.7	0.1	72.8	0.1	0.7	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	1.9	18.7	0.1	1.4	0.5
Lane Grp Delay (d), s/veh	7.7	6.1	73.4	0.5	20.5	25.3
Lane Grp LOS	A	A	F	A	C	C
Approach Vol, veh/h		973	1219		421	
Approach Delay, s/veh		6.3	63.5		22.8	
Approach LOS		A	E		C	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	9.0	55.8	46.9			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	9.0	85.0	72.0			
Max Q Clear Time (g_c+I1), s	5.0	8.8	34.6			
Green Ext Time (p_c), s	0.2	23.3	18.5			

Intersection Summary	
HCM 2010 Ctrl Delay	35.6
HCM 2010 LOS	D

Notes

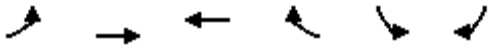


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	190	1249	919	223	155	162
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	172.7	186.3	186.3	186.3
Lanes	1	2	1	1	2	1
Cap, veh/h	413	2418	998	915	702	323
Arrive On Green	0.07	0.70	1.00	1.00	0.20	0.20
Sat Flow, veh/h	1774	3455	1727	1583	3442	1583
Grp Volume(v), veh/h	229	1329	999	272	180	188
Grp Sat Flow(s),veh/h/ln	1774	1727	1727	1583	1721	1583
Q Serve(g_s), s	4.0	15.6	48.1	0.0	3.7	8.9
Cycle Q Clear(g_c), s	4.0	15.6	48.1	0.0	3.7	8.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	413	2418	998	915	702	323
V/C Ratio(X)	0.56	0.55	1.00	0.30	0.26	0.58
Avail Cap(c_a), veh/h	494	3524	1472	1349	702	323
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.1	6.1	0.0	0.0	27.9	30.0
Incr Delay (d2), s/veh	1.2	0.2	20.4	0.2	0.9	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.3	4.1	5.6	0.0	1.6	0.7
Lane Grp Delay (d), s/veh	8.3	6.3	20.4	0.2	28.7	37.4
Lane Grp LOS	A	A	F	A	C	D
Approach Vol, veh/h		1558	1271		368	
Approach Delay, s/veh		6.6	16.0		33.2	
Approach LOS		A	B		C	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	10.2	71.4	61.2			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	10.0	85.0	71.0			
Max Q Clear Time (g_c+I1), s	6.0	17.6	50.1			
Green Ext Time (p_c), s	0.2	34.7	16.2			

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

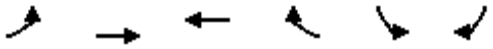


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	235	1269	1695	255	352	315
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	3	3	0	2	1
Cap, veh/h	381	3733	2350	383	857	394
Arrive On Green	0.13	0.67	1.00	1.00	0.25	0.25
Sat Flow, veh/h	1774	5588	4690	764	3442	1583
Grp Volume(v), veh/h	341	1350	1523	722	429	380
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1728	1721	1583
Q Serve(g_s), s	9.4	10.2	0.0	0.0	10.3	22.9
Cycle Q Clear(g_c), s	9.4	10.2	0.0	0.0	10.3	22.9
Prop In Lane	1.00			0.44	1.00	1.00
Lane Grp Cap(c), veh/h	381	3733	1867	866	857	394
V/C Ratio(X)	0.89	0.36	0.82	0.83	0.50	0.96
Avail Cap(c_a), veh/h	564	4522	2010	932	857	394
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.66	0.66	1.00	1.00
Uniform Delay (d), s/veh	16.9	7.0	0.0	0.0	31.1	35.8
Incr Delay (d2), s/veh	12.1	0.1	1.7	4.2	2.1	37.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	8.6	3.4	0.4	1.0	4.6	4.1
Lane Grp Delay (d), s/veh	29.0	7.1	1.7	4.2	33.1	72.9
Lane Grp LOS	C	A	A	A	C	E
Approach Vol, veh/h		1691	2245		809	
Approach Delay, s/veh		11.5	2.5		51.8	
Approach LOS		B	A		D	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	16.1	68.4	52.3			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	22.0	78.0	52.0			
Max Q Clear Time (g_c+I1), s	11.4	12.2	2.0			
Green Ext Time (p_c), s	0.7	52.2	41.8			

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B

Notes

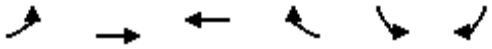


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	365	2010	1370	428	299	311
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	176.1	190.0	186.3	186.3
Lanes	1	3	3	0	2	1
Cap, veh/h	480	3756	1942	669	676	311
Arrive On Green	0.17	0.72	1.00	1.00	0.20	0.20
Sat Flow, veh/h	1774	5182	3758	1295	3442	1583
Grp Volume(v), veh/h	440	2138	1393	618	348	362
Grp Sat Flow(s),veh/h/ln	1774	1727	1761	1532	1721	1583
Q Serve(g_s), s	14.1	19.7	0.0	0.0	9.2	20.0
Cycle Q Clear(g_c), s	14.1	19.7	0.0	0.0	9.2	20.0
Prop In Lane	1.00			0.85	1.00	1.00
Lane Grp Cap(c), veh/h	480	3756	1819	792	676	311
V/C Ratio(X)	0.92	0.57	0.77	0.78	0.51	1.16
Avail Cap(c_a), veh/h	668	4175	1819	792	676	311
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	1.00	1.00
Uniform Delay (d), s/veh	19.3	6.6	0.0	0.0	36.5	40.9
Incr Delay (d2), s/veh	14.0	0.1	1.4	3.6	2.8	103.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	11.9	5.6	0.4	0.8	4.2	8.9
Lane Grp Delay (d), s/veh	33.2	6.7	1.4	3.6	39.3	143.8
Lane Grp LOS	C	A	A	A	D	F
Approach Vol, veh/h		2578	2011		710	
Approach Delay, s/veh		11.2	2.1		92.6	
Approach LOS		B	A		F	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	21.2	77.8	56.6			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	28.0	82.0	50.0			
Max Q Clear Time (g_c+I1), s	16.1	21.7	2.0			
Green Ext Time (p_c), s	1.1	52.1	44.3			

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Notes

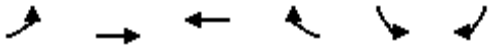


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	235	1357	1740	255	352	315
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	190.0	186.3	186.3
Lanes	1	3	3	0	2	1
Cap, veh/h	381	3875	2482	393	774	356
Arrive On Green	0.13	0.69	1.00	1.00	0.22	0.22
Sat Flow, veh/h	1774	5588	4710	746	3442	1583
Grp Volume(v), veh/h	341	1444	1556	740	429	380
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1731	1721	1583
Q Serve(g_s), s	9.6	10.5	0.0	0.0	10.8	22.0
Cycle Q Clear(g_c), s	9.6	10.5	0.0	0.0	10.8	22.0
Prop In Lane	1.00			0.43	1.00	1.00
Lane Grp Cap(c), veh/h	381	3875	1963	912	774	356
V/C Ratio(X)	0.90	0.37	0.79	0.81	0.55	1.07
Avail Cap(c_a), veh/h	557	4570	2056	956	774	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	6.2	0.0	0.0	33.6	37.9
Incr Delay (d2), s/veh	12.5	0.1	2.1	5.2	2.9	66.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	8.7	3.4	0.6	1.3	4.8	6.6
Lane Grp Delay (d), s/veh	30.7	6.3	2.1	5.2	36.4	104.6
Lane Grp LOS	C	A	A	A	D	F
Approach Vol, veh/h		1785	2296		809	
Approach Delay, s/veh		10.9	3.1		68.4	
Approach LOS		B	A		E	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	16.3	71.8	55.5			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	22.0	80.0	54.0			
Max Q Clear Time (g_c+I1), s	11.6	12.5	2.0			
Green Ext Time (p_c), s	0.7	55.4	44.5			

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	365	2213	1577	428	299	311
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	175.7	190.0	186.3	186.3
Lanes	1	3	3	0	2	1
Cap, veh/h	478	3938	2125	628	562	258
Arrive On Green	0.18	0.76	1.00	1.00	0.16	0.16
Sat Flow, veh/h	1774	5182	3911	1156	3442	1583
Grp Volume(v), veh/h	440	2354	1535	701	348	362
Grp Sat Flow(s),veh/h/ln	1774	1727	1757	1553	1721	1583
Q Serve(g_s), s	15.6	20.8	0.0	0.0	9.8	17.0
Cycle Q Clear(g_c), s	15.6	20.8	0.0	0.0	9.8	17.0
Prop In Lane	1.00			0.74	1.00	1.00
Lane Grp Cap(c), veh/h	478	3938	1909	844	562	258
V/C Ratio(X)	0.92	0.60	0.80	0.83	0.62	1.40
Avail Cap(c_a), veh/h	621	4229	1909	844	562	258
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	5.5	0.0	0.0	40.6	43.6
Incr Delay (d2), s/veh	16.3	0.2	2.6	7.1	5.1	202.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	12.7	5.5	0.7	1.7	4.6	14.5
Lane Grp Delay (d), s/veh	39.2	5.7	2.6	7.1	45.6	245.7
Lane Grp LOS	D	A	A	A	D	F
Approach Vol, veh/h		2794	2236		710	
Approach Delay, s/veh		11.0	4.0		147.6	
Approach LOS		B	A		F	

Timer						
Assigned Phs	7	4	8			
Phs Duration (G+Y+Rc), s	22.6	83.2	60.6			
Change Period (Y+Rc), s	4.0	4.0	4.0			
Max Green Setting (Gmax), s	27.0	85.0	54.0			
Max Q Clear Time (g_c+I1), s	17.6	22.8	2.0			
Green Ext Time (p_c), s	0.9	56.4	49.6			

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	707	96	252	899	52	39	44	113	85	90	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	160	993	844	567	1151	979	289	323	275	308	275	41
Arrive On Green	0.01	1.00	1.00	0.09	0.62	0.62	0.04	0.17	0.17	0.04	0.17	0.17
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1586	235
Grp Volume(v), veh/h	4	744	135	332	1022	76	80	68	169	112	0	124
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1821
Q Serve(g_s), s	0.1	0.0	0.0	6.1	45.5	1.9	3.6	3.1	9.7	4.0	0.0	5.9
Cycle Q Clear(g_c), s	0.1	0.0	0.0	6.1	45.5	1.9	3.6	3.1	9.7	4.0	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	160	993	844	567	1151	979	289	323	275	308	0	316
V/C Ratio(X)	0.03	0.75	0.16	0.59	0.89	0.08	0.28	0.21	0.62	0.36	0.00	0.39
Avail Cap(c_a), veh/h	225	1084	921	698	1312	1115	289	323	275	308	0	316
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	0.0	5.6	15.8	7.5	31.8	34.7	37.5	33.0	0.0	35.9
Incr Delay (d2), s/veh	0.1	2.6	0.1	1.0	7.1	0.0	0.5	1.5	9.9	0.7	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.0	0.7	0.0	1.9	19.0	0.6	1.6	1.5	4.4	0.5	0.0	3.0
Lane Grp Delay (d), s/veh	17.6	2.6	0.1	6.6	22.9	7.5	32.4	36.2	47.3	33.7	0.0	39.5
Lane Grp LOS	B	A	A	A	C	A	C	D	D	C		D
Approach Vol, veh/h		883			1430			317			236	
Approach Delay, s/veh		2.3			18.3			41.2			36.8	
Approach LOS		A			B			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	4.4	56.2		12.7	64.5		8.0	21.0		8.0	21.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	57.0		16.0	69.0		4.0	17.0		4.0	17.0	
Max Q Clear Time (g_c+I1), s	2.1	2.0		8.1	47.5		5.6	11.7		6.0	7.9	
Green Ext Time (p_c), s	0.0	20.3		0.6	13.1		0.0	0.7		0.0	1.0	

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1068	77	110	791	88	64	67	132	76	58	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	186.3	186.3	172.7	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	282	1099	1008	130	1133	1039	259	271	230	248	204	57
Arrive On Green	0.02	0.85	0.85	0.04	0.66	0.66	0.04	0.15	0.15	0.04	0.15	0.15
Sat Flow, veh/h	1774	1727	1583	1774	1727	1583	1774	1863	1583	1774	1404	390
Grp Volume(v), veh/h	20	1148	120	120	851	111	88	84	167	88	0	92
Grp Sat Flow(s),veh/h/ln	1774	1727	1583	1774	1727	1583	1774	1863	1583	1774	0	1794
Q Serve(g_s), s	0.4	70.0	1.4	3.3	36.7	2.9	4.0	4.4	11.1	4.0	0.0	5.1
Cycle Q Clear(g_c), s	0.4	70.0	1.4	3.3	36.7	2.9	4.0	4.4	11.1	4.0	0.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	282	1099	1008	130	1133	1039	259	271	230	248	0	261
V/C Ratio(X)	0.07	1.04	0.12	0.92	0.75	0.11	0.34	0.31	0.73	0.35	0.00	0.35
Avail Cap(c_a), veh/h	317	1099	1008	130	1133	1039	259	271	230	248	0	261
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.3	8.4	3.2	33.4	12.8	7.0	39.5	42.1	44.9	39.4	0.0	42.3
Incr Delay (d2), s/veh	0.1	38.2	0.0	56.0	2.8	0.0	0.8	3.0	18.0	0.9	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.2	16.7	0.4	5.3	13.4	0.9	0.3	2.3	5.4	0.3	0.0	2.5
Lane Grp Delay (d), s/veh	12.3	46.6	3.2	89.4	15.7	7.0	40.3	45.0	62.9	40.3	0.0	46.0
Lane Grp LOS	B	F	A	F	B	A	D	D	E	D		D
Approach Vol, veh/h		1288			1082			339			180	
Approach Delay, s/veh		42.1			23.0			52.6			43.2	
Approach LOS		D			C			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	5.8	74.0		8.0	76.2		8.0	20.0		8.0	20.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	70.0		4.0	70.0		4.0	16.0		4.0	16.0	
Max Q Clear Time (g_c+I1), s	2.4	72.0		5.3	38.7		6.0	13.1		6.0	7.1	
Green Ext Time (p_c), s	0.0	0.0		0.0	19.9		0.0	0.4		0.0	0.9	

Intersection Summary												
HCM 2010 Ctrl Delay			36.2									
HCM 2010 LOS			D									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	757	103	270	963	56	42	47	121	91	96	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	139	1032	877	559	1192	1013	256	295	250	281	251	37
Arrive On Green	0.01	1.00	1.00	0.09	0.64	0.64	0.04	0.16	0.16	0.04	0.16	0.16
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1589	233
Grp Volume(v), veh/h	4	797	145	355	1094	82	86	72	181	120	0	133
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1822
Q Serve(g_s), s	0.1	0.0	0.0	6.3	51.8	2.0	4.0	3.4	11.0	4.0	0.0	6.7
Cycle Q Clear(g_c), s	0.1	0.0	0.0	6.3	51.8	2.0	4.0	3.4	11.0	4.0	0.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	139	1032	877	559	1192	1013	256	295	250	281	0	288
V/C Ratio(X)	0.03	0.77	0.17	0.63	0.92	0.08	0.34	0.24	0.72	0.43	0.00	0.46
Avail Cap(c_a), veh/h	202	1032	877	733	1289	1096	256	295	250	281	0	288
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.1	0.0	0.0	5.4	15.9	6.9	34.6	37.3	40.5	36.1	0.0	38.7
Incr Delay (d2), s/veh	0.1	3.6	0.1	1.2	10.1	0.0	0.8	2.0	16.5	1.0	0.0	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.0	1.0	0.0	2.0	22.5	0.6	1.8	1.8	5.3	0.8	0.0	3.5
Lane Grp Delay (d), s/veh	19.2	3.6	0.1	6.6	26.0	7.0	35.4	39.2	57.0	37.1	0.0	43.9
Lane Grp LOS	B	A	A	A	C	A	D	D	E	D		D
Approach Vol, veh/h		946			1531			339			253	
Approach Delay, s/veh		3.1			20.5			47.7			40.7	
Approach LOS		A			C			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	4.4	60.0		13.1	68.7		8.0	20.0		8.0	20.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	55.0		19.0	70.0		4.0	16.0		4.0	16.0	
Max Q Clear Time (g_c+I1), s	2.1	2.0		8.3	53.8		6.0	13.0		6.0	8.7	
Green Ext Time (p_c), s	0.0	23.4		0.8	10.9		0.0	0.5		0.0	1.0	

Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	1144	82	118	847	94	69	72	141	81	62	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	186.3	186.3	172.7	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	244	1099	1008	130	1131	1037	253	271	230	243	203	58
Arrive On Green	0.02	0.85	0.85	0.04	0.65	0.65	0.04	0.15	0.15	0.04	0.15	0.15
Sat Flow, veh/h	1774	1727	1583	1774	1727	1583	1774	1863	1583	1774	1394	398
Grp Volume(v), veh/h	22	1230	128	128	911	119	95	90	178	94	0	99
Grp Sat Flow(s),veh/h/ln	1774	1727	1583	1774	1727	1583	1774	1863	1583	1774	0	1792
Q Serve(g_s), s	0.5	70.0	1.5	3.9	42.4	3.1	4.0	4.8	11.9	4.0	0.0	5.5
Cycle Q Clear(g_c), s	0.5	70.0	1.5	3.9	42.4	3.1	4.0	4.8	11.9	4.0	0.0	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	244	1099	1008	130	1131	1037	253	271	230	243	0	261
V/C Ratio(X)	0.09	1.12	0.13	0.98	0.81	0.11	0.38	0.33	0.77	0.39	0.00	0.38
Avail Cap(c_a), veh/h	277	1099	1008	130	1131	1037	253	271	230	243	0	261
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	8.4	3.2	34.6	13.9	7.1	40.1	42.2	45.3	39.9	0.0	42.5
Incr Delay (d2), s/veh	0.1	64.9	0.1	74.1	4.4	0.0	0.9	3.3	21.9	1.0	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.2	24.9	0.5	6.2	15.8	0.9	0.5	2.5	6.0	0.5	0.0	2.7
Lane Grp Delay (d), s/veh	14.4	73.4	3.2	108.7	18.2	7.1	41.0	45.5	67.2	40.9	0.0	46.7
Lane Grp LOS	B	F	A	F	B	A	D	D	E	D		D
Approach Vol, veh/h		1380			1158			363			193	
Approach Delay, s/veh		65.9			27.1			54.9			43.9	
Approach LOS		E			C			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	6.0	74.0		8.0	76.0		8.0	20.0		8.0	20.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	70.0		4.0	70.0		4.0	16.0		4.0	16.0	
Max Q Clear Time (g_c+I1), s	2.5	72.0		5.9	44.4		6.0	13.9		6.0	7.5	
Green Ext Time (p_c), s	0.0	0.0		0.0	19.1		0.0	0.3		0.0	1.0	

Intersection Summary		
HCM 2010 Ctrl Delay	48.7	
HCM 2010 LOS	D	

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	31	720	98	258	995	66	62	72	116	128	125	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	150	1070	909	577	1173	997	207	281	238	240	236	38
Arrive On Green	0.06	1.00	1.00	0.09	0.63	0.63	0.04	0.15	0.15	0.04	0.15	0.15
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1569	249
Grp Volume(v), veh/h	62	758	138	339	1131	97	127	111	173	168	0	175
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	0	1819
Q Serve(g_s), s	1.5	0.0	0.0	6.6	60.8	2.6	4.0	5.7	11.1	4.0	0.0	9.6
Cycle Q Clear(g_c), s	1.5	0.0	0.0	6.6	60.8	2.6	4.0	5.7	11.1	4.0	0.0	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	150	1070	909	577	1173	997	207	281	238	240	0	274
V/C Ratio(X)	0.41	0.71	0.15	0.59	0.96	0.10	0.61	0.40	0.73	0.70	0.00	0.64
Avail Cap(c_a), veh/h	160	1070	909	690	1227	1043	207	281	238	240	0	274
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	0.0	5.2	18.6	7.8	41.9	40.8	43.0	42.7	0.0	42.4
Incr Delay (d2), s/veh	1.8	2.2	0.1	1.0	17.5	0.0	5.3	4.1	17.5	8.7	0.0	10.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	0.6	0.0	2.2	28.6	0.8	1.7	3.0	5.4	3.1	0.0	5.2
Lane Grp Delay (d), s/veh	25.8	2.2	0.1	6.2	36.0	7.8	47.2	44.9	60.5	51.4	0.0	53.3
Lane Grp LOS	C	A	A	A	D	A	D	D	E	D		D
Approach Vol, veh/h		958			1567			411			343	
Approach Delay, s/veh		3.4			27.8			52.2			52.4	
Approach LOS		A			C			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.4	65.0		13.2	70.9		8.0	20.0		8.0	20.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	58.0		16.0	70.0		4.0	16.0		4.0	16.0	
Max Q Clear Time (g_c+I1), s	3.5	2.0		8.6	62.8		6.0	13.1		6.0	11.6	
Green Ext Time (p_c), s	0.0	24.3		0.6	4.1		0.0	0.6		0.0	0.9	

Intersection Summary			
HCM 2010 Ctrl Delay		26.3	
HCM 2010 LOS		C	

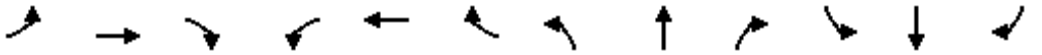
Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	1038	74	108	902	117	114	127	131	268	172	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	172.7	186.3	186.3	172.7	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	169	1021	936	138	1005	921	198	271	230	280	211	80
Arrive On Green	0.06	0.79	0.79	0.04	0.58	0.58	0.06	0.15	0.15	0.08	0.16	0.16
Sat Flow, veh/h	1774	1727	1583	1774	1727	1583	1774	1863	1583	1774	1290	487
Grp Volume(v), veh/h	145	1116	116	117	970	148	156	159	166	312	0	292
Grp Sat Flow(s),veh/h/ln	1774	1727	1583	1774	1727	1583	1774	1863	1583	1774	0	1777
Q Serve(g_s), s	3.6	65.0	1.9	3.0	58.9	4.7	7.0	8.8	11.0	9.0	0.0	18.0
Cycle Q Clear(g_c), s	3.6	65.0	1.9	3.0	58.9	4.7	7.0	8.8	11.0	9.0	0.0	18.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	169	1021	936	138	1005	921	198	271	230	280	0	291
V/C Ratio(X)	0.86	1.09	0.12	0.85	0.97	0.16	0.79	0.59	0.72	1.12	0.00	1.00
Avail Cap(c_a), veh/h	169	1021	936	138	1005	921	198	271	230	280	0	291
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.3	11.8	5.0	27.1	21.9	10.6	40.8	43.9	44.9	42.4	0.0	46.0
Incr Delay (d2), s/veh	32.7	57.2	0.1	36.0	20.4	0.1	18.8	9.0	17.7	88.6	0.0	53.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.7	27.8	0.6	3.1	27.0	1.6	2.0	4.7	5.4	10.3	0.0	12.3
Lane Grp Delay (d), s/veh	59.0	69.0	5.1	63.1	42.3	10.7	59.6	52.9	62.6	131.0	0.0	99.9
Lane Grp LOS	E	F	A	E	D	B	E	D	E	F		F
Approach Vol, veh/h		1377			1235			481			604	
Approach Delay, s/veh		62.5			40.5			58.4			116.0	
Approach LOS		E			D			E			F	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	9.0	69.0		8.0	68.0		11.0	20.0		13.0	22.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	5.0	65.0		4.0	64.0		7.0	16.0		9.0	18.0	
Max Q Clear Time (g_c+I1), s	5.6	67.0		5.0	60.9		9.0	13.0		11.0	20.0	
Green Ext Time (p_c), s	0.0	0.0		0.0	2.8		0.0	0.9		0.0	0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	63.4
HCM 2010 LOS	E

Notes

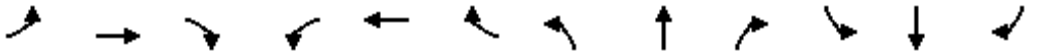


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1456	198	519	1851	107	80	91	233	175	185	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	2	3	0	2	3	0	2	2	0	2	2	0
Cap, veh/h	262	2015	365	780	3027	224	598	358	304	336	671	98
Arrive On Green	0.01	0.58	0.58	0.16	0.59	0.59	0.04	0.19	0.19	0.06	0.21	0.21
Sat Flow, veh/h	3442	4606	835	3442	5140	381	3442	1863	1583	3442	3180	464
Grp Volume(v), veh/h	8	1239	573	683	1520	740	163	140	348	230	129	127
Grp Sat Flow(s),veh/h/ln	1721	1863	1715	1721	1863	1796	1721	1863	1583	1721	1863	1781
Q Serve(g_s), s	0.1	26.0	26.2	13.0	29.5	30.1	4.0	6.8	20.0	5.5	6.1	6.3
Cycle Q Clear(g_c), s	0.1	26.0	26.2	13.0	29.5	30.1	4.0	6.8	20.0	5.5	6.1	6.3
Prop In Lane	1.00		0.49	1.00		0.21	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	262	1630	750	780	2194	1057	598	358	304	336	393	376
V/C Ratio(X)	0.03	0.76	0.76	0.88	0.69	0.70	0.27	0.39	1.14	0.68	0.33	0.34
Avail Cap(c_a), veh/h	367	1630	750	991	2289	1103	598	358	304	336	393	376
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	17.7	17.7	30.5	14.9	15.0	32.5	36.8	42.1	32.2	34.8	34.9
Incr Delay (d2), s/veh	0.0	2.0	4.3	7.4	0.9	1.9	0.2	3.2	96.7	5.6	2.2	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.1	9.4	9.1	9.5	11.7	11.7	1.7	3.5	16.1	2.5	3.1	3.0
Lane Grp Delay (d), s/veh	17.1	19.6	22.0	37.9	15.7	16.9	32.7	40.0	138.8	37.8	37.1	37.3
Lane Grp LOS	B	B	C	D	B	B	C	D	F	D	D	D
Approach Vol, veh/h		1820			2943			651			486	
Approach Delay, s/veh		20.4			21.2			91.0			37.5	
Approach LOS		C			C			F			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	4.8	49.6		20.6	65.3		8.0	24.0		10.0	26.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	45.0		23.0	64.0		4.0	20.0		6.0	22.0	
Max Q Clear Time (g_c+I1), s	2.1	28.2		15.0	32.1		6.0	22.0		7.5	8.3	
Green Ext Time (p_c), s	0.0	16.1		1.7	29.3		0.0	0.0		0.0	3.6	

Intersection Summary	
HCM 2010 Ctrl Delay	30.0
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	2199	159	227	1629	181	132	138	272	157	119	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	173.9	190.0	186.3	174.2	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	3	0	2	3	0	2	2	0	2	2	0
Cap, veh/h	191	2723	279	322	2740	356	580	344	292	291	524	138
Arrive On Green	0.03	0.58	0.58	0.05	0.60	0.60	0.04	0.18	0.18	0.04	0.18	0.18
Sat Flow, veh/h	1774	4656	477	3442	4533	589	3442	1863	1583	3442	2843	750
Grp Volume(v), veh/h	42	1753	860	247	1344	637	181	172	344	183	95	92
Grp Sat Flow(s),veh/h/ln	1774	1739	1655	1721	1742	1638	1721	1863	1583	1721	1863	1730
Q Serve(g_s), s	1.0	45.7	48.7	2.9	26.9	27.3	4.0	9.0	20.0	4.0	4.7	5.0
Cycle Q Clear(g_c), s	1.0	45.7	48.7	2.9	26.9	27.3	4.0	9.0	20.0	4.0	4.7	5.0
Prop In Lane	1.00		0.29	1.00		0.36	1.00		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	191	2035	968	322	2106	990	580	344	292	291	344	319
V/C Ratio(X)	0.22	0.86	0.89	0.77	0.64	0.64	0.31	0.50	1.18	0.63	0.28	0.29
Avail Cap(c_a), veh/h	225	2053	977	354	2106	990	580	344	292	291	344	319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	18.8	19.4	26.1	13.8	13.9	35.4	39.7	44.2	38.8	38.0	38.1
Incr Delay (d2), s/veh	0.4	3.1	7.9	8.9	0.6	1.4	0.3	5.1	109.7	4.2	2.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	17.9	19.3	3.7	9.9	9.6	0.2	4.7	16.9	0.8	2.4	2.4
Lane Grp Delay (d), s/veh	12.4	21.9	27.4	34.9	14.5	15.3	35.8	44.9	153.9	43.0	40.0	40.4
Lane Grp LOS	B	C	C	C	B	B	D	D	F	D	D	D
Approach Vol, veh/h		2655			2228			697			370	
Approach Delay, s/veh		23.5			17.0			96.3			41.6	
Approach LOS		C			B			F			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	6.9	67.4		9.0	69.5		8.0	24.0		8.0	24.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	5.0	64.0		6.0	65.0		4.0	20.0		4.0	20.0	
Max Q Clear Time (g_c+I1), s	3.0	50.7		4.9	29.3		6.0	22.0		6.0	7.0	
Green Ext Time (p_c), s	0.0	12.7		0.1	34.4		0.0	0.0		0.0	3.3	

Intersection Summary			
HCM 2010 Ctrl Delay		30.7	
HCM 2010 LOS		C	

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	1419	193	507	1883	117	100	116	228	212	214	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	2	3	0	2	3	0	2	2	0	2	2	0
Cap, veh/h	316	1986	361	762	2824	225	604	343	291	412	685	105
Arrive On Green	0.04	0.57	0.57	0.15	0.55	0.55	0.05	0.18	0.18	0.08	0.22	0.22
Sat Flow, veh/h	3442	4605	836	3442	5110	407	3442	1863	1583	3442	3157	483
Grp Volume(v), veh/h	66	1208	558	667	1555	757	204	178	340	279	151	147
Grp Sat Flow(s),veh/h/ln	1721	1863	1715	1721	1863	1791	1721	1863	1583	1721	1863	1777
Q Serve(g_s), s	1.1	25.8	25.9	12.6	34.0	34.7	5.0	9.1	19.5	6.4	7.3	7.5
Cycle Q Clear(g_c), s	1.1	25.8	25.9	12.6	34.0	34.7	5.0	9.1	19.5	6.4	7.3	7.5
Prop In Lane	1.00		0.49	1.00		0.23	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	316	1607	740	762	2059	990	604	343	291	412	404	386
V/C Ratio(X)	0.21	0.75	0.75	0.87	0.76	0.77	0.34	0.52	1.17	0.68	0.37	0.38
Avail Cap(c_a), veh/h	334	1607	740	980	2178	1047	604	343	291	428	404	386
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	18.3	18.4	29.5	18.2	18.4	33.5	39.0	43.3	30.2	35.4	35.4
Incr Delay (d2), s/veh	0.3	2.0	4.4	7.3	1.5	3.3	0.3	5.5	106.0	4.1	2.6	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	9.5	9.2	9.5	14.0	14.4	2.2	4.8	16.3	4.0	3.7	3.6
Lane Grp Delay (d), s/veh	18.5	20.4	22.8	36.8	19.7	21.6	33.8	44.6	149.3	34.3	38.0	38.3
Lane Grp LOS	B	C	C	D	B	C	C	D	F	C	D	D
Approach Vol, veh/h		1832			2979			722			577	
Approach Delay, s/veh		21.0			24.0			90.8			36.3	
Approach LOS		C			C			F			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.4	49.7		20.3	62.6		9.0	23.5		12.5	27.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	4.0	43.0		23.0	62.0		5.0	19.0		9.0	23.0	
Max Q Clear Time (g_c+I1), s	3.1	27.9		14.6	36.7		7.0	21.5		8.4	9.5	
Green Ext Time (p_c), s	0.0	14.5		1.6	21.9		0.0	0.0		0.1	3.9	

Intersection Summary												
HCM 2010 Ctrl Delay			32.2									
HCM 2010 LOS			C									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	91	2093	151	217	1684	204	177	193	262	344	229	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	173.9	190.0	186.3	174.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	2	3	0	2	3	0	2	2	0	2	2	0
Cap, veh/h	351	2448	252	305	2383	337	590	357	303	445	583	197
Arrive On Green	0.04	0.53	0.53	0.05	0.53	0.53	0.06	0.19	0.19	0.09	0.22	0.22
Sat Flow, veh/h	3442	4654	479	3442	4484	633	3442	1863	1583	3442	2664	902
Grp Volume(v), veh/h	165	1672	815	236	1404	665	242	241	332	400	196	185
Grp Sat Flow(s),veh/h/ln	1721	1739	1655	1721	1743	1631	1721	1863	1583	1721	1863	1704
Q Serve(g_s), s	2.4	48.1	50.5	3.4	34.7	35.3	6.2	13.2	21.0	9.8	10.1	10.4
Cycle Q Clear(g_c), s	2.4	48.1	50.5	3.4	34.7	35.3	6.2	13.2	21.0	9.8	10.1	10.4
Prop In Lane	1.00		0.29	1.00		0.39	1.00		1.00	1.00		0.53
Lane Grp Cap(c), veh/h	351	1830	870	305	1853	867	590	357	303	445	408	373
V/C Ratio(X)	0.47	0.91	0.94	0.77	0.76	0.77	0.41	0.68	1.10	0.90	0.48	0.50
Avail Cap(c_a), veh/h	370	1839	875	305	1853	867	590	357	303	445	408	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	23.7	24.3	25.8	20.2	20.3	33.0	41.2	44.4	31.6	37.4	37.6
Incr Delay (d2), s/veh	1.0	7.5	17.0	11.7	1.9	4.2	0.5	9.9	79.7	20.8	4.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	20.0	22.2	3.7	13.7	13.7	2.6	7.1	15.0	5.3	5.1	4.9
Lane Grp Delay (d), s/veh	21.3	31.2	41.3	37.4	22.0	24.5	33.5	51.1	124.0	52.4	41.4	42.2
Lane Grp LOS	C	C	D	D	C	C	C	D	F	D	D	D
Approach Vol, veh/h		2652			2305			815			781	
Approach Delay, s/veh		33.7			24.3			75.6			47.2	
Approach LOS		C			C			E			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.4	61.7		9.0	62.3		11.0	25.0		14.0	28.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	5.0	58.0		5.0	58.0		7.0	21.0		10.0	24.0	
Max Q Clear Time (g_c+I1), s	4.4	52.5		5.4	37.3		8.2	23.0		11.8	12.4	
Green Ext Time (p_c), s	0.0	5.2		0.0	20.2		0.0	0.0		0.0	4.2	

Intersection Summary	
HCM 2010 Ctrl Delay	37.2
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	47	50	51	147	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	84	78	64	82	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	56	64	80	179	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	393	185	191	0	-	0
Stage 1	185	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	611	857	1383	-	-	-
Stage 1	847	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	583	857	1383	-	-	-
Mov Capacity-2 Maneuver	583	-	-	-	-	-
Stage 1	847	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	3.4	0
HCM LOS	A		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1383	-	583	857	-	-
HCM Lane V/C Ratio	0.046	-	0.007	0.065	-	-
HCM Control Delay (s)	7.73	-	11.2	9.5	-	-
HCM Lane LOS	A		B	A		
HCM 95th %tile Q(veh)	0.146	-	0.021	0.209	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	8	36	34	141	108	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	75	71	78	93	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	48	48	181	116	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	397	120	124	0	-	0
Stage 1	120	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	608	931	1463	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	588	931	1463	-	-	-
Mov Capacity-2 Maneuver	588	-	-	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	745	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	1.6	0
HCM LOS	A		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1463	-	588	931	-	-
HCM Lane V/C Ratio	0.033	-	0.027	0.052	-	-
HCM Control Delay (s)	7.544	-	11.3	9.1	-	-
HCM Lane LOS	A		B	A		
HCM 95th %tile Q(veh)	0.101	-	0.084	0.163	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	50	54	55	157	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	84	78	64	82	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	60	69	86	191	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	421	197	204	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	589	844	1368	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	559	844	1368	-	-	-
Mov Capacity-2 Maneuver	559	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	3.5	0
HCM LOS	A		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1368	-	559	844	-	-
HCM Lane V/C Ratio	0.051	-	0.007	0.071	-	-
HCM Control Delay (s)	7.772	-	11.5	9.6	-	-
HCM Lane LOS	A		B	A		
HCM 95th %tile Q(veh)	0.16	-	0.022	0.227	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	9	39	36	151	116	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	75	71	78	93	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	52	51	194	125	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	424	129	133	0	-	0
Stage 1	129	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	587	921	1452	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	566	921	1452	-	-	-
Mov Capacity-2 Maneuver	566	-	-	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	1.6	0
HCM LOS	A		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1452	-	566	921	-	-
HCM Lane V/C Ratio	0.035	-	0.032	0.056	-	-
HCM Control Delay (s)	7.569	-	11.6	9.1	-	-
HCM Lane LOS	A		B	A		
HCM 95th %tile Q(veh)	0.108	-	0.098	0.179	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	7	55	64	65	177	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	84	78	64	82	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	65	82	102	216	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	497	231	245	0	-	0
Stage 1	231	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	532	808	1321	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	499	808	1321	-	-	-
Mov Capacity-2 Maneuver	499	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	3.5	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1321	-	499	808	-	-
HCM Lane V/C Ratio	0.062	-	0.028	0.081	-	-
HCM Control Delay (s)	7.906	-	12.4	9.8	-	-
HCM Lane LOS	A		B	A		
HCM 95th %tile Q(veh)	0.198	-	0.086	0.264	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	32	62	59	197	161	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	75	71	78	93	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	83	83	253	173	39

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	611	192	212	0	-	0
Stage 1	192	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	457	850	1358	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	429	850	1358	-	-	-
Mov Capacity-2 Maneuver	429	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	623	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	1.9	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1358	-	429	850	-	-
HCM Lane V/C Ratio	0.061	-	0.149	0.097	-	-
HCM Control Delay (s)	7.824	-	14.9	9.7	-	-
HCM Lane LOS	A		B	A		
HCM 95th %tile Q(veh)	0.195	-	0.52	0.322	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	97	103	105	303	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	84	78	64	82	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	115	132	164	370	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	728	197	394	0	-	0
Stage 1	382	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	358	811	1161	-	-	-
Stage 1	660	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	317	811	1161	-	-	-
Mov Capacity-2 Maneuver	317	-	-	-	-	-
Stage 1	660	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	3.8	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1161	-	317	811	-	-
HCM Lane V/C Ratio	0.114	-	0.025	0.142	-	-
HCM Control Delay (s)	8.498	-	16.7	10.2	-	-
HCM Lane LOS	A		C	B		
HCM 95th %tile Q(veh)	0.384	-	0.078	0.495	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	74	70	290	222	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	75	71	78	93	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	99	99	372	239	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	630	127	255	0	-	0
Stage 1	247	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	414	900	1307	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	383	900	1307	-	-	-
Mov Capacity-2 Maneuver	383	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	609	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	1.7	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1307	-	383	900	-	-
HCM Lane V/C Ratio	0.075	-	0.084	0.11	-	-
HCM Control Delay (s)	7.979	-	15.3	9.5	-	-
HCM Lane LOS	A		C	A		
HCM 95th %tile Q(veh)	0.244	-	0.272	0.368	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	9	102	113	115	323	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	84	78	64	82	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	121	145	180	394	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	795	218	435	0	-	0
Stage 1	415	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	325	786	1121	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	283	786	1121	-	-	-
Mov Capacity-2 Maneuver	283	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	3.9	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1121	-	283	786	-	-
HCM Lane V/C Ratio	0.129	-	0.064	0.154	-	-
HCM Control Delay (s)	8.687	-	18.6	10.4	-	-
HCM Lane LOS	A		C	B		
HCM 95th %tile Q(veh)	0.444	-	0.203	0.545	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	39	97	93	336	267	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	0	350	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	75	71	78	93	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	129	131	431	287	47

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	787	167	334	0	-	0
Stage 1	310	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	329	848	1222	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	294	848	1222	-	-	-
Mov Capacity-2 Maneuver	294	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	527	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	1.9	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1222	-	294	848	-	-
HCM Lane V/C Ratio	0.107	-	0.265	0.153	-	-
HCM Control Delay (s)	8.299	-	21.6	10	-	-
HCM Lane LOS	A		C	B		
HCM 95th %tile Q(veh)	0.359	-	1.043	0.537	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	100	831	975	100	0	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	903	1060	109	0	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1060	0	-	0	1729	1060
Stage 1	-	-	-	-	1060	-
Stage 2	-	-	-	-	669	-
Follow-up Headway	2.218	-	-	-	3.519	3.319
Pot Capacity-1 Maneuver	657	-	-	-	88	271
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	472	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	657	-	-	-	73	271
Mov Capacity-2 Maneuver	-	-	-	-	73	-
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	394	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	23
HCM LOS			C

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	657	-	-	-	271
HCM Lane V/C Ratio	0.165	-	-	-	0.265
HCM Control Delay (s)	11.563	-	-	-	23
HCM Lane LOS	B				C
HCM 95th %tile Q(veh)	0.59	-	-	-	1.037

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	8.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	250	1154	859	189	0	274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	1254	934	205	0	298

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	934	0	-	0	2105	934
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	1171	-
Follow-up Headway	2.218	-	-	-	3.519	3.319
Pot Capacity-1 Maneuver	733	-	-	-	50	321
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	258	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	733	-	-	-	31	321
Mov Capacity-2 Maneuver	-	-	-	-	31	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	162	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	70.3
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	733	-	-	-	321
HCM Lane V/C Ratio	0.371	-	-	-	0.928
HCM Control Delay (s)	12.776	-	-	-	70.3
HCM Lane LOS	B				F
HCM 95th %tile Q(veh)	1.716	-	-	-	9.219

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	100	1609	1913	100	0	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	1749	2079	109	0	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2188	0	-	0	3051	1094
Stage 1	-	-	-	-	2134	-
Stage 2	-	-	-	-	917	-
Follow-up Headway	3.12	-	-	-	3.82	3.92
Pot Capacity-1 Maneuver	# 100	-	-	-	24	179
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	316	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	# 100	-	-	-	24	179
Mov Capacity-2 Maneuver	-	-	-	-	24	-
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	316	-

Approach	EB	WB	SB
HCM Control Delay, s	11.4	0	38
HCM LOS			E

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	# 100	-	-	-	179
HCM Lane V/C Ratio	1.087	-	-	-	0.401
HCM Control Delay (s)	194.698	-	-	-	38
HCM Lane LOS	F				E
HCM 95th %tile Q(veh)	6.951	-	-	-	1.772

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	54.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	250	2262	1711	189	0	274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	2459	1860	205	0	298

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2065	0	-	0	3490	1033
Stage 1	-	-	-	-	1963	-
Stage 2	-	-	-	-	1527	-
Follow-up Headway	3.12	-	-	-	3.82	3.92
Pot Capacity-1 Maneuver	# 116	-	-	-	14	# 197
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	147	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	# 116	-	-	-	14	# 197
Mov Capacity-2 Maneuver	-	-	-	-	14	-
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	147	-

Approach	EB	WB	SB
HCM Control Delay, s	68.7	0	298.7
HCM LOS			F

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	# 116	-	-	-	197
HCM Lane V/C Ratio	2.343	-	-	-	1.512
HCM Control Delay (s)	$ 690.205	-	-	-	298.7
HCM Lane LOS	F				F
HCM 95th %tile Q(veh)	23.757	-	-	-	18.606

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	72	59	110	202	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	78	64	120	220	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	484	236	252	0	-	0
Stage 1	236	-	-	-	-	-
Stage 2	248	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	542	803	1313	-	-	-
Stage 1	803	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	516	803	1313	-	-	-
Mov Capacity-2 Maneuver	516	-	-	-	-	-
Stage 1	803	-	-	-	-	-
Stage 2	754	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	2.8	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1313	-	516	803	-	-
HCM Lane V/C Ratio	0.049	-	0.027	0.097	-	-
HCM Control Delay (s)	7.883	-	12.2	10	-	-
HCM Lane LOS	A		B	B		
HCM 95th %tile Q(veh)	0.154	-	0.084	0.323	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	61	313	138	186	163	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	340	150	202	177	65

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	712	210	242	0	-	0
Stage 1	210	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	399	830	1324	-	-	-
Stage 1	825	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	354	830	1324	-	-	-
Mov Capacity-2 Maneuver	354	-	-	-	-	-
Stage 1	825	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	3.4	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1324	-	354	830	-	-
HCM Lane V/C Ratio	0.113	-	0.187	0.41	-	-
HCM Control Delay (s)	8.066	-	17.5	12.3	-	-
HCM Lane LOS	A		C	B		
HCM 95th %tile Q(veh)	0.382	-	0.679	2.017	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	72	59	207	395	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	78	64	225	429	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	687	231	462	0	-	0
Stage 1	446	-	-	-	-	-
Stage 2	241	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	381	771	1095	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	359	771	1095	-	-	-
Mov Capacity-2 Maneuver	359	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	1.9	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1095	-	359	771	-	-
HCM Lane V/C Ratio	0.059	-	0.039	0.102	-	-
HCM Control Delay (s)	8.492	-	15.4	10.2	-	-
HCM Lane LOS	A		C	B		
HCM 95th %tile Q(veh)	0.186	-	0.123	0.338	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	61	313	138	350	304	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	340	150	380	330	65

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	853	198	396	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	298	810	1159	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	259	810	1159	-	-	-
Mov Capacity-2 Maneuver	259	-	-	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	506	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	2.4	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1159	-	259	810	-	-
HCM Lane V/C Ratio	0.129	-	0.256	0.42	-	-
HCM Control Delay (s)	8.567	-	23.6	12.6	-	-
HCM Lane LOS	A		C	B		
HCM 95th %tile Q(veh)	0.444	-	0.991	2.098	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	59	2	6	75	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	2	7	82	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	160	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	95	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1536	-	831	999
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	929	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1536	-	827	999
Mov Capacity-2 Maneuver	-	-	-	-	806	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	924	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	8.8
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	943	-	-	1536	-
HCM Lane V/C Ratio	0.005	-	-	0.004	-
HCM Control Delay (s)	8.8	-	-	7.354	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.014	-	-	0.013	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	80	5	14	74	5	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	5	15	80	5	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	201	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	111	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1503	-	788	968
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	914	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1503	-	780	968
Mov Capacity-2 Maneuver	-	-	-	-	775	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	905	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.1
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	908	-	-	1503	-
HCM Lane V/C Ratio	0.023	-	-	0.01	-
HCM Control Delay (s)	9.1	-	-	7.42	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.07	-	-	0.031	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	108	2	6	131	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	117	2	7	142	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	120	0	273	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	155	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1468	-	716	934
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	873	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1468	-	712	934
Mov Capacity-2 Maneuver	-	-	-	-	729	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.1
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	873	-	-	1468	-
HCM Lane V/C Ratio	0.005	-	-	0.004	-
HCM Control Delay (s)	9.1	-	-	7.463	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.015	-	-	0.013	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	122	5	14	114	5	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	5	15	124	5	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	138	0	289	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	154	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1446	-	702	914
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	874	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1446	-	694	914
Mov Capacity-2 Maneuver	-	-	-	-	717	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	864	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.3
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	852	-	-	1446	-
HCM Lane V/C Ratio	0.024	-	-	0.011	-
HCM Control Delay (s)	9.3	-	-	7.516	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.074	-	-	0.032	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	57	4	8	68	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	4	9	74	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	155	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	91	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1536	-	836	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	933	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1536	-	831	1000
Mov Capacity-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	927	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	8.9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	809	1000	-	-	1536	-
HCM Lane V/C Ratio	0.003	0.004	-	-	0.006	-
HCM Control Delay (s)	9.5	8.6	-	-	7.357	0
HCM Lane LOS	A	A			A	A
HCM 95th %tile Q(veh)	0.008	0.013	-	-	0.017	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	67	9	18	61	9	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	10	20	66	10	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	83	0	183	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	105	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1514	-	806	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	919	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1514	-	795	983
Mov Capacity-2 Maneuver	-	-	-	-	784	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	906	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	784	983	-	-	1514	-
HCM Lane V/C Ratio	0.012	0.02	-	-	0.013	-
HCM Control Delay (s)	9.7	8.7	-	-	7.409	0
HCM Lane LOS	A	A			A	A
HCM 95th %tile Q(veh)	0.038	0.061	-	-	0.039	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	106	4	8	124	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	115	4	9	135	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	120	0	269	117
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	152	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1468	-	720	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	876	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1468	-	715	935
Mov Capacity-2 Maneuver	-	-	-	-	731	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.2
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	731	935	-	-	1468	-
HCM Lane V/C Ratio	0.003	0.005	-	-	0.006	-
HCM Control Delay (s)	9.9	8.9	-	-	7.467	0
HCM Lane LOS	A	A			A	A
HCM 95th %tile Q(veh)	0.009	0.014	-	-	0.018	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	109	9	18	101	9	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	10	20	110	10	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	128	0	272	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	149	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1458	-	717	928
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	879	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1458	-	706	928
Mov Capacity-2 Maneuver	-	-	-	-	725	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	866	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.3
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	725	928	-	-	1458	-
HCM Lane V/C Ratio	0.013	0.021	-	-	0.013	-
HCM Control Delay (s)	10	9	-	-	7.503	0
HCM Lane LOS	B	A			A	A
HCM 95th %tile Q(veh)	0.041	0.065	-	-	0.041	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	60	2	2	68	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	2	2	74	1	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	67	0	144	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	78	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1535	-	849	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	945	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1535	-	848	998
Mov Capacity-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	944	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	901	-	-	1535	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	9	-	-	7.349	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.007	-	-	0.004	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	71	5	5	65	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	5	5	71	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	83	0	162	80
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	82	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1514	-	829	980
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	941	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1514	-	827	980
Mov Capacity-2 Maneuver	-	-	-	-	807	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.1
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	885	-	-	1514	-
HCM Lane V/C Ratio	0.012	-	-	0.004	-
HCM Control Delay (s)	9.1	-	-	7.386	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.037	-	-	0.011	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	109	2	2	124	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	2	2	135	1	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	121	0	259	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	139	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1467	-	730	931
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	888	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1467	-	729	931
Mov Capacity-2 Maneuver	-	-	-	-	741	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	887	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.4
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	825	-	-	1467	-
HCM Lane V/C Ratio	0.003	-	-	0.001	-
HCM Control Delay (s)	9.4	-	-	7.458	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.008	-	-	0.004	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	113	5	5	105	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	5	5	114	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	128	0	251	126
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	125	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1458	-	738	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	901	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1458	-	735	924
Mov Capacity-2 Maneuver	-	-	-	-	746	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	897	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.4
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	826	-	-	1458	-
HCM Lane V/C Ratio	0.013	-	-	0.004	-
HCM Control Delay (s)	9.4	-	-	7.478	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.04	-	-	0.011	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	60	2	4	65	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	2	4	71	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	67	0	145	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	79	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1535	-	847	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	944	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1535	-	844	998
Mov Capacity-2 Maneuver	-	-	-	-	818	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	941	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	8.9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	930	-	-	1535	-
HCM Lane V/C Ratio	0.004	-	-	0.003	-
HCM Control Delay (s)	8.9	-	-	7.352	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.011	-	-	0.009	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	67	5	9	61	5	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	5	10	66	5	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	162	76
Stage 1	-	-	-	-	76	-
Stage 2	-	-	-	-	86	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1520	-	829	985
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	937	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1520	-	823	985
Mov Capacity-2 Maneuver	-	-	-	-	804	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	912	-	-	1520	-
HCM Lane V/C Ratio	0.017	-	-	0.006	-
HCM Control Delay (s)	9	-	-	7.384	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.051	-	-	0.019	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	109	2	4	121	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	2	4	132	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	121	0	260	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	140	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1467	-	729	931
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	887	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1467	-	727	931
Mov Capacity-2 Maneuver	-	-	-	-	740	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.2
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1467	-
HCM Lane V/C Ratio	0.004	-	-	0.003	-
HCM Control Delay (s)	9.2	-	-	7.461	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.011	-	-	0.009	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	109	5	9	101	5	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	5	10	110	5	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	124	0	250	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	129	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1463	-	739	930
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	897	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1463	-	734	930
Mov Capacity-2 Maneuver	-	-	-	-	744	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	891	-

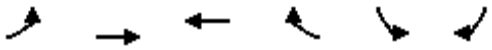
Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.3
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	854	-	-	1463	-
HCM Lane V/C Ratio	0.018	-	-	0.007	-
HCM Control Delay (s)	9.3	-	-	7.477	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.054	-	-	0.02	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

APPENDIX E

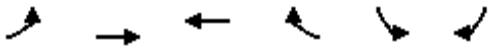
Queuing Analysis Worksheets



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	177	796	1053	166	223	198
v/c Ratio	0.75	0.30	0.88	0.15	0.39	0.46
Control Delay	37.1	4.3	19.7	2.5	43.8	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	4.3	19.7	2.5	43.8	9.7
Queue Length 50th (ft)	50	71	345	6	74	0
Queue Length 95th (ft)	74	91	m393	m13	101	48
Internal Link Dist (ft)		289	1560		433	
Turn Bay Length (ft)	750					
Base Capacity (vph)	236	2734	1219	1092	573	429
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.29	0.86	0.15	0.39	0.46

Intersection Summary

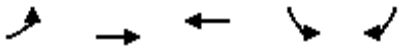
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	229	1329	999	272	180	188
v/c Ratio	0.81	0.53	0.91	0.25	0.32	0.45
Control Delay	38.2	6.0	24.9	2.1	42.9	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	6.0	24.9	2.1	42.9	9.8
Queue Length 50th (ft)	63	155	360	6	59	0
Queue Length 95th (ft)	#151	193	m437	m13	88	54
Internal Link Dist (ft)		289	1600		433	
Turn Bay Length (ft)	750					
Base Capacity (vph)	282	2536	1114	1118	564	417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.52	0.90	0.24	0.32	0.45

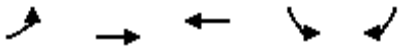
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	341	1444	2296	429	380
v/c Ratio	0.83	0.39	0.93	0.61	0.66
Control Delay	46.6	6.2	21.1	44.2	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	6.2	21.1	44.2	14.0
Queue Length 50th (ft)	176	123	189	143	36
Queue Length 95th (ft)	188	145	336	176	101
Internal Link Dist (ft)		289	1560	433	
Turn Bay Length (ft)	750				
Base Capacity (vph)	421	3698	2471	702	577
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.81	0.39	0.93	0.61	0.66

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	440	2354	2236	348	362
v/c Ratio	0.90	0.65	0.96	0.65	0.65
Control Delay	52.6	6.8	27.0	49.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	6.8	27.0	49.9	10.7
Queue Length 50th (ft)	245	227	226	120	0
Queue Length 95th (ft)	#360	264	#649	161	67
Internal Link Dist (ft)		289	1600	433	
Turn Bay Length (ft)	750				
Base Capacity (vph)	501	3643	2338	539	553
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.65	0.96	0.65	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	62	758	138	339	1131	97	127	111	173	168	175
v/c Ratio	0.47	0.78	0.16	0.86	0.96	0.09	0.65	0.39	0.45	0.67	0.61
Control Delay	25.4	25.8	1.4	38.1	37.8	1.8	55.9	47.2	10.4	54.7	52.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	25.8	1.4	38.1	37.8	1.8	55.9	47.2	10.4	54.7	52.3
Queue Length 50th (ft)	9	462	1	110	681	0	76	72	0	103	114
Queue Length 95th (ft)	10	619	1	153	#1002	8	68	90	16	140	171
Internal Link Dist (ft)		992			349			838			447
Turn Bay Length (ft)	700			875		575	275		125	425	
Base Capacity (vph)	131	991	906	406	1185	1042	194	284	388	249	288
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.76	0.15	0.83	0.95	0.09	0.65	0.39	0.45	0.67	0.61

Intersection Summary

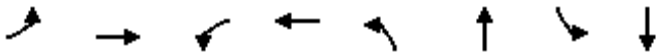
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	145	1116	116	117	970	148	156	159	166	312	292
v/c Ratio	0.94	1.09	0.12	0.89	0.97	0.15	0.87	0.59	0.48	1.18	0.96
Control Delay	77.8	77.1	2.5	73.9	44.5	2.1	76.4	53.7	15.5	147.3	86.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.8	77.1	2.5	73.9	44.5	2.1	76.4	53.7	15.5	147.3	86.8
Queue Length 50th (ft)	52	~900	4	32	615	0	89	106	16	~237	197
Queue Length 95th (ft)	50	#1156	9	#98	#935	17	#133	154	56	#318	#308
Internal Link Dist (ft)		952			349			838			477
Turn Bay Length (ft)	700			875		575	275		125	425	
Base Capacity (vph)	155	1020	972	131	1004	982	180	270	349	265	304
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	1.09	0.12	0.89	0.97	0.15	0.87	0.59	0.48	1.18	0.96

Intersection Summary

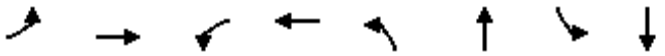
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	1766	667	2312	204	518	279	298
v/c Ratio	0.26	0.89	0.86	0.82	0.37	0.61	0.66	0.39
Control Delay	11.3	31.4	40.8	22.4	32.3	19.3	37.7	37.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	31.4	40.8	22.4	32.3	19.3	37.7	37.0
Queue Length 50th (ft)	6	431	179	453	55	66	78	91
Queue Length 95th (ft)	6	501	188	498	44	52	94	122
Internal Link Dist (ft)		992		349		838		447
Turn Bay Length (ft)	700		875		275		425	
Base Capacity (vph)	253	2000	840	2842	551	855	424	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.88	0.79	0.81	0.37	0.61	0.66	0.39

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	165	2487	236	2069	242	573	400	381
v/c Ratio	0.57	1.00	0.82	0.83	0.47	0.90dr	0.90	0.49
Control Delay	19.2	38.4	39.0	25.4	31.5	48.9	55.4	36.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	38.4	39.0	25.4	31.5	48.9	55.4	36.1
Queue Length 50th (ft)	20	~635	34	426	64	178	111	111
Queue Length 95th (ft)	19	#767	#100	497	76	207	#163	140
Internal Link Dist (ft)		952		349		838		477
Turn Bay Length (ft)	700		875		275		425	
Base Capacity (vph)	287	2480	287	2478	515	683	443	773
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	1.00	0.82	0.83	0.47	0.84	0.90	0.49

Intersection Summary

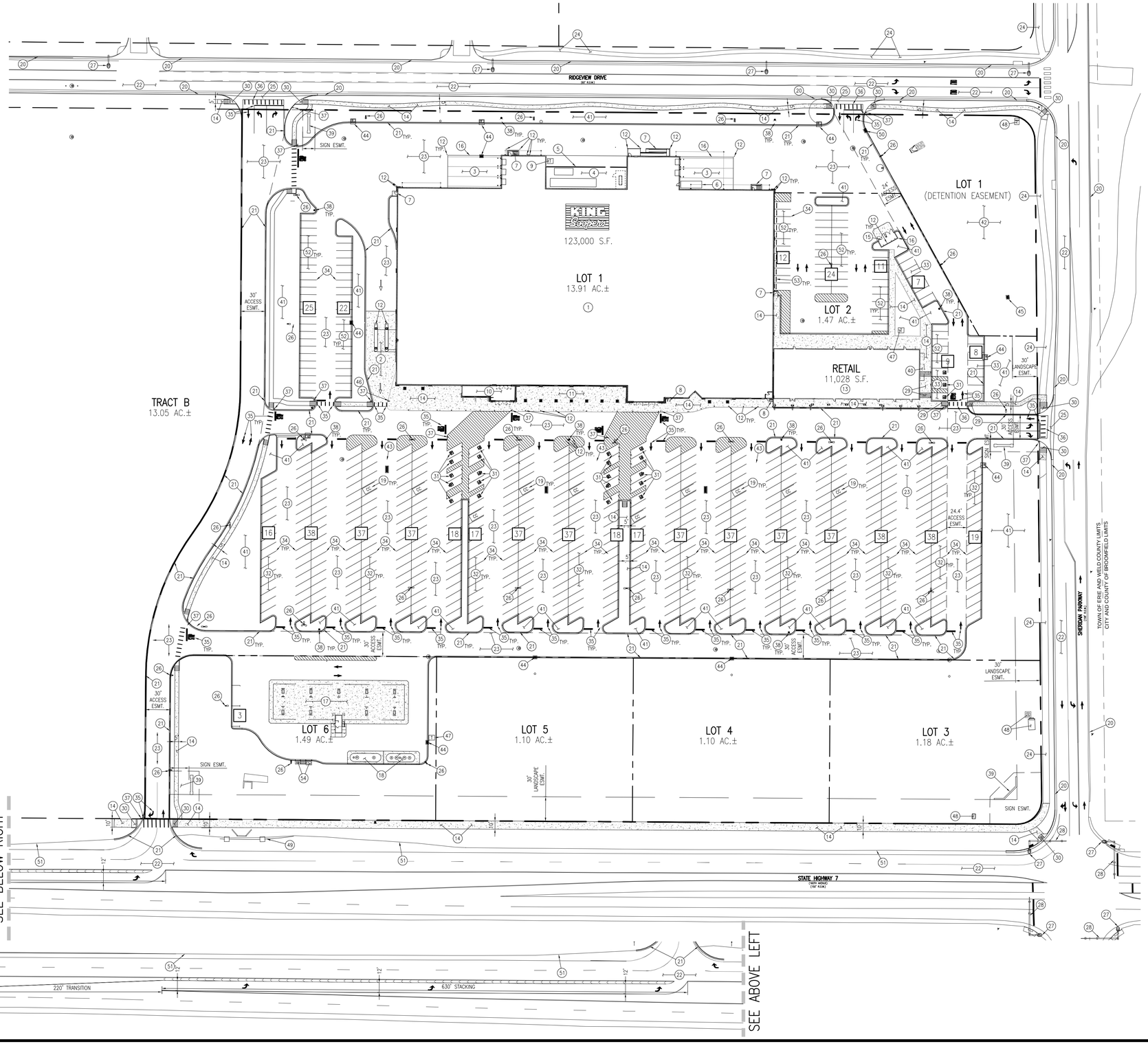
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

APPENDIX F

Conceptual Site Plan



SITE LEGEND

- PROPERTY BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- EASEMENT BOUNDARY LINE
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- PROPOSED NEW
- EXISTING TRAFFIC POLE
- PROPOSED SITE LIGHTING
- EXISTING STREET LIGHT
- EXISTING WATER METER
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING MANHOLE
- PROPOSED MANHOLE
- UTILITY PEDESTAL
- PROPOSED ELECTRICAL TRANSFORMER
- PROPOSED INLET
- TRAFFIC DIRECTION
- 1 PARKING COUNT
- CC CART CORRAL (APPROXIMATE LOCATION)

SCHEDULE

1. PROPOSED 123,000 SF KING SOOPERS MARKETPLACE STORE
2. PROPOSED PHARMACY DRIVE THRU CANOPY AND DRIVE LANES
3. PROPOSED CONCRETE LOADING DOCK
4. PROPOSED MECHANICAL ENCLOSURE AREA
5. PROPOSED SCREEN FENCING AROUND MECHANICAL UNITS
6. PROPOSED TRASH COMPACTOR
7. PROPOSED EGRESS LANDING WITH STAIRS OR RAMP
8. PROPOSED BICYCLE RACK
9. PROPOSED KING SOOPERS TRANSFORMER
10. PROPOSED VESTIBULE
11. PROPOSED OUTDOOR SALES AREA
12. PROPOSED BOLLARD
13. PROPOSED 11,028 SF MULTI-TENANT RETAIL
14. PROPOSED CONCRETE SIDEWALK (SIZE AS SHOWN)
15. PROPOSED TRASH ENCLOSURE
16. PROPOSED 6-FOOT MASONRY SCREEN WALL
17. PROPOSED 43' X 160' FUEL CANOPY AND 175 SF KIOSK
18. PROPOSED FUEL TANKS AND CONCRETE SLAB
19. PROPOSED CART CORRAL (TYP. 10)
20. EXISTING CURB AND GUTTER TO REMAIN
21. PROPOSED CONCRETE CURB AND GUTTER
22. EXISTING ASPHALT PAVING TO REMAIN
23. PROPOSED ASPHALT PAVING
24. EXISTING CONCRETE SIDEWALK TO REMAIN
25. PROPOSED 8-FOOT WIDE CONCRETE CROSSPAN
26. PROPOSED SITE LIGHT
27. EXISTING STREET LIGHT TO REMAIN
28. EXISTING TRAFFIC SIGNAL TO REMAIN
29. PROPOSED ADA ACCESSIBLE RAMP
30. PROPOSED ADA ACCESSIBLE RAMP WITH DETECTABLE WARNINGS
31. PROPOSED ADA PARKING STALL WITH PAINTED ACCESS AISLE AND SIGNAGE (TYP. 22)
32. PROPOSED 9.5'x18.6' 60-DEGREE "ANGLED" PARKING STALL (TYP.)
33. PROPOSED 10'x20' 90-DEGREE "HEAD-IN" PARKING STALL (TYP.)
34. PROPOSED PARKING STRIPING
35. PROPOSED STOP BAR AND TRAFFIC DIRECTIONAL FLOW ARROW
36. PROPOSED CROSSWALK
37. PROPOSED R1-1 STOP SIGN
38. PROPOSED FIRE HYDRANT
39. PROPOSED MONUMENT SIGN
40. PROPOSED OUTDOOR SEATING AREA
41. PROPOSED LANDSCAPING
42. PROPOSED DETENTION POND AND TRICKLE CHANNEL
43. PROPOSED AREA INLET
44. PROPOSED CURB INLET
45. PROPOSED OUTLET STRUCTURE
46. PROPOSED "DO NOT ENTER" SIGN
47. PROPOSED ELECTRICAL TRANSFORMER
48. EXISTING ELECTRICAL TRANSFORMER TO REMAIN (CONTRACTOR TO RAISE TO FINISHED GRADE)
49. EXISTING GUARD RAIL TO REMAIN
50. PROPOSED 2' WIDE CURB CUT
51. EXISTING EDGE OF ASPHALT
52. PROPOSED 9'x20' 90-DEGREE "HEAD-IN" PARKING STALL (TYP.)
53. PROPOSED CONCRETE WHEEL STOP
54. PROPOSED PUBLIC AIR STAND, TELEPHONE, AND PROPANE TANK EXCHANGE CAGE

BASIS OF BEARING

BEARINGS ARE BASED ON THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY No. 7 BEARING N89°38'37"W AS REFERENCED AND BOUNDED BY THE MONUMENTS SHOWN HEREON.

BENCHMARK

CITY AND COUNTY OF BROOMFIELD BM "LUCY".
ELEVATION = 5297.00 FEET (NAVD 1988 DATUM)

CAUTION – NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEEER PRIOR TO CONSTRUCTION.
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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	MARCH 2015
Disk File:	KSS129_C1.1-Site

SITE PLAN

C1.1

Galloway
Planning. Architecture. Engineering.

Phase II Drainage Study
King Soopers Store #129
at
Vista Ridge Marketplace

NWC of East Sheridan Pkwy & Hwy 7
Located in the S ½ of Section 33, Township 1 North, Range 68 West, of the 6th Principal Meridian, Town of Erie, County of Weld, State of Colorado

Date: June 25, 2015

Prepared for:
King Soopers Inc.
65 Tejon Street
Denver, Colorado 80223

Prepared by:
Galloway & Company, Inc.
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Attn: Brandon S. McCrary, P.E.

ENGINEER'S STATEMENT

I hereby certify that this Final Drainage Report for the King Soopers Store #129 at Vista Ridge Marketplace development located at the northwest corner of the intersection of Sheridan Parkway and Highway 7 in Erie, Colorado, was prepared by me (or under my direct supervision) in accordance the provisions of the Town of Erie Standards and Specifications for Design and Construction of Public Improvements and the Urban Drainage and Flood Control District's Urban Storm Drainage Criteria Manual for the owners thereof.

_____

Brandon. S. McCrary, PE
Colorado Registered Professional Engineer

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Introduction

This final drainage report has been prepared by Galloway & Company, Inc. for King Soopers Inc., for Store #129 at Vista Ridge Marketplace in Erie, Colorado. The objective of this report is to define the site's final drainage basins and characteristics for the shopping center and address the general conformance with previous drainage reports related to the property and historic drainage patterns that exist on site. The report analyzes on-site runoff for both the minor 5-year and 10-year frequencies and the major 100-year frequency.

The site will include a 123,419 s.f. grocery store with drive-thru pharmacy (located on Lot 1), an approximate 11,000 s.f retail building (located on Lot 2), and a nine dispenser fueling center (located on Lot 6). The grocery store will be the primary anchor of an approximate 20.25 acre development that will include 6 total lots and a separate drainage tract for a detention and water quality pond that will serve the center. The remaining lots 3, 4 and 5 will be overlot graded. The development will be served by five major access points, two along Hwy 7, one along Sheridan Parkway, and two along Ridge View Road.

I. Project Location and Description

A. Location

The King Soopers at Vista Ridge Marketplace is located at the NWC of East Sheridan Pkwy & Hwy 7 located in the S ½ of Section 33, Township 1 North, Range 68 West, of the 6th Principal Meridian, Town of Erie, County of Weld, State of Colorado. The site is bounded by Ridge View Drive to the north, Sheridan Parkway to the east, Highway 7 to the south, and vacant land to the west.

The adjacent properties include vacant land on the west, roadways to the north, east and south.

PROJECT LOCATION MAP

NOT TO SCALE

B. Description of Property

The existing property is currently vacant and mainly vegetated with natural grasses and weeds with the exception of a few areas that contain mature trees. Fill material has also been brought to the site recently and stockpiled on the north side of the site. The proposed development will include roof and paved areas, along with pockets of landscaping, including mulch, sod, shrubs and trees consistent with commercial development.

The proposed land use will include a 123,419 s.f. grocery store with drive-thru pharmacy and click list grocery pick-up area (located on Lot 1), an approximate 7,100 s.f retail building (located on Lot 2), and a nine dispenser fueling center (located on Lot 6). The grocery store will be the primary anchor of an approximate 20.25 acre development that will include 6 total lots and a separate drainage tract for a detention and water quality pond that will serve the center. The remaining lots 3, 4 and 5 will be overlot graded. The development will be served by five major access points, two along Hwy 7, one along Sheridan Parkway, and two along Ridge View Road.

The majority of the parking for the King Soopers and retail building will be in the front field with landscape islands capping a majority of the parking aisles. The remaining commercial retail outlots along Hwy 7 will have future parking and internal landscaped islands in various configurations based on the end user. The main truck routes for the store will be off Vista Ridge Drive to the north and off of Hwy 7 for the fuel center.

An existing 60" FRICO irrigation culvert bisects the property running south to north on the western half of the development. This culvert will remain with only parking lot paving and landscaping improvements being constructed above the line. The southern portion of the culvert will be extended and the headwall shifted approximately 30' to the north to allow for the construction of the sidewalk adjacent to highway 7. Proposed storm water will not be conveyed to this culvert.

Natural soils on site consist of Ulm clay loam and Renohill clay loam, with average slopes of 1-4%. Imported soil has been stockpiled at the north end of the site, creating 3:1 slopes which are protected by silt fences at the toe of the slope. The soil type for this area is classified as Hydrologic Type C soils, as defined by the USDA SCS Soil Survey of Weld County, Colorado.

Based on the geotechnical report for the site, prepared by Kumar and Associates, dated march 6, 2015, the subsurface conditions consist of a variable thickness top soil overlying overburden man-placed fills and natural soils. The underlying bedrock consisted generally of claystone with frequent zones of interbedded claystone and sandstone ranging from a few inches to about 28 feet below ground surface.

The imported soils encountered on the site ranged from a few inches to approximately 19 feet. Thicker depths of fill materiel were encountered toward the top of the stockpiled areas generally consisting of fine grained lean clay with occasional fine to medium grained sand lenses. The degree of compaction of the existing fill material was not determined at this time.

Groundwater was encountered at depths ranging from 12 to 37 feet and from 9 to 27 feet below ground surface 28 days after initial drilling. It was noted the development of perched groundwater on or within the fractured zones of bedrock will occur after wet weather conditions and irrigation subsequent to development.

A review of the Flood Insurance Rate Map (FIRM) by the Federal Emergency Management Agency (FEMA) shows the entire proposed development in Zone C. By definition of Zone C, all lots within the Vista Ridge Marketplace development are designated as areas of minimal flooding and are outside of the 500 year flood plain according to FIRM Map 080266 0970D (See Appendix H).

II. Historic and Overall Basin Characteristics

The subject property of 20.25 acres primarily resides in the Brownlee parcel and Vista Ridge Parcel 34. The Brownlee parcel sits between the east boundary of Parcel 34 and

the Sheridan Parkway ROW. These two parcels primarily consist of native grasses and the site slopes from west to east towards Sheridan Parkway. The west side of Parcel 34 is a natural ridge running north and south across the entire property. From this ridge, the grade of the land slopes east and west as the two natural drainage patterns for the area and runoff is split into the two major basins. An existing 36" culvert has been installed, presumably in conjunction with improvements to Sheridan Parkway, which drains the historic flows from this site across to the east side of Sheridan. The culvert daylights on the east side of Sheridan into more native grass vacant land. A drainage study was prepared as part of the Brownlee Annexation into the Town of Erie, which also outlines the historic runoff patterns from this site as well as contemplates this site as commercial use with the requirement to detail and treat flows in the developed condition (See Appendix A for details). A drainage report has been prepared for Parcels 32 and 33 by Hurst & Associates, and is referenced in Appendix B.

There are no floodplains encumbering the site. (Refer to Appendix H for FIRM Map)

III. Drainage Design Criteria

A. Development Constraints and Criteria

As noted above, a drainage study was prepared as part of the Brownlee Annexation into the Town of Erie, which also outlines the historic runoff patterns from this site as well as contemplates this site as commercial use with the requirement to detail and treat flows in the developed condition (See Appendix for details). This study defines a 5-year and 100-year minor and major storm respectively for the on-site storm sewer design, as well as 10-year and 100-year for detention pond flows/releases. An 85% overall imperviousness was assigned to the property to evaluated post developed flows and overall detention requirements via the V=KA method. A 40-hr drain time was also outlined for the water quality release duration.

The proposed King Soopers development will conform to the historic release and detention pond/water quality parameters as outlined in the Brownlee Annexation Drainage study.

This final report was prepared using the criteria from the Town of Erie's "Standards and Specifications for Design and Construction of Public Improvements," Section 800, as well as Urban Drainage and Flood Control District's Urban Storm Drainage Criteria Manual.

B. Hydrologic Criteria

Design rainfall intensity-duration-frequency (IDF) data is provided by the Town of Erie. The rational method (Q=CIA) has been used to compute times of concentration and total runoff for the minor (5-year) and major (100-year) storm events. Hydrological calculations are included in the appendix. 5-year and 100-year runoff coefficients were

calculated using the Urban Storm Drainage Criteria Manual for the rational method and UDFCD Tables RO-3 and RO-5. (See Appendix C).

10-year and 100-year detention volumes were sized using the V=KA method outlined in the Denver Urban Storm Drainage Criteria Manual (USDCM). For purposes of sizing the basin, the WQCV has been included within the 100-year detention volume. (See Appendix D).

Stormwater quality has also been provided by designing the detention facility as a full spectrum extended detention basin in accordance with the EURV method as defined by Urban Storm Drainage Criteria Manual (USDCM) Volume 3. Full spectrum detention is designed to best replicate predevelopment peak flows for a broad range of storm intensities and durations.

C. Hydraulic Criteria

A detailed analysis of the storm sewer inlets and storm sewer conveyance system has been provided for both the on-site inlet capacities and storm sewer capacity by the following methods:

- Storm sewer capacities were evaluated using AutoDesk Storm and Sanitary Analysis (SSA) utilizing hydrodynamic routing.
- Inlet capacities were evaluated using the UDFCD Street and inlet Hydraulics Workbook version 3.12, November 2012 and the Storm Drainage Design and Technical Criteria Inlet Capacity Chart - Figure 803.

A detailed analysis for determination of all storm sewer sizes, hydraulic and energy grade lines has been provided in Appendix F.

IV. Drainage Facility Design

A. General Concept

On-Site Flows and Concept

On-Site flows will be collected in a series of basins and storm sewer network throughout the development which will convey storm flows to the proposed development detention and water quality pond located at the northeast corner of the site. The on-site basins will account for all entire proposed 20.25 acre development, including the future overlot graded Lots 3, 4, and 5. The ultimate outfall will be the existing 36” RCP that is stubbed into the property on the west side of Sheridan Parkway. This culverts intention is to convey both flows from this property, as well as the public streets, to the east side of Sheridan, where it daylights the flow onto the vacant land towards the natural drainage

patterns. The proposed detention pond will be owned and maintained by the owner of Lot 1.

Off-Site Flows

The natural ridge line along the west boundary of the property, provides a clean break of on and off-site basins. All flows west of the property will continue to flow west in its natural direction. The majority of the on-site flows will be contained on-site, with the exception of three basins (OS-1, OS-2 and OS-3) at the two access point onto Ridge View Drive and the eastern most access point onto Sheridan Parkway. One off-site basin that will flow onto the site is from the north half of Highway 7. Currently storm water sheet flows off the roadway onto the site and infiltrates. With this proposed design, a roadside swale has been graded between the edge of road and the new ROW sidewalk along the property frontage. This flow will continue to infiltrate into the ground as it sheet flows off the roadway. In larger events, this swale will convey flows from west to east until the water will enter the Sheridan Parkway pavement, where it will sheet flow along the curb and gutter until it enters the existing inlet on the west side of the road.

B. Specific Details

Proposed Basin Description

The basin and storm sewer network is divided into A, B, C and R basins. (Refer to Drainage Plan DP1.2 located in the rear pocket of this report).

Basin A (3.63 acres) collects runoff from the north side of the development, primarily behind the King Soopers and Retail buildings. The storm line B, conveys the flow from these basins, as well as the building rooftops, along the rear of the property to the detention pond.

Basin B (7.99 acres) consists primarily of the front parking field and storm line A conveys the collected flows from west to east and around the east side of the retail building to the pond.

Basin C (3.68 acres) makes up Lots 3-5 and the fueling center on lot 6. Storm line C conveys those flows from west to east along the outer perimeter of the front parking field. Line C will tie into Line B near the southeast corner of the retail building.

Sub-Basin Description

Basin A-1 (1.74 acres, 76 % Impervious) consists of paved and landscaped areas within the western parking area conveyed via sheet flow and gutter flow to the east. An inlet has been provided at the low point to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.72 and 10.01 cfs respectively.

Basin A-2 (0.31 acres, 77% Impervious) consists of paved and landscaped areas by the main entrance off of Ridge View drive conveyed via sheet flow and gutter to the north.

An inlet has been provided at the low point to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.72 and 2.07 cfs respectively.

Basin A-3 (0.16 acres, 75% Impervious) consists of paved and landscaped areas along the rear access road conveyed via sheet flow and gutter flow to the north. An inlet has been provided to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.71 and 1.05 cfs respectively.

Basin A-4 (0.11 acres, 100% Impervious) consists of the paved sunken truck loading area sheet flowing to a low point in the north eastern corner of the loading area. An inlet has been provided to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.96 and 0.98 cfs respectively.

Basin A-5 (0.47 acres, 85% Impervious) consists of paved and landscaped areas along the rear access road conveyed via sheet flow and gutter flow to the north east. An on grade inlet has been provided down stream to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.79 and 3.45 cfs respectively.

Basin A-6 (0.84 acres, 99% Impervious) consists of paved and landscaped areas within the rear retail parking area conveyed via sheet flow and gutter flow to the north east. An inlet has been provided at the low point to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.95 and 7.40 cfs respectively.

Basin B1 (0.42 acres, 88% Impervious) consists of paved and landscaped areas conveyed via sheet flow and gutter flow along the main drive entrance to the north. An on grade inlet has been provided to capture and convey the flow to storm line A and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.82 and 3.19 cfs respectively.

Basin B2 (2.18 acres, 86% Impervious) consists of mainly paved parking areas and some landscaped areas within the main parking field conveyed via sheet flow and gutter flow to a low point centralized within the basin. An inlet has been provided to capture and convey the flow to storm line A and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.80 and 15.33 cfs respectively.

Basin B-3 (1.42acres, 92% Impervious) consists of mainly paved parking areas and some landscaped areas within the main parking field conveyed via sheet flow and gutter flow to a low point centralized within the basin. An inlet has been provided to capture and convey the flow to storm line A and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.85 and 11.21cfs respectively.

Basin B-4 (1.47 acres, 95% Impervious) consists of mainly paved parking areas and some landscaped areas within the main parking field conveyed via sheet flow and gutter flow to a low point centralized within the basin. An inlet has been provided to capture and convey the flow to storm line A and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.89 and 12.15 cfs respectively.

Basin B-4a (0.89 acres, 93% Impervious) consists of mainly paved parking areas and some landscaped areas within the main parking field conveyed via sheet flow and gutter

flow to a low point within the basin. An inlet has been provided to capture and convey the flow to storm line A and to the pond. A ridge to the east of the inlet separates basin B-4a from basin B-5. The 100-year runoff coefficients and flow rate for this basin are 0.87 and 7.19 cfs respectively.

Basin B-5 (1.48 acres, 87% Impervious) consists of mainly paved parking areas and some landscaped areas within the main parking field conveyed via sheet flow and gutter flow to the north east. An inlet has been provided at the low point to capture and convey the flow to storm line A and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.80 and 11.04 cfs respectively.

Basin B-6 (0.13 acres, 99% Impervious) consists of paved and landscaped areas within the retail parking area conveyed via sheet flow and gutter flow to the east. An inlet has been provided at the low point to capture and convey the flow to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.95 and 1.14 cfs respectively.

Basin C-1 (0.61 acres, 43% Impervious) consists of paved and landscaped areas from the fueling center conveyed via sheet flow and gutter flow to the east. An inlet has been provided at the low point to capture and convey the flow to storm line C and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.59 and 3.32 cfs respectively.

Basin C-2 (1.05 acres, assumed 95% Impervious) will be a future commercial development (Lot 5) and is conveyed via sheet flow to the north east. A storm sewer stub has been provided on the north edge of the basin to convey the flow to storm line C and to the pond in the developed condition. The 100-year runoff coefficients and flow rate for this basin are 0.89 and 8.68 cfs respectively.

Basin C-3 (1.05 acres, assumed 95% Impervious) will be a future commercial development (Lot 4) and is conveyed via sheet flow to the north east. A storm sewer stub has been provided on the north edge of the basin to convey the flow to storm line C and to the pond in the developed condition. The 100-year runoff coefficients and flow rate for this basin are 0.89 and 8.68 cfs respectively.

Basin C-4 (0.97 acres, assumed 95% Impervious) will be a future commercial development (Lot 3) and is conveyed via sheet flow to the north east. A storm sewer stub has been provided on the north edge of the basin to convey the flow to storm line C and to the pond in the developed condition. The 100-year runoff coefficients and flow rate for this basin are 0.89 and 8.02 cfs respectively.

Basin R-1A (0.72 acres, 90% Impervious) consists of a portion of the roof area for the proposed King Soopers store. Runoff will be conveyed via roof drains to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.83 and 5.55 cfs respectively.

Basin R-1B (1.35 acres, 90% Impervious) consists of a portion of the roof area for the proposed King Soopers store. Runoff will be conveyed via roof drains to storm line B and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.83 and 10.41 cfs respectively.

Basin R-1C (0.67, 90% Impervious) consists of a portion of the roof area for the proposed King Soopers store. Runoff will be conveyed via roof drains to storm line B and

to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.83 and 5.16 cfs respectively.

Basin R-2 (0.17 acres, 90% Impervious) consists of the roof area for the proposed retail stores. Runoff will be conveyed via roof drains to storm line A and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.83 and 1.31 cfs respectively.

Basin R-3 (0.16 acres, 90% Impervious) consists of the roof canopy area for the proposed fueling center store. Runoff will be conveyed via roof drains to storm line C and to the pond. The 100-year runoff coefficients and flow rate for this basin are 0.83 and 1.23 cfs respectively.

Pond Design

The detention pond is designed as extended detention basin with side slopes of 3.5:1 and the bottoms sloping 2% to a concrete trickle channel which is sloped at 0.45% to the outlet. This flat slope facilitates sedimentation and will promote infiltration within the basins.

Water quality in the pond will be designed utilizing Urban Drainage and Flood Control District's EURV Spreadsheet. A forebay and initial surcharge volume will not be included with this design. The water quality outlet structure will be a Colorado Department of Transportation modified type C inlet with a well screen on the front face and a column of orifices on the inside face, covering an opening in the concrete. The orifice plate allows for release of the water quality capture volume over 72 hours and facilitates sedimentation. A small precast micropool will be included at the face of the inlet. This will help to prevent clogging of the well screen and facilitate biological uptake of nutrients contained in runoff.

The pond 100-year release rate has been determined to be 20.25 CFS based on table 800-4 of "Standards and Specifications for Design and Construction of Public Improvements." A small area of approximately 1.5 ac west of the irrigation ditch historically drained to the west now drains to the east onto the proposed site. Given the 1.5 ac is encompassed within the overall 20.25 ac site area, over detention has been provided within the pond design. The compensating detention procedure was used to reduce the release rate by 4.89 cfs which accounts for basins OS-1, OS-2 and OS-3 which release un-detained from the site to Ridgeview Drive and Sheridan Parkway. This provides an adjusted allowable 100-year release rate of 15.4 cfs. An overflow spillway will be constructed at the 100-year water surface elevation directing overflows to Sheridan Parkway and armored with Type H; riprap. The spillway will have the ability to convey two times the peak runoff from the upstream area without overtopping the pond. This will allow runoff in excess of the 100-year event to be conveyed downstream following historic drainage patterns.

The ponds will be privately maintained and access can be achieved by small power equipment and personnel from the south side of the pond via a 20% grade maintenance path.

V. Conclusions

This final drainage design is in compliance with applicable regional standards including the Town of Erie's "Standards and Specifications for Design and Construction of Public Improvements, Section 800" and Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual. This design provides for on-site release of a maximum of 1 CFS per acre, which is well below the approximate 2 CFS per acre historical release rates. It also provides stormwater quality management and 100-year protection to the downstream drainage system.

VI. References

1. Urban Storm Drainage Criteria Manual, Urban Drainage and Flood Control District, March 2006 (with current revisions).

2. Town of Erie, Standards and Specifications for Design and Construction of Public Improvements, latest revision.

3. Brownlee Annexation Drainage Plan #24 – Provided by Town of Erie

Appendix A

Brownlee Annexation Drainage Study

BROWNLEE PARCEL — DRAINAGE CONCEPT

RIDGE VIEW DRIVE
CURB/GUTTER
80' ROW
S89°31'49"E 551.15'
5275
5270
5265
TRANSFORMER
INLET
50' STRIP FOR
COMMUNTIY DITCH
0 50 100 200
1 inch = 100 ft.
PARCEL 34
ONSITE DETENTION
REQUIRED WITH RELEASE
TO EXISTING STORM SEWER
IN RIDGE VIEW DRIVE
VISTA RIDGE
PARCEL 34
(VISTA RIDGE DEV. CORP.)
N00°06'16"E 865.79'
5270
5260
EXISTING 36" RCP
STORM DRAINAGE
CULVERT
FIBER OPTIC
WARNING POST
CURB/GUTTER
DETENTION POND
RELEASE TO
EX. 36" RCP
CONCRETE
CULVERT
77' ROW
S00°34'46"E 804.80'
SHERIDAN BOULEVARD
11.63 Ac.
5265
5270
50' STRIP FOR
COMMUNTIY DITCH
5275
15' UTILITY
EASEMENT
5280
10' UTILITY
EASEMENT
TRANSFORMER
UTILITY PEDESTALS
ON CONCRETE PAD
5265
TELEPHONE PEDESTAL
15' UTILITY
EASEMENT
5270
5270
UTILITY EQUIPMENT
PHONE PEDESTAL
15' UTILITY
EASEMENT
5280
CONCRETE LINED DITCH
5285
N89°38'37"W 498.22'
N89°38'54"W
62.20'
5275
75'
STATE HIGHWAY 7

BROWNLEE ANNEXATION
DRAINAGE CONCEPT

SITE

The Brownlee parcel consists of an undeveloped 11.63 acre tract of land at the southwest corner of Ridge View Drive and Sheridan Blvd. (Sec 33, T1N, R68W) Currently, native grasses cover the site and drainage flows from west to east to an existing 36" RCP drainage culvert at Sheridan Blvd. Commercial uses are proposed for the site.

DRAINAGE CONCEPT

The proposed development maintains the existing drainage patterns. Developed flows are routed to a detention pond, and the pond outfalls to the existing culvert at Sheridan Blvd. (See concept plan) Vista Ridge Tract 34 borders the site to the west and routes its developed flows to a storm sewer in Ridge View Drive; thus, no offsite flows are considered for this site.

SYSTEM DESIGN

The on-site storm system is defined by the runoff from the 5-year storm, and the major storm system is defined by the runoff from the 100-year storm runoff. Detention pond design considers the 10-year and 100-year developed flows. With an 85% impervious coefficient, detention and water quality requirements are estimated as follows (V=KA):

100 Yr. Storage - 1.55 Ac Ft 100 Yr. Release Rate - 11.6 cfs

10 Yr. Storage - 0.92 Ac Ft 10 Yr. Release Rate – 0.3 cfs

Water Quality Storage (40 hr drain time) – 0.35 Ac Ft

The detention pond provides a reduction in peak developed flow, and the water quality storage volume provides storm water quality enhancement.

EROSION CONTROL

Erosion protection and storm water management will be required during construction. Erosion bales, check structures, sediment traps, concrete washout, vehicle tracking control and silt fencing will be used to control erosion. Water quality mitigation will be provided with extended detention basins and porous landscape detention.

Appendix B

Hurst & Associates Drainage Report

DRAINAGE REPORT
VISTA RIDGE PARCELS 32 & 33
ERIE, COLORADO

Prepared For:
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4950 S. Yosemite Street
F2 #503
Greenwood Village, Colorado 80111

Prepared By:
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Job Number 2142-03
June 3, 2008

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Map Pocket – *Drainage Plan*

INTRODUCTION

Vista Ridge Parcels 32 & 33 are located in the Southwest Quarter of Section 33, Township 1 North, Range 68 West of the 6th P.M., Town of Erie, County of Weld, State of Colorado. Vista Ridge is a master planned mixed use community with Parcels 32 & 33 (31.8 acres) zoned for commercial use. The purpose of this report is to establish the overall drainage design concepts for the commercial parcels. Several different types of commercial/retail uses are possible within these parcels. This report establishes the design and locations of conveyance facilities with detention and water quality requirements.

EXISTING CONDITIONS

Parcels 32 & 33 are bordered by Mountain View Boulevard to the west, State Highway 7 to the south, and Ridge View Drive to the north. The parcels generally drain from the southeast to northwest at slopes of 2 to 4 percent. Vegetation is currently native grasses.

The existing soil type is made up primarily of Ulm clay loam with slopes of 0-3 percent and slopes of 3 to 5 percent as determined by the *Soil Survey of Weld Count, Colorado*. The soil is deep and well drained soil that has a slow permeability. It is in the "C" hydrologic group which generalizes soils as having slow infiltration rates.

PROPOSED FACILITIES

Pond A1 is an extended detention water quality pond located in the northeast corner of Vista Ridge Parcel 32. Pond A1 collects storm runoff from Parcel 32 and a portion of Parcel 33. Pond A1A will collect storm runoff from the remainder of Parcel 33 and outfalls to Pond A1. Developed flows are summarized as follows:

Basin	Total Area (acres)	Design Flow			Drains To
		Q5 (cfs)	Q10 (cfs)	Q100 (cfs)	
A1A	19.97	69.4	85.8	138.5	Pond A1
A1B	12.40	45.4	56.1	90.2	Pond A1A
A1D	1.51	3.6	4.7	8.2	Pond A1
A1E	1.49	3.6	4.6	8.1	Pond A1
A1Z	1.85	5.2	6.7	11.4	SA-160

Pond A1 will utilize retaining walls and vegated slopes at a maximum of 4:1 side slopes. A concrete outlet structure restricts storm runoff to the required release rates for water quality, 10-year and 100-year storm events.

The detention ponds were sized using CUHP and UDSWM. The volumes and release rates are less than the Vista Ridge Master Drainage Plan due to the reduced basin size. Approximately 7.5 acres of the original Basin A1 drains east to a proposed pond on the Brown Lee Annexation. The WQCV was calculated using *Urban Storm Drainage Volume 3*.

The release rates for the 10 year and the 100 year events were all calculated using *Town of Erie's Standards and Specification for Design and Construction of Public Improvements Section 814.08*. The WQCV release rate was calculated using *Urban Storm Drainage Volume 3*.

The storage elevations, volume of storage, and release rates for the WQCV, 10 year storm, and 100 year storm for Pond A1 are as follows:

Pond A1

	Elevation	Volume (ac-ft)	Release Rate (cfs)
WQCV	5225.42	0.86	0.43
10-Yr Storm	5227.33	2.30	10.00
100-Yr Storm	5228.94	3.70	27.00

The concrete outlet structure is a 5' x 5' structure with a grate top and manhole steps for access to the structure. The WQCV release is controlled by an orifice half way up the outlet structure at the bottom of the pond. A pipe screen will be placed over the orifice to prevent

debris from becoming clogged. The 10 year release is controlled by an orifice that is a quarter of the way down from the top of the outlet structure. The 100 year release is at the top of the structure and an emergency spillway has been provided.

Post development water quality is improved by providing extended detention with a 40 hour drain time. During the construction phase, runoff quality is controlled by the use of silt fences and inlet protection.

Appendix C

Hydrological IDF Curves and Runoff Coefficients

PROJECT: King Soopers #129
LOCATION: Sheridan Parkway and Highway 7
Erie, CO

Project No.: KSS000129.01
Date: June 19, 2015
Designed By: Arin Vanderheyden
Checked By: Brandon McCrary, PE

PERCENT IMPERVIOUS VALUES	
LANDSCAPE	0
PAVING	100
ROOFING	90
WALKS/DRIVES	90
FUTURE COMMERCIAL	95

***Refer to Table RO-5, Urban Drainage, Storm Drainage Criteria Manual for Runoff Coefficients used**

***Group C Soils**

Composite Runoff Coefficients and Percent Imperviousness for Developed Drainage Basins

BASIN DESIG.	OVERALL AREA (AC)	LANDSCAPE AREA (AC)	PAVED AREA (AC)	ROOF AREA (AC)	WALKS/ DRIVES (AC)	FUTURE COMMERCIAL (AC)	2-YEAR COEFF.	5-YEAR COEFF.	10-YEAR COEFF.	100-YEAR COEFF.	PERCENT IMPERVIOUS
A-1	1.74	0.38	1.05	0.04	0.27	0.00	-	0.59	0.63	0.72	0.76
A-2	0.31	0.07	0.23	0.00	0.01	0.00	-	0.60	0.63	0.72	0.77
A-3	0.16	0.04	0.12	0.00	0.00	0.00	-	0.58	0.62	0.71	0.75
A-4	0.11	0.00	0.11	0.00	0.00	0.00	-	0.90	0.92	0.96	1.00
A-5	0.47	0.07	0.40	0.00	0.00	0.00	-	0.68	0.71	0.79	0.85
A-6	0.84	0.00	0.72	0.00	0.12	0.00	-	0.89	0.91	0.95	0.99
R1-A	0.72	0.00	0.00	0.72	0.00	0.00	-	0.75	0.77	0.83	0.90
R1-B	1.35	0.00	0.00	1.35	0.00	0.00	-	0.75	0.77	0.83	0.90
R1-C	0.67	0.00	0.00	0.67	0.00	0.00	-	0.75	0.77	0.83	0.90
B-1	0.42	0.05	0.37	0.00	0.00	0.00	-	0.73	0.75	0.82	0.88
B-2	2.18	0.29	1.84	0.00	0.05	0.00	-	0.69	0.72	0.80	0.86
B-3	1.42	0.11	1.31	0.00	0.00	0.00	-	0.77	0.79	0.85	0.92
B-4	1.47	0.08	1.39	0.00	0.00	0.00	-	0.82	0.84	0.89	0.95
B-4A	0.89	0.06	0.83	0.00	0.00	0.00	-	0.80	0.82	0.87	0.93
B-5	1.48	0.19	1.29	0.00	0.00	0.00	-	0.70	0.73	0.80	0.87
B-6	0.13	0.00	0.12	0.00	0.01	0.00	-	0.89	0.91	0.95	0.99
C-1	0.61	0.35	0.26	0.00	0.00	0.00	-	0.36	0.43	0.59	0.43
C-2	1.05	0.00	0.00	0.00	0.00	1.05	-	0.82	0.84	0.89	0.95
C-3	1.05	0.00	0.00	0.00	0.00	1.05	-	0.82	0.84	0.89	0.95
C-4	0.97	0.00	0.00	0.00	0.00	0.97	-	0.82	0.84	0.89	0.95
R-2	0.17	0.00	0.00	0.17	0.00	0.00	-	0.75	0.77	0.83	0.90
R-3	0.16	0.00	0.00	0.16	0.00	0.00	-	0.75	0.77	0.83	0.90
P-1	0.87	0.87	0.00	0.00	0.00	0.00	-	0.15	0.25	0.50	0.00
Total to Pond	19.24	2.56	10.04	3.11	0.46	3.07	-	0.67	0.70	0.78	0.84

Composite Runoff Coefficients and Percent Imperviousness for Offsite Drainage Basins

OS-1	0.08	0.00	0.08	0.00	0.00	0.00	-	0.90	0.92	0.96	1.00
OS-2	0.78	0.67	0.09	0.00	0.02	0.00	-	0.24	0.32	0.54	0.14
OS-3	0.06	0.06	0.00	0.00	0.00	0.00	-	0.15	0.25	0.50	0.00
Total Offsite	0.92	0.73	0.17	0.00	0.02	0.00	-	0.26	0.34	0.55	0.20

Composite Runoff Coefficients and Percent Imperviousness for Historic Drainage Basins

H-1	20.59	20.59	0.00	0.00	0.00		0.00	0.15	0.25	0.50	0.00

PROJECT: King Soopers #129
LOCATION: Sheridan Parkway and Highway 7
Erie, CO

Project No.: KSS000129.01
Date: June 19, 2015
Engineer: Arin Vanderheyden
Checked By: Brandon McCrary, PE

			INITIAL/OVERLAND TIME (Ti) *[Max. 300' Urban, 500' Non-Urban]*					TRAVEL TIME (Tt)								FINAL Tc^5		
Basin No.	Area (acres)	C_{100}	Elevations U/S	Elevations D/S	Dist. (ft)	Slope (%)	Ti^1 (min)	Elevations U/S	Elevations D/S	Dist. (ft)	Slope (%)	Conveyance Coefficient, C_v [2]	Vel.[3] (fps)	Tt[4] (min)	(min)	Remarks	Tc Check
A-1	1.74	0.72					8.00	5281.57	5274.794	412	1.65	20	2.57	2.67	11	Tc Urbanized Check - 8 min. - Governs	12.3
A-2	0.31	0.72					5.00										
A-3	0.16	0.71					5.00										
A-4	0.11	0.96					5.00										
A-5	0.47	0.79					5.00										
A-6	0.84	0.95					5.00										
R1-A	0.72	0.83					5.00										
R1-B	1.35	0.83					5.00										
R1-C	0.67	0.83					5.00										
B-1	0.42	0.82					5.00										
B-2	2.18	0.80	5293.663	5282.9	129	8.34	3.83	5282.40	5275.21	386	1.86	20	2.73	2.36	6	Tc Urbanized Check - 6 min. - Governs	12.9
B-3	1.42	0.85					5.00										
B-4	1.47	1.42					5.00										
B-4A	0.89	0.91					5.00										
B-5	1.48	1.48					10.00										
B-6	0.13	0.12					5.00										
C-1	0.61	0.61					5.00										
C-2	1.05	1.05					5.00										
C-3	1.05	1.05					5.00										
C-4	0.97	0.99					5.00										
R-2	0.17	0.17					5.00										
R-3	0.16	0.16					5.00										
P-1	0.87	0.89					5.00										
H-1	19.24	0.50	5296	5278	500	3.60	11.46	5278.00	5257	627	3.35	5	0.92	11.42	23		

1. $Ti=(0.395(1.1-C_5)\sqrt{L})/(S^{0.33})$ (Urban Drainage)
2. From USDCM Table RO-2
3. $V=C_vS^{0.5}$ (Shallow Concentrated Flow Equation)
4. Tt=D/V/60
5. Max of Ti+Tt or 5

PROJECT: King Soopers #129
LOCATION: Sheridan Parkway and Highway 7
Erie, CO

Project No.: KSS000129.01
Date: June 19, 2015
Designed By: Arin Vanderheyden
Checked By: Brandon McCrary, PE

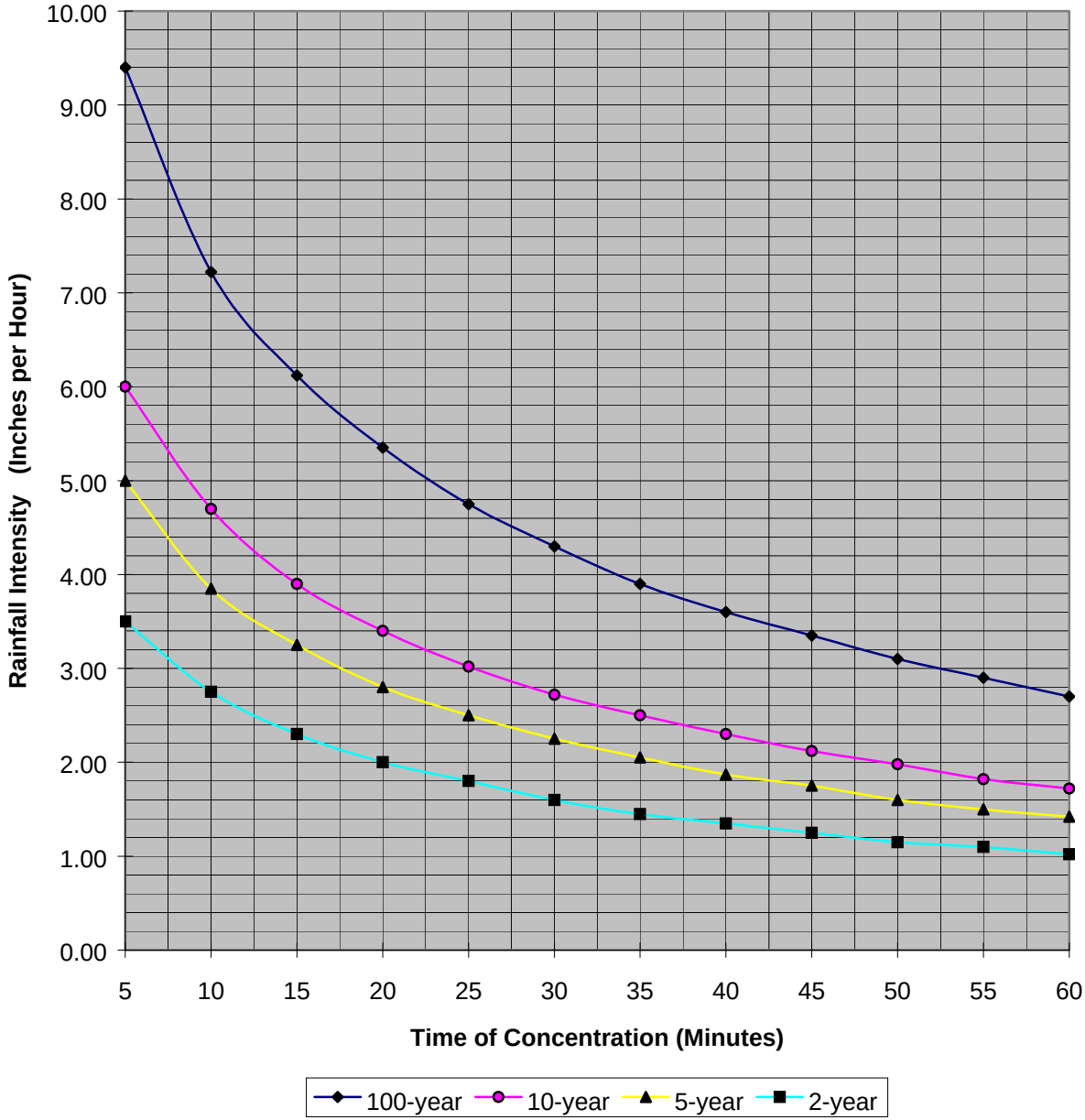
DEVELOPED RUNOFF CALCULATIONS

RUNOFF COMPUTATIONS (RATIONAL METHOD)											5-YEAR DEVELOPED RECURRENCE INTERVAL		100-YEAR DEVELOPED RECURRENCE INTERVAL	
	Design Point	T_c	INTENSITY		AREA		Coeff.		CxA		INTENSITY	RUNOFF	INTENSITY	RUNOFF
		(min)	5-year (in/hr)	100-year (in/hr)	(S.F.)	(acres)	5-year	100-year	5-year	100-year	**i** (in/hr)	**Q** (cfs)	**i** (in/hr)	**Q** (cfs)
PROPOSED BASINS														
A-1		8.00	4.26	8.05	75,794	1.74	0.59	0.72	1.02	1.24	4.26	4.36	8.05	10.01
A-2		5.00	4.92	9.29	13,504	0.31	0.60	0.72	0.18	0.22	4.92	0.91	9.29	2.07
A-3		5.00	4.92	9.29	6,970	0.16	0.58	0.71	0.09	0.11	4.92	0.46	9.29	1.05
A-4		5.00	4.92	9.29	4,792	0.11	0.90	0.96	0.10	0.11	4.92	0.49	9.29	0.98
A-5		5.00	4.92	9.29	20,473	0.47	0.68	0.79	0.32	0.37	4.92	1.57	9.29	3.45
A-6		5.00	4.92	9.29	36,590	0.84	0.89	0.95	0.74	0.80	4.92	3.66	9.29	7.40
R1-A		5.00	4.92	9.29	31,363	0.72	0.75	0.83	0.54	0.60	4.92	2.66	9.29	5.55
R1-B		5.00	4.92	9.29	58,806	1.35	0.75	0.83	1.01	1.12	4.92	4.98	9.29	10.41
R1-C		5.00	4.92	9.29	29,185	0.67	0.75	0.83	0.50	0.56	4.92	2.47	9.29	5.16
B-1		5.00	4.92	9.29	18,295	0.42	0.73	0.82	0.31	0.34	4.92	1.50	9.29	3.19
B-2		6.00	4.68	8.83	94,961	2.18	0.69	0.80	1.51	1.74	4.68	7.05	8.83	15.33
B-3		5.00	4.92	9.29	61,855	1.42	0.77	0.85	1.10	1.21	4.92	5.40	9.29	11.21
B-4		5.00	4.92	9.29	64,033	1.47	0.82	0.89	1.21	1.31	4.92	5.93	9.29	12.15
B-4A		5.00	4.92	9.29	38,768	0.89	0.80	0.87	0.71	0.77	4.92	3.49	9.29	7.19
B-5		5.00	4.92	9.29	64,469	1.48	0.70	0.80	1.04	1.19	4.92	5.12	9.29	11.04
B-6		5.00	4.92	9.29	5,663	0.13	0.89	0.95	0.12	0.12	4.92	0.57	9.29	1.14
C-1		5.00	4.92	9.29	26,572	0.61	0.36	0.59	0.22	0.36	4.92	1.09	9.29	3.32
C-2		5.00	4.92	9.29	45,738	1.05	0.82	0.89	0.86	0.93	4.92	4.23	9.29	8.68
C-3		5.00	4.92	9.29	45,738	1.05	0.82	0.89	0.86	0.93	4.92	4.23	9.29	8.68
C-4		5.00	4.92	9.29	42,253	0.97	0.82	0.89	0.80	0.86	4.92	3.91	9.29	8.02
R-2		5.00	4.92	9.29	7,405	0.17	0.75	0.83	0.13	0.14	4.92	0.63	9.29	1.31
R-3		5.00	4.92	9.29	6,970	0.16	0.75	0.83	0.12	0.13	4.92	0.59	9.29	1.23
P-1		5.00	4.92	9.29	37,897	0.87	0.15	0.50	0.13	0.44	4.92	0.64	9.29	4.04

C = Runoff Coefficient
i = Rainfall Intensity in inches per hour
A = Tributary Area in acres

OS-1		5.00	4.92	9.29	3,485	0.08	0.90	0.96	0.07	0.08	4.92	0.35	9.29	0.71
OS-2		5.00	4.92	9.29	33,977	0.78	0.24	0.54	0.18	0.42	4.92	0.90	9.29	3.90
OS-3		5.00	4.92	9.29	2,614	0.06	0.15	0.50	0.01	0.03	4.92	0.04	9.29	0.28
H-1		24.00	2.50	4.78	897,073	20.59	0.15	0.50	3.09	10.30	2.50	7.72	4.78	49.22

Rainfall Intensity Duration Curves



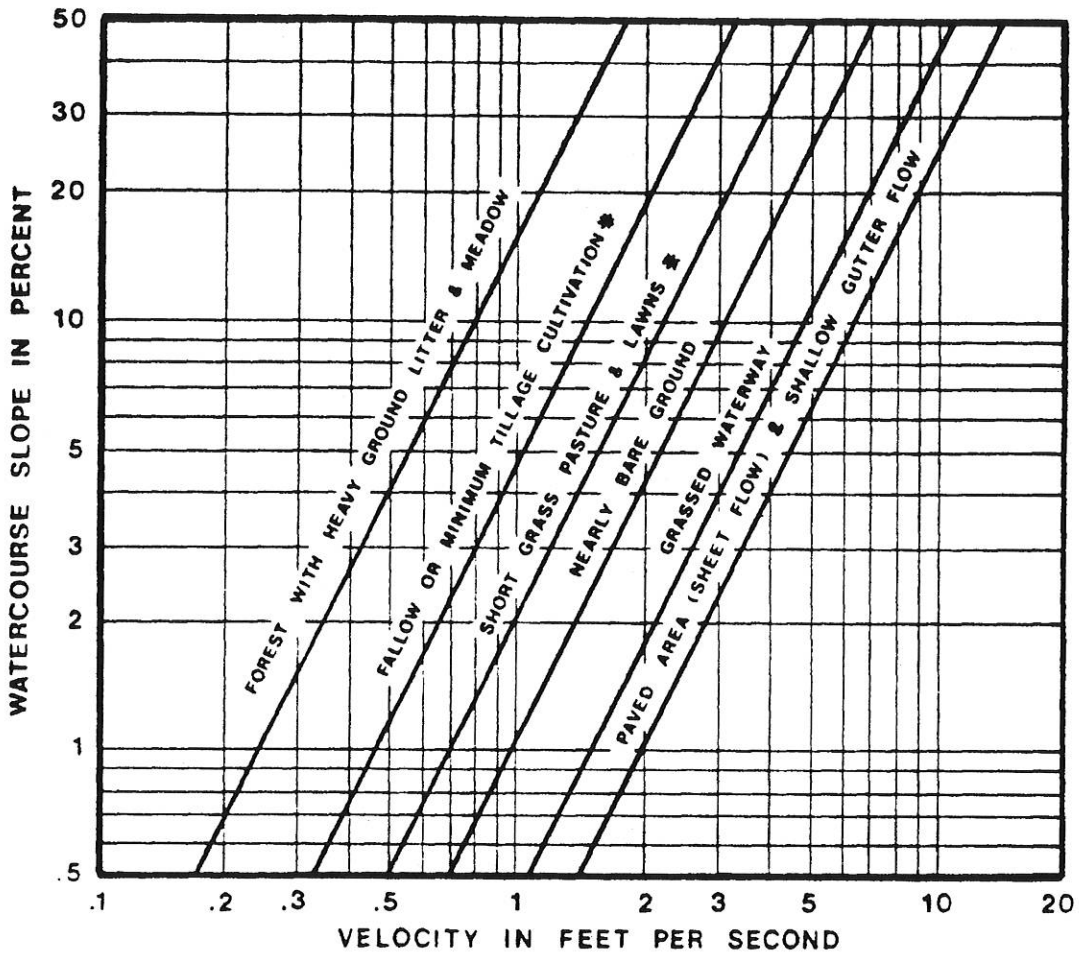


Figure RO-1—Estimate of Average Overland Flow Velocity for Use With the Rational Formula

L = length of overland flow (500 ft maximum for non-urban land uses, 300 ft maximum for urban land uses)

S = average basin slope (ft/ft)

Equation RO-3 is adequate for distances up to 500 feet. Note that, in some urban watersheds, the overland flow time may be very small because flows quickly channelize.

2.4.2 Overland Travel Time

For catchments with overland and channelized flow, the time of concentration needs to be considered in combination with the overland travel time, t_t, which is calculated using the hydraulic properties of the swale, ditch, or channel. For preliminary work, the overland travel time, t_t, can be estimated with the help of Figure RO-1 or the following equation (Guo 1999):

$$V = C_v S_w^{0.5} \qquad \text{(RO-4)}$$

in which:

V = velocity (ft/sec)

C_v = conveyance coefficient (from Table RO-2)

S_w = watercourse slope (ft/ft)

Table RO-2—Conveyance Coefficient, C_v

Type of Land Surface	Conveyance Coefficient, C_v
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

The time of concentration, t_c, is then the sum of the initial flow time, t_i, and the travel time, t_t, as per Equation RO-2.

2.4.3 First Design Point Time of Concentration in Urban Catchments

Using this procedure, the time of concentration at the first design point (i.e., initial flow time, t_i) in an urbanized catchment should not exceed the time of concentration calculated using Equation RO-5.

$$t_c = \frac{L}{180} + 10 \qquad \text{(RO-5)}$$

in which:

t_c = maximum time of concentration at the first design point in an urban watershed (minutes)

Table RO-3—Recommended Percentage Imperviousness Values

Land Use or Surface Characteristics	Percentage Imperviousness
Business:	
Commercial areas	95
Neighborhood areas	85
Residential:	
Single-family	*
Multi-unit (detached)	60
Multi-unit (attached)	75
Half-acre lot or larger	*
Apartments	80
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	5
Playgrounds	10
Schools	50
Railroad yard areas	15
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	0
Lawns, clayey soil	0

* See Figures RO-3 through RO-5 for percentage imperviousness.

$$C_A = K_A + \left(1.31i^3 - 1.44i^2 + 1.135i - 0.12\right) \text{ for } C_A \geq 0, \text{ otherwise } C_A = 0 \quad \text{(RO-6)}$$

$$C_{CD} = K_{CD} + \left(0.858i^3 - 0.786i^2 + 0.774i + 0.04\right) \quad \text{(RO-7)}$$

$$C_B = \left(C_A + C_{CD}\right)/2$$

Table RO-5— Runoff Coefficients, *C*

Percentage Imperviousness	Type C and D NRCS Hydrologic Soil Groups					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
0%	0.04	0.15	0.25	0.37	0.44	0.50
5%	0.08	0.18	0.28	0.39	0.46	0.52
10%	0.11	0.21	0.30	0.41	0.47	0.53
15%	0.14	0.24	0.32	0.43	0.49	0.54
20%	0.17	0.26	0.34	0.44	0.50	0.55
25%	0.20	0.28	0.36	0.46	0.51	0.56
30%	0.22	0.30	0.38	0.47	0.52	0.57
35%	0.25	0.33	0.40	0.48	0.53	0.57
40%	0.28	0.35	0.42	0.50	0.54	0.58
45%	0.31	0.37	0.44	0.51	0.55	0.59
50%	0.34	0.40	0.46	0.53	0.57	0.60
55%	0.37	0.43	0.48	0.55	0.58	0.62
60%	0.41	0.46	0.51	0.57	0.60	0.63
65%	0.45	0.49	0.54	0.59	0.62	0.65
70%	0.49	0.53	0.57	0.62	0.65	0.68
75%	0.54	0.58	0.62	0.66	0.68	0.71
80%	0.60	0.63	0.66	0.70	0.72	0.74
85%	0.66	0.68	0.71	0.75	0.77	0.79
90%	0.73	0.75	0.77	0.80	0.82	0.83
95%	0.80	0.82	0.84	0.87	0.88	0.89
100%	0.89	0.90	0.92	0.94	0.95	0.96
	TYPE B NRCS HYDROLOGIC SOILS GROUP					
0%	0.02	0.08	0.15	0.25	0.30	0.35
5%	0.04	0.10	0.19	0.28	0.33	0.38
10%	0.06	0.14	0.22	0.31	0.36	0.40
15%	0.08	0.17	0.25	0.33	0.38	0.42
20%	0.12	0.20	0.27	0.35	0.40	0.44
25%	0.15	0.22	0.30	0.37	0.41	0.46
30%	0.18	0.25	0.32	0.39	0.43	0.47
35%	0.20	0.27	0.34	0.41	0.44	0.48
40%	0.23	0.30	0.36	0.42	0.46	0.50
45%	0.26	0.32	0.38	0.44	0.48	0.51
50%	0.29	0.35	0.40	0.46	0.49	0.52
55%	0.33	0.38	0.43	0.48	0.51	0.54
60%	0.37	0.41	0.46	0.51	0.54	0.56
65%	0.41	0.45	0.49	0.54	0.57	0.59
70%	0.45	0.49	0.53	0.58	0.60	0.62
75%	0.51	0.54	0.58	0.62	0.64	0.66
80%	0.57	0.59	0.63	0.66	0.68	0.70
85%	0.63	0.66	0.69	0.72	0.73	0.75
90%	0.71	0.73	0.75	0.78	0.80	0.81
95%	0.79	0.81	0.83	0.85	0.87	0.88
100%	0.89	0.90	0.92	0.94	0.95	0.96

Appendix D

Detention Pond Calculations

Required Detention Volume

Date: 3/16/15

Job Name: King Soopers - Erie, CO By: JAS

Job Number: KSS000129.01

Detention Eq.: V=KA (calculation for pond volume)

K_{100} = [1.78(I)-0.002(I^2)-3.56]/1000 (calculation of constant)

I= basin imperviousness (percent)

Contributing Area= 20.25 acres

Weighted I_a= 83.00 %

Water Quality Capture Volume

Basin Storage Volume

	I_a =	83.00	%
A) Tributary Area's Imperviousness Ratio (i = I_a / 100)	i =	0.83	
B) Contributing Watershed Area (Area)	Area =	20.25	acres
C) Excess Urban Runoff Volume (EURV)	EURV =	1.00	watershed inches
EURV(C+D Soils) =1.1 * {(1.1381 *i)-0.0339)}			
D) EURV Volume: Vol = (EURV / 12) * Area	Vol =	1.691	acre-feet
		or	
		73639	cubic feet

EURV=	73639	cubic feet
V_{100}=	**115026**	cubic feet

Allowable release rate

EURV=	See "EDB Design Procedure Form" Worksheet		
Q_{100}=	1.0*Contributing Area - Bypass Runoff=	**15.4**	cfs

POND VOLUME CALCULATIONS

Subdivision
Location CO, Erie

Project Name: King Soopers #129 - E
Project No. KSS000129.01
By: AJV
Checked By: BSM
Date: 6/19/15

Volume=1/3 x Depth x (A+B+(A*B)^0.5)
A - Upper Surface
B - Lower Surface

Pond Name Here

Stage	Stage Elevation	Stage Surface Area (square feet)	Stage Volume (cubic feet)	Cumulative Volume (cubic feet)	Cumulative Volume (acre feet)
0.00	5258.00	145	0	0	0.00
1.00	5259.00	8,381	3,210	3,210	0.07
2.00	5260.00	10,960	9,642	12,852	0.30
3.00	5261.00	12,825	11,880	24,732	0.57
4.00	5262.00	14,788	13,795	38,527	0.88
5.00	5263.00	16,854	15,810	54,337	1.25
6.00	5264.00	19,024	17,928	72,265	1.66
7.00	5265.00	21,287	20,145	92,410	2.12
8.00	5266.00	23,727	22,496	114,906	2.64
9.00	5267.00	26,252	24,979	139,885	3.21

Volume (cubic feet)	Volume	Water Surface Elevation
WQCV*1.2	30,710.00	5261.44
EURV	73,639.00	5264.07
100-Year Detention	115,026.00	5266.01

PIPE OUTFALL RIPRAP SIZING CALCULATIONS

Subdivision:
Location: CO, Erie

Project Name: King Soopers #129 - Erie, CO
Project No.: KSS000129.01
Calculated By: AJV
Checked By: BSM
Date: 6/19/15

	STORM DRAIN SYSTEM		
	KSS129		
Q_{100} (cfs)	99.7		Flows are the greater of proposed vs. future
D or H (in)	48		
W (ft)			
Slope (%)	0.50		
Yn (in)	48.00		
Y_t (ft)	Unknown		If "unknown" Yt/D=0.4
$Y_{t/D}$, $Y_{t/H}$	0.40		Per section MD 7.2
Supercritical	Yes		
Q/D^2.5, Q/WH^1.5	3.12		
Q/D^1.5, Q/WH^0.5			
Da, Ha (in) *	48.00		Da=0.5(D+Yn), Ha=0.5(H+Yn)
Q/Da^1.5, Q/WHa^0.5 *	12.46		
d_{50} (in), Required	10.78		
Required Riprap Size	M		Fig. MD-21 OR MD-22
Use Riprap Size	**M**		
d_{50} (in)	12		Table MD-7
1/(2 tan θ)	4.10		Fig. MD-23 OR MD-24
Erosive Soils	No		
A_t	12.95		A_t=Q/5.5
L	16.8		L=(1/(2 tan θ))(At/Yt - D)
Min L	12.0		Min L=3D or 3H
Max L	40.0		Max L=10D or 10H
Length (ft)	17.0		
Bottom Width (ft)	12.0		Width=3D (Minimum)
Riprap Depth (in)	24		Depth=2(d_{50})
Type II Base Depth (in)	6		Table MD-12 (fine grained soils)
Cutoff Wall			
Cutoff Wall Depth (ft)			Depth of Riprap and Base
Cutoff Wall Width (ft)			

Design Procedure Form: Extended Detention Basin (EDB)

Designer:	**Jesse Smith**
Company:	**Galloway & Company, Inc.**
Date:	**June 22, 2015**
Project:	**King Soopers Store #129**
Location:	**Erie, Colorado**

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 83.0 %

B) Tributary Area's Imperviousness Ratio ($i = I_a / 100$) — i = 0.830

C) Contributing Watershed Area — Area = 20.250 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = ____ in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (1.2 WQCV) Based on 40-hour Drain Time
($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area * 1.2)$) — V_{DESIGN} = 0.705 ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN} / 0.43))$) — $V_{DESIGN\ OTHER}$ = ____ ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired) — $V_{DESIGN\ USER}$ = ____ ac-ft

I) Predominant Watershed NRCS Soil Group

Choose One
- ○ A
- ○ B
- ◉ C / D

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: EURVA = (0.1878i - 0.0104)*Area
For HSG B: $EURV_B$ = (0.1178i - 0.0042)*Area
For HSG C/D: $EURV_{C/D}$ = (0.1043i - 0.0031)*Area

EURV = 1.690 ac-f t

2. Basin Shape: Length to Width Ratio
(A basin length to width ratio of at least 2:1 will improve TSS reduction.)

L : W = 2.1 : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes
(Horizontal distance per unit vertical, 4:1 or flatter preferred)

Z = 3.50 ft / ft
DIFFICULT TO MAINTAIN, INCREASE WHERE POSSIBLE

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

19' x 12' x 2' deep Type "M" riprap pad. See "Pipe Outfall Riprap Sizing Calculations".

Design Procedure Form: Extended Detention Basin (EDB)

Designer:	**Jesse Smith**
Company:	**Galloway & Company, Inc.**
Date:	**June 22, 2015**
Project:	**King Soopers Store #129**
Location:	**Erie, Colorado**

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 3% of the WQCV) — V_{FMIN} = _____ ac-ft

B) Actual Forebay Volume — V_F = _____ ac-ft

C) Forebay Depth (D_F = 18 inch maximum) — D_F = _____ in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — Q_{100} = _____ cfs

ii) Forebay Discharge Design Flow ($Q_F = 0.02 * Q_{100}$) — Q_F = _____ cfs

E) Forebay Discharge Design — Choose One: ○ Berm With Pipe ○ Wall with Rect. Notch ○ Wall with V-Notch Weir

F) Discharge Pipe Size (minimum 8-inches) — Calculated D_P = _____ in

G) Rectangular Notch Width — Calculated W_N = _____ in

6. Trickle Channel

A) Type of Trickle Channel — Choose One: ◉ Concrete ○ Soft Bottom

F) Slope of Trickle Channel — S = 0.0045 ft / ft

7. Micropool and Outlet Structure

A) Depth of Micropool (2.5-feet minimum) — D_M = 2.5 ft

B) Surface Area of Micropool (10 ft^2 minimum) — A_M = 9 sq ft

C) Outlet Type — Choose One: ◉ Orifice Plate ○ Other (Describe):

D) Depth of Design Volume (EURV or 1.2 WQCV) Based on the Design Concept Chosen Under 1.E. — H = 6.41 feet

E) Volume to Drain Over Prescribed Time — EURV = 1.690 ac-ft

F) Drain Time (Min T_D for WQCV= 40 hours; Max T_D for EURV= 72 hours) — T_D = 72 hours

G) Recommended Maximum Outlet Area per Row, (A_o) — A_o = 1.17 square inches

H) Orifice Dimensions:
i) Circular Orifice Diameter or — $D_{orifice}$ = 1 - 3 / 16 inches
ii) Width of 2" High Rectangular Orifice — $W_{orifice}$ = _____ inches

I) Number of Columns — n_c = 1 number

J) Actual Design Outlet Area per Row (A_o) — A_o = 1.11 square inches

K) Number of Rows (nr) — n_r = 19 number

L) Total Outlet Area (A_{ot}) — A_{ot} = 21.3 square inches

M) Depth of WQCV (H_{WQCV}) (Estimate using actual stage-area-volume relationship and V_{WQCV}) — H_{WQCV} = 3.8 feet

N) Ensure Minimum 40 Hour Drain Time for WQCV — $T_{D\,WQCV}$ = 41.3 hours

Design Procedure Form: Extended Detention Basin (EDB)

Designer: Jesse Smith
Company: Galloway & Company, Inc.
Date: June 22, 2015
Project: King Soopers Store #129
Location: Erie, Colorado

8. Initial Surcharge Volume

A) Depth of Initial Surcharge Volume
(Minimum recommended depth is 4 inches)

D_{IS} = 4.8 in

B) Minimum Initial Surcharge Volume
(Minimum volume of 0.3% of the WQCV)

V_{IS} = 76.7 cu ft

C) Initial Surcharge Provided Above Micropool

V_s = 3.4 cu ft INCREASE INITIAL SURCHARGE DEPTH OR SURFACE AREA OF MICROPOOL

9. Trash Rack

A) Type of Water Quality Orifice Used

Choose One
- (●) Circular (up to 1-1/4" diameter)
- ( ) Circular (greater than 1-1/4" diameter) OR Rectangular (2" high)

B) Water Quality Screen Open Area: $A_t = Aot * 38.5*(e^{-0.095D})$

A_t = 732 square inches

C) For 1-1/4"", or Smaller, Circular Opening (See Fact Sheet T-12):

i) Width of Water Quality Screen and Concrete Opening ($W_{opening}$)

$W_{opening}$ = 12.0 inches

ii) Height of Water Quality Screen (H_{TR})

H_{TR} = 104.9 inches

iii) Type of Screen, Describe if "Other"

Choose One
- (●) S.S. Well Screen with 60% Open Area*
- ( ) Other (Describe):

D) For Circular Opening (greater than 1-1/4" diameter)
OR 2" High Rectangular Opening (See Fact Sheet T-12):

i) Width of Water Quality Screen Opening ($W_{opening}$)

$W_{opening}$ = ft

ii) Height of Water Quality Screen (H_{TR})

H_{TR} = ft

iii) Type of Screen, Describe if "Other"

Choose One
- ( ) Aluminum Amico-Klemp SR Series (or equal)
- ( ) Other (Describe):

v) Cross-bar Spacing

inches

vi) Minimum Bearing Bar Size

Design Procedure Form: Extended Detention Basin (EDB)

Designer: Jesse Smith
Company: Galloway & Company, Inc.
Date: June 22, 2015
Project: King Soopers Store #129
Location: Erie, Colorado

10. Overflow Embankment

A) Describe embankment protection for 100-year and greater overtopping:

B) Slope of Overflow Embankment
(Horizontal distance per unit vertical, 4:1 or flatter preferred)

Z_E = 0.00 ft / ft **TOO STEEP (< 3)**

11. Vegetation

Choose One
- (•) Irrigated
- ( ) Not Irrigated

AVOID PLACING IRRIGATION HEADS IN THE BOTTOM OF THE BASIN

12. Access

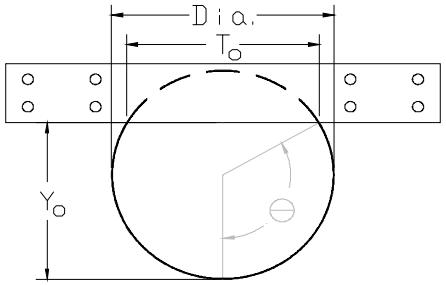
A) Describe Sediment Removal Procedures

Notes:

Project: **King Soopers Store #1129 - Erie, Colorado**

Basin ID:

X



		#1 Vertical Orifice	#2 Vertical Orifice	
Sizing the Restrictor Plate for Circular Vertical Orifices or Pipes (Input)				
Water Surface Elevation at Design Depth	Elev: WS =	66.00		feet
Pipe/Vertical Orifice Entrance Invert Elevation	Elev: Invert =	57.60		feet
Required Peak Flow through Orifice at Design Depth	Q =	15.40		cfs
Pipe/Vertical Orifice Diameter (inches)	Dia =	18.0		inches
Orifice Coefficient	C_o =	0.60		
Full-flow Capacity (Calculated)				
Full-flow area	Af =	1.77		sq ft
Half Central Angle in Radians	Theta =	3.14		rad
Full-flow capacity	Qf =	23.5		cfs
	Percent of Design Flow =	153%		
Calculation of Orifice Flow Condition				
Half Central Angle (0<Theta<3.1416)	Theta =	1.80		rad
Flow area	A_o =	1.14		sq ft
Top width of Orifice (inches)	T_o =	17.53		inches
Height from Invert of Orifice to Bottom of Plate (feet)	Y_o =	0.92		feet
Elevation of Bottom of Plate	Elev Plate Bottom Edge =	58.52		feet
Resultant Peak Flow Through Orifice at Design Depth	Q_o =	15.4		cfs
Width of Equivalent Rectangular Vertical Orifice	**Equivalent Width =**	**1.24**		**feet**
Centroid Elevation of Equivalent Rectangular Vertical Orifice	**Equiv. Centroid El. =**	**58.06**		**feet**

Weir Report

KSS #129 Emergency Spillway Weir Calculation

Rectangular Weir

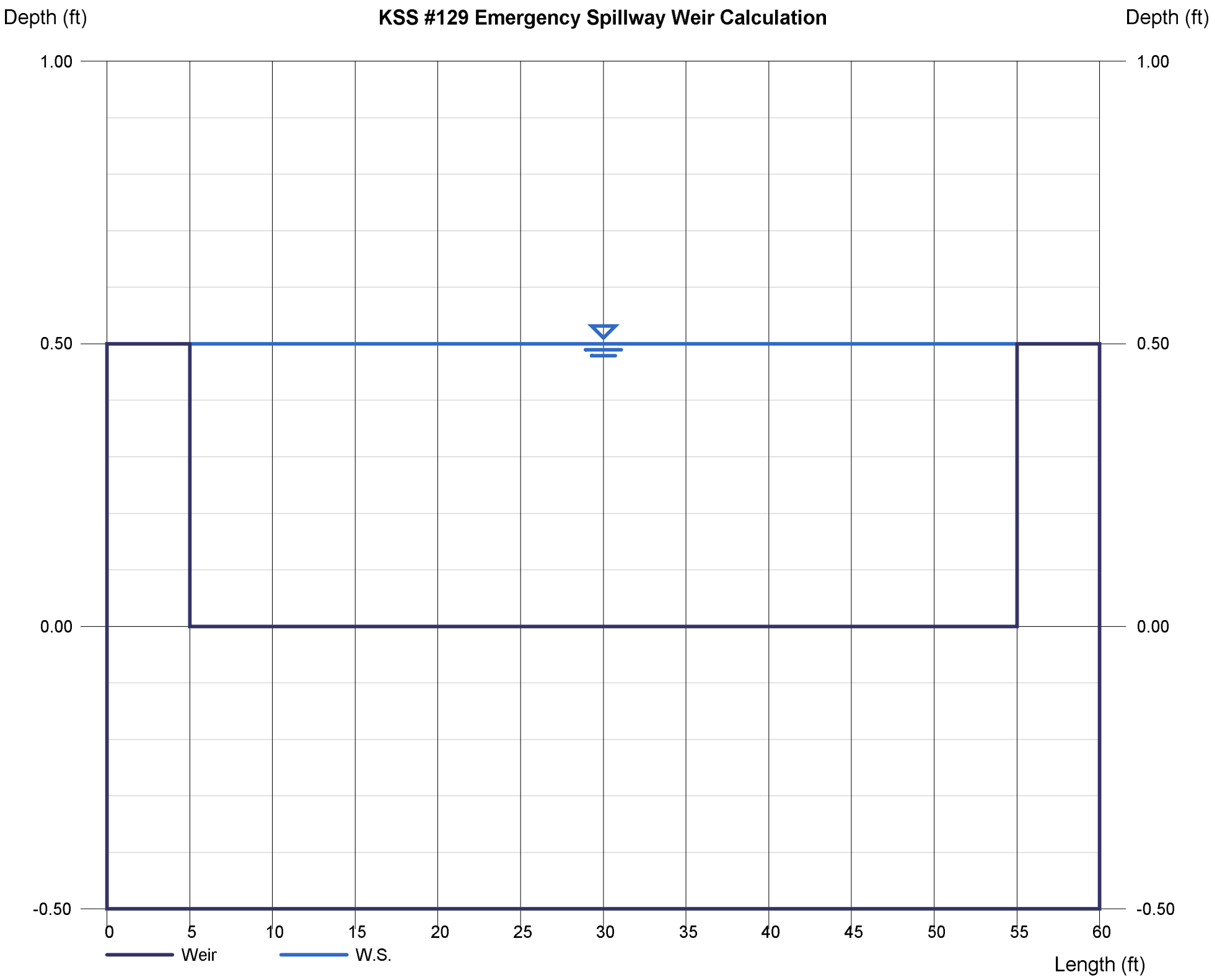
Crest	= Broad
Bottom Length (ft)	= 50.00
Total Depth (ft)	= 0.50

Calculations

Weir Coeff. Cw	= 3.10
Compute by:	Known Depth
Known Depth (ft)	= 0.50

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 54.80
Area (sqft)	= 25.00
Velocity (ft/s)	= 2.19
Top Width (ft)	= 50.00



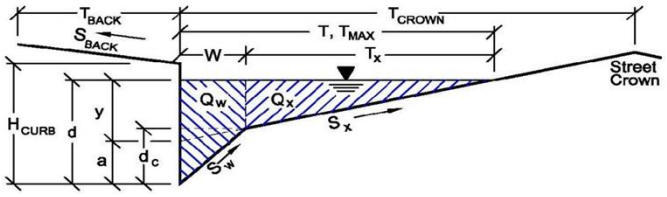
Appendix E
Inlet Calculations

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET A-2



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.000	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	32.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	6.0	32.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	SUMP	SUMP	cfs

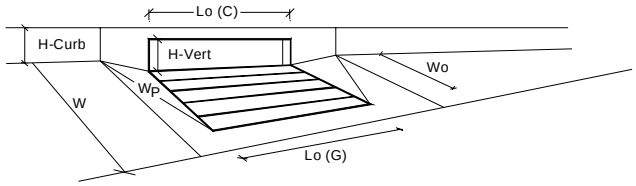
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET IN A SUMP OR SAG LOCATION

Project = King Soopers - Erie CO

Inlet ID = INLET A-2



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	3.0	6.0	inches
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**0.6**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.6	1.1	cfs

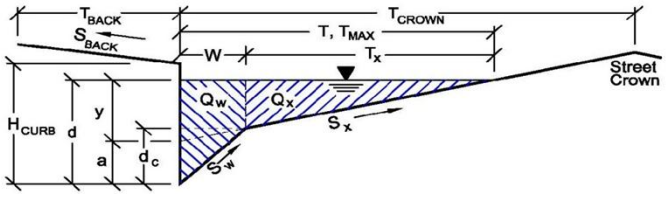
☐ Override Depths

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET A-3



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	10.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	18.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	12.0	18.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	SUMP	SUMP	cfs

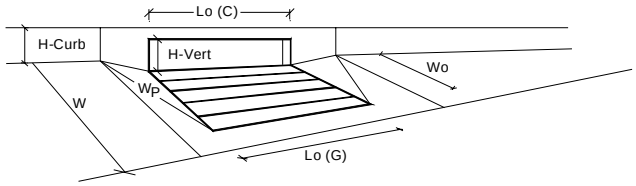
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET IN A SUMP OR SAG LOCATION

Project = King Soopers - Erie CO

Inlet ID = INLET A-3



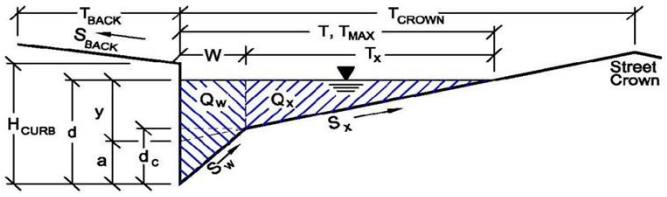
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.4	5.8	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.3**	**12.5**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	5.1	11.0	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET A-8



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.000	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	15.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.010	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.050	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	6.0	15.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	1.5	6.7	cfs

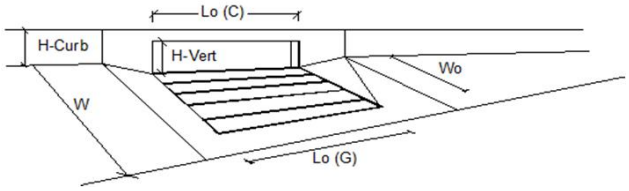
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: King Soopers - Erie CO

Inlet ID: INLET A-8



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

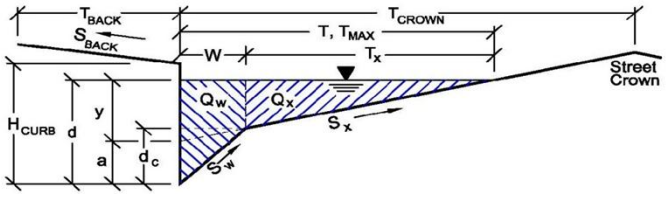
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.50**	**3.19**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET B-2



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.000	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	20.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.010	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.015	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	8.0	20.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**1.8**	**10.5**	**cfs**

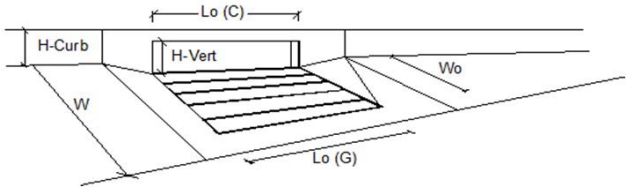
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: King Soopers - Erie CO

Inlet ID: INLET B-2



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

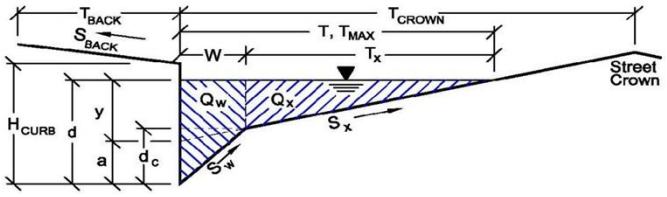
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.57**	**3.52**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**99**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET B-3



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	15.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	20.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.008	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.005	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	7.0	20.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**0.5**	**2.9**	**cfs**

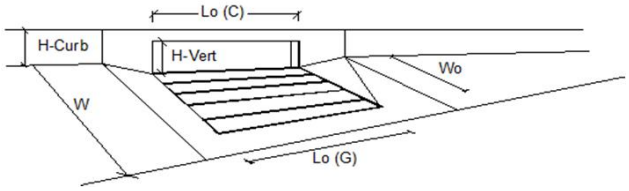
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: King Soopers - Erie CO

Inlet ID: INLET B-3



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

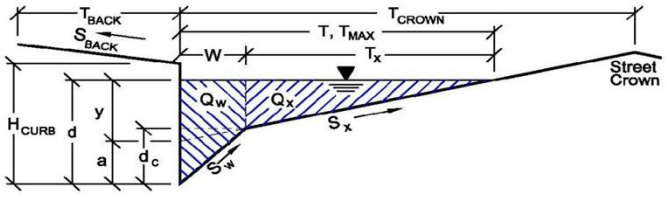
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.46**	**1.26**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**94**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET B-4



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	15.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	20.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.015	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.011	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	6.0	20.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Spread Criterion

		Minor Storm	Major Storm	
MAJOR STORM Allowable Capacity is based on Spread Criterion	Q_{allow} =	**0.9**	**10.7**	**cfs**

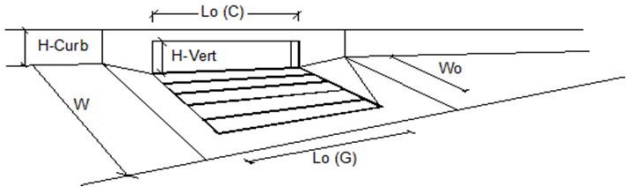
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: King Soopers - Erie CO

Inlet ID: INLET B-4



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

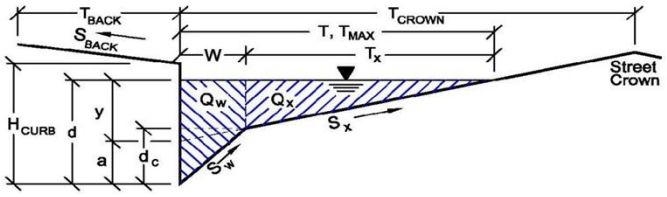
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.91**	**1.74**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**84**	**%**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET B-5



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.030	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	20.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.080	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	6.0	20.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	SUMP	SUMP	cfs

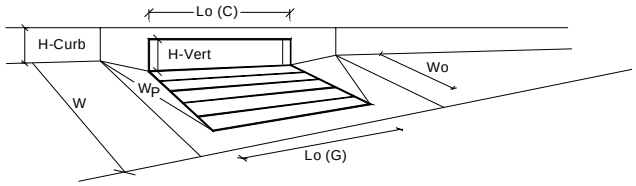
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET IN A SUMP OR SAG LOCATION

Project = King Soopers - Erie CO

Inlet ID = INLET B-5



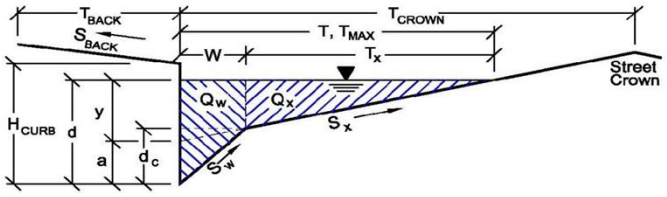
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Combination		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	5.8	12.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**6.0**	**32.9**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	4.4	10.1	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: King Soopers - Erie CO

Inlet ID: INLET C-5



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	2.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.250	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	32.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	11.0	32.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	SUMP	SUMP	cfs

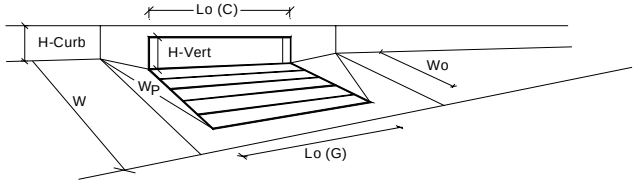
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

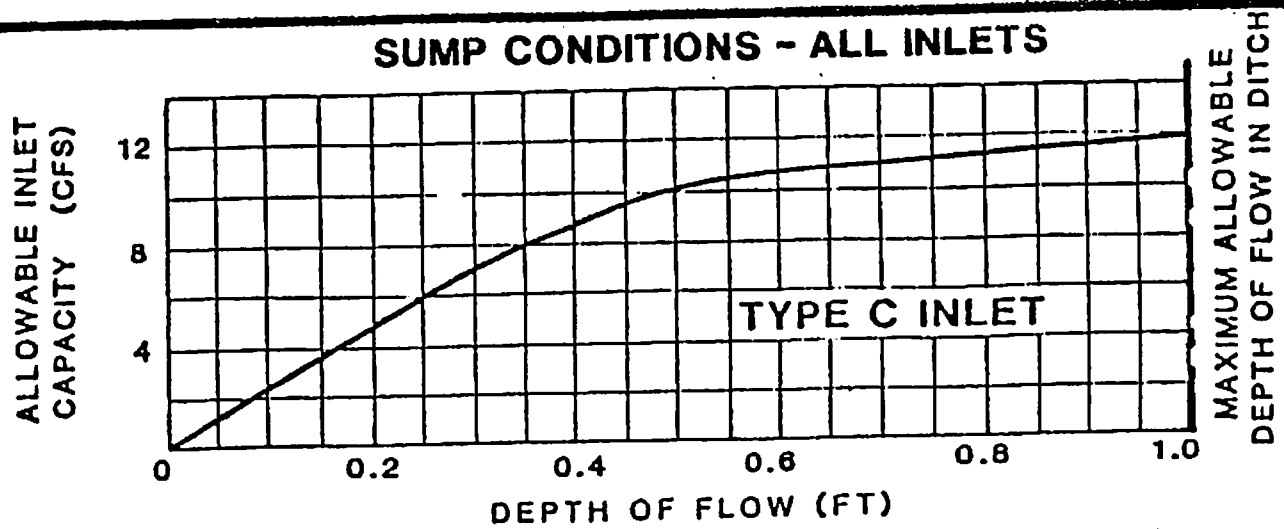
INLET IN A SUMP OR SAG LOCATION

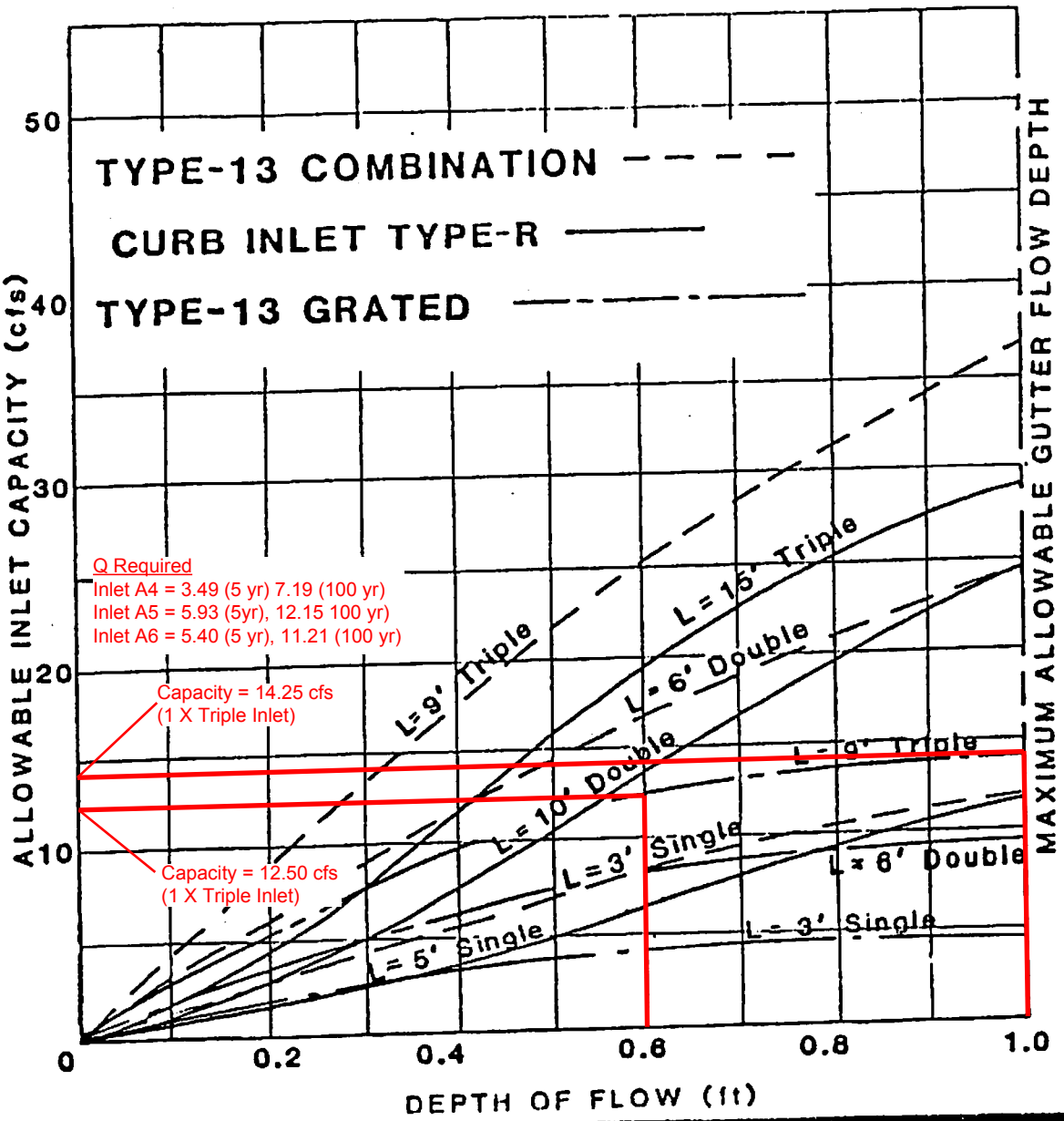
Project = King Soopers - Erie CO

Inlet ID = INLET C-5



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Combination		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.1	9.1	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**1.3**	**7.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	1.1	3.3	cfs

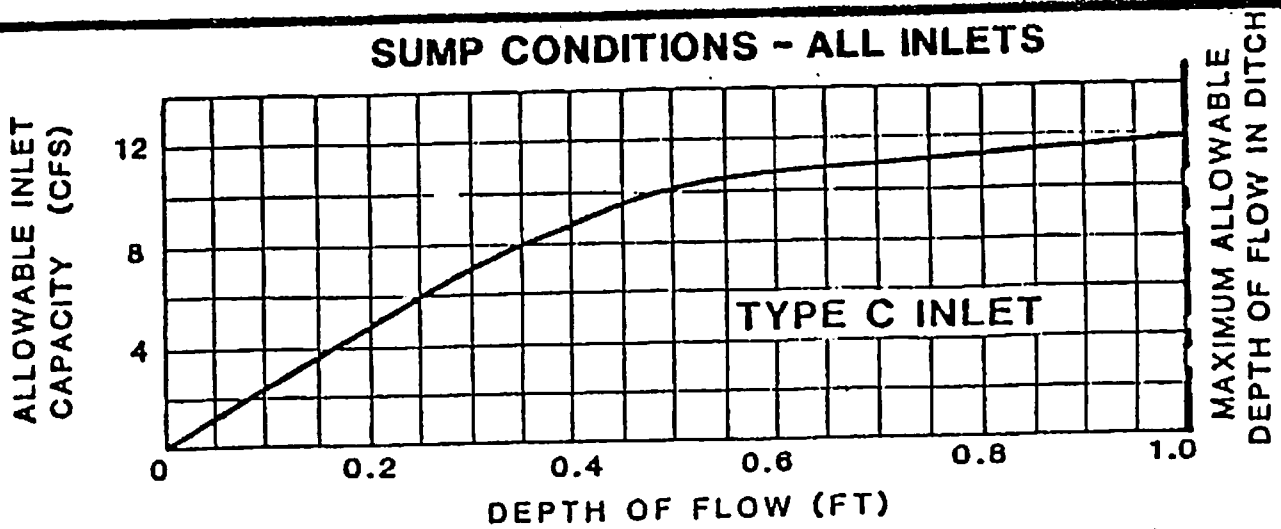


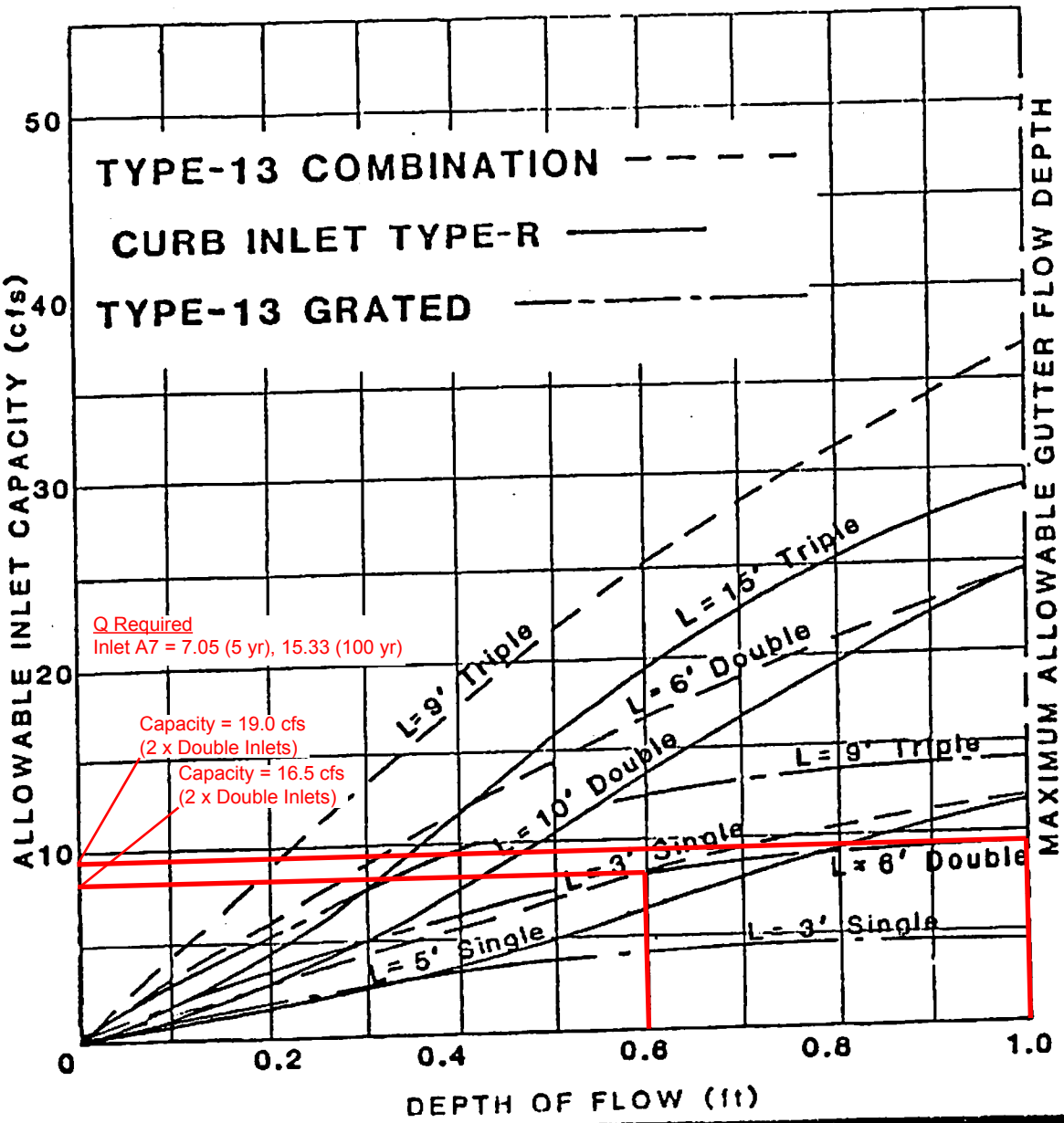


CCSDDTC
MARCH 1987

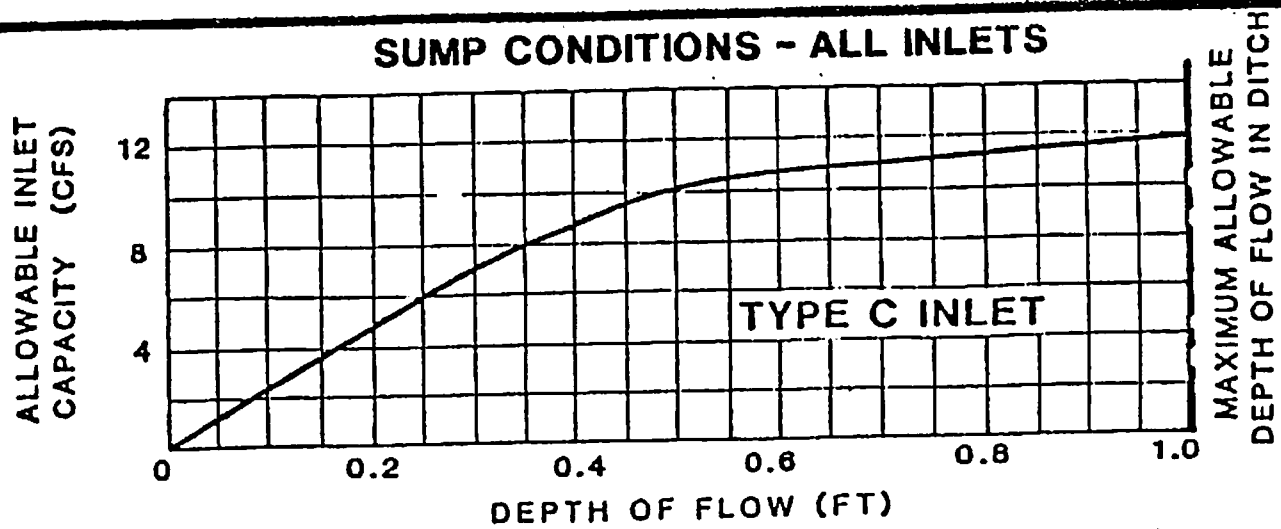
ALLOWABLE INLET CAPACITY

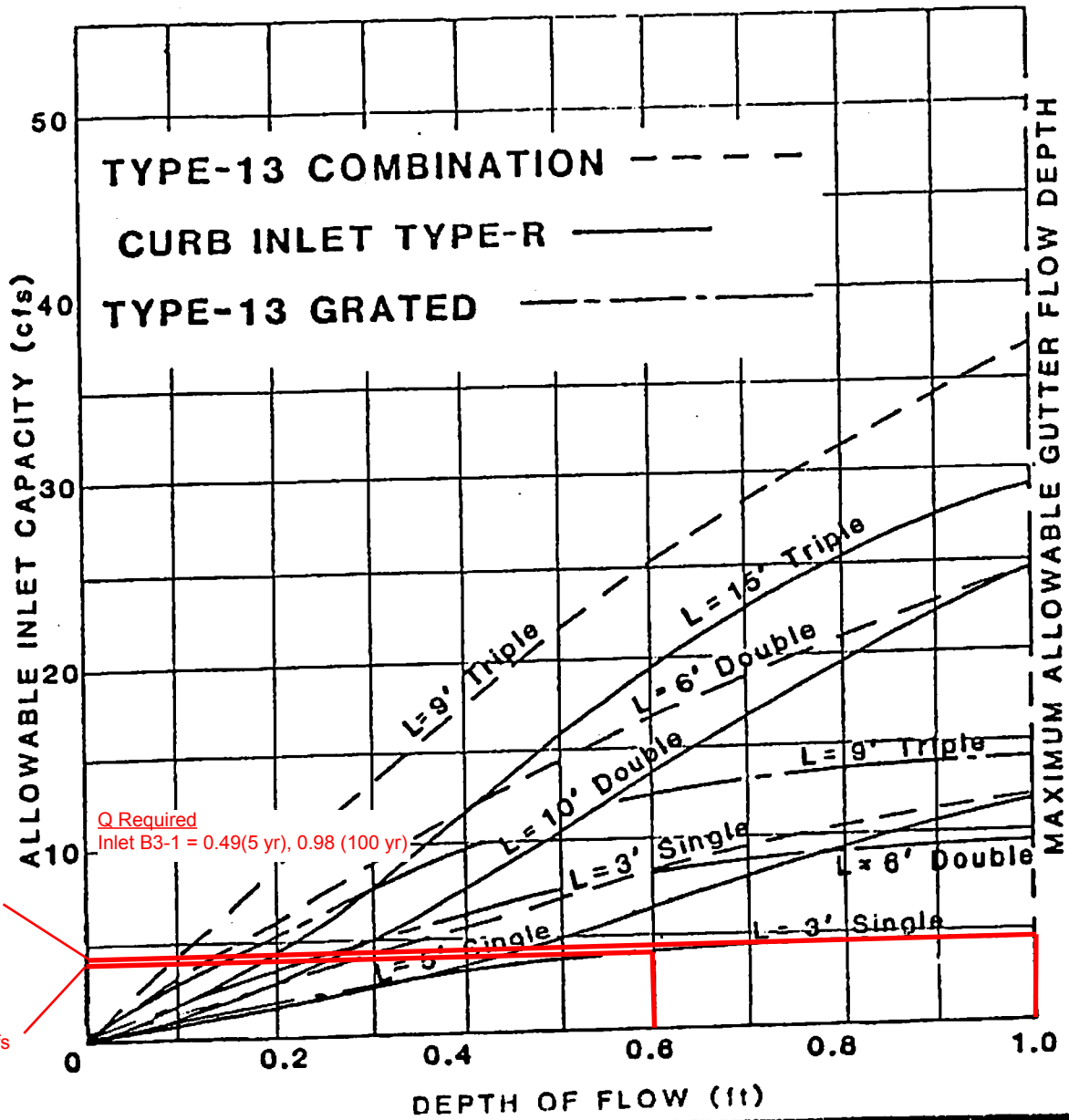
SUMP CONDITIONS - ALL INLETS





SUMP CONDITIONS - ALL INLETS



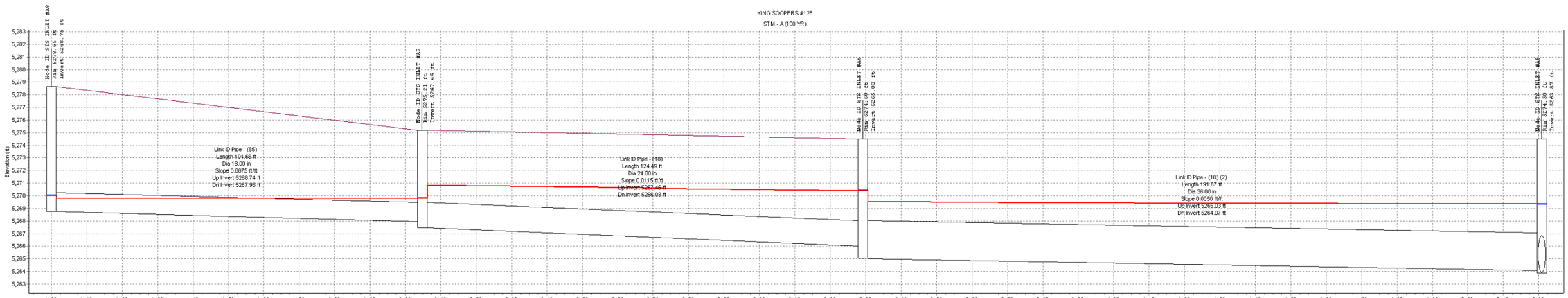


CCSDDTC
MARCH 1987

ALLOWABLE INLET CAPACITY

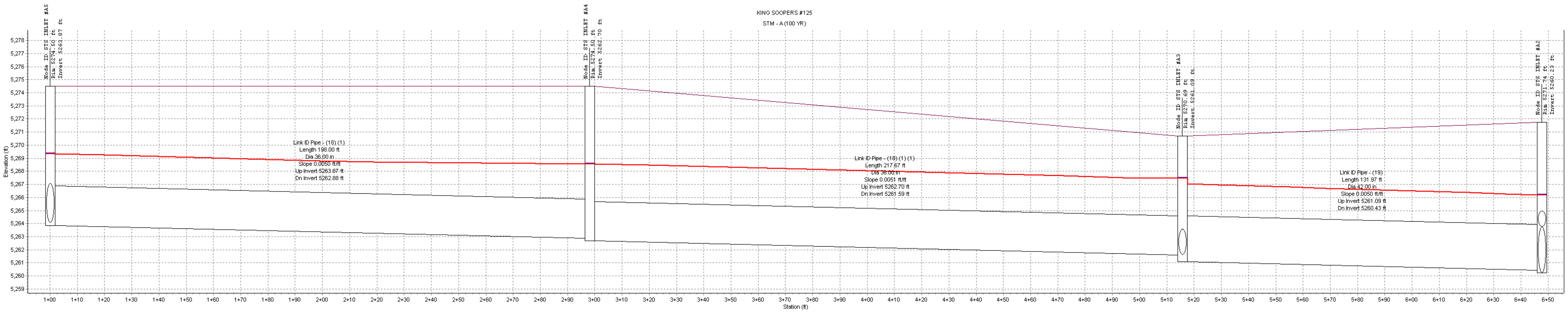
Appendix F

Storm Sewer Profiles (Hydraulic Grade Lines)



Node ID:	STS INLET #A8	STS INLET #A7	STS INLET #A6	STS INLET #A5
Rim (ft)	5278.65	5275.21	5274.50	5274.50
Invert (ft)	5268.75	5267.46	5265.03	5263.87
Min Pipe Cover (ft)	8.40	5.75	6.47	7.43
Max HGL (ft)	5270.00	5271.43	5272.56	5272.25

Link ID:	Pipe - (85)	Pipe - (18)	Pipe - (18) (2)
Length (ft)	104.66	124.49	191.67
Dia (in)	18.00	24.00	36.00
Slope (ft/ft)	0.0075	0.0115	0.0050
Up Invert (ft)	5268.74	5267.46	5265.03
Dn Invert (ft)	5267.96	5266.03	5264.07
Max Q (cfs)	3.76	18.69	29.55
Max Vel (ft/s)	3.81	7.83	5.16
Max Depth (ft)	1.37	2.00	3.00

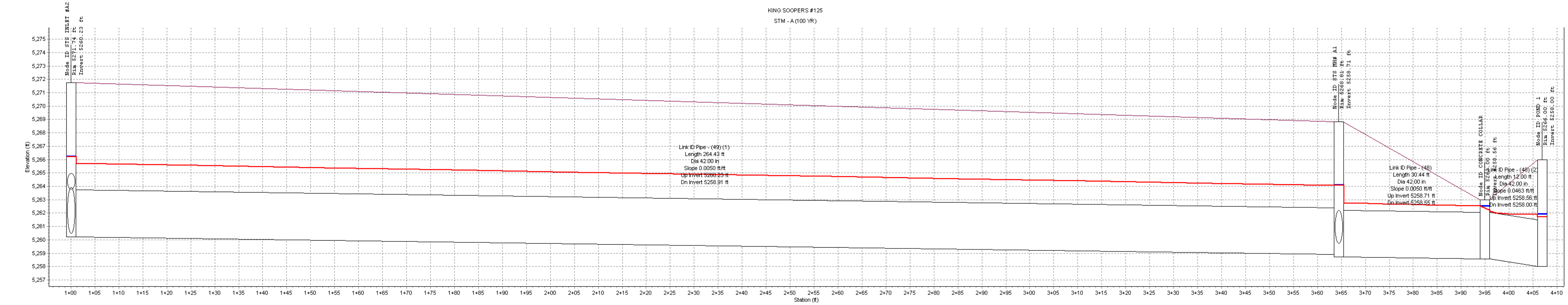


Node ID:	STS INLET #A5	STS INLET #A4	STS INLET #A3	STS INLET #A2
Rim (ft)	5274.50	5274.50	5270.69	5271.74
Invert (ft)	5263.87	5262.70	5261.09	5260.23
Min Pipe Cover (ft)	7.43	8.62	6.10	6.77
Max HGL (ft)	5272.25	5270.00	5267.87	5266.90

Link ID:	Pipe - (18) (1)	Pipe - (18) (1) (1)	Pipe - (19)
Length (ft)	198.00	217.67	131.97
Dia (in)	36.00	36.00	42.00
Slope (ft/ft)	0.0050	0.0051	0.0050
Up Invert (ft)	5263.87	5262.70	5261.09
Dn Invert (ft)	5262.88	5261.59	5260.43
Max Q (cfs)	36.49	36.58	65.52
Max Vel (ft/s)	5.65	5.29	6.81
Max Depth (ft)	3.00	3.00	3.50

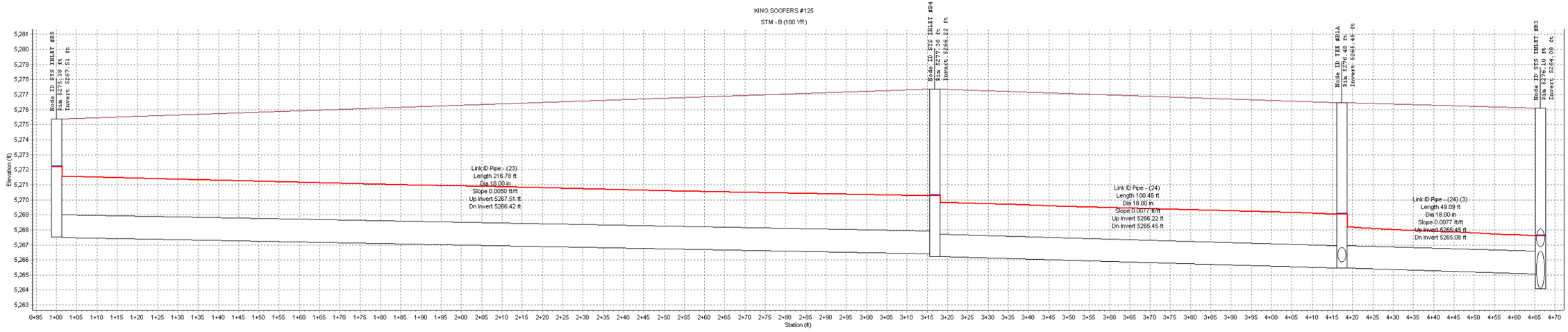
KING SOOPERS #125

STM - A (100 YR)



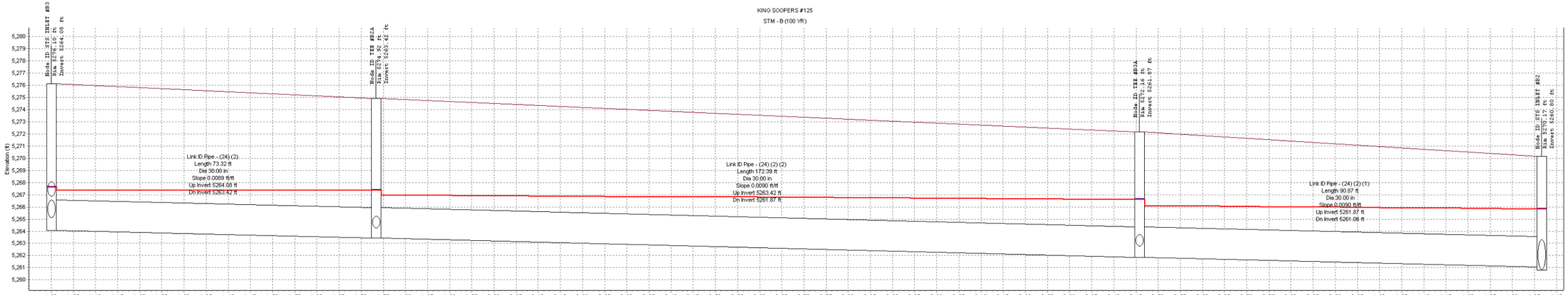
Node ID:	STS INLET #A2	STS MH# A1	CONCRETE COLLAR	POND 1
Rim (ft):	5271.74	5268.81	5263.00	5266.00
Invert (ft):	5260.23	5258.71	5258.56	5258.00
Min Pipe Cover (ft):	6.77	6.40	0.95	
Max HGL (ft):	5266.90	5264.10	5262.55	5261.91

Link ID:	Pipe - (49) (1)	Pipe - (48)	Pipe - (48) (2)
Length (ft):	264.43	30.44	12.00
Dia (in):	42.00	42.00	42.00
Slope (ft/ft):	0.0050	0.0050	0.0463
Up Invert (ft):	5260.23	5258.71	5258.56
Dn Invert (ft):	5258.91	5258.55	5258.00
Max Q (cfs):	67.22	99.56	99.69
Max Vel (ft/s):	6.99	10.35	13.08
Max Depth (ft):	3.50	3.50	3.48

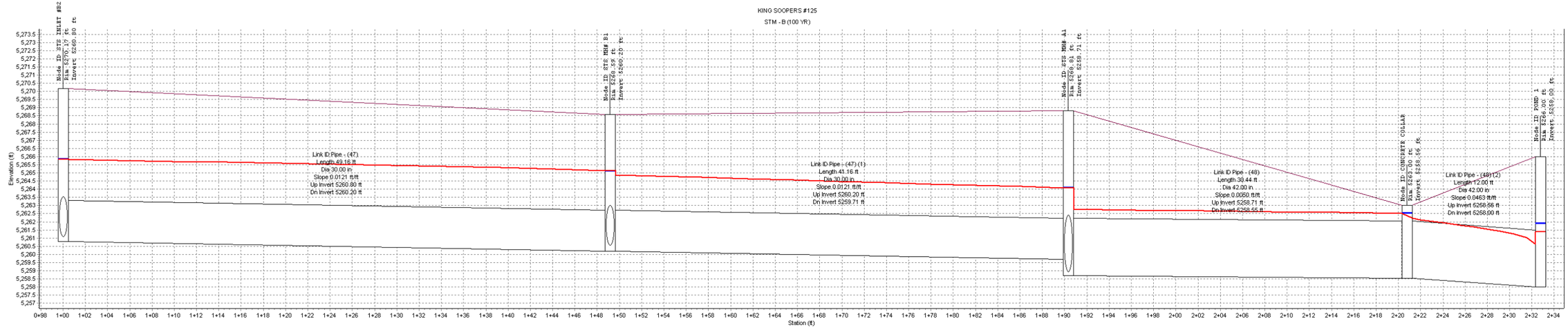


Node ID:	STS INLET #B5	STS INLET #B4	TEE #B1A	STS INLET #B3
Rim (ft)	5275.38	5277.36	5276.48	5276.10
Invert (ft)	5267.51	5266.22	5265.45	5264.08
Min Pipe Cover (ft)	6.37	9.44	9.53	8.02
Max HGL (ft)	5273.92	5271.10	5269.07	5267.61

Link ID:	Pipe - (23)	Pipe - (24)	Pipe - (24) (3)
Length (ft)	216.78	100.46	49.09
Dia (in)	18.00	18.00	18.00
Slope (ft/ft)	0.0050	0.0077	0.0077
Up Invert (ft)	5267.51	5266.22	5265.45
Dn Invert (ft)	5266.42	5265.45	5265.08
Max Q (cfs)	10.07	10.90	14.47
Max Vel (ft/s)	5.70	6.17	8.29
Max Depth (ft)	1.50	1.50	1.50

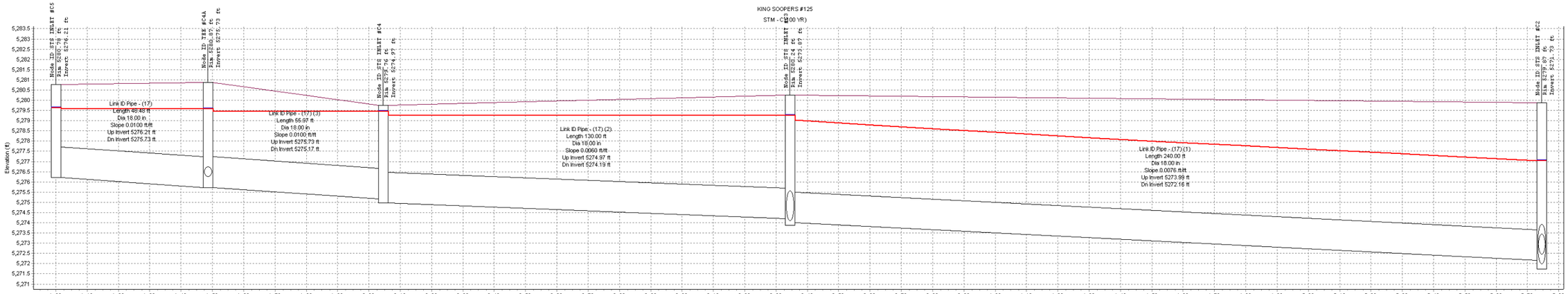


Node ID:	STS INLET #B3	TEE #B2A	TEE #B3A	STS INLET #B2	
Rim (ft)	5276.10	5274.92	5272.16	5270.17	
Invert (ft)	5264.08	5263.42	5261.87	5260.80	
Min Pipe Cover (ft)	8.02	9.00	7.79	6.81	
Max HGL (ft)	5267.61	5267.38	5268.71	5265.83	
Link ID:	Pipe - (24) (2)	Pipe - (24) (2) (2)	Pipe - (24) (2) (1)		
Length (ft)	73.32	172.39	90.87		
Dia (in)	30.00	30.00	30.00		
Slope (ft/ft)	0.0089	0.0090	0.0090		
Up Invert (ft)	5264.08	5263.42	5261.87		
Dn Invert (ft)	5263.42	5261.87	5261.06		
Max Q (cfs)	17.18	22.80	25.88		
Max Vel (ft/s)	5.62	5.62	5.67		
Max Depth (ft)	2.50	2.50	2.50		



Node ID:	STS INLET #B2	STS MH# B1	STS MH# A1	CONCRETE COLLAR	POND 1
Rim (ft):	5270.17	5268.59	5268.81	5263.00	5266.00
Invert (ft):	5260.80	5260.20	5258.71	5258.56	5258.00
Min Pipe Cover (ft):	6.61	5.58	6.40	0.95	
Max HGL (ft):	5265.83	5265.13	5264.10	5262.55	5261.91

Link ID:	Pipe - (47)	Pipe - (47) (1)	Pipe - (48)	Pipe - (48) (2)
Length (ft):	49.16	41.16	30.44	12.00
Dia (in):	30.00	30.00	42.00	42.00
Slope (ft/ft):	0.0121	0.0121	0.0050	0.0463
Up Invert (ft):	5260.80	5260.20	5258.71	5258.56
Dn Invert (ft):	5260.20	5259.71	5258.55	5258.00
Max Q (cfs):	28.02	33.24	99.56	99.69
Max Vel (ft/s):	5.71	6.77	10.35	13.08
Max Depth (ft):	2.50	2.50	3.50	3.48

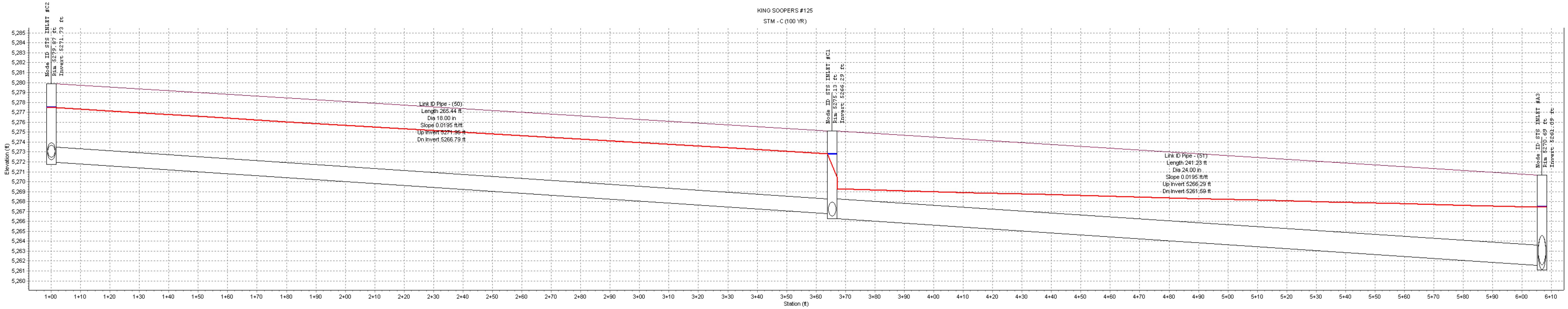


Node ID:	STS INLET #C5	TEE #C4A	STS INLET #C4	STS INLET #C3	STS INLET #C2
Rim (ft):	5280.78	5280.87	5279.76	5280.24	5279.87
Invert (ft):	5276.21	5275.73	5274.97	5273.87	5271.73
Min Pipe Cover (ft):	3.06	3.64	3.09	4.55	5.94
Max HGL (ft):	5279.65	5279.59	5279.48	5279.27	5278.55

Link ID:	Pipe - (17)	Pipe - (17)(3)	Pipe - (17)(2)	Pipe - (17)(1)
Length (ft):	48.48	55.97	130.00	240.00
Dia (in):	18.00	18.00	18.00	18.00
Slope (ft/ft):	0.0100	0.0100	0.0060	0.0076
Up Invert (ft):	5276.21	5275.73	5274.97	5273.99
Dn Invert (ft):	5275.73	5275.17	5274.19	5272.16
Max Q (cfs):	3.48	4.81	5.42	10.84
Max Vel (ft/s):	3.60	4.97	3.31	6.15
Max Depth (ft):	1.50	1.50	1.50	1.50

KING SOOPERS #125

STM - C (100 YR)

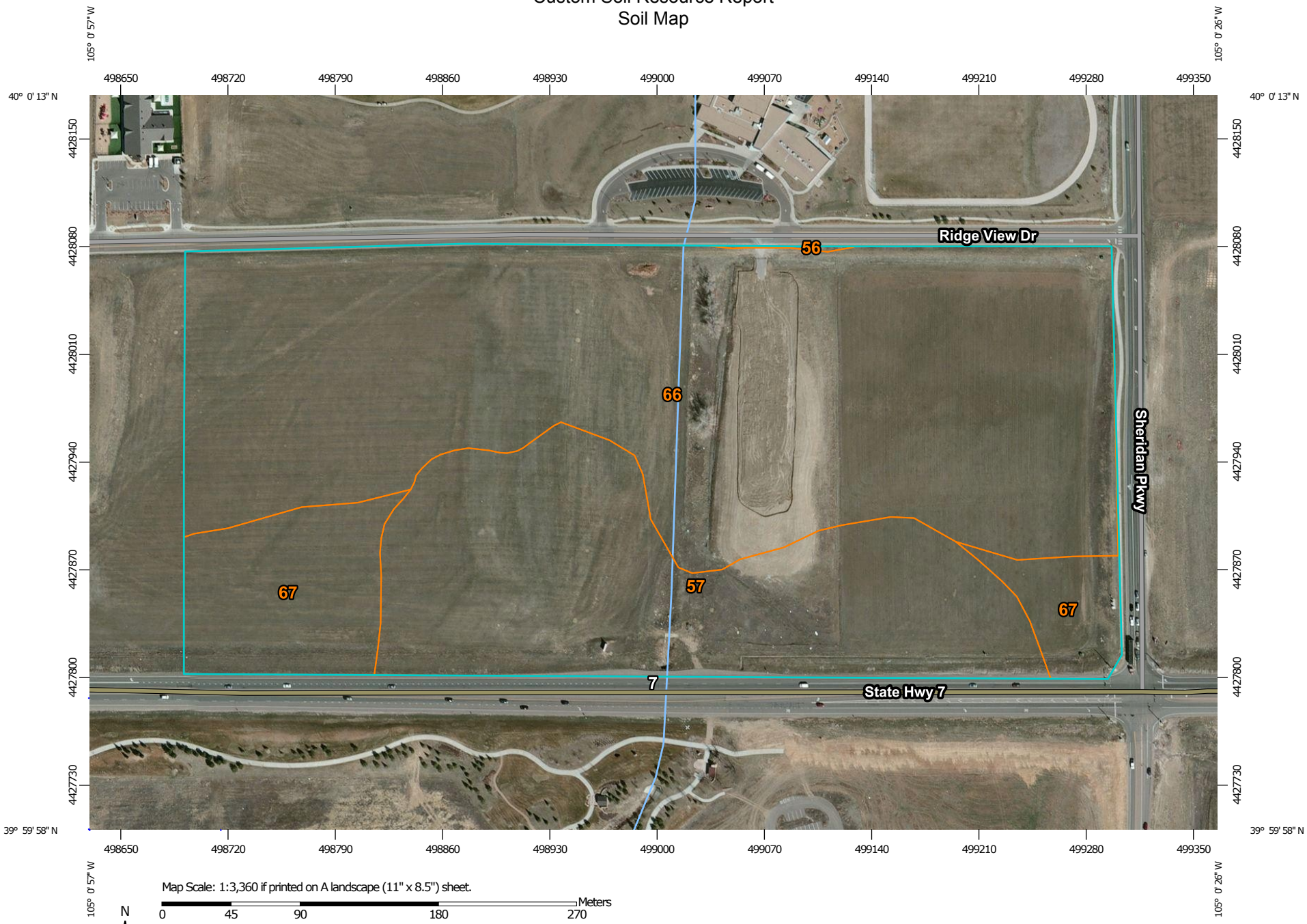


Node ID:	STS INLET #C2	STS INLET #C1	STS INLET #A3
Rim (ft)	5279.87	5275.13	5270.69
Invert (ft)	5271.73	5266.29	5261.09
Min Pipe Cover (ft)	5.94	6.85	6.10
Max HGL (ft)	5278.88	5272.99	5267.99

Link ID:	Pipe - (50)	Pipe - (51)
Length (ft)	265.44	241.23
Dia (in)	18.00	24.00
Slope (ft/ft)	0.0195	0.0195
Up Invert (ft)	5271.96	5266.29
Dn Invert (ft)	5266.79	5261.59
Max Q (cfs)	16.62	22.82
Max Vel (ft/s)	9.46	7.26
Max Depth (ft)	1.50	2.00

Appendix G
Soils Information

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,360 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 12, Jan 3, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 22, 2011—Apr 13, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Weld County, Colorado, Southern Part (CO618)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
56	Renohill clay loam, 0 to 3 percent slopes	0.0	0.1%
57	Renohill clay loam, 3 to 9 percent slopes	11.6	27.4%
66	Ulm clay loam, 0 to 3 percent slopes	26.0	61.7%
67	Ulm clay loam, 3 to 5 percent slopes	4.6	10.9%
Totals for Area of Interest		**42.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic

classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Weld County, Colorado, Southern Part

56—Renohill clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3635
Elevation: 4,850 to 5,200 feet
Mean annual precipitation: 11 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Renohill and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Renohill

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 32 inches: clay loam
H3 - 32 to 36 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey plains (R067BY042CO)

Minor Components

Ulm

Percent of map unit: 10 percent

Shingle

Percent of map unit: 5 percent

57—Renohill clay loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 3636
Elevation: 4,850 to 5,200 feet
Mean annual precipitation: 11 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Renohill and similar soils: 85 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Renohill

Setting

Landform: Hills, ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 32 inches: clay loam
H3 - 32 to 36 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey plains (R067BY042CO)

Minor Components

Shingle
Percent of map unit: 8 percent

Ulm
Percent of map unit: 5 percent

66—Ulm clay loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 363j
Elevation: 5,070 to 5,200 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 105 to 120 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Ulm and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ulm

Setting
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or eolian deposits derived from shale

Typical profile
H1 - 0 to 5 inches: clay loam
H2 - 5 to 19 inches: clay
H3 - 19 to 60 inches: clay loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey plains (R067BY042CO)

Minor Components

Renohill

Percent of map unit: 10 percent

Heldt

Percent of map unit: 5 percent

67—Ulm clay loam, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 363k
Elevation: 5,070 to 5,200 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 105 to 120 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ulm and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ulm

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or eolian deposits derived from shale

Typical profile

H1 - 0 to 5 inches: clay loam
H2 - 5 to 17 inches: clay
H3 - 17 to 60 inches: clay loam

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey plains (R067BY042CO)

Minor Components

Renohill

Percent of map unit: 11 percent

Heldt

Percent of map unit: 4 percent

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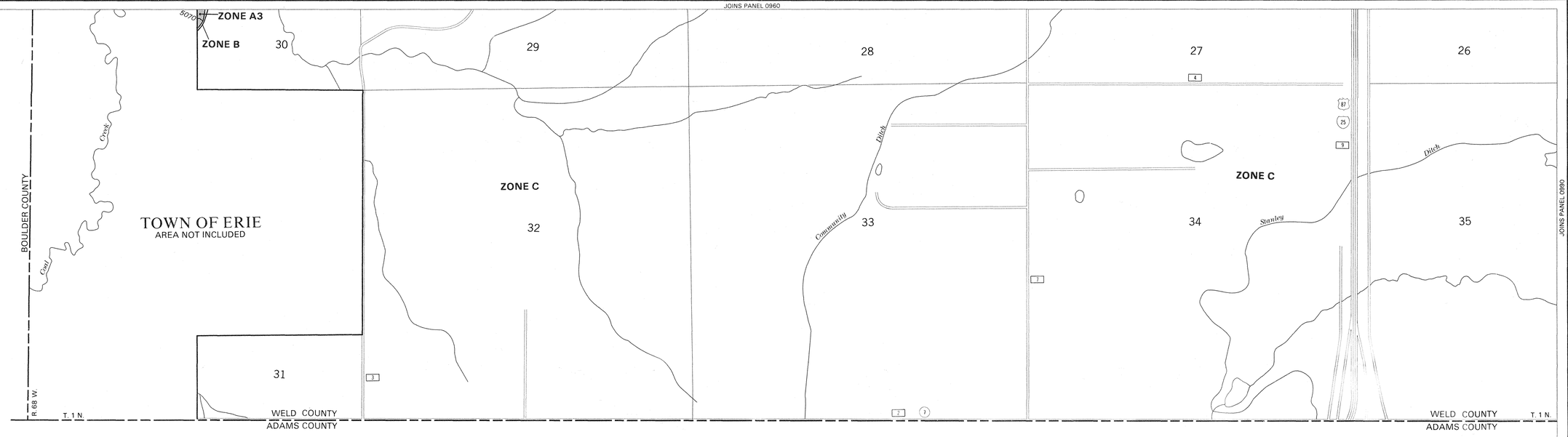
Appendix H

FEMA FIRM Map



KEY TO MAP

- 500-Year Flood Boundary
- 100-Year Flood Boundary
- Zone Designations: ZONE B; ZONE A1 / ZONE A5
- 100-Year Flood Boundary
- 500-Year Flood Boundary: ZONE B
- Base Flood Elevation Line With Elevation In Feet**: 513
- Base Flood Elevation in Feet Where Uniform Within Zone**: (EL 987)
- Elevation Reference Mark: RM7×
- Zone D Boundary
- River Mile: •M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in the Special Flood Hazard Areas (zones A and V) may be protected by flood control structures.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

For adjoining map panels, see separately printed Index to Map Panels.

INITIAL IDENTIFICATION:
MARCH 21, 1978

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:
MARCH 18, 1980

FLOOD INSURANCE RATE MAP REVISIONS:
SEPTEMBER 28, 1982 to change corporate limits, to add new Special Flood Hazard Areas, to reduce Special Flood Hazard Areas, to add Zone Designations, to add Base Flood Elevations, to add Street Names, and to add Streets.

Map revised September 28, 1990 to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, and to add roads and road names.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE IN FEET
1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

WELD COUNTY, COLORADO
(UNINCORPORATED AREAS)

PANEL 970 OF 1075
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
080266 0970 D

MAP REVISED:
SEPTEMBER 28, 1990

Federal Emergency Management Agency

Appendix I

Historic and Proposed Drainage Maps

NOTE: BASINS WITHIN SHADED AREA ARE ANALYZED BY SEPARATE DRAINAGE REPORT. SEE HURST AND ASSOCIATES DRAINAGE REPORT DATED JUNE 3rd, 2008

EXISTING IRRIGATION ACCESS MANHOLE

A1E 1.49 (0.70 | 0.80)

A1D 1.51 (0.70 | 0.79)

RH-1 2.82 (0.0 | 0.0)

RIDGEVIEW DRIVE

EXISTING CURB INLET

EXISTING STORM MANHOLE

501 FARMERS RESERVOIR IRRIGATION COMPANY EASEMENT (REC. No. 2893921)

EXISTING IRRIGATION ACCESS MANHOLE

A1B 12.40 (0.84 | 0.87)

H-1 20.59 (0.15 | 0.50)

TO EXISTING STORM SYSTEM

48" RCP

A1A 19.97 (0.84 | 0.87)

EXISTING IRRIGATION ACCESS MANHOLE

EXISTING IRRIGATION CHANNEL

SHERIDAN PARKWAY

TOWN OF ERIE AND WELD COUNTY LIMITS
CITY AND COUNTY OF BROOMFIELD LIMITS

ABANDONED, UNUSED CULVERTS

ABANDONED, UNUSED CULVERTS

DRAINAGE LEGEND

- PROPERTY BOUNDARY LINE
- INTERNAL PROPERTY BOUNDARY LINE
- 24 EXISTING CONTOUR
- 24 PROPOSED CONTOUR
- STS EXISTING STORM SEWER
- STS PROPOSED STORM SEWER
- 1 DESIGN POINT
- MAJOR BASIN BOUNDARY LINE
- FLOW ARROW

A-1 / 0.00 / (0.00 | 0.00)
- BASIN DESIGNATION
- BASIN AREA IN ACRES
- 100 YEAR RUNOFF COEFFICIENT
- 10 YEAR RUNOFF COEFFICIENT

N

0 40 80

SCALE: 1"=80'

SUMMARY RUNOFF TABLE

BASIN DESIGN	AREA (ACRES)	DESIGN POINT	RUNOFF COEFFICIENT		RUNOFF CFS	
			5YEAR	100YEAR	5YEAR	100YEAR
H-1	20.59	1	0.15	0.50	7.72	49.22
RH-1	2.82	2	0.00	0.00	0.0	0.0
			10YEAR	100YEAR	10YEAR	100YEAR
INFORMATION BELOW FROM HURST AND ASSOCIATES DRAINAGE REPORT DATED JUNE 3RD, 2008						
A1A	19.97	NOT SHOWN, SEE HURST & ASSOCIATES DRAINAGE REPORT DATED JUNE 3RD, 2008	0.84	0.87	85.80	138.47
A1B	12.40		0.84	0.87	56.13	90.21
A1D	1.51		0.70	0.79	4.66	8.17
A1E	1.49		0.70	0.80	4.64	8.10

DESIGN POINT	NOTES
1	36" RCP WITH FLARED END SECTION
2	CURB INLET IN SHERIDAN PARKWAY

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/19/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	1"=80'
Designed By:	JAS
Drawn By:	JJA
Date:	MARCH 2015
Disk File:	KSS129_DP1.1-Hist Drain

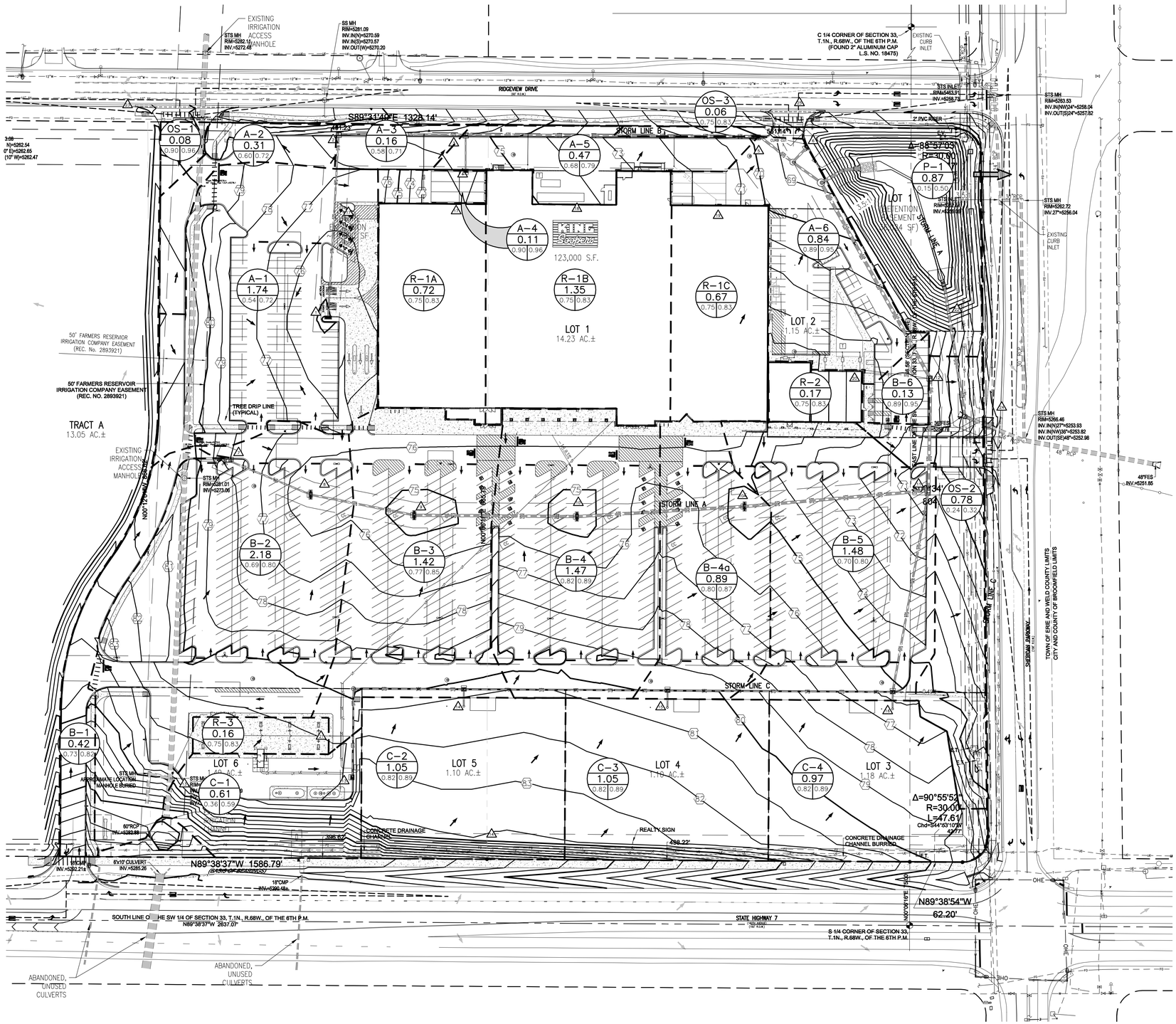
HISTORIC DRAINAGE PLAN

DP1.1

VISTA RIDGE MARKETPLACE

SITE DEVELOPMENT PLAN

LOTS 1, 2 & 6 OF VISTA RIDGE - FILING N O. 14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N., R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
SP-000052-2014



DRAINAGE LEGEND

- PROPERTY BOUNDARY LINE
- INTERNAL PROPERTY BOUNDARY LINE
- 24 EXISTING CONTOUR
- 24 PROPOSED CONTOUR
- STS EXISTING STORM SEWER
- STS PROPOSED STORM SEWER
- 1 DESIGN POINT
- MAJOR BASIN BOUNDARY LINE
- FLOW ARROW
- EMERGENCY OVERFLOW LOCATION AND DIRECTION
- A-1 0.00 0.00 0.00 — BASIN DESIGNATION / BASIN AREA IN ACRES / 100 YEAR RUNOFF COEFFICIENT / 5 YEAR RUNOFF COEFFICIENT

SUMMARY RUNOFF TABLE

BASIN DESIGN	AREA (ACRES)	DESIGN POINT	RUNOFF COEFFICIENT		SURFACE FLOW TO DESIGN POINT (CFS)		CUMULATIVE FLOW AT DESIGN POINT (CFS)	
			5YEAR	100YEAR	5YEAR	100YEAR	5YEAR	100YEAR
A–1	1.74	1	0.59	0.72	4.36	10.01	4.36	10.01
A–2	0.31	2	0.60	0.72	0.91	2.07	4.41	10.90
A–3	0.16	3	0.58	0.71	0.46	1.05	6.61	15.57
A–4	0.11	4	0.90	0.96	0.49	0.98	0.49	0.98
A–5	0.47	5	0.68	0.79	1.57	3.45	14.26	27.96
A–6	0.84	6	0.89	0.95	3.66	7.40	3.66	7.40
B–1	0.42	7	0.73	0.82	1.50	3.19	1.50	3.19
B–2	2.18	8	0.69	0.80	7.05	15.33	8.84	19.30
B–3	1.42	9	0.77	0.85	5.40	11.21	13.67	29.29
B–4	1.47	10	0.82	0.89	5.93	12.15	19.08	40.73
B–4A	0.89	10A	0.80	0.87	3.49	7.19	21.72	43.39
B–5	1.48	11	0.70	0.80	5.12	11.04	37.67	66.97
B–6	0.13	12	0.89	0.95	0.57	1.14	37.43	67.97
C–1	0.61	13	0.36	0.59	1.09	3.32	1.09	3.32
C–2	1.05	14	0.82	0.89	4.23	8.68	4.23	8.68
C–3	1.05	15	0.82	0.89	4.23	8.68	4.23	8.68
C–4	0.97	16	0.82	0.89	3.91	8.02	3.91	8.02
R–1A	0.72	17	0.75	0.83	2.66	5.55	2.66	5.55
R–1B	1.35	18	0.75	0.83	4.98	10.41	4.98	10.41
R–1C	0.67	19	0.75	0.83	2.47	5.16	2.47	5.16
R–2	0.17	20	0.75	0.83	0.63	1.31	0.63	1.31
R–3	0.16	21	0.75	0.83	0.59	1.23	0.59	1.23
P–1	0.87	22	0.15	0.50	0.64	4.04	0.32	0.66
TOTAL TO POND	19.26	–	0.65	0.76	–	–	51.83	99.69
OS–1	0.08	23	0.90	0.96	0.35	0.71	0.35	0.71
OS–2	0.74	24	0.24	0.32	0.90	3.90	0.90	3.90
OS–3	0.06	25	0.15	0.50	0.04	0.28	0.04	0.28

No.	REVISION	DES. BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/24/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15

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KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS

HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No:	KSS000129.01
Sheet Scale:	1"=60'
Designed By:	JAS
Drawn By:	JJA
Date:	JUNE 2015
Disk File:	KSS129_DP1.2-Prop Drain

PROPOSED DRAINAGE PLAN

DP1.2

Kumar & Associates, Inc.
Geotechnical and Materials Engineers
and Environmental Scientists

ACEC MEMBER

2390 South Lipan Street
Denver, Colorado 80223
phone: 303-742-9700
fax: 303-742-9666
email: kadenver@kumarusa.com
www.kumarusa.com

Office Locations: Denver (HQ), Colorado Springs, Fort Collins, and Frisco, Colorado

July 6, 2015

King Soopers, Inc.
65 Tejon Street
Denver, Colorado 80223

Attention: Lowell Good
Phone: 303-778-3123
Fax: 303-871-9262
Email: lowell.good@kingsoopers.com

Subject: Migratory Bird Nesting Survey, Approximately 20.25 Acres of Undeveloped Land (Proposed KS-129), Northwest Corner of State Highway 7 and Sheridan Parkway, Erie, Weld County, Colorado 80516

Project No. 15-1-344

Kumar & Associates, Inc. (K+A) appreciates the opportunity to provide this migratory bird survey of approximately 20.25 acres of undeveloped land (proposed KS-129) at the above-referenced location in Erie, Colorado.

Introduction

A pre-construction migratory bird and raptor nesting survey of the above-described subject site was performed by K+A on June 11, 2015. The survey was conducted to identify potential active raptor nesting locations. The survey area for active bird nests included vegetated areas within the construction footprint and included a "buffer" area (100 feet for non-raptors and 875 feet for raptors) around all observed active nests. This buffer allows for survey coverage of suitable nesting habitat located within the project boundary. Any active nest of a protected species detected within the project boundary or adjacent buffer will receive a protective buffer radius around the nest tree as per guidelines provided by Colorado Parks and Wildlife (CPW) *Recommended Buffer Zones and Seasonal Restrictions Around Raptor Use Sites*. The nesting bird survey was conducted prior to the commencement of construction. The anticipated date of construction shall be recommended to begin after the seasonal nesting habit of associated raptors.

Methodology

K+A conducted the nesting survey through a combination of desktop review and field reconnaissance. Prior to the commencement of the field survey, a list of bird species with potential to nest in the area was reviewed. This review assisted in the identification of the specific and preferred habitats where nesting is generally expected to occur and was categorized as primarily tree habitat. Following to the desktop review, K+A biologist, Michael Elick, conducted a field survey that consisted of observations of the subject site from a vehicle parked off of adjoining roads surrounding the subject site and accordingly spaced to allow complete visual coverage of all habitats. Because there had been an observed nest within the

project boundary, parameter observations were conducted from a vehicle to identify additional nests on the subject site. Observation points for the survey were strategically placed at locations with an open view of the horizon, including the project foot print and 875 feet buffer, where habitat for breeding raptors has been identified. Due to the current and historical presence of roads and urbanization surrounding the site, K+A assumed that this observation method would cause the least amount of disturbance to the raptors' normal daily habits.

Regulations Protecting Nesting Birds

The purpose of this report is to identify potential adverse impacts to biological resources related to the proposed action. This report was prepared in general accordance with the following environmental regulations.

- Bald and Golden Eagle Protection Act
- Endangered Species Act
- National Environmental Policy Act (NEPA)
- Migratory Bird Treaty Act

Findings and Conclusions

K+A biologist arrived at the subject site at 4:45 a.m. on Thursday, June 11, 2015. Weather conditions were partly cloudy with a temperature of 58º Fahrenheit, with sunrise occurring at 5:35 a.m. K+A biologist observed the first red-tailed hawk (*Buteo jamaicensis*) at 5:27 a.m. moving from the nest location to the hunting perch located on the southernmost cottonwood tree *(Populus fremontii)* outcropping. A second red-tailed hawk was observed on the subject site at 5:41 a.m. The pair alternated leaving the nesting site to hunt on the southern portion of the subject site and southerly adjoining property. K+A observed the pair of red-tailed hawks capture what looked to be common field mice and return the prey to the nest. This indicated to the biologist that the nest is active with juvenile red-tailed hawks. The nesting survey continued with similar observations until 9:00 a.m., when the biologist concluded the survey.

K+A concluded that the nest located on the subject site is active with nesting red-tailed hawks. In accordance to the CPW *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors*, any construction and/or habitat alteration to the subject site should only commence after the nesting schedule of the red-tailed hawk is completed. According to CPW, courtship for this species typically occurs in the month of March, with incubation occurring from late March to late June. Dependent nestlings will last from late April to late July. K+A recommends that any construction and/or habitat alteration begin in the calendar month of August or later, allowing the current red-tailed hawks and nestlings adequate time to abandon the nesting site.

Sincerely,

KUMAR & ASSOCIATES, INC.

By _____

Michael Elick
Environmental Staff Biologist

Approximate Site Boundary

Source: Google Earth (2015 Google)

Imagery Date: October 6, 2014

The base aerial photograph depicts conditions at the time the image was recorded; which may differ from conditions at the time of the site reconnaissance.

NORTH

Scale: 1" ≈ 475'

King Soopers Inc - Migratory Bird Nesting Survey
Northwest Corner of State Highway 7 and Sheridan Parkway, Erie, Weld County, Colorado

Figure 1

Kumar & Associates Project No. 15-1-344

Site and Vicinity Diagram

ATTACHMENT D

architecture + design

King Soopers Store #129
Alternative Equivalent Compliance Request

Dear Planning Commission Members:

The applicant, King Soopers, would like to formally request the following alternative equivalent compliances for the proposed Vista Ridge Marketplace development. The requests are listed below:

i. There are horizontal runs of parapet that exceed 60' without a vertical or horizontal change of 3' between the entries and at the Southeast corner of the front elevation.

This is necessary between the entries because the changes in parapet height are coordinated with the windows below which required the middle portion of the wall to be over 60' long. 12" deep pilasters are shown wall height changes and an EIFS cornice is utilized to break up the wall. An additional 12" deep pilaster is also shown on the run of wall that is longer than 60' between the entries.

The portion of the front wall at the Southeast corner that is longer than 60' without a step is needed for screening. If the portion of wall at the Starbucks sign was shown as low wall then there would be multiple RTU's visible above the mezzanine area. 12" deep pilasters, EIFS cornice, wood trellises and metal awnings are used on this span of wall to break up the wall.

ii. Rooftop equipment on the elevations exceeds the height of the parapet on the south, east, and west elevations.

Sight line drawings have been provided to demonstrate adequate screening of the rooftop units. RTU screens have been provided at any RTU's that are visible from the residential properties behind the King Soopers building.

iii. There are areas between pilasters at the docks and at the mechanical courtyard that do not have three features of articulation.

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Due to typical King Soopers operations it is not advisable to have three features or articulation at these location. Additional articulation at the docks would be highly susceptible to damage from truck traffic and could become a challenge to maintain due to frequent damage. The area at the mechanical courtyard is screened by a screen wall and the docks on both sides so it is a low visibility area and additional articulation could be in conflict with equipment. Pilasters, changes in wall height, and EIFS cornice are being shown at the docks and mechanical courtyard to maintain interest at those locations where additional articulation is not feasible.

Sincerely,

CR architecture + design

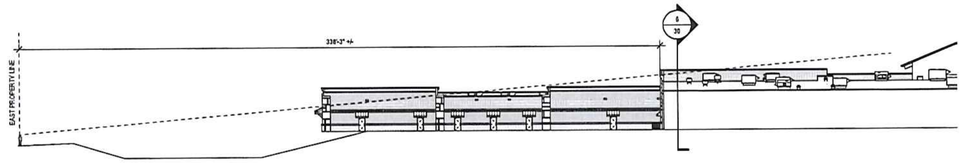
Charlie Carroll
Leader

Pc:

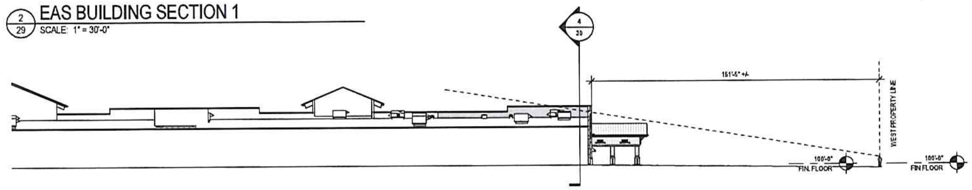
File Location: S:\5_Retail\5_15_Retail\515029_KingSoopersKS129_ErieCO_New\Zoning Documents\KS129_Alternative Equivalent Compliance Request_2015-07-07.docx

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

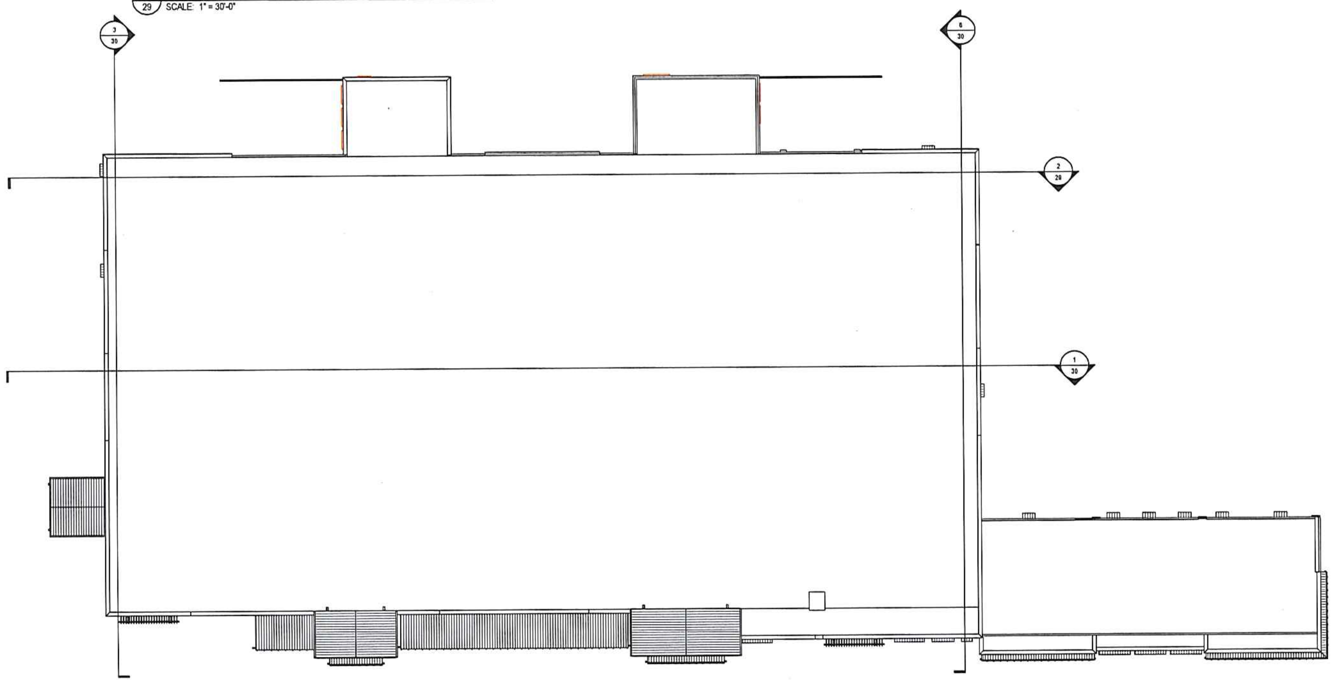
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING NO.14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N.,R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



2/29 EAS BUILDING SECTION 1
SCALE: 1" = 30'-0"



5/29 WEST BUILDING SECTION 1
SCALE: 1" = 30'-0"



1/29 KEY PLAN
SCALE: 1" = 30'-0"

No.	REVISION	DES BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/13/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	06/09/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

CR architecture + design

King Soopers

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

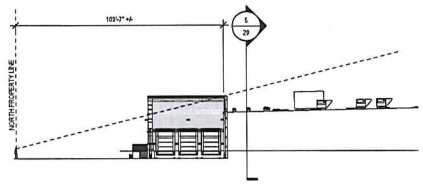
Project No:	515029
Sheet Scale:	
Designed By:	
Drawn By:	
Date:	JULY 2015
Disk File:	KSS129_A1.2-KS Elevations

SIGHT LINE STUDY

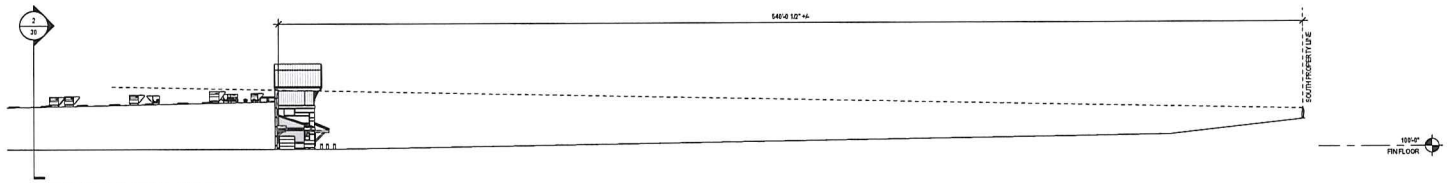
29

VISTA RIDGE MARKETPLACE
SITE DEVELOPMENT PLAN

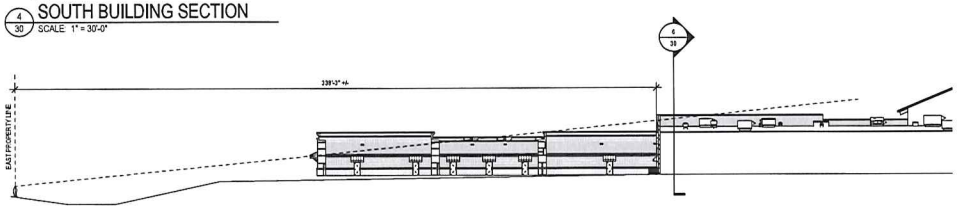
LOTS 1, 2 & 6 OF VISTA RIDGE - FILING NO.14
SITUATED IN THE S 1/2 OF SECTION 33, T.1N.,R.68W., OF THE 6TH P.M.
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
16.8699 ACRES
SP-000052-2014



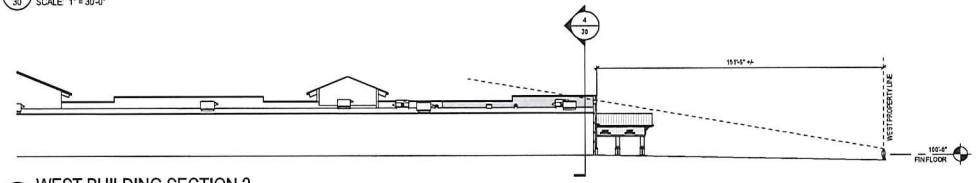
3/30 NORTH BUILDING SECTION
SCALE: 1" = 30'-0"



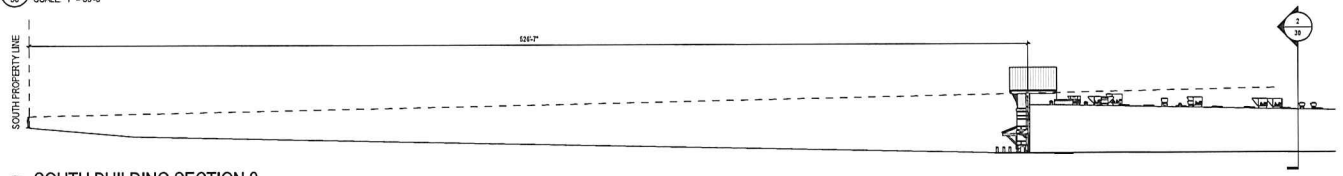
4/30 SOUTH BUILDING SECTION
SCALE: 1" = 30'-0"



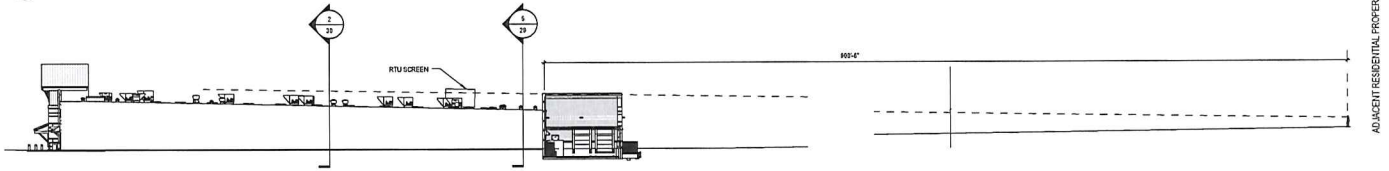
1/30 EAST BUILDING SECTION 2
SCALE: 1" = 30'-0"



2/30 WEST BUILDING SECTION 2
SCALE: 1" = 30'-0"



5/30 SOUTH BUILDING SECTION 2
SCALE: 1" = 30'-0"



6/30 NORTH BUILDING SECTION 2
SCALE: 1" = 30'-0"

No.	REVISION	DES BY	DRAWN BY	DATE
1	1ST PLANNING SUBMITTAL	JAS	JJA	12/27/14
2	2ND PLANNING SUBMITTAL	JAS	JJA	03/19/15
3	3RD PLANNING SUBMITTAL	JAS	JJA	05/29/15
4	4TH PLANNING SUBMITTAL	JAS	JJA	07/06/15

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King Soopers
65 Inverness Drive East
Phone (303) 779-5710
Fax (303) 779-1234

KING SOOPERS #129
AT VISTA RIDGE MARKETPLACE
SITE CONSTRUCTION PLANS
HIGHWAY 7 & SHERIDAN PARKWAY
ERIE, COLORADO

Project No: 515029
Sheet Scale:
Designed By:
Drawn By:
Date: JULY 2015
Disk File: KSS129_A1.2-KS Elevations

SIGHT LINE STUDY

30

ATTACHMENT E

Galloway
Planning. Architecture. Engineering.

King Soopers Store #129
Parking Modification Request

Dear Planning Commission Members:

The applicant, King Soopers, would like to formally request approval of a minor modification to the parking requirements listed below for the proposed Vista Ridge Marketplace development.

Town Code requires that 60 degree parking modules to be 64' wide comprised of 21' stall lengths and 22' drive aisles. The applicant requests that the proposed 61.2' parking modules with 18.6' stall lengths and 24' drive aisles be approved. The proposed difference from 64' to 61.2' is within 10 percent of the requirement.

Section 10.7.8 D of the Town of Erie Unified Development Code requires that the minor modification request meets four approval criteria as listed below.

1. The requested modification is generally consistent with the Town's Comprehensive Master Plan and the stated purpose of this UDC.
   This request is generally consistent with the intent and vision of the Town's Comprehensive Master Plan.

2. The requested modification meets all other applicable building and safety codes.
   This request is in compliance with all other applicable building and safety codes.

3. The requested modification does not encroach into a recorded easement.
   While there are multiple recorded easements on this property related to utilities and access, the requested modification does not detrimentally impact any of the recorded easements on site.

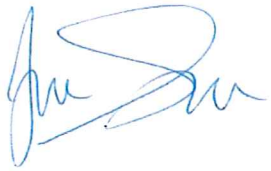
4. The requested modification will have no significant impact on the health, safety, or general welfare of surrounding property owners or the general public, or such impacts will be substantially mitigated.
   If granted the modification will not have any significant impact to health, safety, or general welfare of the surrounding property owners or the general public.

5. The requested modification is necessary to either (a) compensate for some practical difficulty or some unusual aspect of the site of the proposed development not shared by the landowners in general: or (b) accommodate an alternative or innovative design practice that achieves to the same or better degree the objective of the existing design standard to be modified. In

determining if "practical difficulty" exists, the approval criteria for Variances in Section 7.9 shall be considered.

King Soopers has presented the Town of Erie with a proposal which will provide the community with a readily accessible grocery retailer. The proposed stall dimensions are the King Soopers standard, and King Soopers has demonstrated at other locations within Colorado that the parking stall size is sufficient. Specific examples of existing sites where this is occurring without detriment and/or complaint are in: Brighton (4.7/1000*), Aurora (4.9/1000), and Englewood (4.5/1000). Many of these sites have stall dimensions which are smaller than the stalls proposed in Erie. Each of these locations serve diverse populations with similar site plan proposals. Each site has operated without any adverse traffic or access issues arising post development. If the Town's required parking stall size were to be utilized, an entire parking module would be eliminated and would reduce the parking ratio from 4.8/1000 to 4.2/1000, which is less than is needed for a development based on operational knowledge and experience from many other operating stores around the metro area. This proposal will more than adequately serve the public and safely provide parking and access through this commercial development. We respectfully request approval of this minor modification.

Sincerely,



Jesse Smith, Galloway & Company, Inc.
On Behalf Of King Soopers Inc.

*parking spaces per 1000 sf floor area

ATTACHMENT F

Galloway
Planning. Architecture. Engineering.

King Soopers Store #129
Sign Area Increase Request

Dear Planning Commission Members:

The applicant, King Soopers, would like to formally request specific increases to the number and area of signs in the proposed Vista Ridge Marketplace development. The increases are listed below:

i. Increase in the allowable sign area (10.6.12.D.1.c) for the principal wall sign of King Soopers from 100 sf to 253.3 sf.

ii. Increase in the allowable sign area (10.6.12.D.1.c) for a secondary wall sign of King Soopers from 32 sf to 99.2 sf.

iii. Increase in the allowable sign area (10.6.12.D.1.c) for the principal wall sign of The Little Clinic from 32 sf to 49 sf.

iv. Increase in the allowable sign area (10.6.12.D.1.c) for the principal wall sign of Fred Meyers Jewelers from 32 sf to 42 sf.

v. Increase in the maximum number of signs (10.6.12.E.2) for the King Soopers fueling station from 5 to 8.

vi. Increase in the total number of Development Identification Signs (10.6.12.F.4.a) from 2 to 3 and an increase in the maximum height of a Development Identification Sign (10.6.12.F.4.a) from 10' to 10'-8" to accommodate a joint Town of Erie and King Soopers Center Identification sign at the northwest corner of State Highway 7 and Sheridan Parkway and the Multi-Tenant Monument signs at the State Highway 7 and Sheridan Parkway access points.

vii. An increase in the maximum height of a Monument Sign (10.6.12.D.3.b) from 10' to 13' to accommodate a Fuel Pad Lot and King Soopers Monument sign along State Highway 7 and Ridgeview Drive.

We respectfully request approval of the increased number and size of the noted signs in conjunction with this development. It is our understanding, in discussions with Town staff that the Code for Erie does not currently address development of this size and scale. Therefore, many of the listed signs have exceeded requirements listed in the Town regulations, but are proportionate to the size and scale of overall development. The recently approved King Soopers in Brighton Colorado has similar signage, both in terms of number of signs and size of each sign. The signage is appropriate for the end

user in terms of business identification and location, and yet will simultaneously not pose any detriment with regard to lighting, compatibility with the surrounding community and intent of the local code. Thank you in advance for your consideration of approval.

Sincerely,

Jesse Smith, Galloway & Company, Inc.
On Behalf Of King Soopers Inc.

ATTACHMENT G

MEETING SIGN-IN SHEET

Project/Site:	King Soopers Marketplace/Hwy 7 & Sheridan Pkwy	**Project Number:**	KSS000129.01
Jurisdiction:	Town of Erie	**Date:**	04/22/15

Name	Title	Company / Agency	Phone	E-Mail
Tim Hedahl	HOA V.P.			tghedahl@hotmail.com
Lindsey Smith				lasmitty09@gmail.com
Tamara Wessel	Realtor	ERA	3-8880234	tstodder@live.com
Bekah Zoradrager				bekahjcz@yahoo.com
JEFF WALTERS	CONCERNED RESIDENT		9-380-6160	JWALTERS68168@GMAIL.COM
CATHY OLSON			303-499-0360	
Cynthia Smithe	Homemaker		303-604-6776	
Janet + Art Enns	Homeowner		720 320 2936	jenns512@gmail.com
Lynne + Bob Berg	Homeowner V.R.		303 604 6926	lpberg@hotmail.com
Heather Shea	Homeowner VR			heathershea@gmail.com
Sue Fiorino	Homeowner VR			
Niall Stewart	Home owner VR			Brandon has it.

Galloway
Planning. Architecture. Engineering.

MEETING SIGN-IN SHEET

Project/Site:	King Soopers Marketplace/Hwy 7 & Sheridan Pkwy	**Project Number:**	KSS000129.01
Jurisdiction:	Town of Erie	**Date:**	04/22/15

Name	Title	Company / Agency	Phone	E-Mail
Otto Schodrow			303-666-6303	
John & Shirley Amore			303-815-0302	
Judy Wacker				
Adam Fidlan				
Michael Turner			303-350-7103	mikewturner@gmail.com
Janet Cummings				
John Beswadi			(303) 666-6753	
Joan Ashbaugh				
Linda Koelbel				
Chakriya Metcalfe				
Lee Metcalfe				
John & Laura Courier				
Michael Haas				

Galloway
Planning, Architecture, Engineering

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: John & Shirley Amore

STREET ADDRESS: 2690 Forsythia Ct.

CITY: Erie STATE: CO ZIP: 80516

EMAIL: libros@comcast.net

TELEPHONE: 303-815-0302

Comments

Happy to see a grocery store coming to Erie but have concerns that landscaping will be adequate to block view of building from neighboring streets.

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: JEFF WALTERS

STREET ADDRESS: 2135 INDIAN PAINTBRUSH WAY

CITY: ERIE STATE: CO ZIP: 80516

EMAIL: JWALTERS68168@GMAIL.COM

TELEPHONE: 970-380-6160

Comments

(1) I AM CURIOUS ABOUT THE ~~AFF~~ EFFECT THAT THIS WILL HAVE ON THE TRAFFIC AROUND OUR NEIGHBORHOOD (VISTA RIDGE). HWY 7 IS ALREADY AN UNMITIGATED DISASTER DURING PEAK HOURS & SHERIDAN IS AWKWARD AT BEST TO THE NORTH. HOW MANY MORE CARS WILL WE SEE ZIPPING THROUGH OUR NEIGHBORHOOD IN ORDER TO GO SHOPPING? WHAT ARE YOUR PLANS TO ENSURE THE TRAFFIC STAYS OUTSIDE OF V.R.??

(2) THERE ARE 9 MAJOR GROCERY STORES IN A 6 MILE RADIUS OF HWY 7 & SHERIDAN. WHY DO WE NEED ANOTHER? ESPECIALLY A 3RD KING SOOPERS...

(3) WHAT EFFECT WILL THIS HAVE ON OUR PROPERTY VALUES? ESPECIALLY WITH ~~A~~ LARGE INCREASE IN TRAFFIC + POTENTIAL TO HAVE VACANT

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: Ken Watson

STREET ADDRESS: 2142 Driver Lane

CITY: Erie STATE: CO ZIP: 80516

EMAIL: watson2142@comcast.net

TELEPHONE: 303-665-1255

Comments

Welcome to the neighborhood!

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: MICHAEL TURNER

STREET ADDRESS: 2160 BAJA CIRCLE

CITY: ERIE STATE: CO ZIP: 80516

EMAIL: miketurner@gmail.com

TELEPHONE: 303-350-7102

Comments

EXCITED ABOUT THIS DEVELOPMENT!

ONLY COMMENT — WOULD BE GREAT TO GET SOME ETHNIC RESTAURANTS IN THE RETAIL SECTION. INDIAN AND/OR THAI WOULD BE GREAT!

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: Lynne & Bob Berg

STREET ADDRESS: 2208 Holly Dr

CITY: Erie STATE: CO ZIP: 80516

EMAIL: lplzerg@hotmail.com

TELEPHONE: _____

Comments

Excited about the new store - however, highly concerned about increase of traffic on Sheridan heading (N) to homes in VR. The crossing at the light is bad now; with increased traffic - from store, new subdivision to East of Sheridan & new subdivisions near Erie HS - traffic within the neighborhood will most definitely increase. Also - backup of Hwy 7 during morning & evening "rush" - to school, to work, etc. - hopeful that traffic light will be "reset" to work with "flow" appropriately.

Thanks so much for the info - GREATLY appreciated!

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: CATHY OLSON

STREET ADDRESS: 2030 CEDARWOOD PLACE

CITY: ERIE STATE: CO ZIP: 80516

EMAIL:

TELEPHONE: 303-499-0360

Comments

VERY HAPPY TO SEE A KING SOOPERS COMING TO THE NEIGHBORHOOD - MY FAVORITE GROCERY STORE & HAVE BEEN A LOYAL CUSTOMER FOR MANY YEARS!

Public Comment
Erie, CO – Proposed King Soopers Marketplace, Fuel and Retail
Neighborhood Meeting
April 22, 2015 5:30 p.m.

NAME: Janet Enns

STREET ADDRESS: 2743 Windemere Ln.

CITY: Erie STATE: CO ZIP: 80516

EMAIL: jenns512@gmail.com

TELEPHONE: 720-320-2936

Comments

Thanks! I can't wait for the new KS Marketplace.

TOWN OF ERIE
PLANNING COMMISSION MEETING
July 15, 2015

SUBJECT: **PUBLIC HEARING:**

Consideration of Resolution P15-21: A Resolution Regarding The Preliminary Plat Of Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat, Adopting Certain Findings Of Fact And Conclusions Favorable To The Preliminary Plat.

PURPOSE: Consideration of a Preliminary Plat that includes 25 single family lots.

PROJECT NO.: PP-14-00017

CODE: Erie Municipal Code, Title 10

DEPARTMENT: Community Development

PRESENTER: R. Martin Ostholthoff, Director

STAFF RECOMMENDATION:

Staff finds the Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat in compliance with the Preliminary Plat Approval Criteria and recommends the Planning Commission adopt Resolution No. P15-21 recommending approval to the Board of Trustees with the following conditions of approval:

1. The proposed utility easement to be dedicated to the Town of Erie within Tract B shall meet the Town of Erie Standards and Specifications for Design and Construction of Public Improvements.
2. Technical corrections to Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat shall be made to the Town's satisfaction.

SUMMARY AND BACKGROUND OF SUBJECT MATTER:

Applicant: Chartered Development Corporation
Ward Ritter
3160 Vista Village Drive, Suite 104
Erie, Colorado, 80516

Owner: Montex (Vista Ridge, LLC)
Andy Chaikovsky
4915 Gaylord Street
Englewood, Colorado 80113

Location:
Vista Ridge Filing No. 2, 1st Amendment is located on the north side of Ridge View Drive between Mountain View Boulevard and Sheridan Boulevard and is highlighted in red on the below map.

Existing Conditions:

Zoning: Vista Ridge PD – Planned Development
Project Size: 4.036 Acres
Existing Use: Vacant Land

Adjacent Land-Use/Zoning:

	ZONING	LAND USE
NORTH	PD – Planned Development (Vista Ridge)	Golf course
EAST	PD – Planned Development (Vista Ridge)	Private school
SOUTH	PD – Planned Development (Vista Ridge)	Vacant Land (future residential and commercial)
WEST	PD – Planned Development (Vista Ridge)	Private school

Compliance with Town of Erie Comprehensive Plan:
The application is in Compliance with the Land Use designations on the Comprehensive Plan, Land Use Plan Map. This particular property allows High Density Residential, Medium Density Residential and Regional Commercial land uses.

Compliance with the Vista Ridge PD Development Plan:
The residential uses and density proposed are in compliance with the Vista Ridge PD Development Plan for Planning Area 7-3.

SITE SPECIFIC DEVELOPMENT INFORMATION:

The applicant proposal includes 25 single family residential lots in Vista Ridge Filing No. 2, 1st Amendment. The proposed lots are less than 5,000 square feet in size which requires separate Site Plan approval. A Site Plan application is being processed concurrent with this preliminary plat.

Development Data:

- Preliminary Plat Size: 4.036 acres
- Number of Residential Lots Proposed: 25 lots
- Number of Tracts: 3 tracts
- Gross Residential Density Proposed: 6.2 dwelling units per acre

Roadways:

The roads and private drives serving the propose subdivision are in compliance with the standards permitted by the Vista Ridge Planned Development - Development Plan. All roads and private drives proposed will be owned and maintained by a sub homeowners association that will be formed as part of final plat approvals.

An emergency access easement is provided as the secondary access point into the proposed subdivision via Ridge View Drive.

Utilities:

The property will be served by the Town of Erie for water and sanitary sewer service.

An existing detention pond located west of the subject property was sized to accommodate the storm water from the proposed development of this site.

Utility service providers for the property are United Power for electric, Source Gas for natural gas, Century Link Communications for telephone services and Comcast for cable television. Utility easements for these providers will be established at the time of final plat.

Natural Areas Inventory:

The Town of Erie Natural Areas Inventory does not identify any natural areas within and immediately adjacent to the subject property.

Threatened and Endangered Species and Significant Habitats

A site specific General Ecological Resources Survey, completed by Western Environmental and Ecology, Inc., was submitted to assess threatened and endangered species and significant habitats.

The report concludes that no threatened or endangered species or obvious habitats were seen on the subject property.

Landscaping, Parks, Trails and Open Space:

Landscape buffers are provided along Ridge View Drive. Sidewalks will be added in addition to landscaping within the right of way.

Park and open space dedications have been previously satisfied for Vista Ridge.

Schools:
The proposed subdivision is located in the St. Vrain Valley School District.

Police Services:

The Erie Police Department will provide service to the property.

Fire Protection:

The Mountain View Fire Protection District will provide fire and emergency medical services.

Oil/Gas Facilities:

No above ground oil and gas facilities are located within 350-feet of the propose subdivision.

Soils and Geology:

The Geotechnical Investigation report provided by the applicant addresses subsidence risks and soil conditions for the property. The report states that the site is not undermined, and that expansive soils exist. The expansive soil issue will be mitigated in that prior to the issuance of a building permit; site specific soil tests are required for each lot that will be the basis for foundations design that mitigates expansive soil issues.

APPROVAL CRITERIA - STAFF ANALYSIS:

The proposed Preliminary Plat for the single family detached dwelling units within Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat was reviewed for conformance with Municipal Code, Title 10, UDC Section 10.7.7 C.10. Approval Criteria. Staff finds the Preliminary Plat in compliance with the Preliminary Plat Approval Criteria as listed below.

a. The subdivision is generally consistent with the Town's Comprehensive Master Plan.

   Staff: The proposed subdivision is generally consistent with the 2005 Comprehensive Plan Land Use Plan Map land use designation of MDR-Medium Density Residential.

b. The subdivision is generally consistent with and implements the intent of the specific zoning district in which it is located.

   Staff: The proposed subdivision is in compliance with the Vista Ridge Planned Development zoning.

c. The general layout of lots, streets, driveways, utilities, drainage facilities, and other services within the proposed subdivision is designed to meet the Town's standards related to health and safety and in a way that minimizes the amount of land disturbance, maximizes the amount of open space in the development, preserves existing trees/vegetation and riparian areas, protects critical wildlife habitat, and otherwise accomplishes the purposes and intent of this UDC.

   Staff: The proposed subdivision meets the applicable Town's standards.

d. The subdivision complies with all applicable use, development, and design standards set forth in Chapters 3, 5 and 6 of this UDC that have not otherwise been modified or waived pursuant to this Chapter or this UDC. Applicants shall refer to the Development Standards in Chapter 5 of this UDC and shall consider them in the layout of the subdivision in order to avoid creating lots or patterns of

lots in the subdivision that will make compliance with such development and design standards difficult or infeasible.

Staff: The proposed subdivision meets the Town's UDC standards.

e. The subdivision complies with all applicable regulations, standards, requirements, or plans of the Federal or State governments and other relevant jurisdictions, including but not limited to wetlands, water quality, erosion control, and wastewater regulations.

Staff: The proposed subdivision will meet applicable Federal and State standards.

f. The subdivision will not result in significant adverse impacts on the natural environment, including air, water, noise, storm water management, wildlife, and vegetation, or such impacts will be substantially mitigated.

Staff: No significant adverse impacts are anticipated with the proposed subdivision.

g. The subdivision shall be integrated and connected, where appropriate, with adjacent development through street connections, sidewalks, trails, and similar features.

Staff: The proposed subdivision will be integrated into the existing road and pedestrian network.

h. The subdivision will not result in significant adverse impacts on adjacent properties, or such impacts will be substantially mitigated.

Staff: No significant adverse impacts are anticipated with the proposed subdivision.

i. Adequate and sufficient public safety, transportation, utility facilities and services, recreation facilities, parks, and schools are available to serve the subject property, while maintaining sufficient levels of service to existing development.

Staff: Adequate facilities are available to serve the proposed subdivision.

j. As applicable, the proposed phasing plan for development of the subdivision is rational in terms of available infrastructure capacity.

Staff: Adequate infrastructure is available to serve the proposed subdivision.

STAFF RECOMMENDATION:

Staff finds the Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat in compliance with the Preliminary Plat Approval Criteria and recommends the Planning Commission adopt Resolution No. P15-21 recommending approval to the Board of Trustees with the following conditions of approval:

1. The proposed utility easement to be dedicated to the Town of Erie within Tract B shall meet the Town of Erie Standards and Specifications for Design and Construction of Public Improvements.
2. Technical corrections to Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat shall be made to the Town's satisfaction.

NEIGHBORHOOD MEETING:

As required by the Municipal Code a Neighborhood Meeting was held on April 22, 2015 at 6:00 p.m. at the Vista Ridge Community Center. The required notice for the Neighborhood Meeting was provided.

PUBLIC NOTICE:

Notice of this Public Hearing has been provided as follows:

Published in the Colorado Hometown Weekly:	June 24, 2015
Property Posted as required:	June 26, 2015
Letters to Adjacent Property Owners:	June 26, 2015

Approved by:

R. Martin Ostholthoff
Community Development Director

Attachments:

A. Resolution P15-21
B. Application Materials
C. Referral Comments/Responses

ATTACHMENT A

RESOLUTION NO. P15-21

A RESOLUTION REGARDING THE VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT, ADOPTING CERTAIN FINDINGS OF FACT AND CONCLUSIONS FAVORABLE TO THE PRELIMINARY PLAT.

WHEREAS, the Planning Commission of the Town of Erie, Colorado, considered the Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat on Wednesday, July 15, 2015 on the application of Montex (Vista Ridge, LLC), 4915 Gaylord Street, Englewood, CO 80113, such Preliminary Plat being a plat of the following real property; to wit:

LOT 2, VISTA RIDGE FILING NO. 2, MINOR SUBDIVISION, A SUBDIVISION PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715 OF THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33 TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Preliminary Plat is detailed on the attached "Exhibit A" Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat; and

WHEREAS, said Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat is incorporated herein and made part hereof by this reference.

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE TOWN OF ERIE, COLORADO, as follows:

Section 1. Findings of Fact.

1. The applicant's application and supporting documents are in substantial compliance with Section 7.7.C of Title 10, Town of Erie Municipal Code.
2. The Town of Erie Municipal Code shall be followed in the development of the property.
3. A development agreement will be required at such time as the property is approved for the final plat.
4. The Preliminary Plat as proposed, subject to the following conditions, will preserve the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado.
    a. The proposed utility easement to be dedicated to the Town of Erie within Tract B shall meet the Town of Erie Standards and Specifications for Design and Construction of Public Improvements.
    b. Technical corrections to Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat shall be made to the Town's satisfaction.

Section 2. Conclusions and Order Recommending Approval of the Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat to the Board of Trustees.

1. Based on the above Findings of Fact, the Planning Commission hereby forwards the Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat application to the Board of Trustees with the Planning Commission's recommendation for approval with the conditions of approval listed above.

INTRODUCED, READ, SIGNED AND APPROVED this 15th day of July 2015.

TOWN OF ERIE, PLANNING COMMISSION

_____

J. Eric Bottenhorn, Chairman

ATTEST:

_____

Hallie S. Sawyer, Secretary

EXHIBIT A

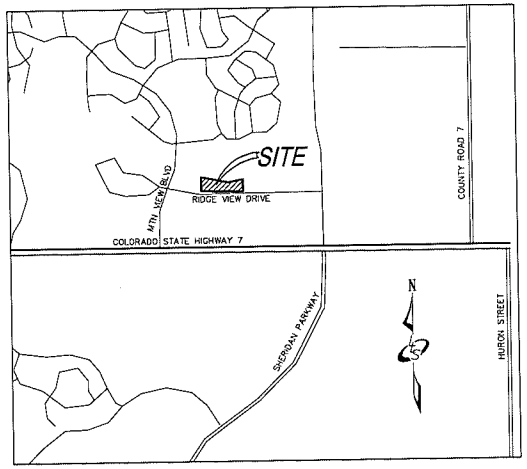
VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33,
TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 1 OF 4

LEGAL DESCRIPTION

LOT 2 OF "VISTA RIDGE FILING NO. 2 – MINOR SUBDIVISION", A SUBDIVISION PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715 OF THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

CONTAINING 175,823 SQUARE FEET OR 4.036 ACRES, MORE OR LESS.



VICINITY MAP
1"=1000'

LAND SUMMARY CHART		
TYPE	AREA	% OF TOTAL AREA
RESIDENTIAL LOTS (25)	102,984 S.F.	59%
TRACTS (3)	72,839 S.F.	41%
PUBLIC ROW	0 S.F.	0%
TOTAL	175,823 S.F.	100%

TRACT SUMMARY CHART				
TRACT	AREA	USE	OWNERSHIP	MAINTENANCE
TRACT A	41,101 S.F.	PRIVATE ACCESS DRIVE EMERGENCY ACCESS DRAINAGE/UTILITY	HOA	HOA
TRACT B	20,842 S.F.	OPEN SPACE DRAINAGE/UTILITY	HOA	HOA
TRACT C	10,896 S.F.	OPEN SPACE DRAINAGE/UTILITY	HOA	HOA

GENERAL NOTES

1. THE PLAT CONSISTS OF FURTHER SUBDIVIDING LOT 2, VISTA RIDGE FILING NO. 2, AS RECORDED 11/15/2007 AT RECEPTION NO. 3517715, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO. THIS PLAT WILL CONTAIN 25 SINGLE FAMILY RESIDENTIAL LOTS. ONLY ONE RESIDENTIAL DWELLING IS PERMITTED ON EACH SINGLE FAMILY LOT.

2. ALL GENERAL NOTES, DEDICATIONS, AND PLAT RESTRICTIONS AS SHOWN ON THE PLAT OF VISTA RIDGE FILING NO. 2, A SUBDIVISION PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715 OF THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, SHALL APPLY UNLESS SPECIFICALLY AMENDED AND SUPERCEDED HEREBY.

3. TRACT A IS FOR UTILITY, DRAINAGE, PRIVATE ACCESS DRIVES AND EMERGENCY ACCESS PURPOSES AND SHALL BE MAINTAINED BY THE SUBDIVIDER, ITS SUCCESSOR OR ASSIGNS, UNTIL SUCH TIME AS THIS TRACT IS CONVEYED TO THE HOA. TRACT B IS FOR DRAINAGE AND LANDSCAPING AND SHALL BE MAINTAINED BY THE SUBDIVIDER, ITS SUCCESSOR OR ASSIGNS, UNTIL SUCH TIME AS THIS TRACT IS CONVEYED TO THE HOA. TRACT C IS FOR DRAINAGE, LANDSCAPING AND EMERGENCY ACCESS FROM RIDGE VIEW DRIVE TO RIDGE VIEW COURT AND SHALL BE MAINTAINED BY THE SUBDIVIDER, ITS SUCCESSOR OR ASSIGNS, UNTIL SUCH TIME AS THIS TRACT IS CONVEYED TO THE HOA.

4. UTILITY AND DRAINAGE EASEMENTS, LABELED HEREON, SHALL BE GRANTED FOR THE INSTALLATION AND MAINTENANCE OF SANITARY SEWER LINES, WATER LINES, STORM DRAINAGE FACILITIES, SURFACE DRAINAGE AND FOR THE BENEFIT OF THE APPLICABLE UTILITY PROVIDERS FOR THE INSTALLATION, MAINTENANCE, AND REPLACEMENT OF ELECTRIC, GAS, TELEVISION, CABLE, AND TELECOMMUNICATIONS FACILITIES (DRY UTILITIES) AND ALL NECESSARY AND CONVENIENT APPURTENANCES THERETO, TOGETHER WITH A PERPETUAL RIGHT OF INGRESS AND EGRESS FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF SUCH LINES AND APPURTENANCES. SAID EASEMENTS AND RIGHTS ARE TO BE UTILIZED IN A RESPONSIBLE AND PRUDENT MANNER.

5. DRAINAGE EASEMENTS, LABELED HEREON, SHALL BE GRANTED FOR THE INSTALLATION AND MAINTENANCE OF DRAINAGE LINES AND ALL NECESSARY AND CONVENIENT APPURTENANCES THERETO, AS WELL AS SURFACE DRAINAGE, TOGETHER WITH A PERPETUAL RIGHT OF INGRESS AND EGRESS FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF SUCH LINES AND APPURTENANCES. SAID EASEMENTS AND RIGHTS ARE TO BE UTILIZED IN A RESPONSIBLE AND PRUDENT MANNER.

6. A BLANKET DRAINAGE EASEMENT SHALL BE GRANTED ALONG ALL COMMON LOT LINES FOR DOWNSPOUT DISCHARGE, DRAINAGE SWALES AND APPURTENANCES REQUIRED FOR PROPER LOT DRAINAGE.

7. BASIS OF BEARINGS: THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 33, WHICH BEARS NORTH 00°12'01" WEST ACCORDING TO THE VISTA RIDGE MASTER FINAL PLAT AND IS MONUMENTED AS SHOWN HEREON.

8. ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

9. BASED UPON THE INSURANCE RATE MAP COMMUNITY PANEL NO. 08013C 044J, THIS PANEL IS NOT PRINTED AND THERE IS NO SPECIAL FLOOD INFORMATION.

10. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18–4–508, OF THE COLORADO REVISED STATUTE.

11. DISTANCES ON THIS PLAT ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. A U.S. SURVEY FOOT IS DESCRIBED AS EXACTLY 1200/3937 METERS.

APPLICANT
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
CONTACT: WARD RITTER
(303) 545–2554

ENGINEER
ENERTIA CONSULTING GROUP, LLC
1529 MARKET STREET, SUITE 200
DENVER, COLORADO 80202
CONTACT: SHAWN MERZ, P.E., LEED AP
PHONE: (720) 502–6574

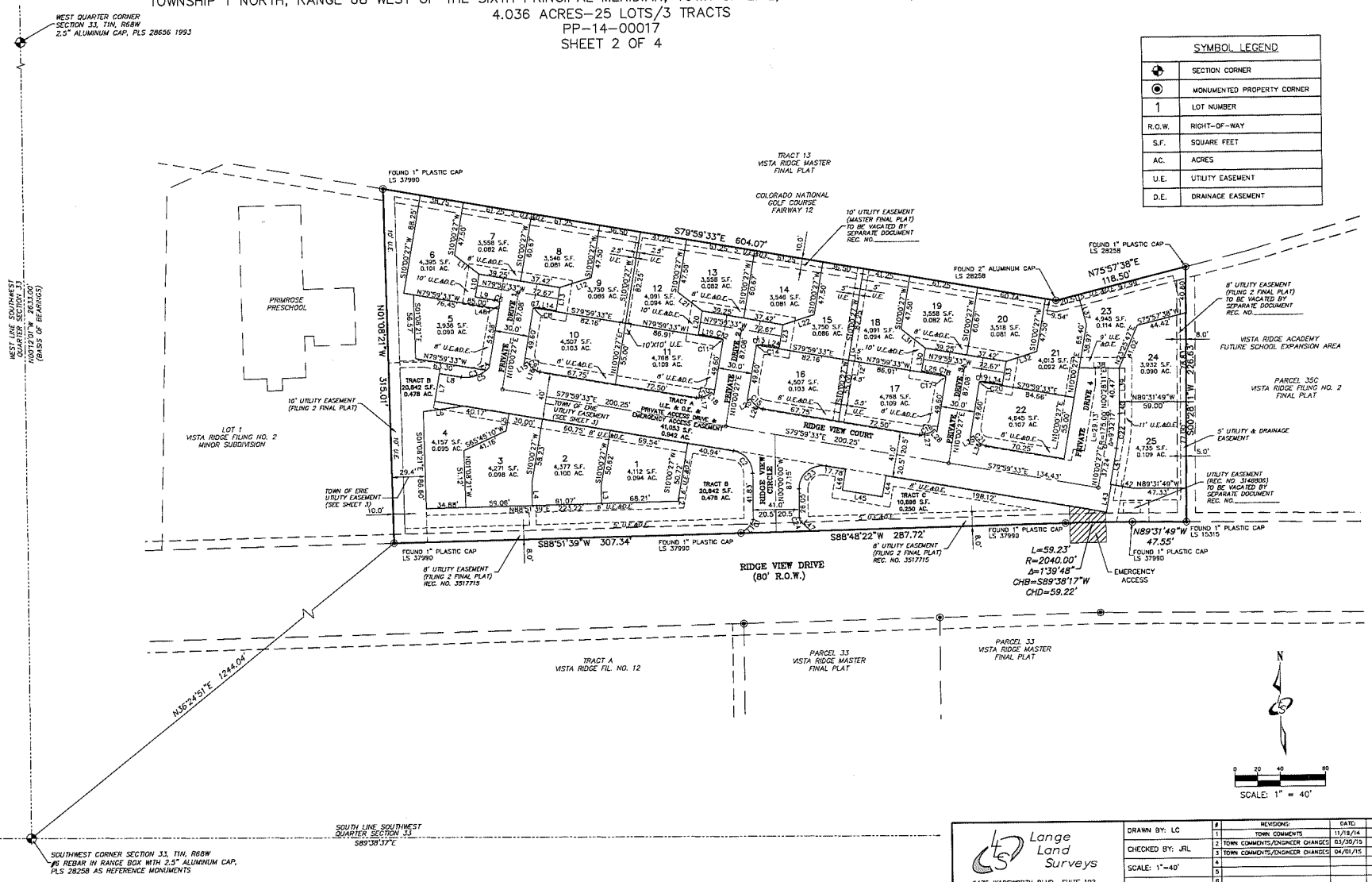
SURVEYOR
LANGE LAND SURVEYS, LLC
6475 WADSWORTH BLVD., SUITE 102
ARVADA, COLORADO 80003
CONTACT: JON LANGE, PLS
PHONE: (720) 242–9732

Lange Land Surveys
6475 WADSWORTH BLVD., SUITE 102
ARVADA, CO 80003
P:(720) 242–9732 F:(720) 242–9654

DRAWN BY: LC	#	REVISIONS:	DATE:	BY:
CHECKED BY: JRL	1	TOWN COMMENTS	11/19/14	LC
SCALE: N/A	2	TOWN COMMENTS/ENGINEER CHANGES	03/30/15	LC
DATE: 10/31/14	3			
FILE NO. PRELIM PLAT	4			
	5			
	6			
	7			
	8			
	JOB NUMBER: 947–625		SHEET: 1 OF 4	

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33,
TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 2 OF 4



SYMBOL LEGEND	
◆	SECTION CORNER
◉	MONUMENTED PROPERTY CORNER
1	LOT NUMBER
R.O.W.	RIGHT-OF-WAY
S.F.	SQUARE FEET
AC.	ACRES
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT

Lange Land Surveys
6475 WADSWORTH BLVD., SUITE 102
ARVADA, CO 80003
P:(720) 242-9732 F:(720) 242-9654

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1"=40'
DATE: 10/31/14
FILE NO. PRELIM PLAT

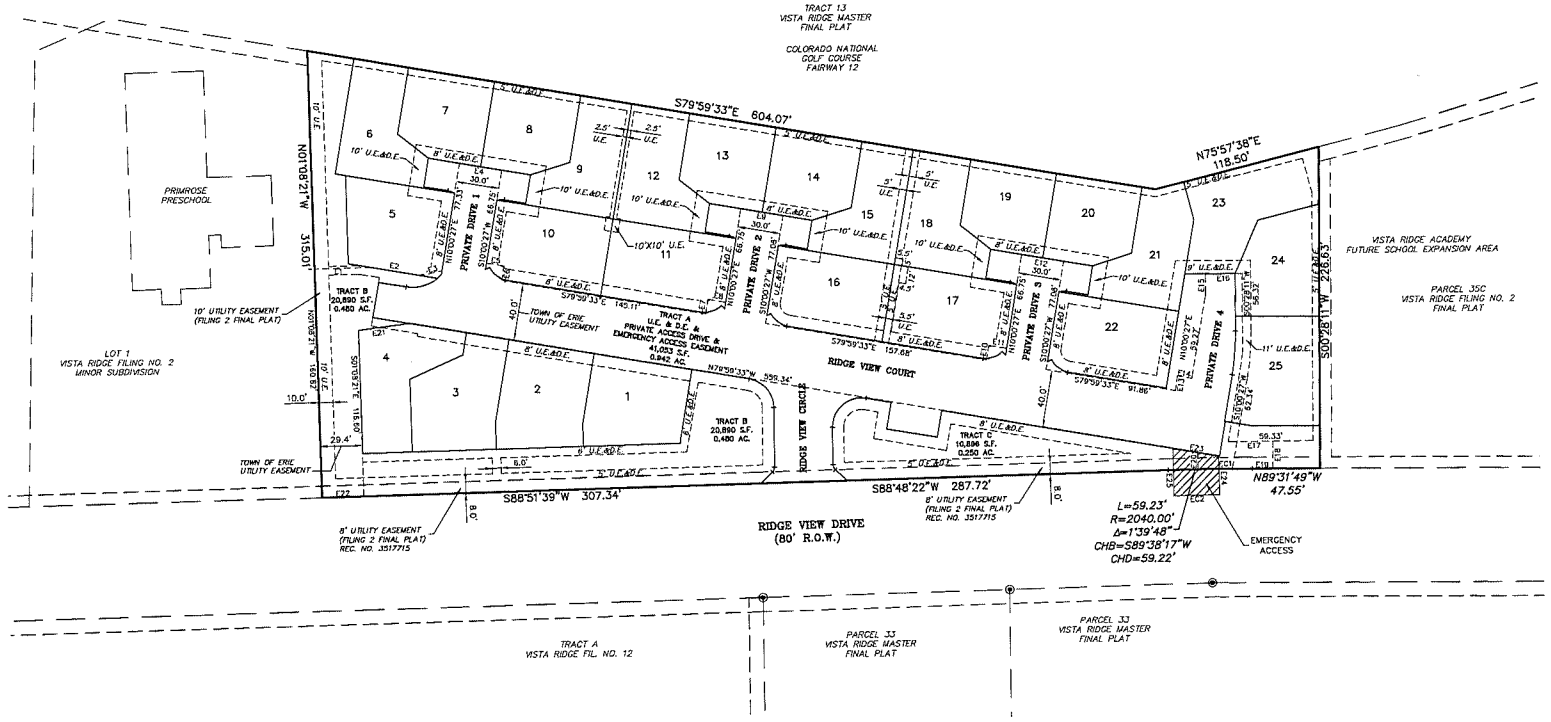
#	REVISIONS:	DATE:	BY:
1	TOWN COMMENTS	11/19/14	LC
2	TOWN COMMENTS/ENGINEER CHANGES	03/30/15	LC
3	TOWN COMMENTS/ENGINEER CHANGES	04/01/15	LC
4			
5			
6			
7			
8			

JOB NUMBER: 947-625 SHEET: 2 OF 4

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 3 OF 4

EASEMENT DETAIL



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DRAWN BY: LC	#	REVISIONS:	DATE: BY:
CHECKED BY: JRL	1	TOWN COMMENTS	11/19/14 LC
	2	TOWN COMMENTS/ENGINEER CHANGES	03/30/15 LC
SCALE: 1"=40'	3	TOWN COMMENTS/ENGINEER CHANGES	04/01/15 LC
DATE: 10/31/14	4		
	5		
FILE NO. PRELIM PLAT	6		
	7		
	8		
JOB NUMBER: 947-825	SHEET: 3 OF 4		

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 4 OF 4

LINE TABLE

LINE	BEARING	DISTANCE
L1	N46°06'03"E	11.47'
L2	S01°08'21"E	1.85'
L3	N01°08'21"W	15.39'
L4	S01°08'21"E	19.67'
L5	S10°00'27"W	15.62'
L6	S82°56'43"W	36.55'
L7	S10°00'27"W	25.00'
L8	S79°59'33"E	19.50'
L9	N79°59'33"W	17.25'
L10	S10°00'27"W	20.50'
L11	N51°14'34"W	27.37'
L12	N73°00'03"E	29.00'
L13	N10°00'27"E	20.50'
L14	S79°59'33"E	15.42'
L15	N63°36'07"E	3.28'
L16	S24°14'03"W	0.50'
L17	N04°13'08"W	0.50'
L18	S43°35'12"E	3.28'
L19	S79°59'33"E	17.50'
L20	S10°00'27"W	20.50'
L21	N51°14'34"W	27.37'
L22	N73°00'03"E	29.00'
L23	N10°00'27"E	20.50'
L24	S79°59'33"E	15.42'
L25	N63°36'07"E	3.28'
L26	N24°14'03"E	0.50'
L27	S04°13'08"E	0.50'
L28	N43°35'12"W	3.28'
L29	S79°59'33"E	17.25'
L30	N10°00'27"E	20.50'
L31	N51°14'34"W	27.37'
L32	N72°32'10"E	28.54'
L33	S10°00'27"W	20.50'
L34	N79°59'33"W	15.42'
L35	N63°36'07"E	3.28'
L36	N24°14'03"E	0.50'
L37	S14°02'22"E	27.60'
L38	N89°31'49"W	35.41'
L39	N00°28'11"E	31.44'
L40	S00°28'11"W	10.53'
L41	N10°00'27"E	32.96'
L42	S79°59'33"E	19.96'
L43	S10°00'27"W	24.78'
L44	N10°00'27"E	19.00'
L45	S79°59'33"E	36.00'
L46	S10°00'27"W	19.00'
L47	N47°14'04"W	11.67'
L48	N10°00'27"E	5.66'

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	5.00'	4.02'	3.92'	S23°03'02"W	46°06'03"
C2	20.50'	28.62'	26.35'	S39°59'46"E	79°59'33"
C3	27.50'	23.57'	22.86'	N75°27'03"E	49°08'35"
C4	27.50'	3.67'	3.66'	S47°04'34"W	7°38'23"
C5	27.50'	27.24'	26.14'	N71°37'52"E	58°44'58"
C6	9.50'	5.27'	5.20'	S64°06'50"E	31°45'25"
C7	9.50'	4.58'	4.54'	N86°11'34"E	27°37'46"
C8	9.50'	0.68'	0.68'	S70°18'52"W	4°07'39"
C9	15.00'	10.81'	10.57'	N45°07'38"W	41°16'41"
C10	15.00'	10.81'	10.57'	N65°08'31"E	41°16'41"
C11	9.50'	0.68'	0.68'	S50°17'57"E	4°07'39"
C12	9.50'	4.58'	4.54'	N66°10'39"W	27°37'46"
C13	9.50'	4.58'	4.54'	N86°11'34"E	27°37'46"
C14	9.50'	0.68'	0.68'	S70°18'52"W	4°07'39"
C15	15.00'	10.81'	10.57'	S45°07'38"E	41°16'41"
C16	15.00'	10.81'	10.57'	S65°08'31"W	41°16'41"
C17	9.50'	0.68'	0.68'	S50°17'57"E	4°07'39"
C18	9.50'	4.58'	4.54'	S66°10'39"E	27°37'46"
C19	9.50'	4.58'	4.54'	N86°11'34"E	27°37'46"
C20	9.50'	0.68'	0.68'	S70°18'52"W	4°07'39"
C21	15.00'	10.81'	10.57'	N45°07'38"W	41°16'41"
C22	185.00'	30.80'	30.76'	S05°14'19"W	9°32'17"
C23	20.50'	35.78'	31.41'	S50°00'14"W	100°00'22"
C24	5.00'	4.12'	4.01'	N23°37'02"W	47°14'04"

EASEMENT LINE TABLE

E1	N88°45'27"E	38.58'
E2	S79°59'33"E	36.76'
E3	N77°30'27"E	15.03'
E4	S79°59'33"E	30.00'
E5	S79°59'33"E	12.57'
E6	S10°00'27"W	10.33'
E7	N10°00'27"E	10.33'
E8	S79°59'33"E	12.57'
E9	S79°59'33"E	30.00'
E10	N10°00'27"E	10.33'
E11	S79°59'33"E	12.57'
E12	S79°59'33"E	30.00'
E13	N10°00'27"E	10.33'
E14	S79°59'33"E	10.07'
E15	N00°28'11"E	14.92'
E16	S89°31'49"E	26.00'
E17	S89°49'01"E	31.16'
E18	S00°10'59"W	19.30'
E19	N89°31'49"W	14.48'
E20	N00°10'59"E	12.22'
E21	S82°56'43"W	38.25'
E22	S88°51'39"W	29.43'
E23	S79°59'33"E	32.53'
E24	S00°20'54"E	27.01'
E25	N00°20'54"W	33.02'

EASEMENT CURVE TABLE

EC1	2040.00'	38.31'	38.31'	S86°55'54"W	1°04'33"
EC2	2022.00'	32.00'	32.00'	S89°21'33"W	0°54'24"

Lange Land Surveys
6475 WADSWORTH BLVD., SUITE 102
ARVADA, CO 80003
P:(720) 242-9732 F:(720) 242-9654

DRAWN BY: LC	#	REVISIONS:	DATE:	BY:
CHECKED BY: JRL	1	TOWN COMMENTS	11/19/14	LC
	2	TOWN COMMENTS/ENGINEER CHANGES	03/30/15	LC
SCALE: N/A	3			
	4			
DATE: 10/31/14	5			
	6			
FILE NO. PRELIM PLAT	7			
	8			
	JOB NUMBER: 947-625		SHEET: 4 OF 4	

ATTACHMENT B

Print Form

TOWN OF ERIE
Community Development Department – Planning Division
645 Holbrook Street – PO Box 750 – Erie, CO 80516
Tel: 303.926.2770 – Fax: 303.926.2706 – Web: www.erieco.gov

LAND USE APPLICATION

Please fill in this form completely. Incomplete applications will not be processed.

STAFF USE ONLY

FILE NAME: VISTA RIDGE FIL. NO. 2, 1ST AMDT PRELIMINARY PLAT
FILE NO: PP-14-00017 DATE SUBMITTED: 11/4/14 FEES PAID: $3040.-

PROJECT/BUSINESS NAME: Montex North at Vista Ridge

PROJECT ADDRESS: Vista Ridge Filing 2 Lot 2

PROJECT DESCRIPTION: Residential development, providing 26 single family, ranch style patio homes.

LEGAL DESCRIPTION *(attach legal description if Metes & Bounds)*

Subdivision Name: Vista Ridge

Filing #: 2 Lot #: 2 Block #: Section: 33 Township: 1 North Range: 68 West

OWNER *(attach separate sheets if multiple)*

Name/Company: Montex (Vista Ridge, LLC)
Contact Person: Andy Chaikovsky
Address: 4915 Gaylord St
City/State/Zip: Englewood, CO 80113
Phone: 303.783.8425 Fax:
E-mail: achaikovsky@comcast.net

AUTHORIZED REPRESENTATIVE

Company/Firm: Chartered Development Corporation
Contact Person: Ward Ritter
Address: 3160 Village Vista Drive, #104
City/State/Zip: Erie, CO 80516
Phone: 303.545.2554 Fax:
E-mail: ward@charteredhomes.com

MINERAL RIGHTS OWNER *(attach separate sheets if multiple)*

Name/Company: N/A
Address:
City/State/Zip:

MINERAL LEASE HOLDER *(attach separate sheets if multiple)*

Name/Company: N/A
Address:
City/State/Zip:

LAND-USE & SUMMARY INFORMATION

Present Zoning: PD
Proposed Zoning: PD
Gross Acreage: 4.04
Gross Site Density (du/ac): 6.43/ac
Lots/Units Proposed: 26/26
Gross Floor Area:

SERVICE PROVIDERS

Electric: United Power
Metro District: Vista Ridge Metro District
Water *(if other than Town):*
Gas: Excel Energy
Fire District: Mountain View Fire Protection District
Sewer *(if other than Town):* Town of Erie

PAGE TWO MUST BE SIGNED AND NOTARIZED

DEVELOPMENT REVIEW FEES

ANNEXATION		**SUBDIVISION**	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☑ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☐ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☑ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☐ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☐ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: _____ Date: _____

Owner _____ Date: 10-25-17

Applicant: _____ Date: _____

STATE OF ~~COLORADO~~ FLORIDA)
) ss.
County of Sarasota)

The foregoing instrument was acknowledged before me this 28th day of October, 2014, by Andrew Chatkovsky.

My commission expires: May 23, 2015
Witness my hand and official seal.

_____
Notary Public

R. CHRISTOPHER KNICELEY
Notary Public - State of Florida
My Comm. Expires May 23, 2015
Commission # EE 96510

DEVELOPMENT REVIEW FEES

ANNEXATION		SUBDIVISION	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
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☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: _____ Date: _____

Owner: _____ Date: _____

Applicant: [signature] president Date: 10/28/14

STATE OF COLORADO)
) ss.
County of Weld)

The foregoing instrument was acknowledged before me this 28 day of October, 2014, by Ward Ritter, president.

My commission expires: 1/29/18.
Witness my hand and official seal.

BRANDON CHANDLER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144004192
MY COMMISSION EXPIRES JANUARY 29, 2018

[signature]
Notary Public

1437 Larimer St.
Denver, CO 80202
303•875•7131
bonner.gilmore@enertiacg.com

Mr. Marty Ostholthoff, Director of Community Development
Town of Erie
645 Holbrook Street
Erie, CO 80516

April 17, 2015

RE: Montex North – Preliminary Plat Section 3 Written Narrative (North Parcel)

Dear Mr. Ostholthoff:

General project concept and purpose of the request:

Montex North at Vista Ridge is within Vista Ridge's Planning area 7-3 and is proposing 25 single-family detached home units. The proposed project is to provide ranch style patio homes with optional finished basements within the mixed use planning area. The project site is made up of 4.04 acres and is described as Lot 2 of Filing 2 of the Vista Ridge Planned Development. The project is bounded to the north by the 12th hole of Colorado National Golf Course, Vista Ridge Academy the east, Primrose Preschool to the west and Ridge View Drive to the south. Ridge View Drive to the south will provide access and egress to the site.

Vista Ridge Development Plan Amendment #6 permits up to 200 residential units within Planning Area 7-3. Article V, Section F (Medium/High Density Planning Area) Subsections 5.d, 5.e and 5.f of the Vista Ridge Development Plan have been amended to accommodate various encroachments into the setbacks.

Compliance with Vista Ridge Development Plan Amendment #6, Vista Ridge Development Guide and Uniform Development Code compliance:

- The land use, density, setbacks, building heights, encroachments, patio/terraces and additional provisions comply with Vista Ridge Development Plan Amendment #6 for a high density planning area.
- The local street complies with Vista Ridge Development Guide Article VII-G Private Street section. The street section with attached walks on both sides is currently used in Filings 5 and 9.
- A second access point is provided for emergency access to Ridge View Road.
- Two residents are anticipated per unit = 50 residents. Required park area = 0.4 acres. A pocket park is proposed south of Ridge View Drive. Required open space = 0.85 acres. Open space obligation was met previously by Vista Ridge Development Corporation.
- Off-street and on-street parking spaces exceed the resident and guest parking requirement. Each single family detached unit has a two car garage and two parking spaces in front of the garage satisfying the parking needs on each lot.

Site Data:

Total land area to be divided: 4.04 acres

Total number of lots, and if residential, the proposed density: 25 single-family detached lots. Proposed density = 6.2 du/ac

If non-residential, the total square footage of floor area proposed: N/A

Total land area to be preserved as open space: 0.49 acres (12.1%)

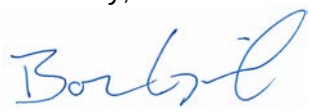
Brief description regarding the phasing of the proposed subdivision: The project will be constructed as a single phase and homes will be constructed as sales allow.

Brief description regarding the availability and adequacy of existing infrastructure and other necessary services including schools, fire protection, water/sewer service and utility providers: Montex is part of the constructed masterplan of Vista Ridge and fits within the design criteria set by the approved PUD. Existing infrastructure includes water, sewer and storm sewer, all of which are stubbed to the property boundary; dry utilities such as power, gas and telephone are also adjacent at the properties border; The applicant has met with Mountain View Fire District and the District has preliminarily approved the site plan due to the AutoTURN analysis and utility layout that was provided to them; The Vista Ridge PUD, including the addition of Montex will fall under the approved residential maximum that was also approved by the St. Vrain Valley School District. Although the school impact is anticipated to be minimal, as this age targeted product is directed toward empty nesters looking to downsize.

Brief description regarding the location, function and ownership/maintenance of public and private open space, parks, trails, common areas, common buildings: Passive open space is provided within Tracts B and C totaling 0.73 acres. In addition, a planned 0.25 acre pocket park will be provided interior to the proposed Montex South (adjacent, south of Ridge View Drive). The intent of the Montex South park is to meet the needs of the future residents providing possible amenities such as seating, barbeque grills, lawn and enhanced landscape areas. The pocket park will be privately owned and maintained as in Filing 5. No open space is provided. Detention and water quality will occur west of the site in a regional, off-site detention basin. No trails are proposed. Common areas are to be landscaped and privately owned and maintained. No common buildings are proposed.

Brief description regarding the substance of any existing or proposed covenants, special conditions, grants of easements, or other restrictions applying to the proposed subdivision: The proposed covenants will be consistent with PUD's in this marketplace and will govern private streets, architectural control, landscape maintenance, snow removal and common areas.

Sincerely,



Bonner Gilmore
Managing Partner

Land Title
GUARANTEE COMPANY
WWW.LTGC.COM

Customer Distribution

Our Order Number: ABB25121037-4

Date: 10-30-2014

Property Address: VISTA RIDGE ERIE

For Closing Assistance	**Closer's Assistant**	**For Title Assistance**
Tom Blake	Marshall Ray	Bruce Rosellen
3033 E 1ST AVE #600	3033 E 1ST AVE #600	5975 GREENWOOD PLAZA BLVD
DENVER, CO 80206	DENVER, CO 80206	GREENWOOD VILLAGE, CO 80111
303-331-6237 (phone)	303-331-6218 (phone)	303-850-4130 (phone)
303-393-4959 (fax)	303-393-4704 (fax)	303-393-4842 (fax)
tblake@ltgc.com	mray@ltgc.com	brosellen@ltgc.com

Buyer/Borrower
CHARTERED DEVELOPMENT CORP.
Attention: WARD RITTER
2705 DUNDEE PLACE
ERIE, CO 80516
805-284-6152 (home)
303-545-2554 (work)
ward@charteredhomes.com
Delivered via: Electronic Mail

LAND TITLE GUARANTEE COMPANY
Attention: PETER TOBIN
3033 E 1ST AVE #600
DENVER, CO 80206
303-321-1880 (work)
303-322-7603 (work fax)
ptobin@ltgc.com
Delivered via: Electronic Mail

Seller/Owner
MONTEX (VISTA RIDGE), LLC
Attention: ANDY CHAIKOVSKY
4915 SOUTH GAYLORD STREET
ENGLEWOOD, CO 80113
303-783-9425 (work)
303-783-9427 (work fax)
achaikovsky@comcast.net
Delivered via: Electronic Mail

BONNER GILMORE, SURVEYOR
Attention: BONNER GILMORE, SURVEYOR
720-502-6573 (work)
Delivered via: Electronic Mail

Agent for Seller
VISTA RIDGE DEVELOPMENT CORP
Attention: JAMES SPEHALSKI
4950 S YOSEMITE ST #F2-503
GREENWOOD VILLAGE, CO 80112
303-920-9400 (work)
303-920-9440 (work fax)
jaspehalski@marathonlc.com
Delivered via: Linked Commitment Delivery

BROWNSTEIN HYATT FARBER & SCHRECK PC
Attention: KATHY OSTER
410 17TH ST 22ND FL
DENVER, CO 80202
303-223-1323 (work)
303-223-0323 (work fax)
koster@bhfs.com
Delivered via: Linked Commitment Delivery

Attorney for Seller
BROWNSTEIN HYATT FARBER & SCHRECK PC
Attention: GREGORY VALLIN
410 17TH ST 22ND FL
DENVER, CO 80202
303-223-1100 (work)
303-223-1111 (work fax)
gvallin@bhfs.com
Delivered via: Electronic Mail

BROWNSTEIN HYATT FARBER SCHRECK, LLP
Attention: KATHY OSTER
410 SEVENTEENTH STREET, #2200
DENVER, CO 80202
303-223-1343 (work)
koster@bhfs.com
Delivered via: Electronic Mail

Attorney for Buyer
SHARI BAKER LLC
Attention: SHARI BAKER
1630A 30TH STREET
BOULDER, CO 80301
303-442-3751 (work)
303-957-2643 (work fax)
shari@sbakerlaw.com
Delivered via: Electronic Mail

Land Title Guarantee Company

Estimate of Title Fees

Order Number: ABB25121037-4 Date: 10-30-2014

Property Address: VISTA RIDGE ERIE

Buyer/Borrower: CHARTERED DEVELOPMENT CORP., A NEVADA CORPORATION

Seller: MONTEX (VISTA RIDGE), LLC, A COLORADO LIMITED LIABILITY COMPANY

Wire Instructions	
Bank:	FIRSTBANK OF COLORADO
Address:	10403 W COLFAX AVENUE LAKEWOOD, CO 80215
Phone:	303-237-5000
Credit:	LAND TITLE GUARANTEE COMPANY
ABA No:	107005047
Account:	2160521825
Attention:	Tom Blake
Please note: We do not accept ACH electronic transfers.	

Visit Land Title's website at www.ltgc.com for directions to any of our offices.

Estimate of Title Insurance Fees	
ALTA Owners Policy 06-17-06 (Builder Rate)	$2,730.00
Deletion of Exceptions 1-3	$60.00
Deletion of General Exception 4	$25.00
Endorsement 100.31-06 (MODIFIED LIMITED TO HARD MINERALS NOT OIL AND GAS RIGHTS)	$521.00
Tax Certificate (will be ordered prior to closing)	$75.00
Additional Parcel	$150.00
If Land Title Guarantee Company will be closing this transaction, the fees listed above will be collected at closing.	
Total	$3,561.00
THANK YOU FOR YOUR ORDER!	

ALTA COMMITMENT
First American Title Insurance Company
Schedule A

Order Number: ABB25121037-4

Customer Ref-Loan No.:

Property Address:

VISTA RIDGE ERIE

1. Effective Date:

10-23-2014 at 05:00PM

2. Policy to be Issued and Proposed Insured:

"ALTA" Owner's Policy 06-17-06 $2,700,000.00
Proposed Insured:
CHARTERED DEVELOPMENT CORP., A NEVADA CORPORATION

3. The estate or interest in the land described or referred to in this Commitment and covered herein is:

A FEE SIMPLE

4. Title to the estate or interest covered herein is at the effective date hereof vested in:

MONTEX (VISTA RIDGE), LLC, A COLORADO LIMITED LIABILITY COMPANY

5. The Land referred to in this Commitment is described as follows:

PARCEL A:

A PORTION OF TRACT A OF "VISTA RIDGE FILING NO 12 MINOR SUBDIVISION" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF SAID TRACT A: THENCE S 00° 12' 01" E, 608.49 FEET ALONG THE EASTERLY LINE OF SAID TRACT A (BASIS OF BEARINGS);
THENCE S 90° 00' 00" W, 332.94 FEET;
THENCE 78.54 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 100.00 FEET, A CENTRAL ANGLE OF 45° 00' 00", AND A CHORD BEARING OF N 67° 30' 00" W, 76.54 FEET;
THENCE N 45° 00' 00" W, 182.11 FEET;
THENCE 117.81 FEET ALONG THE ARC OF A TANGENT CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 150.00 FEET, A CENTRAL ANGLE OF 45° 00' 00", AND A CHORD BEARING N 67° 30' 00" W, 114.81 FEET;
THENCE N 90° 00' 00" W, 19.93 FEET;
THENCE N00°00'00"W, 16.05 FEET;
THENCE 56.06 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 173.00 FEET, A CENTRAL ANGLE OF 18°34' 05", AND A CHORD BEARING N09°17'02"E, 55.82 FEET;
THENCE N18°34'05"E, 342.47 FEET TO THE NORTHERLY LINE OF SAID TRACT A;
THENCE N88° 51' 39"E, 538.34 FEET ALONG THE SAID NORTHERLY LINE OF TRACT A TO THE POINT OF BEGINNING.

PARCEL B:

ALTA COMMITMENT
First American Title Insurance Company
Schedule A

Order Number: ABB25121037-4

Customer Ref-Loan No.:

A PORTION OF PARCEL 33 OF "VISTA RIDGE MASTER FINAL PLAT" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M. TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID PARCEL 33;
THENCE N 88° 48' 22" E, 173.66 FEET ALONG THE NORTHERLY LINE OF SAID PARCEL 33 (BASIS OF BEARINGS);
THENCE S00°00'00"E 612.10 FEET;
THENCE N90°00'00"W, 171.49 FEET TO THE WESTERLY LINE OF SAID PARCEL 33;
THENCE N00°12'01"W, 608.49 FEET ALONG SAID WESTERLY LINE OF PARCEL 33 TO THE POINT OF BEGINNING.

PARCEL C:

LOT 2 OF "VISTA RIDGE FILING NO 2 - MINOR SUBDIVISION" (PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715), TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

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ALTA COMMITMENT
First American Title Insurance Company
Schedule B Section 1

(Requirements)

Order Number: ABB25121037-4

The following are the requirements to be complied with:

Payment to or for the account of the grantors or mortgagors of the full consideration for the estate or interest to be insured.

Proper instrument(s) creating the estate or interest to be insured must be executed and duly filed for record, to-wit:

1. RECORD RELEASE OR PROOF OF PAYMENT OF NOTICES RECORDED MARCH 16, 2012 AT RECEPTION NO. 3832301 AND MAY 21, 2013 AT RECEPTION NO. 3933756.

2. A FULL COPY OF THE FULLY EXECUTED OPERATING AGREEMENT AND ANY AND ALL AMENDMENTS THERETO FOR MONTEX (VISTA RIDGE), LLC, A COLORADO LIMITED LIABILITY COMPANY MUST BE FURNISHED TO LAND TITLE GUARANTEE COMPANY. SAID AGREEMENT MUST DISCLOSE WHO MAY CONVEY, ACQUIRE, ENCUMBER, LEASE OR OTHERWISE DEAL WITH INTERESTS IN REAL PROPERTY FOR SAID ENTITY.

   NOTE: ADDITIONAL REQUIREMENTS MAY BE NECESSARY UPON REVIEW OF THIS DOCUMENTATION.

3. DULY EXECUTED AND ACKNOWLEDGED STATEMENT OF AUTHORITY SETTING FORTH THE NAME OF MONTEX (VISTA RIDGE), LLC, A COLORADO LIMITED LIABILITY COMPANY AS A LLC. THE STATEMENT OF AUTHORITY MUST STATE UNDER WHICH LAWS THE ENTITY WAS CREATED, THE MAILING ADDRESS OF THE ENTITY, AND THE NAME AND POSITION OF THE PERSON(S) AUTHORIZED TO EXECUTE INSTRUMENTS CONVEYING, ENCUMBERING, OR OTHERWISE AFFECTING TITLE TO REAL PROPERTY ON BEHALF OF THE ENTITY AND OTHERWISE COMPLYING WITH THE PROVISIONS OF SECTION 38-30-172, CRS.

   NOTE: THE STATEMENT OF AUTHORITY MUST BE RECORDED WITH THE CLERK AND RECORDER.

4. WARRANTY DEED FROM MONTEX (VISTA RIDGE), LLC, A COLORADO LIMITED LIABILITY COMPANY TO CHARTERED DEVELOPMENT CORP., A NEVADA CORPORATION CONVEYING SUBJECT PROPERTY.

5. PROVIDE LAND TITLE GUARANTEE COMPANY WITH A CURRENT SURVEY OF SUBJECT PROPERTY. UPON REVIEW, ADDITIONAL REQUIREMENTS AND/OR EXCEPTIONS MAY BE NECESSARY.

   LAND TITLE IS NOT RESPONSIBLE FOR ORDERING SAID SURVEY.

   SAID SURVEY MUST BE CERTIFIED TO LAND TITLE GUARANTEE COMPANY AND OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY.

   NOTE: ITEMS 1-3 OF THE STANDARD EXCEPTIONS WILL BE DELETED UPON RECEIPT OF AN APPROVED SURVEY. MATTERS DISCLOSED BY SAID SURVEY MAY BE ADDED TO SCHEDULE B-2 HEREOF.

   UPON THE APPROVAL OF THE COMPANY AND THE RECEIPT OF A NOTARIZED FINAL LIEN AFFIDAVIT, ITEM NO. 4 OF THE STANDARD EXCEPTIONS ON THE OWNER'S POLICY, WILL BE AMENDED AS FOLLOWS:

   ITEM NO. 4 OF THE STANDARD EXCEPTIONS IS DELETED AS TO ANY LIENS OR FUTURE LIENS

ALTA COMMITMENT
First American Title Insurance Company
Schedule B Section 1

(Requirements)

Order Number: ABB25121037-4

The following are the requirements to be complied with:

RESULTING FROM WORK OR MATERIAL FURNISHED AT THE REQUEST OF MONTEX (VISTA RIDGE), LLC, A COLORADO LIMITED LIABILITY COMPANY.
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY SHALL HAVE NO LIABILITY FOR ANY LIENS ARISING FROM WORK OR MATERIAL FURNISHED AT THE REQUEST OF CHARTERED DEVELOPMENT CORP., A NEVADA CORPORATION.

NOTE: ITEM 5 OF THE STANDARD EXCEPTIONS WILL BE DELETED IF LAND TITLE GUARANTEE COMPANY CONDUCTS THE CLOSING OF THE CONTEMPLATED TRANSACTION(S) AND RECORDS THE DOCUMENTS IN CONNECTION THEREWITH.

NOTE: UPON PROOF OF PAYMENT OF 2013 TAXES, ITEM 6 WILL BE AMENDED TO READ:

TAXES AND ASSESSMENTS FOR THE YEAR 2014 AND SUBSEQUENT YEARS.

First American Title Insurance Company
Schedule B Section 2

(Exceptions)

Order Number: ABB25121037-4

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

1. **Any facts, rights, interests, or claims thereof, not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.**

2. **Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.**

3. **Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.**

4. **Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.**

5. **Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date of the proposed insured acquires of record for value the estate or interest or mortgage thereon covered by this Commitment.**

6. **(a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.**

7. **(a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water.**

8. RESERVATIONS BY THE UNION PACIFIC RAILROAD COMPANY COMPANY OF:
(1) ALL OIL, COAL AND OTHER MINERALS UNDERLYING SUBJECT PROPERTY,
(2) THE EXCLUSIVE RIGHT TO PROSPECT FOR, MINE AND REMOVE OIL, COAL AND OTHER MINERALS, AND
(3) THE RIGHT OF INGRESS AND EGRESS AND REGRESS TO PROSPECT FOR, MINE AND REMOVE OIL, COAL AND OTHER MINERALS, ALL AS CONTAINED IN DEED RECORDED JUNE 04, 1902, IN BOOK 201 AT PAGE 16.

   MINERAL DEED RECORDED NOVEMBER 3, 1972 AT RECEPTION NO. 1602712 IN BOOK 681
   AND
   RELINQUISHMENT AND QUIT CLAIM RECORDED AUGUST 21, 2000 AT RECEPTION NO. 2788395 .

9. OIL AND GAS LEASE RECORDED NOVEMBER 30, 1972 UNDER RECEPTION NO. 1602713 IN BOOK 681 AND ANY AND ALL ASSIGNMENTS THEREOF, OR INTEREST THEREIN.

   NOTE: EXTENSION OF THE ABOVE LEASE AS CLAIMED BY AFFIDAVIT OF PRODUCTION WAS RECORDED DECEMBER 07, 2000 UNDER RECEPTION NO. 2811882.AND
   SURFACE USE AGREEMENT RECORDED AUGUST 21, 2000 AT RECEPTION NO. 2788394 AND AMENDED NOVEMBER 15, 2004 AT RECEPTION NO. 3235488
   AND
   REQUEST FOR NOTIFICATION RECORDED MAY 28, 2002 AT RECEPTION NO. 2954455

10. TERMS, CONDITIONS AND PROVISIONS OF CERTIFICATE OF ORGANIZATION FOR THE NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY RECORDED JUNE 30, 1999 AT RECEPTION

First American Title Insurance Company
Schedule B Section 2

(Exceptions)

Order Number: ABB25121037-4

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

NO. 2703636 AND RE-RECORDED NOVEMBER 19, 1999 AT RECEPTION NO. 2733705.

11. TERMS, CONDITIONS AND PROVISIONS OF ORDINANCE RECORDED AUGUST 30, 2000 AT RECEPTION NO. 2790549.

12. TERMS, CONDITIONS AND PROVISIONS OF ORDINANCE RECORDED AUGUST 30, 2000 AT RECEPTION NO. 2790550.

13. TERMS, CONDITIONS AND PROVISIONS OF ANNEXATION AGREEMENT RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793930 AND RE-RECORDED DECEMBER 8, 2000 AT RECEPTION NO. 2812291.

14. TERMS, CONDITIONS AND PROVISIONS OF ORDER AND DECREE RECORDED JANUARY 08, 2001 AT RECEPTION NO. 2817763 AND NOTICE RECORDED JUNE 14, 2006 AT RECEPTION NO. 3396125.

15. RIGHT OF WAY EASEMENT AS GRANTED TO FARMERS RESERVOIR AND IRRIGATION COMPANY IN INSTRUMENT RECORDED OCTOBER 22, 2001, UNDER RECEPTION NO. 2893921.

16. TERMS, CONDITIONS AND PROVISIONS OF MASTER DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED DECEMBER 14, 2001 AT RECEPTION NO. 2909244 AND AMENDED JANUARY 28, 2003 AT RECEPTION NO. 3027600.

17. TERMS, CONDITIONS AND PROVISIONS OF DEVELOPMENT AGREEMENT RECORDED DECEMBER 04, 2001 AT RECEPTION NO. 2905896.

    NOTICE RECORDED JUNE 14, 2006 AT RECEPTION NO. 3396125

18. EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE RECORDED PLAT OF VISTA RIDGE MASTER FINAL PLAT RECORDED SEPTEMBER 6, 2001 AT RECEPTION NO. 2903870.

19. TERMS, CONDITIONS AND PROVISIONS OF DEVELOPMENT PLAN RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793940 AND AMENDMENT RECORDED FEBRUARY 27, 2002 AT RECEPTION NO. 2928673.

20. TERMS, CONDITIONS AND PROVISIONS OF DECLARATION OF GOLF PLAY COVENANTS RECORDED JULY 07, 2003 AT RECEPTION NO. 3080606.

21. RIGHT OF WAY EASEMENT AS GRANTED TO UNITED POWER INC IN INSTRUMENT RECORDED APRIL 17, 2002, UNDER RECEPTION NO. 2943714.

22. TERMS, CONDITIONS AND PROVISIONS OF AGREEMENT RECORDED JULY 22, 2003 AT RECEPTION NO. 3086574.

23. RIGHT OF WAY EASEMENT AS GRANTED TO UNITED POWER INC IN INSTRUMENT RECORDED SEPTEMBER 22, 2003, UNDER RECEPTION NO. 3108688.

24. RESTRICTIVE COVENANTS, WHICH DO NOT CONTAIN A FORFEITURE OR REVERTER CLAUSE, BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP,

First American Title Insurance Company
Schedule B Section 2

(Exceptions)

Order Number: ABB25121037-4

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

NATIONAL ORIGIN, ANCESTRY, OR SOURCE OF INCOME, AS SET FORTH IN APPLICABLE STATE OR FEDERAL LAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS CONTAINED IN INSTRUMENT RECORDED NOVEMBER 19, 2008, UNDER RECEPTION NO. 3590556.

25. TERMS, CONDITIONS AND PROVISIONS OF ANNEXATION MAPS RECORDED AUGUST 25, 2000 AT RECEPTION NO. 2789487 AND RECORDED SEPTEMBER 15, 2000 AT RECEPTION NO. 2793937 AND 2793938 AND 2793939

26. EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE PLAT OF VISTA RIDGE FILING NO 2 RECORDED NOVEMBER 15, 2007 AT RECEPTION NO. 3517715.

27. TERMS, CONDITIONS AND PROVISIONS OF DEVELOPMENT AGREEMENT RECORDED JUNE 06, 2003 AT RECEPTION NO. 3070386.

28. TERMS, CONDITIONS AND PROVISIONS OF STORM PIPE AGREEMENT RECORDED JANUARY 07, 2008 AT RECEPTION NO. 3527519.

29. TERMS, CONDITIONS AND PROVISIONS OF ORDER RECORDED DECEMBER 14, 2001 AT RECEPTION NO. 2908969 AND 2908970 AND 2908971 AND 2908972.

30. EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE PLAT OF VISTA RIDGE FILING NO 12 RECORDED NOVEMBER 19, 2008 AT RECEPTION NO. 3590554.

31. TERMS, CONDITIONS AND PROVISIONS OF DEVELOPMENT AGREEMENT RECORDED NOVEMBER 19, 2008 AT RECEPTION NO. 3590555.

32. RESTRICTIVE COVENANTS, WHICH DO NOT CONTAIN A FORFEITURE OR REVERTER CLAUSE, BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, NATIONAL ORIGIN, ANCESTRY, OR SOURCE OF INCOME, AS SET FORTH IN APPLICABLE STATE OR FEDERAL LAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS CONTAINED IN INSTRUMENT RECORDED NOVEMBER 19, 2008, UNDER RECEPTION NO. 3590557.

33. (ITEM INTENTIONALLY DELETED)

34. TERMS, CONDITIONS AND PROVISIONS OF DEED OF EASEMENT RECORDED NOVEMBER 28, 2001 AT RECEPTION NO. 2903864.

35. RIGHT OF WAY EASEMENT AS GRANTED TO TOWN OF ERIE IN INSTRUMENT RECORDED JANUARY 28, 2004, UNDER RECEPTION NO. 3148806.

36. TERMS, CONDITIONS AND PROVISIONS OF DEVELOPMENT PLAN RECORDED MARCH 03, 2011 AT RECEPTION NO. 3753956.

37. TERMS, CONDITIONS AND PROVISIONS OF TITLE COMPANIES AND OTHER INTERESTED PARTIES: PLEASE BE ON NOTICE THAT: RECORDED MARCH 16, 2012 AT RECEPTION NO. 3832301.

38. TERMS, CONDITIONS AND PROVISIONS OF NOTICE TO TITLE COMPANIES AND OTHER

First American Title Insurance Company
Schedule B Section 2

(Exceptions)

Order Number: ABB25121037-4

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

INTERESTED PARTIES RECORDED MAY 21, 2013 AT RECEPTION NO. 3933756 AND RERECORDED AUGUST 20, 2014 UNDER RECEPTION NO. 4039682.

39. TERMS, CONDITIONS AND PROVISIONS OF DEVELOPMENT PLAN AMENDMENT NO 6 RECORDED NOVEMBER 25, 2013 AT RECEPTION NO. 3980214.

40. TERMS, CONDITIONS AND PROVISIONS OF ORDINANCE RECORDED NOVEMBER 25, 2013 AT RECEPTION NO. 3980215.

41. TERMS, CONDITIONS AND PROVISIONS OF NOTICE TO TITLE COMPANIES AND OTHER INTERESTED PARTIES RECORDED MARCH 18, 2014 AT RECEPTION NO. 4002991.

JOINT NOTICE OF PRIVACY POLICY OF

LAND TITLE GUARANTEE COMPANY,
LAND TITLE GUARANTEE COMPANY - GRAND JUNCTION,
LAND TITLE INSURANCE CORPORATION AND
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

This Statement is provided to you as a customer of Land Title Guarantee Company and Meridian Land Title, LLC, as agents for Land Title Insurance Corporation and Old Republic National Title Insurance Company.

We want you to know that we recognize and respect your privacy expectations and the requirements of federal and state privacy laws. Information security is one of our highest priorities. We recognize that maintaining your trust and confidence is the bedrock of our business. We maintain and regularly review internal and external safeguards against unauthorized access to non-public personal information ("Personal Information").

In the course of our business, we may collect Personal Information about you from:

- applications or other forms we receive from you, including communications sent through TMX, our web-based transaction management system;
- your transactions with, or from the services being performed by, us, our affiliates, or others;
- a consumer reporting agency, if such information is provided to us in connection with your transaction;

  and

- the public records maintained by governmental entities that we either obtain directly from those entities, or from our affiliates and non-affiliates.

Our policies regarding the protection of the confidentiality and security of your Personal Information are as follows:

- We restrict access to all Personal Information about you to those employees who need to know that information in order to provide products and services to you.
- We maintain physical, electronic and procedural safeguards that comply with federal standards to protect your Personal Information from unauthorized access or intrusion.
- Employees who violate our strict policies and procedures regarding privacy are subject to disciplinary action.
- We regularly access security standards and procedures to protect against unauthorized access to Personal Information.

WE DO NOT DISCLOSE ANY PERSONAL INFORMATION ABOUT YOU WITH ANYONE FOR ANY PURPOSE THAT IS NOT PERMITTED BY LAW.

Consistent with applicable privacy laws, there are some situations in which Personal Information may be disclosed. We may disclose your Personal Information when you direct or give us permission; when we are required by law to do so, for example, if we are served a subpoena; or when we suspect fraudulent or criminal activities. We also may disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

Our policy regarding dispute resolution is as follows. Any controversy or claim arising out of or relating to our privacy policy, or the breach thereof, shall be settled by arbitration in accordance with the rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

LAND TITLE GUARANTEE COMPANY

LAND TITLE GUARANTEE COMPANY - GRAND JUNCTION

DISCLOSURE STATEMENTS

Note: Pursuant to CRS 10-11-122, notice is hereby given that:

A) The Subject real property may be located in a special taxing district.
B) A Certificate of Taxes Due listing each taxing jurisdiction shall be obtained from the County Treasurer or the County Treasurer's authorized agent.
C) The information regarding special districts and the boundaries of such districts may be obtained from the Board of County Commissioners, the County Clerk and Recorder, or the County Assessor.

Note: Effective September 1, 1997, CRS 30-10-406 requires that all documents received for recording or filing in the clerk and recorder's office shall contain a top margin of at least one inch and a left, right and bottom margin of at least one half of an inch. The clerk and recorder may refuse to record or file any document that does not conform, except that, the requirement for the top margin shall not apply to documents using forms on which space is provided for recording or filing information at the top margin of the document.

Note: Colorado Division of Insurance Regulations 3-5-1, Paragraph C of Article VII requires that "Every title entity shall be responsible for all matters which appear of record prior to the time of recording whenever the title entity conducts the closing and is responsible for recording or filing of legal documents resulting from the transaction which was closed". Provided that Land Title Guarantee Company conducts the closing of the insured transaction and is responsible for recording the legal documents from the transaction, exception number 5 will not appear on the Owner's Title Policy and the Lenders Policy when issued.

Note: Affirmative mechanic's lien protection for the Owner may be available (typically by deletion of Exception no. 4 of Schedule B, Section 2 of the Commitment from the Owner's Policy to be issued) upon compliance with the following conditions:

A) The land described in Schedule A of this commitment must be a single family residence which includes a condominium or townhouse unit.
B) No labor or materials have been furnished by mechanics or material-men for purposes of construction on the land described in Schedule A of this Commitment within the past 6 months.
C) The Company must receive an appropriate affidavit indemnifying the Company against un-filed mechanic's and material-men's liens.
D) The Company must receive payment of the appropriate premium.
E) If there has been construction, improvements or major repairs undertaken on the property to be purchased within six months prior to the Date of the Commitment, the requirements to obtain coverage for unrecorded liens will include: disclosure of certain construction information; financial information as to the seller, the builder and or the contractor; payment of the appropriate premium fully executed Indemnity Agreements satisfactory to the company, and, any additional requirements as may be necessary after an examination of the aforesaid information by the Company.

No coverage will be given under any circumstances for labor or material for which the insured has contracted for or agreed to pay.

Note: Pursuant to CRS 10-11-123, notice is hereby given:

This notice applies to owner's policy commitments containing a mineral severance instrument exception, or exceptions, in Schedule B, Section 2.

A) That there is recorded evidence that a mineral estate has been severed, leased, or otherwise conveyed from the surface estate and that there is a substantial likelihood that a third party holds some or all interest in oil, gas, other minerals, or geothermal energy in the property; and
B) That such mineral estate may include the right to enter and use the property without the surface owner's permission.

Note: Pursuant to CRS 10-1-128(6)(a), It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policyholder or claimant for the purpose of defrauding or attempting to defraud the policyholder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado division of insurance within the department of regulatory agencies.

Nothing herein contained will be deemed to obligate the company to provide any of the coverages referred to herein unless the above conditions are fully satisfied.

Commitment to Insure

ALTA Commitment - 2006 Rev.

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, a Minnesota corporation, (Company) for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the requirements; all subject to the provisions of Schedule A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company. All liability and obligation under this commitment shall cease and terminate six months after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue such policy or policies is not the fault of the Company.

CONDITIONS AND STIPULATIONS

1. The term "mortgage", when used herein, shall include deed of trust, trust deed, or other security instrument.
2. If the proposed Insured has or acquires actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions and Stipulations.
3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and the Conditions and Stipulations and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.
4. This commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.
5. The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at www.alta.org.

STANDARD EXCEPTIONS

In addition to the matters contained in the Conditions and Stipulations and Exclusions from Coverage above referred to, this Commitment is also subject to the following:

1. Rights or claims of parties in possession not shown by the Public Records.
2. Easements, or claims of easements, not shown by the Public Records.
3. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, and any facts which a correct survey or inspection of the Land would disclose and which are not shown by the Public Records.
4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the Public Records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the Public Records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires of record for value the estate or interest or mortgage thereon covered by this Commitment.

IN WITNESS WHEREOF, Old Republic National Title Insurance Company has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A to be valid when countersigned by a validating officer or other authorized signatory.

Issued by:
Land Title Guarantee Company
3033 East First Avenue
Suite 600
Denver, Colorado 80206
303-850-4165

John E. Freyer
President

Authorized Officer or Agent

Old Republic National Title Insurance Company
a Stock Company
400 Second Avenue South
Minneapolis, Minnesota 55401
(612)371-1111

Mark Bilbrey
President

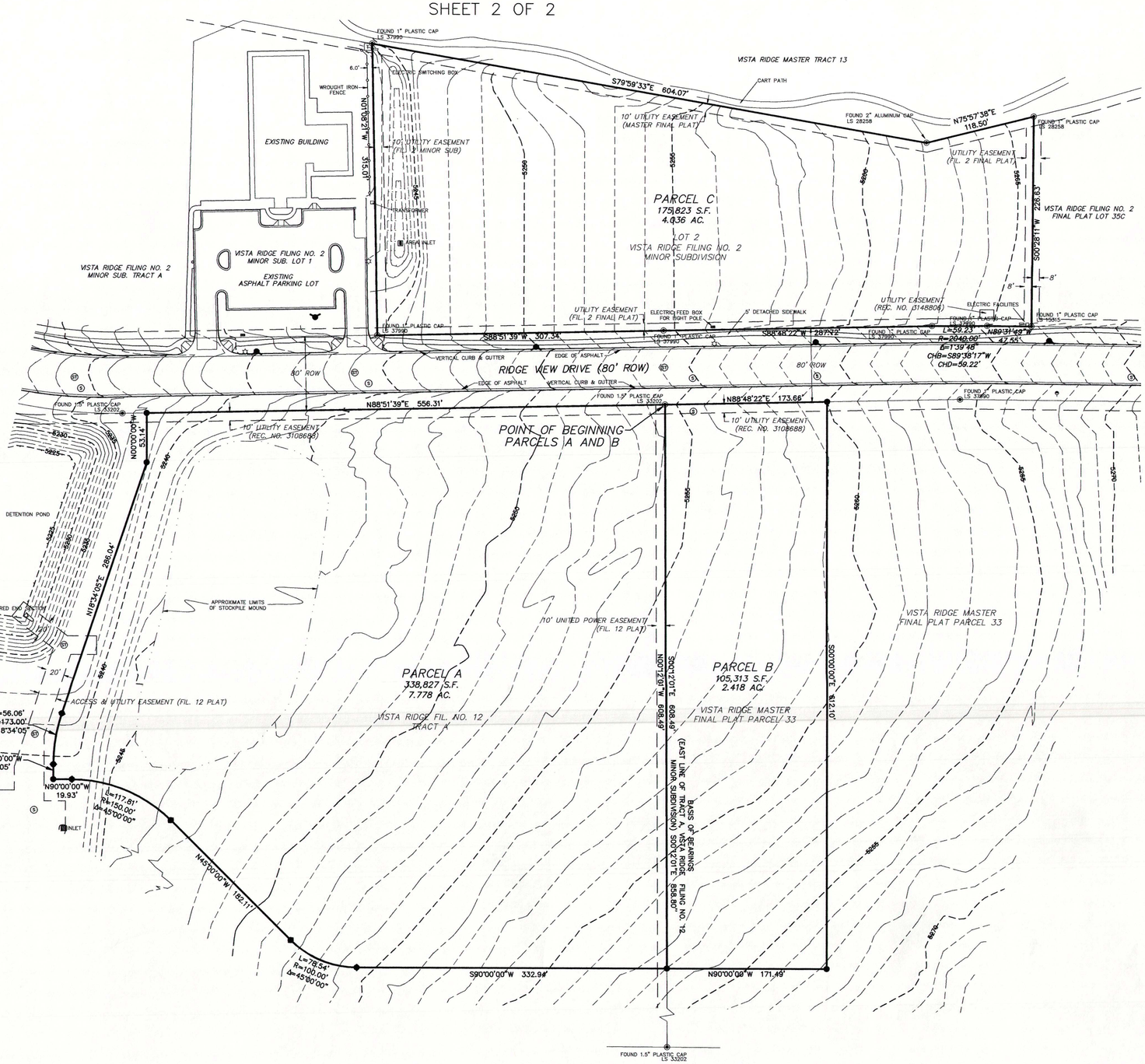
Rande Yeager
Secretary

AMERICAN LAND TITLE ASSOCIATION

ALTA / ACSM LAND TITLE SURVEY
VISTA RIDGE COMMERCIAL AREA

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

SHEET 2 OF 2



SYMBOL LEGEND	
◉	MONUMENTED PROPERTY CORNER
●	SET #5 REBAR WITH PLASTIC CAP PLS 37908
(S)	SANITARY SEWER MANHOLE
(ST)	STORM SEWER MANHOLE
	FIRE HYDRANT
	6' TYPE"R" INLET
	FIBER OPTIC WARNING SIGN
T	TELEPHONE PEDESTAL
	HANDICAP RAMP
	LIGHT POLE
	CONTOUR-MAJOR
	CONTOUR-MINOR

N

0 30 60 120

SCALE: 1" = 60'

#	REVISIONS:	DATE:	BY:
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8			

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1" = 60'
DATE: 03/18/14
FILE NO. ALTA

JOB NUMBER: 1057-556

SHEET: 2 OF 2

ALTA / ACSM LAND TITLE SURVEY
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

PREPARED FOR:
CHARTERED DEVELOPMENT

Lange Land Surveys
9572 W. 58TH AVE. ARVADA, CO 80002
P:(720) 242-9732 F:(720) 242-9654

ALTA / ACSM LAND TITLE SURVEY
VISTA RIDGE COMMERCIAL AREA

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
SHEET 1 OF 2

LEGAL DESCRIPTION (FROM COMMITMENT):

PARCEL A:

A PORTION OF TRACT A OF "VISTA RIDGE FILING NO 12 MINOR SUBDIVISION" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF SAID TRACT A: THENCE S00°12'01"E, 608.49 FEET ALONG THE EASTERLY LINE OF SAID TRACT A (BASIS OF BEARINGS);
THENCE S90°00'00"W, 332.94 FEET;
THENCE 78.54 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 100.00 FEET, A CENTRAL ANGLE OF 45°00'00", AND A CHORD BEARING OF N67°30'00"W, 76.54 FEET;
THENCE N45°00'00"W, 182.11 FEET;
THENCE 117.81 FEET ALONG THE ARC OF A TANGENT CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 150.00 FEET, A CENTRAL ANGLE OF 45°00'00", AND A CHORD BEARING N67°30'00"W, 114.81 FEET;
THENCE N90°00'00"W, 19.93 FEET;
THENCE N00°00'00"W, 16.05 FEET;
THENCE 56.06 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 173.00 FEET, A CENTRAL ANGLE OF 18°34'05", AND A CHORD BEARING N09°17'02"E, 55.82 FEET;
THENCE N18°34'05"E, 286.04 FEET;
THENCE N00°00'00"W, 53.14' TO THE NORTHERLY LINE OF SAID TRACT A;
THENCE N88°51'39"E, 556.31 FEET ALONG THE SAID NORTHERLY LINE OF TRACT A TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 338,827 SQUARE FEET OR 7.778 ACRES, MORE OR LESS.

PARCEL B:

A PORTION OF PARCEL 33 OF "VISTA RIDGE MASTER FINAL PLAT" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M. TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID PARCEL 33;
THENCE N 88° 48' 22" E, 173.66 FEET ALONG THE NORTHERLY LINE OF SAID PARCEL 33;
THENCE S00°00'00"E 612.10 FEET;
THENCE N90°00'00"W, 171.49 FEET TO THE WESTERLY LINE OF SAID PARCEL 33;
THENCE N00°12'01"W, 608.49 FEET ALONG SAID WESTERLY LINE OF PARCEL 33 TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 105,313 SQUARE FEET OR 2.418 ACRES, MORE OR LESS.

PARCEL C:

LOT 2 OF "VISTA RIDGE FILING NO 2 – MINOR SUBDIVISION" (PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715), TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 175,823 SQUARE FEET OR 4.036 ACRES, MORE OR LESS.

SURVEY CERTIFICATION:

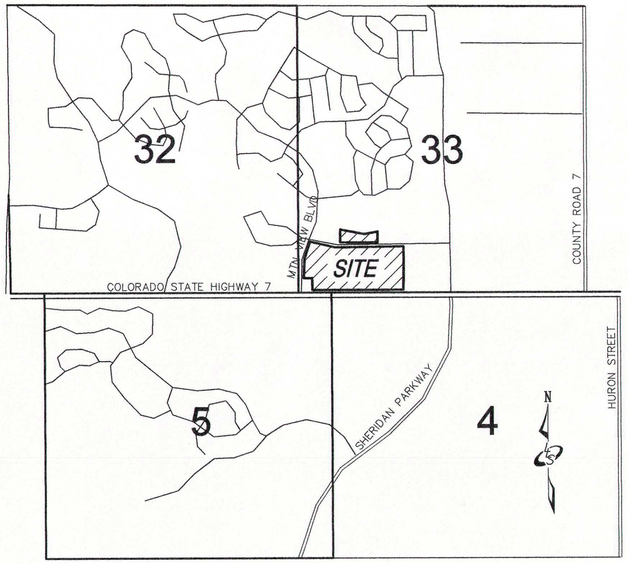
CERTIFIED TO:

CHARTERED DEVELOPMENT CORP.

FOR AND ON BEHALF OF LANGE LAND SURVEYS, LLC, I CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 2005, AND INCLUDES ITEMS 1–5 & 11A OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR LICENSED IN THE STATE OF COLORADO, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

DATE: 8/28/14

COLORADO REGISTERED JONATHAN R. LANGE 37908 PROFESSIONAL LAND SURVEYOR



VICINTY MAP
N.T.S.

GENERAL NOTES:

1. NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

2. BASIS OF BEARINGS: THE EASTERLY LINE OF TRACT A OF VISTA RIDGE FILING NO. 12 MINOR SUBDIVISION, ASSUMED TO BEAR S00°12'01"E, TO MATCH RECORDED PLATS. MONUMENTS DESCRIBED ON DRAWING.

3. FOUND PROPERTY CORNERS ARE DESCRIBED HEREON.

4. NO BUILDINGS ARE PRESENTLY LOCATED ON THIS PROPERTY.

6. THIS PROPERTY IS LOCATED IN ZONE C (AREAS OF MINIMAL FLOODING) ACCORDING TO FIRM COMMUNITY PANEL NUMBER 0802660970 D WITH A REVISION DATE OF 09/28/1990.

7. THE SUBJECT PROPERTY ABUTS UPON AND HAS INGRESS TO AND EGRESS FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS KNOWN AS RIDGE VIEW DRIVE.

8. PROPERTY IS CURRENTLY ZONED PD (PLANNED DEVELOPMENT).

9. TOTAL AREA OF THREE THE PARCELS IS 14.232 ACRES.

10. THE RECORD DESCRIPTION OF THE SUBJECT PROPERTY FORMS A MATHEMATICALLY CLOSED FIGURE AND, TO THE EXTENT ANY EASEMENT CANNOT BE LOCATED FROM ITS RECORD DESCRIPTION, A NOTATION IS MADE HEREON.

11. TWO PLATS HAVE BEEN RECORDED THAT AFFECT PARCELS: "VISTA RIDGE FILING NO. 2 FINAL PLAT", RECORDED 06/06/2003 AT RECEPTION NO. 3070387 AND "VISTA RIDGE FILING NO. 2 MINOR SUBDIVISION", RECORDED 11/15/2007 AT RECEPTION NO. 3517715, WHICH IS A REPLAT OF PARCEL 35B OF FILING NO. 2.

TITLE COMMITMENT NOTES:

THIS LAND SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY LANGE LAND SURVEYS, LLC. TO DETERMINE OWNERSHIP OF THIS PARCEL OF LAND, VERIFY THE DESCRIPTION SHOWN, VERIFY THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF THE ADJACENT PARCELS OF LAND, OR VERIFY EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHT-OF-WAY OR TITLE OF RECORD, LANGE LAND SURVEYS, LLC RELIED UPON ORDER NO. 25121037, WITH A DATE OF APRIL 11, 2014, PREPARED BY LAND TITLE GUARANTEE COMPANY.

THE FOLLOWING COMMENTS ARE IN REGARDS TO THE ABOVE REFERENCED ORDER NO.'S

SCHEDULE A

ITEM # COMMENT

1. NOTED ABOVE.

2., 3., 4. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

5. THE LEGAL DESCRIPTION OF THE LAND SURVEYED IS SHOWN HEREON, TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

SCHEDULE B – SECTION 1 (REQUIREMENTS)

ITEM # COMMENT

1.–5. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS. THIS ALTA/ACSM LAND TITLE SURVEY IS A RESPONSE TO THE REQUEST FOR A SURVEY.

SCHEDULE B – SECTION 2 (EXCEPTIONS)

ITEM # COMMENT

1.–14. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

15. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

16.–17. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

18. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

19.–20. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

21. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

22. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

23. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

24.–25. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

26. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

27.–29. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

30. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

31.–32. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

33. ITEM INTENTIONALLY DELETED.

34. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

35. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

36.–41. LANGE LAND SURVEYS DID NOT EXAMINE OR ADDRESS THESE ITEMS.

#	REVISIONS:	DATE:	BY:
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JOB NUMBER: 1057-556 SHEET: 1 OF 2

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1" = 60'
DATE: 03/18/14
FILE NO. ALTA

ALTA / ACSM LAND TITLE SURVEY
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

PREPARED FOR:
CHARTERED DEVELOPMENT

Lange Land Surveys
9572 W. 58TH AVE. ARVADA, CO 80002
P:(720) 242-9732 F:(720) 242-9654

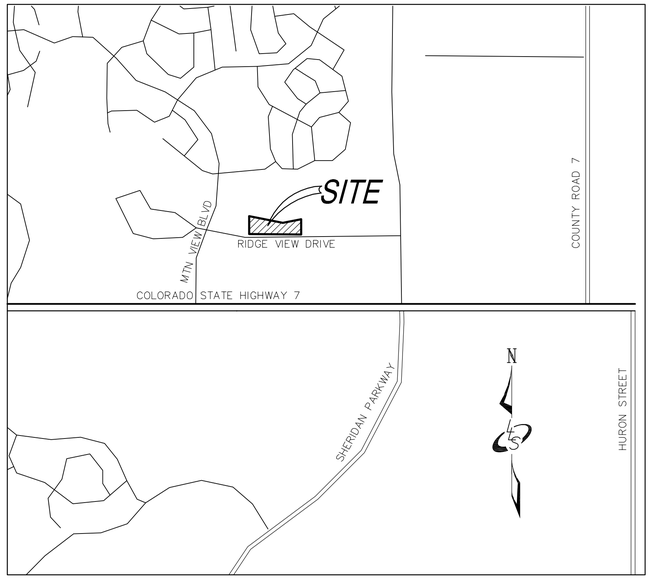
VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33,
TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 1 OF 4

LEGAL DESCRIPTION

LOT 2 OF "VISTA RIDGE FILING NO. 2 – MINOR SUBDIVISION", A SUBDIVISION PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715 OF THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

CONTAINING 175,823 SQUARE FEET OR 4.036 ACRES, MORE OR LESS.



VICINITY MAP
1"=1000'

LAND SUMMARY CHART		
TYPE	AREA	% OF TOTAL AREA
RESIDENTIAL LOTS (25)	102,984 S.F.	59%
TRACTS (3)	72,839 S.F.	41%
PUBLIC ROW	0 S.F.	0%
TOTAL	175,823 S.F.	100%

TRACT SUMMARY CHART				
TRACT	AREA	USE	OWNERSHIP	MAINTENANCE
TRACT A	41,101 S.F.	PRIVATE ACCESS DRIVE EMERGENCY ACCESS DRAINAGE/UTILITY	HOA	HOA
TRACT B	20,842 S.F.	OPEN SPACE DRAINAGE/UTILITY	HOA	HOA
TRACT C	10,896 S.F.	OPEN SPACE DRAINAGE/UTILITY	HOA	HOA

GENERAL NOTES

1. THE PLAT CONSISTS OF FURTHER SUBDIVIDING LOT 2, VISTA RIDGE FILING NO. 2, AS RECORDED 11/15/2007 AT RECEPTION NO. 3517715, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO. THIS PLAT WILL CONTAIN 25 SINGLE FAMILY RESIDENTIAL LOTS. ONLY ONE RESIDENTIAL DWELLING IS PERMITTED ON EACH SINGLE FAMILY LOT.

2. ALL GENERAL NOTES, DEDICATIONS, AND PLAT RESTRICTIONS AS SHOWN ON THE PLAT OF VISTA RIDGE FILING NO. 2, A SUBDIVISION PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715 OF THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, SHALL APPLY UNLESS SPECIFICALLY AMENDED AND SUPERCEDED HEREBY.

3. TRACT A IS FOR UTILITY, DRAINAGE, PRIVATE ACCESS DRIVES AND EMERGENCY ACCESS PURPOSES AND SHALL BE MAINTAINED BY THE SUBDIVIDER, ITS SUCCESSOR OR ASSIGNS, UNTIL SUCH TIME AS THIS TRACT IS CONVEYED TO THE HOA. TRACT B IS FOR DRAINAGE AND LANDSCAPING AND SHALL BE MAINTAINED BY THE SUBDIVIDER, ITS SUCCESSOR OR ASSIGNS, UNTIL SUCH TIME AS THIS TRACT IS CONVEYED TO THE HOA. TRACT C IS FOR DRAINAGE, LANDSCAPING AND EMERGENCY ACCESS FROM RIDGE VIEW DRIVE TO RIDGE VIEW COURT AND SHALL BE MAINTAINED BY THE SUBDIVIDER, ITS SUCCESSOR OR ASSIGNS, UNTIL SUCH TIME AS THIS TRACT IS CONVEYED TO THE HOA.

4. UTILITY AND DRAINAGE EASEMENTS, LABELED HEREON, SHALL BE GRANTED FOR THE INSTALLATION AND MAINTENANCE OF SANITARY SEWER LINES, WATER LINES, STORM DRAINAGE FACILITIES, SURFACE DRAINAGE AND FOR THE BENEFIT OF THE APPLICABLE UTILITY PROVIDERS FOR THE INSTALLATION, MAINTENANCE, AND REPLACEMENT OF ELECTRIC, GAS, TELEVISION, CABLE, AND TELECOMMUNICATIONS FACILITIES (DRY UTILITIES) AND ALL NECESSARY AND CONVENIENT APPURTENANCES THERETO, TOGETHER WITH A PERPETUAL RIGHT OF INGRESS AND EGRESS FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF SUCH LINES AND APPURTENANCES. SAID EASEMENTS AND RIGHTS ARE TO BE UTILIZED IN A RESPONSIBLE AND PRUDENT MANNER.

5. DRAINAGE EASEMENTS, LABELED HEREON, SHALL BE GRANTED FOR THE INSTALLATION AND MAINTENANCE OF DRAINAGE LINES AND ALL NECESSARY AND CONVENIENT APPURTENANCES THERETO, AS WELL AS SURFACE DRAINAGE, TOGETHER WITH A PERPETUAL RIGHT OF INGRESS AND EGRESS FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF SUCH LINES AND APPURTENANCES. SAID EASEMENTS AND RIGHTS ARE TO BE UTILIZED IN A RESPONSIBLE AND PRUDENT MANNER.

6. A BLANKET DRAINAGE EASEMENT SHALL BE GRANTED ALONG ALL COMMON LOT LINES FOR DOWNSPOUT DISCHARGE, DRAINAGE SWALES AND APPURTENANCES REQUIRED FOR PROPER LOT DRAINAGE.

7. BASIS OF BEARINGS: THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 33, WHICH BEARS NORTH 00°12'01" WEST ACCORDING TO THE VISTA RIDGE MASTER FINAL PLAT AND IS MONUMENTED AS SHOWN HEREON.

8. ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

9. BASED UPON THE INSURANCE RATE MAP COMMUNITY PANEL NO. 08013C 044J, THIS PANEL IS NOT PRINTED AND THERE IS NO SPECIAL FLOOD INFORMATION.

10. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18–4–508, OF THE COLORADO REVISED STATUTE.

11. DISTANCES ON THIS PLAT ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. A U.S. SURVEY FOOT IS DESCRIBED AS EXACTLY 1200/3937 METERS.

APPLICANT

CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
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ENGINEER

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SURVEYOR

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6475 WADSWORTH BLVD., SUITE 102
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DRAWN BY: LC
CHECKED BY: JRL
SCALE: N/A
DATE: 10/31/14
FILE NO. PRELIM PLAT

#	REVISIONS:	DATE:	BY:
1	TOWN COMMENTS	11/19/14	LC
2	TOWN COMMENTS/ENGINEER CHANGES	03/30/15	LC
3			
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5			
6			
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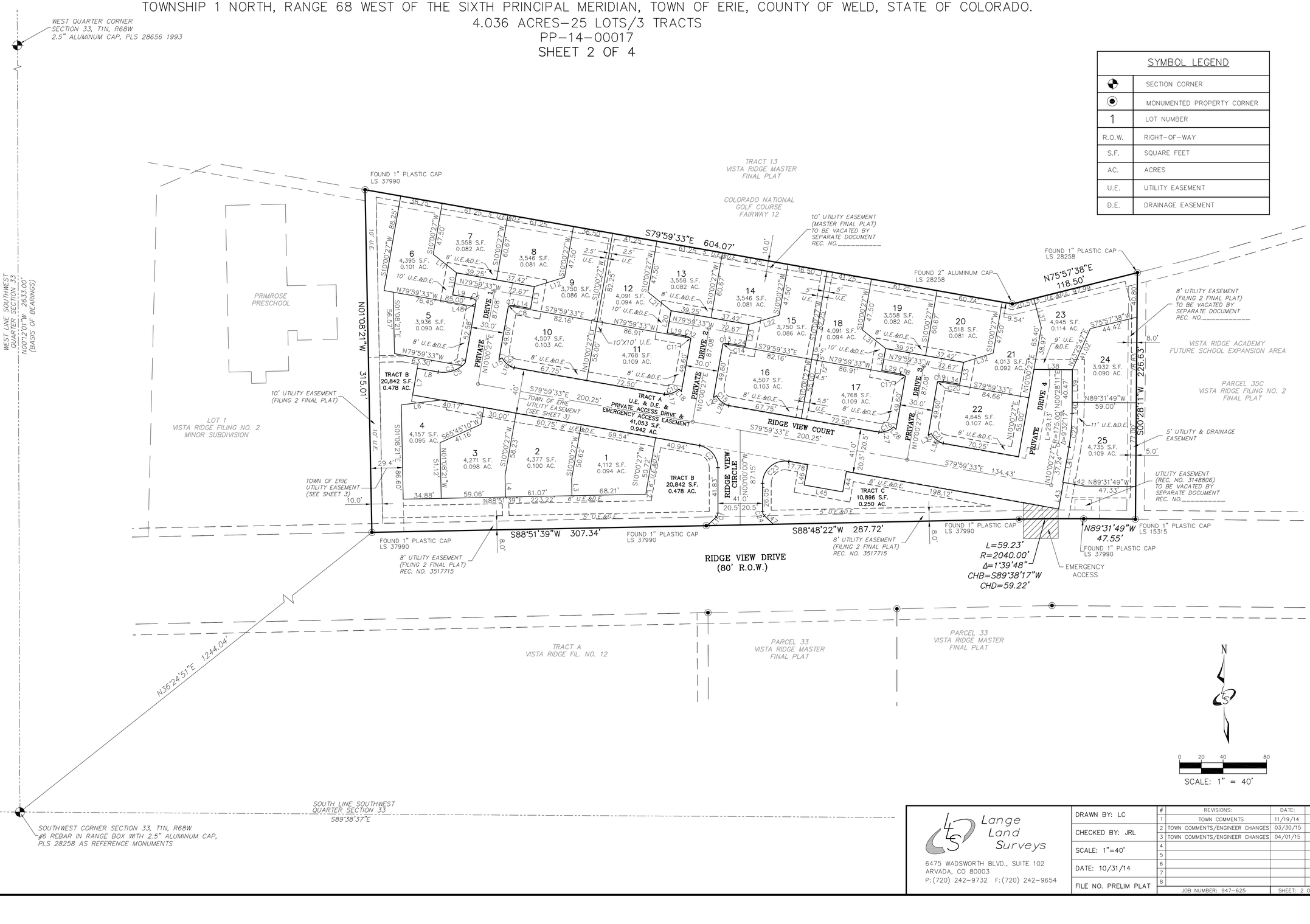
JOB NUMBER: 947–625
SHEET: 1 OF 4

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33,
TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 2 OF 4

SYMBOL LEGEND	
⊕	SECTION CORNER
◉	MONUMENTED PROPERTY CORNER
1	LOT NUMBER
R.O.W.	RIGHT–OF–WAY
S.F.	SQUARE FEET
AC.	ACRES
U.E.	UTILITY EASEMENT
D.E.	DRAINAGE EASEMENT



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SCALE: 1"=40'
DATE: 10/31/14
FILE NO. PRELIM PLAT

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3	TOWN COMMENTS/ENGINEER CHANGES	04/01/15	LC
4			
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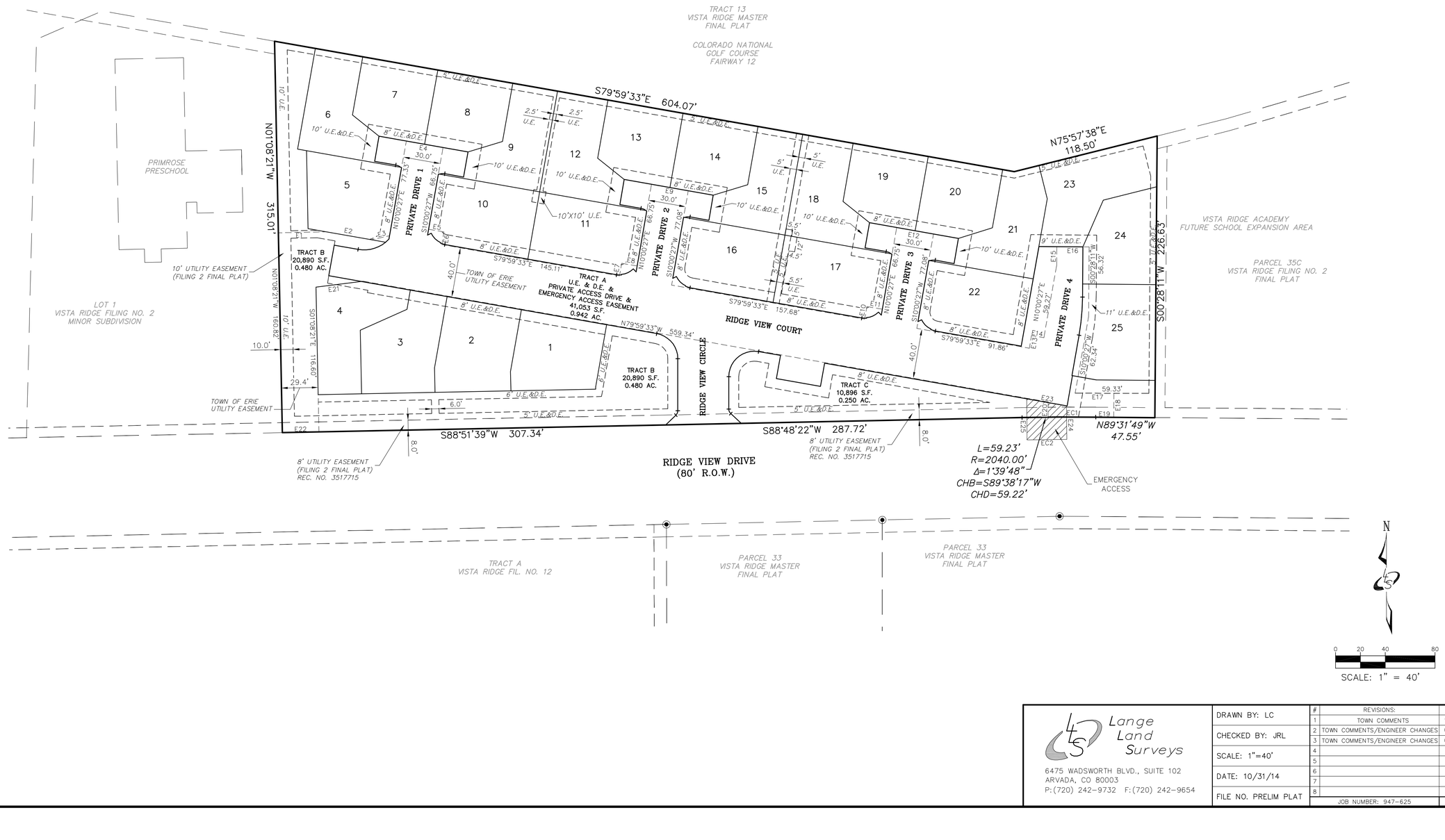
JOB NUMBER: 947–625 SHEET: 2 OF 4

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33,
TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.
4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 3 OF 4

EASEMENT DETAIL



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JOB NUMBER: 947–625 SHEET: 3 OF 4

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT PRELIMINARY PLAT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF SECTION 33,
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4.036 ACRES–25 LOTS/3 TRACTS
PP–14–00017
SHEET 4 OF 4

LINE TABLE

LINE	BEARING	DISTANCE
L1	N46°06'03"E	11.47'
L2	S01°08'21"E	1.85'
L3	N01°08'21"W	15.39'
L4	S01°08'21"E	19.67'
L5	S10°00'27"W	15.62'
L6	S82°56'43"W	36.55'
L7	S10°00'27"W	25.00'
L8	S79°59'33"E	19.50'
L9	N79°59'33"W	17.25'
L10	S10°00'27"W	20.50'
L11	N51°14'34"W	27.37'
L12	N73°00'03"E	29.00'
L13	N10°00'27"E	20.50'
L14	S79°59'33"E	15.42'
L15	N63°36'07"E	3.28'
L16	S24°14'03"W	0.50'
L17	N04°13'08"W	0.50'
L18	S43°35'12"E	3.28'
L19	S79°59'33"E	17.50'
L20	S10°00'27"W	20.50'
L21	N51°14'34"W	27.37'
L22	N73°00'03"E	29.00'
L23	N10°00'27"E	20.50'
L24	S79°59'33"E	15.42'
L25	N63°36'07"E	3.28'
L26	N24°14'03"E	0.50'
L27	S04°13'08"E	0.50'
L28	N43°35'12"W	3.28'
L29	S79°59'33"E	17.25'
L30	N10°00'27"E	20.50'
L31	N51°14'34"W	27.37'
L32	N72°32'10"E	28.54'
L33	S10°00'27"W	20.50'
L34	N79°59'33"W	15.42'
L35	N63°36'07"E	3.28'
L36	N24°14'03"E	0.50'
L37	S14°02'22"E	27.60'
L38	N89°31'49"W	35.41'
L39	N00°28'11"E	31.44'
L40	S00°28'11"W	10.53'
L41	N10°00'27"E	32.96'
L42	S79°59'33"E	19.96'
L43	S10°00'27"W	24.78'
L44	N10°00'27"E	19.00'
L45	S79°59'33"E	36.00'
L46	S10°00'27"W	19.00'
L47	N47°14'04"W	11.67'
L48	N10°00'27"E	5.66'

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	5.00'	4.02'	3.92'	S23°03'02"W	46°06'03"
C2	20.50'	28.62'	26.35'	S39°59'46"E	79°59'33"
C3	27.50'	23.57'	22.86'	N75°27'03"E	49°06'35"
C4	27.50'	3.67'	3.66'	S47°04'34"W	7°38'23"
C5	27.50'	27.24'	26.14'	N71°37'52"E	56°44'58"
C6	9.50'	5.27'	5.20'	S64°06'50"E	31°45'25"
C7	9.50'	4.58'	4.54'	N86°11'34"E	27°37'46"
C8	9.50'	0.68'	0.68'	S70°18'52"W	4°07'39"
C9	15.00'	10.81'	10.57'	N45°07'36"W	41°16'41"
C10	15.00'	10.81'	10.57'	N65°08'31"E	41°16'41"
C11	9.50'	0.68'	0.68'	S50°17'57"E	4°07'39"
C12	9.50'	4.58'	4.54'	N66°10'39"W	27°37'46"
C13	9.50'	4.58'	4.54'	N86°11'34"E	27°37'46"
C14	9.50'	0.68'	0.68'	S70°18'52"W	4°07'39"
C15	15.00'	10.81'	10.57'	S45°07'36"E	41°16'41"
C16	15.00'	10.81'	10.57'	S65°08'31"W	41°16'41"
C17	9.50'	0.68'	0.68'	S50°17'57"E	4°07'39"
C18	9.50'	4.58'	4.54'	S66°10'39"E	27°37'46"
C19	9.50'	4.58'	4.54'	N86°11'34"E	27°37'46"
C20	9.50'	0.68'	0.68'	S70°18'52"W	4°07'39"
C21	15.00'	10.81'	10.57'	N45°07'36"W	41°16'41"
C22	185.00'	30.80'	30.76'	S05°14'19"W	9°32'17"
C23	20.50'	35.78'	31.41'	S50°00'14"W	100°00'27"
C24	5.00'	4.12'	4.01'	N23°37'02"W	47°14'04"

EASEMENT LINE TABLE

E1	N88°45'27"E	38.58'
E2	S79°59'33"E	36.76'
E3	N77°30'27"E	15.03'
E4	S79°59'33"E	30.00'
E5	S79°59'33"E	12.57'
E6	S10°00'27"W	10.33'
E7	N10°00'27"E	10.33'
E8	S79°59'33"E	12.57'
E9	S79°59'33"E	30.00'
E10	N10°00'27"E	10.33'
E11	S79°59'33"E	12.57'
E12	S79°59'33"E	30.00'
E13	N10°00'27"E	10.33'
E14	S79°59'33"E	10.07'
E15	N00°28'11"E	14.92'
E16	S89°31'49"E	26.00'
E17	S89°49'01"E	31.16'
E18	S00°10'59"W	19.30'
E19	N89°31'49"W	14.48'
E20	N00°10'59"E	12.22'
E21	S82°56'43"W	38.25'
E22	S88°51'39"W	29.43'
E23	S79°59'33"E	32.53'
E24	S00°20'54"E	27.01'
E25	N00°20'54"W	33.02'

EASEMENT CURVE TABLE

EC1	2040.00'	38.31'	38.31'	S89°55'54"W	1°04'33"
EC2	2022.00'	32.00'	32.00'	S89°21'33"W	0°54'24"

Lange Land Surveys
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JOB NUMBER: 947–625
SHEET: 4 OF 4

prepared by
Enertia Consulting Group, LLC
1529 Market Street, Suite 200
Denver, CO 80202

Phase III Drainage Report

Montex North at Vista Ridge, Erie, Colorado

prepared for

Chartered Development Corp
3160 Village Vista Drive
Erie, CO 80516

LAND • ENERGY • INFRASTRUCTURE

ENGINEER'S CERTIFICATION

"I hereby certify that this Phase II Drainage Report for the design of Montex North at Vista Ridge was prepared by me (or under my direct supervision) in accordance with the provisions of the *Town of Erie Standards and Specifications for Design and Construction* for the owners thereof. I understand that the Town of Erie does not and will not assume liability for drainage facilities designed by others, including the designs presented in this report."

_____

Shawn C. Merz, PE
State of Colorado Registration No. 41241
For and on Behalf of Enertia Consulting Group

TOWN ACCEPTANCE

This report has been reviewed and found to be in general compliance with the *Town of Erie Standards and Specifications for Design and Construction* and other Town requirements. **THE ACCURACY AND VALIDITY OF THE ENGINEERING DESIGN, DETAILS, DIMENSIONS, QUANTITIES, AND CONCEPTS IN THIS REPORT REMAINS THE SOLE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.**

Accepted by: _____ Date: _____
Deputy Public Works Director

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APPENDIX B – HYDROLOGIC/HYDRAULIC COMPUTATIONS

- Impervious Calcs
- SF-2 Form
- 2-Year SF-3 Form
- 100-Year SF-3 Form
- Inlet Capacity Summary
- Street Capacity/Inlet Calcs
- 2-Year Pipe Sizing/HGL-EGL Calcs
- 100-Year Pipe Sizing/HGL-EGL Calcs
- Drainage Swale Capacity Calcs

APPENDIX C – REFERENCE DOCUMENTS

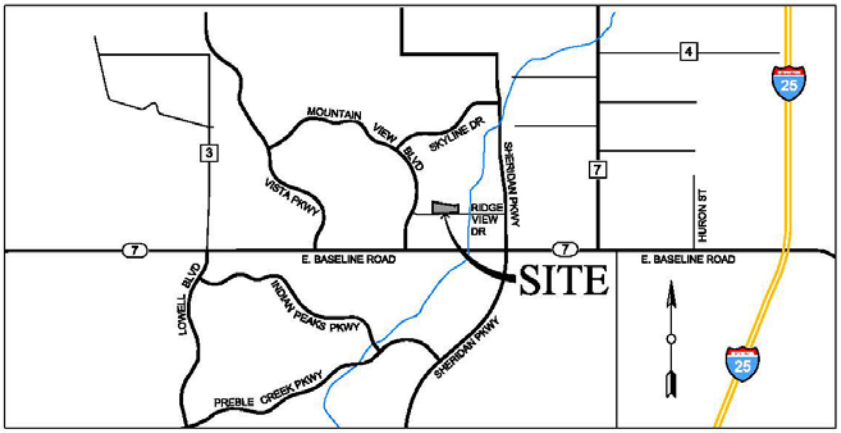
- Erie Criteria Sheets
- FIRM Map
- ALTA SURVEY
- Primrose School Final Drainage Report
- Primrose School Grading and Drainage Plan

1. GENERAL LOCATION AND DESCRIPTION

A. Site Location

The project site is a re-subdivision of Lot 2, Vista Ridge Filing No. 2 and is located in the Southwest Quarter of Section 33, Township 1 North, Range 68 West of the 6th Principle Meridian. The project is bounded to the north by Colorado National Golf Course, Vista Ridge Academy the east, Primrose Preschool to the west and Ridge View Drive to the south. The adjacent major roadways are Mountain View Boulevard to the west, Sheridan Parkway to the east and East Baseline Road to the south.

Montex at Vista Ridge Vicinity Map



B. Description of Property

The proposed site consists of 4.04 acres. The site is gently sloping from east to west with an existing slope of roughly 2.8%. Existing ground cover consists of natural grasses. There is a drainage swale along the western property line that collects runoff from the site and conveys the water to an inlet which drains to the detention pond west of Primrose Preschool (A3). To the east of the site, on the Vista Ridge Academy property, a retention pond has been constructed to capture runoff from the Vista Ridge Academy Site. There are no wetlands on the proposed site. The developed parcel will consist of 25 single-family homes with a density of 6.2 dwelling units/acre. There is an existing 10' utility easement along the north, west property line and an existing 8' utility easement along the east and south property line. There is also a pocket utility easement at the southeast corner of the site for a water stub to the site. The ALTA Survey for the site has been included in Appendix C.

The utility easement along the east, west and north property line will be reduced in size and pocket easements will be provided for transformers as part of this development.

2. DRAINAGE BASINS

A. Major Basin Description

Pond A3

The project is located within the FEMA Floodplain Panel 08013C0444J. This panel was not printed by FEMA. The FIRM Index notes this panel as having "*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED". Therefore the project is clear of any floodplain hazards. The project will discharge to a regional detention pond (Pond A3) west of Primrose Preschool where detention and water quality will be provided. This detention pond has a 100-year water surface elevation of 5232.89. The lowest elevation of the site is 5240.55 at the existing Type C inlet on the west side of the property. The pond is owned and maintained by the Vista Ridge Metro District. The existing site is not irrigated. However there is irrigation on the golf course to the north and the right-of-way to the south. Currently, the proposed site is vacant. This project will develop the infrastructure for 25 single-family residential homes.

B. Sub-Basin Description

Basin S1

Basin S1 consists of 0.93 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is 69% which results in Q_2=1.54 cfs and Q_{100}=5.75 cfs. This water will be collected with a 10' Type R on-grade inlet between lots 116 and 17 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S2

Basin S2 consists of 0.33 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is 43% which results in Q_2=0.34 cfs and Q_{100}=1.77 cfs. This water will be collected with a 10' Type R on-grade inlet at the southeast corner of Ridge View Court and Ridge View Circle and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S3

Basin S3 consists of 0.67 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and

landscaped open space areas. The imperviousness is 74% which results in Q_2=1.21 cfs and Q_{100}=4.29 cfs. This water will be collected with a 10' Type R on-grade inlet near lot 10 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S4

Basin S4 consists of 0.41 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is 78% which results in Q_2=0.81 cfs and Q_{100}=2.75 cfs. This water will be collected with a 10' Type R sump inlet between lots 4 and 5 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S5

Basin S5 consists of 0.45 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is anticipated to be 77% which results in Q_2=0.87 cfs and Q_{100}=2.98 cfs. This water will be collected with a 10' Type R sump inlet between lots 4 and 5 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S6

Basin S6 consists of 0.41 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space areas. The imperviousness is anticipated to be 21% which results in Q_2=0.25 cfs and Q_{100}=2.09 cfs. This water will be collected with a Type 13 sump inlet near lot 4 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S7

Basin S7 consists of 0.23 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space areas. The imperviousness is anticipated to be 29% which results in Q_2=0.21 cfs and Q_{100}=1.48 cfs. This water will be collected with a Type D sump inlet behind lot 4 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S8

Basin S8 consists of 0.23 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space area. The imperviousness is anticipated to be 53% which results in Q_2=0.28 cfs and Q_{100}=1.28 cfs. This basin will combine with basin OS4 & OS5 runoff. The combined water will be collected with a Type 13 sump inlet between lots 15 and 18 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S9

Basin S9 consists of 0.09 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space area. The imperviousness is anticipated to be 50% which results in Q_2=0.26 cfs and Q_{100}=1.26 cfs. This water will drain onto the golf course.

Basin S10
Basin S10 consists of 0.19 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is anticipated to be 42% which results in Q_2=0.09 cfs and Q_{100}=0.48 cfs. This water will drain onto Ridge View Drive.

Basin OS1
Basin OS1 is on the Vista Ridge Academy site and consists of 0.19 acres of native grasses. The imperviousness is 5% which results in Q_2=0.05 cfs and Q_{100}=0.92 cfs. This basin will drain between the houses and combine with basin S1 runoff.

Basin OS2
Basin OS2 is on the Vista Ridge Academy site and consists of 0.11 acres of native grasses. The imperviousness is 5% which results in Q_2=0.03 cfs and Q_{100}=0.54 cfs. This basin will drain between the houses and combine with basin S2 runoff.

Basin OS3
Basin OS3 is on the Vista Ridge Academy site and consists of 2.37 acres of native grasses and a small parking area. This area in anticipated to be developed in the future and an imperviousness of 95% has been assumed which results in Q_2=6.51 cfs and Q_{100}=19.36 cfs. This basin currently drains to a retention pond constructed within the basin.

Basin OS4
Basin OS2 is on the Vista Ridge Academy site and consists of 0.07 acres of native grasses. The imperviousness is 5% which results in Q_2=0.02 cfs and Q_{100}=0.35 cfs. This basin will combine with basin S8 & OS5 runoff. The combined water will be collected with a Type 13 sump inlet between lots 15 and 18 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin OS5
Basin OS5 is on the Colorado National Golf Course. It is currently comprised of native grasses and irrigated grass turf. The basin is 0.57 acres. The imperviousness is 5% which results in Q_2=0.15 cfs and Q_{100}=2.68 cfs. This basin will drain to a grass swale along the north property line where it will combine with basin S8 & OS4 runoff. The combined water will be collected with a Type 13 sump inlet between lots 15 and 18 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

A conservative time of concentration of 5 minutes has been assumed for all basins.

3. DRAINAGE DESIGN CRITERIA

A. Development Criteria Reference and Constraints

The site parcel is identified as Lot 2 in the Primrose Drainage Report. A 36-inch diameter pipe with a Type C Inlet was extended to the site to capture runoff. The anticipated 100-year runoff was determined to be 59.58 cfs. A drainage swale was constructed with the Primrose

Preschool construction which directs runoff to the inlet. The Vista Ridge Academy Site drainage east of the proposed development is divided in the middle by a high point. The eastern portion of Vista Ridge Academy drains east to an onsite detention pond and the western portion drains to the west. The western portion of the site consists of parking lot and undeveloped land. Runoff from the western basin drains to a retention pond which was constructed onsite restricting discharge from the project. A pipe stub and emergency swale will be constructed with the Montex North Development to convey future development to the detention pond. Vista Ridge Academy will need to control the emergency overflow from the retention pond and future development and convey it to the provided swale location. The Final Primrose Drainage Report has been included in Appendix C for reference.

B. Hydrological Criteria

Basin Runoff has been calculated using criteria from the Town of Erie *"STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS, 2014 Edition"*. The design storm return periods for residential land use are 2-year for the initial storm and 100-year for the major storm. Imperviousness values were selected using Table 800-3. One-hour rainfall depths of 1.01 for the 2-year design storm and 2.70 for the 100-year design storm were used to calculate the intensities using Urban Drainage equation RA-3. Using the rational method, runoffs for each basin were determined. Due to the small basin sizes the time of concentration was assumed to be 5 minutes for each basin. The hydrologic calculations are located in Appendix B.

C. Hydraulic Criteria

The maximum allowable runoff from the Project and Vista Ridge Academy may not exceed 59.6 cfs as outlined in the Primrose Preschool Final Drainage Report. During the 2-year event, the depth of flow for local roads may not overtop the curb and may extend to the crown of the road. Residential buildings are required to be no less than 12-inches above the 100-year water surface elevation and the water depth may not exceed 18-inches at the gutter flow line. A "Hollywood Monolithic Integral Curbwalk" will be used on this site. Therefore, the initial flow line depth will be limited to 4" and the major storm runoff has been limited to the back of the utility easement. Additional capacity will be required at the 10' type R inlet located at the low point at the west end of Ridge View Court, therefore 6" vertical curb will be provided in this area. This allows the flow to pond to 6" before spilling to the west.

D. Adaptations from Criteria

No adaptions are requested at this time.

4. DRAINAGE FACILITY DESIGN

A. General Concept

The site has been graded to drain from east to west which follows the historic drainage patterns. The Private Drives drain to Ridge View Court. Residential downspouts will discharge to the ground surface. The majority of onsite runoff drains to Ridge View Court and is captured in Type R inlets and conveyed to the detention facility via RCP piping.

Basin S9 cannot be captured and will discharge to Colorado National Golf Course, however this flow is small (Q_2=0.26 cfs, Q_{100}=1.26 cfs) and has been minimized. Additionally, there is a small basin from the golf course (Basin OS5) which drains onto the Montex North Site. Flow from the golf course (Q_2=0.15 cfs, Q_{100}=2.68 cfs) exceeds the flow from Basin S9. The golf course runoff is captured in an area inlet between Buildings 15 and 18 and routed through the pond west of Primrose Preschool where detention and water quality is provided. This offsets the runoff to the golf course from Basin S9. Basin S9 water quality and detention will be provided in downstream ponds. Ultimately both basins end up in the same location.

Basin S10 will not be collected in the Montex North storm drainage system. This is a small area from the high point in Ridge View Circle which cannot be captured and will discharge flow (Q_2=0.09 cfs, Q_{100}=0.48 cfs) to Ridge View Drive.

An existing retention pond is located on the Vista Ridge Academy site. This pond currently prevents the majority of water from draining onto the Montex North Site. A storm drain stub will be provided to the Vista Ridge Academy south of lot 25 for future development. This pipe has been sized to accommodate a 95% impervious development. A swale has also been provided at this location to accommodate any potential emergency overflow. The retention pond should be modified to control the emergency overflow location and prevent overflow from discharging to the proposed homes.

An emergency overflow has been provided at the 10’ Type R inlet between lots 4 and 5 (Design Point 4). This emergency overflow has been sized to pass all tributary flow (Basin OS1-OS-3, S1-S5). Should this inlet plug, water will be conveyed to a Type D sump area inlet west of lot 4 (Design Point 5). An additional emergency overflow has been provided at this location to convey water to the Primrose Preschool parking lot.

Additional area inlets have been provided to capture onsite flow from swales between lots 15 and 18 and behind lot 4.

B. Specific Details

The inlet and street capacities were sized using Urban Drainage and Flood Control District Street Capacity and Inlet Sizing spreadsheet. Two 10’ Type R on grade inlets have been located at the east side of the Ridge View Court and Ridge View Circle intersection. An additional 10’ Type R inlet has been provided near lot 10 and a 10’ Type R sump inlet has been provided at the Ridge View Court low point (Design Point 4) near the fire department turnaround between lots 4 and 5 at the western edge of the site.

The inlets have been provided to capture runoff and maintain street capacities at allowable depths during the initial and major storm event and have been spaced to meet the Town of Erie Design Criteria. The storm sewer system has been designed to capture and convey the 100-year storm event. The curb near the fire department turn-around at the west end of Ridge View Court has been transitioned from a 4” Hollywood Curb to a 6” vertical curb. 6-inches of ponding depth enables the 10’ type R sump inlet to capture the 100-year storm. Should this inlet plug, water will spill over and into the drainage swale along the west property line.

The existing Type C inlet onsite near the west property line will be removed and replaced closer to the property with a close mesh grate Type D Inlet to accommodate the site layout. An emergency overflow spillway has been designed at this location to provide 1.2' of depth. Assuming a clogging factor of 0.5, this inlet has a capacity of 20.5 cfs with 1.2' of ponding. Basin S7 has 1.48 cfs during the major design storm. Should this inlet plug, water will spill out into the Primrose Preschool parking lot and drain to pond A3. A capacity chart for the Type D inlet has been provided in Appendix B.

A Type 13 sump inlet has been provided between lots 15 and 18. This sump was set to a depth of 9" to capture the 100-year runoff from basins S8, OS4 and OS5. Should this inlet plug water will be conveyed onto the golf course.

Hydraulic Analysis was performed using the Hydraflow software within AutoCAD to size pipes and determine HGL's and EGL's. The pipes have been sized to keep the HGL and the EGL below the proposed ground surface.

Language has been included in the Final Plat to allow for drainage runoff and maintenance on all tracts and individual lots.

All hydrologic and hydraulic calculations are provided in Appendix B.

5. SUMMARY

The proposed Montex North Residential Development will fall within the drainage guidelines outlined in the Town of Erie Standards and Specification as well as the previous drainage studies. The proposed development will construct a storm sewer system to convey runoff to the provided 36-inch storm drainage stub and ultimately to the existing Pond A3 detention facility. No adverse impacts are anticipated to the existing detention facilities.

6. REFERENCES

STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS, Town of Erie, Colorado, 2014 Edition.

URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 1, 2 & 3., UDFCD, Denver, Colorado, Revised April 2008.

FINAL DRAINAGE REPORT – PRIMROSE SCHOOL, Hurst and Associates, Inc, May 8, 2007.

APPENDIX A

Drainage Map

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

SK-14-00020

DESIGN POINT SUMMARY TABLE

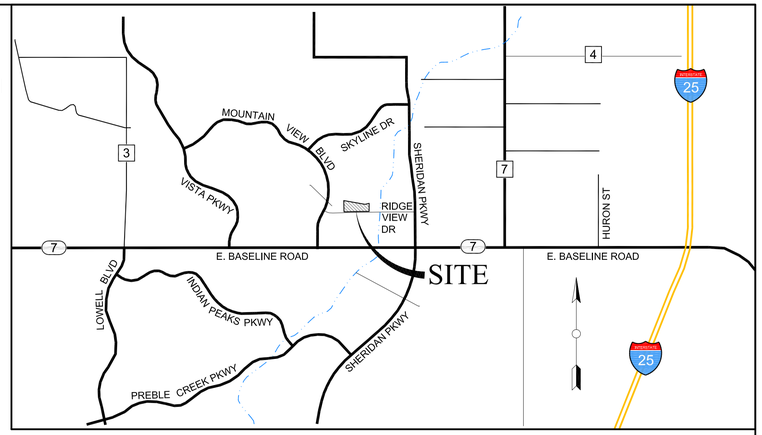
DESIGN POINT	Q_5 (CFS)	Q_{100} (CFS)	TRIBUTARY BASINS
1	1.54	10.88	S8, OS4, OS 5, S1, OS1
2	6.61	31.96	S8, OS4, OS 5, S1, OS1, S2, OS2
3	7.07	35.38	S8, OS4, OS 5, S1, OS1, S2, OS2, S3
4	8.07	40.58	S8, OS4, OS 5, S1, OS1, S2, OS2, S3, S4, S5
5	8.22	43.65	S8, OS4, OS 5, S1, OS1, S2, OS2, S3, S4, S5, S6, S7

BASIN RUNOFF SUMMARY TABLE

BASIN	AREA (AC)	Q_5 (CFS)	Q_{100} (CFS)
S1	0.93	1.54	5.75
S2	0.33	0.34	1.77
S3	0.67	1.21	4.29
S4	0.41	0.81	2.75
S5	0.45	0.87	2.98
S6	0.41	0.25	2.09
S7	0.29	0.21	1.48
S8	0.23	0.28	1.28
S9	0.23	0.26	1.26
S10	0.09	0.09	0.48
OS1	0.19	0.05	0.92
OS2	0.11	0.03	0.54
OS3	2.37	6.51	19.36
OS4	0.07	0.02	0.35
OS5	0.57	0.15	2.68

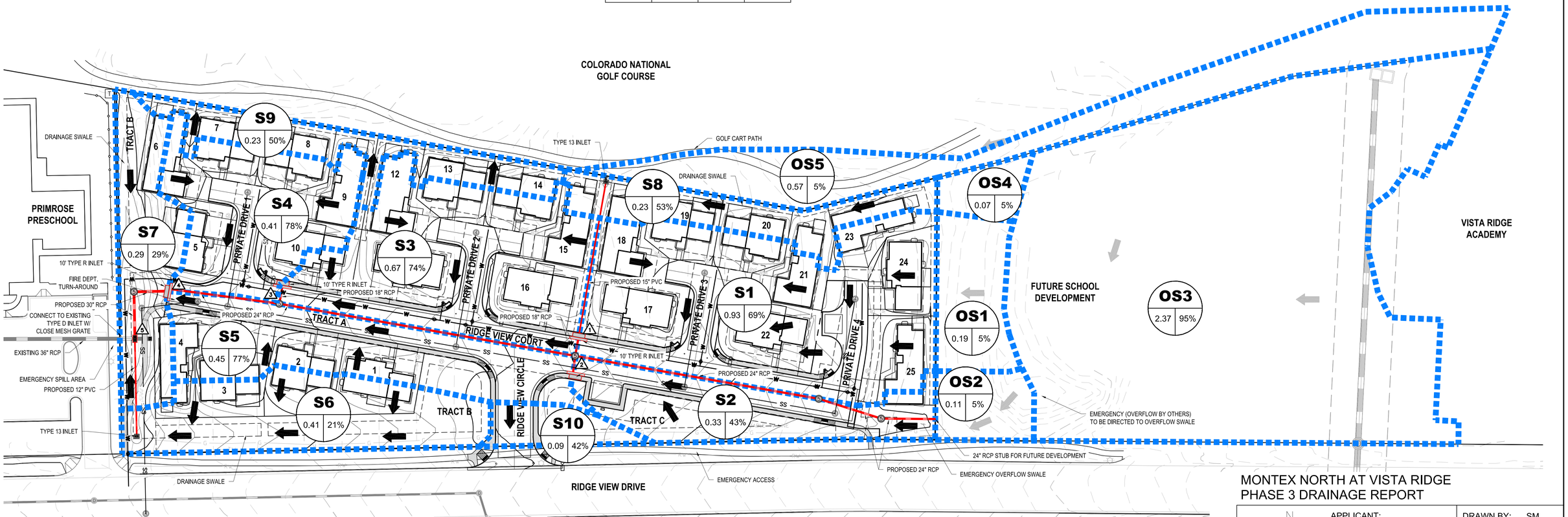
LEGEND

- PROPOSED CONDITION DRAINAGE BOUNDARY
- 5525 EXISTING CONTOUR
- 5525 PROPOSED CONTOUR
- EXISTING STORM DRAIN SYSTEM
- PROPOSED STORM DRAIN SYSTEM
- EXISTING DRAINAGE FLOW ARROW
- PROPOSED DRAINAGE FLOW ARROW
- XX BASIN IDENTIFICATION
- XX.X IMPERVIOUSNESS
- XX% AREA (ACRES)



GENERAL LOCATION MAP

SCALE 1"=2000'



MONTEX NORTH AT VISTA RIDGE
PHASE 3 DRAINAGE REPORT

N

0' 20' 40' 80'

SCALE: 1"=40'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY: SM
APRVD BY: SM
DATE: 10/31/2014
REVISED: 4/2/2015

SHEET 1 OF 1

APPENDIX B

Calculations

ENERTIA CONSULTING GROUP

CALCULATED BY: SCM
DATE: 31-Mar-15

Montex North at Vista Ridge
Proposed Conditions Imperviousness Calculations

		Impervious Area			
Basin ID	**Total Basin Area (sf)**	**Building (sf)**	**Drives, Pvmt, Swk (sf)**	**Total Imp. (sf)**	**Imperviousness (%)**
S1	40,602			12,523	**69%**
S2	14,319			8,093	**43%**
S3	29,110			7,601	**74%**
S4	18,012			4,008	**78%**
S5	19,676			4,538	**77%**
S6	17,954			14,247	**21%**
S7	12,427			8,870	**29%**
S8	9,947			4,666	**53%**
S9	9,921			4,933	**50%**
S10	3,855			2,231	**42%**
OS1	8,430			422	**5%**
OS2	4,995			250	**5%**
OS3	103,340			98,173	**95%**
OS4	3,245			162	**5%**
OS5	24,624			1,231	**5%**

Total Site Imperviousness (%) = ***59%***

STANDARD FORM SF-2
TIME OF CONCENTRATION

CALCULATED BY: SCM
DATE: 31-Mar-15
CHECKED BY: JMM

PROJECT: Montex North at Vista Ridge
JOB NUMBER:

SUB-BASIN DATA					INITIAL/OVERLAND TIME (T_i)			TRAVEL TIME (T_t)					Tc CHECK (URBANIZED BASINS)			FINAL T_c	REMARKS							
DESIGN:	AREA	AREA IMP.	AREA	C_5	LENGTH	SLOPE	T_i	LENGTH	SLOPE	C_V	VEL.	T_t	COMP.	TOTAL	T_c=(L/180)+10			C_2	C_5	C_{100}	K_2	K_5	K_{100}	Imperv.
	SF	SF	Ac		Ft	%		Ft	%		FPS		T_c	LENGTH	MIN	MIN									%
(1)			(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)									
S1	40,602	28,079	0.93	0.52												5.0		0.48	0.52	0.67	0.00	0.04	0.19	69%
S2	14,319	6,226	0.33	0.36												5.0		0.30	0.36	0.59	0.00	0.07	0.29	43%
S3	29,110	21,509	0.67	0.57												5.0		0.53	0.57	0.70	0.00	0.04	0.17	74%
S4	18,012	14,004	0.41	0.60												5.0		0.57	0.60	0.73	0.00	0.03	0.16	78%
S5	19,676	15,138	0.45	0.59												5.0		0.56	0.59	0.72	0.00	0.03	0.16	77%
S6	17,954	3,707	0.41	0.26												5.0		0.17	0.26	0.55	0.00	0.09	0.38	21%
S7	12,427	3,557	0.29	0.30												5.0		0.22	0.30	0.57	0.00	0.08	0.35	29%
S8	9,947	5,281	0.23	0.41												5.0		0.36	0.41	0.61	0.00	0.06	0.25	53%
S9	9,921	4,988	0.23	0.40												5.0		0.34	0.40	0.60	0.00	0.06	0.26	50%
S10	3,855	1,624	0.09	0.36												5.0		0.29	0.36	0.59	0.00	0.07	0.30	42%
OS1	8,430	422	0.19	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
OS2	4,995	250	0.11	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
OS3	103,340	98,173	2.37	0.82												5.0		0.80	0.82	0.89	0.00	0.02	0.09	95%
OS4	3,245	162	0.07	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
OS5	24,624	1,231	0.57	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
Total																								

STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

CALCULATED BY: SCM
DATE: 31-Mar-15
CHECKED BY: JMM

P_1= 1.01

PROJECT: Montex North at Vista Ridge
JOB NUMBER:
DESIGN STORM: 2-Year

* Negative flows indicate flow in storm sewer.

STREET	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
	DESIGN POINT	AREA DESIG.	AREA (Ac)	RUNOFF COEFF.	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Flow (cfs)	Flow (cfs)	Slope (%)	Size (in)	Length (ft)	Velocity (fps)	tt (min)	
		S1	0.93	0.48	5.0	0.45	3.43	1.54													
		S2	0.33	0.30	5.0	0.10	3.43	0.34													
		S3	0.67	0.53	5.0	0.35	3.43	1.21													
		S4	0.41	0.57	5.0	0.24	3.43	0.81													
		S5	0.45	0.56	5.0	0.25	3.43	0.87	5.0	0.49	3.43	1.68									Basin S4 & S5 C2=0.57, A=0.86 ac
		S6	0.41	0.17	5.0	0.07	3.43	0.25													
		S7	0.29	0.22	5.0	0.06	3.43	0.21													
		S8	0.23	0.36	5.0	0.08	3.43	0.28													
		S9	0.23	0.34	5.0	0.08	3.43	0.26													Offsite Flow
		S10	0.09	0.29	5.0	0.03	3.43	0.09													Offsite Flow
		OS1	0.19	0.08	5.0	0.01	3.43	0.05	5.0	0.47	3.43	1.59									Basin S1 & OS1 C2=0.42, A=1.12ac
		OS2	0.11	0.08	5.0	0.01	3.43	0.03	5.0	0.11	3.43	0.37									Basin S2 & OS2 C2=0.25, A=0.44ac
		OS3	2.37	0.80	5.0	1.90	3.43	6.51													Offsite Flow (Retention Pond)
		OS4	0.07	0.08	5.0	0.01	3.43	0.02													
		OS5	0.57	0.08	5.0	0.04	3.43	0.15	5.0	0.13	3.43	0.45									Basin S8, OS4 & OS5 C2=0.15, A=0.87

STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

CALCULATED BY: SCM
DATE: 31-Mar-15
CHECKED BY: JMM

P_1= 2.70

PROJECT: Montex North at Vista Ridge
JOB NUMBER:
DESIGN STORM: 100-Year

* Negative flows indicate flow in storm sewer.

STREET	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
	DESIGN POINT	AREA DESIG.	AREA (Ac)	RUNOFF COEFF.	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Flow (cfs)	Flow (cfs)	Slope (%)	Size (in)	Length (ft)	Velocity (fps)	tt (min)	
		S1	0.93	0.67	5.0	0.63	9.16	5.75													
		S2	0.33	0.59	5.0	0.19	9.16	1.77													
		S3	0.67	0.70	5.0	0.47	9.16	4.29													
		S4	0.41	0.73	5.0	0.30	9.16	2.75													
		S5	0.45	0.72	5.0	0.33	9.16	2.98	5.0	0.63	9.16	5.73									Basin S4 & S5 C100=0.73, A=0.86 ac
		S6	0.41	0.55	5.0	0.23	9.16	2.09													
		S7	0.29	0.57	5.0	0.16	9.16	1.48													
		S8	0.23	0.61	5.0	0.14	9.16	1.28													
		S9	0.23	0.60	5.0	0.14	9.16	1.26													Offsite Flow
		S10	0.09	0.59	5.0	0.05	9.16	0.48													Offsite Flow
		OS1	0.19	0.52	5.0	0.10	9.16	0.92	5.0	0.73	9.16	6.67									Basin S1 & OS1 C100=0.65, A=1.12ac
		OS2	0.11	0.52	5.0	0.06	9.16	0.54	5.0	0.25	9.16	2.32									Basin S2 & OS2 C100=0.57, A=0.44ac
		OS3	2.37	0.89	5.0	2.11	9.16	19.36													Offsite Flow (Retention Pond)
		OS4	0.07	0.52	5.0	0.04	9.16	0.35													
		OS5	0.57	0.52	5.0	0.29	9.16	2.68	5.0	0.47	9.16	4.31									Basin S8, OS4 & OS5 C100=0.54, A=0.87

Inlet Capcity Summary

Basin S1 & OS1

Q_2 =	1.59 cfs	
Q_{100} =	6.67 cfs	
Q_2 (Carryover from other basins)=	0 cfs	
Q_{100} (Carryover from other basins)=	0 cfs	
Q_2 (Total)=	**1.59 cfs**	
Q_{100} (Total)=	**6.67 cfs**	
Inlet Type:	**10' Type R**	
Capture Per UDFCD Inlet Spreadsheet:	**6.12 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.55 cfs**	**to Basin S3**

Basin S2 & OS2

Q_2 =	0.37 cfs	
Q_{100} =	2.32 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.37 cfs**	
Q_{100} (Total)=	**2.32 cfs**	
Inlet Type:	**10' Type R**	
Capture Per UDFCD Inlet Spreadsheet:	**2.32 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Basin S6

Q_2 =	0.25 cfs	
Q_{100} =	2.09 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.25 cfs**	
Q_{100} (Total)=	**2.09 cfs**	
Inlet Type:	**Type 13**	
Max Sump Depth	6"	
Capture Per UDFCD Inlet Spreadsheet:	**2.64 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Basin S7

Q_2 =	0.21 cfs	
Q_{100} =	1.48 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.21 cfs**	
Q_{100} (Total)=	**1.48 cfs**	
Inlet Type:	**Type D**	
Max Sump Depth	1.7'	
Capture Per UDFCD Chart:	**30.00 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Basin S3

Q_2 =	1.21 cfs	
Q_{100} =	4.29 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.55 cfs	
Q_2 (Total)=	**1.21 cfs**	
Q_{100} (Total)=	**4.84 cfs**	
Inlet Type:	**10' Type R**	
Capture Per UDFCD Inlet Spreadsheet:	**4.81 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.03 cfs**	**to Basin S4 & S5**

Basin S4 & S5

Q_2 =	1.68 cfs	
Q_{100} =	5.73 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.03 cfs	
Q_2 (Total)=	**1.68 cfs**	
Q_{100} (Total)=	**5.76 cfs**	
Inlet Type:	**10' Type R**	
Max Sump Depth	6"	
Capture Per UDFCD Inlet Spreadsheet:	**5.76 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

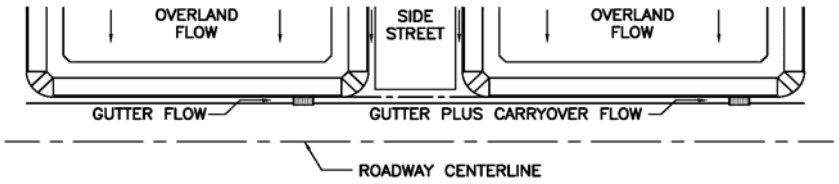
Basin S8, OS4 & OS5

Q_2 =	0.45 cfs	
Q_{100} =	4.31 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.45 cfs**	
Q_{100} (Total)=	**4.31 cfs**	
Inlet Type:	**Type 13**	
Max Sump Depth	9"	
Capture Per UDFCD Inlet Spreadsheet:	**4.55 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S1 & OS1



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	1.59	6.67	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

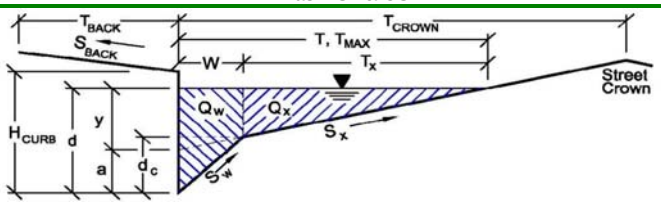
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.00**	**cfs**
Total Design Peak Flow, Q =	**1.59**	**6.67**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S1 & OS1



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.06**	**14.62**	**cfs**

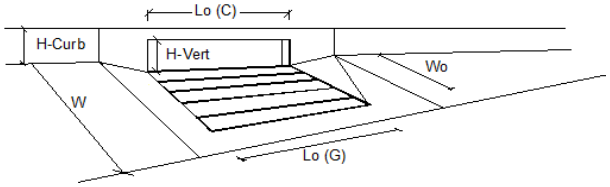
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: Montex North

Inlet ID: Basin S1 & OS1

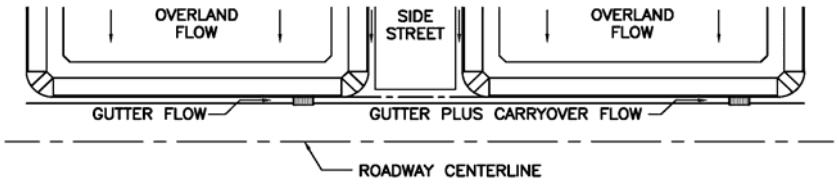


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.59**	**6.12**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.00**	**0.55**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**92**	**%**

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S2 & OS2



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	0.37	2.32	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

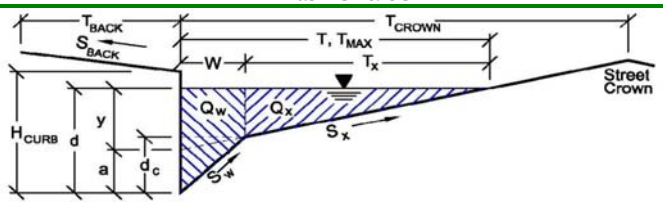
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.00**	**cfs**
Total Design Peak Flow, Q =	**0.37**	**2.32**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S2 & OS2



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.06**	**14.62**	**cfs**

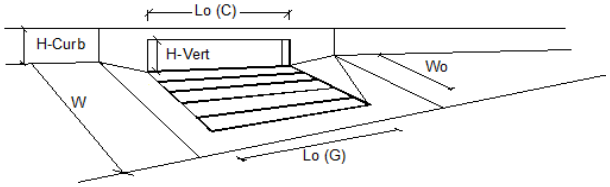
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: Montex North

Inlet ID: Basin S2 & OS2

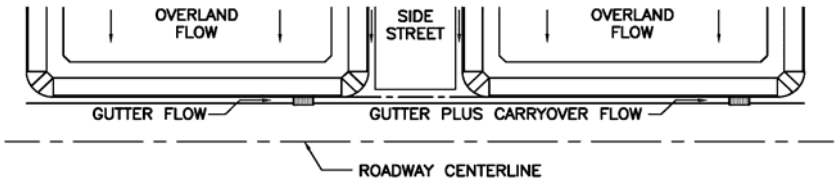


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.37**	**2.32**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.00**	**0.00**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100**	**%**

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S3



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	1.21	4.29	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

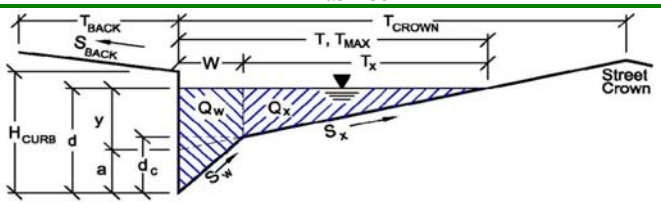
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.55**	**cfs**
Total Design Peak Flow, Q =	**1.21**	**4.84**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S3



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.86**	**15.54**	**cfs**

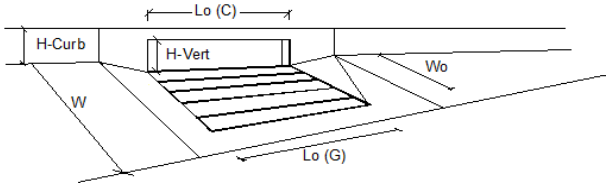
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: Montex North

Inlet ID: Basin S3

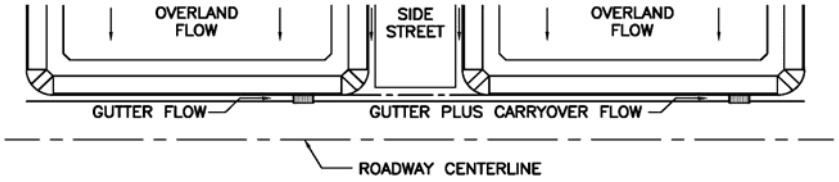


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.21**	**4.81**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.00**	**0.03**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**99**	**%**

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S4 & S5



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	1.68	5.73	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

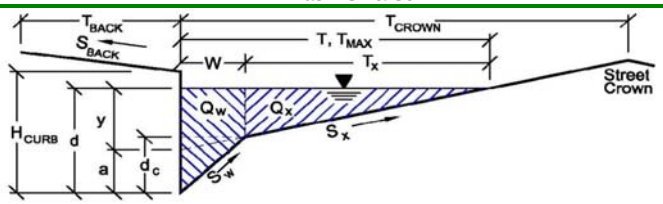
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.03**	**cfs**
Total Design Peak Flow, Q =	**1.68**	**5.76**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S4 & S5



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.86**	**15.54**	**cfs**

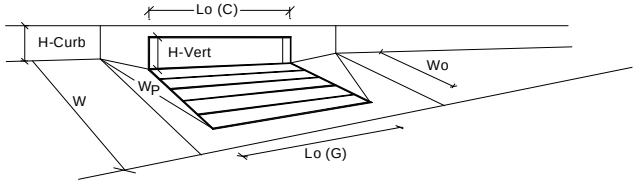
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET IN A SUMP OR SAG LOCATION

Project = Montex North

Inlet ID = Basin S4 & S5



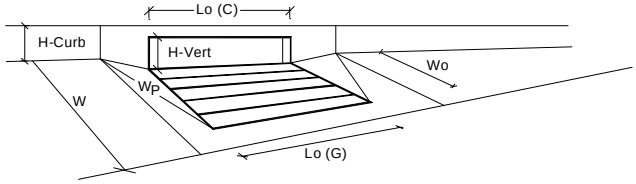
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**8.28**	**8.28**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	1.68	5.76	cfs

☑ Override Depths

INLET IN A SUMP OR SAG LOCATION

Project = Montex North

Inlet ID = Basin S6



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Valley Grate		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	N/A	N/A	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	N/A	N/A	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	N/A	N/A	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	N/A	N/A	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	N/A	N/A	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	N/A	N/A	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	N/A	N/A	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.64**	**2.64**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.25	2.09	cfs

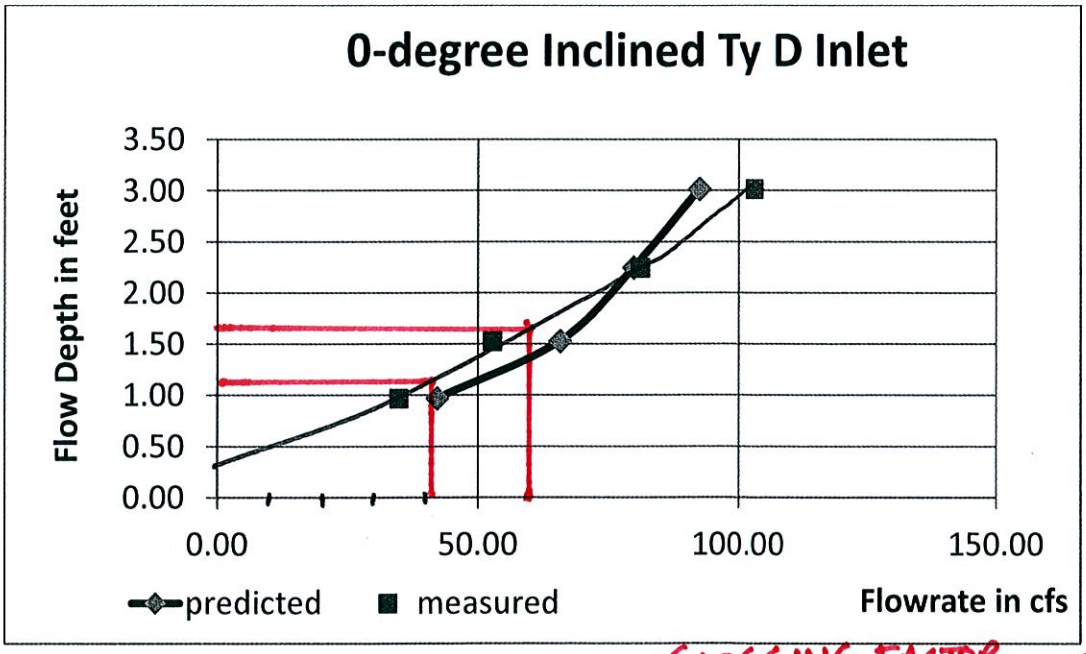
☑ Override Depths

PAGE 30 OF URBAN DRAINAGE HYDRAULIC CAPACITY OF CDOT TYPE C AND D AREA INLETS

Width of Grate	B	3.00		(input)
Inclined Length of Grate	L	6.00	ft	
Opening Ratio of Grate	n	0.70		(input)
Grate Discharge Coeff	Cd	0.79		(input)
Height of Box	Hb=	0.00	ft	
Inclined Angle	@	0.00	degree	(input)
Orifice/ Weir Coeff	Co=	0.53	Cw=	1.69
Orientation	Ko=	0		

BASIN S7

Water Depth H ft	Submerged Si Weir Length ft (X)	Inclined Left S Weir cfs	Inclined Right S Weir cfs	Base Weir cfs	Total Weir cfs	Total Orifice cfs	Predcited Flow cfs	Observed Flow cfs	Error %	Sq error cfs^2
0.97	6.00	16.89	16.89	8.44	42.22	52.28	**42.22**	**34.9**	-20.97%	53.58
1.53	6.00	33.41	33.41	16.70	83.52	65.63	**65.63**	**52.8**	-24.27%	164.26
2.25	6.00	59.63	59.63	29.82	149.08	79.62	**79.62**	**81.0**	1.73%	1.96
3.02	6.00	92.69	92.69	46.34	231.71	92.22	**92.22**	**103.3**	10.72%	122.57
										342.37

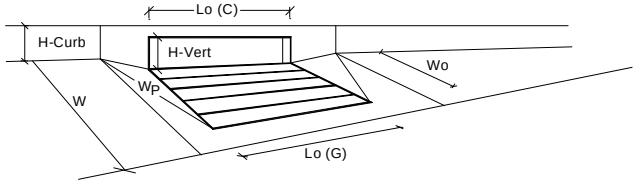


	CLOGGING FACTOR	CAPACITY
1.2' DEPTH → 41 CFS	0.5	20.5 CFS
1.7' DEPTH → 60 CFS	0.5	30 CFS

INLET IN A SUMP OR SAG LOCATION

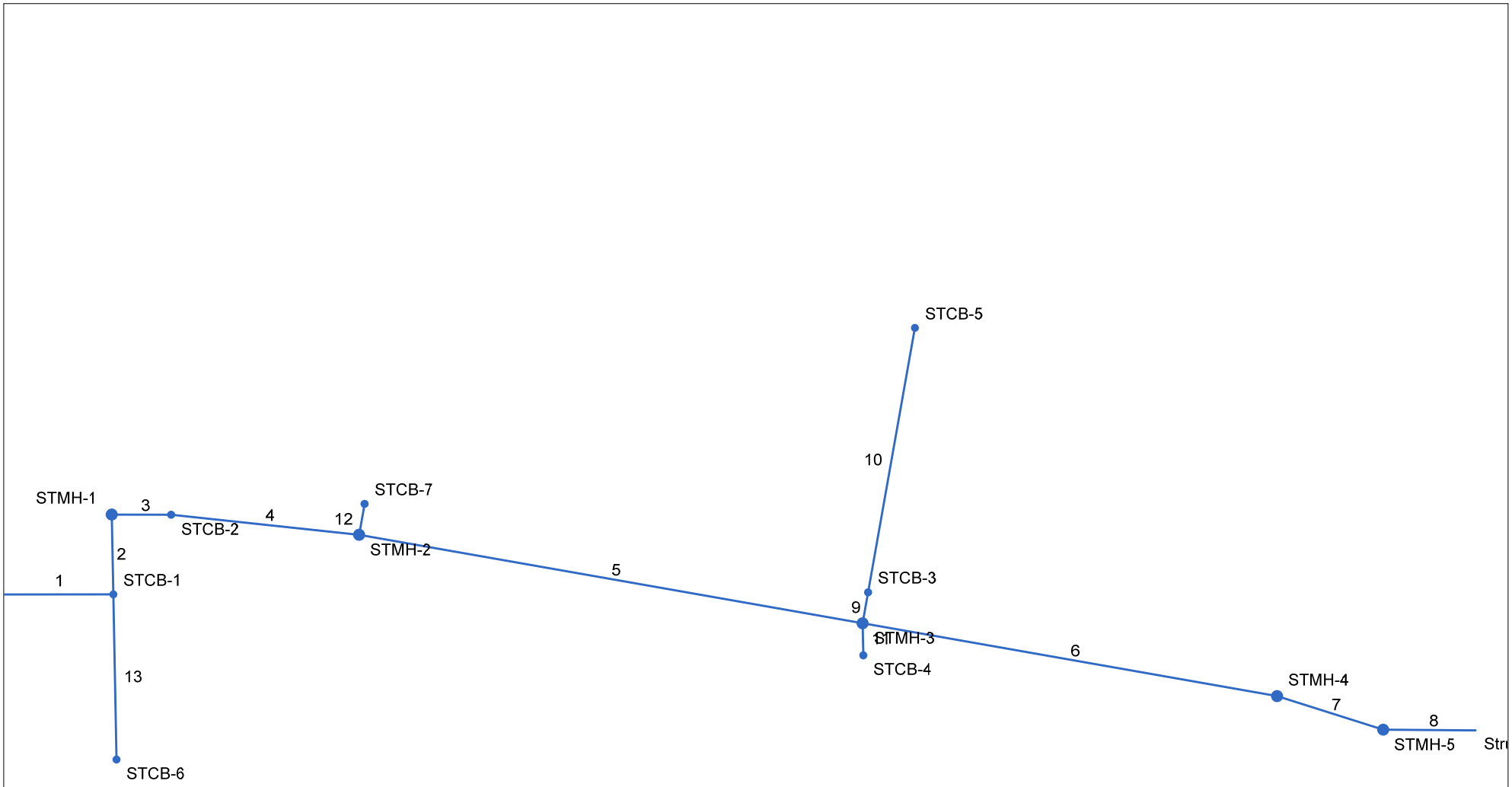
Project = Montex North

Inlet ID = Basin S8, OS4, OS5



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Valley Grate		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	9.0	inches
				☑ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	N/A	N/A	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	N/A	N/A	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	N/A	N/A	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	N/A	N/A	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	N/A	N/A	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	N/A	N/A	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	N/A	N/A	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.64**	**4.55**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.45	4.31	cfs

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2013 Plan



Project File: NORTH-2-YEAR.stm	Number of lines: 13	Date: 4/1/2015

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	59.298	-0.056	MH	0.00	0.29	0.22	5.0	5233.65	1.52	5234.55	36	Cir	0.013	1.00	5241.11	Pipe - (33)
2	1	40.657	-91.081	MH	0.00	0.00	0.00	0.0	5235.25	1.99	5236.06	30	Cir	0.013	1.00	5242.07	Pipe - (30)
3	2	30.112	91.284	MH	0.00	0.86	0.57	5.0	5236.16	6.01	5237.97	30	Cir	0.013	0.15	5246.13	Pipe - (29)
4	3	95.906	5.974	MH	0.00	0.00	0.00	0.0	5239.47	3.60	5242.92	24	Cir	0.013	1.00	5249.32	Pipe - (28)
5	4	259.315	3.886	MH	0.00	0.00	0.00	0.0	5243.12	3.00	5250.90	24	Cir	0.013	1.00	5256.46	Pipe - (27)
6	5	213.461	0.000	MH	0.00	0.00	0.00	0.0	5250.90	3.00	5257.30	24	Cir	0.013	0.16	5262.53	Pipe - (81)
7	6	56.501	7.587	MH	0.00	0.00	0.00	0.0	5257.53	2.00	5258.66	24	Cir	0.013	0.34	5264.15	Pipe - (80)
8	7	46.737	-17.125	None	0.00	2.37	0.80	5.0	5258.86	1.99	5259.79	24	Cir	0.013	1.00	5262.21	Pipe - (79)
9	5	16.000	-90.000	MH	0.00	1.12	0.42	5.0	5251.69	2.00	5252.01	18	Cir	0.013	0.15	5256.01	Pipe - (25)
10	9	136.750	0.000	MH	0.00	0.87	0.15	5.0	5252.32	0.99	5253.68	15	Cir	0.013	1.00	5257.80	Pipe - (78)
11	5	16.316	78.686	MH	0.00	0.44	0.25	5.0	5251.69	2.02	5252.02	18	Cir	0.013	1.00	5256.08	Pipe - (31)
12	4	16.001	-86.114	MH	0.00	0.67	0.53	5.0	5243.62	2.00	5243.94	18	Cir	0.013	1.00	5248.87	Pipe - (93)
13	1	84.126	88.953	MH	0.00	0.41	0.17	5.0	5236.75	2.00	5238.43	12	Cir	0.013	1.00	5243.46	Pipe - (82)

Project File: NORTH-2-YEAR.stm

Number of lines: 13

Date: 4/1/2015

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (33)	8.22	36	Cir	59.298	5233.65	5234.55	1.518	5234.56	5235.19	n/a	5235.19	End	Manhole
2	Pipe - (30)	8.01	30	Cir	40.657	5235.25	5236.06	1.992	5235.88	5236.69	n/a	5236.69	1	Manhole
3	Pipe - (29)	8.07	30	Cir	30.112	5236.16	5237.97	6.011	5236.69	5238.45	n/a	5238.45	2	Manhole
4	Pipe - (28)	7.07	24	Cir	95.906	5239.47	5242.92	3.597	5240.02	5243.47	n/a	5243.47	3	Manhole
5	Pipe - (27)	6.61	24	Cir	259.315	5243.12	5250.90	3.000	5243.68	5251.46	n/a	5251.46	4	Manhole
6	Pipe - (81)	6.16	24	Cir	213.461	5250.90	5257.30	2.998	5251.46	5257.84	n/a	5257.84	5	Manhole
7	Pipe - (80)	6.31	24	Cir	56.501	5257.53	5258.66	2.001	5258.13	5259.26	n/a	5259.26	6	Manhole
8	Pipe - (79)	6.44	24	Cir	46.737	5258.86	5259.79	1.990	5259.47	5260.40	n/a	5260.40	7	None
9	Pipe - (25)	1.54	18	Cir	16.000	5251.69	5252.01	1.999	5252.02	5252.34	n/a	5252.34	5	Manhole
10	Pipe - (78)	0.44	15	Cir	136.750	5252.32	5253.68	0.995	5252.54	5253.90	n/a	5253.90	9	Manhole
11	Pipe - (31)	0.37	18	Cir	16.316	5251.69	5252.02	2.023	5251.85	5252.18	n/a	5252.18	5	Manhole
12	Pipe - (93)	1.21	18	Cir	16.001	5243.62	5243.94	1.999	5243.91	5244.23	n/a	5244.23	4	Manhole
13	Pipe - (82)	0.24	12	Cir	84.126	5236.75	5238.43	1.997	5236.90	5238.58	n/a	5238.58	1	Manhole

Project File: NORTH-2-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

NOTES: Return period = 2 Yrs.

Hydraulic Grade Line Computations

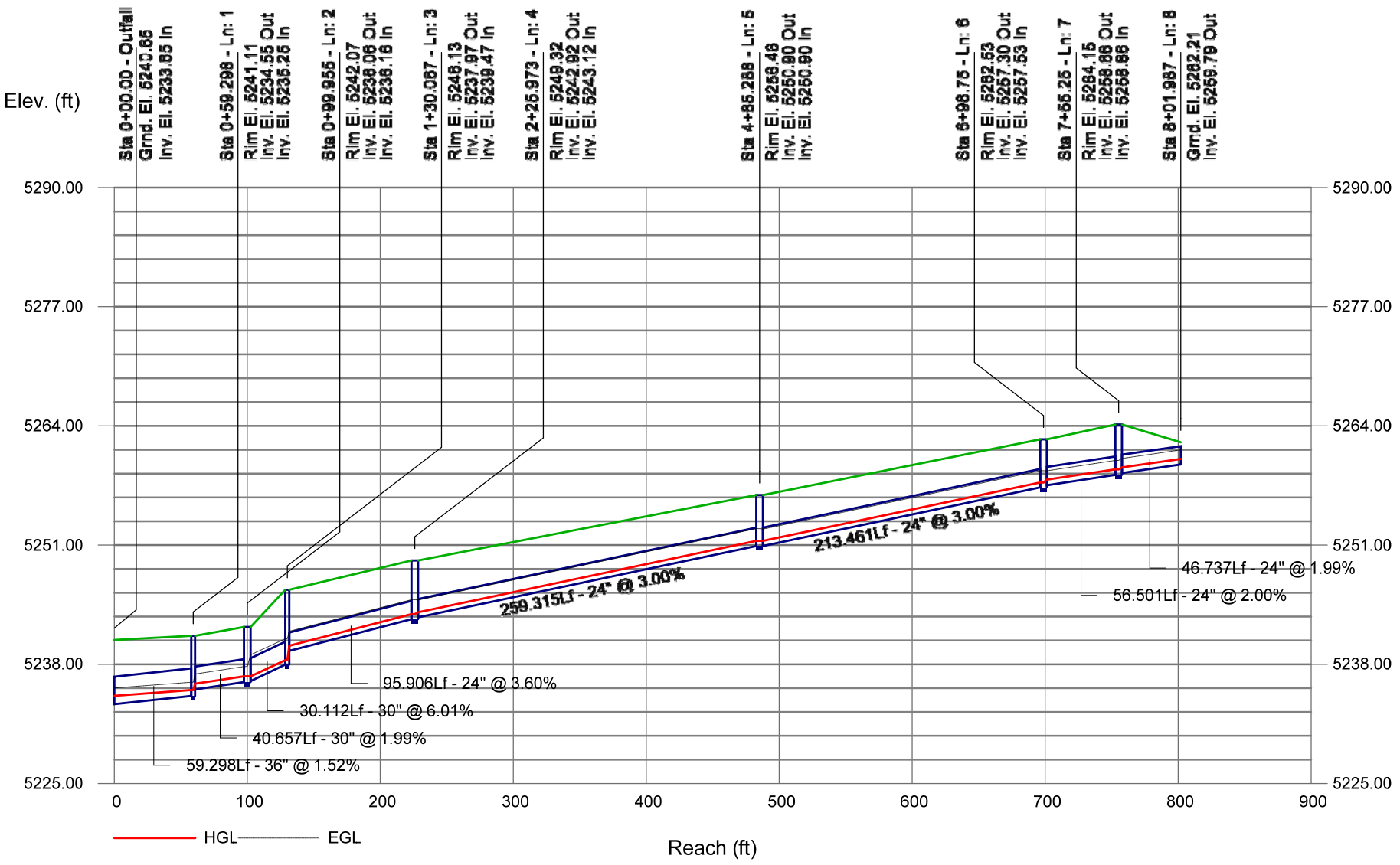
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	36	8.22	5233.65	5234.56	0.91	1.11	0.00	0.86	5235.42	0.000	59.298	5234.55	5235.19	0.64	1.11	7.43	0.86	5236.05	0.000	0.000	0.000	1.00	n/a
2	30	8.01	5235.25	5235.88	0.63*	0.97	0.00	1.06	5236.94	0.000	40.657	5236.06	5236.69	0.63	0.97	8.28	1.06	5237.75	0.000	0.000	0.000	1.00	n/a
3	30	8.07	5236.16	5236.69	0.53	0.66	0.00	2.34	5239.03	0.000	30.112	5237.97	5238.45	0.48	0.66	12.27	2.34	5240.79	0.000	0.000	0.000	0.15	n/a
4	24	7.07	5239.47	5240.02	0.55*	0.70	0.00	1.58	5241.60	0.000	95.906	5242.92	5243.47	0.55	0.70	10.08	1.58	5245.05	0.000	0.000	0.000	1.00	n/a
5	24	6.61	5243.12	5243.68	0.56*	0.71	0.00	1.34	5245.01	0.000	259.315	5250.90	5251.46	0.56	0.71	9.27	1.34	5252.79	0.000	0.000	0.000	1.00	n/a
6	24	6.16	5250.90	5251.46	0.56	0.68	0.00	1.28	5252.74	0.000	213.461	5257.30	5257.84	0.54	0.68	9.08	1.28	5259.12	0.000	0.000	0.000	0.16	n/a
7	24	6.31	5257.53	5258.13	0.60*	0.80	0.00	0.97	5259.11	0.000	56.501	5258.66	5259.26	0.60	0.80	7.92	0.97	5260.24	0.000	0.000	0.000	0.34	n/a
8	24	6.44	5258.86	5259.47	0.61*	0.81	0.00	0.98	5260.45	0.000	46.737	5259.79	5260.40	0.61	0.81	7.95	0.98	5261.38	0.000	0.000	0.000	1.00	n/a
9	18	1.54	5251.69	5252.02	0.33*	0.28	0.00	0.46	5252.47	0.000	16.000	5252.01	5252.34	0.33	0.28	5.42	0.46	5252.79	0.000	0.000	0.000	0.15	n/a
10	15	0.44	5252.32	5252.54	0.22*	0.15	0.00	0.14	5252.68	0.000	136.750	5253.68	5253.90	0.22	0.15	3.01	0.14	5254.04	0.000	0.000	0.000	1.00	n/a
11	18	0.37	5251.69	5251.85	0.16*	0.10	0.00	0.20	5252.05	0.000	16.316	5252.02	5252.18	0.16	0.10	3.57	0.20	5252.38	0.000	0.000	0.000	1.00	n/a
12	18	1.21	5243.62	5243.91	0.29*	0.24	0.00	0.40	5244.31	0.000	16.001	5243.94	5244.23	0.29	0.24	5.05	0.40	5244.63	0.000	0.000	0.000	1.00	n/a
13	12	0.24	5236.75	5236.90	0.15*	0.07	0.00	0.17	5237.07	0.000	84.126	5238.43	5238.58	0.15	0.07	3.28	0.17	5238.75	0.000	0.000	0.000	1.00	n/a

Project File: NORTH-2-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

Notes: * depth assumed. ; c = cir e = ellip b = box

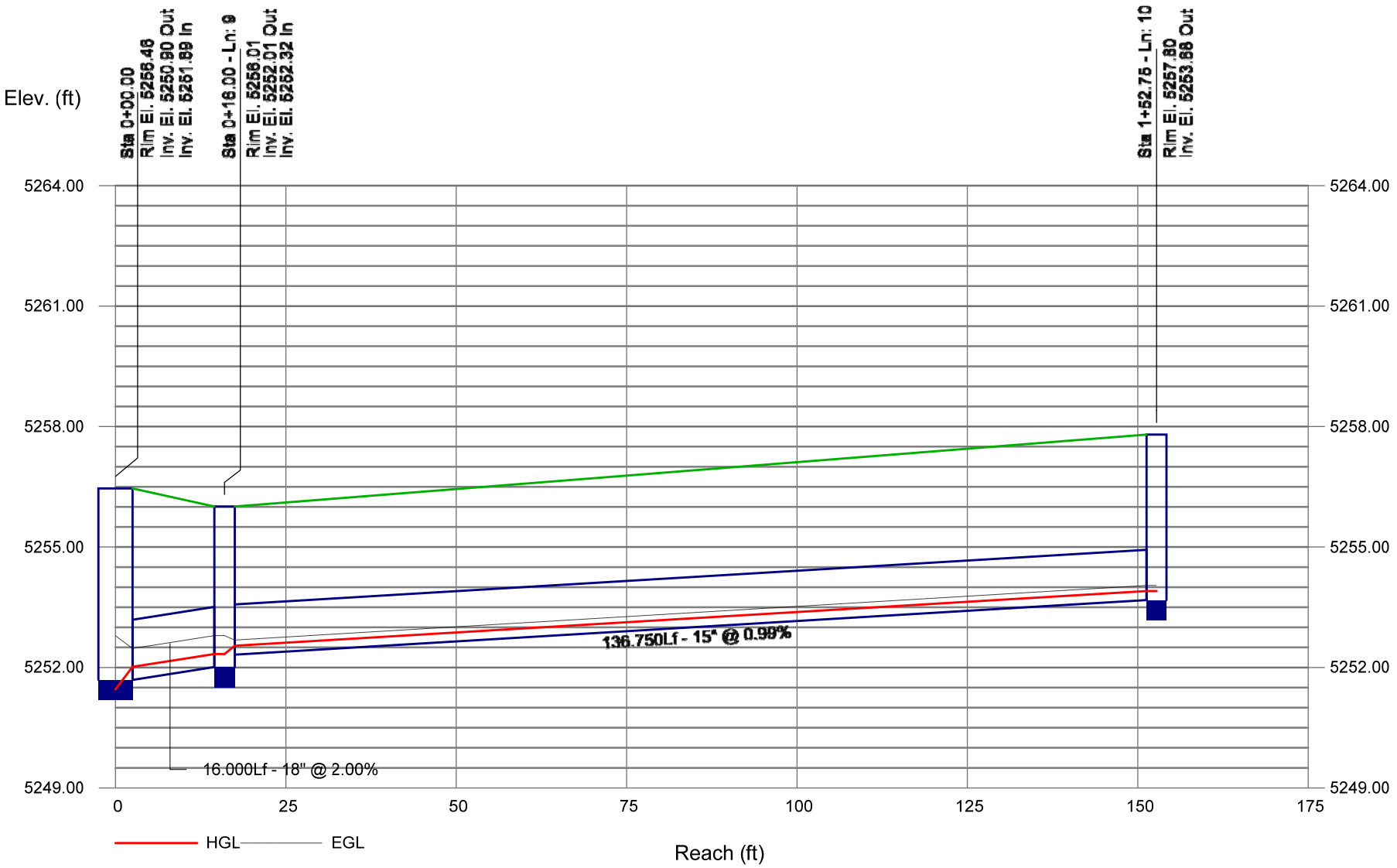
Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



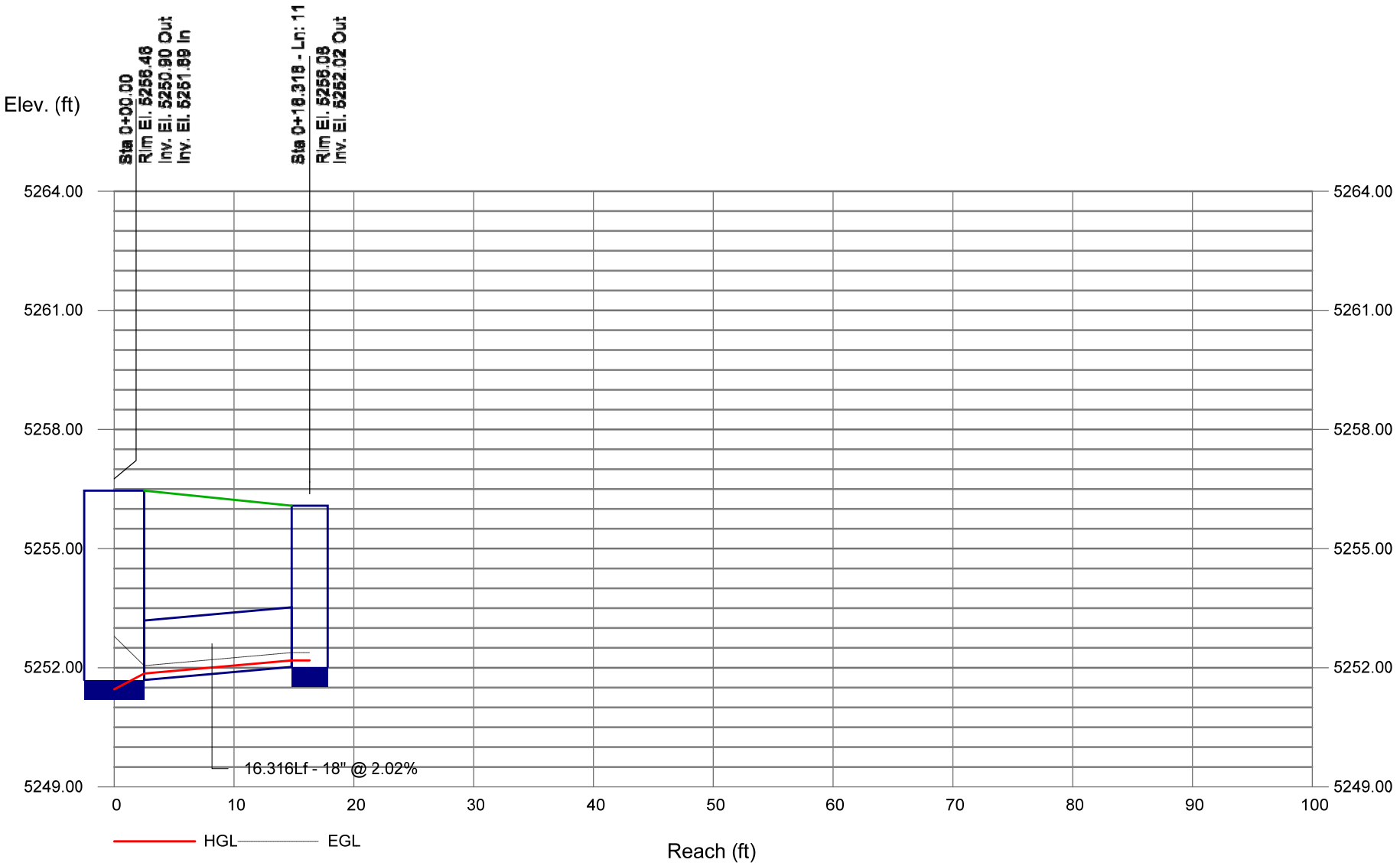
Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



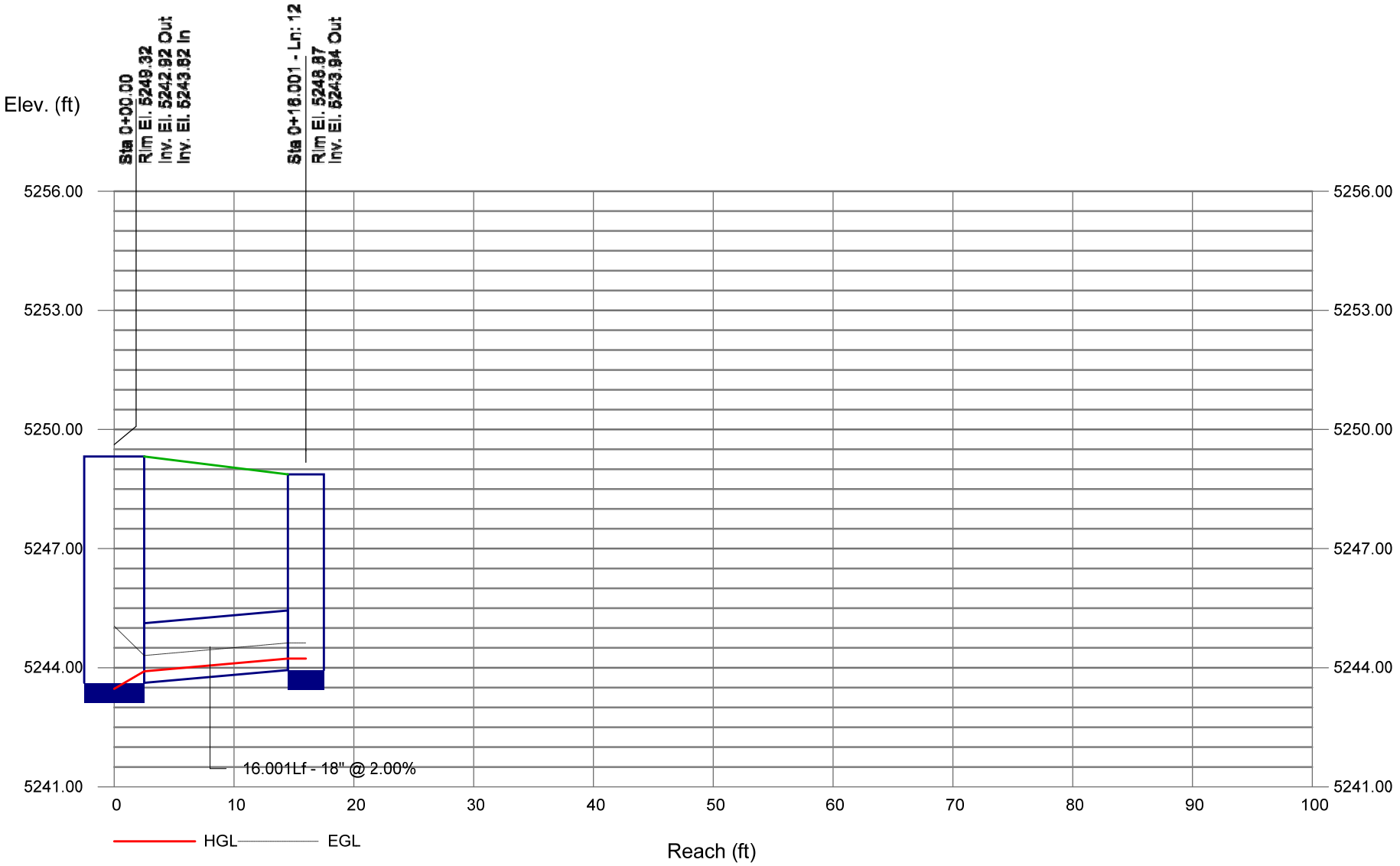
Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



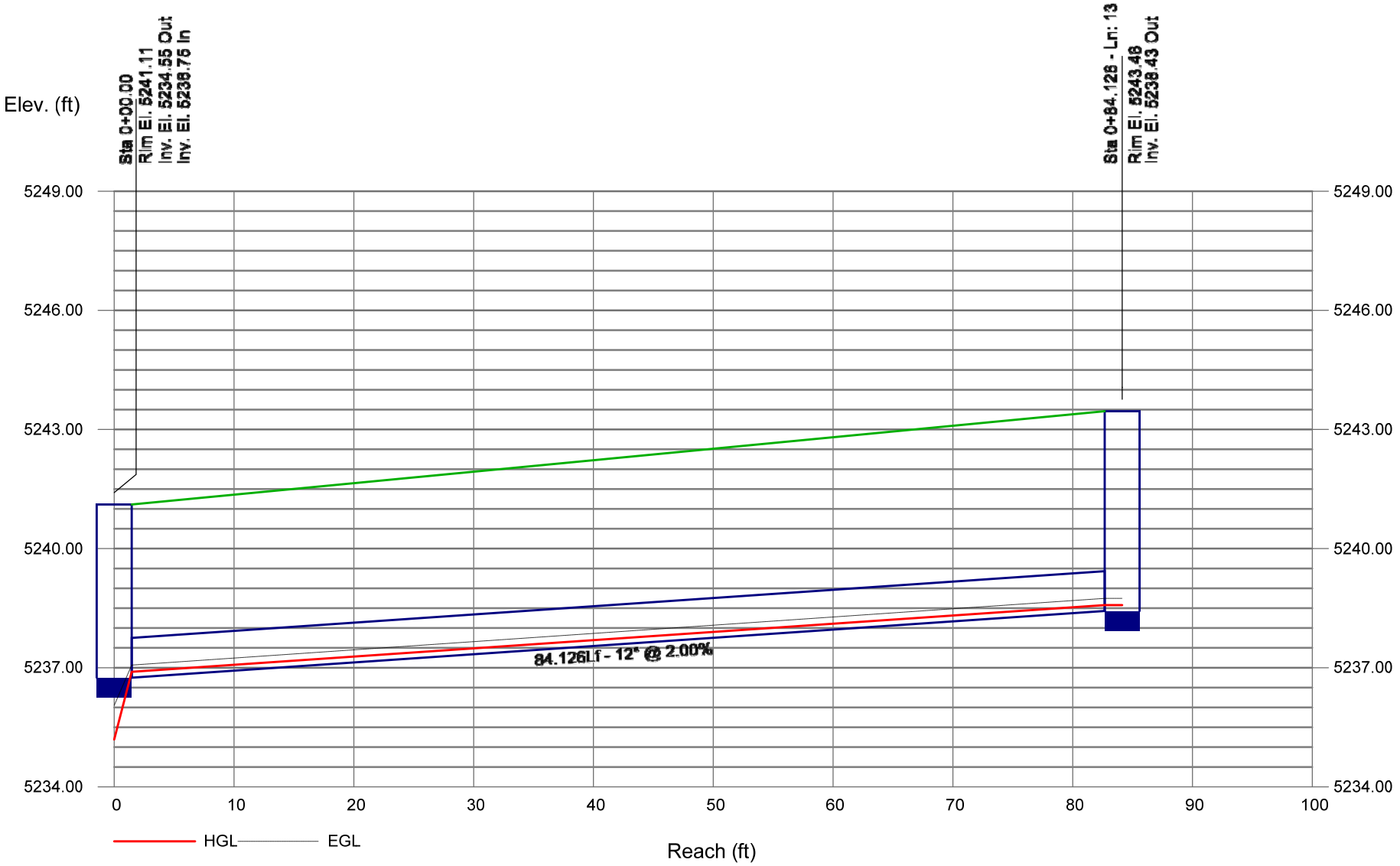
Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm

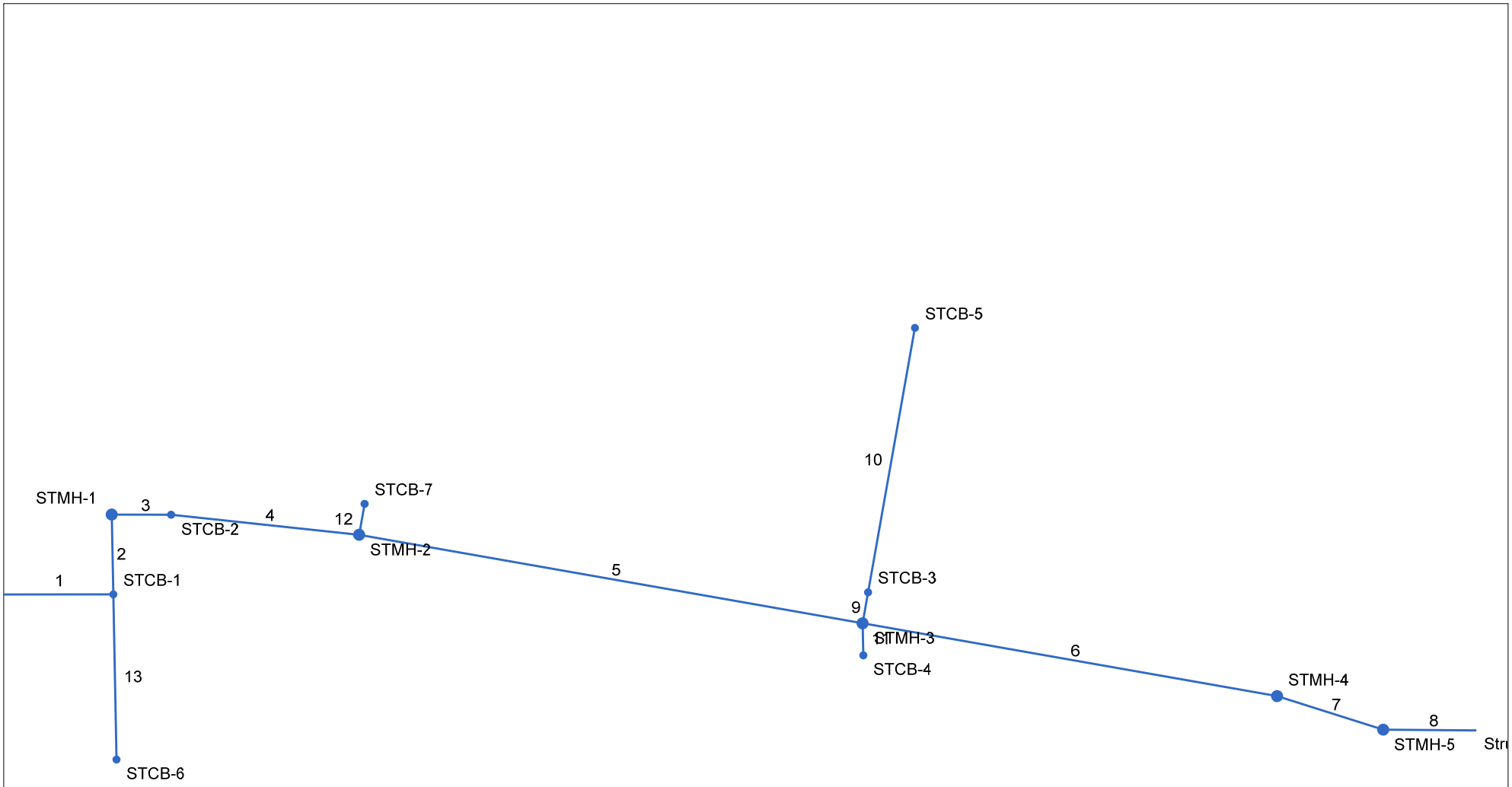


Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2013 Plan



Project File: NORTH-100-YEAR.stm	Number of lines: 13	Date: 4/1/2015

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	59.298	-0.056	MH	0.00	0.29	0.57	5.0	5233.65	1.52	5234.55	36	Cir	0.013	1.00	5241.11	Pipe - (33)
2	1	40.657	-91.081	MH	0.00	0.00	0.00	0.0	5235.25	1.99	5236.06	30	Cir	0.013	1.00	5242.07	Pipe - (30)
3	2	30.112	91.284	MH	0.00	0.86	0.73	5.0	5236.16	6.01	5237.97	30	Cir	0.013	0.15	5246.13	Pipe - (29)
4	3	95.906	5.974	MH	0.00	0.00	0.00	0.0	5239.47	3.60	5242.92	24	Cir	0.013	1.00	5249.32	Pipe - (28)
5	4	259.315	3.886	MH	0.00	0.00	0.00	0.0	5243.12	3.00	5250.90	24	Cir	0.013	1.00	5256.46	Pipe - (27)
6	5	213.461	0.000	MH	0.00	0.00	0.00	0.0	5250.90	3.00	5257.30	24	Cir	0.013	0.16	5262.53	Pipe - (81)
7	6	56.501	7.587	MH	0.00	0.00	0.00	0.0	5257.53	2.00	5258.66	24	Cir	0.013	0.34	5264.15	Pipe - (80)
8	7	46.737	-17.125	None	0.00	2.37	0.89	5.0	5258.86	1.99	5259.79	24	Cir	0.013	1.00	5262.21	Pipe - (79)
9	5	16.000	-90.000	MH	0.00	1.12	0.65	5.0	5251.69	2.00	5252.01	18	Cir	0.013	0.15	5256.01	Pipe - (25)
10	9	136.750	0.000	MH	0.00	0.87	0.54	5.0	5252.32	0.99	5253.68	15	Cir	0.013	1.00	5257.80	Pipe - (78)
11	5	16.316	78.686	MH	0.00	0.44	0.57	5.0	5251.69	2.02	5252.02	18	Cir	0.013	1.00	5256.08	Pipe - (31)
12	4	16.001	-86.114	MH	0.00	0.67	0.70	5.0	5243.62	2.00	5243.94	18	Cir	0.013	1.00	5248.87	Pipe - (93)
13	1	84.126	88.953	MH	0.00	0.41	0.55	5.0	5236.75	2.00	5238.43	12	Cir	0.013	1.00	5243.46	Pipe - (82)

Project File: NORTH-100-YEAR.stm | Number of lines: 13 | Date: 4/1/2015

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (33)	43.65	36	Cir	59.298	5233.65	5234.55	1.518	5235.76	5236.11	n/a	5236.11	End	Manhole
2	Pipe - (30)	40.45	30	Cir	40.657	5235.25	5236.06	1.992	5236.79	5237.60	n/a	5237.60	1	Manhole
3	Pipe - (29)	40.58	30	Cir	30.112	5236.16	5237.97	6.011	5237.60	5239.08	n/a	5239.08	2	Manhole
4	Pipe - (28)	35.38	24	Cir	95.906	5239.47	5242.92	3.597	5240.85	5244.30	n/a	5244.30	3	Manhole
5	Pipe - (27)	31.96	24	Cir	259.315	5243.12	5250.90	3.000	5244.49	5252.27	n/a	5252.27	4	Manhole
6	Pipe - (81)	19.53	24	Cir	213.461	5250.90	5257.30	2.998	5252.27	5258.30	n/a	5258.30	5	Manhole
7	Pipe - (80)	19.69	24	Cir	56.501	5257.53	5258.66	2.001	5258.67	5259.80	n/a	5259.80	6	Manhole
8	Pipe - (79)	19.82	24	Cir	46.737	5258.86	5259.79	1.990	5260.00	5260.93	n/a	5260.93	7	None
9	Pipe - (25)	10.88	18	Cir	16.000	5251.69	5252.01	1.999	5252.64	5252.96	n/a	5252.96	5	Manhole
10	Pipe - (78)	4.41	15	Cir	136.750	5252.32	5253.68	0.995	5253.08	5254.44	n/a	5254.44	9	Manhole
11	Pipe - (31)	2.36	18	Cir	16.316	5251.69	5252.02	2.023	5252.27	5252.42	n/a	5252.42	5	Manhole
12	Pipe - (93)	4.41	18	Cir	16.001	5243.62	5243.94	1.999	5244.30	5244.50	n/a	5244.50	4	Manhole
13	Pipe - (82)	2.12	12	Cir	84.126	5236.75	5238.43	1.997	5237.20	5238.88	n/a	5238.88	1	Manhole

Project File: NORTH-100-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

NOTES: Return period = 100 Yrs.

Hydraulic Grade Line Computations

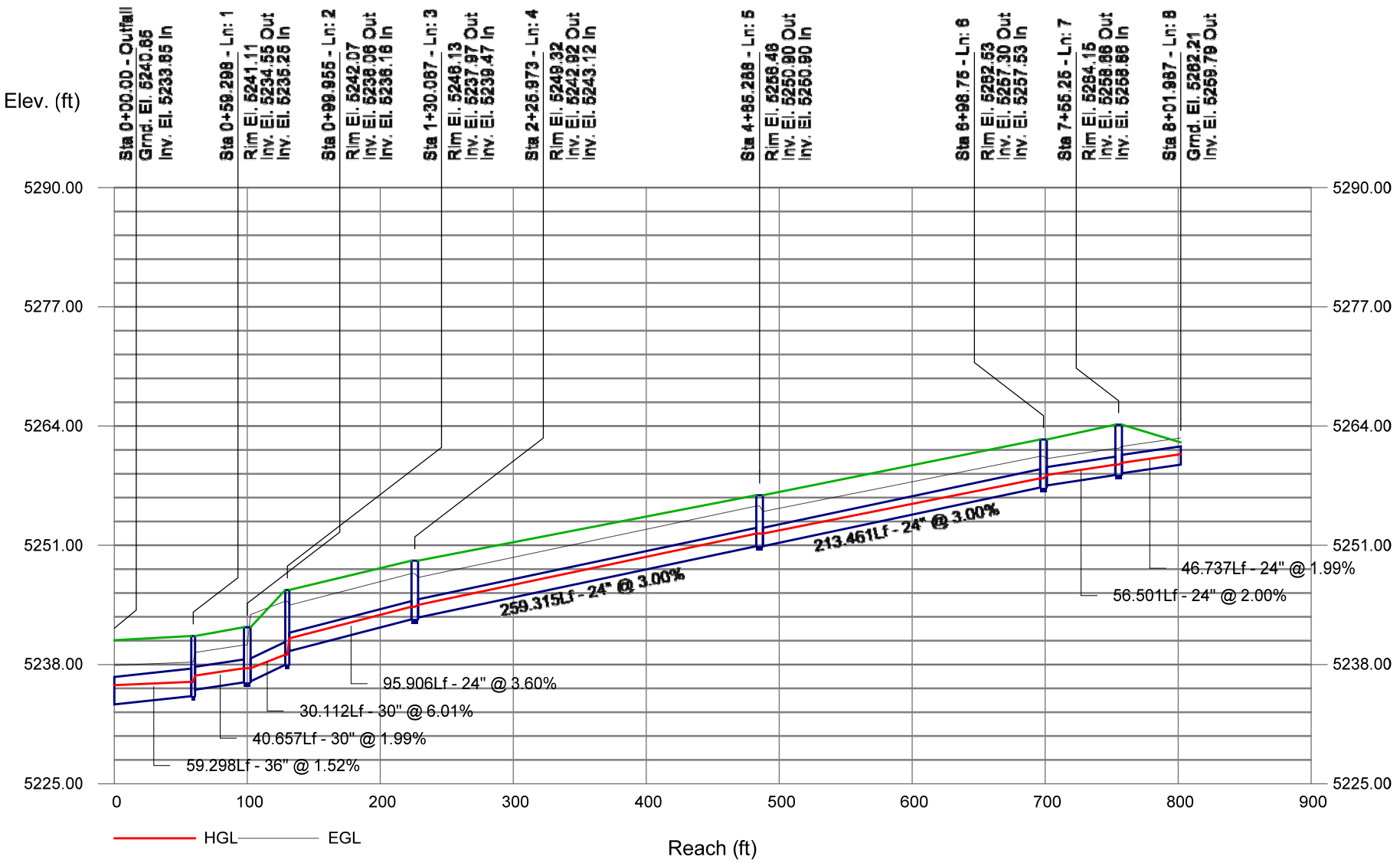
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	43.65	5233.65	5235.76	2.11	3.70	0.00	2.16	5237.92	0.000	59.298	5234.55	5236.11	1.56	3.70	11.79	2.16	5238.27	0.000	0.000	0.000	1.00	n/a
2	30	40.45	5235.25	5236.79	1.54*	3.17	0.00	2.53	5239.32	0.000	40.657	5236.06	5237.60	1.54	3.17	12.75	2.53	5240.13	0.000	0.000	0.000	1.00	n/a
3	30	40.58	5236.16	5237.60	1.44	2.09	0.00	5.84	5243.44	0.000	30.112	5237.97	5239.08	1.11	2.09	19.38	5.84	5244.92	0.000	0.000	0.000	0.15	n/a
4	24	35.38	5239.47	5240.85	1.38*	2.32	0.00	3.61	5244.47	0.000	95.906	5242.92	5244.30	1.38	2.32	15.25	3.61	5247.92	0.000	0.000	0.000	1.00	n/a
5	24	31.96	5243.12	5244.49	1.37*	2.30	0.00	3.00	5247.50	0.000	259.315	5250.90	5252.27	1.37	2.30	13.90	3.00	5255.28	0.000	0.000	0.000	1.00	n/a
6	24	19.53	5250.90	5252.27	1.37	1.57	0.00	2.41	5254.69	0.000	213.461	5257.30	5258.30	1.00	1.57	12.45	2.41	5260.71	0.000	0.000	0.000	0.16	n/a
7	24	19.69	5257.53	5258.67	1.13*	1.84	0.00	1.78	5260.45	0.000	56.501	5258.66	5259.80	1.13	1.84	10.70	1.78	5261.58	0.000	0.000	0.000	0.34	n/a
8	24	19.82	5258.86	5260.00	1.14*	1.85	0.00	1.78	5261.78	0.000	46.737	5259.79	5260.93	1.14	1.85	10.70	1.78	5262.71	0.000	0.000	0.000	1.00	n/a
9	18	10.88	5251.69	5252.64	0.95*	1.19	0.00	1.31	5253.95	0.000	16.000	5252.01	5252.96	0.95	1.19	9.18	1.31	5254.27	0.000	0.000	0.000	0.15	n/a
10	15	4.41	5252.32	5253.08	0.76*	0.78	0.00	0.50	5253.58	0.000	136.750	5253.68	5254.44	0.76	0.78	5.65	0.50	5254.94	0.000	0.000	0.000	1.00	n/a
11	18	2.36	5251.69	5252.27	0.58	0.38	0.00	0.59	5252.86	0.000	16.316	5252.02	5252.42	0.40	0.38	6.16	0.59	5253.01	0.000	0.000	0.000	1.00	n/a
12	18	4.41	5243.62	5244.30	0.68	0.60	0.00	0.83	5245.14	0.000	16.001	5243.94	5244.50	0.56	0.60	7.32	0.83	5245.33	0.000	0.000	0.000	1.00	n/a
13	12	2.12	5236.75	5237.20	0.45*	0.35	0.00	0.58	5237.79	0.000	84.126	5238.43	5238.88	0.45	0.35	6.13	0.58	5239.47	0.000	0.000	0.000	1.00	n/a

Project File: NORTH-100-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

Notes: * depth assumed. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: NORTH-100-YEAR.stm



Storm Sewer Profile

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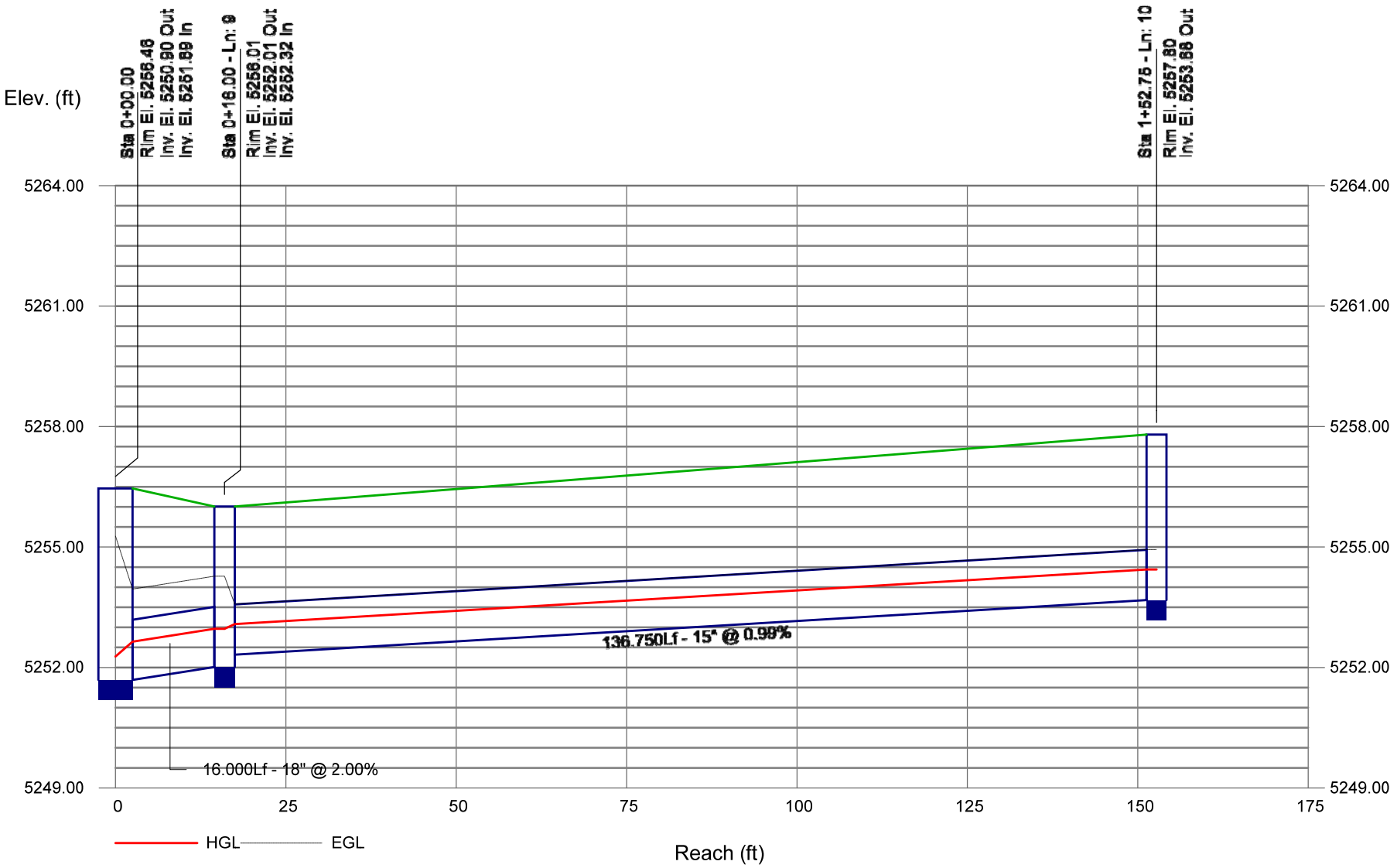

Storm Sewer Profile

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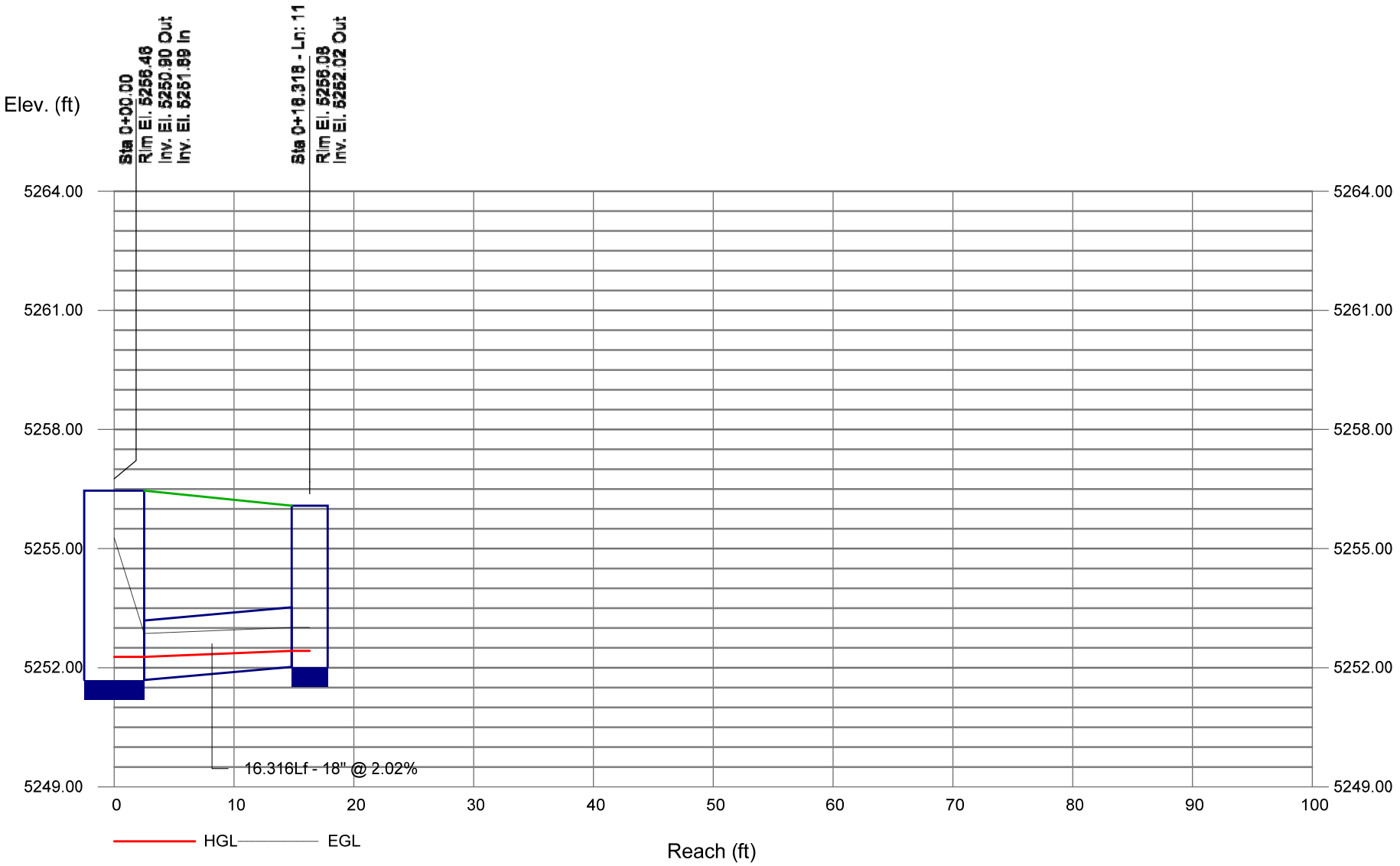

Storm Sewer Profile

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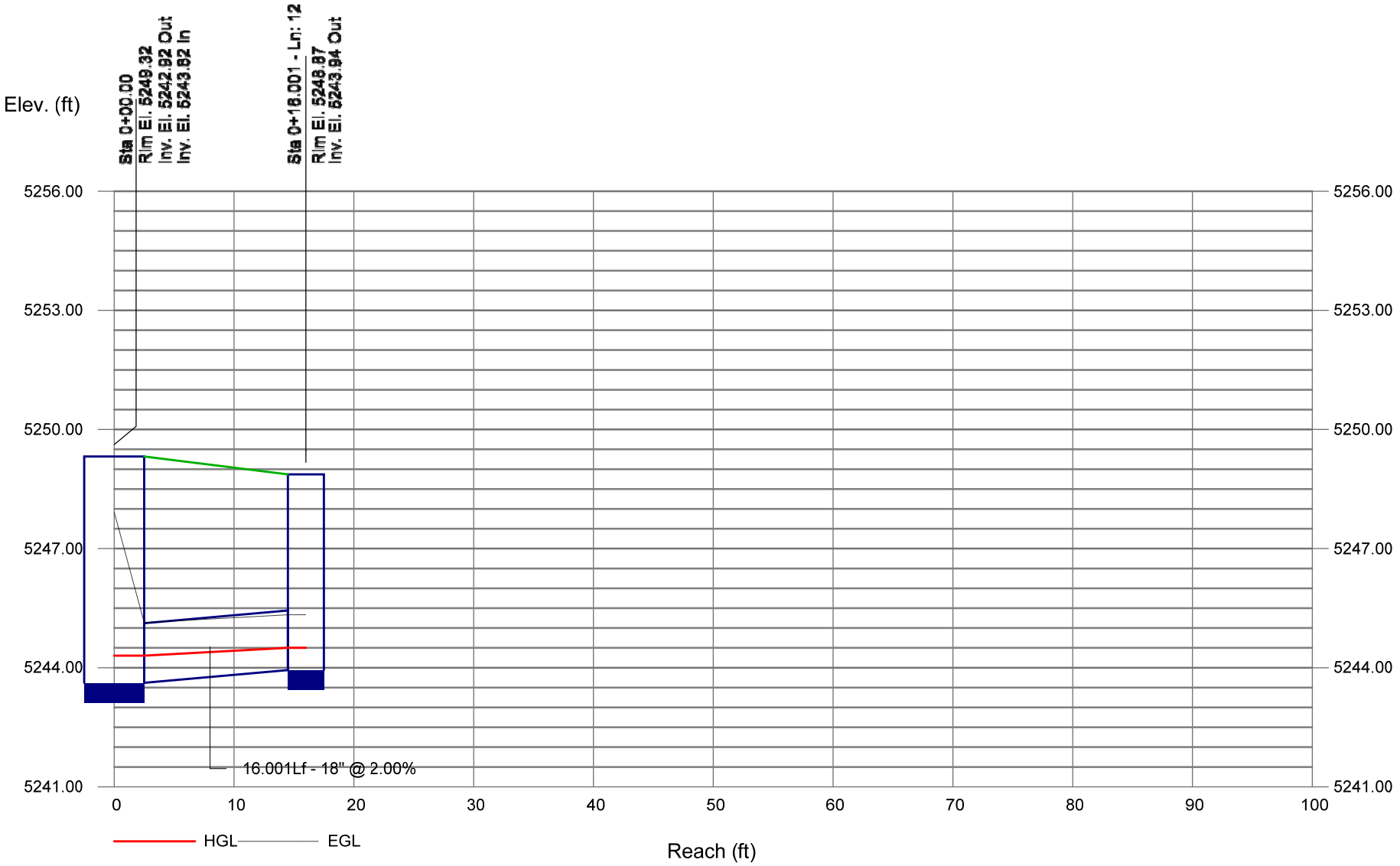

Storm Sewer Profile

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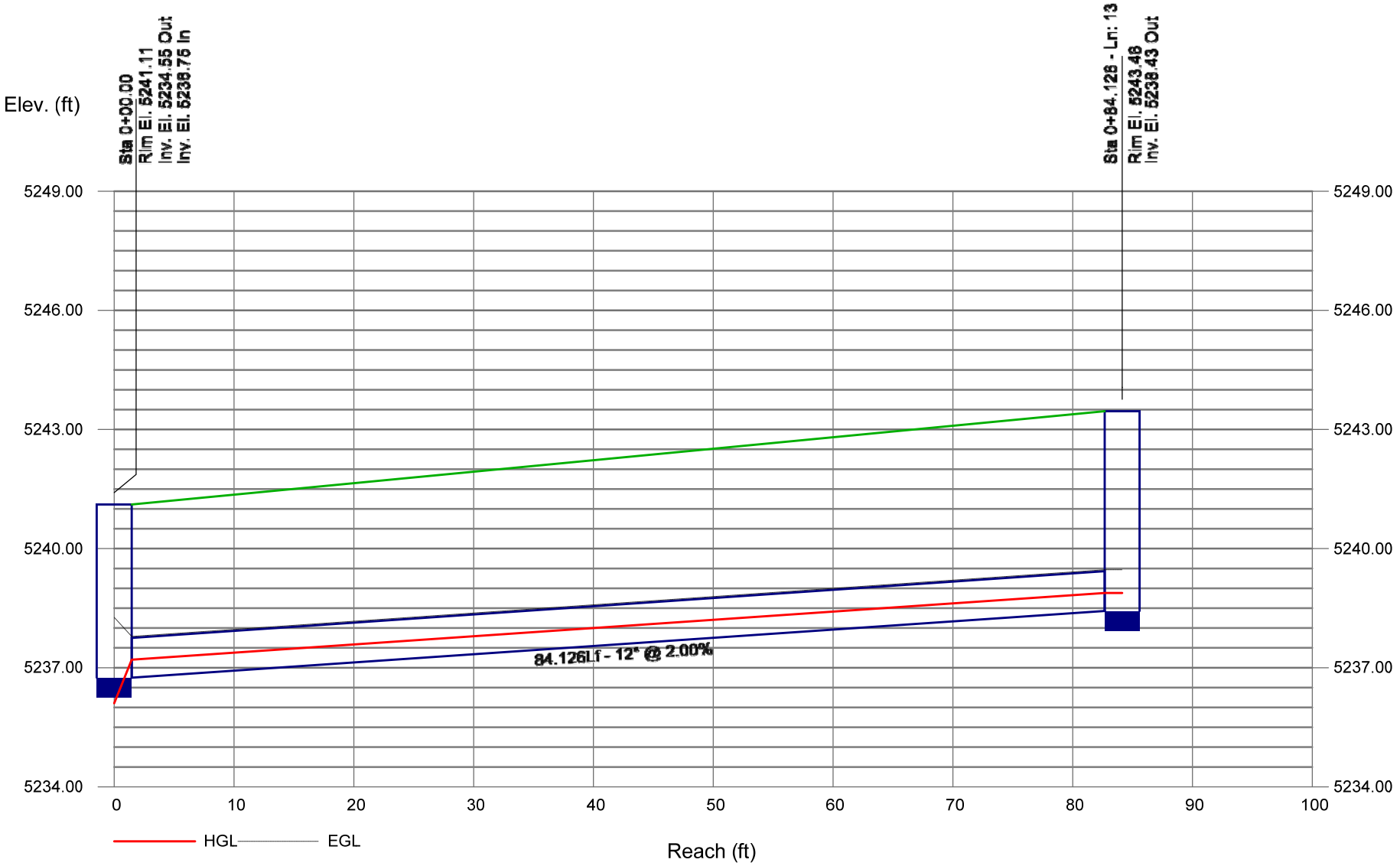


Channel Report

Swale Capacity Check Between House

Triangular

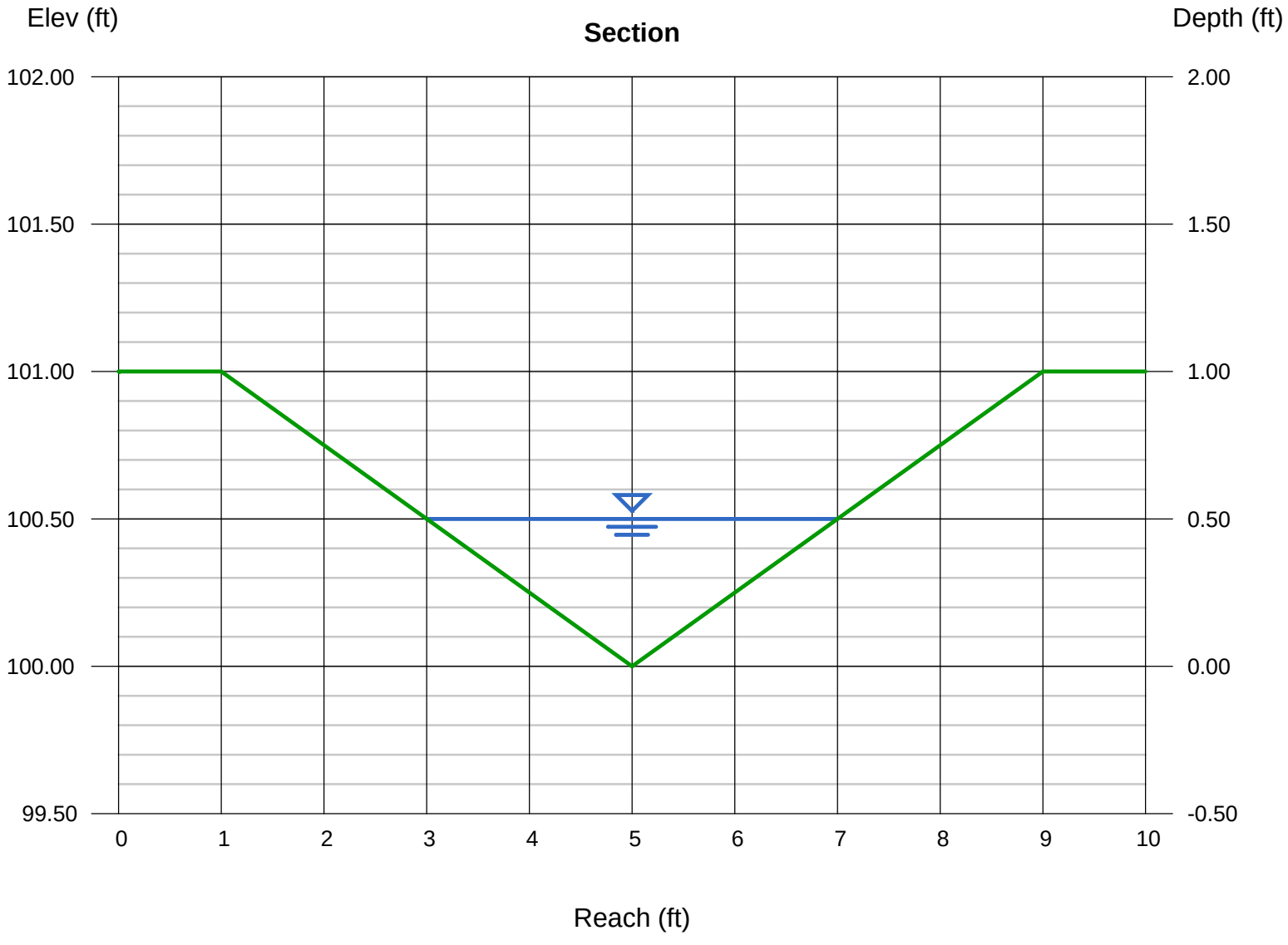
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.024

Calculations

Compute by:	Q vs Depth
No. Increments	= 10

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 3.404
Area (sqft)	= 1.00
Velocity (ft/s)	= 3.40
Wetted Perim (ft)	= 4.12
Crit Depth, Yc (ft)	= 0.54
Top Width (ft)	= 4.00
EGL (ft)	= 0.68



Channel Report

Vista Ridge Academy Overflow Swale

Trapezoidal

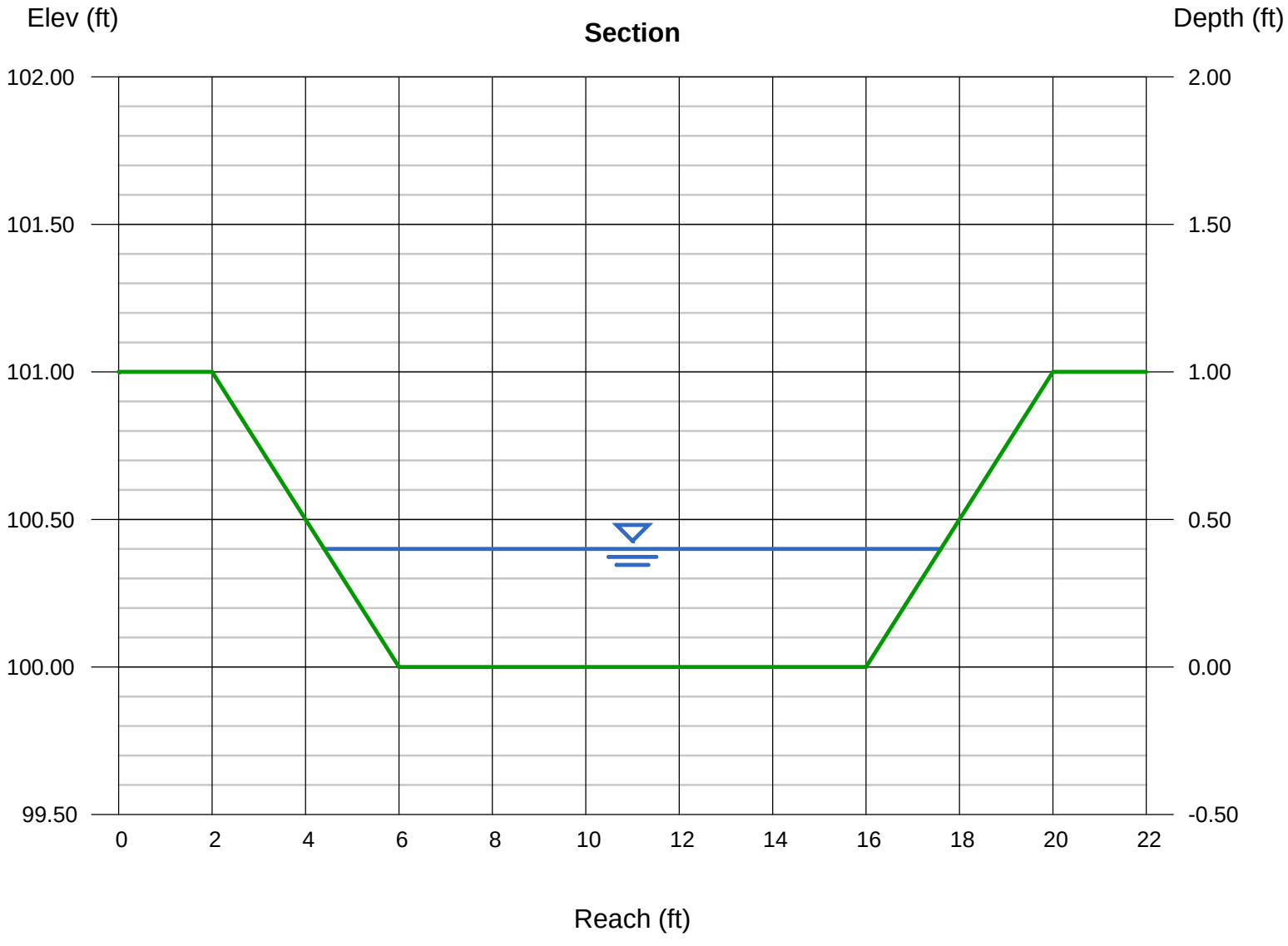
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.20
N-Value	= 0.024

Calculations

Compute by:	Known Q
Known Q (cfs)	= 20.82

Highlighted

Depth (ft)	= 0.40
Q (cfs)	= 20.82
Area (sqft)	= 4.64
Velocity (ft/s)	= 4.49
Wetted Perim (ft)	= 13.30
Crit Depth, Yc (ft)	= 0.48
Top Width (ft)	= 13.20
EGL (ft)	= 0.71



Weir Report

DESIGN POINT 4 EMERGENCY OVERFLOW

Rectangular Weir

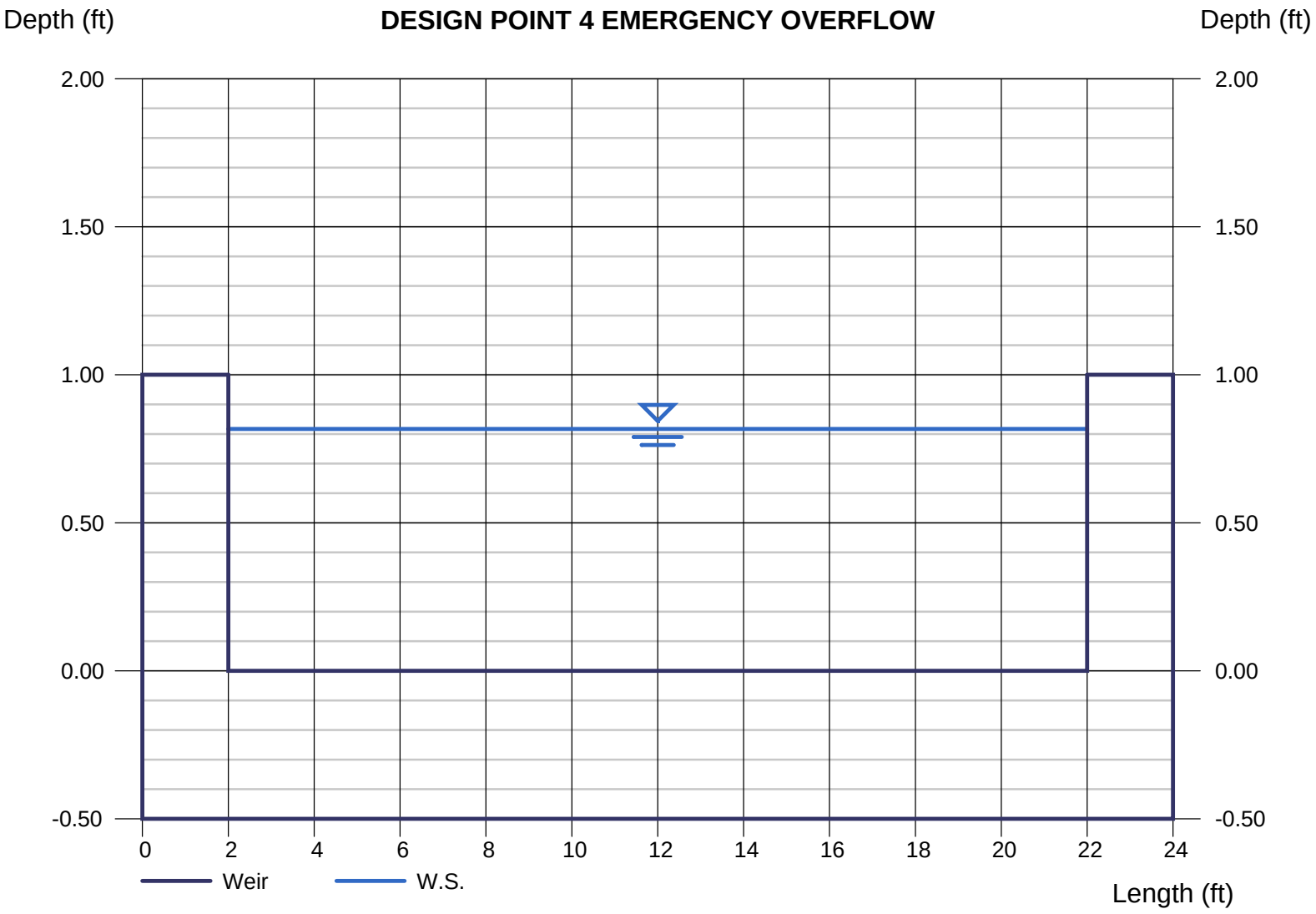
Crest	= Broad
Bottom Length (ft)	= 20.00
Total Depth (ft)	= 1.00

Calculations

Weir Coeff. Cw	= 2.60
Compute by:	Known Q
Known Q (cfs)	= 38.40

Highlighted

Depth (ft)	= 0.82
Q (cfs)	= 38.40
Area (sqft)	= 16.34
Velocity (ft/s)	= 2.35
Top Width (ft)	= 20.00



Weir Report

DESIGN POINT 5 EMERGENCY OVERFLOW

Rectangular Weir

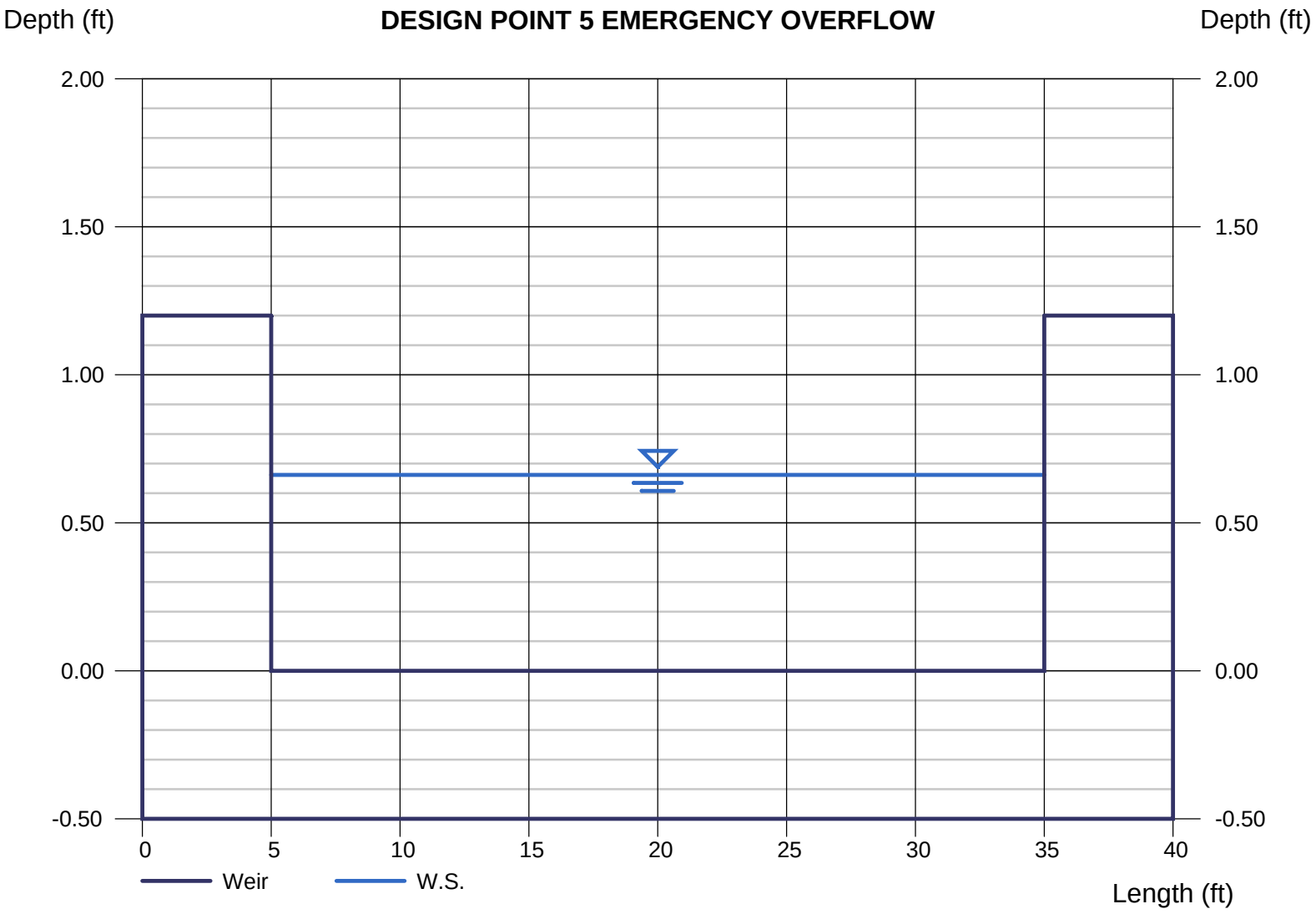
Crest	= Broad
Bottom Length (ft)	= 30.00
Total Depth (ft)	= 1.20

Calculations

Weir Coeff. Cw	= 2.60
Compute by:	Known Q
Known Q (cfs)	= 42.00

Highlighted

Depth (ft)	= 0.66
Q (cfs)	= 42.00
Area (sqft)	= 19.85
Velocity (ft/s)	= 2.12
Top Width (ft)	= 30.00



APPENDIX C

Reference Documents

DESIGN STORM RETURN PERIODS

Land Use or Zoning	Design Storm Return Period	
	Initial Storm	Major Storm
Residential	2-year	100-year
Business	5-year	100-year
Public Building Areas	5-year	100-year
Parks, Greenbelts, etc.	2-year	100-year
Open Channels and Drainage ways	10 year	100-year
Detention Facilities	Water Quality and 10 year	100-year

TABLE 800-3

PERCENT IMPERVIOUS FOR RATIONAL METHOD

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS
Business	
Commercial Areas	95
Neighborhood Areas	85
Residential	
Single-Family	*
Multi-Unit (detached)	60
Multi-Unit (attached)	75
1/2 Acre Lot or Larger	*
Apartments	80
Industrial	
Light Areas	80
Heavy Areas	90
Parks, Cemeteries	5
Playgrounds	10
Schools	50
Railroad Yard Areas	15
Undeveloped Areas	
Historic Flow Analysis	2
Greenbelts, Agricultural	2
Offsite Flow Analysis	
(when land use not defined)	45
Streets	
Paved	100
Gravel	40
Drives and Walks	90
Roofs	90
Lawns, Sandy Soil	0
Lawns, Clay Soil	0

Note: These Rational Formula coefficients may not be valid for large basins.

* Refer to Urban Storm Drainage Criteria Manual for percent impervious values.

813.06 Rainfall Intensities

The rainfall intensities to be used in the computation of runoff using the Rational Method shall be obtained from the Rainfall Intensity Duration Curves for the Town of Erie, included in these STANDARDS AND SPECIFICATIONS.

813.03 Runoff Computations, Colorado Urban Hydrograph Procedure (CUHP)

The CUHP method is generally applicable to basins greater than 90 acres. However, the CUHP is required for watershed areas larger than 160-acres. The procedures for the CUHP, as explained in the Urban Storm Drainage Criteria Manual, shall be followed in the preparation of drainage reports and storm drainage facility designs in the Town. The CUHP program requires the input of a design storm, either as a detailed hyetograph or as a 1-hour rainfall depth. The program for the latter using the 2-hour storm distribution recommended in the Urban Storm Drainage Criteria Manual generates a detailed hyetograph distribution. The 1-hour rainfall depths for the Town of Erie are presented in Table 800-2.

Table 800-2
TOWN OF ERIE
ONE-HOUR RAINFALL DEPTH

Design Storm	Rainfall Depth (in.)
2-Year	1.01
5-Year	1.43
10-Year	1.73
50-Year	2.40
100-Year	2.70

The hydrograph from the CUHP program must be routed through any proposed conveyance facility using UDSWM or a similar method.

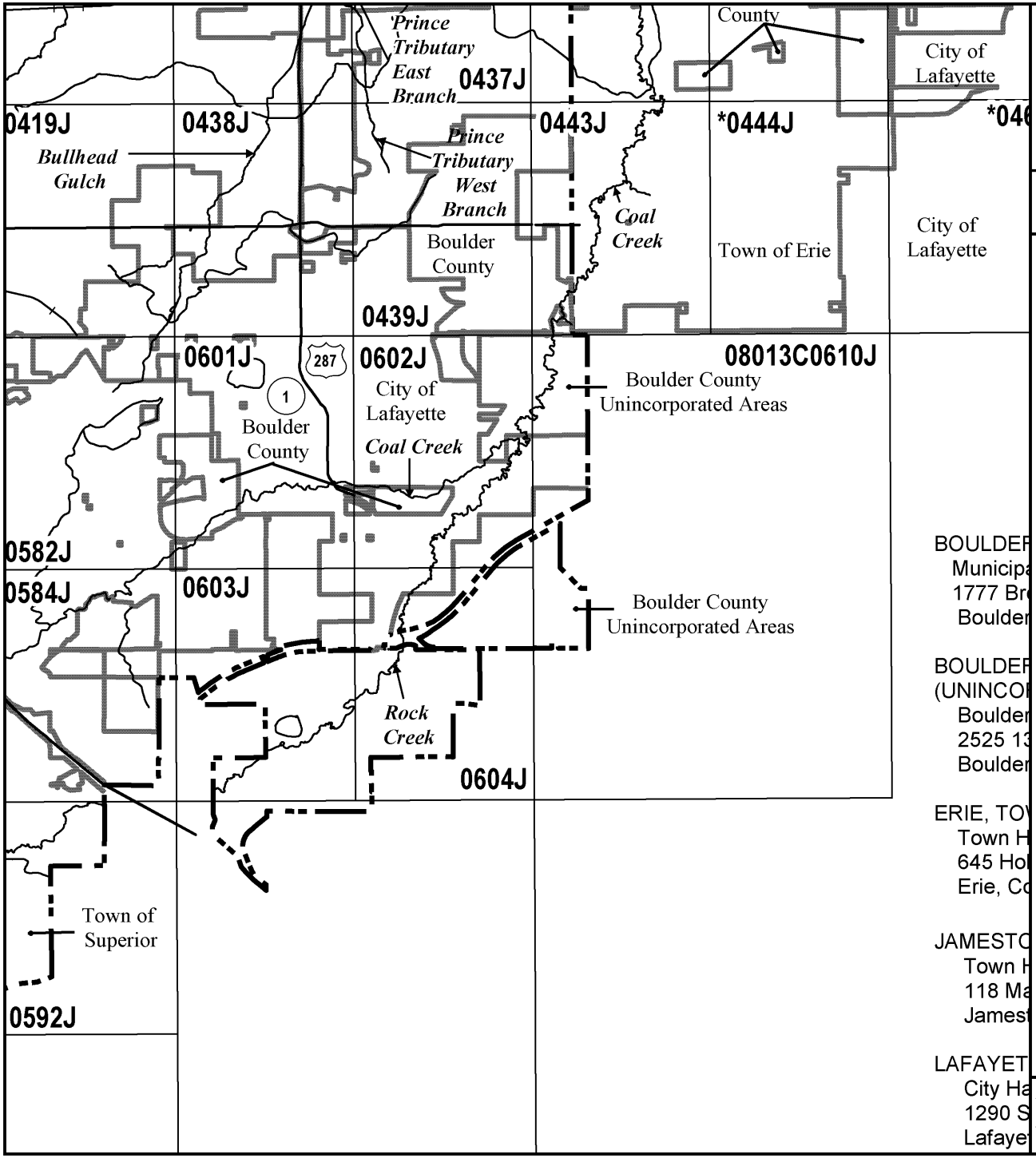
813.04 Runoff Computations, Rational Method

The Rational Method will be utilized for sizing storm sewers and for determining runoff magnitude from un-sewered areas. The limit of application of the Rational Method is approximately 160 acres. When the drainage basin exceeds 160 acres, the CUHP method shall be used.

The procedures for the Rational Method, as explained in the Urban Storm Drainage Criteria Manual, shall be followed in the preparation of drainage reports in the Town.

813.05 Runoff Coefficients

Rational method runoff coefficients: The runoff coefficient (C) to be used in conjunction with the Rational Method will be calculated using the percent imperviousness shown in Table 800-3 as explained in the Urban Storm Drainage Criteria Manual.



BOULDER
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Boulder

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Boulder

ERIE, TO
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Erie, Co

JAMESTO
Town H
118 Ma
Jamest

LAFAYET
City Ha
1290 S
Lafaye

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

SHEET 2 OF 2

PANELS PRINTED: 334, 342, 355, 357, 360, 365, 370, 376, 377, 378, 379, 385, 390, 391, 392, 393, 394, 401, 402, 403, 404, 407, 410, 411, 412, 413, 414, 416, 417, 418, 419, 429, 430, 435, 436, 437, 438, 439, 441, 443, 509, 530, 535, 557, 559, 560, 566, 567, 576, 577, 578, 579, 582, 583, 584, 586, 587, 591, 592, 601, 602, 603, 604, 610

(SEE SHEET 1 FOR ADDITIONAL PANELS PRINTED)

MAP NUMBER
08013CIND2B

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

08013C0394J	December 18, 20
08013C0401J	December 18, 20
08013C0402J	December 18, 20
08013C0403J	December 18, 20
08013C0404J	December 18, 20
08013C0407J	December 18, 20

COMMUNITY NAME	COMMUNITY NUMBER	
BOULDER, CITY OF	080024	0385, 0391, 0392, 0393, 0394, 040
BOULDER COUNTY UNINCORPORATED AREAS	080023	**0025, **0050, **0075, **0100, 0125, **0230, 0231, 0232, 0233, 0234, 024 0269, 0278, 0286, 0287, 0288, 0289, 0360, 0365, 0370, 0376, 0377, 03 0404, 0407, 0410, 0411, 0412, 0413, 0438, 0439, 0441, 0443, **0500, 050 **0575, 0576, 0577, 0578, 0579
ERIE, TOWN OF	080181	0429, 0435, 0436, 0437, 0438,
JAMESTOWN, TOWN OF	080216	
LAFAYETTE, CITY OF	080026	0418, 0419, 04
LONGMONT, CITY OF	080027	**0260, 0266, 0267, 0268, 02
LOUISVILLE, CITY OF	085076	0579, **
LYONS, TOWN OF	080029	
NEDERLAND, TOWN OF	080255	
SUPERIOR, TOWN OF	080203	057
*WARD, TOWN OF	080292	

*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

**PANEL NOT PRINTED

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

SHEET 2 OF 2

PANELS PRINTED: 334, 342, 355, 357, 360, 365, 370, 376, 377, 378, 379, 385, 390, 391, 392, 393, 394, 401, 402, 403, 404, 407, 410, 411, 412, 413, 414, 416, 417, 418, 419, 429, 430, 435, 436, 437, 438, 439, 441, 443, 509, 530, 535, 557, 559, 560, 566, 567, 576, 577, 578, 579, 582, 583, 584, 586, 587, 591, 592, 601, 602, 603, 604, 610

(SEE SHEET 1 FOR ADDITIONAL PANELS PRINTED)

MAP NUMBER
08013CIND2B

MAP REVISED
DECEMBER 18, 2012

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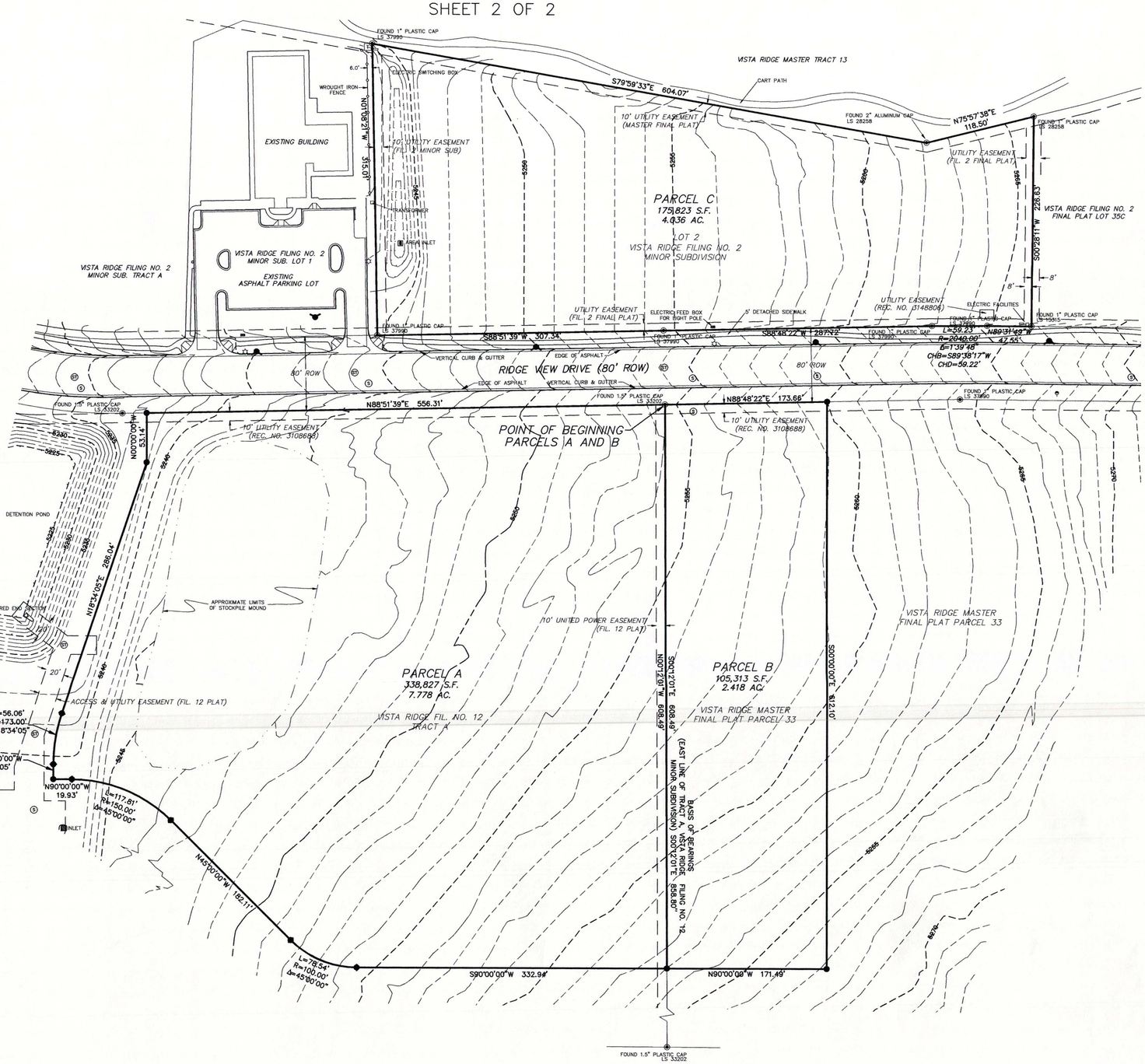
ALTA / ACSM LAND TITLE SURVEY
VISTA RIDGE COMMERCIAL AREA

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

SHEET 2 OF 2



SYMBOL LEGEND	
◉	MONUMENTED PROPERTY CORNER
●	SET #5 REBAR WITH PLASTIC CAP PLS 37908
(S)	SANITARY SEWER MANHOLE
(ST)	STORM SEWER MANHOLE
	FIRE HYDRANT
	6' TYPE"R" INLET
	FIBER OPTIC WARNING SIGN
T	TELEPHONE PEDESTAL
	HANDICAP RAMP
	LIGHT POLE
	CONTOUR-MAJOR
	CONTOUR-MINOR

N

0 30 60 120

SCALE: 1" = 60'

#	REVISIONS:	DATE:	BY:
1			
2			
3			
4			
5			
6			
7			
8			

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1" = 60'
DATE: 03/18/14
FILE NO. ALTA

JOB NUMBER: 1057-556

SHEET: 2 OF 2

ALTA / ACSM LAND TITLE SURVEY
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

PREPARED FOR:
CHARTERED DEVELOPMENT

Lange Land Surveys
9572 W. 58TH AVE. ARVADA, CO 80002
P:(720) 242-9732 F:(720) 242-9654

ALTA / ACSM LAND TITLE SURVEY
VISTA RIDGE COMMERCIAL AREA

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
SHEET 1 OF 2

LEGAL DESCRIPTION (FROM COMMITMENT):

PARCEL A:

A PORTION OF TRACT A OF "VISTA RIDGE FILING NO 12 MINOR SUBDIVISION" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF SAID TRACT A: THENCE S00°12'01"E, 608.49 FEET ALONG THE EASTERLY LINE OF SAID TRACT A (BASIS OF BEARINGS);
THENCE S90°00'00"W, 332.94 FEET;
THENCE 78.54 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 100.00 FEET, A CENTRAL ANGLE OF 45°00'00", AND A CHORD BEARING OF N67°30'00"W, 76.54 FEET;
THENCE N45°00'00"W, 182.11 FEET;
THENCE 117.81 FEET ALONG THE ARC OF A TANGENT CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 150.00 FEET, A CENTRAL ANGLE OF 45°00'00", AND A CHORD BEARING N67°30'00"W, 114.81 FEET;
THENCE N90°00'00"W, 19.93 FEET;
THENCE N00°00'00"W, 16.05 FEET;
THENCE 56.06 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 173.00 FEET, A CENTRAL ANGLE OF 18°34'05", AND A CHORD BEARING N09°17'02"E, 55.82 FEET;
THENCE N18°34'05"E, 286.04 FEET;
THENCE N00°00'00"W, 53.14' TO THE NORTHERLY LINE OF SAID TRACT A;
THENCE N88°51'39"E, 556.31 FEET ALONG THE SAID NORTHERLY LINE OF TRACT A TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 338,827 SQUARE FEET OR 7.778 ACRES, MORE OR LESS.

PARCEL B:

A PORTION OF PARCEL 33 OF "VISTA RIDGE MASTER FINAL PLAT" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M. TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID PARCEL 33;
THENCE N 88° 48' 22" E, 173.66 FEET ALONG THE NORTHERLY LINE OF SAID PARCEL 33;
THENCE S00°00'00"E 612.10 FEET;
THENCE N90°00'00"W, 171.49 FEET TO THE WESTERLY LINE OF SAID PARCEL 33;
THENCE N00°12'01"W, 608.49 FEET ALONG SAID WESTERLY LINE OF PARCEL 33 TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 105,313 SQUARE FEET OR 2.418 ACRES, MORE OR LESS.

PARCEL C:

LOT 2 OF "VISTA RIDGE FILING NO 2 – MINOR SUBDIVISION" (PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715), TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 175,823 SQUARE FEET OR 4.036 ACRES, MORE OR LESS.

SURVEY CERTIFICATION:

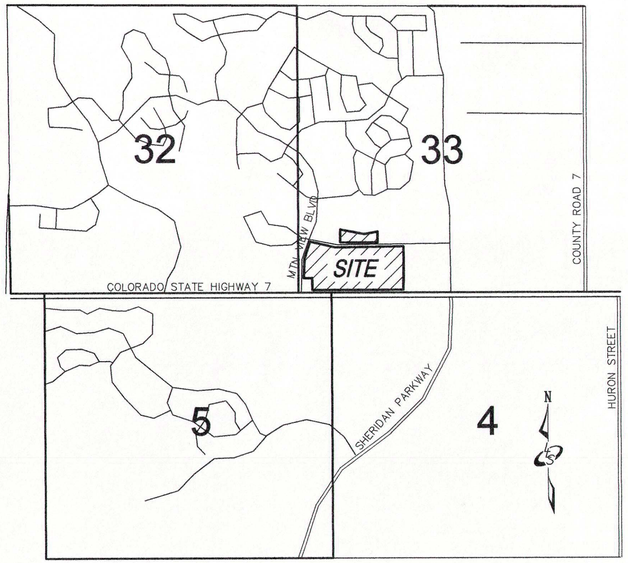
CERTIFIED TO:

CHARTERED DEVELOPMENT CORP.

FOR AND ON BEHALF OF LANGE LAND SURVEYS, LLC, I CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 2005, AND INCLUDES ITEMS 1–5 & 11A OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR LICENSED IN THE STATE OF COLORADO, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

DATE: 8/28/14

COLORADO REGISTERED JONATHAN R. LANGE 37908 PROFESSIONAL LAND SURVEYOR



VICINTY MAP
N.T.S.

GENERAL NOTES:

1. NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

2. BASIS OF BEARINGS: THE EASTERLY LINE OF TRACT A OF VISTA RIDGE FILING NO. 12 MINOR SUBDIVISION, ASSUMED TO BEAR S00°12'01"E, TO MATCH RECORDED PLATS. MONUMENTS DESCRIBED ON DRAWING.

3. FOUND PROPERTY CORNERS ARE DESCRIBED HEREON.

4. NO BUILDINGS ARE PRESENTLY LOCATED ON THIS PROPERTY.

6. THIS PROPERTY IS LOCATED IN ZONE C (AREAS OF MINIMAL FLOODING) ACCORDING TO FIRM COMMUNITY PANEL NUMBER 0802660970 D WITH A REVISION DATE OF 09/28/1990.

7. THE SUBJECT PROPERTY ABUTS UPON AND HAS INGRESS TO AND EGRESS FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS KNOWN AS RIDGE VIEW DRIVE.

8. PROPERTY IS CURRENTLY ZONED PD (PLANNED DEVELOPMENT).

9. TOTAL AREA OF THREE THE PARCELS IS 14.232 ACRES.

10. THE RECORD DESCRIPTION OF THE SUBJECT PROPERTY FORMS A MATHEMATICALLY CLOSED FIGURE AND, TO THE EXTENT ANY EASEMENT CANNOT BE LOCATED FROM ITS RECORD DESCRIPTION, A NOTATION IS MADE HEREON.

11. TWO PLATS HAVE BEEN RECORDED THAT AFFECT PARCELS: "VISTA RIDGE FILING NO. 2 FINAL PLAT", RECORDED 06/06/2003 AT RECEPTION NO. 3070387 AND "VISTA RIDGE FILING NO. 2 MINOR SUBDIVISION", RECORDED 11/15/2007 AT RECEPTION NO. 3517715, WHICH IS A REPLAT OF PARCEL 35B OF FILING NO. 2.

TITLE COMMITMENT NOTES:

THIS LAND SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY LANGE LAND SURVEYS, LLC. TO DETERMINE OWNERSHIP OF THIS PARCEL OF LAND, VERIFY THE DESCRIPTION SHOWN, VERIFY THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF THE ADJACENT PARCELS OF LAND, OR VERIFY EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHT-OF-WAY OR TITLE OF RECORD, LANGE LAND SURVEYS, LLC RELIED UPON ORDER NO. 25121037, WITH A DATE OF APRIL 11, 2014, PREPARED BY LAND TITLE GUARANTEE COMPANY.

THE FOLLOWING COMMENTS ARE IN REGARDS TO THE ABOVE REFERENCED ORDER NO.'S

SCHEDULE A

ITEM # COMMENT

1. NOTED ABOVE.

2., 3., 4. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

5. THE LEGAL DESCRIPTION OF THE LAND SURVEYED IS SHOWN HEREON, TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

SCHEDULE B – SECTION 1 (REQUIREMENTS)

ITEM # COMMENT

1.–5. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS. THIS ALTA/ACSM LAND TITLE SURVEY IS A RESPONSE TO THE REQUEST FOR A SURVEY.

SCHEDULE B – SECTION 2 (EXCEPTIONS)

ITEM # COMMENT

1.–14. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

15. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

16.–17. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

18. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

19.–20. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

21. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

22. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

23. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

24.–25. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

26. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

27.–29. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

30. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

31.–32. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

33. ITEM INTENTIONALLY DELETED.

34. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

35. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

36.–41. LANGE LAND SURVEYS DID NOT EXAMINE OR ADDRESS THESE ITEMS.

#	REVISIONS:	DATE:	BY:
1			
2			
3			
4			
5			
6			
7			
8			

JOB NUMBER: 1057-556 SHEET: 1 OF 2

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1" = 60'
DATE: 03/18/14
FILE NO. ALTA

ALTA / ACSM LAND TITLE SURVEY
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

PREPARED FOR:
CHARTERED DEVELOPMENT

Lange Land Surveys
9572 W. 58TH AVE. ARVADA, CO 80002
P:(720) 242-9732 F:(720) 242-9654

FINAL DRAINAGE REPORT
PRIMROSE SCHOOL
ERIE, COLORADO

Prepared For:
Children's Design Group
71 Market Place
Montgomery, AL 36117

Prepared By:
Hurst & Associates, Inc.
4999 Pearl East Circle
Suite 106
Boulder, CO 80301

Job No. 2410-01
May 8, 2007

TABLE OF CONTENTS

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Hydrologic/Hydraulic Analysis

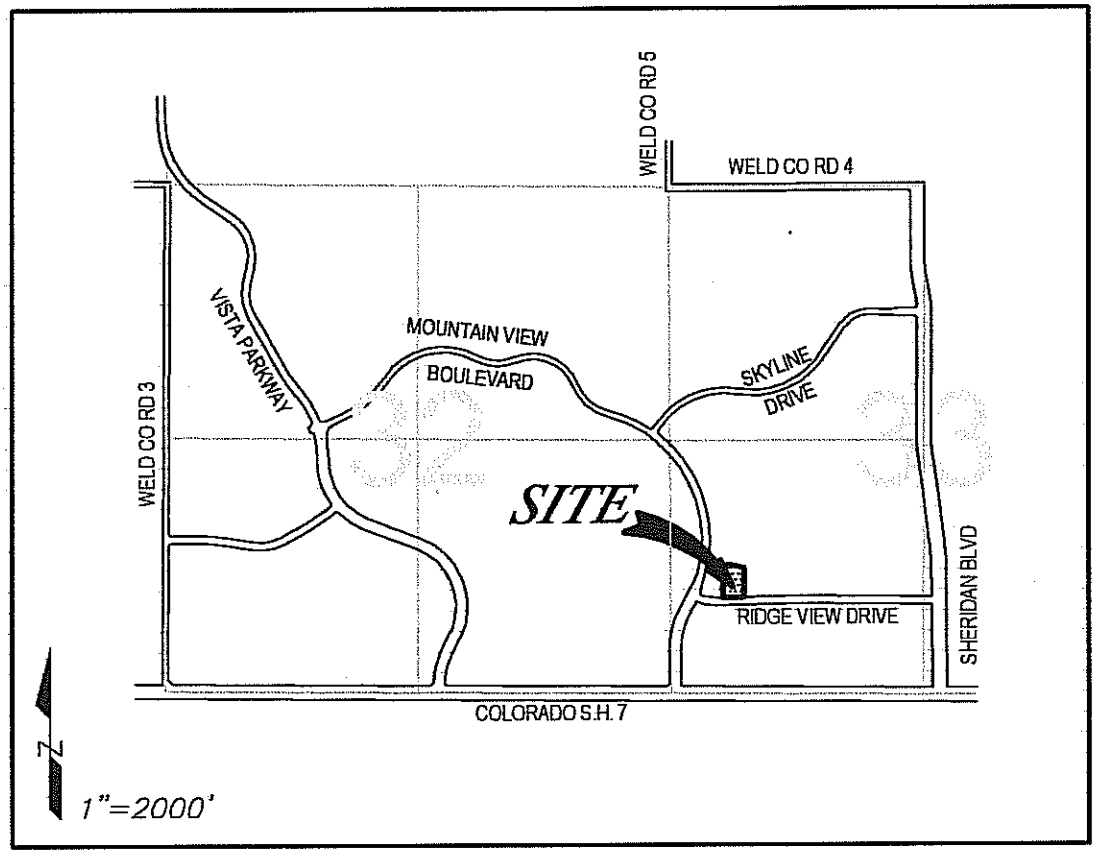
Drainage Facility Design

Erosion Control

Runoff Calculations ..... **Appendix A**

Storm Sewer Pipe Sizing & Inlet Analysis ..... **Appendix B**

Map Pocket - **Primrose School Drainage Plan**
Primrose School Grading Plan



VICINITY MAP

INTRODUCTION

This report presents the drainage concept and design of the drainage facilities of the proposed Primrose School. The Primrose School is to be built on Lot 2 of Vista Ridge Filing No. 2, Replat A. Lot 2 is located in the southwest one-quarter of Section 33, Township 1 North, Range 68 West of the Sixth Principal Meridian, Town of Erie, County of Weld, State of Colorado. The site is currently vacant. Runoff drains westerly to existing Vista Ridge Detention Pond A3. Runoff from Lot 3 of Vista Ridge Filing No. 2, Replat A and the western portion of the Vista Ridge Academy drains westerly across the Primrose School.

HYDROLOGIC/HYDRAULIC ANALYSIS

The stormwater runoff was determined using the Rational Method as presented in the *Urban Drainage and Flood Control District Manual*. Drainage basins were defined by the proposed grading and the locations of the proposed inlets and storm sewers. Times of concentration were developed for each basin. These times and the Time-Intensity-Frequency Curves from the Town of Erie's *Standards and Specifications for Design and Construction of Public Improvements* were used to determine the minor and major storm intensities and the corresponding runoff rates for each basin. According to the Town of Erie's *Standards and Specifications for Design and Construction of Public Improvements* the drainage facilities for the site must be designed using at least a 5-year initial storm return period and a 100-year major storm return period. Runoff calculations are located in **Appendix A**.

DRAINAGE CONCEPT

The drainage concept for the Primrose School is to convey the offsite flows from Lot 3 of Vista Ridge Filing No. 2, Replat A and the western portion of the Vista Ridge Academy along with

the runoff from the Primrose School to the existing Vista Ridge Detention Pond A3. Pond A3 was designed to detain flows from the Primrose School.

To avoid offsite flows from crossing the Primrose School during 100-year storm event, a 36 inch reinforced pipe is being extend to Lot 3. This pipe has the capacity to convey the developed 100-year flows from Lot 3 and the western portion of the Vista Ridge Academy. A Type 'C' inlet will be temporarily placed on the 36 inch pipe until Lot 3 is developed. **See Appendix B.**

APPENDIX A

RUNOFF CALCULATIONS

Primrose School
Job No.: 2410-1

Land Use	C_5	C_{100}
Roof	0.85	0.90
Grass	0.15	0.50
Walks	0.87	0.89
Pavement	0.88	0.93
Commercial	0.87	0.89

Basin	Total	Roof	Grass	Walks	Pavement	Comm.	C_5	C_{100}
	acres	*acres*	*acres*	*acres*	*acres*	*acres*		
A3A	1.13	0.25	0.37	0.08	0.43	0.00	**0.63**	**0.78**
A3B	2.95	0.00	0.00	0.00	0.00	2.95	**0.87**	**0.89**
A3C	4.92	0.00	0.88	0.12	0.00	3.92	**0.74**	**0.82**

Basin	Overland Flow			Travel Time in Channel				T_c (mins)	T_c Check		Final T_c (min = 5 mins)
	Length (ft)	Slope (%)	T_i (Fig. 2) (mins)	Length (ft)	Slope	Velocity (ft/sec) (fig.3-2)	T_t (mins)		Total Length (ft)	T_c = (L/180) +10 (mins)	
A3A	-	-	-	-	-	-	-	-	-	-	**5.0**
A3B	-	-	-	-	-	-	-	-	-	-	**5.0**
A3C	120	4.2	4.4	675	PIPE	5.0	2.3	6.6	795	14.4	**6.6**

Basin	Runoff		T_c (min)	Intensity		Design Flow	
	C5	C100		I_5 (in/hr)	I_{100} (in/hr)	Q_5 (cfs)	Q_{100} (cfs)
A3A	**0.63**	**0.78**	**5.0**	*5.00*	*9.40*	**3.58**	**8.29**
A3B	**0.87**	**0.89**	**5.0**	*5.00*	*9.40*	**12.83**	**24.68**
A3C	**0.74**	**0.82**	**6.6**	*4.60*	*8.65*	**16.77**	**34.90**

TABLE 800-3
RUNOFF COEFFICIENTS (C) FOR RATIONAL METHOD

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	FREQUENCY			
		2	5	10	100
Business					
Commercial Areas	95	.87	.87	.88	.89
Neighborhood Areas	70	.60	.65	.70	.80
Residential					
Single-Family	*	.40	.45	.50	.60
Multi-Unit (detached)	50	.45	.50	.60	.70
Multi-Unit (attached)	70	.60	.65	.70	.80
1/2 Acre Lot or Larger	*	.30	.35	.40	.60
Apartments	70	.65	.70	.70	.80
Industrial					
Light Areas	80	.71	.72	.76	.82
Heavy Areas	90	.80	.80	.85	.90
Parks, Cemeteries	7	.10	.18	.25	.45
Playgrounds	13	.15	.20	.30	.50
Schools	50	.45	.50	.60	.70
Railroad Yard Areas	20	.20	.25	.35	.45
Undeveloped Areas					
Historic Flow Analysis	2	(See "Lawns")			
Greenbelts, Agricultural					
Offsite Flow Analysis					
(when land use not defined)	45	.43	.47	.55	.65
Streets					
Paved	100	.87	.88	.90	.93
Gravel	40	.40	.45	.50	.60
Drives and Walks	96	.87	.87	.88	.89
Roofs	90	.80	.85	.90	.90
Lawns, Sandy Soil	0	.00	.01	.05	.20
Lawns, Clay Soil	0	.05	.15	.25	.50

Note: These Rational Formula coefficients may not be valid for large basins.

* Refer to Urban Storm Drainage Criteria Manual for percent impervious values.

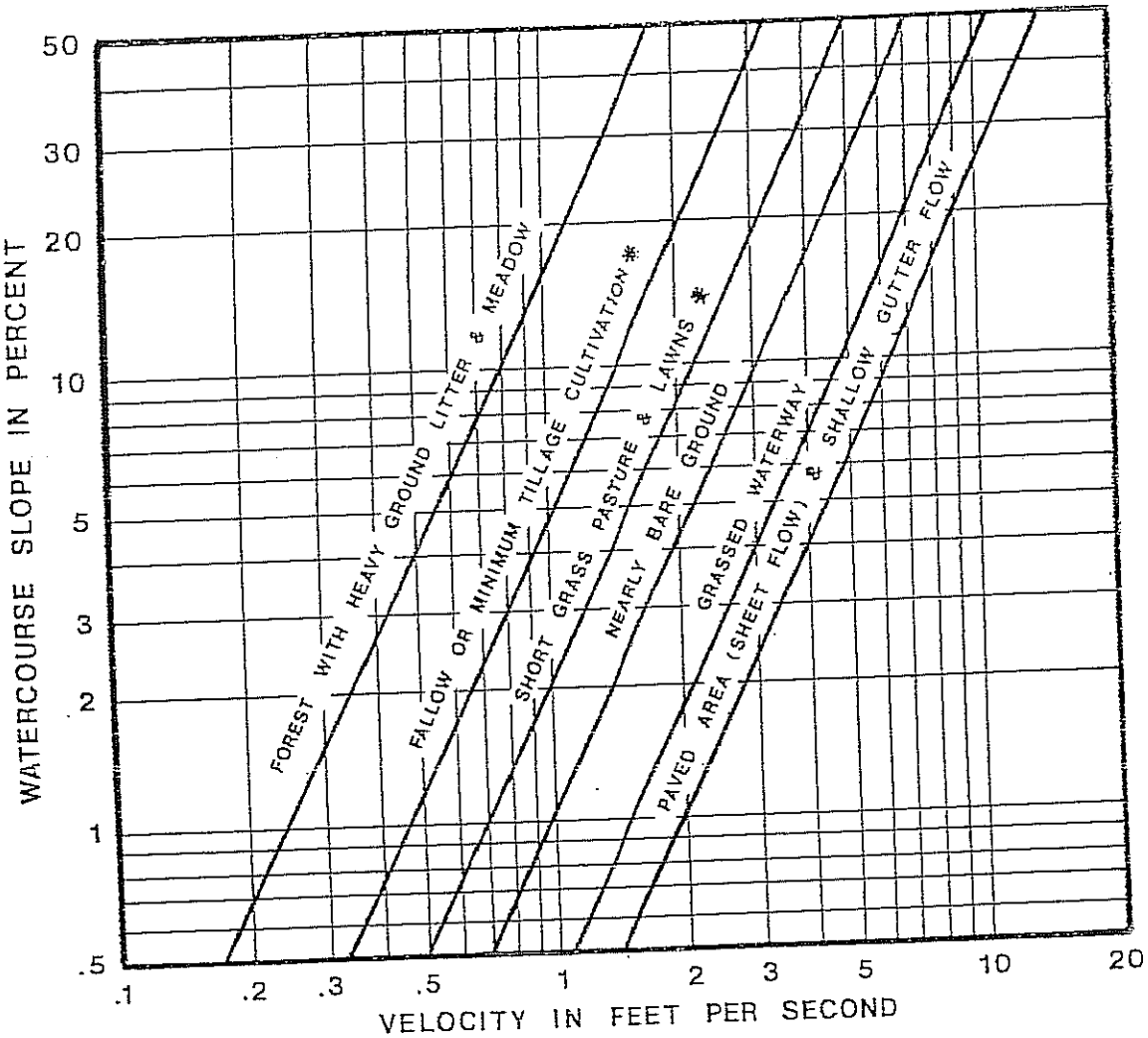


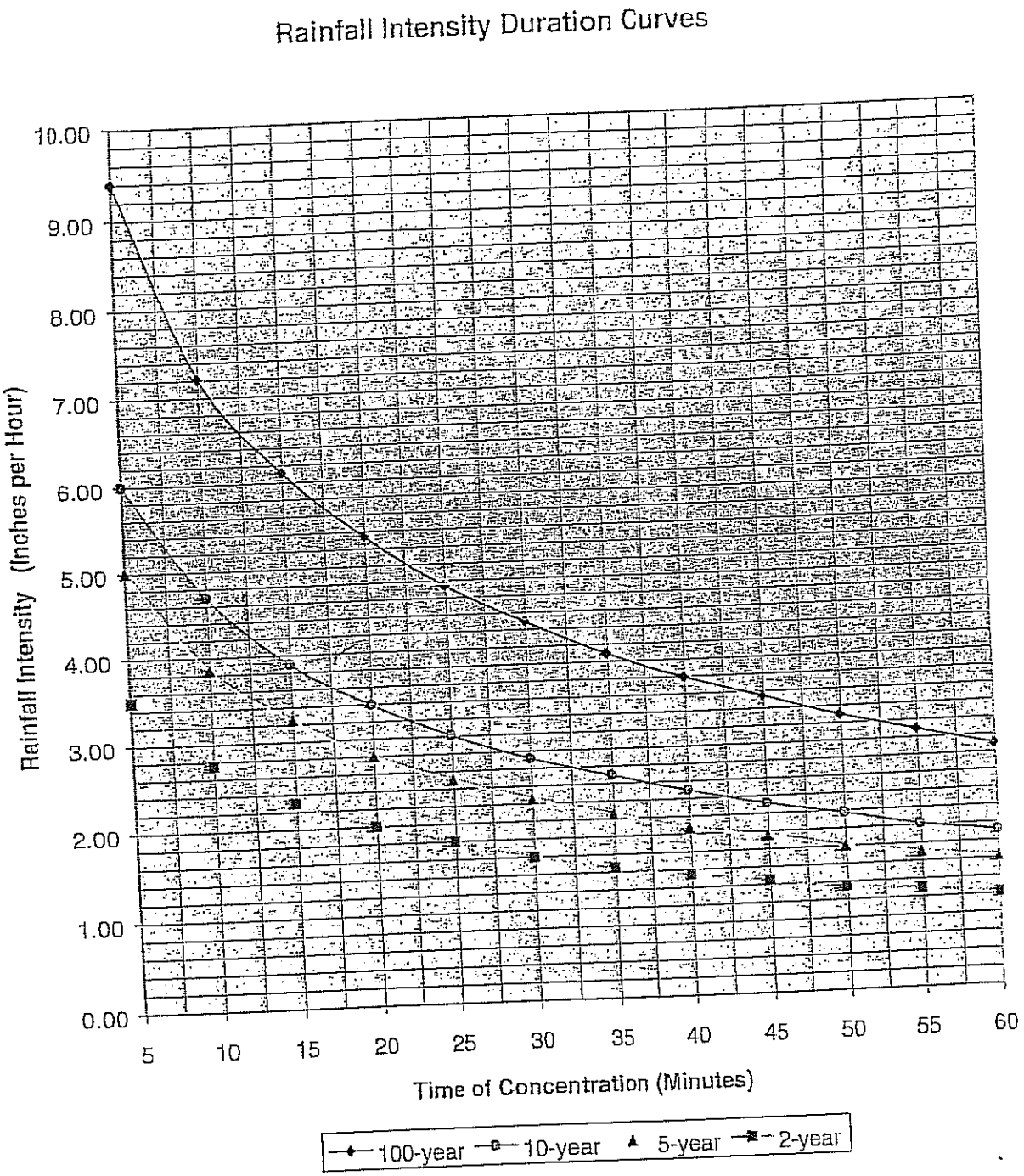
FIGURE 3-2. ESTIMATE OF AVERAGE FLOW VELOCITY FOR USE WITH THE RATIONAL FORMULA.

* MOST FREQUENTLY OCCURRING "UNDEVELOPED" LAND SURFACES IN THE DENVER REGION.

REFERENCE: "Urban Hydrology For Small Watersheds" Technical Release No. 55, USDA, SCS Jan. 1975.

813.06 Rainfall Intensities

The rainfall intensities to be used in the computation of runoff using the Rational Method shall be obtained from the Rainfall Intensity Duration Curves for the Town of Erie, included in these STANDARDS AND SPECIFICATIONS.



APPENDIX B

STORM SEWER PIPE SIZING & INLET ANALYSIS

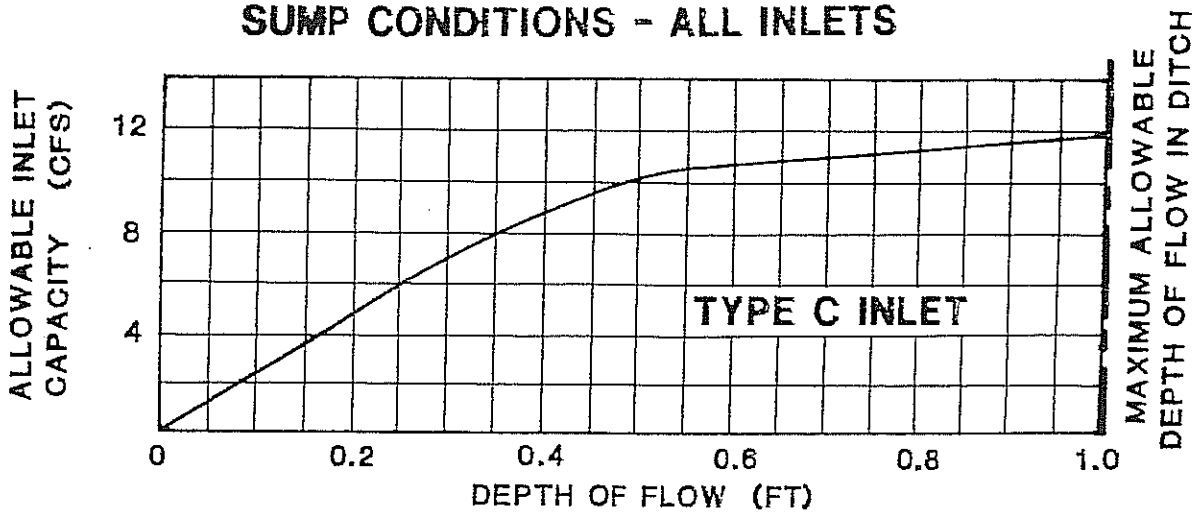
Primrose School
Job No.: 2410-1

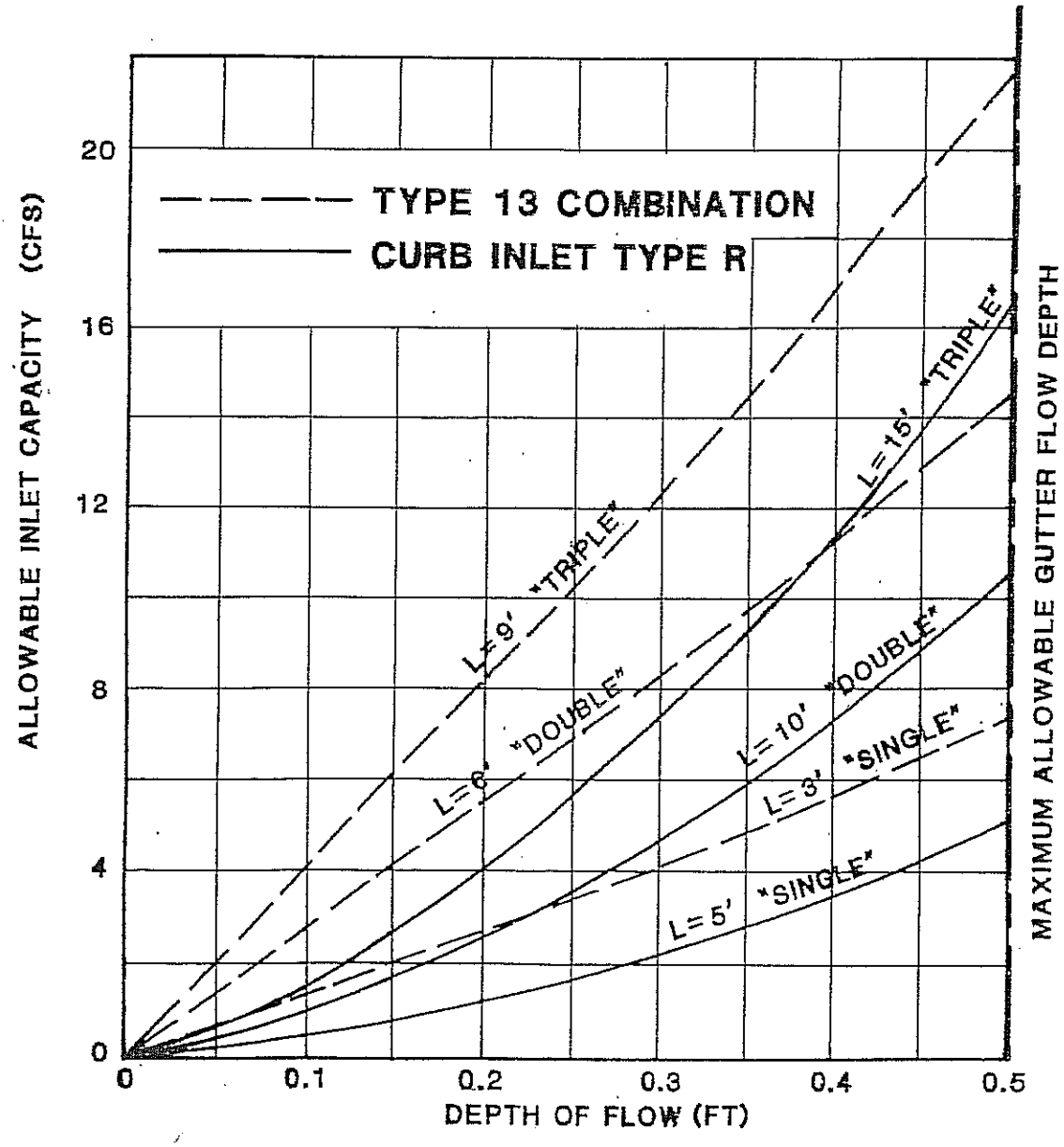
Type 'R' Inlets

Structure Number	Contributing Basins	Q_5 (cfs)	Q_{100} (cfs)	Condition	Depth of Flow (ft)	Inlet Type	Capacity (cfs)
SP-2	A3A	**3.58**	**8.29**	Sump	0.50	**5 Foot Single**	5.0

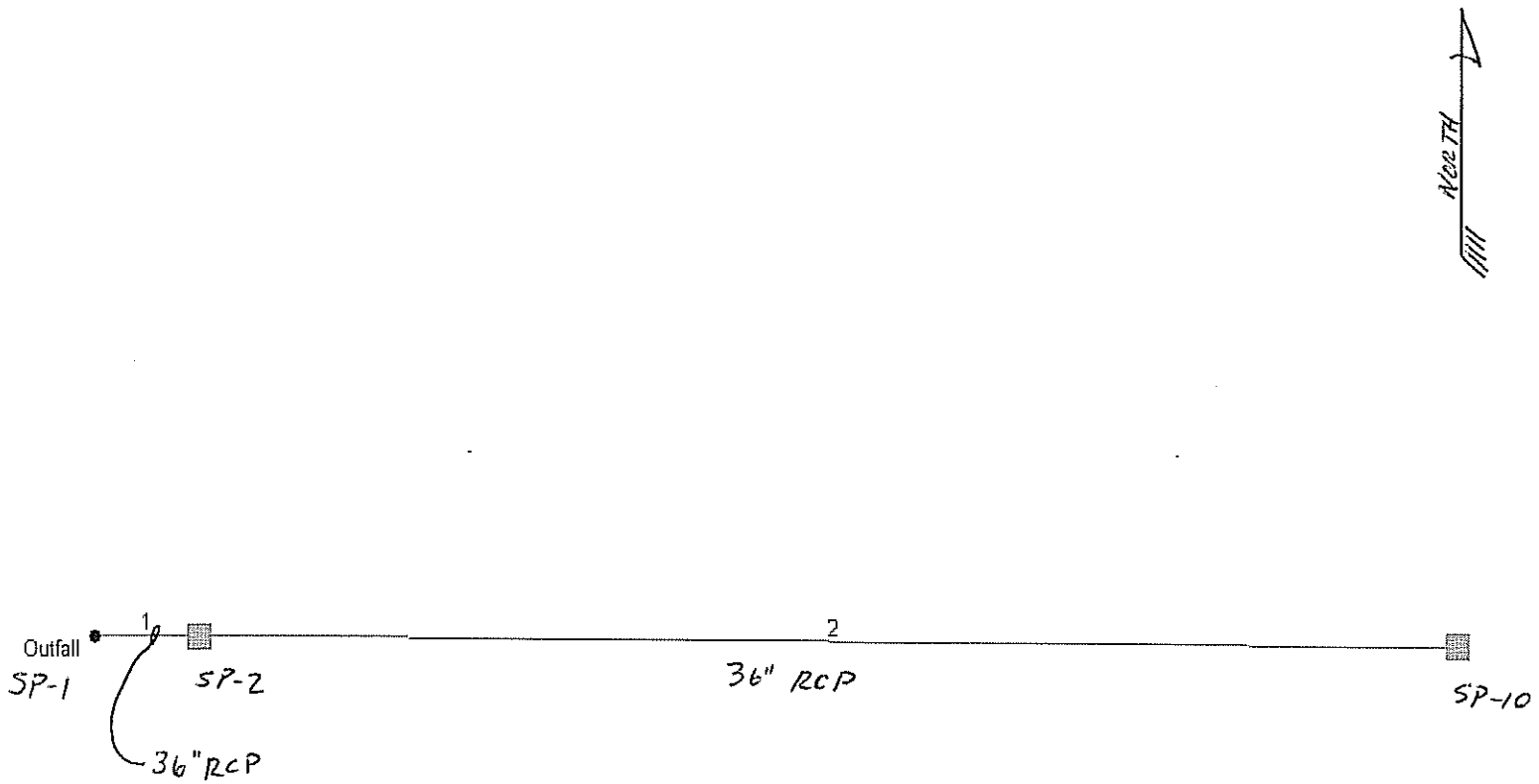
ALLOWABLE INLET CAPACITY

SUMP CONDITIONS - ALL INLETS





Hydraflow Plan View



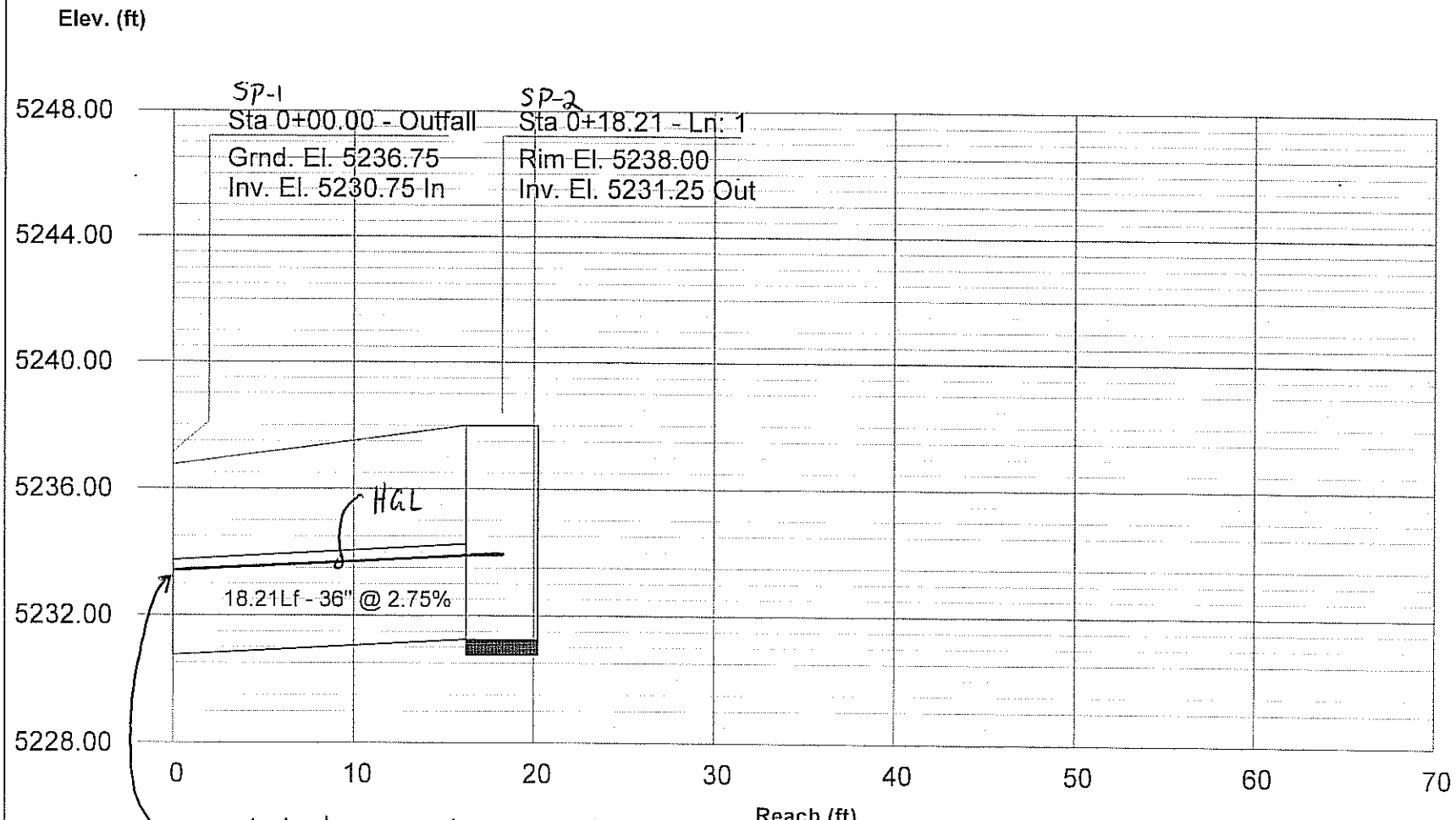
Project File: 241001B.stm

No. Lines: 2

05-03-2007

Storm Sewer Profile

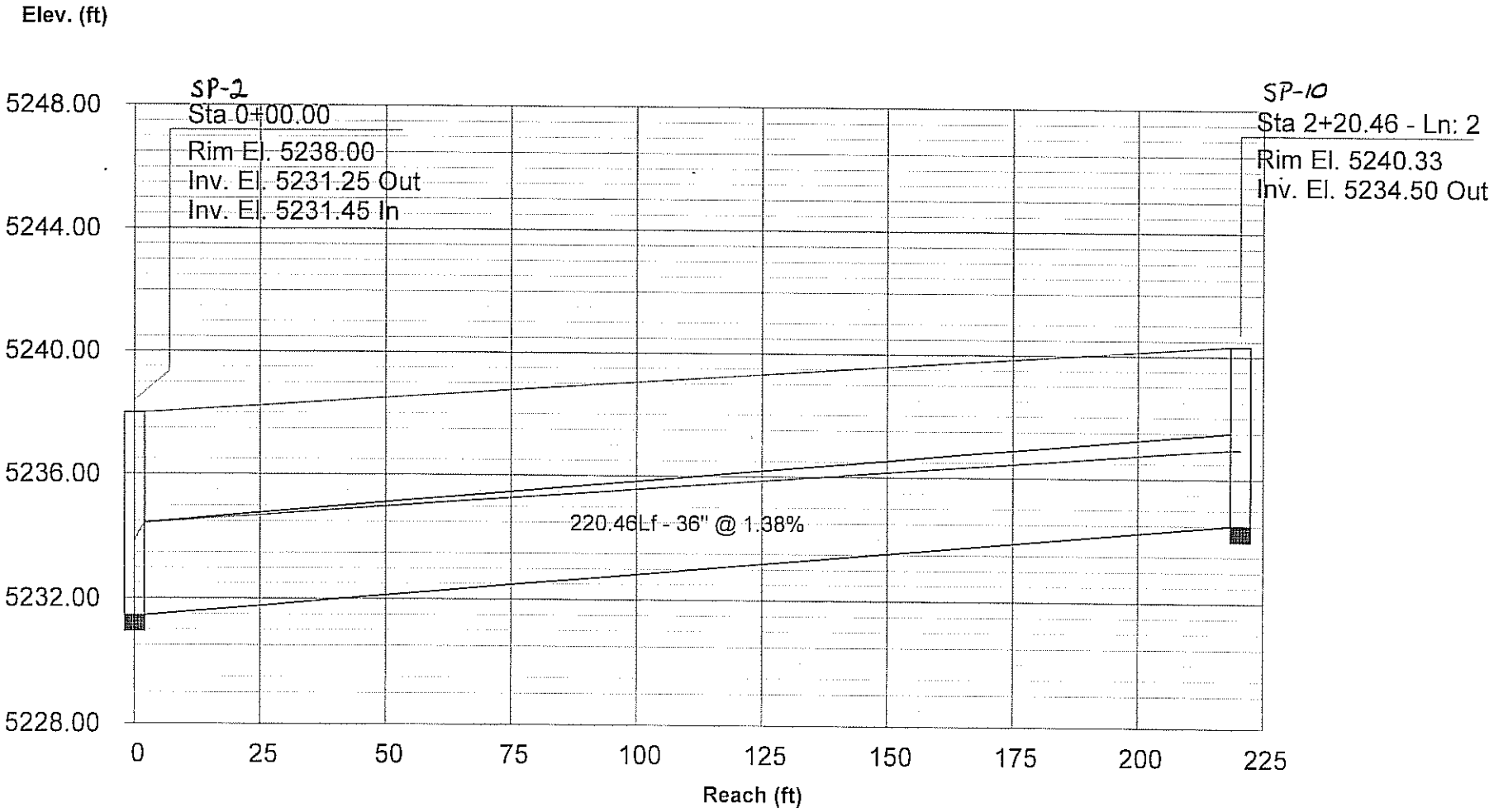
Proj. file: 241001B.stm



The hydraulic grade line was started at the 100-year W.S.E. of the detention pond. (5232.89)

Storm Sewer Profile

Proj. file: 241001B.stm



Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	18.2	0.0	Curb	67.87	0.00	0.00	0.0	5230.75	2.75	5231.25	36	Cir	0.013	0.50	5238.00	SP-1 TO SP-2
2	1	220.5	0.2	Grate	59.58	0.00	0.00	0.0	5231.45	1.38	5234.50	36	Cir	0.013	1.00	5240.33	SP-2 TO SP-10

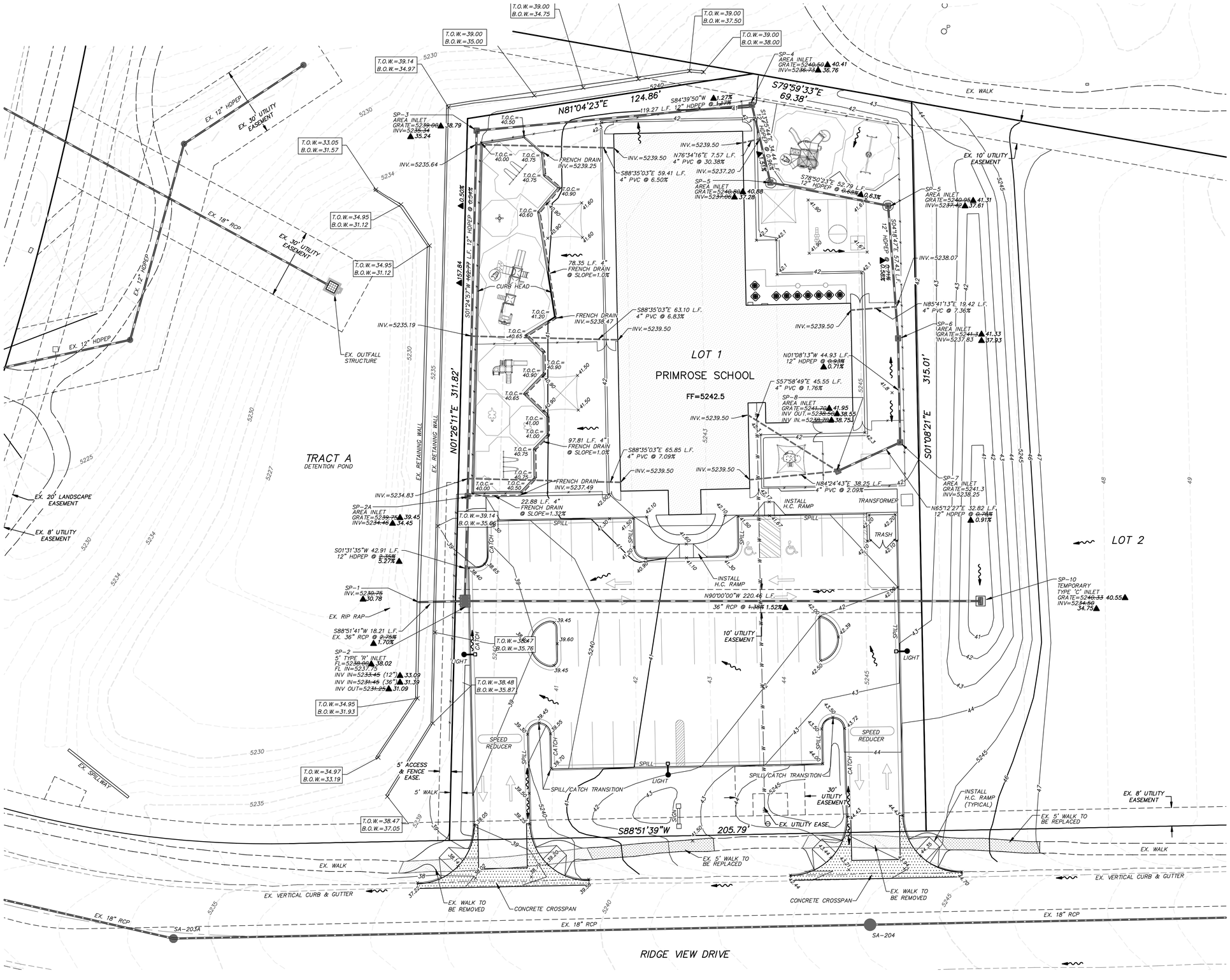
Project File: 241001B.stm | Number of lines: 2 | Date: 05-03-2007

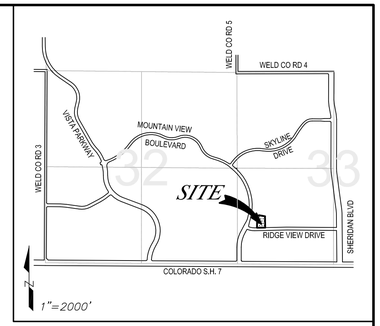
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
1	36	67.87	5230.75	5233.38	2.63	6.57	10.33	1.66	5235.04	0.935	18.2	5231.25	5233.88	2.63**	6.57	10.33	1.66	5235.54	0.935	0.935	n/a	0.50	n/a
2	36	59.58	5231.45	5234.44	2.98	7.06	8.43	1.11	5235.54	0.751	220	5234.50	5236.96	2.46**	6.20	9.60	1.43	5238.39	0.797	0.774	n/a	1.00	1.43

Project File: 241001B.stm | Number of lines: 2 | Run Date: 05-03-2007

Notes: ; ** Critical depth.





VICINITY MAP

THIS PLAN AND THE INFORMATION CONTAINED HEREON ACCURATELY REPRESENT THE "AS BUILT" CONDITION OF THE IMPROVEMENTS AS SHOWN AS OF 07/14/08.

▲ AS-BUILT BY
HURST & ASSOCIATES, INC.
CONSULTING ENGINEERS
4999 Pearl East Circle, Suite 106
Boulder, Colorado 80301 (303) 449-9105
07/14/08

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- Manhole
- Existing Manhole
- Thrust Block
- Proposed Water Valve
- Existing Water Valve
- Proposed Fire Hydrant
- Existing Fire Hydrant
- Plug
- Blowoff
- Proposed Water Line
- Existing Wate Line
- Proposed Sewer Line
- Existing Sewer Line
- Proposed Storm Line
- Existing Storm Line
- 10' Type 'R' Inlet
- 5' Type 'R' Inlet

ALL UTILITIES ARE PROPOSED UNLESS OTHERWISE NOTED

72 HOURS BEFORE YOU DIG
CALL THE UTILITY NOTIFICATION CENTER OF COLORADO (U.N.C.C.)
1-800-922-1987
GAS, ELECTRIC, TELEPHONE, CATV AND PANHANDLE EASTERN PIPELINE LOCATIONS

PRIMROSE SCHOOL
VISTA RIDGE FILING NO. 2
MINOR SUBDIVISION, LOT 1
GRADING & DRAINAGE PLAN

SCALE	HOR. 1"=20' VERT. N/A
DESIGN/APPR.	JJ
DRAWN BY	GLG
DATE	11/14/07

HURST & ASSOCIATES, INC.
CONSULTING ENGINEERS
4999 Pearl East Circle, Suite 106
Boulder, Colorado 80301 (303) 449-9105

FILE G:\21423\PARCEL 35B-2\CONST\24101-GG SHEET 3 OF 8

prepared by
Enertia Consulting Group, LLC
1437 Larimer Street
Denver, CO 80202

Storm Water Management Plan

Montex North at Vista Ridge, Erie, Colorado

prepared for

Chartered Development Corp
3160 Village Vista Drive
Erie, CO 80516

LAND • ENERGY • INFRASTRUCTURE

SWMP PLAN ACKNOWLEDGEMENT

SWMP Administrator Acknowledgement

This SWMP for the Montex North project described herein was prepared by me or under my direct supervision in accordance with the provisions of the Colorado Department of Public Health and Environment (CDPHE) guidelines. The SWMP has been prepared in accordance with good engineering, hydrologic and pollution control practices. I acknowledge responsibility for preparation of this SWMP Plan.

_____

J. Sean O'Hearn, PE, PG
Registered Professional Engineer
State of Colorado No. 33568

Date _____

For and on behalf of Enertia Consulting Group

Local Facility Acknowledgement

Chartered Development Corporation certifies that the grading, erosion, and sediment control measures for Montex North, shall be constructed, inspected and maintained according to this SWMP.

Chartered Development Corporation

_____
Name

_____
Date

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APPENDIX A BMP Inspection and Maintenance Report Form
Construction & Stabilization Report Form

1.0 INTRODUCTION

The following Storm Water Management Plan (SWMP) has been prepared on behalf of Chartered Development Corporation for land development activities including: clearing, grubbing and grading; constructing roads and infrastructure improvements; and constructing 26 single family residential units within a 4 acre area north of Ridge View Drive in Erie Colorado (the Project). The goal of this SWMP is to identify possible pollutant sources that may contribute pollutants to storm water, and identify Best Management Practices (BMP's) that, when implemented, will reduce or eliminate any possible water quality impacts. The SWMP shall be implemented at the time the Project breaks ground, and revised as construction proceeds, to accurately reflect the conditions and practices at the Project site. This SWMP has been prepared in general accordance with CDPHE Water Quality Control Division, Storm Water Program requirements.

1.1 Name, Address and Telephone Number of General Permit Applicant

Ward Ritter
Chartered Development Corporation
3160 Village Vista Drive, Suite 104
Erie, CO 80516
(303) 545-2554

1.2 Name, Address and Telephone Number of SWMP Preparer

J. Sean O'Hearn, PE, PG (CO PE No. 33568)
Enertia Consulting Group, LLC
1437 Larimer Street, Denver, CO 80202
(720) 473-3131

1.3 Name, Address and Telephone Number of Local Facility/SWMP Manager

Chartered Development Corporation
3160 Village Vista Drive, Suite 104
Erie, CO 80516
(303) 545-2554

2.0 PROJECT DESCRIPTION AND LOCATION

The Project consists of developing 26 single-family homes and appurtenant infrastructure on a +/- 4 acre site, which is identified as a re-subdivision of Lot 2, Vista Ridge Filing No. 2. The site is gently sloping from east to west with an existing slope of approximately 2.8%. Existing ground cover consists of upland grasses. There is a drainage swale along the western property line that collects runoff from the site and conveys it to an inlet which drains to the detention pond west of Primrose Preschool. To the east of the site on the Vista Ridge Academy property, a retention pond has been constructed to capture runoff from this adjacent property which effectively reduces off-site runoff toward the site. There are no wetlands or other sensitive resource areas on the 4 acre Project site.

The project is bounded to the north by Colorado National Golf Course, the Vista Ridge Academy to the east, Primrose Preschool to the west and Ridge View Drive to the south. The adjacent major roadways are Mountain View Boulevard to the west, Sheridan Parkway to the east and East Baseline Road to the south.

The Project is located in the southwest quarter of Section 33, Township 1 North, Range 68 West of the 6th Principle Meridian. The assigned latitude and longitude of the Project is 40.0024^{0} and -105.0141^{0}, respectively.

Additional Project information and anticipated construction activities are described in Sections 2.1 and 2.2 below.

2.1 Project Purpose, Area of Disturbance and Total Construction Area

The primary purpose of the Project is to construct roads, infrastructure and building pads required for 26 new homes in Vista Ridge. In order to complete the Project, an area of approximately 4 acres will be disturbed. For the purposes of this SWMP, this area is considered the total construction area. This area is currently unimproved and generally covered with native vegetation (approx. 70-80% coverage).

2.2 Construction Description and Sequence

Project construction activities generally include: installation of storm water BMP's; clearing, grubbing and grading; installation of wet utilities (water, sanitary and storm) and road subgrade; concrete work including curb & gutter and sidewalks; installation of dry utilities (gas, electric, data/communications); asphalt paving; and fine grading & landscaping open space areas. A general description of these construction activities is as follows.

2.2.1 Installation of BMP's

Erosion and sediment control BMP's shown on Figure 1 including vehicle tracking control at Ridge View Drive, inlet protection (west side of site) and silt fence along the limit of grading will be installed prior to any clearing and grubbing. Additional inlet protection, a concrete wash out area, and permanent seeding/mulching and other landscaping will be installed during the construction process. Figure 2 illustrates the final BMP condition.

2.2.2 Clearing, Grubbing and Grading

The entire 4 acre area will be cleared, grubbed and rough graded. Organics and other excess materials shall be stockpiled adjacent to Ridge View Drive. This designated stockpile area is illustrated on Figure 1.

2.2.3 Overexcavation of Project Site

Based on geotechnical requirements, the majority of the 4 acre area will be overexcavated to a maximum depth of 3' below roads, sidewalks and driveways and 22' below housing unit finished floor elevations. The excavated soils will be removed, stockpiled, reconditioned and reinstalled as part of this Project.

2.2.4 Installation of Wet Utilities and Ridge View Court Construction

Ridge View Court, the Project access road will be rough graded prior to water, sanitary sewer and storm sewer installation. Excess trench materials will be placed as engineered fill in the Ridge View Court alignment. Once utilities have been installed, curb & gutter and sidewalks will be installed prior to road surface compaction, fine grading and asphalt paving.

2.2.5 Concrete Work

Once wet utilities are installed and road subsurface materials installed and compacted, concrete curb & gutter and adjacent sidewalks will be constructed. As shown on Figure 2, a concrete wash out area will be located adjacent to the vehicle tracking control prior to concrete work.

2.2.6 Dry Utility Installation

Natural gas lines will be installed off the back of curb and electric/data communication lines will be installed in the Xcel trench located in the Ridge View Court right of way.

2.2.7 Landscaping/Seeding & Mulching Open Space Areas

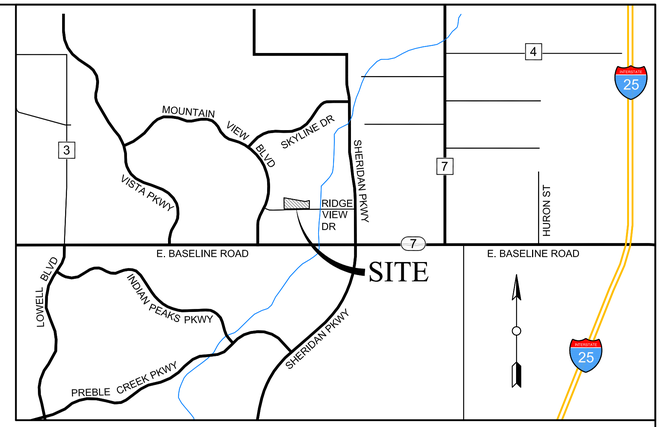
Stockpiled topsoil (if any) will be spread as needed over the graded ground surface in designated open space areas shown on Figure 2. These areas will be landscaped or seeded and mulched in accordance with the Project landscape design plans to achieve stabilization requirements described in Section 5.4 of this SWMP.

2.3 Potential Sources of Pollution

Soils within the construction area are classified as Type C and the primary potential pollutant source is exposed sediment. Secondary potential sources of pollution include concrete wash activities (e.g., sidewalks, curb & gutter construction) and uncontained releases from construction vehicles or heavy equipment or stored hazardous materials (if any). It is understood that the Project Contractor will implement a Spill Prevention, Control and Countermeasure (SPCC) Plan for the Project. It is anticipated that information including: on-site vehicle fueling procedures; temporary storage of fuel, hydraulic fluids, lubricants or other hazardous materials (if any); available emergency response materials and equipment; and emergency response contact information and procedures will be included in the SPCC Plan.

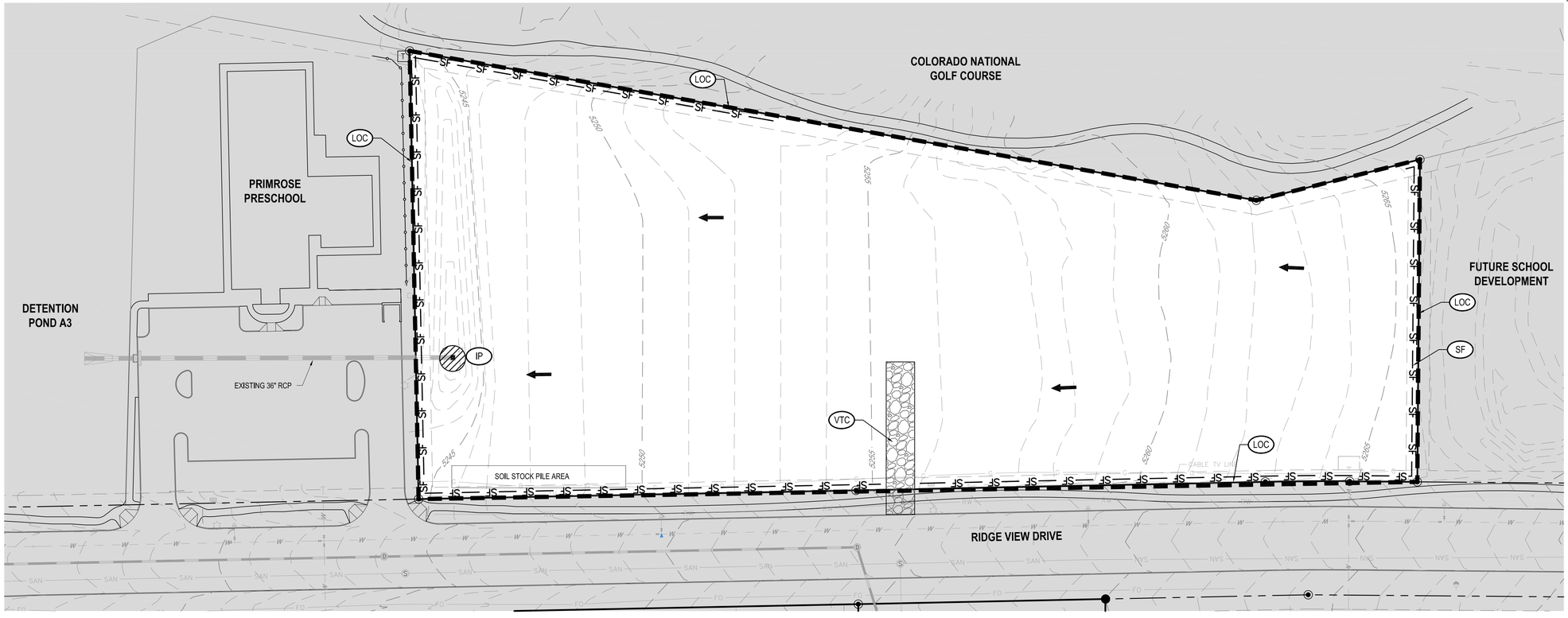
MONTEX NORTH AT VISTA RIDGE
INITIAL STORMWATER BMP INSTALLATION

FIGURE 1



GENERAL LOCATION MAP

SCALE 1"=2000'



GENERAL LEGEND:

- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- DIRECTION OF FLOW
- AREA OUTSIDE LIMIT OF CONSTRUCTION

BMP LEGEND:

- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- PS — PERMANENT SEEDING
- IP — INLET PROTECTION

N

0' 20' 40' 80'

SCALE: 1"=40'

MONTEX NORTH AT VISTA RIDGE
STORM WATER MANAGEMENT PLAN

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

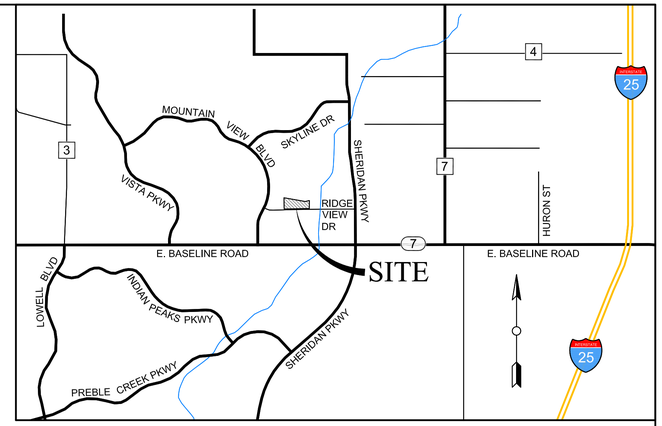
PLANNER:
HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE 110
BOULDER, COLORADO 80304
303-449-9105

DATE: 11/14/2014

REVISED:

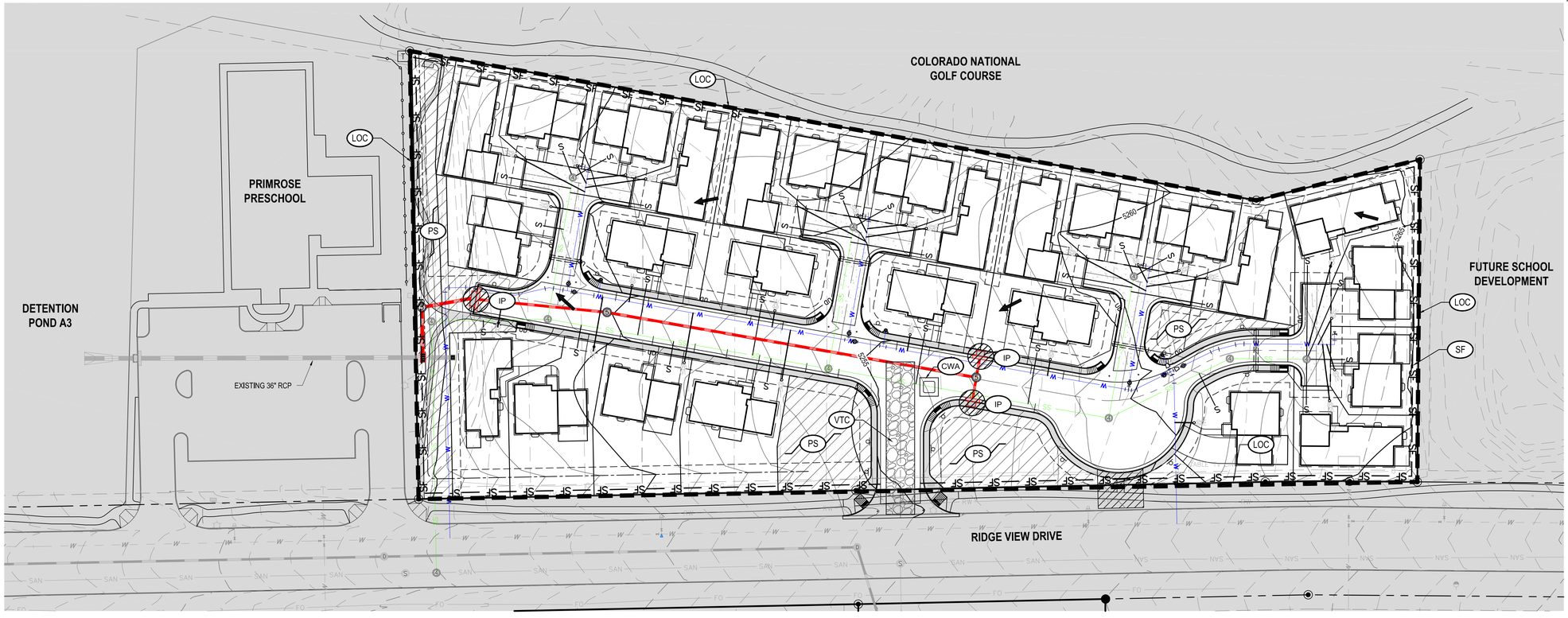
MONTEX NORTH AT VISTA RIDGE
FINAL STORMWATER BMP INSTALLATION

FIGURE 2



GENERAL LOCATION MAP

SCALE 1"=2000'



GENERAL LEGEND:

- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED 1' CONTOUR
- DIRECTION OF FLOW
- AREAS TO BE LANDSCAPED
- AREA OUTSIDE LIMIT OF CONSTRUCTION

BMP LEGEND:

- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION
- SF — SILT FENCE
- PS — PERMANENT SEEDING
- CWA — CONCRETE WASHOUT AREA
- IP — INLET PROTECTION

N

0' 20' 40' 80'

SCALE: 1"=40'

MONTEX NORTH AT VISTA RIDGE
STORM WATER MANAGEMENT PLAN

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
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2500 BROADWAY STREET, SUITE 110
BOULDER, COLORADO 80304
303-449-9105

DATE: 11/14/2014

REVISED:

3.0 EXISTING SITE CONDITIONS AND ADJACENT AREAS

The Project site is generally unimproved and the existing ground surface is vegetated and slopes from east to west at an average grade of about 2.8 percent. In general, the vegetative cover over the Project site is approximately 70-80 percent. Existing soils are classified as Type C. There are no wetland resource areas or other unique features on or near the Project site. Surface water flows overland and is ultimately conveyed via storm sewer toward the regional detention pond to the west. This pond currently retains storm water and discharge toward a water feature within the Vista Ridge golf course. Ultimately, treated storm water from these developed areas flows toward Coal Creek.

The Project is located within a mixed use area in the Vista Ridge Planned Development. Currently, there are residential, institutional (school) and recreational (golf) developments adjacent to or surrounding Project. There are no streams or lakes adjacent to or surrounding the Project site. There are no anticipated allowable sources of non-storm water discharges at the Project Site.

4.0 EROSION AND SEDIMENT CONTROL MEASURES

The Project will be developed on unimproved land within Vista Ridge. Prior to clearing and grubbing the Project site, BMP's will be installed. As shown on Figure 1, proposed sediment controls to be installed prior to and during construction include: vehicle tracking control; inlet protection; silt fence; and soil stockpile area. BMP construction details are shown on Figure 3.

4.1 Vehicular Access

Construction related vehicles will enter and exit the Project site via Ridge View Drive. Vehicle tracking control will be installed as shown on Figure 1. Vehicle access will be controlled with construction markers (orange traffic cones). Since the construction area is not open to the public, non-construction related traffic will be minimal. The construction markers will direct non-construction related vehicles away from any construction areas.

Earth moving equipment will likely remain at the Project site through project completion. Delivery vehicles (e.g., trucks entering with wet utility pipe and appurtenances, concrete, asphalt) may be exposed to soil but given the vehicle tracking control located at Ridge View Drive, sediment tracking shall be significantly reduced. However, it is the contractor's responsibility to ensure that:

- Public streets shall be free of sediment and debris throughout Project construction;
- Any sediment tracked onto public streets shall be cleaned by using a vacuum type street sweeper, a brush type street sweeper with dust control, or manually using shovels and brooms;
- Public streets shall not be washed with water at any time; and
- The SWMP Manager shall inspect streets on a regular basis. The SWMP Manager shall complete inspections as soon as practical after a storm event and direct the cleanup sediment by the Contractor as necessary.

4.2 Concrete Trucks

Concrete trucks will enter and exit the Project site via Ridge View Drive. Prior to leaving the construction site, the concrete truck trough shall be cleaned (if necessary) in the designated concrete wash area adjacent to the vehicle tracking control (shown on Figure 2).

MONTEX NORTH AT VISTA RIDGE
STORMWATER BMP INSTALLATION DETAILS

FIGURE 3

Eco-Pan Specification sheet

Eco-Pan objective
Allows for easy concrete pump washout, ready mix trucks, and other equipment associated with cement on site and easy off site recycling of the same concrete materials

Eco-Pan Application
Construction projects where concrete, stucco, mortar, grout and cement are used as a construction material or where cementitious wastewater is created.

Eco-Pan Maintenance
Inspect and clean out when ¾ full, not allowing the Eco-Pan to overflow.
Inspect wastewater level and request service. Replace with empty Eco-Pan, as needed.
Inspect Eco-Pan's to ensure that proper housekeeping are employed when washing out equipment.

Description
A self-contained and watertight eco-pan with added fork channels for portability captures and contains concrete wastewater and washout material. Our eco-pan's come in two sizes to accommodate every size pour, 1 yard /2 ton or 2.5 yard /4.5 ton.

SPECIFICATIONS
The eco-pan must be portable and temporary, watertight, equipped with fork channels and have a holding capacity to accept washout from approximately 250 yds - 2.5 yard /4.5ton, Or, 150yards-1yard /2 ton of poured concrete.

2.5 YARD / 4.5 TON

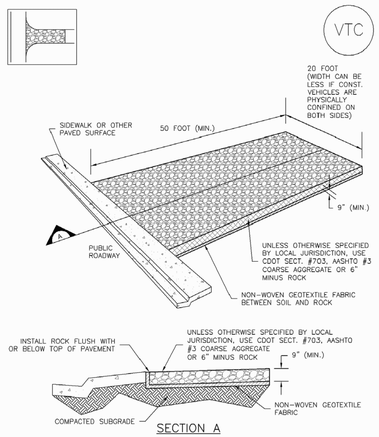
600 Gallon Capacity
20 to 30 Mixer Wash Outs *
7' x 7' x 26"

1 YARD / 2 TON

300 Gallon Capacity
10 to 15 Mixer Wash Outs *
7'x 7' x 14" (Enough to contain material from Pump Hopper)

CONCRETE WASHOUT DETAIL
NOT TO SCALE

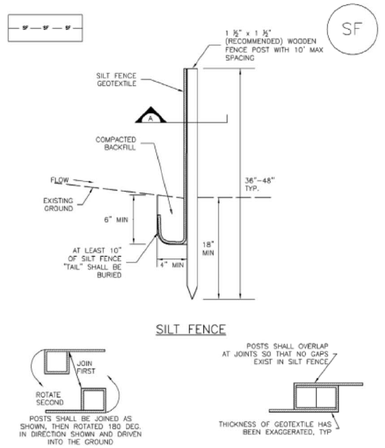
Vehicle Tracking Control (VTC) SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

VEHICLE TRACKING CONTROL DETAIL
NOT TO SCALE

Silt Fence (SF) SC-1



SF-1. SILT FENCE

SILT FENCE DETAIL
NOT TO SCALE

SC-1 Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

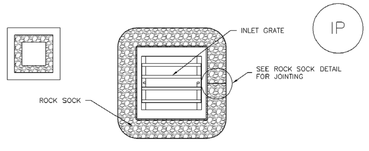
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

SILT FENCE DETAIL DETAIL
NOT TO SCALE

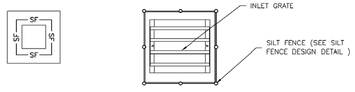
Inlet Protection (IP) SC-6



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

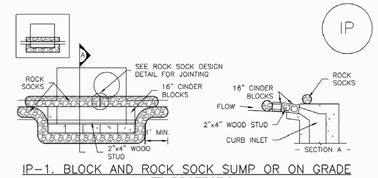
1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

TYPE 13 SEDIMENT CONTROL DETAIL
NOT TO SCALE

SC-6 Inlet Protection (IP)



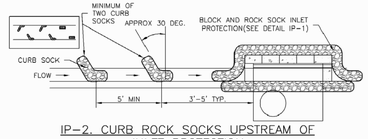
IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.

TYPE R SEDIMENT CONTROL DETAIL
NOT TO SCALE

MONTEX NORTH AT VISTA RIDGE
STORM WATER MANAGEMENT PLAN

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

PLANNER:
HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE 110
BOULDER, COLORADO 80304
303-449-9105

DATE: 11/14/2014

REVISED:

5.0 INSPECTIONS AND RECORDKEEPING

The Project area shall be routinely inspected by the Contractor's SWMP Manager to ensure that installed erosion and sediment control measures are maintained in effective condition. Maintenance needs or additional controls identified during inspections shall be completed immediately or as soon as practical.

5.1 Inspections

Erosion and sediment control measures shall be inspected on a regular basis, at least one inspection every 2 weeks, to ensure that they are operating correctly. Areas used for storage of construction materials and equipment; inlets, the vehicle tracking pad, and the entire perimeter of the disturbed area shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Windblown litter will be policed on a daily basis. Locations where vehicles enter or exit the Project construction area (Ridge View Drive) will be inspected for evidence of off-site sediment tracking as described in Section 4.1 of this SWMP.

5.2 Timing of Inspections

During construction, inspections will be performed at least once every two weeks, and within 24 hours of the end of a storm event that can cause erosion. Where areas have been stabilized (as described in Section 5.4), inspections will be performed at least once every month until the CDPHE Storm Water Permit is terminated.

"Winter Waiver" - During the winter when the ground is frozen for more than one month, and land disturbances activities have been suspended, inspections are not required until one month before thawing conditions. The beginning and ending dates of the waiver period must be documented on the inspection report.

5.3 Inspection Reports

An inspection report (Appendix A of this SWMP) will be prepared and signed by the assigned individual after the completion of each inspection. Any noted deficiencies shall be corrected as soon as practical after the inspection. The reports shall be retained as part of this SWMP for at least three years from the date of final stabilization.

5.4 Stabilization Reports

Pictorial records shall be used to establish initial and final stabilization. These records will kept on file with other construction records. A stabilization report (Appendix A of this SWMP) will be completed to document beginning and end dates of construction and ground surface stabilization/revegetation activities. In disturbed areas, stabilization goals will be accomplished when all soil-disturbing activities have been completed and perennial vegetation has been established that is greater than or equal to 70% basal cover. Establishment success must occur within two growing seasons in order to meet the standard. A visual estimate of basal cover class using plots (such as the Daubenmire or Braun-Blanquet system) is the simplest monitoring protocol to perform. Monitoring is recommended at one year and two years following seeding so as to capture germination/growth of both cool and warm season species that are already present or were seeded. Monitoring will be performed by qualified personnel trained in monitoring protocol implementation and plant identification. Once stabilization is achieved, a Notice of Termination will be sent to the CDPHE removing this construction project for the SWMP permit requirements.

5.5 Permit Requirements

A copy of the applicable CDPHE General Permit for Storm Water Discharge from Construction Activities will be available from the Local Facility Contact/SWMP Manager or Contractor onsite. The general permit number is _____.

5.6 Compliance with State & Local Regulations

The Local Facility/SWMP Manager shall ensure compliance with applicable State, and/or local storm water permit and other regulatory requirements.

6.0 NON STORM WATER EVENTS

This Project will generally involve earthwork, concrete work, wet and dry utility installation, road construction and open space landscaping/seeding & mulching. Possible non-storm water discharges resulting from the Project include dust suppression water, fire suppression water and air conditioning condensate from vehicles or construction trailers.

Although bulk chemical or petroleum storage will not occur at the Project site, any such storage area would include secondary containment to prevent migration of a release. Potential chemical or petroleum leaks may occur from an onsite portable latrine, refueling of equipment, and leaks of lube oil or hydraulic fluid from construction equipment.

The Project area shall be maintained in a neat, orderly condition during construction. Waste materials at the Project site shall be collected and disposed of promptly at appropriate waste disposal site. A portable latrine may be used on site. Any sanitary waste that is present at the site will be collected and disposed by a designated, licensed operator. All waste from materials imported to the construction site area are to be removed by the contractor for appropriate disposal. No wastes of imported materials shall be buried, dumped or improperly disposed of.

All equipment refueling shall occur in designated locations during daylight hours in accordance with the Project SPCC plan. It is anticipated that the refueling protocol requires that the operator constantly monitor the refueling process. Each fuel truck shall be equipped with a complete spill kit (including materials such as a shovel, containers for contaminated soils, sorbent socks and pads). All spills are to be addresses immediately and reported in accordance with the Project SPCC plan. In addition the Project area shall be visually inspected as a part of the standard 14 day inspection for any signs of spills.

Visual observation of leaks of equipment lube oils may be noted in the SWMP inspection report and corrected before daily operations begin. As required, any spills will be contained and contaminated soils removed from Project area in accordance with SPCC Plan requirements. Efforts to immediately repair any leaking equipment will be initiated. If the construction site experiences a spill of any hazardous substance, oil, or condensate in an amount which exceeds a federal or state reportable quantity, the spill must be reported. Note: if a release of over 25 gallons to the surface soils or any amount that could potentially impact storm water runoff is recognized, the Town of Erie Storm Water Compliance Manager and CDPHE will be notified as described in the Project SPCC plan.

prepared by
Enertia Consulting Group, LLC
1437 Larimer Street
Denver, CO 80202

Storm Water Management Plan

Montex North at Vista Ridge, Erie, Colorado

Appendix A

Inspection Report

Stabilization Report

LAND • ENERGY • INFRASTRUCTURE

INSPECTION AND MAINTENANCE REPORT

PROJECT NAME: Montex North Residential Development DATE:

During construction, inspections will be performed at least once every 14 calendar days, and within 24 hours of the end of a storm event of 1 inch or greater. Where areas have been stabilized, or when runoff is unlikely due to winter or drought conditions, inspections will be performed at least once every month. "Winter Waiver" - During the winter when the ground is frozen for more than one month, and land disturbances activities have been suspended, inspections are not required until one month before thawing conditions. The beginning and ending dates of the waiver period must be documented here.

Beginning date: Ending Date:

	Y	N	N/A	COMMENTS
1) In the disturbed areas of the construction site that have not been finally stabilized, is there evidence of, or potential for sediment entering the drainage system?				
2) Are the sediment control measures (silt fences, hay bales, VTC, Inlet and Outlet Protection, etc) operating correctly? 2A) Have sediment controls been repaired or replaced where problems were noted?				
3) If applicable, in the areas used for storage of construction debris and construction chemicals, is there evidence of, or the potential for, pollutants to enter the drainage system?				
4) In locations where vehicles enter or exit the site, does sediment get tracked onto the road?				
5) If applicable, at discharge locations (where accessible) are the erosion control measures effective in preventing significant impacts to receiving waters?				
6) Were there any indications of spills from fueling trucks, equipment oil pans, or port-a-potties? Were measures taken to clean up these sites?				
7) Any other issues to note?				

I hereby certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:_____ Date:_____

STORM WATER MANAGEMENT PLAN
CONSTRUCTION & STABILIZATION REPORT

PROJECT NAME: Montex North Residential Development

ESTIMATED TOTAL ACERAGE TO BE DISTURBED: 4 ACRES
(Length of Project X Width of R.O.W. ÷ 43,560)

LIST ALL POTENTIAL DRAINAGES AND WATER CROSSINGS:
DATES WHEN MAJOR CONSTRUCTION ACTIVITIES OCCUR:

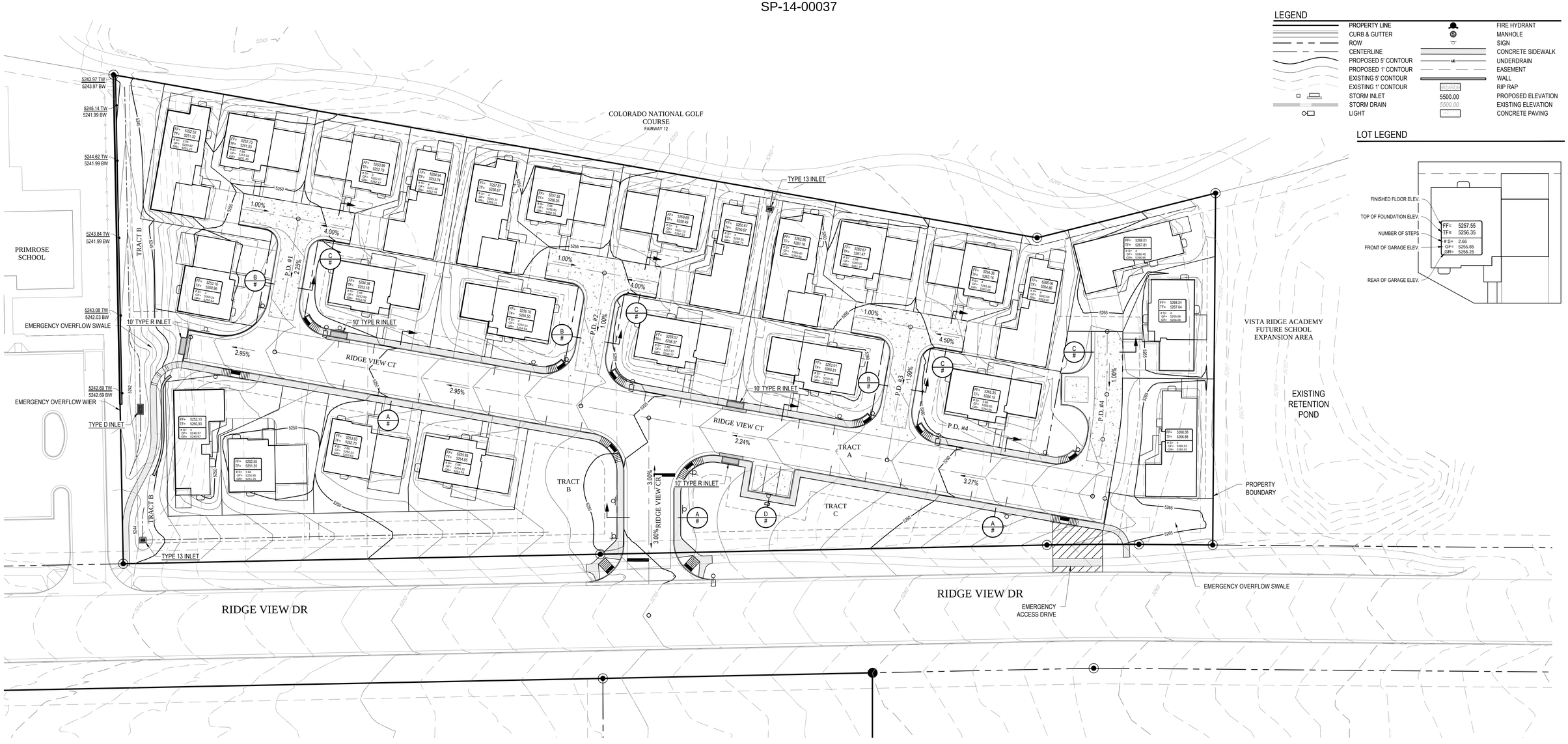
Surveying & Staking	Date:		
Type of Vegetation:	Dry Land	Irrigated Land	
Estimated Vegetative Cover (%)	Picture Taken	Yes	No
ROW Clearing	Date:		
Describe Activity:			
Initiate Construction	Date:		
Describe Activity:			
Drainage Crossing	Date:		
Describe Activity:			
Drainage Crossing	Date:		
Describe Activity:			
Final Grading	Date:		
Describe Activity:			
Reseeding	Date:		
Type of Seed Applied:	Dry Land Seed Mix	Irrigated Land Seed Mix	
Final Stabilization	Date:		
Estimated Vegetative Cover (%)	Picture Taken	Y	N
Controls/BMP's Removed	Date:		

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

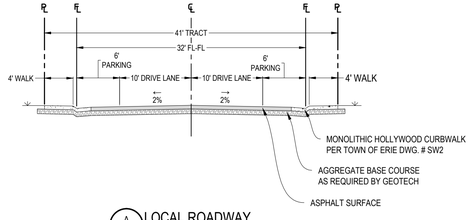
A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

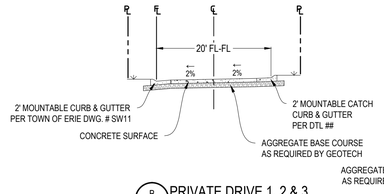
SP-14-00037



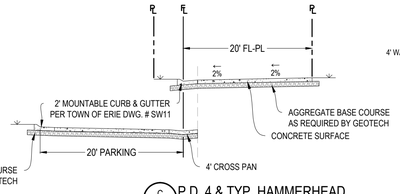
STREET SECTIONS



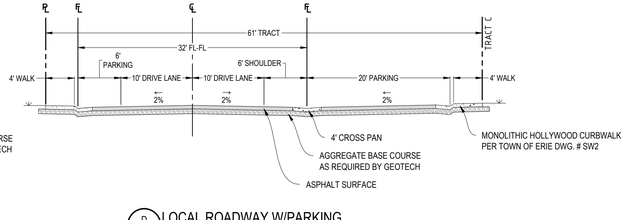
A/3 LOCAL ROADWAY SECTION
N.T.S.



B/3 PRIVATE DRIVE 1, 2 & 3 SECTION
N.T.S.

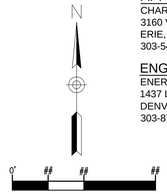


C/3 P.D. 4 & TYP. HAMMERHEAD SECTION
N.T.S.



D/3 LOCAL ROADWAY W/PARKING SECTION
N.T.S.

GRADING PLAN



APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY: BC
APRVD BY: SM
DATE: 11/20/2014
REVISED: 04/17/2015

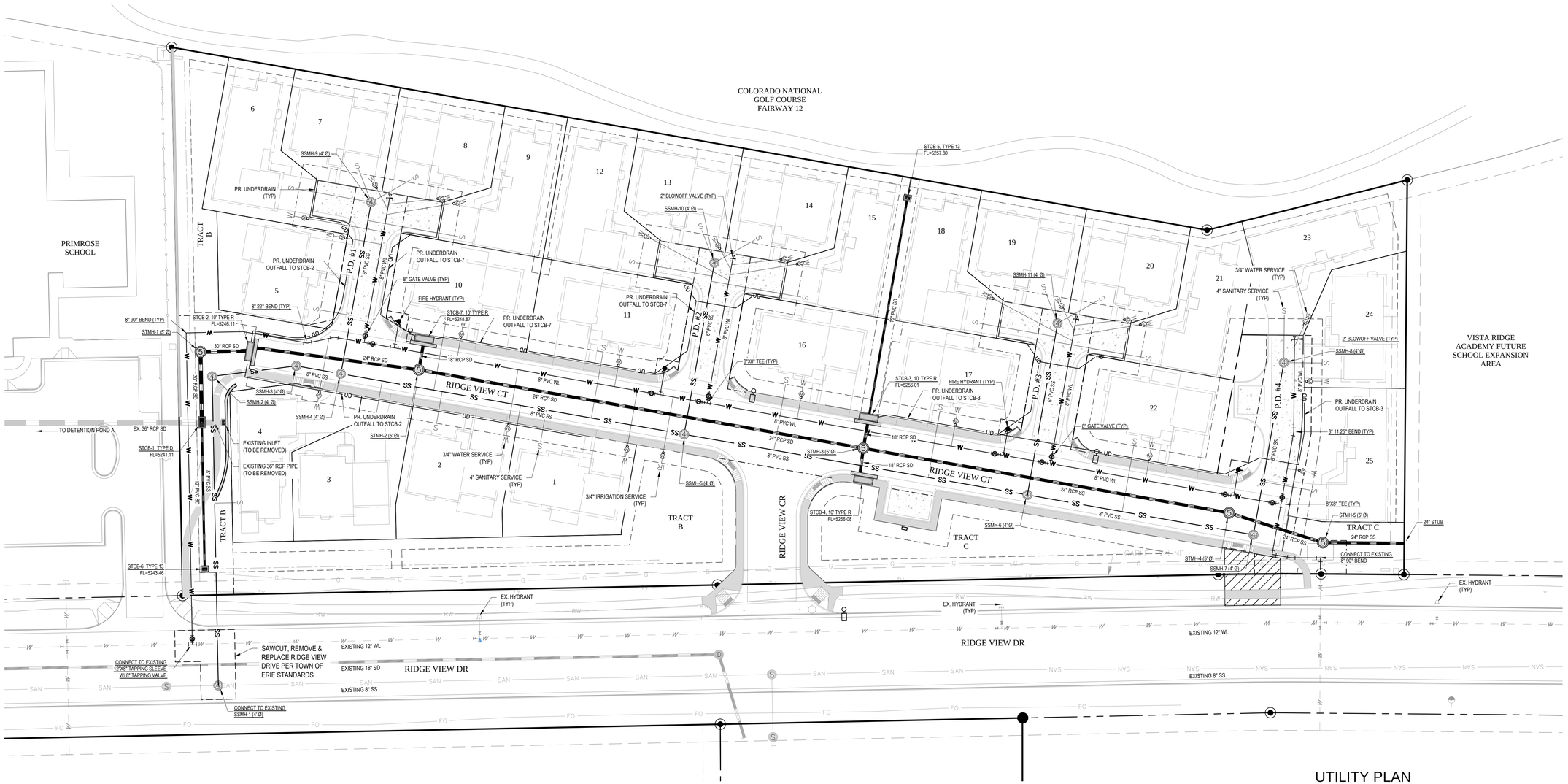
C4

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

SP-14-00037



UTILITY PLAN

LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

N

0' 15 30 60

SCALE: 1"=30'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY:	BC
APRVD BY:	SM
DATE:	11/20/2014
REVISED:	04/17/2015

C3

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

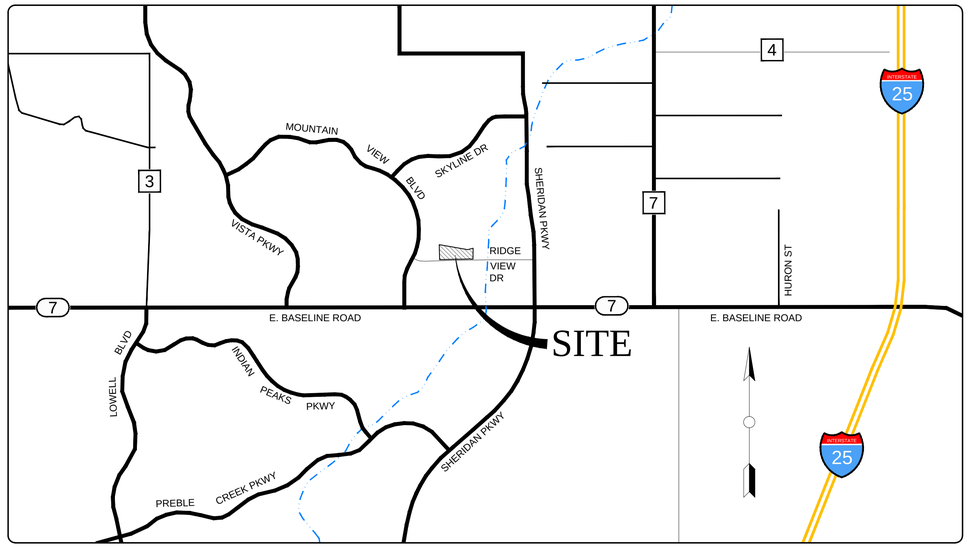
CIVIL CONSTRUCTION DOCUMENTS

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

SHEET INDEX

SHEET INDEX

SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION	SUBMITTAL 1 NOVEMBER. 03, 2014	SUBMITTAL 2 APRIL 17, 2015	REV	
1	CVR-1.0	COVER SHEET	●	●		
2	GEN-2.0	GENERAL NOTES	●	●		
3	SIT-3.0	SITE PLAN	●	●		
4	OGP-4.0	OVERALL GRADING PLAN	●	●		
5	DGP-4.1	DETAIL GRADING PLAN 1	●	●		
6	DGP-4.2	DETAIL GRADING PLAN 2	●	●		
7	GDT-4.3	GRADING DETAILS		●		
8	OUP-5.0	OVERALL UTILITY PLAN	●	●		
9	RDW-6.1	RIDGE VIEW CT STA: 0+50 TO 7+25	●	●		
10	RDW-6.2	RIDGE VIEW CR & P.D. #2	●	●		
11	RDW-6.3	PRIVATE DRIVES #1, #3 & #4		●		
12	STM-7.1	STORM DRAIN STA: 0+00 TO 5+00	●	●		
13	STM-7.2	STORM DRAIN STA: 5+00 TO 9+00		●		
14	SAN-8.1	SANITARY - MAIN STA: -0+25 TO 8+25	●	●		
15	SAN-8.2	SANITARY LATERALS	●	●		
16	WAT-9.0	WATER PLAN	●	●		
17	WAT-9.1	WATER CROSSING PROFILES		●		
18	DTL-10.0	GENERAL DETAILS		●		



VICINITY MAP

SCALE 1" = 1500'

PROJECT TEAM

OWNER
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DR, STE. 104
ERIE, CO 80516
CONTACT: WARD RITTER
(303) 545-2554

ENGINEER
ENERTIA CONSULTING GROUP, LLC
1437 LARIMER STREET
DENVER, COLORADO 80202
CONTACT: SHAWN MERZ, PE
(720) 502-6574

ARCHITECT
WOODLEY ARCHITECTURAL GROUP
731 SOUTH PARK DR, STE. B
LITTLETON, COLORADO 80120

PLANNER
HURST & ASSOCIATES
2500 BROADWAY STREET, STE. 110
BOULDER, COLORADO 80304
(303) 449-9105

SURVEYOR
LANGE LAND SURVEYS
9572 W. 58TH AVE.
ARVADA, CO 80002
(720) 242-9732

ELECTRICAL ENGINEER
RG ENGINEERING CONSULTANTS INC.
2555 WALNUT ST, SUITE B.,
DENVER, CO 80205

LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR		EXISTING TREE
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR	RIP-RAP	RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	5500.00	EXISTING ELEVATION

LIST OF ABBREVIATIONS

R.O.W.	=	RIGHT OF WAY	SW	=	SWALE	FL	=	FLOW LINE
S/W	=	SIDEWALK	TC	=	TOP OF CURB	PI	=	POINT OF INFLECTION
FL	=	FLOWLINE	NTS	=	NOT TO SCALE	LT	=	LEFT
CB	=	CATCH BASIN	HP	=	HIGH POINT	RT	=	RIGHT
FF	=	FINISHED FLOOR	LP	=	LOW POINT	MH	=	MANHOLE
TF	=	TOP OF FOOTING ELEVATION	INV	=	INVERT	PC	=	POINT OF CURVATURE
FG	=	FINISH GRADE ELEVATION	LF	=	LINEAR FEET	PT	=	POINT OF TANGENCY
EOC	=	EDGE OF CONCRETE	STA	=	STATION	PVC	=	POLYVINYL CHLORINE PIPE
EL	=	ELEVATION	TOP	=	TOP OF PIPE	RCP	=	REINFORCED CONCRETE PIPE
FH	=	FIRE HYDRANT	BOP	=	BOTTOM OF PIPE	SF	=	SILT FENCE
HP	=	HIGH POINT	SD	=	STORM DRAIN	BW	=	BACK OF WALK
LP	=	LOW POINT	SS	=	SANITARY SEWER	EX	=	EXISTING
PD	=	PRIVATE DRIVE	WL	=	WATER LINE	PROP	=	PROPOSED
HH	=	HAMMER HEAD	CL	=	CENTERLINE	CY	=	CUBIC YARDS

BENCHMARK

- GEODETIC COORDINATES ARE BASED ON NAD 83 (1992)
- ORTHOMETRIC HEIGHTS ARE BASED ON NAVD 88
- STATE PLANE COORDINATES ARE BASED ON THE COLORADO NORTH ZONE (501)
- UNITS ARE US SURVEY FEET (SFT)

- PROJECT (GROUND) COORDINATES ARE MODIFIED STATE PLANE
- PROJECT COMBINED FACTOR = 0.999716267

- PROJECT COORDINATES WERE MODIFIED TO GROUND AT NGS 1ST ORDER HORIZONTAL CONTROL MARK "LUCY". THE MARK IS A CITY OF BROOMFIELD 3 1/4" BRASS DISK SET INTO 18" ROUND CONCRETE POST, FLUSH WITH THE GROUND. THE LOCATION OF THE MARK MATCHES THE NGS DATA SHEET "STATION DESCRIPTION".

- DESIGNATION = LUCY
- NGS PID - A13578
- NAD 83 (1992) COORDINATES
- LATITUDE = 40°00'00.35831" (N)
- LONGITUDE = 105°00'41.28278" (W)
- ELLP. HEIGHT - 5240.15 SFT
- NAVD 88 ELEVATION - 5297.00 SFT

- STATE PLANE COORDINATES NORTH ZONE (501)
- N=1,243,260.09 SFT
- E=3,136,862.48 SFT

- MODIFIED STATE PLANE COORDINATES (GROUND)
- N=1,243,612.94 SFT
- E=3,137,752.76 SFT

- PROJECT BENCHMARK:
- "LUCY" AS DESCRIBED ABOVE
- NAVD 88 ELEVATION = 5297.00 SFT

BASIS OF BEARING

THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST, OF THE 6TH P.M. WHICH BEARS NORTH 00°12'01"

ENGINEER CERTIFICATION

ALL WORK SHALL BE CONSTRUCTED TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. THIS DRAWING HAS BEEN REVIEWED AND FOUND TO BE IN GENERAL COMPLIANCE WITH THESE STANDARDS AND OTHER TOWN REQUIREMENTS. THE ENGINEERING DESIGN AND CONCEPTS REMAINS THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.

ACCEPTED BY: _____ DATE
DIRECTOR OF PUBLIC WORKS

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS FOR MONTEX - NORTH AT VISTA RIDGE WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

ENGINEER: _____ DATE
SHAWN MERZ, P.E. 41241

FOR AND ON BEHALF OF
ENERTIA CONSULTING GROUP, LLC.

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD	REVISION
		SM	BC	BG	SM	

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

COVER SHEET

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	1 CVR-1.0.DWG
DWG	CVR-1.0
SHEET	1 OF 18

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF ENERTIA CONSULTING GROUP AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF ENERTIA CONSULTING GROUP

GENERAL NOTES – CONSTRUCTION

1. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST "STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" BY THE TOWN OF ERIE. COPIES OF THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS MAY BE OBTAINED FROM THE TOWN OF ERIE WEB SITE. CONTRACTOR SHALL HAVE A SET ON SITE AT ALL TIMES.

2. THE OWNER SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE TOWN OF ERIE ENGINEERING STAFF AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THOSE IN ATTENDANCE SHALL INCLUDE THE OWNER, HIS ENGINEER, THE TOWN OF ERIE ENGINEERING STAFF, REPRESENTATIVES OF THE CONTRACTORS AND OTHER AFFECTED AGENCIES. PLANS SIGNED AND ACCEPTED BY THE TOWN OF ERIE WILL BE DISTRIBUTED AT THE PRE-CONSTRUCTION MEETING. CONTRACTOR SHALL HAVE (1) COPY OF THE SIGNED PLANS ON SITE AT ALL TIMES.

3. THE TOWN OF ERIE, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES
NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT. THE OWNER AND DESIGN ENGINEER UNDERSTAND THAT THE RESPONSIBILITY FOR THE ENGINEERING ADEQUACY OF THE FACILITIES DEPICTED IN THIS DOCUMENT LIES SOLELY WITH THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. REPORT ALL DISCREPANCIES TO THE DESIGN ENGINEER IMMEDIATELY.

4. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL OBTAIN ANY/ALL WRITTEN AGREEMENTS FOR INGRESS AND EGRESS TO THE WORK SITE FROM ADJACENT PRIVATE PROPERTY OWNERS. A COPY OF ALL AGREEMENTS SHALL BE PROVIDED TO THE TOWN. ACCESS TO ANY ADJACENT PRIVATE PROPERTY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

5. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF ERIE ENGINEERING STAFF. THE TOWN RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO TOWN STANDARDS AND SPECIFICATIONS. INSPECTIONS AND ONSITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE BY THE TOWN ENGINEERING STAFF OF THE CONTRACTORS" CONTRACTUAL COMMITMENT. REQUESTS FOR INSPECTION BY THE TOWN OF ERIE SHALL BE MADE BY THE CONTRACTOR A MINIMUM OF TWENTYFOUR (24) HOURS IN ADVANCE.

6. CONSTRUCTION WATER IS AVAILABLE TO THE CONTRACTOR AS ESTABLISHED IN THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE TOWN OF ERIE REGARDING CURRENT REGULATIONS, FEES AND REQUIRED AGREEMENTS RELATED TO THE PROVISION OF CONSTRUCTION WATER.

7. THE CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH THE AFFECTED UTILITY COMPANIES AND SHALL NOTIFY THE UTILITY NOTIFICATION CENTER, PHONE NUMBER 811, FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

8. UTILITIES IN THE AREA OF CONSTRUCTION ARE APPROXIMATE ONLY. THEY HAVE BEEN LOCATED FROM FIELD INVESTIGATION AND THE BEST AVAILABLE UTILITY RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL CONTACT ALL RESPECTIVE UTILITIES AND HAVE ALL UTILITIES FIELD-LOCATED PRIOR TO CONSTRUCTION. IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE TOWN OF ERIE ENGINEERING STAFF AND DESIGN ENGINEER PRIOR TO PROCEEDING.

9. THE CONTRACTOR SHALL NOTIFY TOWN OF ERIE ENGINEERING STAFF OF ANY PROBLEM IMPACTING WATER AND WASTE WATER FACILITIES THAT WOULD POTENTIALLY REQUIRE A VARIANCE FROM THE APPROVED PLANS AND SPECIFICATIONS. ANY VARIANCE FROM THE APPROVED DOCUMENTS SHALL BE AT THE SOLE DISCRETION OF THE TOWN OF ERIE ENGINEERING STAFF.

10. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE SPECIFICATIONS AND PERMITS NECESSARY TO PERFORM THE PROPOSED WORK.

11. AS-BUILT DRAWINGS AND A CD INCLUDING AUTOCAD AND PDF FILES, AS REQUIRED IN THE SPECIFICATIONS, ARE TO BE SUBMITTED BY THE OWNER/DEVELOPER PRIOR TO SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE CONSTRUCTION.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY EXISTING SIGNS, STRUCTURES, FENCES, ETC., ENCOUNTERED ON THE JOB AND RESTORING THEM TO THEIR ORIGINAL CONDITION.

13. THE CONTRACTOR IS RESPONSIBLE FOR:
A. NOTIFYING THE TOWN OF ERIE UTILITY CUSTOMERS OF POTENTIAL SERVICE OUTAGES, AND COORDINATE WITH THE TOWN OF ERIE FOR DETERMINATION OF MINIMUM TIME REQUIREMENT.

B. NOTIFYING THE TOWN OF ERIE ENGINEERING STAFF IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START-UP. THE CONTRACTOR SHALL NOTIFY THE TOWN OF ERIE FORTY-EIGHT (48) HOURS PRIOR TO RESTART.

C. IN THE EVENT OF AN AFTER HOURS EMERGENCY, CALL 303-441-4444.

D. NOTIFYING THE MOUNTAIN VIEW FIRE PROTECTION DISTRICT OF ALL STREET CLOSURES AND EXISTING FIRE HYDRANTS TAKEN OUT OF SERVICE A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

14. PRIOR TO INSTALLATION OF UTILITY MAINS, ROAD CONSTRUCTION MUST HAVE PROGRESSED TO AT LEAST THE "SUB-GRADE" STAGE.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. A CONSTRUCTION DEWATERING PERMIT MUST BE OBTAINED FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE). GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS OR EROSION OF ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. THE USE OF ANY SANITARY SEWER TO DISPOSE OF TRENCH WATER WILL NOT BE PERMITTED. NO CONCRETE SHALL BE PLACED WHERE GROUNDWATER IS VISIBLE OR UNTIL THE GROUNDWATER TABLE HAS BEEN LOWERED BELOW THE PROPOSED IMPROVEMENTS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, THE TOWN OF ERIE, AND THE DESIGN ENGINEER AT THE TIME OF THE OCCURRENCE

16. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO RESOLVE CONSTRUCTION PROBLEMS WITH THE TOWN OF ERIE DUE TO CHANGED CONDITIONS ENCOUNTERED BY THE CONTRACTOR DURING THE PROGRESS OF ANY PORTION OF THE PROPOSED WORK. IF, IN THE OPINION OF THE TOWN OF ERIE, PROPOSED ALTERATIONS TO THE SIGNED CONSTRUCTION PLANS INVOLVES SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK, OR TO THE FUTURE CONTIGUOUS PUBLIC OR PRIVATE IMPROVEMENTS, THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING REVISED PLANS TO THE TOWN OF ERIE FOR REVIEW, PRIOR TO ANY FURTHER CONSTRUCTION RELATED TO THAT PORTION OF THE WORK.

17. DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. THE TOWN OF ERIE OR THE DESIGN ENGINEER EXERCISE NO CONTROLS OVER THE SAFETY OR ADEQUACY OF ANY EQUIPMENT, BUILDING COMPONENTS, SCAFFOLDING, FORMS OR OTHER WORK AIDS USED IN OR ABOUT THE PROJECT, OR IN THE SUPERINTENDING OF THE SAME. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE DESIGN ENGINEER OR THE TOWN. THE TOWN OF ERIE ENGINEERING STAFF, OR ANY CONTRACTED ENGINEER, ARE NOT RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE PROJECT SITE, NOR FOR COMPLIANCE BY THE APPROPRIATE PARTY OF ANY REGULATIONS RELATING THERETO.

18. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.

19. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING A STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES FOR ANY PROJECT DISTURBING OVER ONE ACRE FROM BOTH THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND THE TOWN OF ERIE.

20. EACH TYPE OF CONSTRUCTION SHALL BE COMPLETED BY A CONTRACTOR THAT HAS DEMONSTRATED ACCEPTABLE QUALIFICATIONS TO THE TOWN AND IS A LICENSED CONTRACTOR IN THE TOWN OF ERIE.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL DURING CONSTRUCTION. ALL TRAFFIC CONTROLS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION. A PLAN SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING.

22. ALL BACKFILL SHALL CONFORM TO THE TRENCH DETAIL LOCATED IN THE TOWN OF ERIE STANDARDS & SPECIFICATIONS.

23. THE CONTRACTOR SHALL IMMEDIATELY REMOVE ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS.

24. THE CONTRACTOR SHALL REPAIR ANY EXCAVATION OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.

25. THE CONTRACTOR SHALL RENEW OR REPLACE ANY EXISTING TRAFFIC STRIPING AND/OR PAVEMENT MARKINGS, WHICH HAVE BEEN EITHER REMOVED OR THE EFFECTIVENESS OF WHICH HAS BEEN REDUCED DURING HIS OPERATION. RENEWAL OF PAVEMENT STRIPING AND MARKING SHALL BE DONE IN CONFORMANCE WITH THE TOWN OF ERIE STANDARD SPECIFICATIONS.

26. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE EVERY MEASURE NECESSARY TO COMPLY WITH ANY STATE, COUNTY OR TOWN DUST CONTROL ORDINANCE.

27. CONSTRUCTION VEHICLES SHALL USE TRUCK ROUTES DESIGNATED BY THE TOWN.

28. THE OWNER/DEVELOPER WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF THE IMPROVEMENTS FOR A MINIMUM OF TWO (2) YEARS FROM THE DATE OF SUBSTANTIAL COMPLETION/ CONSTRUCTION ACCEPTANCE OF THE IMPROVEMENTS BY THE TOWN OF ERIE. ANY FAILURE DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE OWNER/CONTRACTOR TO THE SATISFACTION OF THE TOWN OF ERIE AT NO EXPENSE TO THE TOWN.

29. THE DESIGN ENGINEER SHALL PERFORM SUFFICIENT INSPECTIONS AND SURVEYS DURING GRADING AND CONSTRUCTION SO THAT AN OPINION CAN BE RENDERED AND VERIFIED IN WRITING AS TO COMPLIANCE WITH THE PLANS AND CODES WITHIN THE DESIGN ENGINEER'S PURVIEW.

30. THE SOILS ENGINEER SHALL PERFORM SUFFICIENT INSPECTIONS DURING GRADING AND CONSTRUCTION SO THAT AN OPINION CAN BE RENDERED AND VERIFIED IN WRITING AS TO COMPLIANCE WITH THE PLANS AND CODES WITHIN THE SOILS ENGINEER'S PURVIEW.

GENERAL NOTES – GRADING

1. ALL CONSTRUCTION ACTIVITIES THAT DISTURBS ONE OR MORE ACRES OF LAND, AS WELL AS ACTIVITIES THAT DISTURB LESS THAN ONE ACRE OF LAND, BUT IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT, MUST COMPLY WITH BOTH LOCAL AND STATE REGULATIONS REGARDING STORMWATER DRAINAGE ON CONSTRUCTION SITES. OWNERS OR CONTRACTORS MUST OBTAIN A COLORADO STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) AND EITHER A PUBLIC IMPROVEMENT PERMIT OR A GRADING AND STORMWATER QUALITY PERMIT FROM THE TOWN OF ERIE. CONTRACTOR SHALL:

A. MAINTAIN A COPY OF THE STORM WATER MANAGEMENT PLAN (SWMP) ONSITE AT ALL TIMES. THE SWMP MUST BE MAINTAINED AND MADE AVAILABLE TO TOWN OF ERIE INSPECTORS UPON REQUEST.

B. INSTALL AND MAINTAIN EROSION, SEDIMENT, AND MATERIALS MANAGEMENT CONTROL BMPS AS SPECIFIED IN THE SWMP.

C. INSPECT ALL BEST MANAGEMENT PRACTICES (BMPS) AT LEAST EVERY FOURTEEN (14) DAYS AND WITHIN TWENTY FOUR (24) HOURS AFTER ANY PRECIPITATION OR SNOWMELT EVENT THAT CAUSES SURFACE RUNOFF.

D. MAINTAIN INSPECTION AND MAINTENANCE RECORDS OF BMPS ONSITE WITH THE SWMP. COPIES OF THESE REPORTS SHALL BE PROVIDED TO THE TOWN OF ERIE ENGINEERING STAFF.

E. BASED ON INSPECTIONS PERFORMED BY THE PERMIT HOLDER OR BY TOWN PERSONNEL, MODIFICATIONS TO THE SWMP WILL BE NECESSARY IF AT ANY TIME THE SPECIFIED BMPS DO NOT MEET THE OBJECTIVES OF THE PERMIT. ALL MODIFICATIONS SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REFERENCED INSPECTION, AND SHALL BE RECORDED ON THE OWNER'S COPY OF THE SWMP.

F. THE OPERATOR SHALL AMEND THE SWMP WHENEVER THERE IS A SIGNIFICANT CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR DISCHARGE OF POLLUTANTS TO THE RECEIVING WATERS, OR IF THE SWMP PROVES TO BE INEFFECTIVE IN ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.

G. INSTALLATION AND MAINTENANCE OF BMPS SHALL BE SUPERVISED BY PERSONNEL CERTIFIED IN EROSION AND SEDIMENT CONTROL.

2. ALL SITE GRADING (EXCAVATION, EMBANKMENT, AND COMPACTION) SHALL CONFORM TO THE RECOMMENDATIONS OF THE LATEST SOILS INVESTIGATION FOR THIS PROPERTY AND SHALL FURTHER BE IN CONFORMANCE WITH THE TOWN OF ERIE "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION.

3. ALL GRADING AND FILLING OPERATIONS SHALL BE OBSERVED, INSPECTED AND TESTED BY A LICENSED SOILS ENGINEER. ALL TEST RESULTS SHALL BE SUBMITTED TO THE TOWN OF ERIE ENGINEERING STAFF.

4. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID ANY DAMAGE TO EXISTING FOLIAGE THAT LIES IN THE PROJECT AREA UNLESS DESIGNATED FOR REMOVAL AND SHALL BE LIABLE FOR SUCH DAMAGE AT HIS/HER EXPENSE.

5. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE RE-VEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS.

6. TEMPORARY VEGETATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR IMMEDIATE INSTALLATION. SEEDING WILL BE DONE ACROSS THE SLOPE FOLLOWING THE CONTOURS. VEGETATION SHALL CONFORM TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION. SEEDED AREAS SHALL BE IRRIGATED IN ACCORDANCE WITH THE TOWN OF ERIE'S STANDARDS AND SPECIFICATIONS.

7. AT ALL TIMES, A WATER TRUCK SHALL BE ON-SITE AND THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND-CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN FUGITIVE DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE OWNER/DEVELOPER SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.

8. FILL SLOPES SHALL BE COMPACTED BY MEANS OF SHEEPSFOOT COMPACTOR OR OTHER SUITABLE EQUIPMENT. COMPACTING SHALL CONTINUE UNTIL SLOPES ARE STABLE AND THERE IS NOT AN APPRECIABLE AMOUNT OF LOOSE SOIL ON THE SLOPES.

9. TEMPORARY CUT/FILL SLOPES SHALL ABIDE BY THE SOILS REPORT. PERMANENT SLOPES SHALL BE AS SHOWN ON PLANS.

10. DEPTH OF MOISTURE-DENSITY CONTROL SHALL BE FULL DEPTH ON ALL EMBANKMENT AND SIX (6) INCHES ON THE BASE OF CUTS AND FILLS.

11. OUTLET SIDES OF ALL STORM PIPES SHALL BE GRADED TO DRAIN AND SHALL HAVE SUFFICIENT EROSION PROTECTION.

12. THE PERMITTEE OR HIS AGENT SHALL NOTIFY THE SITE GEOTECHNICAL ENGINEER WHEN THE GRADING OPERATION IS READY FOR EACH OF THE FOLLOWING INSPECTIONS:

A. INITIAL INSPECTION WHEN THE PERMITTEE IS READY TO BEGIN WORK, BUT NOT LESS THAN TWO (2) DAYS BEFORE ANY GRADING OR GRUBBING IS STARTED.

B. AFTER THE NATURAL GROUND OR BEDROCK IS EXPOSED AND PREPARED TO RECEIVE FILL, BUT BEFORE FILL IS PLACED.

C. EXCAVATION INSPECTION AFTER THE EXCAVATION IS STARTED BUT BEFORE THE VERTICAL DEPTH OF THE EXCAVATION EXCEEDS TEN (10) FEET.

D. FILL INSPECTION AFTER THE FILL PLACEMENT IS STARTED, BUT BEFORE THE FILL EXCEEDS TEN (10) FEET.

GENERAL NOTES – ROADWAY

1. ALL STATIONING IS BASED ON CENTERLINE OF ROADWAYS UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL PREPARE THE SUBGRADE BY SCARIFYING THE UPPER ONE (1) FOOT OF THE SUBGRADE IN CUT AREAS OR AREAS WITH LITTLE OR NO FILL, UNLESS SPECIFIED IN THE SOILS REPORT. THE WORK SHALL CONFORM TO THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
3. PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL ALL UNDERGROUND UTILITIES HAVE BEEN INSTALLED, TESTED AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.
4. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO SUPERVISE AND CERTIFY THAT PROPER COMPACTION HAS BEEN OBTAINED BY SUBCONTRACTORS AND AGENCIES CONCERNING UTILITY LINE BACKFILL INCLUDING, BUT NOT LIMITED TO, SEWER, WATER, ELECTRICAL, GAS AND LANDSCAPE IRRIGATION LINES AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF AND THE SOILS ENGINEER.
5. STREET PAVING SHALL NOT START UNTIL:
   A. A SOILS REPORT AND PAVEMENT DESIGN IS ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.
   B. ALL STREETS ARE COMPACTED IN ACCORDANCE WITH THE SOILS REPORT AND THE TOWN OF ERIE SPECIFICATIONS.
   C. ALL COMPACTION TEST REPORTS HAVE BEEN SUBMITTED TO THE TOWN ENGINEERING STAFF PRIOR TO PROOF ROLLS.
   D. PROOF ROLLS ARE PERFORMED USING SINGLE AXLE, FIVE (5) TON TRUCK AND MONITORED BY THE TOWN OF ERIE ENGINEERING STAFF.
6. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL UTILITY MANHOLE COVERS AND ACCESS LIDS TO GRADE.
7. ALL CONCRETE SHALL BE A MINIMUM OF CLASS B, IN CONFORMANCE WITH CDOT STANDARDS.
8. ALL CONCRETE EDGES MUST BE ROUNDED TO A FOURTH (1/4) INCH RADIUS, EXCEPT WHERE SHOWN OTHERWISE ON DRAWINGS.
9. ONE HALF (1/2) INCH EXPANSION JOINTS SHALL BE INSTALLED AT ALL CURB RETURNS, CURB CUTS AND EXISTING STRUCTURES. CONTROL JOINTS SHALL BE INSTALLED AT TEN (10) FOOT INTERVALS, HALF STONES ARE NOT ALLOWED.
10. BEFORE PLACING OF ASPHALT THE SUBGRADE SHALL RECEIVE A GROUND STERILANT APPLIED AT A RATE IN ACCORDANCE TO MANUFACTURERS RECOMMENDATIONS.
11. TACK COAT SHALL BE USED PRIOR TO OVERLAY, (CSS-1H), 50:50 DILUTION, 0.10 GAL/SY. ALL EDGES ABUTTING NEW PAVEMENT SHALL BE TACKED.
12. WHEN IT IS REQUIRED TO MATCH EXISTING PAVEMENT, EXISTING PAVEMENT SHALL BE SAW CUT IN A MANNER TO AFFECT A SMOOTH, VERTICAL STRAIGHT CUT EDGE.
13. ALL SAWCUT EDGES OF EXISTING PAVEMENT SHALL BE CLEAN AND COATED WITH TACK COAT PRIOR TO PLACING NEW PAVEMENT ADJACENT TO THE EXISTING PAVEMENT.
14. ALL ASPHALT SHALL BE ONE FOURTH (1/4) INCH ABOVE CONCRETE EDGES, MANHOLE COVERS AND ACCESS LIDS.
15. SIGNAGE AND STRIPING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, THE COLORADO DEPARTMENT OF TRANSPORTATION M&S STANDARDS, AND THE TOWN OF ERIE STANDARD DESIGN CRITERIA AND STANDARD CONSTRUCTION REQUIREMENTS.
16. THE PURCHASE AND INSTALLATION OF STREET NAME SIGNS SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR. THE OWNER/CONTRACTOR SHALL SECURE THE APPROVAL OF THE TOWN OF ERIE ENGINEERING STAFF FOR TYPE AND LOCATION OF THE STREET NAME SIGNS PRIOR TO INSTALLATION.
17. ALL NEW ROADWAY SECTIONS SHALL HAVE SUBGRADE PREPARATION AND INITIAL ASPHALT PAVEMENT PLACED WITH A 1% CROWN. FINAL OVERLAY IS TO BE PLACED WITH A 2% CROWN. SEE DETAIL ST7 IN THE "STANDARD DETAILS-STREET" FOR MORE INFORMATION.
18. DETERMINATION OF CROWN FOR CUL DE SAC PAVING SHALL BE EVALUATED ON A CASE BY CASE BASIS.

GENERAL NOTES – STORM DRAIN

1. EXCEPT WHERE NOTED, ALL STORM SEWER PIPE SHALL BE REINFORCED CONCRETE, CLASS III AND SHALL CONFORM TO REQUIREMENTS OF ASTM C76. ALL RCP SHALL HAVE RUBBER GASKETED JOINTS AND SHALL CONFORM TO REQUIREMENTS OF ASTM C443, AND SHALL PROVIDE WATERTIGHT PERFORMANCE CHARACTERISTICS.
2. TONGUE AND GROOVE JOINTS SHALL NOT BE ALLOWED.
3. THE MINIMUM COVERAGE FOR ALL STORM DRAINAGE PIPES SHALL BE 1.5 FEET FOR CLASS III PIPE AND 1 FOOT FOR CLASS IV PIPE.
4. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. ALL MANHOLES SHALL BE CONCRETE AND CONFORM TO CDOT STANDARD M-604-20.
6. THE MINIMUM MANHOLE DIAMETER SHALL BE AS SPECIFIED BELOW:

PIPE DIAMETER	MANHOLE SIZE
15" TO 18"	4' DIAMETER
21" TO 42"	5' DIAMETER
48" TO 54"	6' DIAMETER
60" AND LARGER	BOX BASE MANHOLE

7. ALL STREET INLETS SHALL BE CURB OPENING TYPE R, CONFORMING TO CDOT STANDARD M-604-12, EXCEPT WHERE OTHERWISE NOTED.
8. ALL INLET ACCESS COVERS SHALL HAVE THE WORDS "NO DUMPING –DRAINS TO RIVERS" AND "STORM SEWER" CAST INTO THE COVER PER TOWN OF ERIE STANDARD DETAIL.
9. ALL END SECTIONS SHALL CONFORM TO CDOT STANDARD M-603-10.
10. WHERE RIPRAP IS CALLED FOR ON THE PLANS FOR EROSION CONTROL, IT SHALL CONFORM TO THE URBAN STORM DRAINAGE CRITERIA MANUAL SPECIFICATIONS (LATEST REVISION).

GENERAL NOTES – SEWER

1. THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING SEWERS TO BE CONNECTED TO PRIOR TO CONSTRUCTION STAKING.
2. CONNECTION TO EXISTING TOWN OF ERIE LINES WILL BE PERMITTED UPON SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE NEW SANITARY SEWER SYSTEM. EXISTING PIPE AT THE POINT OF CONNECTION SHALL NOT BE "BROKEN OUT" UNTIL THE NEW SYSTEM IS ACCEPTED. IF CONNECTING TO AN EXISTING MANHOLE, THE NEW LINE SHALL BE PLUGGED UNTIL THE NEW SYSTEM IS ACCEPTED.
3. MINIMUM VERTICAL SEPARATIONS BETWEEN ALL UTILITY PIPES SHALL BE EIGHTEEN (18) INCHES. IF VERTICAL SEPARATIONS ARE LESS THAN EIGHTEEN (18) INCHES, THE UTILITY PIPES SHALL BE REINFORCED AND PROTECTED AS REQUIRED BY CURRENT TOWN STANDARD SPECIFICATIONS.
4. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE-HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
5. ALL SANITARY SEWER SERVICES AND WATER SERVICES ARE TO BE TEN (10) FEET APART.
6. SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHTS OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A GREEN PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH AN "S" or "X".
7. THE LENGTH OF SANITARY SEWER LINE IS THE HORIZONTAL DISTANCE BETWEEN CENTER OF MANHOLE TO CENTER OF MANHOLE. THEREFORE, THE DISTANCES INDICATED ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND MANHOLE DIMENSIONS.
8. SERVICE LINE CONNECTIONS TO DEAD END MANHOLES THAT HAVE NO FURTHER POSSIBILITY OF EXTENSION SHALL BE ALLOWED AND SHALL HAVE A MINIMUM DROP OF 0.75 X MAIN DIAMETER. SERVICE LINE CONNECTINGS TO IN-LINE MANHOLES ARE NOT PERMITTED. MINIMUM SERVICE LINE SLOPE; 4 INCHES=2%; 6 INCHES= 1%; 8 INCHES=0.4%.
9. ALL FOUR (4) THROUGH FIFTEEN (15) INCH SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) AND SHALL BE IN ACCORDANCE WITH ASTM D-3034-SDR35, "STANDARD SPECIFICATION FOR PVC SEWER PIPE AND FITTINGS". ANY SANITARY SEWER HAVING A DEPTH IN EXCESS OF FIFTEEN (15) FEET SHALL BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
10. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
11. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE SEWER PIPE.
12. PRECAST CONCRETE MANHOLE SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C0478. MANHOLE STEPS SHALL BE POLYPROPYLENE COVERED STEEL CONFORMING TO ASTM. D-4101 AND ASTMA-615. CAST IRON RING AND COVER SHALL CONFORM TO ASTM A-48.
13. MANHOLES SHALL BE A MINIMUM FOUR (4) FOOT DIAMETER AND CONSTRUCTED PER THE STANDARDS AND SPECIFICATIONS.
14. THE CONTRACTOR SHALL TAKE CARE TO PROPERLY SHAPE ALL MANHOLE INVERTS AND BENCHES IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS, TO PROMOTE SMOOTH FLOW THROUGH THE MANHOLE. INVERTS OF LINES INTERSECTING AT 90 DEGREES AND AT HIGHLY DIVERGENT OR FLAT SLOPES ARE ESPECIALLY CRITICAL. MANHOLE INVERTS SHALL BE CONSTRUCTED WITH A SMOOTH TROWEL FINISH, AND BENCH FINISHED WITH A LIGHT BROOMED, NON-SKID, FINISH.
15. SEWER TEES AND/OR WYES SHALL BE STAKED BY A SURVEY CREW. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER "AS-CONSTRUCTED" LOCATION OF TEES AND WYES. ALL SERVICE LINES ARE FOUR (4) INCH UNLESS OTHERWISE NOTED.
16. THE CONTRACTOR, AT THE OWNER'S EXPENSE, WILL MAKE ALL SEWER SERVICE TAPS.
17. PRIOR TO BACKFILL THE TOWN OF ERIE ENGINEERING STAFF SHALL INSPECT ALL SANITARY SEWER MAINS AND SERVICE EXTENSIONS.
18. MANHOLE RIMS SHALL BE SET AT AN ELEVATION RELATIVE TO THE PAVEMENT, IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS. WHETHER THE MANHOLE IS AT PAVED OR UNPAVED GRADE, A MINIMUM OF ONE (1) AND A MAXIMUM OF FOUR (4) CONCRETE RINGS SHALL BE USED TO ADJUST THE RIM ELEVATION TO FINAL GRADE. THE MAXIMUM ACCEPTABLE VERTICAL ADJUSTMENT UTILIZING CONCRETE RINGS IS EIGHTEEN (18) INCHES.
19. A SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE NEW SANITARY SEWER MAINS IS CONTINGENT UPON THE RECEIPT OF COPIES OF:
   A. SANITARY SEWER TRENCH COMPACTION TEST RESULT.
   B. RECORD DRAWINGS, BOTH MYLAR AND ELECTRONIC FILES.
   AND THE SANITARY SEWER SYSTEM BEING TESTED IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS WHICH INCLUDES:
   A. LOW PRESSURE AIR TEST 100% OF THE NEW SYSTEM.
   B. VACUUM TEST 100% OF THE NEW SYSTEM MANHOLES.
   C. JET VACUUM 100% OF THE NEW SYSTEM.

GENERAL NOTES – WATER

1. AT ALL POINTS OF CONNECTION OF NEW WATER MAINS TO EXISTING MAINS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING AND VERIFYING LOCATION OF THE EXISTING LINES PRIOR TO ANY CONSTRUCTION.
2. EXCEPT IN CASE OF AN EMERGENCY, VALVES ON THE TOWN OF ERIE WATER SYSTEM SHALL BE OPERATED BY OR UNDER THE DIRECTION OF THE APPROPRIATE TOWN OF ERIE PERSONNEL. THE CONTRACTOR SHALL GIVE THE TOWN OF ERIE ENGINEERING STAFF 48 HOURS NOTICE TO ARRANGE FOR OPERATING VALVES. BOTH THE CONTRACTOR AND THE APPROPRIATE TOWN OF ERIE PERSONNEL SHALL BE PRESENT WHEN THE VALVES ARE OPERATED.
3. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE-HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
4. ALL WATER LINES SHALL HAVE A MINIMUM OF FOUR AND ONE-HALF (4½) FEET OF COVER AND BE LOCATED A MINIMUM OF TEN (10) FEET FROM THE SANITARY SEWER AND THREE (3) FEET FROM THE EDGE OF CONCRETE CURB AND GUTTER PAN.
5. ANY DEFLECTION REQUIRED UNDER (VERTICALLY) OR AROUND (HORIZONTALLY) EXISTING UTILITIES SHALL BE MADE USING BENDS. HORIZONTAL BENDS SHALL REQUIRE THRUST BLOCKS AND VERTICAL BENDS SHALL REQUIRE HARNESS RODS. ANY ABRUPT CHANGE IN LINE OR GRADE SHALL REQUIRE FITTINGS.
6. WHEN IT IS NECESSARY TO DEPRESS WATER LINES AT UTILITY CROSSINGS, A MINIMUM CLEARANCE OF ONE AND ONE-HALF (1-1/2) FEET SHALL BE MAINTAINED BETWEEN OUTSIDES OF PIPE.
7. DEFLECTION OF PIPE SHALL CONFORM TO AMERICAN WATER WORKS ASSOCIATION (AWWA) AND/OR EIGHTY (80%) PERCENT OF MANUFACTURERS RECOMMENDED MAXIMUM DEFLECTION, WHICH EVER IS MORE STRINGENT. A COPY OF THE MANUFACTURES RECOMMENDATIONS SHALL BE SUBMITTED TO THE TOWN.
8. DISTANCES FOR WATER LINES ARE THE HORIZONTAL DISTANCE BETWEEN THE CENTERS OF THE FITTINGS. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.
9. ALL WATER LINE VALVES SHALL BE SET ADJACENT TO THE TEE, EXCEPT FOR POINTS THAT FALL IN THE FLOW LINE OF A CONCRETE CROSS PAN. IN WHICH CASE, THE VALVE SHALL BE LOCATED SO THAT SURFACE DRAINAGE DOES NOT INFILTRATE THE VALVE BOX. VALVE BOXES SHALL BE SET AT AN ELEVATION IN ACCORDANCE WITH TOWN PAVING REQUIREMENTS.
10. ALL WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE PIPE UNLESS SPECIFIED OTHERWISE. NOMINAL PVC PIPE SIZES 6-INCH THROUGH 12-INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C-900, PRESSURE CLASS 150 (DR18). NOMINAL PVC PIPE SIZES 16-INCH THROUGH 24-INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C-905, PRESSURE CLASS 165 (DR25). ALL PVC PIPES SHALL HAVE OUTSIDE DIAMETERS EQUIVALENT TO CAST IRON PIPE.
11. FIRE HYDRANT ASSEMBLY INCLUDES THE FIRE HYDRANT, SIX (6) INCH VALVE, AND SIX (6) INCH PIPE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
12. ALL FITTINGS SHALL BE MADE FROM DUCTILE IRON, FURNISHED WITH MECHANICAL JOINT ENDS OR INTEGRAL RESTRAINED JOINTS, AND SHALL HAVE A PRESSURE RATING OF 350 PSI.
13. POLYETHYLENE WRAPPING SHALL BE INSTALLED AROUND ALL DUCTILE IRON PIPES, FITTINGS, VALVES, FIRE HYDRANT BARRELS AND ROD AND CLAMPS. THE POLYETHYLENE SHALL HAVE A MINIMUM THICKNESS OF EIGHT (8) MILS, IN ACCORDANCE WITH AWWA STANDARD C-105.
14. ALL WATER LINE PIPE SHALL BE PROVIDED WITH A MINIMUM GAGE SIZE OF #14 AWG INSULATED; MULTI-STRAND COPPER WIRE. SPLICES IN TRACER WIRE SHALL BE CAPPED IN WATER PROOF GEL CAP TYPE CONNECTORS SUITED FOR DIRECT BURY APPLICATION (3M TYPE DBY-6 LOW VOLTAGE OR EQUAL). WIRE SHALL BE ATTACHED TO TOP OF WATER LINE WITH 2-INCH WIDE PVC TAPE @ 5-FT INTERVALS ALONG PIPE. TRACER WIRE SHALL EXTEND TO THE SURFACE AND BE COILED IN A LOCATE BOX AT THE BACKSIDE OF EITHER EACH FIRE HYDRANT OR VALVE. UNDER THE SUPERVISION OF TOWN OF ERIE ENGINEERING STAFF, TEST SHALL BE MADE BY THE CONTRACTOR @ THE COMPLETION OF CONSTRUCTION TO INSURE THAT THE TRACER WIRES CARRY A CONTINUOUS CURRENT BETWEEN ALL ACCESS POINTS.
15. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE WATER PIPE.
16. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
17. VALVES SHALL OPEN COUNTER CLOCKWISE. VALVES 12-INCH AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. LARGER VALVES SHALL BE BUTTERFLY VALVES.
18. VALVE BOXES SHALL BE RAISED TO ONE-FOURTH (1/4) INCH BELOW GRADE AFTER COMPLETION OF SURFACE PAVING OR FINAL GRADING. VALVE BOXES IN NON-PAVED AREAS SHALL HAVE A CONCRETE COLLAR AROUND THE VALVE LID IN ACCORDANCE WITH THE DETAIL.
19. ALL SERVICE LINE TAPS SHALL HAVE DOUBLE STRAP BRASS TAPPING SADDLES. (ROMAC 202B OR APPROVED EQUAL).
20. ALL RESIDENTIAL WATER TAPS SHALL BE THREE-QUARTER (3/4) INCH OR AS REQUIRED BY THE CURRENT BUILDING CODE.
21. ALL WATER SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHT OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A BLUE PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH A "V" or "W".
22. CONCRETE THRUST BLOCKS AND/OR "MEGA-LUG" MECHANICAL RESTRAINTS ARE REQUIRED AT ALL MECHANICAL FITTINGS. THRUST BLOCKS MAY NOT BE REQUIRED IF PIPE RESTRAINT IS PROVIDED IN ACCORDANCE WITH RESTRAINED PIPE DETAIL.
23. NO WORK SHALL BE BACKFILLED (INCLUDING BEDDING MATERIAL ABOVE THE SPRING LINE OF THE PIPE) UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE TOWN OF ERIE ENGINEERING STAFF.
24. ONLY ONE CONNECTION TO THE EXISTING WATER DISTRIBUTION SYSTEM SHALL BE MADE UNTIL ALL HYDROSTATIC TESTING, CHLORINATION AND FLUSHING HAS BEEN COMPLETED.
25. DISINFECTION AND HYDROSTATIC TESTING SHALL BE DONE IN THE PRESENCE OF A TOWN OF ERIE ENGINEERING STAFF. CONTACT THE TOWN OF ERIE DEPARTMENT OF PUBLIC WORKS, FORTY-EIGHT (48) HOURS PRIOR TO DISINFECTING AND/OR TESTING.
26. DISINFECTION AND FLUSHING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO DEPARTMENT OF HEALTH AND THE PROCEDURE SET FORTH IN AWWA C651, "STANDARD FOR DISINFECTING WATER MAINS". THE CHLORINATION OF THE WATER LINE SHALL BE PERFORMED PRIOR TO THE HYDROSTATIC TESTING. ALL VALVES, FIRE HYDRANTS AND OTHER APPURTANCES SHALL BE OPERATED WHILE PIPELINE IS FILLED WITH THE CHLORINATING AGENT TO INSURE THAT HIGH CHLORINE CONTACT IS MADE WITH ALL INTERNAL SURFACES.
27. ALL WATER LINES SHALL BE HYDROSTATIC TESTED. PRESSURE AND LEAKAGE TESTS SHALL BE CONDUCTED ACCORDING TO THE APPLICABLE SECTIONS OF AWWA C600/605 TO A MINIMUM PRESSURE OF ONE HUNDRED AND FIFTY (150) POUNDS PER SQUARE (PSI) INCH AT THE LOW POINT OF THE SECTION BEING TESTED FOR THE DURATION OF TWO (2) HOURS. THE MAXIMUM LENGTH OF LINE TO BE TESTED SHALL BE ONE THOUSAND (1,000) FEET. ALL JOINTS IN CONNECTIONS ARE TO BE WATERTIGHT WITHIN TOLERANCES ALLOWED BY THE SPECIFICATIONS IN AWWA C600/605. ANY LEAKAGE THAT IS DISCOVERED BY OBSERVATION OR TESTS SHALL BE LOCATED AND MADE WATERTIGHT BY THE CONTRACTOR. PRESSURE AND LEAKAGE TESTS SHALL NOT BE CONDUCTED UNTIL THE LINE HAS PASSED ALL REQUIRED DISINFECTION TESTS.
28. SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE NEW WATER LINES ARE CONTINGENT UPON RECEIVING COPIES OF:
   A. WATER TRENCH COMPACTION TEST RESULTS
   B. HYDRO STATIC TESTING OF 100% OF THE SYSTEM
   C. HEALTH DEPARTMENT TESTS. (CHLORINE AND/OR CLEAR WATER AS REQUIRED)
29. ALL METER PITS AND CURB STOPS SHALL BE PROTECTED AT THE TIME OF INSTALLATION WITH A MINIMUM OF THREE (3) T-POSTS AND ORANGE SAFETY FENCE. THE T-POST AND SAFETY FENCE SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL THE LANDSCAPING IS INSTALLED.

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NO.	DATE	REVISION	DR	BC	CHK	BG	APVD	SM
DSGN	SM							

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

GENERAL NOTES

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	2 GEN-2.0.DWG
DWG	GEN-2.0
SHEET	2 OF 18

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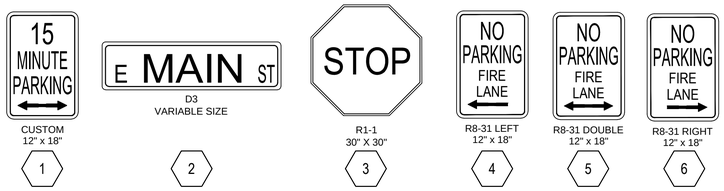
LEGEND

PROPERTY LINE		FIRE HYDRANT
CURB & GUTTER		MANHOLE
ROW		SIGN
CENTERLINE		CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UG	UNDERDRAIN
PROPOSED 1' CONTOUR		EASEMENT
EXISTING 5' CONTOUR		WALL
EXISTING 1' CONTOUR		RIP RAP
STORM INLET	5500.00	PROPOSED ELEVATION
STORM DRAIN	5500.00	EXISTING ELEVATION
LIGHT		CONCRETE PAVING

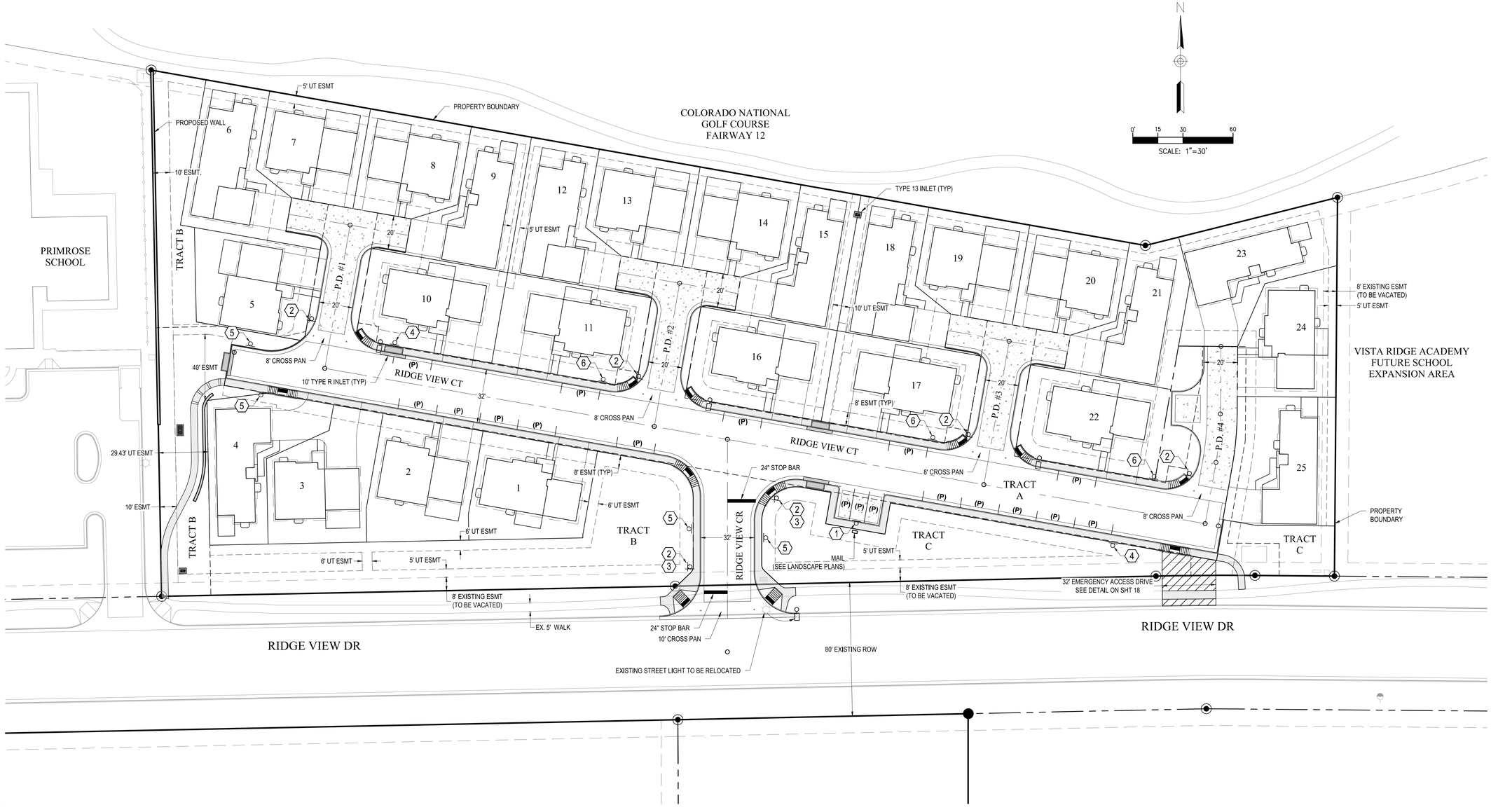
SIGNAGE LEGEND



SIGNAGE NOTES:
1. ALL SIGNS AND POSTS AND BASES SHALL BE PER TOWN OF ERIE STANDARDS.
2. STOP SIGNS SHOULD BE PLACED BETWEEN PC AND 6' FROM PC FOLLOWING M.U.T.C.D. STANDARDS.

GENERAL NOTES

1. SEE PHOTOMETRIC PLAN FOR LOCATION, SIZE AND HEIGHT OF PROPOSED LIGHT FIXTURES.
2. ALL SIDEWALKS ARE 4' UNLESS OTHERWISE NOTED.
3. INTERIOR ROADWAYS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER.
4. RAILING AND FENCE LOCATIONS ARE SHOWN ON THE LANDSCAPE PLAN.
5. ALL STORM DRAINS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER.
6. (P) DESIGNATES PARKING SPACES. ON STREET PARKING IS NOT STRIPED.



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TOWN OF ERIE, COLORADO

SITE PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	3 SIT-3.0.DWG
DWG	SIT-3.0
SHEET	3 OF18

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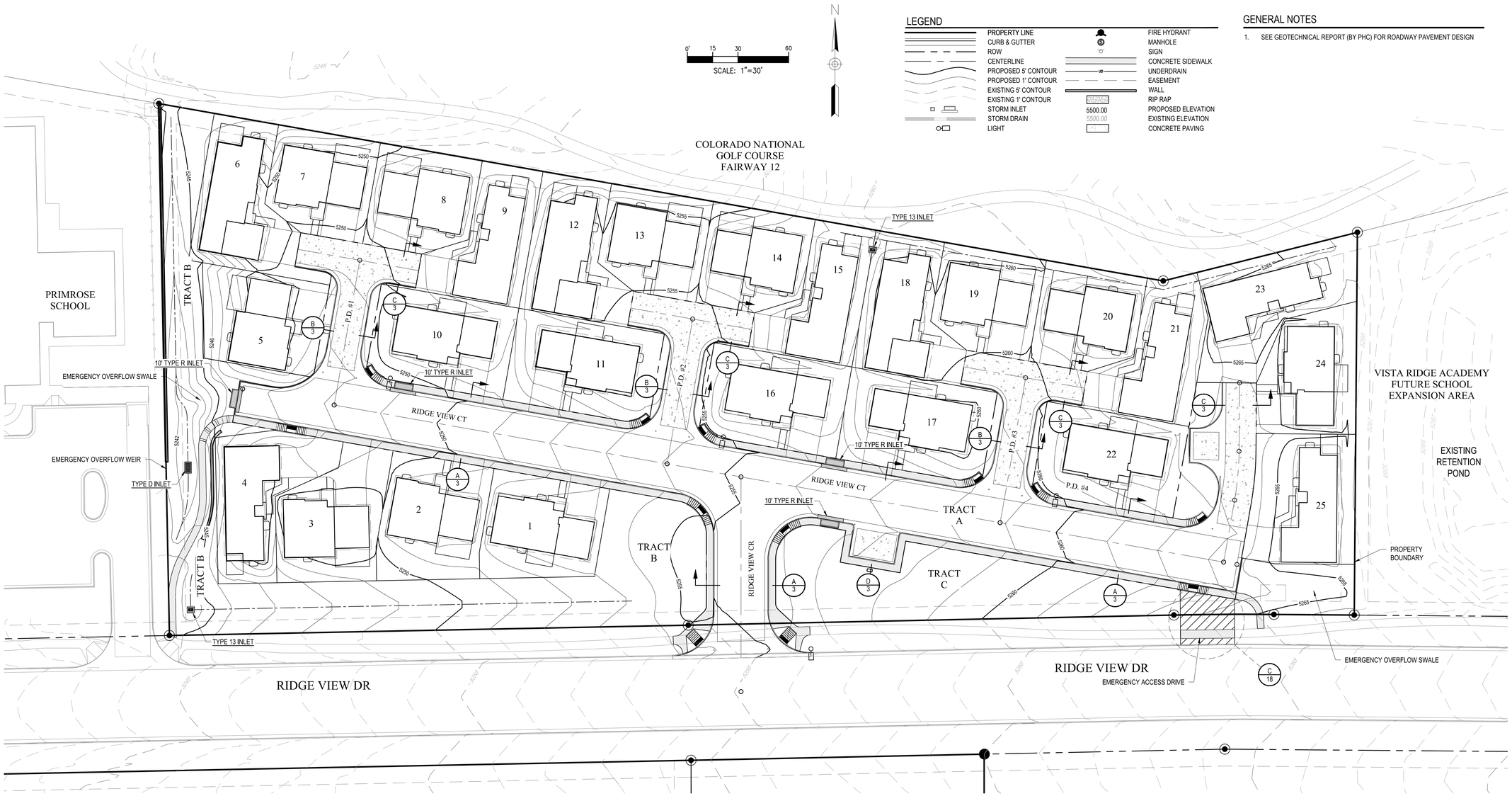
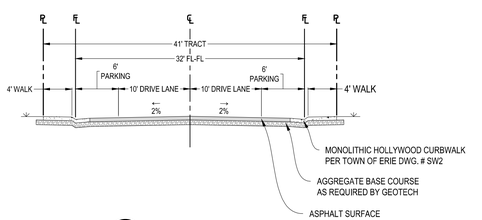
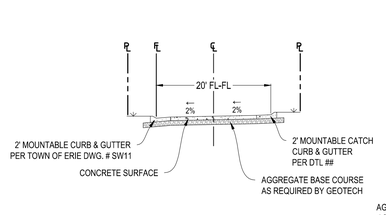


GENERAL NOTES

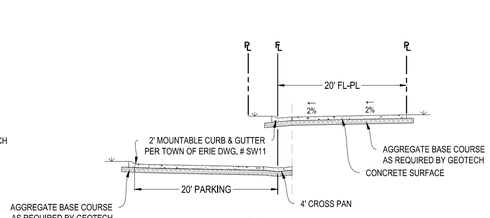
1. SEE GEOTECHNICAL REPORT (BY PHC) FOR ROADWAY PAVEMENT DESIGN



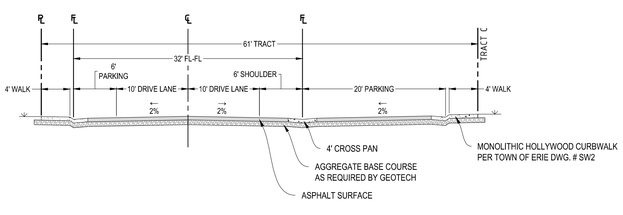
A/3 LOCAL ROADWAY SECTION
N.T.S.



B/3 PRIVATE DRIVE 1, 2 & 3 SECTION
N.T.S.



C/3 P.D. 4 & TYP. HAMMERHEAD SECTION
N.T.S.



D/3 LOCAL ROADWAY W/PARKING SECTION
N.T.S.

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CHARTERED HOMES OF COLORADO
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OVERALL GRADING PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	4 OGP-4.0.DWG
DWG	OGP-4.0
SHEET	4 OF18

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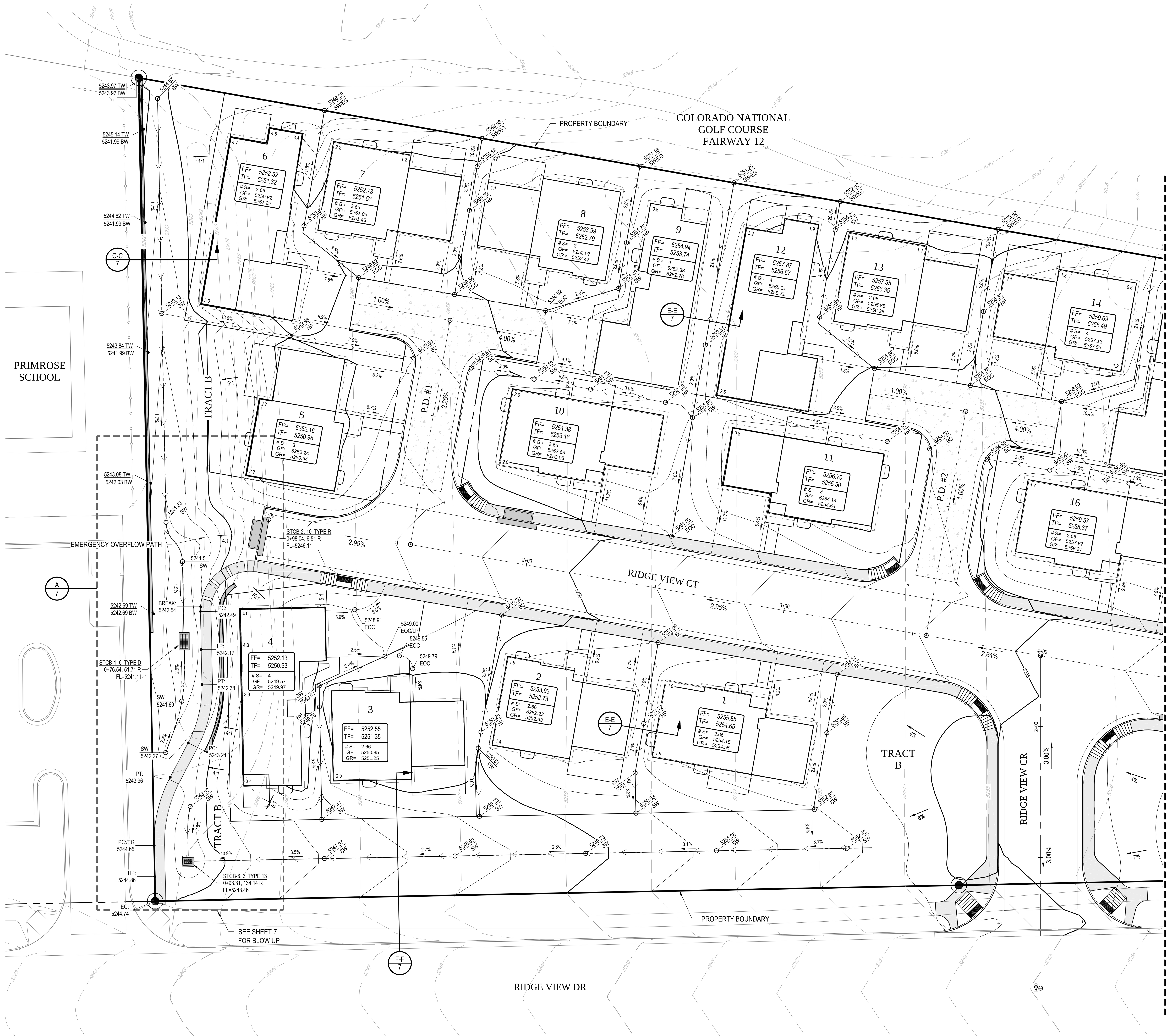
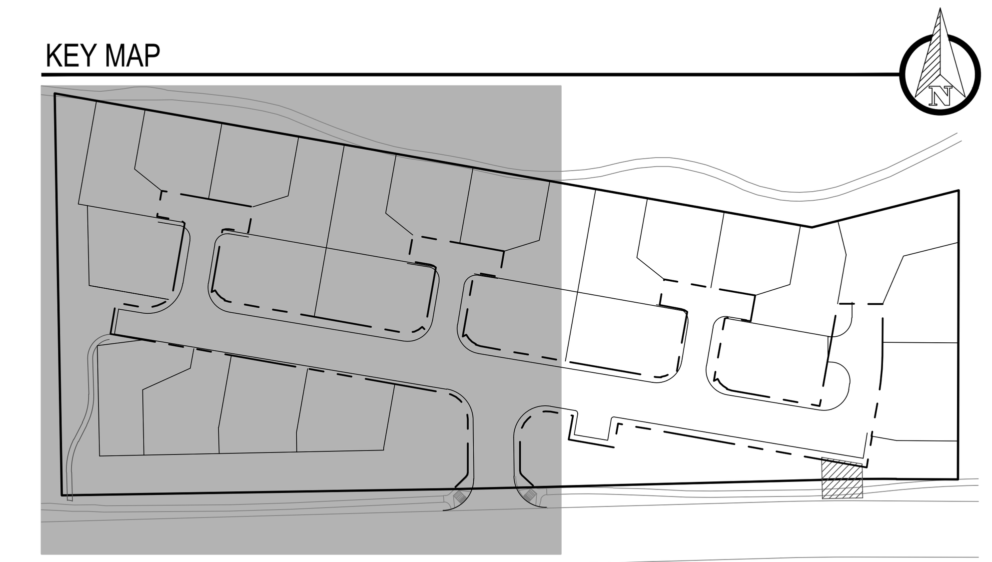


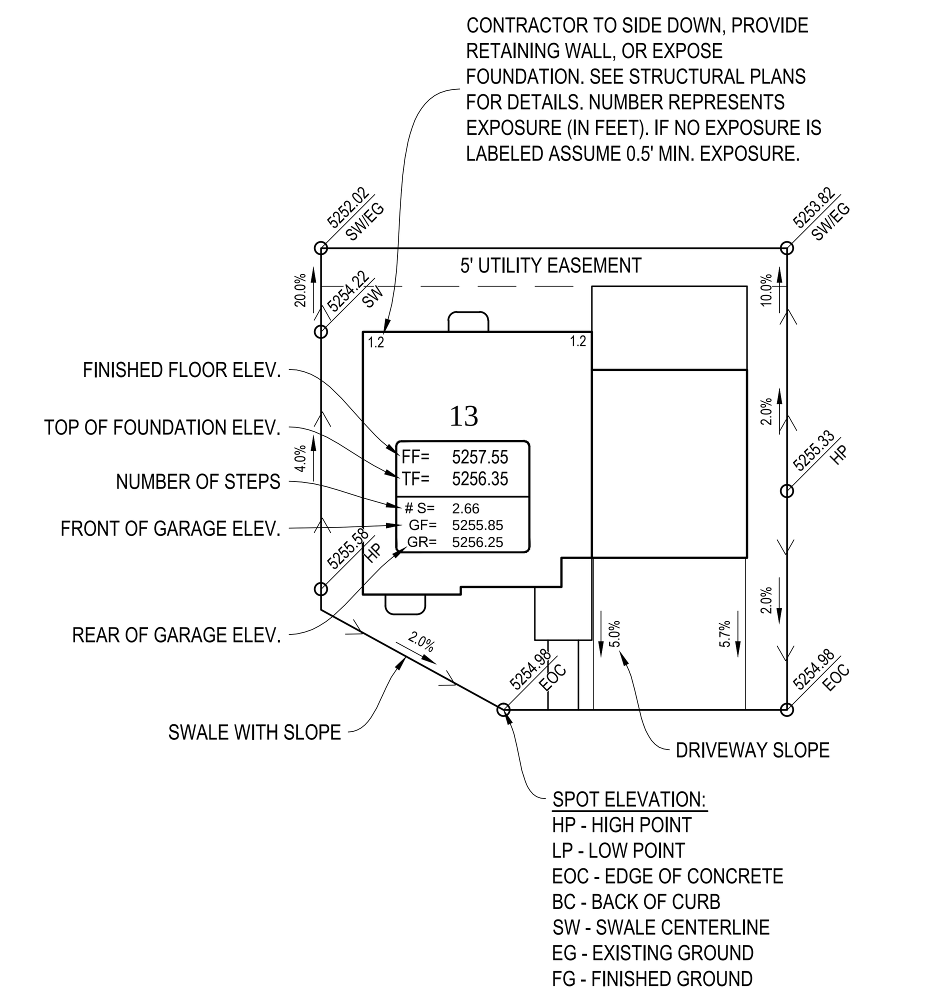
KEY MAP



LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR		UNDERDRAIN
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR		RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	5500.00	EXISTING ELEVATION
	LIGHT		CONCRETE PAVING

TYPICAL LOT LEGEND



SPOT ELEVATION:
HP - HIGH POINT
LP - LOW POINT
EOC - EDGE OF CONCRETE
BC - BACK OF CURB
SW - SWALE CENTERLINE
EG - EXISTING GROUND
FG - FINISHED GROUND

SCALE: 1"=20'

NO.	DATE	REVISION	DSGN	DR	CHK	APVD
			SM	BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

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CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

DETAIL GRADING PLAN 1

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	6 DGP-4.2.DWG
DWG	DGP-4.1
SHEET	5 OF18

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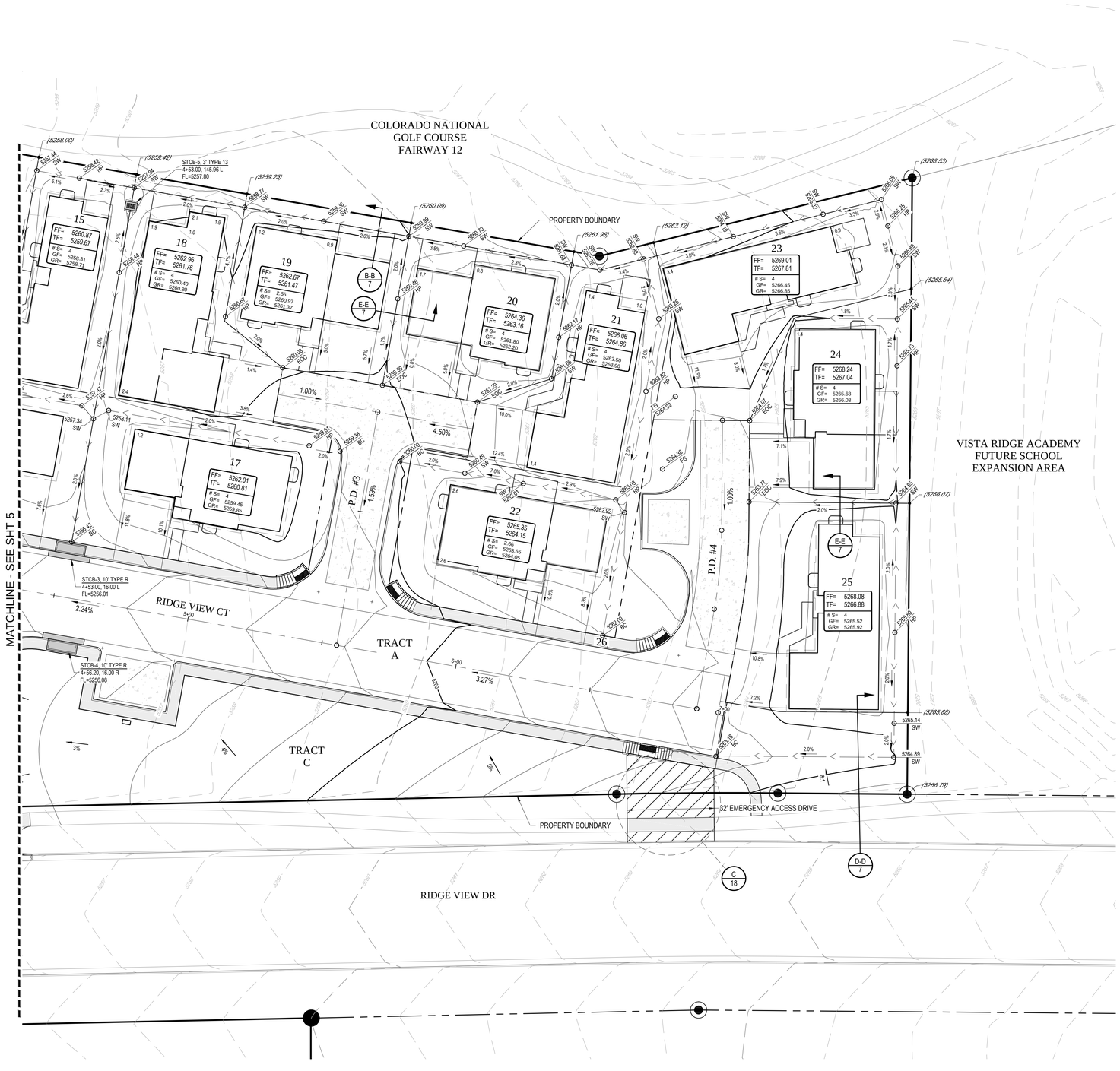
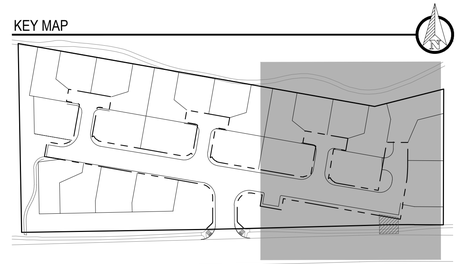


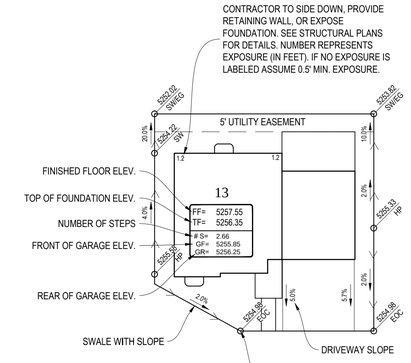
KEY MAP



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

TYPICAL LOT LEGEND



N

0' 10 20 40

SCALE: 1"=20'

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DSGN	SM		BC				

ENERTIA CONSULTING GROUP
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CHARTERED HOMES OF COLORADO
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DETAIL GRADING PLAN 2

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	6 DGP-4.2.DWG
DWG	DGP-4.2
SHEET	6 OF18

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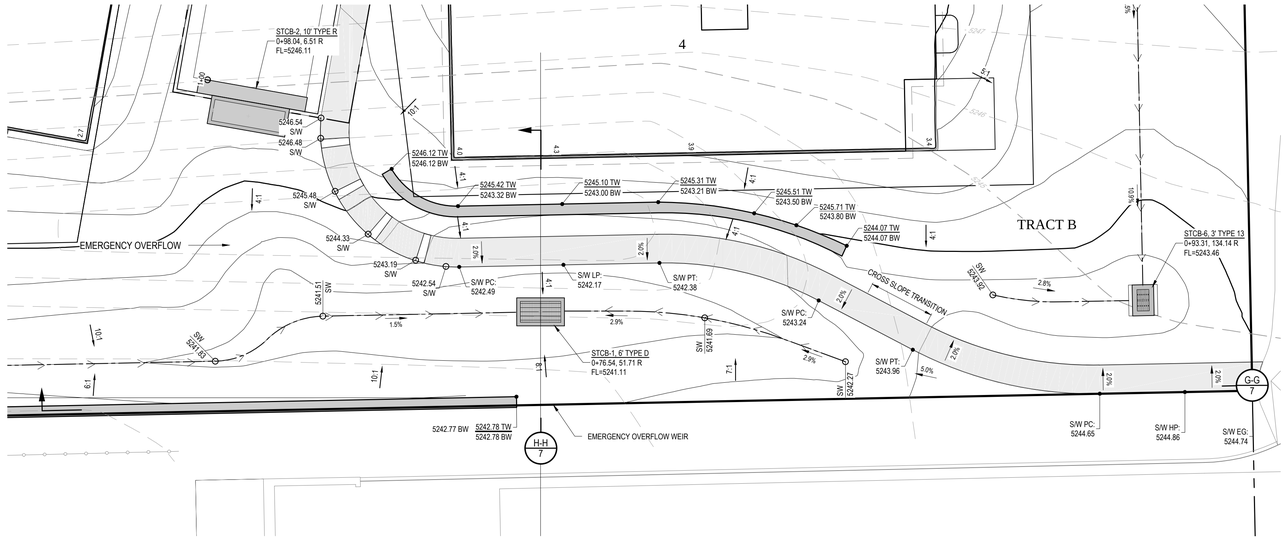
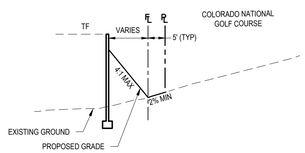
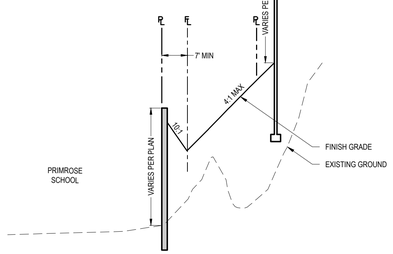


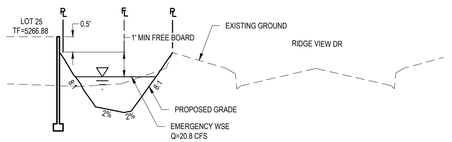
A 7 TRACT B BLOW-UP
H:1"=20'
V: 1"=2"



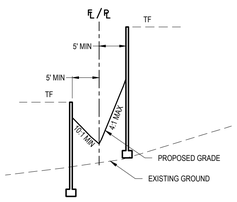
B-B 7 NORTH SWALE SECTION
H:1"=20'
V: 1"=2"



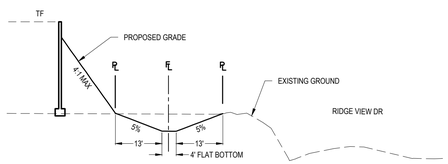
C-C 7 WEST SWALE/WALL SECTION
H:1"=20'
V: 1"=2"



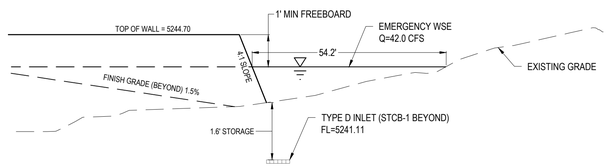
D-D 7 EMERGENCY OVERFLOW SWALE SECTION
H:1"=20'
V: 1"=2"



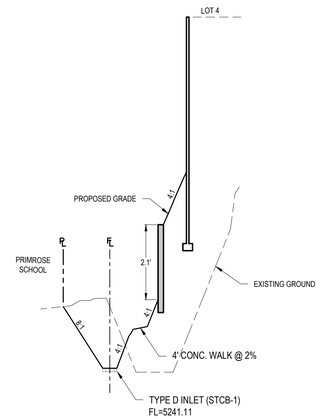
E-E 7 TYPICAL SIDE LOT SWALE SECTION
H:1"=20'
V: 1"=2"



F-F 7 SOUTH SWALE SECTION
H:1"=20'
V: 1"=2"



G-G 7 EMERGENCY OVERFLOW WIER SECTION
H:1"=20'
V: 1"=2"



H-H 7 STCB-1 SUMP SECTION
H:1"=20'

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GRADING DETAILS

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	7 GDT-4.3.DWG
DWG	GDT-4.3
SHEET	7 OF18

NOTES

1. ALL UNDERDRAIN TO BE 4" PVC WITH A MINIMUM DEPTH OF 2.5' AND A MINIMUM SLOPE OF 2%.

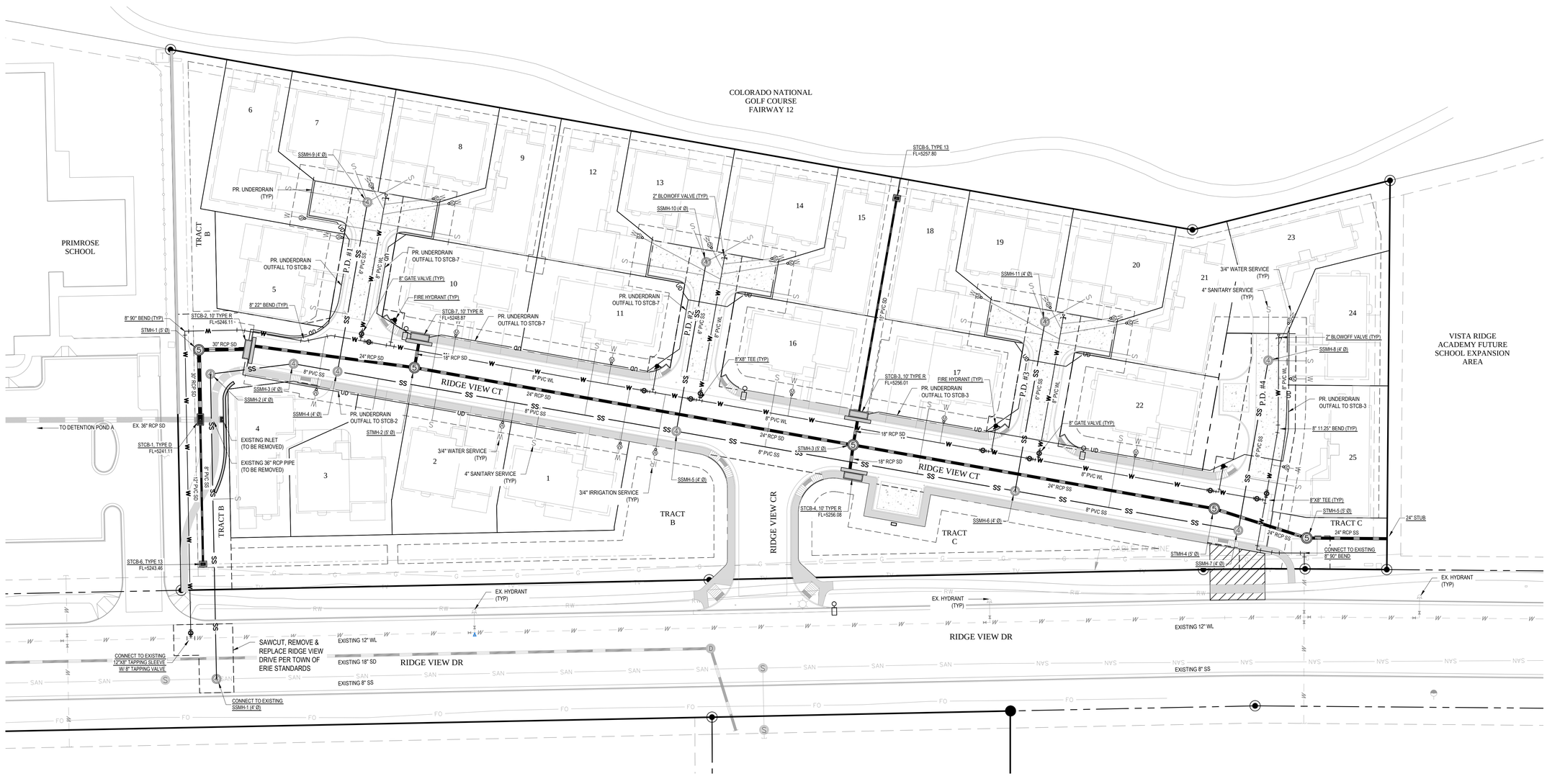
LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR	5520.00	RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

N

0' 15 30 60

SCALE: 1"=30'



PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	REVISION	APVD
		SM	BC	BG		SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

OVERALL UTILITY PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	8 OUP-5.0.DWG
DWG	OUP-5.0
SHEET	8 OF18

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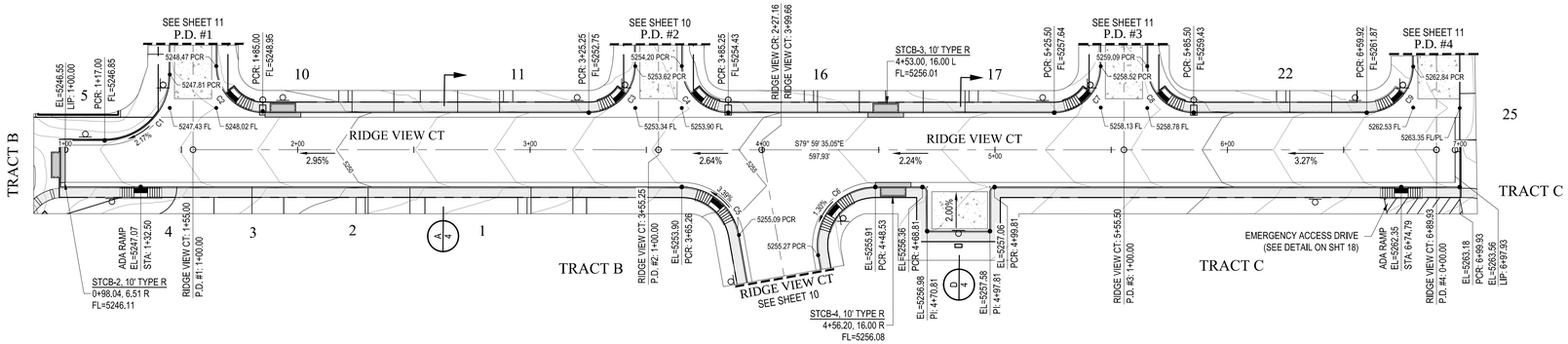
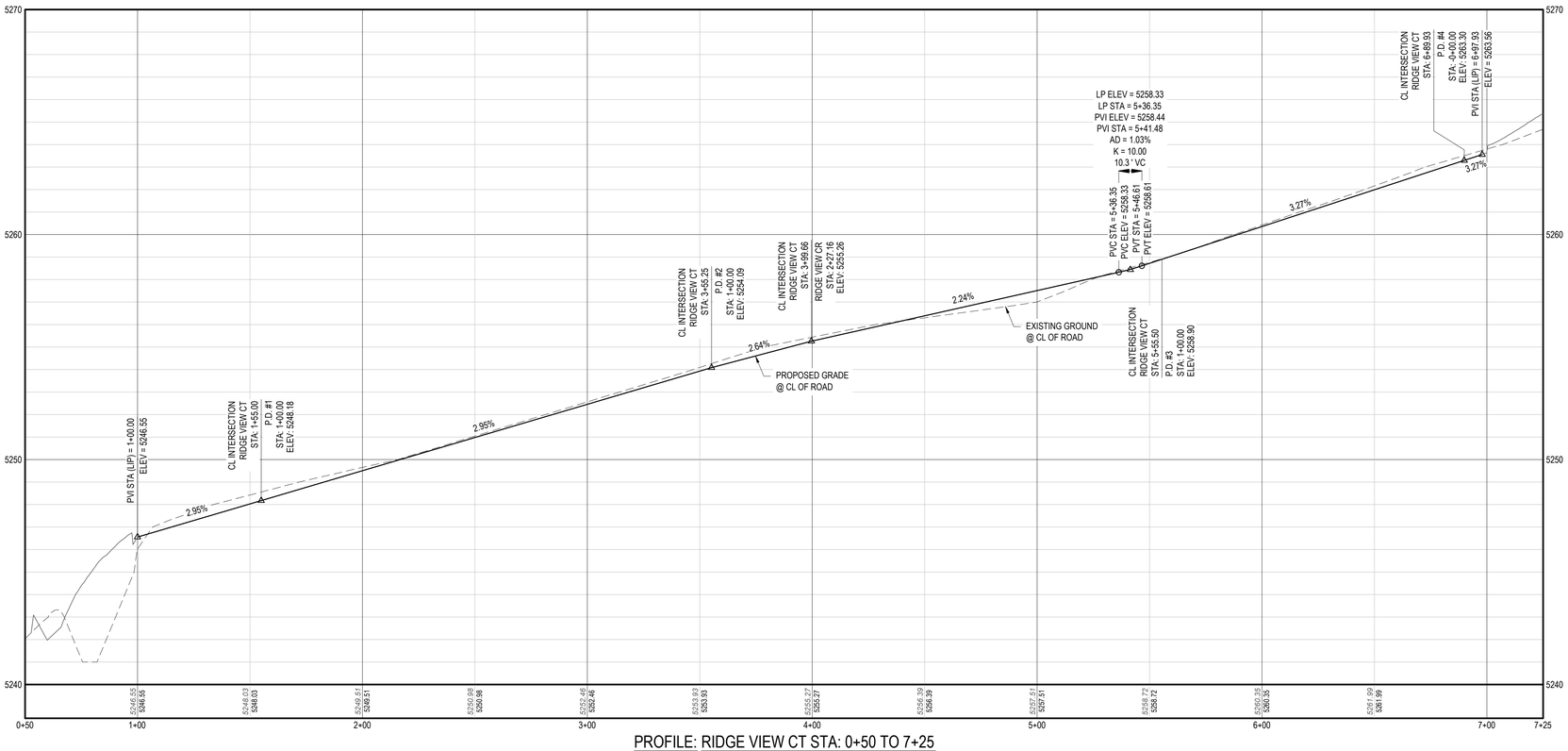


PLAN: RIDGE VIEW CT STA: 0+50 TO 7+25

HORIZONTAL SCALE: 1" = 30'

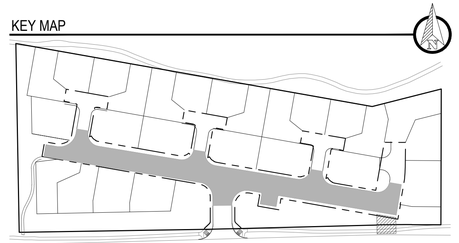


PROFILE: RIDGE VIEW CT STA: 0+50 TO 7+25

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3

KEY MAP

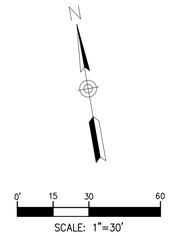


LEGEND

PROPERTY LINE	FIRE HYDRANT
CURB & GUTTER	MANHOLE
ROW	SIGN
CENTERLINE	CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UNDERDRAIN
PROPOSED 1' CONTOUR	EASEMENT
EXISTING 5' CONTOUR	WALL
EXISTING 1' CONTOUR	RIP RAP
STORM INLET	PROPOSED ELEVATION
STORM DRAIN	EXISTING ELEVATION
LIGHT	CONCRETE PAVING

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	44.35'	28.00'	90°44'08"	N54°38'17"E	39.86'
C2	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C3	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C4	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C5	34.90'	25.00'	79°59'33"	N39°59'46"W	32.14'
C6	43.64'	25.00'	100°00'27"	S50°00'14"W	38.31'
C7	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C8	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C9	31.24'	20.00'	89°30'36"	N55°15'10"E	28.16'



PRELIMINARY
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NO.	DATE	DR	CHK	APVD
DSGN	SM	BC	BG	SM

REVISION

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR. STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

RIDGE VIEW CT STA: 0+50 TO 7+25
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	9 RDW-6.1.DWG
DWG	RDW-6.1
SHEET	9 OF18

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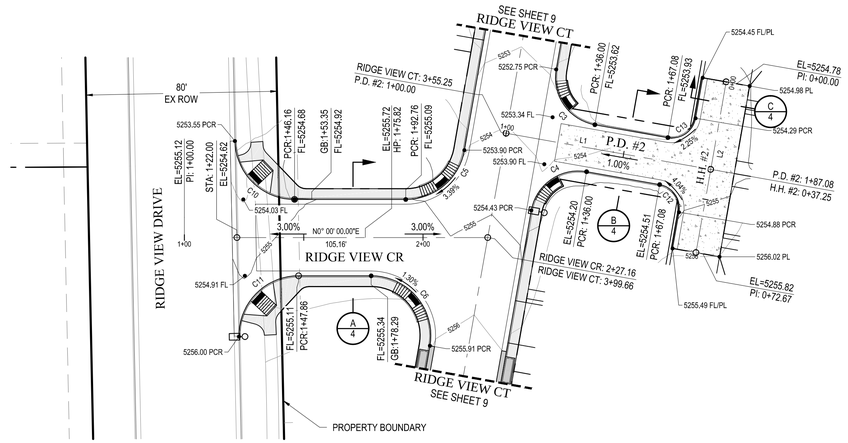
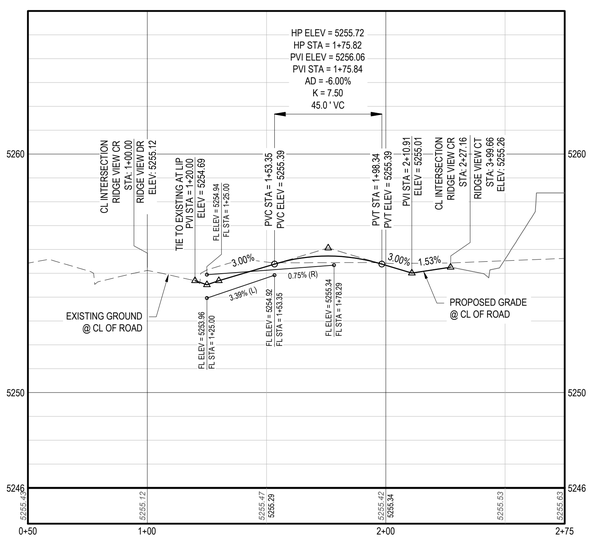


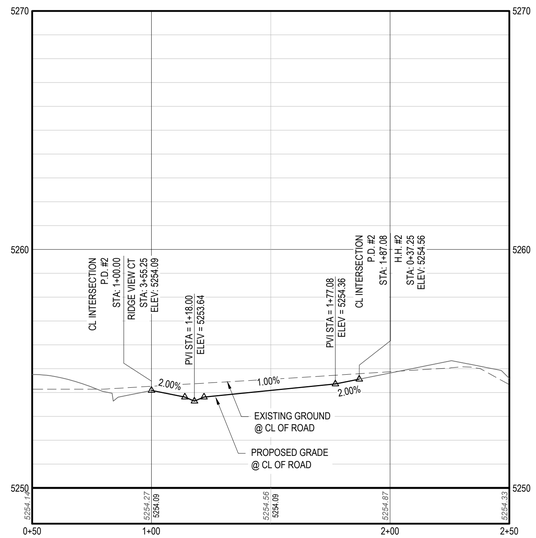
PLAN: RIDGE VIEW CR & P.D. #2

HORIZONTAL SCALE: 1" = 30'



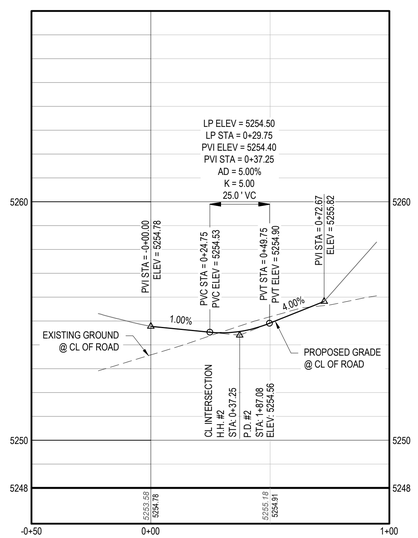
PROFILE: RIDGE VIEW CR STA: 0+50 TO 2+75

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: P.D. #2 STA: 0+50 TO 2+50

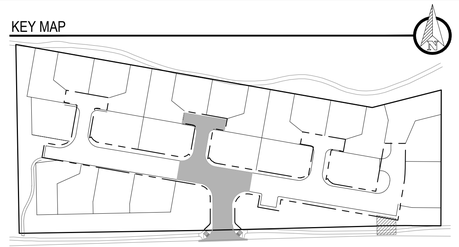
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: H.H. #2 STA: -0+50 TO 1+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

KEY MAP



LEGEND

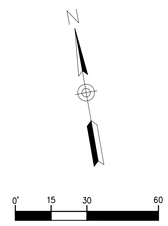
PROPERTY LINE	FIRE HYDRANT
CURB & GUTTER	MANHOLE
ROW	SIGN
CENTERLINE	CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UNDERDRAIN
PROPOSED 1' CONTOUR	EASEMENT
EXISTING 5' CONTOUR	WALL
EXISTING 1' CONTOUR	RIP RAP
STORM INLET	5500.00 PROPOSED ELEVATION
STORM DRAIN	5500.00 EXISTING ELEVATION
LIGHT	CONCRETE PAVING

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C3	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C4	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C5	34.90'	25.00'	79°59'33"	N39°59'46"W	32.14'
C6	43.64'	25.00'	100°00'27"	S50°00'14"W	38.30'
C10	38.77'	25.00'	88°51'39"	N44°25'49"E	35.00'
C11	39.79'	25.00'	91°11'38"	S45°35'49"E	35.72'
C12	15.71'	10.00'	90°00'00"	S55°00'27"W	14.14'
C13	15.71'	10.00'	90°00'00"	N34°59'33"W	14.14'

LINE TABLE

LINE NO.	LENGTH	DIRECTION
L1	87.08'	N10°00'27"E
L2	72.67'	N79°59'33"W



PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DR	CHK	REVISION	APVD
DSGN	SM	BC	BG		SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

RIDGE VIEW CR & P.D. #2
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	10 RDW-6.2.DWG
DWG	RDW-6.2
SHEET	10 OF18

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LEGEND

PROPERTY LINE		FIRE HYDRANT
CURB & GUTTER	M	MANHOLE
ROW		SIGN
CENTERLINE		CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UD	UNDERDRAIN
PROPOSED 1' CONTOUR		EASEMENT
EXISTING 5' CONTOUR		WALL
EXISTING 1' CONTOUR	RIP RAP	RIP RAP
STORM INLET	5500.00	PROPOSED ELEVATION
STORM DRAIN	5500.00	EXISTING ELEVATION
LIGHT		CONCRETE PAVING

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	44.35'	28.00'	90°44'08"	N54°38'17"E	39.86'
C2	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C7	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C8	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C9	31.24'	20.00'	89°30'36"	N55°15'10"E	28.16'
C14	25.06'	15.00'	95°44'21"	N38°58'46"W	22.25'
C15	23.56'	15.00'	90°00'00"	N45°28'11"E	21.21'

LINE TABLE

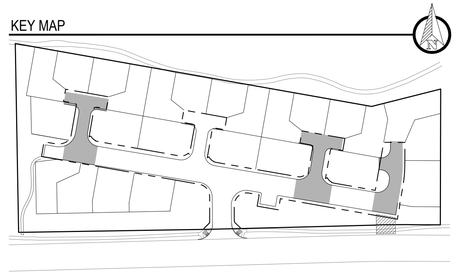
LINE NO.	LENGTH	DIRECTION
L3	87.08'	N10°00'27"E
L4	72.67'	S79°59'33"E
L5	87.08'	N10°00'27"E
L6	72.67'	S79°59'33"E
L7	37.24'	N10°00'27"E
L8	40.47'	N0°28'11"E

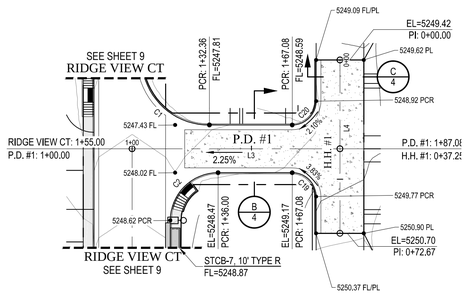
N

0' 15 30 60

SCALE: 1"=30'

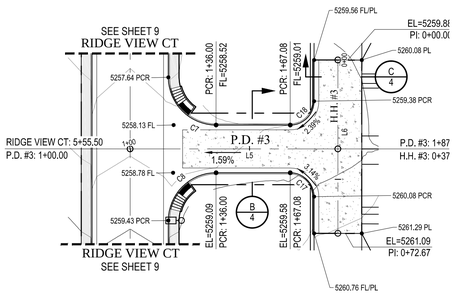
KEY MAP





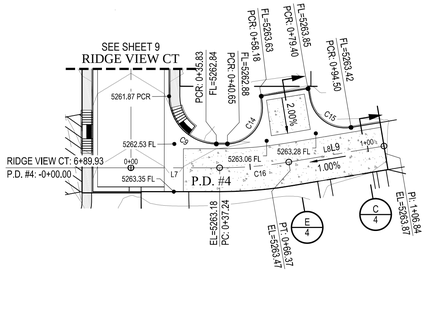
PLAN: PRIVATE DRIVE #1

HORIZONTAL SCALE: 1" = 30'



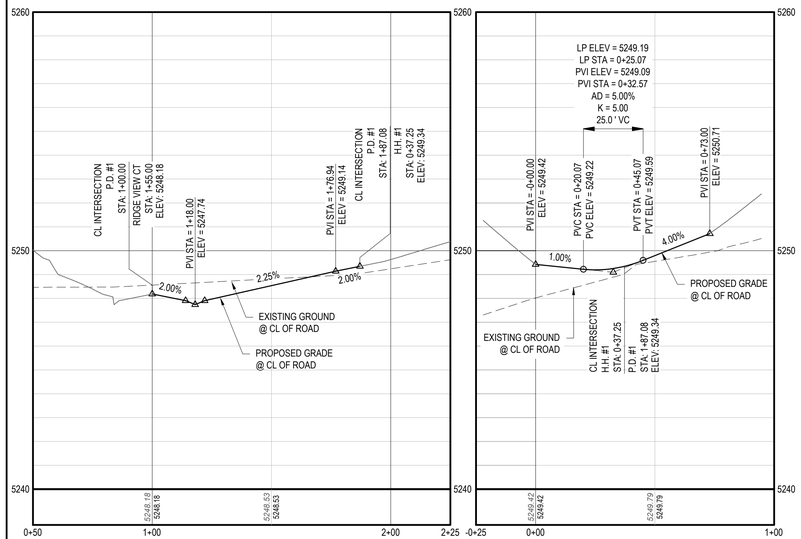
PLAN: PRIVATE DRIVE #3

HORIZONTAL SCALE: 1" = 30'



PLAN: PRIVATE DRIVE #4

HORIZONTAL SCALE: 1" = 30'

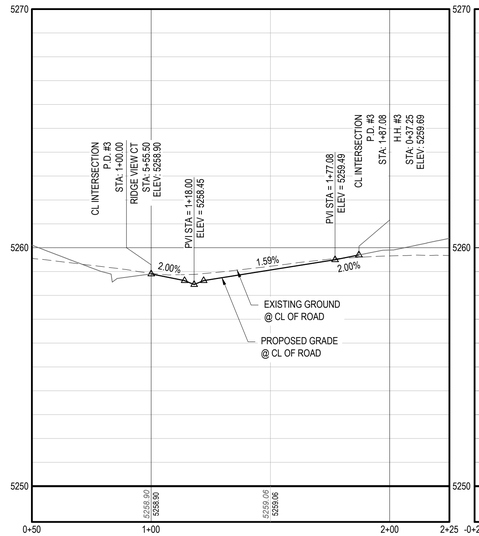


PROFILE: P.D. #1 STA: 0+50 TO 2+25

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

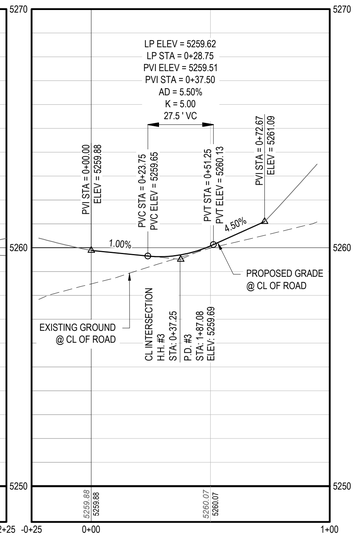
PROFILE: H.H. #1 STA: -0+25 TO 1+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



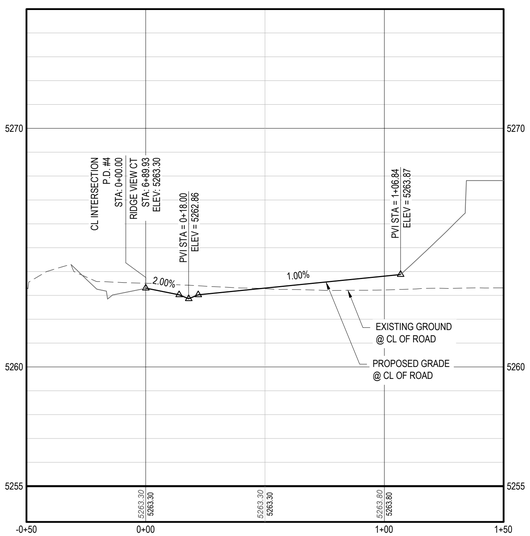
PROFILE: P.D. #3 STA: 0+50 TO 2+25

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: H.H. #3 STA: -0+25 TO 1+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: P.D. #4 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISION	CHK	APVD
DSGN	SM	DR BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

PRIVATE DRIVES #1, #3 & #4
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	11 RDW-6.3.DWG
DWG	RDW-6.3
SHEET	11 OF 18

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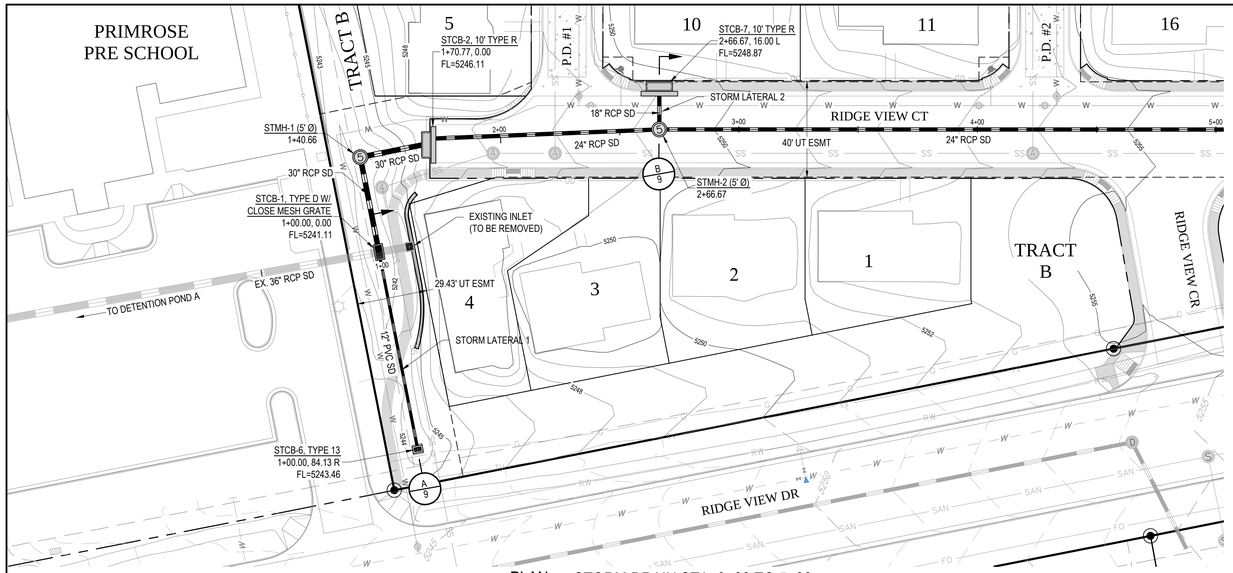
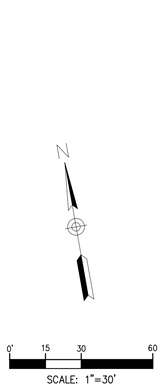
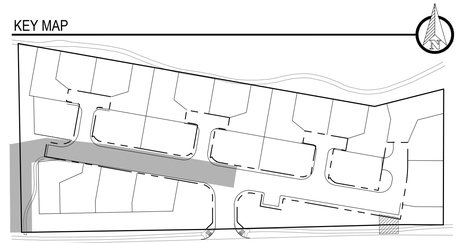


PLAN: STORM DRAIN STA: 0+00 TO 5+00

HORIZONTAL SCALE: 1" = 30'

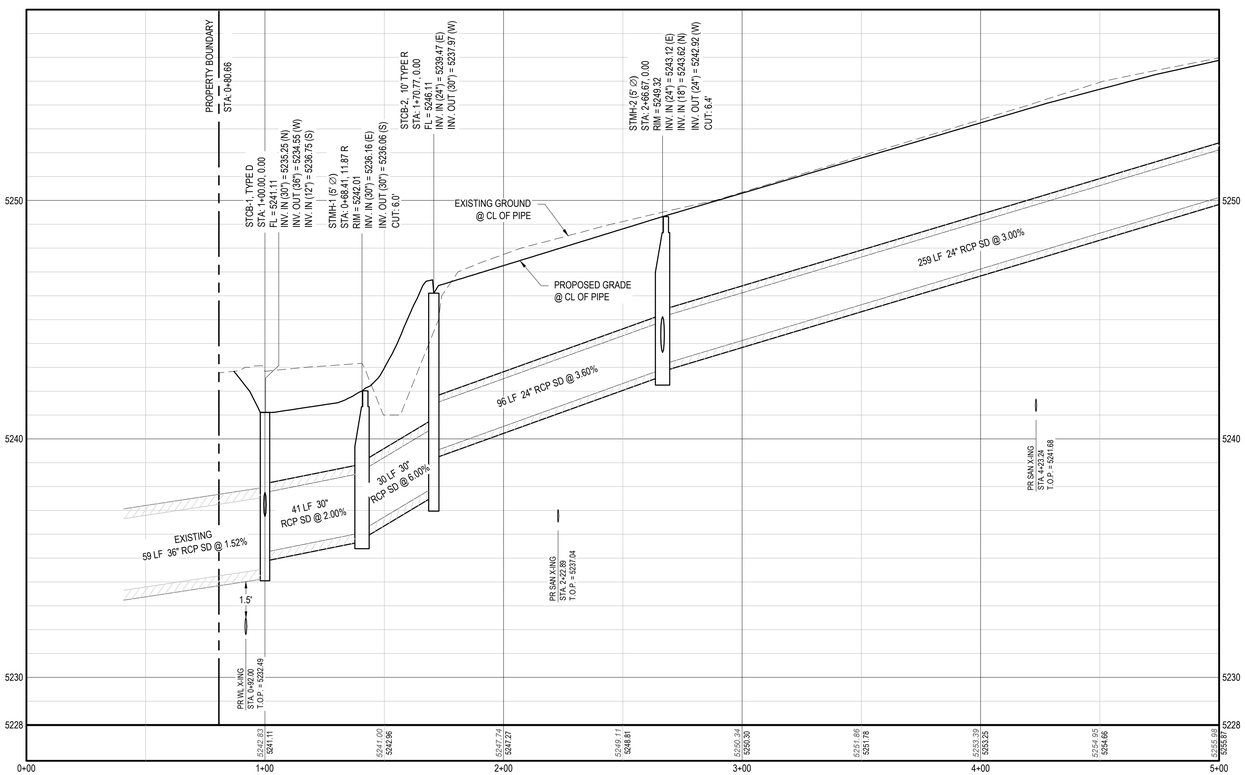


KEY MAP



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	



PROFILE: STORM SEWER - MAIN STA: 0+00 TO 5+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

A/9 STM LATERAL 1
PROFILE
H: 1"=30'
V: 1"=3'

B/9 STM LATERAL 2
PROFILE
H: 1"=30'
V: 1"=3'

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DSGN

REVISION | DR | BC | CHK | BG | APVD | SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

STORM DRAIN STA: 0+00 TO 5+00
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	12 STM-7.1.DWG
DWG	STM-7.1
SHEET	12 OF18

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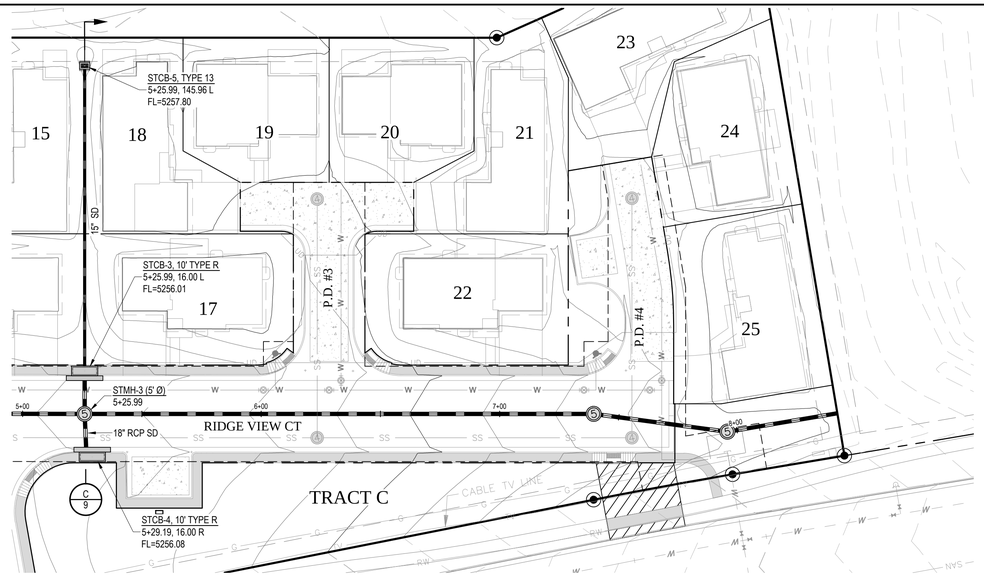
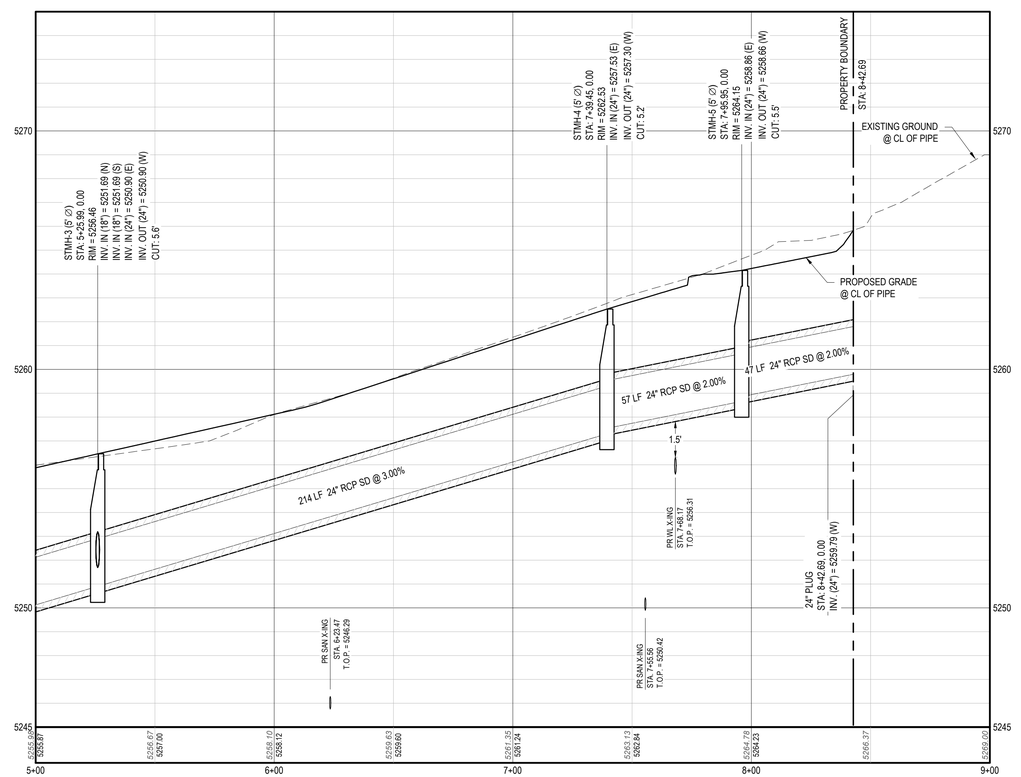


PLAN: STORM DRAIN STA: 5+00 TO 9+00

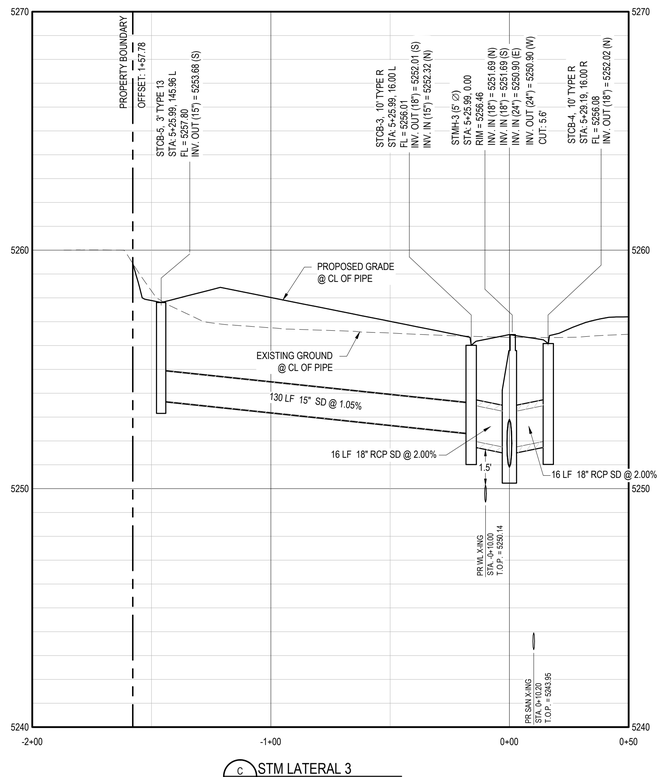
HORIZONTAL SCALE: 1" = 30'



PROFILE: STORM SEWER - MAIN STA: 5+00 TO 9+00

HORIZONTAL SCALE: 1" = 30'

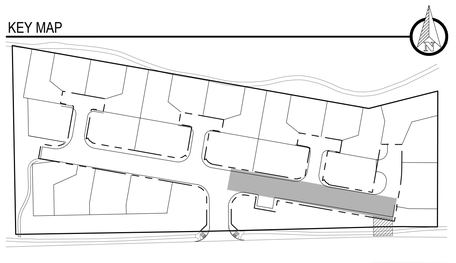
VERTICAL SCALE: 1" = 3'



C/9 STM LATERAL 3 PROFILE

H: 1"=30'
V: 1"=3'

KEY MAP



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

N

0' 15 30 60

SCALE: 1"=30'

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD
		SM	BC	BG	SM

REVISION

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

STORM DRAIN STA: 5+00 TO 9+00
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	13 STM-7.2.DWG
DWG	STM-7.2
SHEET	13 OF18

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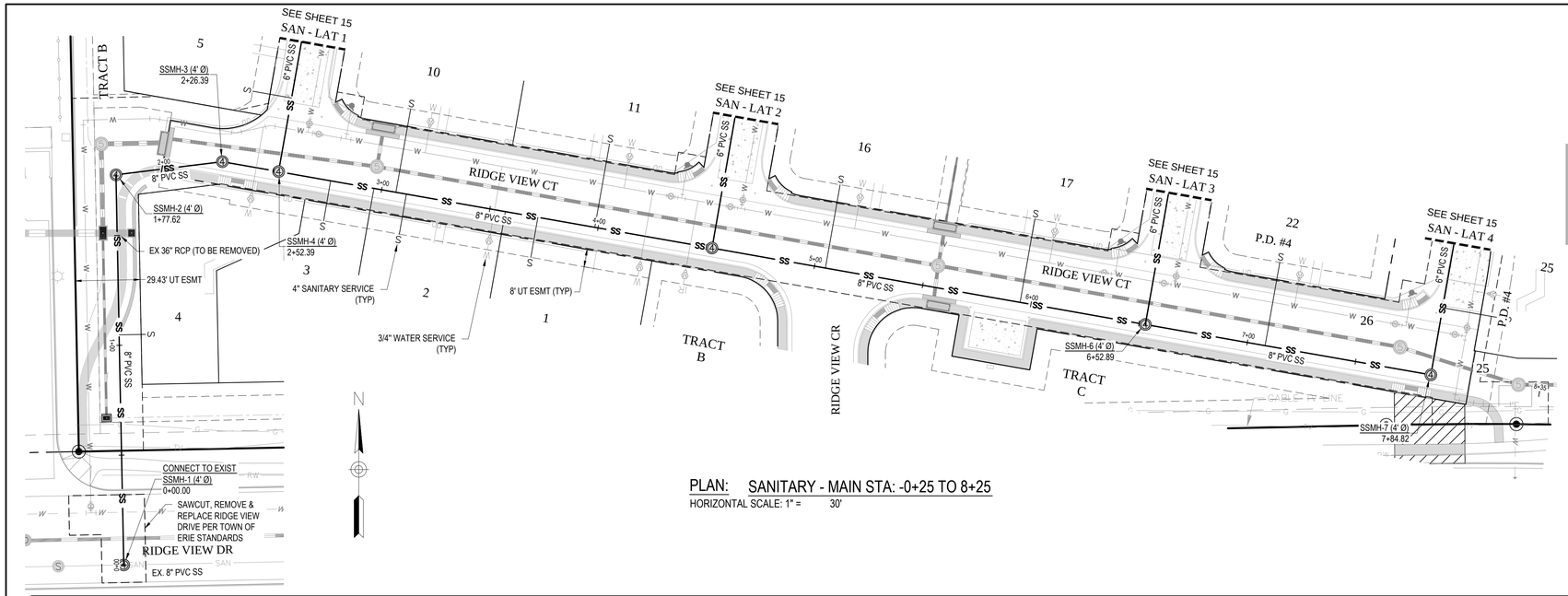
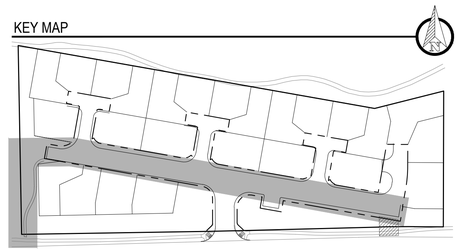


PLAN: SANITARY - MAIN STA: -0+25 TO 8+25

HORIZONTAL SCALE: 1" = 30'

KEY MAP



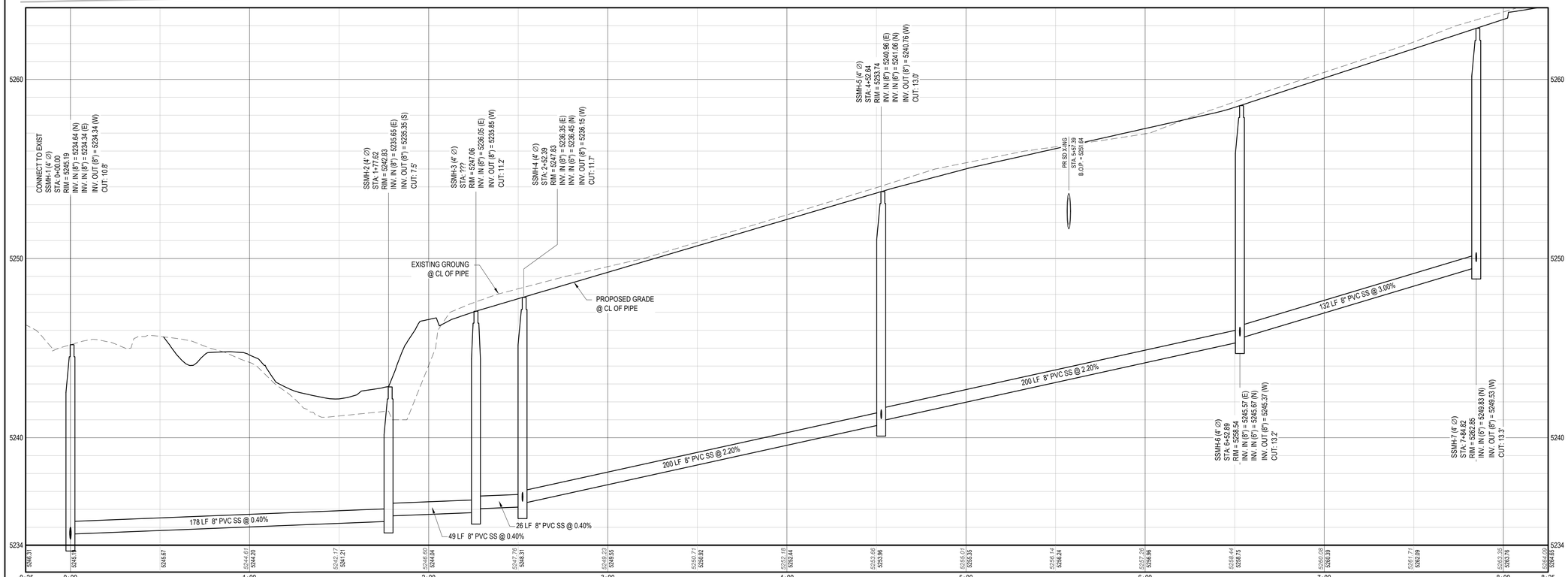
LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR	5500	UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR	5500	RIP RAP	
STORM INLET		PROPOSED ELEVATION	5500.00
STORM DRAIN		EXISTING ELEVATION	5500.00
LIGHT		CONCRETE PAVING	

NOTES

1. SEE SHEET 18 FOR SANITARY SEWER SERVICE TABLE AND DETAIL.
2. CONTRACTOR TO VERIFY EXISTING SANITARY INVERTS IN RIDGE VIEW DRIVE PRIOR TO CONSTRUCTION.

SCALE: 1"=30'



PROFILE: SANITARY SEWER - MAIN STA: -0+25 TO 8+25

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

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	REVISION	
	DR	SM
	CHK	BC
	APVD	BG
		SM

ENERTIA CONSULTING GROUP
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SANITARY - MAIN STA: -0+25 TO 8+25
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	14 SAN-8.1.DWG
DWG	SAN-8.1
SHEET	14 OF18

LEGEND

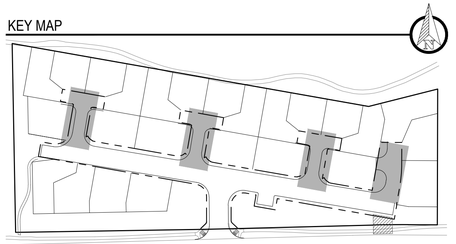
PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

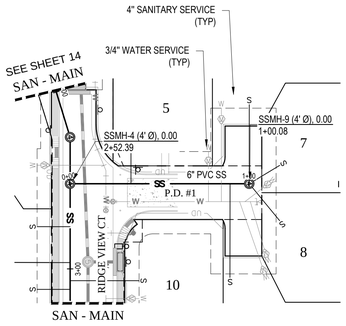
N

0' 20 40 80

SCALE: 1"=40'

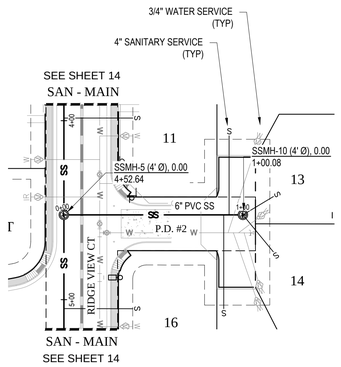
KEY MAP





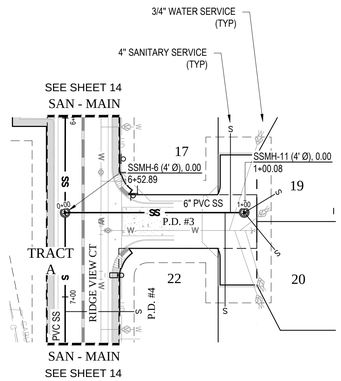
PLAN: SANITARY - LATERAL 1

HORIZONTAL SCALE: 1" = 40'



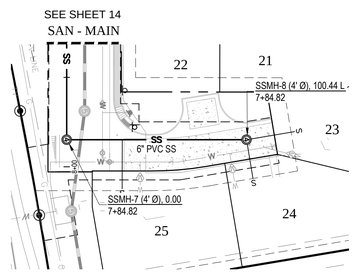
PLAN: SANITARY - LATERAL 2

HORIZONTAL SCALE: 1" = 40'



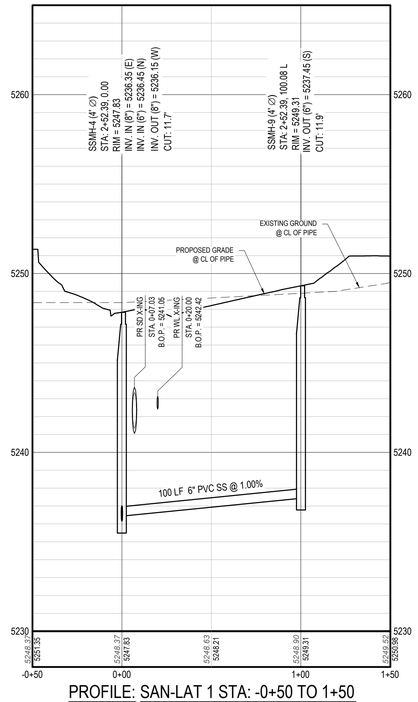
PLAN: SANITARY - LATERAL 3

HORIZONTAL SCALE: 1" = 40'



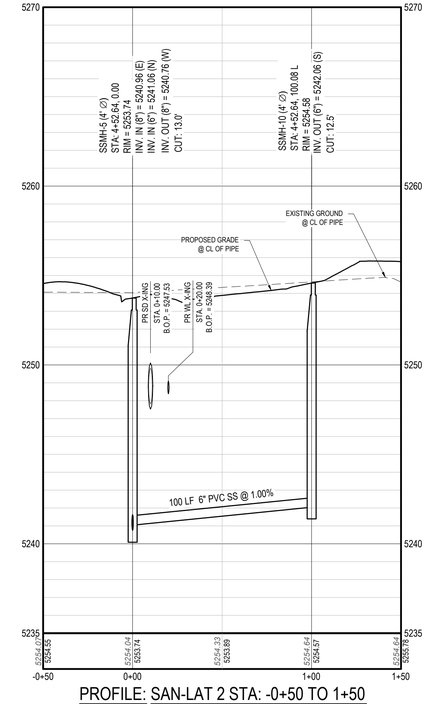
PLAN: SANITARY - LATERAL 4

HORIZONTAL SCALE: 1" = 40'



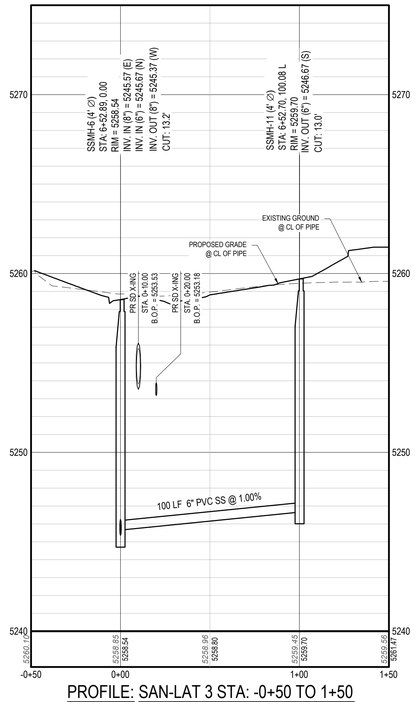
PROFILE: SAN-LAT 1 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



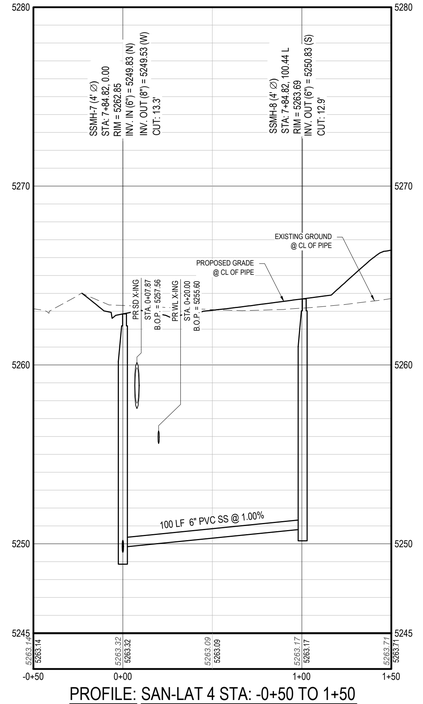
PROFILE: SAN-LAT 2 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



PROFILE: SAN-LAT 3 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



PROFILE: SAN-LAT 4 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISION	DR	CHK	APVD
DSGN	SM		BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

SANITARY LATERALS
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	15 SAN-8.2.DWG
DWG	SAN-8.2
SHEET	15 OF 18

LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR	UD	UNDERDRAIN
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR	RIP-RAP	RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	5500.00	EXISTING ELEVATION
	LIGHT	CP	CONCRETE PAVING

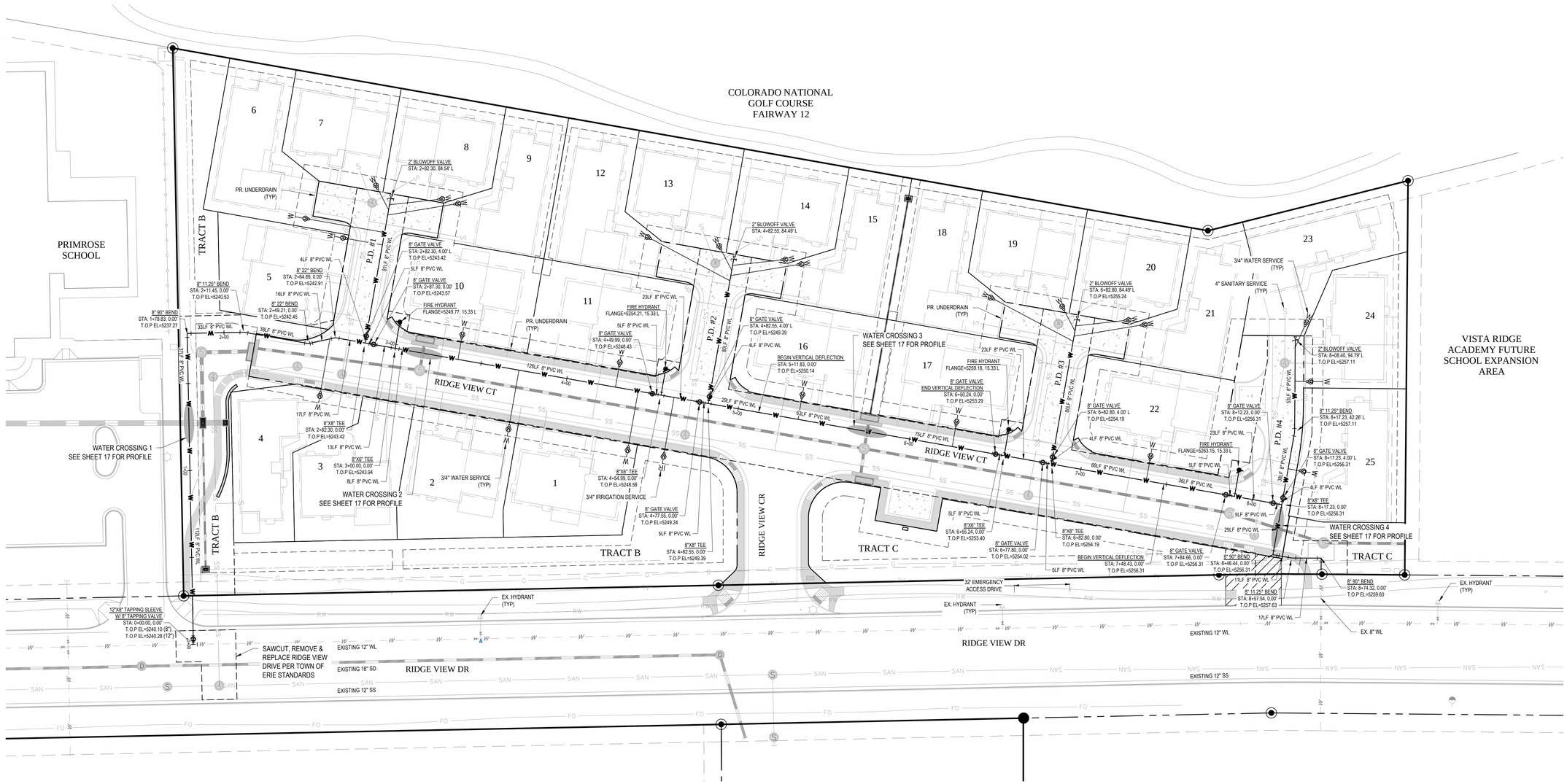
NOTES

1. ALL DOMESTIC WATER SERVICES TO BE 3/4" TYPE K COPPER UNLESS OTHERWISE NOTED
2. CURB STOP & WATER METERS PER TOWN OF ERIE STANDARD DETAIL W11 - W13

N

0' 15 30 60

SCALE: 1"=30'



PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD	REVISION
		SM	BC	BG	SM	

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ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

WATER PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	16 WAT-9.0.DWG
DWG	WAT-9.0
SHEET	16 OF18

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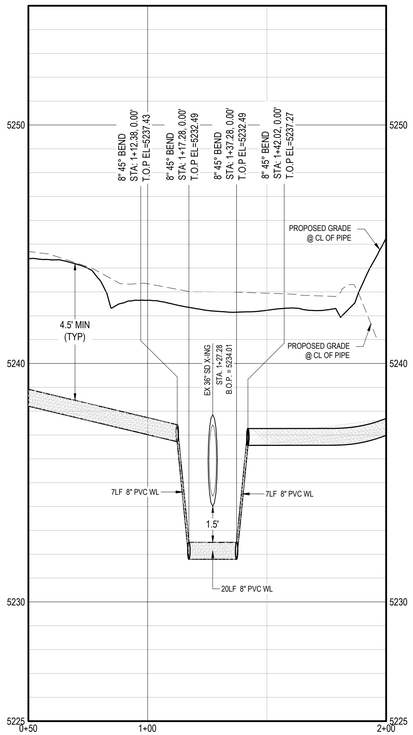
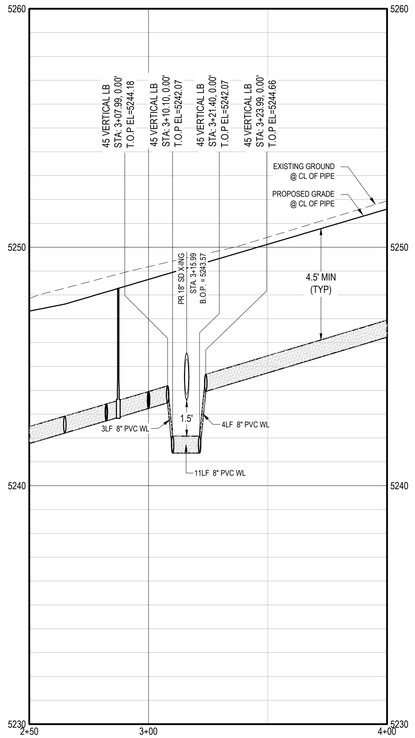
LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR	UD	UNDERDRAIN
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR	RIP-RAP	RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	*5500.00*	EXISTING ELEVATION
	LIGHT	CP	CONCRETE PAVING



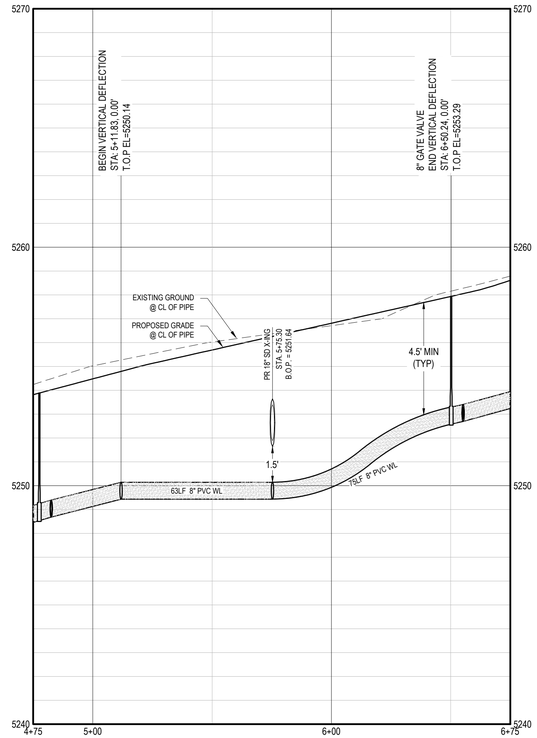
PROFILE: WATER CROSSING 1

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



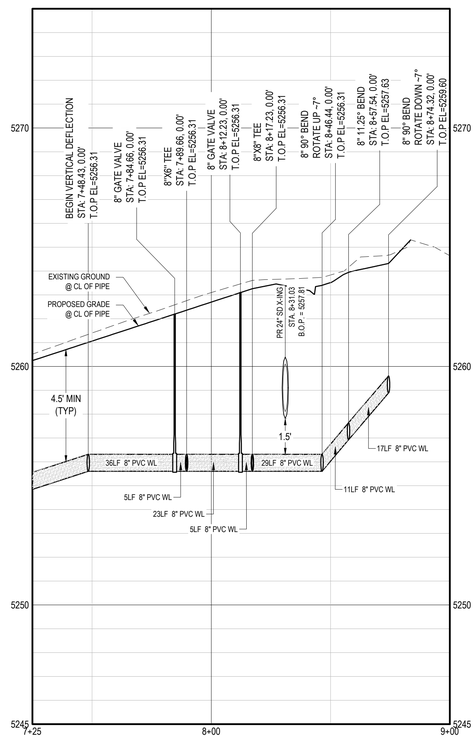
PROFILE: WATER CROSSING 2

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: WATER CROSSING 3

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: WATER CROSSING 4

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

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PRELIMINARY
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DSGN	SM		BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
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MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

WATER CROSSING PROFILES

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	17 WAT-9.1.DWG
DWG	WAT-9.1
SHEET	17 OF18

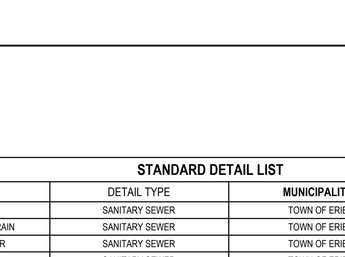
STANDARD DETAIL LIST

ITEM	DETAIL TYPE	MUNICIPALITY	DETAIL ID
STANDARD MANHOLE	SANITARY SEWER	TOWN OF ERIE	SS3A & SS3B
MANHOLE W/ PRIVATE UNDERDRAIN	SANITARY SEWER	TOWN OF ERIE	SS4
24" MANHOLE RING AND COVER	SANITARY SEWER	TOWN OF ERIE	SS6
TRENCH DETAIL	SANITARY SEWER	TOWN OF ERIE	SS8
TRENCH W/ PRIVATE UNDERDRAIN	SANITARY SEWER	TOWN OF ERIE	SS9
SERVICE MAINTENANCE LINE	SANITARY SEWER	TOWN OF ERIE	SS10
TYPICAL MH BASE CHANNELIZATION	SANITARY SEWER	TOWN OF ERIE	SS11A & SS11B
MANHOLE STEPS	SANITARY SEWER	TOWN OF ERIE	SS12
STEEL MARKER POST	SANITARY SEWER	TOWN OF ERIE	SS14
DOMESTIC SEWER TAPPING	SANITARY SEWER	TOWN OF ERIE	SS15
SEWER SERVICE CONNECTION	SANITARY SEWER	TOWN OF ERIE	SS18
PIPE CROSSING SUPPORT PAD	SANITARY SEWER	TOWN OF ERIE	SS19
DITCH OR PIPE CROSSING	SANITARY SEWER	TOWN OF ERIE	SS21
CURB INLET TYPE R	STORM DRAIN	CDOT	M-604-12
MANHOLES	STORM DRAIN	CDOT	M-604-20
MANHOLE STEPS	STORM DRAIN	TOWN OF ERIE	STM9
INLET & INLET COVER	STORM DRAIN	TOWN OF ERIE	STM10
FIRE HYDRANTS, MAINS & VALVES	WATERLINE	TOWN OF ERIE	W7
POLYETHYLENE WRAP	WATERLINE	TOWN OF ERIE	W9
POTABLE SERVICE LINE - ATTACHED WALK	WATERLINE	TOWN OF ERIE	W11A
WATER METER PIT - ⅝" x ¾", ¾" & 1" METER	WATERLINE	TOWN OF ERIE	W12A
1½" & 2" METER MANHOLE METER PIT	WATERLINE	TOWN OF ERIE	W13
MECHANICAL JOINT RESTRAINT	WATERLINE	TOWN OF ERIE	W17
COMBINATION FLANGED HARNESS LUG	WATERLINE	TOWN OF ERIE	W18
JOINT RESTRAINT	WATERLINE	TOWN OF ERIE	W19
TAPPING TEE AND VALVE	WATERLINE	TOWN OF ERIE	W21
DOMESTIC WATER TAPPING	WATERLINE	TOWN OF ERIE	W22
CONCRETE ENCASEMENT	WATERLINE	TOWN OF ERIE	W23
CROSSING STORM AND SANITARY SEWERS	WATERLINE	TOWN OF ERIE	W25
12" OR SMALLER WATERLINE LOWERING	WATERLINE	TOWN OF ERIE	W27
TRENCH DETAIL	WATERLINE	TOWN OF ERIE	W35
STANDARD VALVE AND BOX	WATERLINE	TOWN OF ERIE	W38
MONOLITHIC INTEGRAL CURBWALK	STREET	TOWN OF ERIE	SW2
CONCRETE CROSS PAN	STREET	TOWN OF ERIE	SW3
DRIVE CUT - ATTACHED WALK	STREET	TOWN OF ERIE	SW4B
MOUNTABLE CURB SECTION	STREET	TOWN OF ERIE	SW11
CURB RAMPS	STREET	CDOT	M-608-1

SANITARY SEWER SERVICE TABLE

	LOT	D/S MH	MAIN INV @ D/S MH	DISTANCE to D/S MH3	MAIN SLOPE (%)	MAIN INVERT	TEE INVERT AT MAIN2 3	SERVICE LENGTH TO FOUNDATION4	MIN SERVICE SLOPE (%)	SERVICE INVERT AT FOUNDATION (SIF)	MIN. HEIGHT FROM SIF TO TOF4	MIN. TOF ELEVATION1	DESIGN TOF ELEVATION
Montex North	1	MH-4	5236.35	119.8	0.0220	5238.99	5240.19	26	0.02	5240.71	13.3	5254.0	5254.65
	2	MH-4	5236.35	59.0	0.0220	5237.65	5238.85	26	0.02	5239.36	13.3	5252.7	5252.73
	3	MH-4	5236.35	24.0	0.0220	5236.88	5238.08	67	0.02	5239.41	11.9	5251.3	5251.35
	4	MH-1	5234.64	104.8	0.0040	5235.06	5236.26	15	0.02	5236.56	13.3	5249.9	5250.93
	5	MH-4	5236.45	34.0	0.0100	5236.79	5237.99	27	0.02	5238.53	12.4	5250.9	5250.96
	6	MH-4	5237.45	CONNECTS TO MANHOLE		5237.45	5237.95	75	0.02	5239.46	11.9	5251.4	5251.32
	7	MH-9	5237.45	CONNECTS TO MANHOLE		5237.45	5237.95	40	0.02	5238.75	12.8	5251.6	5251.53
	8	MH-9	5237.45	CONNECTS TO MANHOLE		5237.45	5237.95	40	0.02	5238.75	13.3	5252.1	5252.79
	9	MH-4	5237.45	89.3	0.0100	5238.34	5239.54	84	0.02	5241.23	12.5	5253.7	5253.74
	10	MH-4	5237.35	54.2	0.0220	5238.54	5239.74	46	0.02	5240.66	12.5	5253.2	5253.18
	11	MH-4	5237.35	146.1	0.0220	5240.56	5241.76	46	0.02	5242.68	12.8	5255.5	5255.5
	12	MH-5	5241.06	92.3	0.0100	5241.98	5243.18	75	0.02	5244.69	12.0	5256.7	5256.67
	13	MH-10	5242.06	CONNECTS TO MANHOLE		5242.06	5242.56	40	0.02	5243.36	13.0	5256.4	5256.35
	14	MH-10	5242.06	CONNECTS TO MANHOLE		5242.06	5242.56	40	0.02	5243.36	13.3	5256.7	5258.49
	15	MH-5	5241.06	89.3	0.0100	5241.95	5243.15	84	0.02	5244.84	13.3	5258.2	5259.67
	16	MH-5	5240.96	52.4	0.0220	5242.11	5243.31	46	0.02	5244.23	13.3	5257.6	5258.37
	17	MH-5	5240.96	142.4	0.0220	5244.09	5245.29	46	0.02	5246.21	13.3	5259.5	5260.81
	18	MH-6	5245.67	92.3	0.0100	5246.59	5247.79	75	0.02	5249.30	12.5	5261.8	5261.76
	19	MH-11	5246.67	CONNECTS TO MANHOLE		5246.67	5247.17	40	0.02	5247.97	13.3	5261.3	5261.47
	20	MH-11	5246.67	CONNECTS TO MANHOLE		5246.67	5247.17	40	0.02	5247.97	13.3	5261.3	5263.16
	21	MH-6	5245.67	89.3	0.0100	5246.56	5247.76	84	0.02	5249.45	13.3	5262.8	5264.86
	22	MH-6	5245.57	55.3	0.0300	5247.23	5248.43	46	0.02	5249.35	13.3	5262.7	5264.15
	23	MH-8	5250.83	CONNECTS TO MANHOLE		5250.83	5251.33	66	0.02	5252.65	13.3	5266.0	5267.81
	24	MH-8	5250.83	CONNECTS TO MANHOLE		5250.83	5251.33	57	0.02	5252.46	13.3	5265.8	5267.04
	25	MH-7	5249.83	31.0	0.0100	5250.14	5251.34	61	0.02	5252.55	13.3	5265.9	5266.88

NOTES:
1. TABLE IS PROVIDED FOR INFORMATION ONLY. CONTRACTOR TO VERIFY 2% MINIMUM SERVICE GRADE AND A MINIMUM DEPTH OF 13.3' BELOW TOP OF FOUNDATION PRIOR TO CONSTRUCTING FOUNDATION.
2. ASSUMED TEE ELEVATION OF SANITARY SERVICE EQUALS MAIN INV. + 1.2'. ALL SERVICES THAT ARE CONNECTED DIRECTLY TO MANHOLES WILL NOT REQUIRE A TEE.
3. SERVICES THAT ARE CONNECTED DIRECTLY TO MANHOLES ARE SET 0.5 FT ABOVE INVERT OUT.
4. REFER TO THE TYPICAL SERVICE DETAIL ON SHEET 18 OF THE VISTA RIDGE FILING NO. 2, 1ST AMENDMENT CIVIL CONSTRUCTION DOCUMENTS.



A 18 PRIVATE DRIVE INTERSECTION CURB RAMP PLAN
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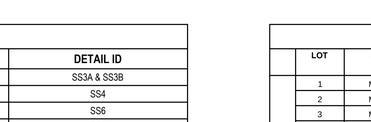

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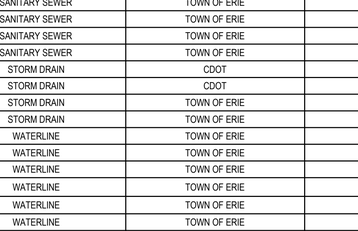

B 18 UNDERDRAIN TRENCH SECTION
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C 18 EMERGENCY SECONDARY ACCESS PLAN
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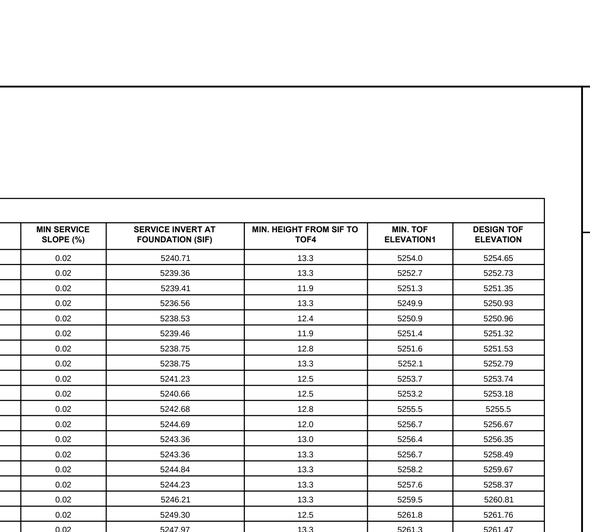

D 18 TYPICAL SANITARY SERVICE DETAIL (SERVICE TYPICAL AND MAY VARY DEPENDING ON CONSTRAINTS)
NTS

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PRELIMINARY
NOT FOR CONSTRUCTION

REVISION

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DSGN	SM	BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

GENERAL DETAILS

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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SHEET	18 OF18

GENERAL ECOLOGICAL RESOURCES SURVEY

Montex at Vista Ridge

14.23 Acres within Section 33,

Township 1 North, Range 68 West

Erie, Colorado 80516

PREPARED FOR:

Chartered Development Corporation
c/o Ward Ritter
3160 Village Vista Drive, Suite 104
Erie, Colorado 80516

WESTERN ENVIRONMENT AND ECOLOGY, INC.

2217 West Powers Avenue
Littleton, Colorado 80120
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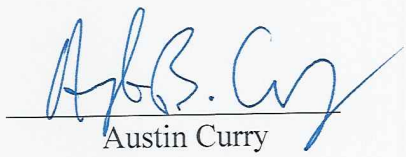
October 31st, 2014

Prepared by:



Austin Curry
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1.0 INTRODUCTION

Western Environment and Ecology, Inc. (Western Environment) was retained by Mr. Ward Ritter, of the Chartered Development Corporation, to conduct a general survey of ecological resources, including threatened and endangered species, wetlands, and other significant habitats, on approximately 14.23 acres within the Town of Erie, Colorado. Mr. Ritter indicated that this study was in response to potential residential development of the site.

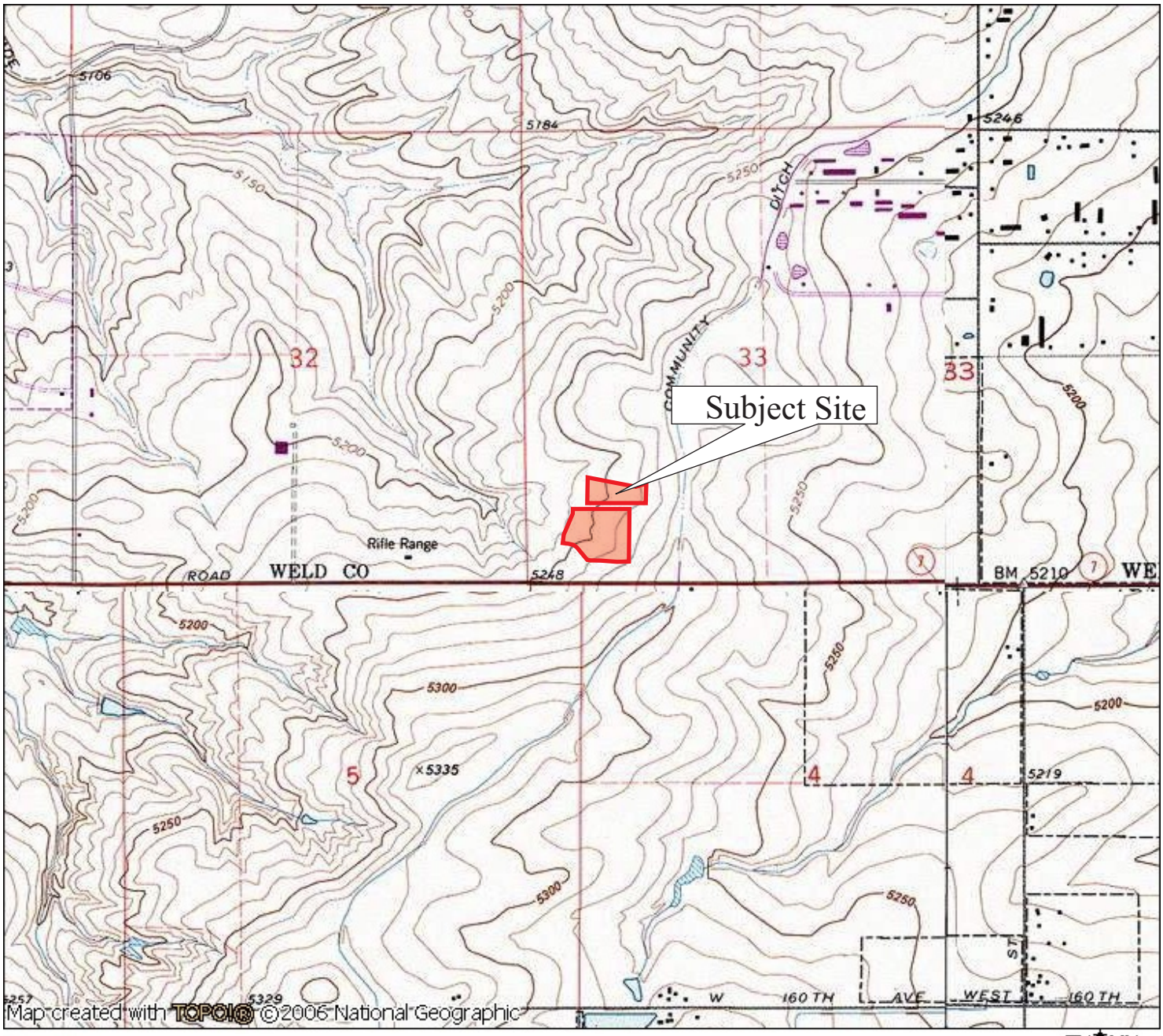
The objectives of this study were to (1) establish presence/absence and potential habitat of any federal or state threatened and endangered species on the property, (2) identify any wetlands or other ecologically sensitive areas on and adjacent to the property, and (3) make practical recommendations based on the results of the study.

View of the site from the east, Colorado National Golf Course to the right

2.0 STUDY AREA

The project site consists of two parcels totaling approximately 14.23 acres within Section 33, Township 1 North, Range 69 West, within the Town of Erie, Weld County, Colorado (Figure 1). The property is part of the Vista Ridge Subdivision located northeast of the intersection of East Baseline Road and Mountain View Boulevard (Figure 2). Ridge View Drive bisects the project site into two parcels. Colorado National Golf Course comprises the northern property boundary, Primrose Preschool borders the property to the northwest, and the Northern Ridge Baptist Church is present to the northeast. Undeveloped properties surround the southern parcel of the project. Properties in dry-farm agricultural production border the site to the south and east, while the lots comprising the western boundary are primarily covered with smooth brome (*Bromus inermis*) and cheatgrass *(Bromus tectorum*). Residential developments are present to the north, west and southwest of the project site.

The subject property was vacant at the time of the investigation. The majority of the site consisted of fallow dry-farm agricultural land dominated by Alfalfa (*Medicago sativa*). Additionally, a small hill, covered with smooth brome and cheatgrass, occurred on the southwestern end of the site. Bunch grass, short native grasses, and Russian thistle (*Salsola australis*) were also present on the site. No woody vegetation was present on the property. The approximate mean elevation of the property is 5,250 feet above sea level (USGS Frederick 7.5 Minute Quadrangle, 1994). The topography is generally flat, with a gradual slope to the west. Site geology includes eolian clays, silts and sands overlying the Cretaceous Age Laramie Formation (Tweto, 1979). The USRCS classifies the soils as Ulm clay loam on 0 to 3% slopes. No streams or stream beds occur on the property.



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and ecology, inc.
2217 West Powers Avenue,
Littleton, Colorado 80120

Figure 1 - Project Location Map,
14.23 Acres within Section 33,
Township 1 North, Range 68 West,
Erie, Colorado

Scale in feet

200 0 200 400

Western environment and ecology, inc. 2217 West Powers Avenue, Littleton, Colorado 80120	Figure 2 - Site Map, 14.23 Acres within Section 33, Township 1 North, Range 68 West, Erie, Colorado

3.0 METHODS

Species that are federally or state listed as threatened or endangered, including federally proposed and candidate species, occurring or having historically occurred in Weld County were considered for this study (Table 1). The county classification was determined by following the Colorado Field Office of the U.S. Fish and Wildlife Service's county checklist (USFWS, 2011). The list was narrowed based on habitat requirements of the species relative to existing habitats on the project.

The property was surveyed on October 22nd, 2014. Information was collected on topography, ecosystems, and species of flora and fauna found on and adjacent to the property. Photographs were taken, and emphasis was placed on potential habitat of threatened and endangered species, and the presence of wetlands.

View of the site from the south

Table 1. Common name, scientific name, and status of federal and state threatened and endangered species that could occur or historically occurred in the Colorado Piedmont (CDOW, 2008; USFWS, 2008).

Common Name	Scientific Name	Status[1]
Birds		
Bald eagle	*Haliaeetus leucocephalus*	ST
Whooping crane	*Grus americana tabida*	FE, SE
Least Tern	*Sterna antillarum*	FE, SE
Mountain plover	*Charadrius montanus*	FPT, SC
Piping plover	*Charadrius melodus*	FT, ST
Mexican spotted owl	*Strix occidentalis lucida*	FT, ST
Plains Sharp-Tailed Grouse	*Tympanuchus phasianellus jamesii*	SE
Western burrowing owl	*Athene cunicularia*	ST
Lesser Prairie Chicken	*Tympanuchus pallidicinctus*	ST
Ferruginous Hawk	*Buteo regalis*	SC
Mammals		
Black-footed ferret	*Mustela nigripes*	FE, SE
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT, ST
Canada Lynx	*Lynx canadensis*	FT, SE
Kit Fox	*Vulpes macrotis*	SE
Black-tailed prairie dog	*Cynomys ludovicianus*	SC
Amphibians		
Boreal Toad	*Bufo boreas boreas*	SE
Northern Leopard Frog	*Rana pipiens*	SC
Plants		
Ute ladies'-tresses	*Spiranthes diluvialis*	FT
Colorado butterfly plant	*Gaura neomexicana coloradensis*	FT
Insects		
Pawnee montane skipper	*Hesperia leonardus montana*	FT

[1]**Status Codes:** FE = Federally Endangered, FT = Federally Threatened, FPT = Federally Proposed as Threatened, FC = Federal Candidate, SE = State Endangered, ST = State Threatened, SC = State Concerned

4.0 RESULTS AND DISCUSSION

4.1 Wetlands

No perennial waters, wetlands or obvious wetland habitat was observed on the project. Vegetation on the site was dominated by non-irrigated Alfalfa (*Medicago sativa*).

Western Environment evaluated, to the best of our ability based upon site conditions at the time of the survey, the three components of a jurisdictional wetland as defined in the US Army Corp of Engineers, (ACOE) Wetland Delineation Manual (1987). These components are: 1) Vegetation, 2) Soil and 3) Hydrology. The ACOE Manual defines *Nonwetlands* as "including upland areas that are neither deepwater aquatic habitats, wetlands, nor other special aquatic sites. They are seldom or never inundated, or if frequently inundated, they have saturated soils for only brief periods during the growing season, and, if vegetated, they normally support a prevalence of vegetation typically adapted for life only in aerobic soil conditions."

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill materials into Waters of the U.S. under the authority of Section 404 of the Clean Water Act. Waters of the U.S. include ephemeral, intermittent and perennial streams, their surface connected wetlands and adjacent wetlands, certain lakes, ponds, drainage ditches and irrigation ditches that have a nexus to interstate commerce.

It is the opinion of Western Environment that the proposed development, as shown on Figure 2, does not impact waters or habitat subject to Corps regulations under Section 404 of the Clean Water Act.

4.2 Wildlife Species Eliminated from Consideration as Occurring on the Project

The following threatened and endangered species that have historically been thought to occur in Weld County were immediately ruled out of serious consideration for this project based on available habitat: Mexican spotted owl, whooping crane, least tern, Canada lynx, kit fox, black-footed ferret, boreal toad, and Colorado butterfly plant.

The Mexican spotted owl was eliminated because it requires forests that are not present on the project. The whooping crane was also eliminated due to rarity in Colorado, and no known nesting or feeding habitat exists on or adjacent to the property. Less than 20 sightings of whooping cranes along the eastern plains and mountainous regions of Colorado have been recorded since 1931 (Andrews and Righter, 1992). The least tern inhabits sandy shorelines of reservoirs, lakes, and rivers with bare sandy shorelines. This shore bird is a casual to very rare spring and fall migrant on the northeastern plains of Colorado, and is unlikely to occur on the subject project.

The Canada lynx is a rare forest-dwelling species of northern latitudes that feeds primarily on snowshoe hares. No lynx habitat or its prey exist on the subject site. The kit fox is only know to occur on Colorado's desert slopes ranging from Montrose to Grand Junction. The black-footed ferret, which was eradicated from the Colorado Piedmont, has only been recently reintroduced in small numbers in northern Larimer and Weld Counties. These are experimental populations under study by the US Fish and Wildlife Service.

Colorado's only alpine species of toad, the boreal toad, has been found in spruce-fir forests and alpine meadows at elevations between 7,000 and 12,000 feet. The toad also requires lakes, marshes, ponds, or bogs with shallow water for breeding. These habitats do not exist on the property.

The Colorado butterfly plant has only been found in northern Larimer County in recent years and is generally associated with streams that do not exist onsite (Colorado Native Plant Society 1997).

4.3 Species Included in Survey

Western Burrowing Owl (*Athene cunicularia*)

State Threatened

The burrowing owl is found primarily in eastern Colorado as a summer resident. Two aspects of the biology of the western burrowing owl appear to influence both its regional and local abundance: 1) it prefers areas of short vegetation, and 2) it rarely, if ever, digs its own burrows. This migratory species is most often seen in Colorado during the summer months. Historically, burrowing owls were common wherever there were prairie dog colonies in northeastern Colorado. During the inspection, no prairie dog colonies were observed on the property.

Western burrowing owl, photo acquired on www.corbis.com.

Bald Eagle (*Haliaeetus leucocephalus*)

State Threatened

The bald eagle was removed from the Federal Endangered and Threatened Species List on July 9th, 2007. Western Environment reviewed the Natural Diversity Information Source (NDIS) and identified no active or inactive bald eagle nests within on or adjacent to the project. In winter bald eagles are transient and use areas that provide feeding and roosting opportunities. There is no permanent water or large trees on the property, therefore, it is unlikely that any bald eagles use the site. The Colorado Oil and Gas Conservation Commission (COGCC) did not indicate that a "Sensitive Wildlife Habitant" as defined by COGCC Series Rule 1200, for Bald Eagle Nesting and Roosting, was located near the subject property.

Mountain Plover (*Charadrius montanus*)

State Concerned Species

Typical habitat characteristics of the mountain plover are a mixture of short vegetation, bare ground, and a flat topography at both breeding and wintering locations. This small shorebird breeds in Colorado, and in parts of its breeding range the species commonly shows a preference for prairie dog towns and sites that are heavily grazed by domestic livestock. Prairie dog grazing promotes the short grasses that the plover prefers, and their digging creates areas of bare soil important for plover nesting. Mountain plovers were proposed for federal listing as threatened on February 16, 1999 (USFWS, 1999b), however the U.S. Fish and Wildlife Service withdrew the proposal on September 8, 2003. Mountain plovers breed in Eastern Colorado from approximately April 1st through August 1st. It is our opinion that no habitat conducive to Mountain Plovers was observed on the project.

Piping Plover *(Charadrius melodus)*

Federally Threatened, State Threatened

This small shorebird can be found on very sparsely vegetated beaches, mudflats and sandy areas near water on shores and islands. Piping Plovers usually arrive in Colorado in late April or early May, and leave when the nesting cycle is completed, or by late August. Nesting populations have been documented in eastern Colorado along the South Platte and Arkansas River drainages. Food sources for Piping Plovers include insects, crustaceans and other small aquatic animals. Plovers feed along beaches, especially in areas where waves have washed up debris (CDOW, 1994). Due to the lack of sandbars or mud-flats in the vicinity of the project, it is unlikely to occur.

Plains Sharp-Tailed Grouse *(Tympanuchus phasianellus jamesii*)

State Endangered

The Plains Sharp-Tailed Grouse historically occurred on Colorado's eastern grasslands. Grouse habitat is characterized by rolling hills with Gambles oak, sage brush, service berries and

grassy glades. This grouse is a resident from Alaska east to the Hudson Bay, and south to northern New Mexico. Currently, Colorado populations occur in Douglas County, northern and eastern Weld County, and Logan County east of Sterling. No known populations of the Plains Sharp-Tailed Grouse are known to occur in proximity to the subject project (CDOW, 2008).

Lesser Prairie Chicken (*Tympanuchus pallidicinctus*)

State Threatened

Historically, this bird occupied the grasslands of Texas, Oklahoma, New Mexico, Kansas and southeastern Colorado. It prefers sandy grassland areas abundant in midgrasses, sandsage and yucca. The majority of Colorado breeding pairs occur in the southeastern portion of the state in Baca, Prowers, Kiowa and Cheyenne Counties, and for the most part, on the Comanche National Grasslands near Campo. No known populations of the Plains Sharp-Tailed Grouse are known to occur in proximity to the subject project (CDOW, 2008).

Ferruginous Hawk (*Buteo regalis*)

State Concerned

This hawk is known to occur throughout eastern Colorado and in northwestern Colorado. In Colorado, the species is a common winter resident, but is considered an uncommon summer resident on the eastern plains (Andrews and Righter, 1992). Areas that could be potential nesting sites include large trees, rock outcrops, manmade structures such as windmills and power poles, or the ground. These birds often can be seen associated with prairie dog colonies, which they utilize for foraging. This hawk, as are all birds of prey, is federally protected under the Migratory Bird Species Act.

Preble's Meadow Jumping Mouse

(*Zapus hudsonius preblei*)

Federally Threatened, State Threatened

Preble's meadow jumping mouse

Typical Preble's habitat has been described as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity," and "dense herbaceous vegetation consisting of a variety of grasses, forbs and thick shrubs" (Armstrong et al., 1997). Although any vegetation could offer cover and hibernacula for Preble's, the species is mostly known from habitat containing shrub cover, such as willow or narrow-leaf cottonwood.

Preble's are known to regularly range outward into adjacent uplands to feed and hibernate. For this reason, the U.S. Fish and Wildlife Service generally requires a 300 foot development buffer from the edge of the 100 year flood plain. Although Weld County is not contained within the USFWS Denver Metropolitan area Block Clearance Zone (BCZ), riparian habitat with a permanent water source likely suitable to Preble's was not observed on or adjacent to the project site.

Black-tailed Prairie Dog (*Cynomys ludovicianus*)

Former Candidate for Federal Listing, *State Concerned*

The U.S. Fish and Wildlife Service was petitioned to list the black-tailed prairie dog as a threatened species in July of 1998. The agency determined on February 3rd, 2000, that listing the species was warranted, but it was precluded because other species were in greater need of protection (USFWS, 2000). The black-tailed prairie dog was added to the candidate list, and the species' status was reviewed annually. On August 12th, 2004 the USFWS determined that the black-tailed prairie dog no longer meets the Endangered Species Act definition as threatened, and

was removed as a candidate for federal listing. The City of Erie, and Weld County have prepared Administrative Procedures and Policies for Prairie Dog Management. The inspection of the subject property identified no prairie dog colonies.

Ute Ladies'-Tresses Orchid

Ute Ladies'-Tresses Orchid (*Spiranthes diluvialis*)

Federally Threatened

This orchid usually occurs in "...old stream channels, alluvial terraces, wet meadows, and other sites where the soil is saturated to within 18" of the surface at least temporarily during the growing seasons" (USFWS, 1992). The eastern Colorado populations of species are located in mesic riparian meadows in relict tall grass prairie areas near Boulder Creek, South Boulder Creek, and Saint Vrain Creek in Boulder County, Colorado, and in mesic meadows in the riparian woodland understory along Clear Creek in Jefferson County, Colorado (USFWS 50 CFR Part 17). One population was historically identified in Weld County east of Greeley near Crow Creek in 1856, but is now considered extirpated. Soil conditions and vegetation composition of known *Spiranthes* sites suggest that wetlands regulated by the Corps under the Clean Water Act qualify as potential *Spiranthes* habitat. Orchid surveys are required in Boulder and Jefferson Counties, and in the 100-year flood plains and perennial tributaries of the South Platte River, Fountain Creek, and the Yampa Rivers if construction is expected to impact these areas (USFWS 1992). Generally, these surveys must be completed during blooming season (July 20 to August 31). It should be noted that the survey is only required in areas where proposed construction activities are to occur in potential *Spiranthes* habitat, and only when a **Federal** permit (for instance a permit to place fill materials into a Waters of the U.S. under Section 404 of the Clean Water Act) or **Federal** funding is utilized for an activity in those habitats. If a Federal

permit or funding is needed for an activity on the project, the agency responsible for issuing the permit or providing the funds would consult the Service to determine how the action may affect the species or its designated critical habitat. The Service would then work with the agency and/or landowner to modify the project and minimize impacts. No perennial waters occur on the property, nor is *Spiranthes* designated Critical Habitat. It is the opinion of Western Environment that *Spiranthes* does not inhabit the project.

Pawnee montane skipper (*Hesperia leonardus montana*)

Federally Threatened

This butterfly occurs in dry, open Ponderosa pine woodlands at an elevation range of 6,000 to 7,000 feet within the Pikes Peak Granite formation. Assessment of the skipper indicates that the insect's habitat is centered near Deckers, Colorado, with their range estimated to be 37.9 square miles (USFWS, 1998). The adult butterflies emerge from their pupae in late July for feeding and mating. The females then deposit their eggs on the leaves of blue grama grass, the larval food supply. Little is known about the larval and pupal stages of the species. Recent surveys of the skipper suggest that their populations may be at an all time high (recorded) after the Hayman Fire of 2002 (Colorado Natural Heritage Program, January 2005). This is likely due to the necessity of fire to remove trees, and promote herbaceous grass growth including blue grama and gayfeather on the forest floor. The subject project does not occur in known Pawnee montane skipper habitat.

Other Wildlife

Western Environment did not observed any wildlife on, or adjacent to the project site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

At the time of the survey, no threatened or endangered species or their obvious habitat were seen on the subject site. Additionally, no wetlands or Waters of the U.S. subject to regulation under Section 404 of the Clean Water Act occur on the project.

No ecological issues were identified with the site.

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Cultural Resource File Search – Montex North at Vista Ridge

A cultural resource file search was conducted by History Colorado on October 30, 2014. The file search included historical, cultural resources, archaeological and paleontological data base review. As shown on the attached History Colorado letter, 5 sites and 2 surveys were located in the vicinity of the project area. Further analysis indicates that the sites and surveys were not located on the Montex North site.

HISTORY COLORADO
Office of Archaeology and Historic Preservation
1200 Broadway, Denver, Colorado 80203

Mr. Sean O'Hearn
Enertia Consulting Group
1437 Larimer Street,
Denver, CO 80202

October 30, 2014

Re: Vista Ridge Filing 14, Montex at Vista Ridge
File Search No. 18544

At your request, the Office of Archaeology and Historic Preservation has conducted a search of the Colorado Inventory of Cultural Resources located in the following areas:

PM	T	R	S
6th	1N	68W	33

5 sites and 2 surveys were located in the designated area(s).

If information on sites in the project area was found, detailed information follows the summary. If no sites or districts were found, but surveys are known to have been conducted in the project area, survey information follows the summary. We do not have complete information on surveys conducted in Colorado, and our site files cannot be considered complete because most of the state has not been surveyed for cultural resources. There is the possibility that as yet unidentified cultural resources exist within the proposed impact area.

Therefore, in the event there is Federal or State involvement, we recommend that a professional survey be conducted to identify any cultural resources in the project area, which are eligible to be listed in the National Register of Historic Places. We look forward to consulting with you regarding the effect of the proposed project on any eligible cultural resource in accordance with the Advisory Council on Historic Preservation Procedures and the Preservation and Protection of Historic and Cultural Resources (36 CFR 800). Please provide this office with the results of the cultural resource survey for our review of professional adequacy and compliance with regulations.

If you have any questions, please contact the Office of Archaeology and Historic Preservation at (303) 866-3395 or 3392.

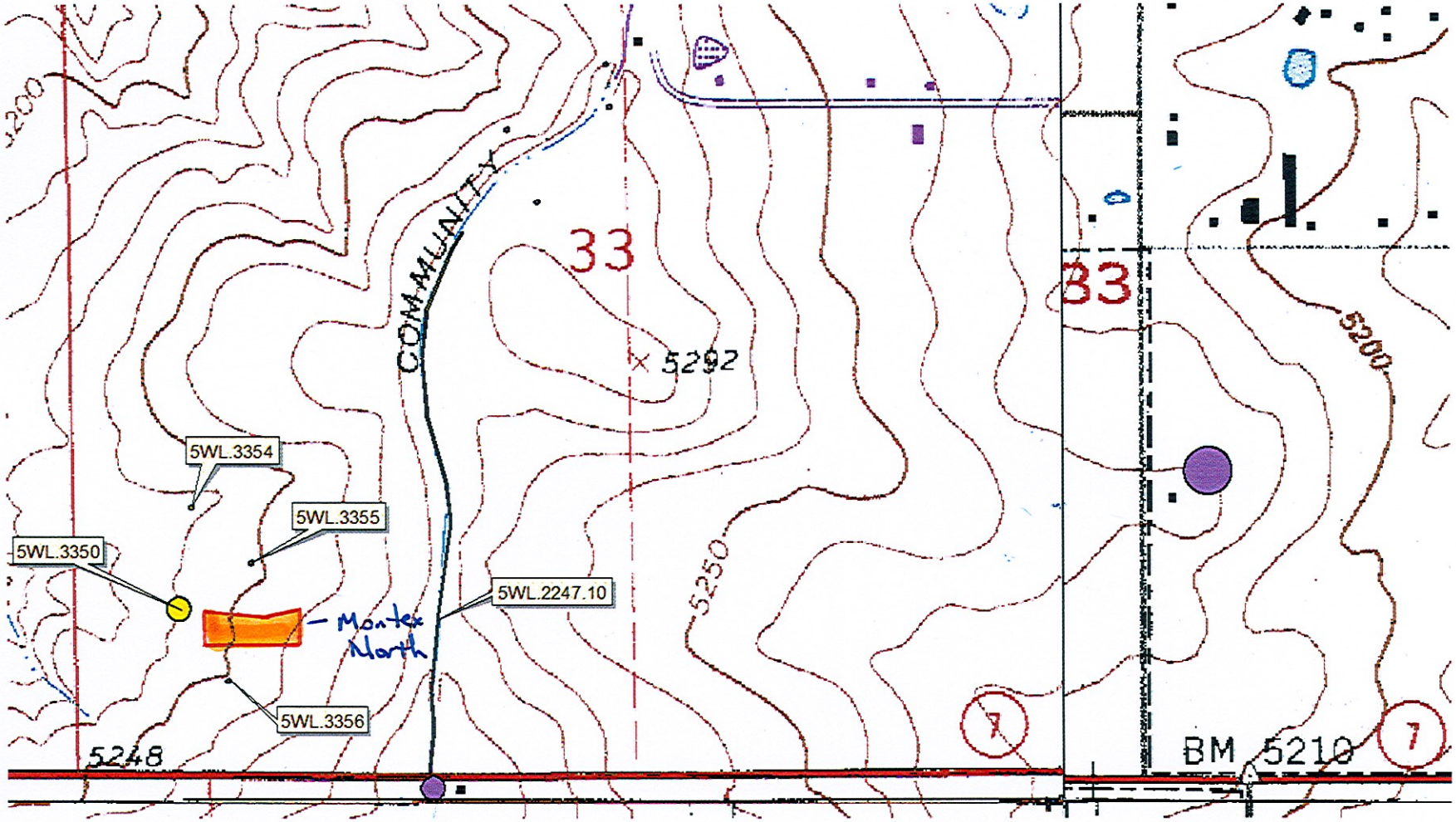
Thank you for your interest in Colorado's cultural heritage.

Richard Wilshusen
Deputy State Historic Preservation Officer for Archaeology
State Archaeologist

Kevin Black
Assistant State Archaeologist

*Information regarding significant archaeological resources is excluded from the Freedom of Information Act. Therefore, legal locations of these resources must not be included in documents for public distribution.

18544_s/18544_sy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5WL.3350
5WL.2247.10
Monte North
5WL.3356
5248
BM 5210
7
7

Sean O'Hearn

From: ., HC_FileSearch
Sent: Friday, October 31, 2014 8:07 AM
To: Sean O'Hearn
Subject: Re: new file search in Erie CO

Hi Sean,

Sure I can measure those distances. From the ditch, 5WL3356 is due west 305 meters (1000 feet), and from Highway 7 it is due north 140 meters (459 feet).

Again, sorry I wasn't able to definitively say whether these resources were in or out. I usually can work from a map of a project area and do that.

One thing to note is 5WL3356 was just what is called an Isolated Find. That means a single or few artifacts with no evidence for any longer use or occupation were all that was found. In the case of 5WL3356 it was just a single piece of historic glass. Isolated finds are not eligible, by definition, to the National Register of Historic Places.

Bob

On Thu, Oct 30, 2014 at 3:03 PM, Sean O'Hearn <sean.ohearn@enertiacg.com> wrote:

Thanks for the help Bob. The only resource area that may be on the site is 5WL.3356. Using your system, can you approximately measure the distance from 5WL.3356 to the irrigation ditch and to SH 7? That will help us locate our site on your map, in lieu of sending a shape file (we don't have that capability).

This has certainly been the most interesting site we've worked on together! Thanks again. Sean

From: ., HC_FileSearch [mailto:hc_filesearch@state.co.us]
Sent: Thursday, October 30, 2014 10:57 AM

To: Sean O'Hearn
Subject: Re: new file search in Erie CO

Hi Sean,

Attached you will find a file containing information on the sites and surveys we have in our database for the legals you requested. The file is in a flat ASCII format. The fields are comma delimited and the values within those fields are ">" delimited. Our fields are all of unlimited length and should all be treated as character. On the following page you will find a list of the fields in the order that they appear in the file as well as a description of each. I hope all of this helps. If you have any further questions please feel free to call me at (303) 866-5216.

Sincerely,
Robert Cronk

File: Sites

FIELD NAMES	DESCRIPTION
ID	Smithsonian Trinomial assigned to the site.
SITE.NAME	Name of the site.
RESOURCE.TYPE	The resource type as defined by the National Register.
ADDRESS	The address of the resource.
ASSESSMENT	The status of the site in regards to its eligibility to the National Register.
ASSESSMENT.DATE	The date that the assessment was made.
ORGANIZATION	The name of the organization that recorded the site.
RECORDING.DATE	The date that the site was recorded.
CONDITION	The integrity of the site as well as if it has been tested, excavated or vandalized.
CONDITION.DATE	Date associated with condition.
SITE.DOC.ID	Unique ID number of the document in which the site is referenced.
SITE.DOC	The name of the document in which the site is referenced.
ARCHAEOLOGICAL.TYPE	Type of site.
CULTURE	The culture of the people who created the site.
FEATURE	Features found on the site.
FEATURE.COUNT	How many of each feature type found on the site.
ARTIFACT	Artifacts found on the site.
ARTIFACT.COUNT	How many of each artifact type found on the site.
ARCHITECTURE.SITE.TYPE	Historic site type.
ARCHITECTURE.ORIGINAL.USE	The original use of the building. Also may be the type of architectural site.
ARCHITECTURE.PRESENT.USE	The present use of the building. Yet another category where the historians may have stuck the architectural site type.
ARCHITECTURE.STYLE	Architectural style of the property.
ARCHITECTURE.FEATURES	Features and unusual aspects of the property, i.e. gargoyles.
ARCHITECTURE.ARCHITECT	Name of the architect of the property.
ARCHITECTURE.INTEGRITY	Condition of the property as compared to when it was built.
ARCHITECTURE.EARLY.DATE	Earliest date that the property could have been constructed. If there is only an early date, then it is the exact date construction.
ARCHITECTURE.LATE.DATE	Latest date that the property could have been constructed. With early date the date range in which the property was built.
PRINCIPAL.MERIDIAN	Principal Meridian in which the site is located.
TOWNSHIP	Township in which the site is located.
RANGE	Range in which the site is located.
SECTION	Section in which the site is located.
MAPS	The names of the USGS Topographical Quadrangles on which the site is located.
*ZONE.EAST	The zone and easting coordinate of the UTM in a ##;###### format, where the ##; represents the zone.
*NORTH	The northing coordinate of the UTM in a ####### format.

*If the site area is less than 10 acres, then a center point is given. If the area is greater than 10 acres it will be enclosed in a polygon of UTMS. All UTMs are figured from NAD 83.

File: survey

FIELD NAMES	DESCRIPTION
ID	This a unique number assigned to each survey. The first two letters are the county code abbreviation, the next two letters are the lead agency abbreviation. This is followed by either an R# or an NR#. R means that there were results, NR no results. The number is just the next sequential number for that county and lead agency. EX: DL.LM.R10 is a positive survey in Dolores county where the BLM was the lead agency.
NAME	The name of the survey.
PROCEDURE	How the survey was done, ie block, linear etc.
COUNTY	The county(s) in which the survey was located.
LEAD.AGENCY	The lead agency of the undertaking.
INSTITUTION	The name of the contractor that performed the survey.
DOC.AUTHOR	Whomever wrote the report.
DOC.NAME	The name of the document associated with this survey. More times than not this will be the same as the name of the survey.
METHOD	The type of survey performed,ie Class I, Class II, Class III
COMPLETION.DATE	The last day of fieldwork for the survey
ACRES.TOTAL	Number of acres surveyed.
SITE.COUNT	Number of sites recorded.
IF.COUNT	Number of isolated finds recorded.
MAPS	The name of the map(s) on which the survey is located.
PMTRSQ	Prime meridian, Township, Range Section and quarter sections in which the survey was located.
*ZONE.EAST	The easting coordinate of the UTM in a ##;###### format where the ##; represents the zone.
*NORTH	The northing coordinate of the UTM in a ####### format.

*If the survey took place on unsectioned land, there will be utms. A center point is given if the area surveyed was less than 10 acres. If it is greater than 10 acres the area will be enclosed in a polygon of UTMS. All UTMs are figured from NAD 83.

Native Tree and Vegetation Survey: Not applicable, there are no trees on the site.

Preliminary Geotechnical Engineering Report

FAIRWAYS AT VISTA RIDGE
RIDGE VIEW DRIVE AND
MOUNTAIN VIEW BOULEVARD
ERIE, COLORADO

Prepared for:

Chartered Development Corporation
1965 Fairway Pointe Drive
Erie, Colorado 80516

Prepared by:

Pickering, Cole & Hivner, LLC
PCH Project No. 12.139.13

March 24, 2014

March 24, 2014

Chartered Development Corporation
1965 Fairway Pointe Drive
Erie, Colorado 80516

Attn: Mr. Ward Ritter

Re: Preliminary Geotechnical Engineering Report
Fairways at Vista Ridge Residential Development
Ridge View Drive and Mountain View Boulevard
Erie, Colorado
PCH Project No. 12.139.13

Pickering Cole & Hivner, LLC (PCH) has completed a preliminary geotechnical engineering investigation for the proposed residential development to be located east of the subject intersection in Erie, Colorado. This study was performed in general accordance with our Proposal and Agreement for Services executed April 24, 2013.

This letter summarizes subsurface conditions and key geotechnical considerations. The entire report should be read and used for site design preliminary structure design, and construction planning purposes. Particular attention should be given to the items noted below and to the section of the report titled General Comments for an understanding of the report limitations.

- **Subsurface Conditions:** Existing fill, consisting of lean clay and claystone bedrock fragments was encountered in Boring Nos. 1 and 4 and extended to a depth of about 4 feet below existing site grade. The near-surface soils encountered in the remainder of the borings at the site consisted of lean clays with varying amounts of sand. Sedimentary claystone and sandstone bedrock was encountered below the fill and native clays at depths ranging from about 4 to 10 feet below the ground surface and extended to the full depth of exploration. Groundwater was encountered in two of the eight borings at depths ranging from about 19 to 20 feet below existing site grade.

- **Expansive Soils and Bedrock:** The clay overburden soils and underlying claystone bedrock materials have variable swell potential, ranging from low to very high. This report provides recommendations to help mitigate the effects of soil shrinkage and expansion. However, even if these procedures are followed, some movement and at least minor cosmetic cracking in the structures, flatwork, etc. should be anticipated. Even with the measures recommended in this report, this movement may cause minor cosmetic distress that is common in this geologic region.

- **Foundations and Floor Slabs:** Considering the size and type of construction planned and the subsurface conditions encountered in our test borings, we have evaluated two foundation systems that can be considered for support of the structures on the site. These include deep foundations such as straight shaft piers (caissons), micropiles, or helical piles drilled into bedrock or shallow foundations

such as spread footings or post-tensioned slabs. We feel that deep foundations best mitigate the risk of post-construction movement where expansive soils are present. It has been our experience that this alternative is typically cost prohibitive for large residential buildings, such as the planned four-plex "Manor Home" buildings.

If the use of shallow foundations is desired, in our experience the expansive potential of the clay soils and bedrock may be reduced by subexcavation, moisture conditioning, and recompaction of these materials. This process does not mitigate the potential for movement as effectively as deep foundations, ***however, we believe that the magnitude of movement can be reduced to tolerable levels by supporting shallow foundations and floor slabs on a sufficient zone of properly compacted fill. In general, we believe on-site soils would be acceptable for use in this fill zone. Additional details are discussed in the report.***

- **Pavement Design and Structural Sections**: Based on the poor quality clay soils and *assumed* traffic volumes, we estimate light-duty pavements for automobile parking areas should include a minimum of 5-½ to 6 inches of asphalt concrete or, alternately, 5 inches of Portland cement concrete. Heavy-duty pavements such as fire lanes, main drive isles, and driveways should include a minimum of 6-½ to 7 inches of asphalt concrete or, alternately, 6 inches of Portland cement concrete.

  The Town of Erie typically requires the use of a composite section of asphalt concrete over aggregate base course and the Town Standards also require the installation of edge drain behind the curb along public roads. These measures will be required for any public roadway improvements and should be considered for private roadway construction as well.

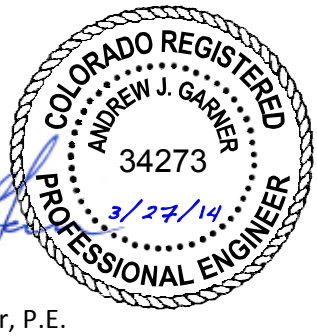
- **Surface Drainage:** The amount of movement associated with foundations, floor slabs, pavements, etc. is typically related to the wetting of underlying supporting soils. Therefore, it is imperative that surface water be directed away from foundations and other critical elements where movement must be held to a minimum. The recommendations outlined in the "Surface Drainage" section of this report should be used by the project Civil Engineer to develop grading plans that promote rapid runoff of storm water. Landscaping should be designed to minimize the amount of irrigation needed in proximity of the foundations.

This report should not be used for final structural design. Supplemental exploration is required for final design (typically a minimum of one boring per structure is recommended in this geologic region). These additional services will be used to develop final structural design parameters and to confirm and/or modify the preliminary recommendations and conclusions contained in this report.

We appreciate being of service to you in the geotechnical engineering phase of this project, and are prepared to assist you during the construction phases as well. Please do not hesitate to contact us if you have any questions concerning this report or any of our testing, inspection, design and consulting services.

Sincerely,

Pickering, Cole & Hivner



Glenn D. Ohlsen, P.E.
Staff Engineer

Andrew J. Garner, P.E.
Senior Project Manager

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PRELIMINARY GEOTECHNICAL ENGINEERING REPORT

FAIRWAYS AT VISTA RIDGE RESIDENTIAL DEVELOPMENT
RIDGE VIEW DRIVE AND MOUNTAIN VIEW BOULEVARD
ERIE, COLORADO

PCH Project No. 12.139.13
March 24, 2014

INTRODUCTION

This report contains the results of our preliminary geotechnical engineering exploration for the proposed residential development to be located east of the intersection of Ridge View Drive and Mountain View Boulevard in Erie, Colorado.

The purpose of these services is to provide initial subsurface information and geotechnical engineering recommendations relative to:

- Subsurface soil and bedrock conditions
- Groundwater conditions
- Site preparation and earthwork
- Preliminary structure foundation alternatives
- Below-grade construction
- Floor slab construction
- Preliminary pavement sections
- Surface and subsurface drainage

The recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, our experience with similar soil conditions, similar projects, and our understanding of the proposed project.

PROJECT INFORMATION

Based on the information provided, we understand that the project will include the construction of approximately 56 single-family cluster homes and 24 four-plex "Manor Home" apartment buildings on approximately 14 acres of vacant land. The site is located east of the intersection of Ridge View Drive and Mountain View Boulevard and includes Lot 33 of Vista Ridge Subdivision and Lot 2, Vista Ridge Filing No. 2 Minor Subdivision. Approximately 4 acres of the property is located north of Ridge View Drive and the remainder of the property is located south of Ridge View Drive.

We understand that the proposed single-family residences will include one to two stories of wood-framed construction over concrete basement foundations. We understand the apartment buildings will include two stories of wood framing over at grade foundations. We assume that all structures will include attached, at-grade garages.

The site was previously graded as part of the overall development, however, we assume some grading of the site will be required to install infrastructure and provide site drainage. We estimate that maximum earthen cut and fill depths on the order of about 5 to 8 feet could be required, exclusive of any sub-excavation that may be necessary to mitigate swell potential of the expansive soils and bedrock known to be present in the area.

Other major site development will include the installation of utilities, as well as the construction of private asphalt concrete and/or Portland cement concrete parking areas, and site landscape improvements. We assume that roadways within the development will be privately maintained and not subject to the Town of Erie roadway design standards.

If our assumptions noted herein are inaccurate or if you have additional information that may be useful, please forward at your convenience.

SITE EXPLORATION PROCEDURES

The scope of the services performed for this project included a preliminary-phase subsurface exploration program, laboratory testing, and engineering analysis.

Field Exploration: Our scope of services included geotechnical exploration of the subsurface materials by advancing eight, widely-spaced test borings on the site, shown on the Boring Location Diagram included in Appendix A. Borings were advanced to depths ranging from about 25 to 35 feet below existing site grades with a truck-mounted drilling rig utilizing 4-inch diameter, solid-stem auger.

Our field engineer recorded lithologic logs of each boring during the drilling operations. At selected intervals, samples of the subsurface materials were obtained by driving Modified California split-barrel samplers. Penetration resistance measurements were obtained by driving the sample barrels into the subsurface materials with a 140-pound manual hammer falling 30 inches. The penetration resistance value is a useful index to the consistency, relative density or hardness of the materials encountered.

Groundwater measurements were conducted in each boring at the time of site exploration and a minimum of two days later.

Laboratory Testing: Samples retrieved during the field exploration were returned to our laboratory for observation by the project geotechnical engineer, and were classified in general accordance with the Unified Soil Classification System described in Appendix C. Samples of bedrock were classified in general

accordance with the general notes for Rock Classification. At that time, an applicable laboratory-testing program was formulated to determine engineering properties of the subsurface materials. Following the completion of the laboratory testing, the field descriptions were confirmed or modified as necessary, and Boring Logs were prepared. These logs are presented in Appendix A.

Laboratory test results are presented in Appendix B. These results were used for the geotechnical engineering analyses and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable local or other accepted standards.

Selected soil and bedrock samples were tested for the following engineering properties:

- Water content
- Dry density
- Consolidation/Swell
- Moisture-Density relationship
- Grain size
- Plasticity Index
- Water soluble sulfates
- Remolded swell potential

SITE CONDITIONS

The site is located east of the intersection of Ridge View Drive and Mountain View Boulevard in Erie, Colorado. As discussed, approximately 4 acres of the property is located on the north side of Ridge View Drive, with the remainder located south of that roadway. The northern parcel is bound by a golf course (Colorado National Golf Club) to the north and private schools (Vista Ridge Academy and Primrose School) to the east and west. The southern parcel is bound by undeveloped land on the east and south, and a large soil stockpile and regional stormwater detention area to the west.

Vegetation includes a sparse to moderate growth of native grasses and weeds. We were not provided with any topographic information, however, the site appears to slope gently down to the west, with the exception of the soil stockpile. We estimate that the overall topographic relief to be on the order of about 20 feet or more across the site. Site drainage was generally in the form of sheet surface flow directed to the west.

SUBSURFACE CONDITIONS

Geology: Surficial geologic conditions at the site, as mapped by the U.S. Geological Survey (USGS) ([1]Colton, 1977), primarily consist of Loess (Mantles pre-Broadway alluvium) of Pleistocene Age. These materials are described as fine-grained silt, clay and sand. Thickness of this is reported up to 12 feet.

Bedrock underlying the surface units consists of the Laramie Formation of Upper Cretaceous Age. The upper part of the formation is reported to include claystone, shale, sandy shale, and scattered lenticular

[1] Colton, R.B., and Anderson, L.W., 1977, ***Preliminary Geologic Map of the Erie Quadrangle, Boulder, Weld, and Adams Counties, Colorado,*** United States Geological Survey, Map MF-882.

beds of sandstone and lignite. The thickness of this upper unit is reported to be on the order of 600 to 700 feet in thickness.

Mapping completed by the Colorado Geological Survey ([2]Hart, 1972) indicates the site includes soils and bedrock considered to possess "High to Very High Swell Potential". The expansive materials generally include the clay overburden soils and clayey bedrock.

Due to the relatively flat nature of the site, geologic hazards at the site are anticipated to be low. In addition, based upon review of the maps showing the extent of mining in the Boulder-Weld coal field for the area ([3]Roberts, Hynes, and Woodward, 2001), the project is located outside of areas identified as being underlain by past mine workings. A detailed evaluation of subsidence potential is beyond the scope of this study. However, it is our opinion that the planned construction should not cause significant subsidence.

Due to the relatively flat nature of the site, other geologic hazards at the site are anticipated to be low. Seismic activity in the area is anticipated to be low, and the property should be relatively stable from a structural standpoint. With proper site grading around proposed structures, erosional problems at the site should be reduced.

Soil and Bedrock Conditions: Existing fill, consisting of lean clay and claystone bedrock fragments was encountered in Boring Nos. 1 and 4 and extended to a depth of about 4 feet below existing site grade. The near-surface soils encountered in the remainder of the borings at the site consisted of lean clays with varying amounts of sand. Sedimentary claystone and sandstone bedrock was encountered below the fill and native clays at depths ranging from about 4 to 10 feet below the ground surface and extended to the full depth of exploration.

Field and Laboratory Test Results: Field test results indicate that the native and fill clay soils are very stiff to hard in consistency. The bedrock is medium hard to very hard in hardness.

Samples of the existing clay soils and claystone bedrock exhibited moderate to very high expansion upon wetting in our laboratory. Water-soluble sulfate testing indicated moderate to severe concentrations ranging from 300 to 1,600 parts per million (ppm).

Groundwater Conditions: Groundwater was encountered in Boring 4 at a depth of about 21 feet below existing site grade during drilling. The other borings remained dry immediately after drilling. When checked a minimum of two days later, groundwater was encountered in Boring Nos. 4 and 8 at depths of about 19 to 20 feet below grade. Groundwater was not present in the remaining borings at that time.

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[2] Hart, Stephen S., 1972, ***Potentially Swelling Soil and Rock in the Front Range Urban Corridor, Colorado***, Colorado Geological Survey, Sheet 1 of 4.

[3] Roberts, S.B., Hynes, J.L., and Woodward, C.L., 2001, ***Maps showing the extent of mining, locations of mine shafts, adits, air shafts, and bedrock faults, and thickness of overburden above abandoned coal mines in the Boulder-Weld coal field, Boulder, Weld, and Adams Counties, Colorado***, United States Geological Survey, Geologic Investigations Series I-2735.

These observations are only representative of the locations explored at the time of our exploration and may fluctuate seasonally, particularly in the southern lower extents of the site.

Based upon review of U.S. Geological Survey Maps ([4]Hillier, et al, 1983), regional groundwater beneath the project area is mapped as an area where localized water-table aquifers occur in colluvial and aeolian deposits, and in sedimentary bedrock. Depth to water table generally ranges from 5 to 20 feet.

ENGINEERING RECOMMENDATIONS

Geotechnical Considerations: Based on the information obtained from our subsurface exploration, laboratory testing, and a cursory review of geologic conditions, it is our opinion that the site appears suitable for development of the proposed project provided the recommendations in this report are followed. The following primary geotechnical considerations were identified:

- **Expansive Soils and Bedrock:** ***Expansive soils and bedrock are a geologic hazard that is present at this site and will impact the design, construction, and performance of foundations, exterior flatwork, pavements and other features of the development.*** Geologic mapping by the USGS and our laboratory test data indicate the clay soils and bedrock materials range from low to very highly expansive. These materials are common in vicinity of the site, and when subjected to normal post-construction wetting, commonly result in uneven floor slabs or foundation movement causing mostly cosmetic distress such as uneven door and window frames, drywall cracking, etc. ***The risk of this distress will increase if excessive wetting or drying of the expansive soils is allowed to occur. This wetting could be due to excessive irrigation, poor surface drainage, water line breaks, or other items outside of our control. Therefore, site maintenance is critical.***

  Based on our experience with similar materials and testing of select samples from this site, we believe that subexcavation, adding significant moisture, and recompaction of these soils will result in significantly reducing the expansive potential of the native soils and bedrock (essentially "pre-swelling" the materials). This process is commonly used to substantially reduce, but not eliminate, the risk of movement and distress associated with this geologic hazard.

- **Foundations and Floor Slabs:** Considering the size and type of construction planned and the subsurface conditions encountered in our test borings, we have evaluated two foundation systems that can be considered for support of the structures on the site. These include deep foundations such as straight shaft piers (caissons), micropiles, or helical piles drilled into bedrock (caissons) or shallow foundations such as spread footings or post-tensioned slabs. We feel that deep foundations best mitigate the risk of post-construction movement where expansive soils are present. It has been our experience that this alternative is typically cost prohibitive for large residential buildings, such as the planned four-plex Manor Home buildings.

[4] Hillier, Donald E.; and Schneider, Paul A., Jr., 1979, ***Depth to Water Table (1976-1977) in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado***, United States Geological Survey, Map I-856-I.

If the use of shallow foundations is desired, in our experience the expansive potential of the clay soils and bedrock may be reduced by subexcavation, moisture conditioning, and recompaction of these materials. This process does not mitigate the potential for movement as effectively as deep foundations, ***however, we believe that the magnitude of movement can be reduced to tolerable levels by supporting shallow foundations and floor slabs on a sufficient zone of properly compacted fill. In general, we believe on-site soils would be acceptable for use in this fill zone. Additional details are discussed below.***

Earthwork and Site Development:

- **General Considerations:** The following presents our initial recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project based on the limited plans provided and common construction methods. As the design plans are finalized, these recommendations should be refined accordingly.

  All earthwork on the project should be observed and evaluated by PCH. The evaluation of earthwork should include observation and testing of engineered fills, subgrade preparation, foundation bearing soils and other geotechnical conditions exposed during the construction of the project.

- **Site Preparation:** Strip and remove existing vegetation, debris, and any other deleterious materials from the site. Stripped materials consisting of vegetation and organic materials should be wasted from the site or stockpiled for use in re-vegetation of non-structural areas of the site.

  It is anticipated that excavations for the proposed construction can be accomplished with conventional heavy-duty earthmoving equipment. However, excavations penetrating the bedrock may require ripping or jack-hammering to advance excavations.

  The stability of the site subgrade may be affected by precipitation, proximity to groundwater, detention ponds, repetitive construction traffic, or other factors. If unstable conditions are encountered or develop during construction, workability may be improved by scarifying and aeration. Gravel augmentation or chemical treatment could also be considered for very soft areas.

- **Fill Materials:** The on-site materials are generally considered suitable for use in fill zones beneath structures and new pavements. Evaluation of the stockpiled soils was not included in our scope of services, however, if similar to the on-site materials, the stockpiled materials may be re-used as fill on the site. Clay soils and bedrock materials should be processed to a soil-like consistency, with a maximum fragment size of about 2 to 3 inches. All fill soils will require moisture conditioning prior to compaction.

Imported soils (if required) should conform to the following:

Gradation	**Percent finer by weight (ASTM C136)**
6"	100
3"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	20-60

- Liquid Limit ..... 45 (max)
- Plasticity Index ..... 20 (max)
- Maximum expansive potential (%)* 1.0

*Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about optimum water content. The sample is confined under a 500 psf surcharge and submerged.

Fill Placement and Compaction: Subgrade soils beneath new fill, engineered fills used to bring the site to construction grade, fill beneath structures, and other backfill soils should be placed and compacted according to the recommendation in the following table:

Criteria	**Recommended values**
Lift Thickness	8 to 12 inches, depending on compaction equipment
Moisture Content Range	• Clay soils: +1% to +4% over optimum • Imported Sand soils: -2% below to +3% above optimum • Pavement areas: Optimum to +2% above optimum
Compaction	On-site clays: ASTM D698 standard Proctor dry density • Upper fill soils and subgrade soils: 95% minimum • > 12 ft below finished grade: 98% minimum Imported sands: ASTM D1557 modified Proctor dry density • Below foundations: 98% minimum • All other areas: 95% minimum

At a minimum, fill soils placed for site grading, beneath structures, utility trench backfill, and pavement subgrade soils should be tested to confirm that earthwork is being performed according to our recommendations and project specifications. Subsequent lifts of fill should not be placed on previous lifts if the moisture content or dry density is determined to be less than specified. We also recommend that the in-place fill materials comprised of on-site clay be tested for expansion potential frequently to that the fill mass is low expansive.

Excavation and Trench Construction: Excavations into the native clays and bedrock are expected to stand on relatively steep temporary slopes. All excavations should be sloped, shored, and/or dewatered in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards. Individual contractors are responsible for providing OSHA competent personnel to evaluate the safety of excavations on the site daily.

The soils to be penetrated by the proposed excavations may vary significantly across the site. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are encountered at the time of construction, the actual conditions should be evaluated to determine any excavation modifications necessary to maintain safe conditions.

As a safety measure, it is recommended that all vehicles and soil piles be kept to a minimum lateral distance from the crest of the slope equal to no less than the slope height. The exposed slope face should be protected against the elements.

Preliminary Structure Foundation Design: As discussed, foundation designs should be based on additional subsurface exploration and analyses for each building. We have evaluated the use of deep and shallow foundation systems for support of the proposed residential structures at the site. Deep foundations would include grade beams supported on straight shaft drilled piers (caissons), micropiles, or helical piles drilled into bedrock. Shallow foundations would include spread footings or post-tensioned slab-on-grade foundations bearing either on a zone of tested and approved engineered fill.

Deep Foundations: Straight shaft drilled piers (caissons) socketed into the deeper bedrock materials are commonly used in this region to mitigate the risk of post-construction movement associated with wetting of the expansive soils/bedrock. We are available to discuss the use of micropiles as well. Helical piles are most likely not feasible due to the shallow bedrock conditions.

Drilled piers are designed to extend through the upper zones of expansive materials to bear in the deeper bedrock materials that are not as likely to experience significant movements. Cast-in-place concrete grade beams are used to span between piers, and a void space is constructed below the grade beam.

Based on our limited study and the shallow bedrock beneath most of the site drilled pier lengths would likely range from about 35 to 40 feet from current site grades. Drilling to the likely design depths should be possible with the heavy-duty caisson drill rigs commonly used in the area.

Some hard bedrock lenses should be anticipated, and the drilling contractor may need to use specialized drilling equipment or techniques to achieve the required length/penetration below these lenses.

Our experience in the area suggests that the bedrock formation can also contain water-bearing seams. This condition, if encountered during drilling, will at least require the use of a concrete pump truck with a tremie extension to discharge concrete at the bottom of the pier hole in order to displace excessive water. Where dry or relatively dry conditions are encountered during pier drilling and no caving of the overburden soil occurs, it will probably be possible to construct the pier using "drill and pour" construction methods. In some cases, groundwater flows could require the use of temporary steel casing to maintain the sides of the shafts while completing drilling and concrete placement, however, we believe these areas will be relatively isolated.

Shallow Foundations with Deep Overexcavation: Shallow foundations can also be considered at this site provided the expansive soils and bedrock are substantially mitigated to reduce the risk of movement. The use of spread footings can be considered for single-family residential construction, however, we understand that post-tensioned slab-on-grade foundations are also being considered for support of the Manor Homes. ***In our opinion, the use of these shallow foundations should only be considered if movement can be tolerated. If movement must be minimized, deep foundations should be used.***

In order to reduce movement to levels that can normally be tolerated, subexcavation of the expansive soils would be required. These on-site soils would then be processed, moisture conditioned and recompacted to provide a zone of low-expansive fill beneath foundations***. Based on our widely spaced test borings, we estimate that deep subexcavation will need to extend a minimum depth of 10 feet below the lowest foundation bearing depth.***

Based on our experience with shallow foundations, including post-tensioned slabs, foundation movements, even after subexcavation, could result in periodic, and possibly seasonal, cosmetic distress to drywall, window frames, door fames and other features. Movements should be reduced and tend to be more uniform when bearing on the recommended zone of fill. We estimate that total foundation movement on the order of about 1 to 2 inches could still be possible. ***Excessive movement could occur should the subsurface soils become wetted to significant depths, which could result in potential excessive movement and severe cracking.*** This could be due to over watering of landscaping, poor drainage, improperly functioning drain systems, and/or broken utility lines. Therefore, it is imperative that the surface drainage recommendations contained in subsequent sections of this report be followed.

Below-Grade Construction: Based on current groundwater conditions, we believe that basement construction should be feasible on the site. Post-construction perched groundwater typically develops at the bottom of basement excavations since the subsurface soils are relatively impermeable and tend to trap water. To collect this perched groundwater, to limit impact to foundation-bearing soils, and prevent the water from entering basement areas, installation of a perimeter foundation drainage system is recommended around the perimeter of the basement excavation.

Normally, the drain systems would be constructed around the exterior of the foundation and would be used to collect water that would tend to accumulate at the base of the foundation excavation after completion of development. Foundation drainage systems would typically include a properly sized perforated pipe, embedded in gravel, designed to discharge flows into the storm sewer system or to a sump pit where water could be pumped to a suitable discharge. We are available to provide additional recommendations regarding the design and installation of a perimeter drain systems around all below-grade portions of the structures.

Seismic Considerations: Based on the soil and bedrock conditions encountered in the test holes drilled on the site, we estimate that portions of the site may be classified as Seismic Site Class C according to the 2012 International Building Code (Table 1613.5.2). The Seismic Site Class was estimated based on extrapolation of data beyond the deepest depth explored, using methods allowed by the code. Actual shear wave velocity testing/analysis and/or exploration to 100 feet was not performed.

Floor Slab Design and Construction: As discussed, expansive materials are present on this site. Floor slabs placed on these materials may be subject to potentially excessive movement. This movement could result in cosmetic distress such as drywall cracking and distress of other elements supported on the floor slab. ***Where deep foundations (drilled piers) are utilized, we recommend the use of a structural floor system suspended above the subgrade soils and supported on the deep foundation elements.***

Conventional slab-on-grade floors may be considered, however, to reduce the movement slabs should bear on a zone of low expansive engineered fill soils as discussed above for shallow foundations. Based on our limited evaluation, we estimate that movement of conventional slab-on-grade floors bearing on at least 10 feet of engineered fill may still be subject to about 1 to 2 inches of total movement. The owner/end-user must accept the risk of this floor movement.

The movement estimates outlined above assume that the other recommendations in this report are followed. Some movement can typically be accommodated using typical expansive subgrade precautions in the design and construction of conventional slab-on-grade floors. ***Additional movement could occur should the subsurface soils become wetted to significant depths, which could result in potential excessive movement causing uneven floor slabs and severe cracking.*** We typically recommend minimal landscaping be installed and downspouts be hard-piped to storm sewer systems as described in subsequent sections of this report.

The following additional recommendations are typically provided for conventional slab-on-grade floors:

- Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement.

- Control joints should be provided in conventional slabs to control the location and extent of cracking.

- Typically, a minimum 2-inch void space is recommended below non-bearing partition walls placed on the floor slab. As an alternative, this "slip joint" is often framed above partition walls. Some movement and cosmetic distress to drywall and other finishes could occur if this is done.

- Special framing details should be provided at doorjambs and frames within partition walls to avoid potential distortion. Partition walls should be isolated from suspended ceilings. The isolation should be checked and maintained throughout the life of the project.

- Interior trench backfill placed beneath slabs should consist of on-site soils, moisture conditioned and compacted in accordance with recommended specifications outlined below.

- The use of a vapor retarder may need to be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the architect, slab designer and/or contractor(s) should refer to ACI 302 for procedures and cautions regarding the use and placement of a vapor retarder.

- Floor slabs should not be constructed on frozen subgrade.

- Other design and construction considerations, as outlined in Section 302.1R of the *ACI Design Manual*, are recommended.

Preliminary Private Pavement Thickness Design: The preliminary design of private pavements for the project is based on the procedures outlined in the 1993 *Guideline for Design of Pavement Structures* by the American Association of State Highway and Transportation Officials (AASHTO) and the Colorado Department of Transportation (CDOT). Any public improvements will have to be designed in accordance with Town of Erie standards, which would include additional subsurface investigation for pavement thickness design.

The referenced design methods are based on the subgrade soil support properties and anticipated traffic values.

- **Expansive Subgrade Mitigation and Subgrade Support:** Flexible (asphalt cement concrete, AC) and rigid (Portland cement concrete, PCC) pavements supported on the expansive soils and bedrock will move and may crack due to soil shrink and swell. Subexcavation, maintaining proper surface drainage behind curbs and sidewalks, providing edge drains, chemical stabilization and other methods can help reduce the distress. However, even if these recommendations are followed, some pavement distress (such as longitudinal "edge" cracking, etc.) should be anticipated and may need to be repaired. It may be possible to further reduce movement and distress if significantly more expensive measures are used. We are available to discuss additional alternatives with you.

To reduce potential movements and distress beneath private pavements to a level typically considered acceptable in this geologic region, we recommend pavement subgrade soils be subexcavated, moisture conditioned, and replaced as engineered fill. Based on our experience and current CDOT recommendations, subexcavation on the order of 5 feet below main drives and 3 feet below parking lot pavements will generally provide adequate reduction in surface deflection for these low speed roadways. Existing soils should be subexcavated, moisture-conditioned and recompacted to 95 percent of standard Proctor density (ASTM D698) at moisture contents between optimum to 3 percent above optimum. Stabilization of these soils may also be required to provide a stable base for paving.

Based on the properties of the poorest quality subgrade soils, we have estimated a resilient modulus of 3,025 psi for the subgrade soils.

- **Assumed Traffic:** We assume that pavements associated with the project will include private drive lanes, driveways, fire lanes, and surface parking for automobiles and light trucks. We assume that private pavements will include asphalt concrete or Portland cement concrete. Any improvements to adjacent public roadways will need to be designed and constructed according to the governing standards

  Based on our experience with similar projects, the following traffic criteria were used for determining pavement thicknesses using a design life of 20 years:

  - Driveways and parking stalls - maximum daily traffic of 1,000 cars per day (equivalent single-axle loads, ESAL's of 22,000)
  - Main site access drives and fire lanes – up to 5 trips/day by single-axle delivery trucks per day, 1 combined-axle truck per day and 1 trash truck per day, plus maximum daily traffic of 1,000 cars per day (73,000 ESAL’s)

  The owner should review these assumptions, and we should be contacted to confirm or modify these resulting pavement sections, if needed.

- **Pavement Sections:** Recommended alternatives for flexible and rigid pavements are summarized for each traffic area as follows:

Traffic Area	Alternative	Preliminary Pavement Thickness (Inches)		
		Asphalt Concrete Surface	Aggregate Base Course	Portland Cement Concrete
Light-Duty Automobile and Light Truck Parking Only	A	5-½ to 6	--	--
	B	3-½ to 4	7 to 8	--
	C	--	--	5
Heavy-Duty Private Drives, Fire Lanes, Delivery truck access	A	6-½ to 7	--	--
	B	4 to 4-½	9 to 10	--
	C	--	--	6

Pavement thicknesses recommended are based on approved subgrade materials being properly moisture conditioned and compacted prior to paving. The Town of Erie typically requires the use of a composite section for public roadways (Alternative B outlined above for each type of paved area). In addition, Town of Erie standards require that the base course be drained by installing edge drains behind curbs. These measures should also be considered to reduce the potential for distress for the private pavements associated with this project.

A proofroll of the subgrade soils should also be performed prior to paving and any soft/yielding areas remediated. Paving materials used at the site should meet current Town of Erie and CDOT specifications.

Future performance of pavements constructed on the subgrade soils at this site will be dependent upon several factors, including:

- Maintaining stable moisture content of the subgrade soils.
- Providing for a planned program of preventative maintenance.

Minimizing excess moisture, which can reach the subgrade soils, can enhance the performance of all pavements. Preventative maintenance should be planned and provided for an ongoing pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment.

Final Grading, Landscaping, and Surface Drainage: All grades must be adjusted to provide positive drainage away from structures during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during

construction. Landscaped irrigation adjacent to foundations should be eliminated where possible or minimized to only limited drip irrigation.

Water permitted to pond near or adjacent to the perimeter of the structures (either during or post-construction) can result in significantly higher soil movements than those discussed in this report. As a result, any estimations of potential movement described in this report cannot be relied upon if positive drainage is not obtained and maintained, and water is allowed to infiltrate the fill and/or subgrade.

Exposed ground should be sloped at a minimum of 10 percent grade for at least 10 feet beyond the perimeter of the buildings, where possible. We understand that this may not be feasible in all unpaved areas due to ADA access requirements and other required design features. In these areas, exterior grades should be sloped as much as possible down to area drain systems, swales, and/or sidewalk chases to facilitate drainage. Downspouts could also be connected to area drain systems to help reduce wetting. If this is not possible, roof drain flows should be directed onto pavements or discharge a minimum of 5 feet away from the structure or through the use of splash blocks or downspout extensions.

Backfill against foundations, exterior walls and in utility and sprinkler line trenches should be well compacted and free of construction debris to reduce the possibility of moisture infiltration. After building construction and prior to project completion, we recommend that verification of final grading be performed to document that positive drainage, as described above, has been achieved. This is especially important in areas where heating and cooling units are placed in close proximity to the buildings.

Planters located adjacent to the structure should preferably be self-contained (planter boxes, potted landscaping, etc.). Sprinkler mains and spray heads should be located a minimum of 5 feet away from the buildings. We recommend the use of Xeric landscaping, requiring little or no irrigation, be used within 5 feet of foundations. If drip irrigation is required in this zone, systems should timed to provide only the amount of water needed to sustain growth. Irrigation systems should be frequently checked for proper performance and any breakages fixed as soon as possible.

Additional Design and Construction Considerations:

- **Exterior Slabs:** Exterior slabs-on-grade, exterior architectural features, and utilities founded on the on-site soils may experience some movement due to frost heave and potential volume change of backfill in utility trenches and around building pads. Overexcavation and recompaction to a depth of 3 feet should be considered to help limit movement of high-profile or critical PCC flatwork. Potential movement could be reduced by:

    - minimizing moisture increases in the subgrade soils.

- controlling moisture-density during placement of any backfill.
- using designs which allow vertical movement between the exterior features and adjoining structural elements.
- placing effective control joints on relatively close centers.

- **Underground Utilities:** All underground piping within or near the proposed structure should be designed with flexible couplings, so minor deviations in alignment do not result in breakage or distress. Utility knockouts in foundation walls should be oversized to accommodate differential movements.

  It is strongly recommended that a representative of the geotechnical engineer provide nearly full-time observation and compaction testing of trench backfill within building and pavement areas.

- **Concrete Corrosion Protection:** Results of soluble sulfate testing indicate that project concrete should include Portland cement meeting the specifications of ASTM Type V or equivalent. Foundation concrete should be designed for potentially severe sulfate exposure in accordance with the provisions of Section 318, Chapter 4, of the *ACI Design Manual*.

GENERAL COMMENTS

Supplemental exploration and analyses should be performed in order to develop final design parameters and to confirm and/or modify the preliminary recommendations and conclusions contained in this report.

PCH should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our preliminary geotechnical recommendations in the project site design and specifications. PCH should also be retained to provide testing and observation during the excavation, grading, foundation and construction phases of the project.

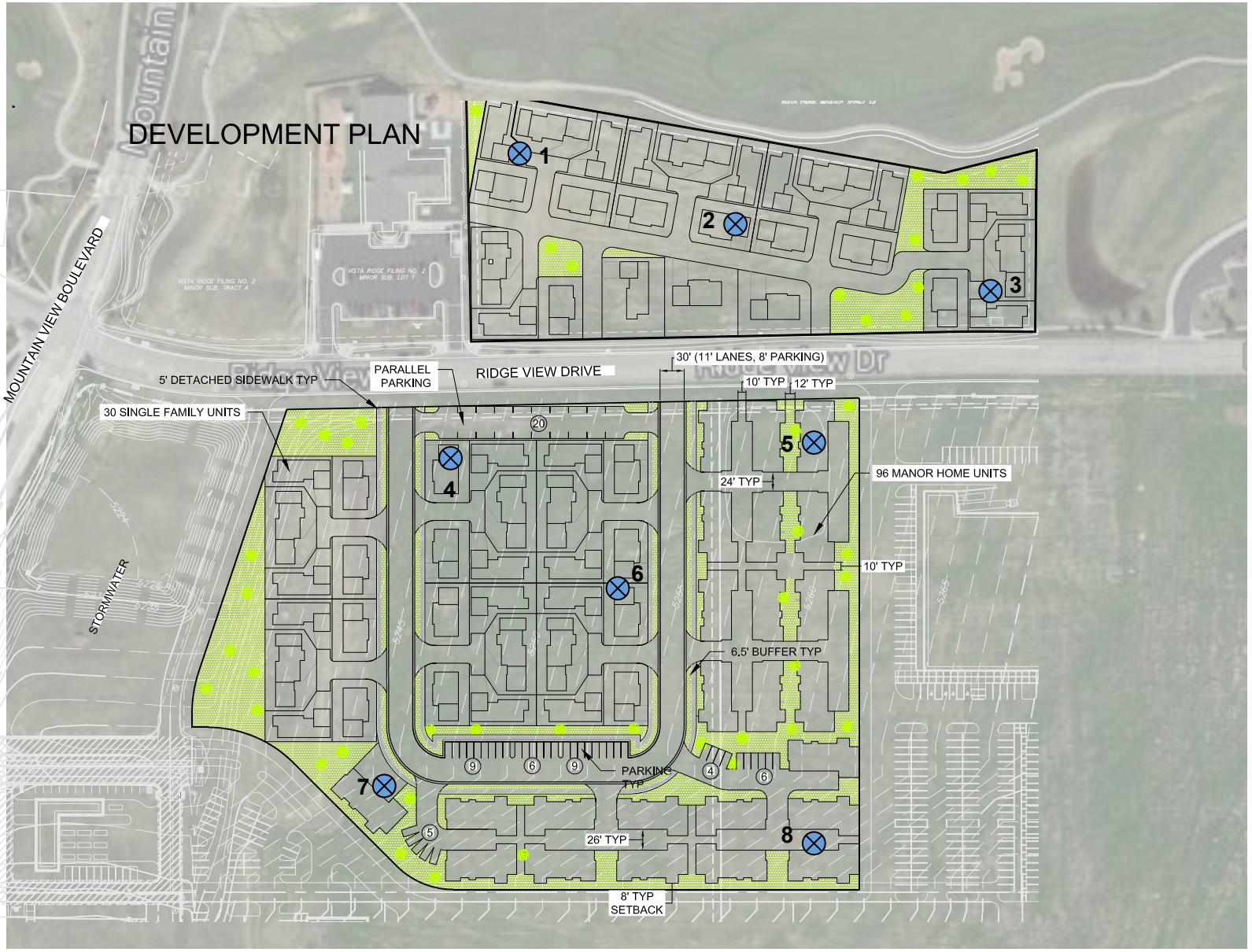
The analysis and recommendations presented in this preliminary report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include, either specifically or by implication, any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This preliminary report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes are planned in the nature, design, or location of the project as outlined in this report, the conclusions and recommendations contained in this report shall not be considered valid unless PCH reviews the changes, and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

BORING LOCATION DIAGRAM
BORING LOGS



1 ⊗ **APPROXIMATE BORING LOCATION**

BORING LOCATION DIAGRAM
FAIRWAYS AT VISTA RIDGE
ERIE, COLORADO
PCH PROJECT NO. 12.139.13

Pickering, Cole, & Hivner, LLC
1070 W. 124th Ave., Suite 300
Westminster, CO 80234
(303) 996-2999
PCH

LOG OF BORING NO. 1

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	15-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Vine Laboratories / CME-850 Track Rig	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ None - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		FILL - CLAY/CLAYSTONE, olive gray, brown, tan, dry to moist, hard	1		CB	50/11"	11	10.5	120	7.9	0.50
		4.0 ft									
5		**CLAYSTONE BEDROCK**, varies sandy, gray, brown, rust, slightly calcareou, moist, medium hard to very hard	2		CB	49	12	15.7	115		
10			3		CB	50/11"	11	15.3	117	16.9	0.50
15			4		CB	50/10"	10	14.0	114		
20			5		CB	50/8"	8	7.7	128		
25			6		CB	50/5"	5	10.1	125		
30											
35			7		CB	50/4"	4	8.6	121		
		Boring terminated at about 35 feet									
40											

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 2

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	7-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Dakota Driiling / Diedrich D-50	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ None - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		LEAN CLAY with SAND, with weathered claystone bedrock fragments with depth, brown, rust, tan, calcareous, moist, very stiff to hard	1	CL	CB	26	12	17.0	112		
5			2	CL	CB	50/6"	6	10.3	127	6.4	0.20
		7.0 ft									
		CLAYSTONE BEDROCK, olive gray, dark gray, brown, rust, moist, very hard	3		CB	50/6"	6	18.2	115	11.5	0.50
10											
			4		CB	50/6"	6	16.1	110		
15											
			5		CB	50/5"	5	14.1	104		
20											
			6		CB	50/6"	6	13.5	119	5.6	2.00
25											
		Boring terminated at 25 feet									
30											
35											
40											

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 3

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	15-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Vine Laboratories / CME-850 Track Rig	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ None - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		LEAN CLAY with SAND, to Sandy Lean Clay, light brown, tan, calcareous, dry to moist, very stiff									
5			1	CL	CB	24	12	9.6	103		
		7.0 ft									
		CLAYSTONE BEDROCK, varies sandy, gray, rust, brown, varies calcareous, with trace lignite, moist, medium hard to very hard									
10			2		CB	50	12	10.2	124	6.5	0.50
15			3		CB	50/8"	8	32.0	106	6.3	1.00
20			4		CB	50/11"	11	16.7	115		
25			5		CB	45	12	18.2	113	2.8	2.00
30											
35			6		CB	50/5"	5	10.4	118		
		Boring terminated at about 35 feet									
40											

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 4

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	7-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Dakota Driiling / Diedrich D-50	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ 21 ft - 2/7/2014 ▽ 20 ft - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		FILL - SANDY LEAN CLAY, and Claystone/Sandstone fragments, brown, rust, tan, moist, very stiff	1	CL	CB	30	12	13.4	118	0.4	0.50
		4.0 ft									
5		**SANDY LEAN CLAY,** brown, rust, tan, calcareous, moist, hard	2	CL	CB	45	12	11.6	125	6.5	0.50
10		10.0 ft	3	CL	CB	50/11"	11	7.5	123		
		CLAYSTONE/SANDSTONE BEDROCK, interbedded, gray, rust, brown, tan, varies calcareous, moist to wet, medium hard to very hard									
15			4		CB	49	12	10.5	126	0.7	1.00
20		▽ ▼	5		CB	50/6"	6	13.6	105		
25			6		CB	25/0"	0				
30											
35			7		CB	50	12	20.0	109		
40		Boring terminated at about 35 feet									

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 5

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	7-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Dakota Driiling / Diedrich D-50	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ None - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
0		**SANDY LEAN CLAY**, to Lean Clay with Sand, brown, tan, calcareous, dry to moist, hard	1	CL	CB	50/11"	11	11.9	119		
5			2	CL	CB	50/8"	8	6.6	105	-4.1	0.50
		9.0 ft									
10		**CLAYSTONE BEDROCK**, gray, dark gray, rust, brown, moist, hard to very hard	3		CB	50/8"	8	15.1	116	11.0	0.50
15			4		CB	50/7"	7	15.9	110		
20			5		CB	50/5"	5	14.9	118	3.9	2.00
25			6		CB	50/5"	5	15.8	110		
30		Boring terminated at about 25 feet									
35											
40											

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 6

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	7-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Dakota Driiling / Diedrich D-50	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ None - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		SANDY LEAN CLAY, brown, rust, tan, calcareous, moist, very stiff	1	CL	CB	25	12	16.6	113	2.6	0.20
5		5.0 ft									
		CLAYSTONE/SANDSTONE BEDROCK, interbedded, tan, reddish brown, grey, moist, medium hard to very hard	2		CB	49	12	7.0	123		
10			3		CB	50/6"	6	5.9	111		
15			4		CB	50/2"	2	5.1	111		
20			5		CB	50/6"	6	3.5	112		
25			6		CB	50/10"	10				
30		Boring terminated at about 25 feet									
35											
40											

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 7

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	7-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Dakota Driiling / Diedrich D-50	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ None - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		SANDY LEAN CLAY, brown, rust, tan, calcareous, moist, hard									
5			1	CL	CB	50/10"	10	9.7	117	6.1	0.50
		7.0 ft									
		CLAYSTONE BEDROCK, with interbedded Sandstone, gray, rust, brown, moist, medium hard to very hard									
10			2		CB	43	12	19.0	114	8.4	0.50
15			3		CB	50/10"	12	11.8	123	5.7	1.00
20			4		CB	50/7"	7	11.6	124		
25			5		CB	50/6"	6	10.0	126		
		Boring terminated at about 25 feet									
30											
35											
40											

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

LOG OF BORING NO. 8

PROJECT:	Fairways at Vista Ridge	PROJECT NO.:	12.139.13
CLIENT:	Chartered Development Corporation	DATE:	7-Feb-14
LOCATION:	Erie, Colorado	ELEVATION:	Not Provided
DRILLER / RIG:	Dakota Driiling / Diedrich D-50	LOGGED BY:	G. Ohlsen
DEPTH TO WATER:	▼ None - While Drilling ▽ 19 ft - 2/17/14		

Depth	Soil Graphic	Description	Samples								
			No.	USCS	Type	Blows per foot*	Recovery, in	Moisture Content, %	Dry Density, pcf	Swell or Consol. (-), %	Surcharge, ksf
		Low growth grass and weeds at surface									
		LEAN CLAY with SAND, brown, rust, moist									
		4.0 ft									
5		**CLAYSTONE BEDROCK**, gray, rust, brown, with trace lignite, moist, medium hard to very hard	1		CB	50/12"	12	15.5	114	12.5	0.50
10			2		CB	50/6"	6	13.5	121	3.1	0.50
15			3		CB	50/10"	10	20.2	109	2.6	1.00
20		▽	4		CB	50/8"	8	16.5	114	2.1	1.00
25			5		CB	48	12	16.0	114	1.9	2.00
30			6		CB	50/8"	8	14.8	113		
35			7		CB	50/5"	5	14.2	108	0.3	2.00
40		Boring terminated at about 35 feet									

* Values represent blows/ft (unless otherwise noted) using sampler indicated. This value may not be indicative of Standard Penetration Test (N-values).

Transitions between layers is shown for information only, actual transitions may be gradual.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

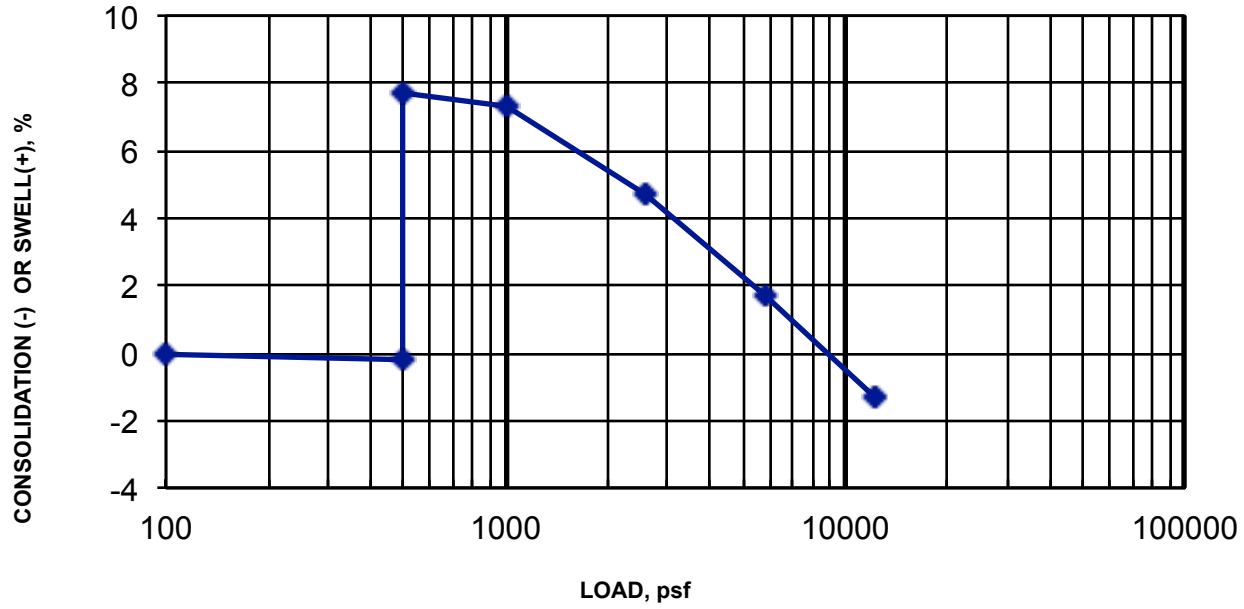
** Disturbed sample

Pickering, Cole, and Hivner
Geotechnical and Environmental Engineers
Westminster, Colorado – 303.996.2999

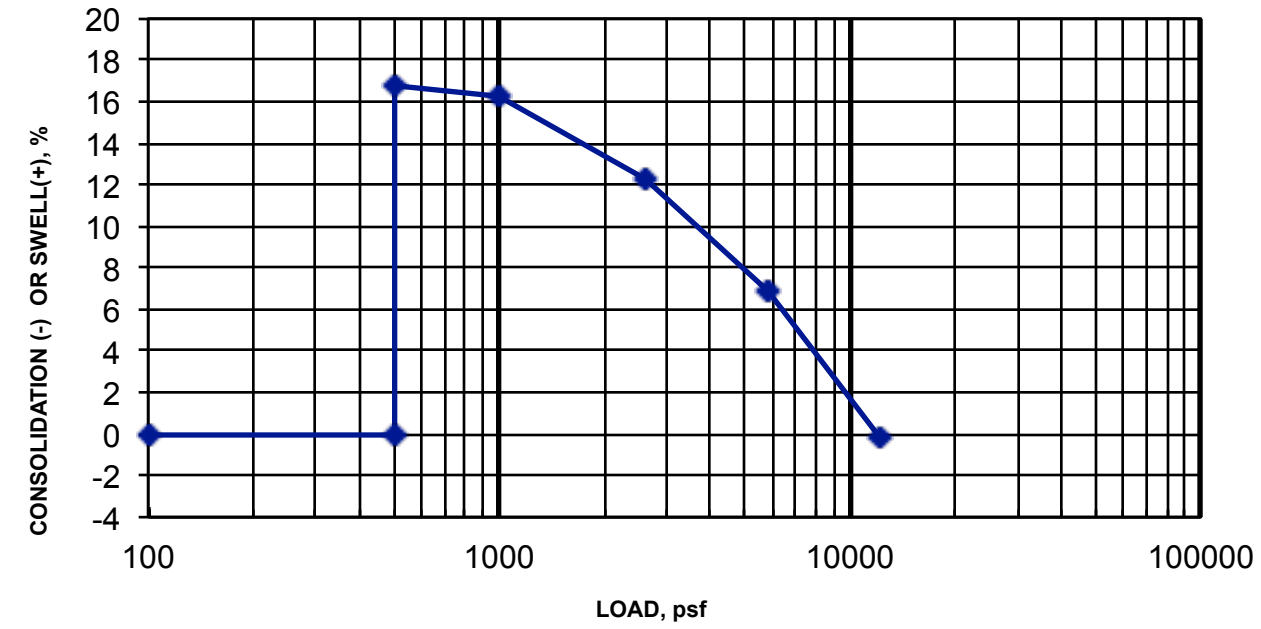
APPENDIX B

LABORATORY TEST RESULTS AND SUMMARY

SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 1 at 2 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Fill - Clay/Claystone		
PRE-TEST MOISTURE CONTENT	10.5%	**DRY DENSITY**	120 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 1 at 9 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	15.3%	**DRY DENSITY**	117 pcf

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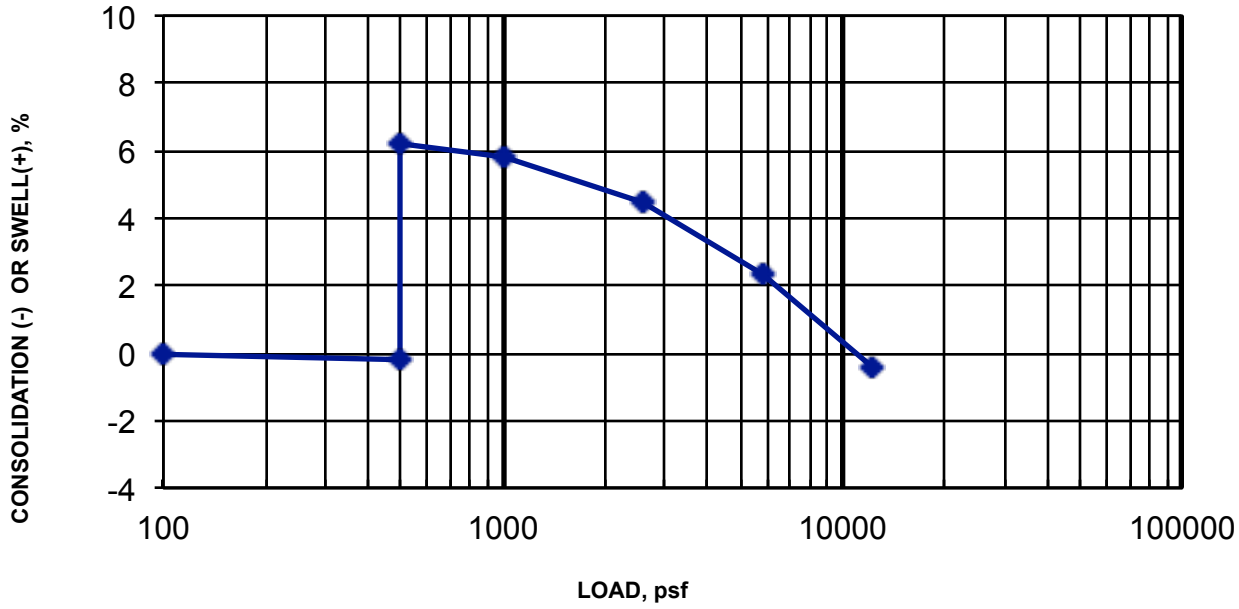
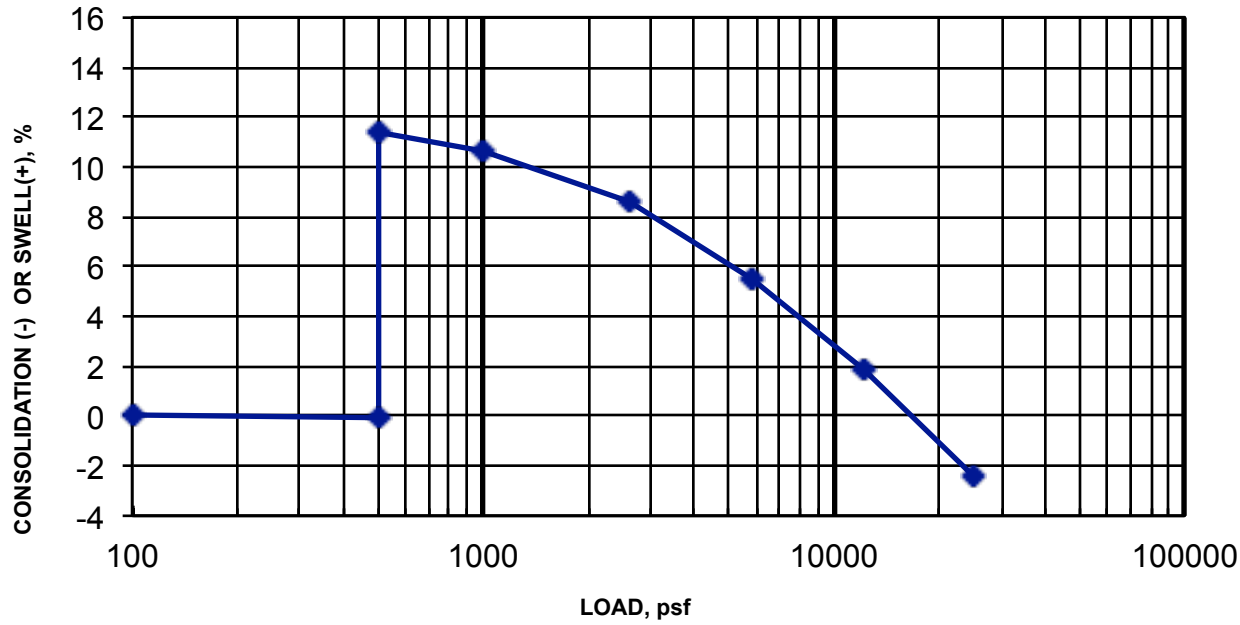
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 2 at 5 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Lean Clay with Sand		
PRE-TEST MOISTURE CONTENT	10.3%	**DRY DENSITY**	127 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 2 at 9 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	18.2%	**DRY DENSITY**	115 pcf

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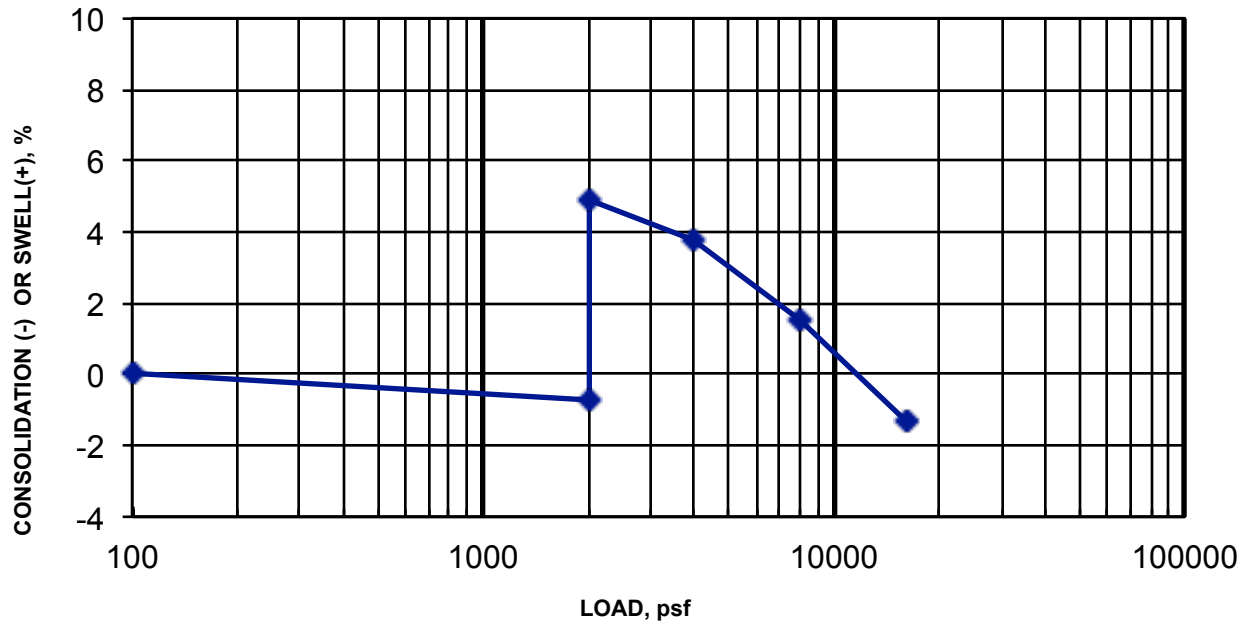
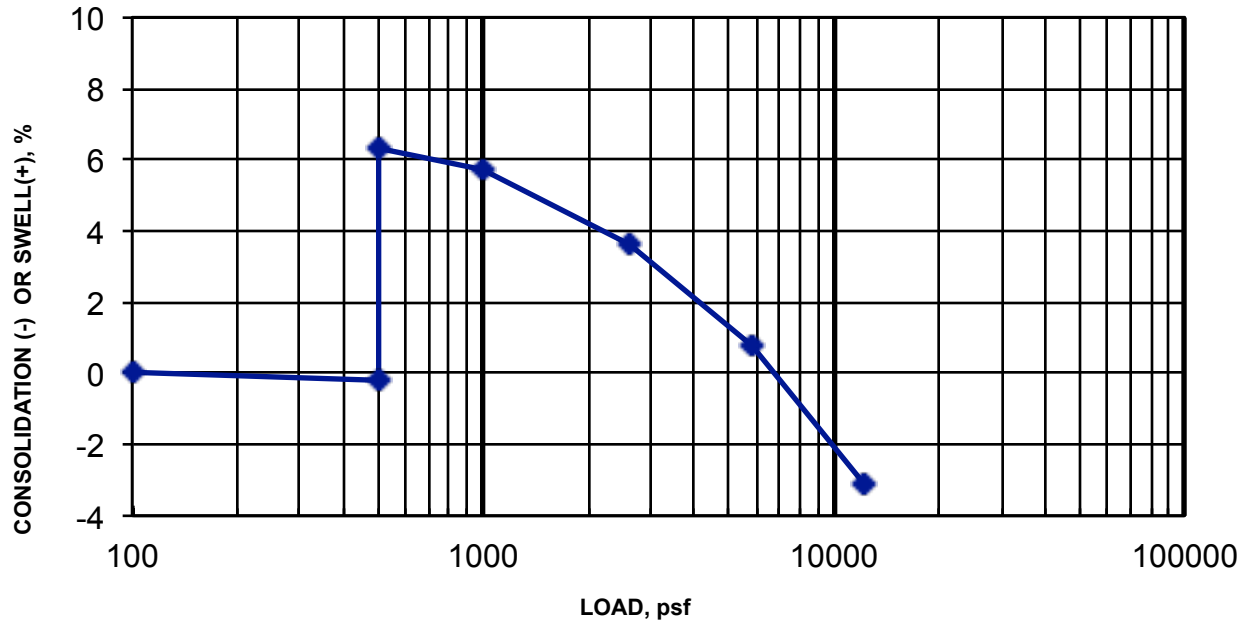
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 2 at 24 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	13.5%	**DRY DENSITY**	119 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 3 at 9 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	10.2%	**DRY DENSITY**	124 pcf

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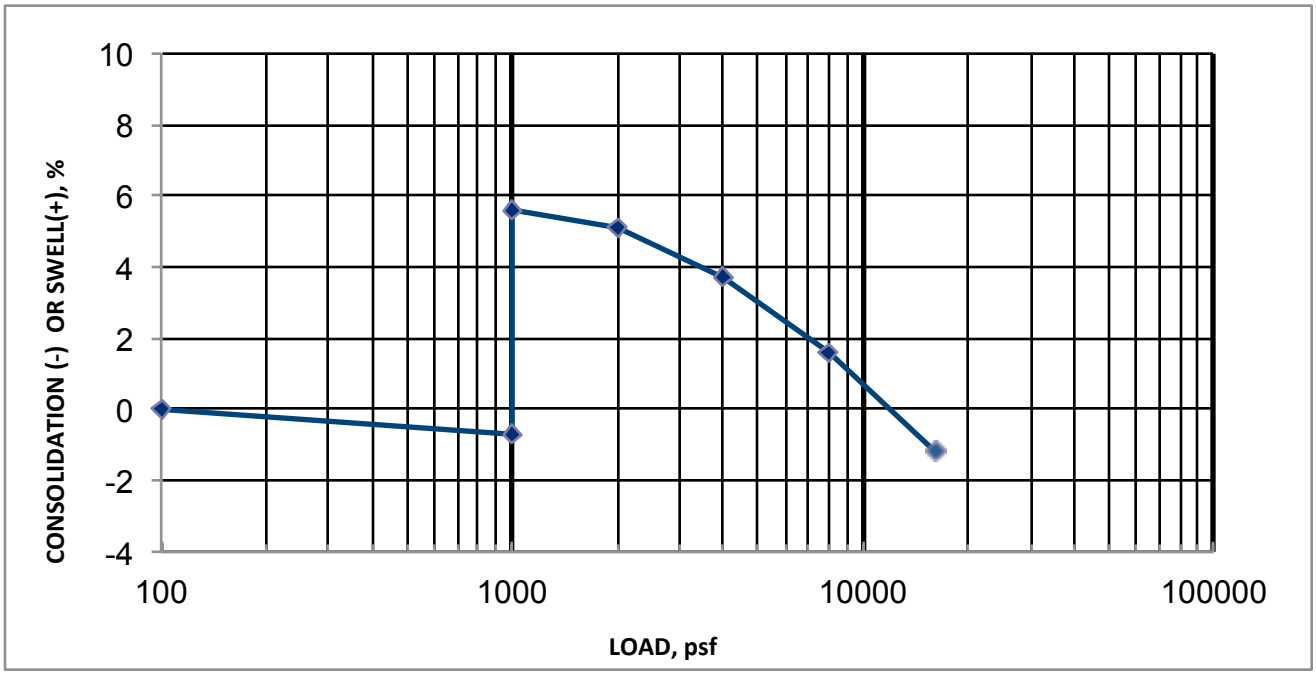
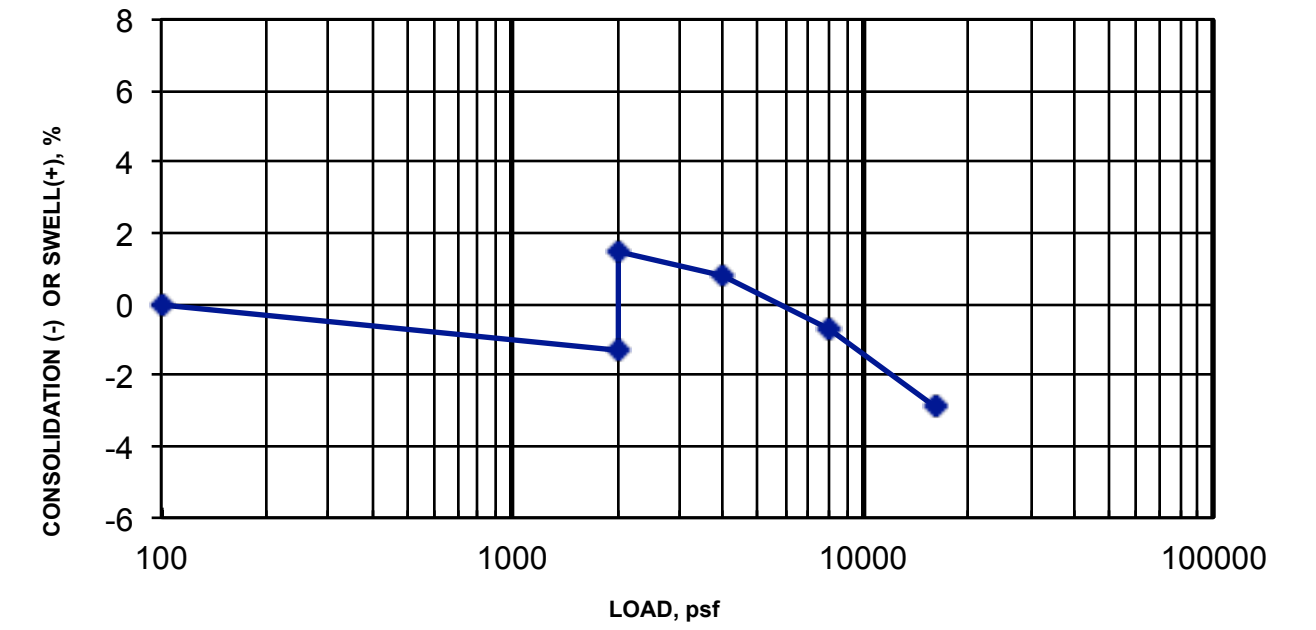
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 3 at 14 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	32.0%	**DRY DENSITY**	106 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 3 at 19 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	17.4%	**DRY DENSITY**	113 pcf

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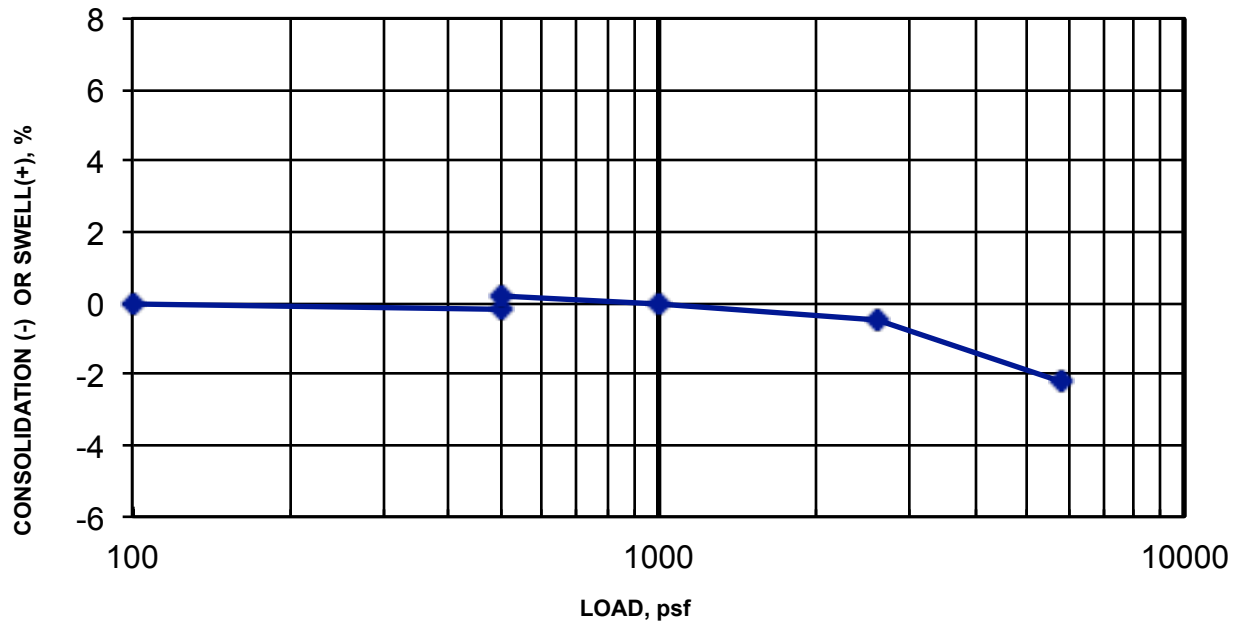
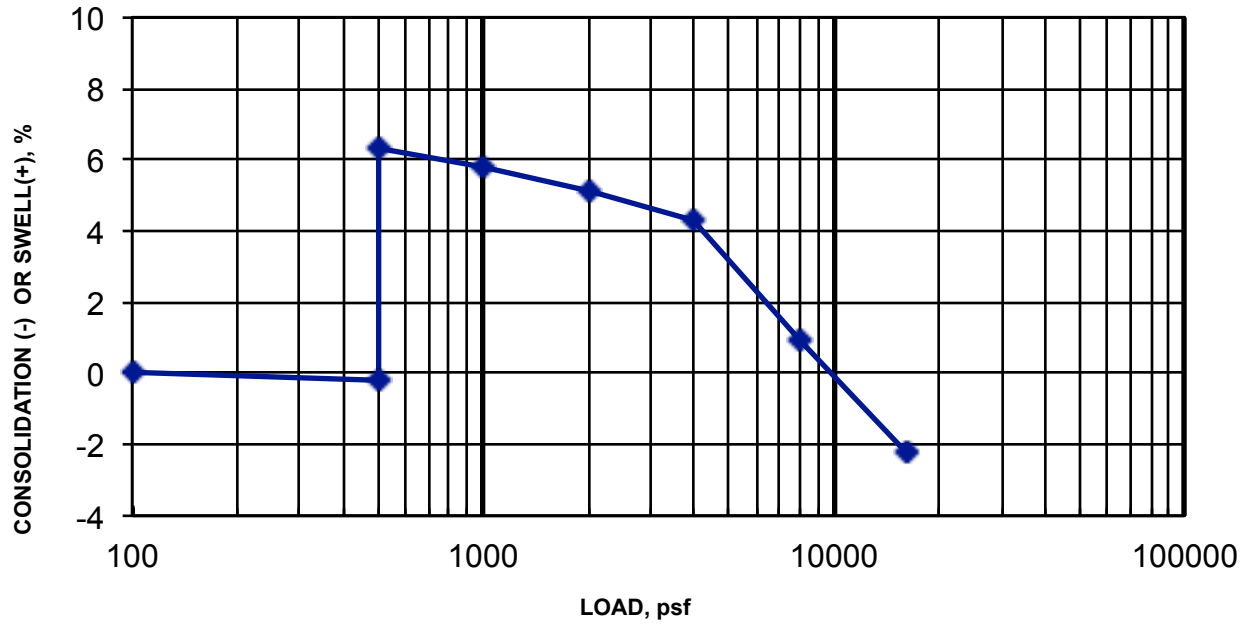
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 4 at 2 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Fill - Sandy Lean Clay		
PRE-TEST MOISTURE CONTENT	13.4%	**DRY DENSITY**	118 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 4 at 5 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Sandy Lean Clay		
PRE-TEST MOISTURE CONTENT	11.6%	**DRY DENSITY**	125 pcf

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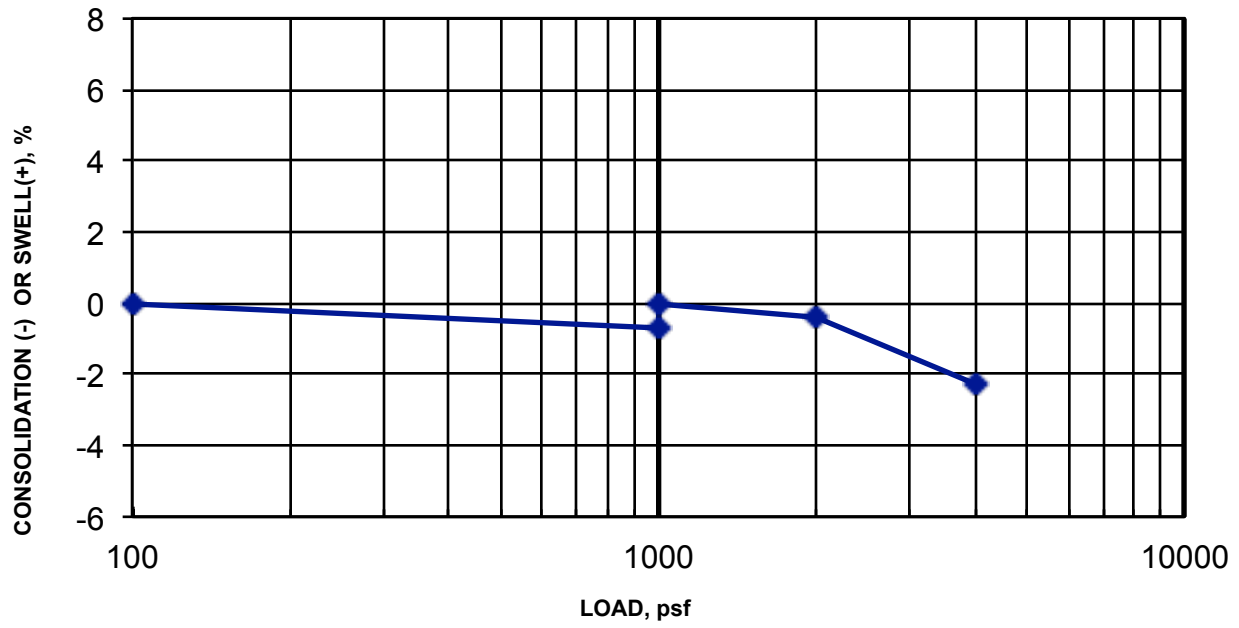
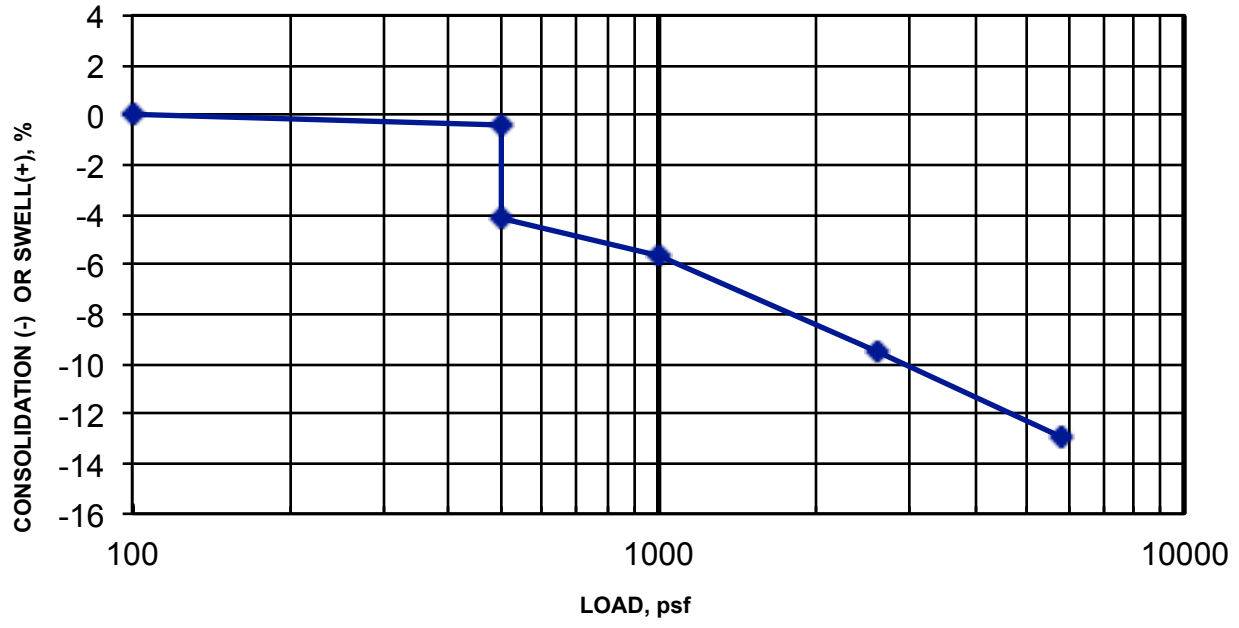
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 4 at 14 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone/Sandstone Bedrock		
PRE-TEST MOISTURE CONTENT	10.5%	**DRY DENSITY**	126 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 5 at 5 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Sandy Lean Clay		
PRE-TEST MOISTURE CONTENT	6.6%	**DRY DENSITY**	105 pcf

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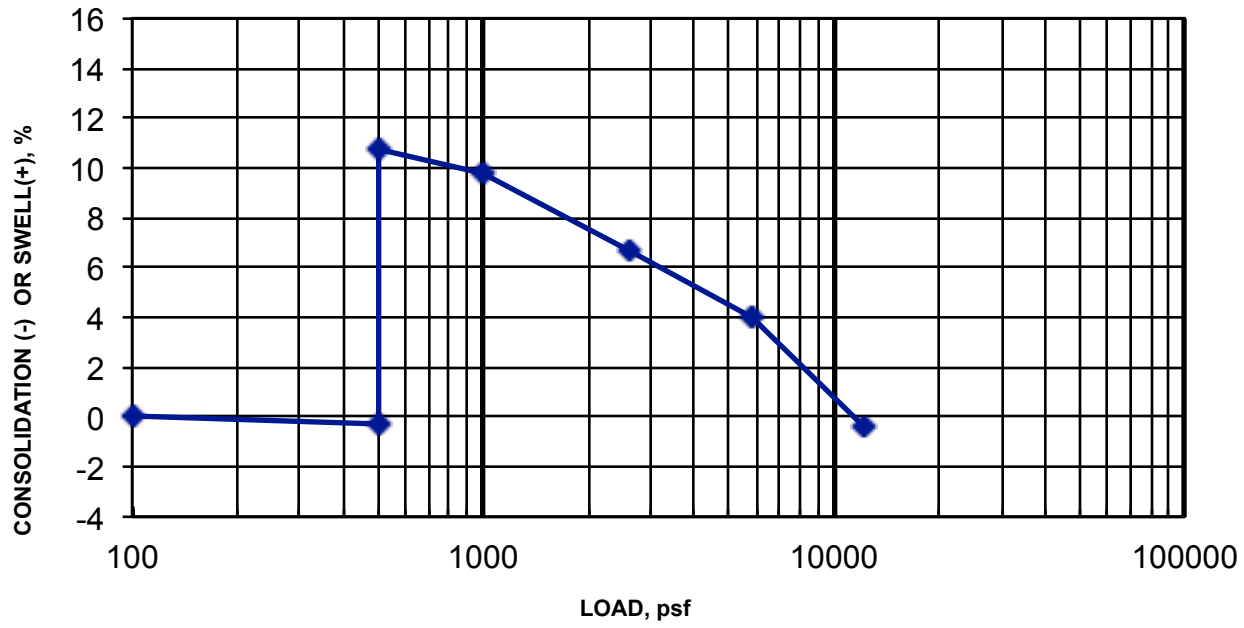
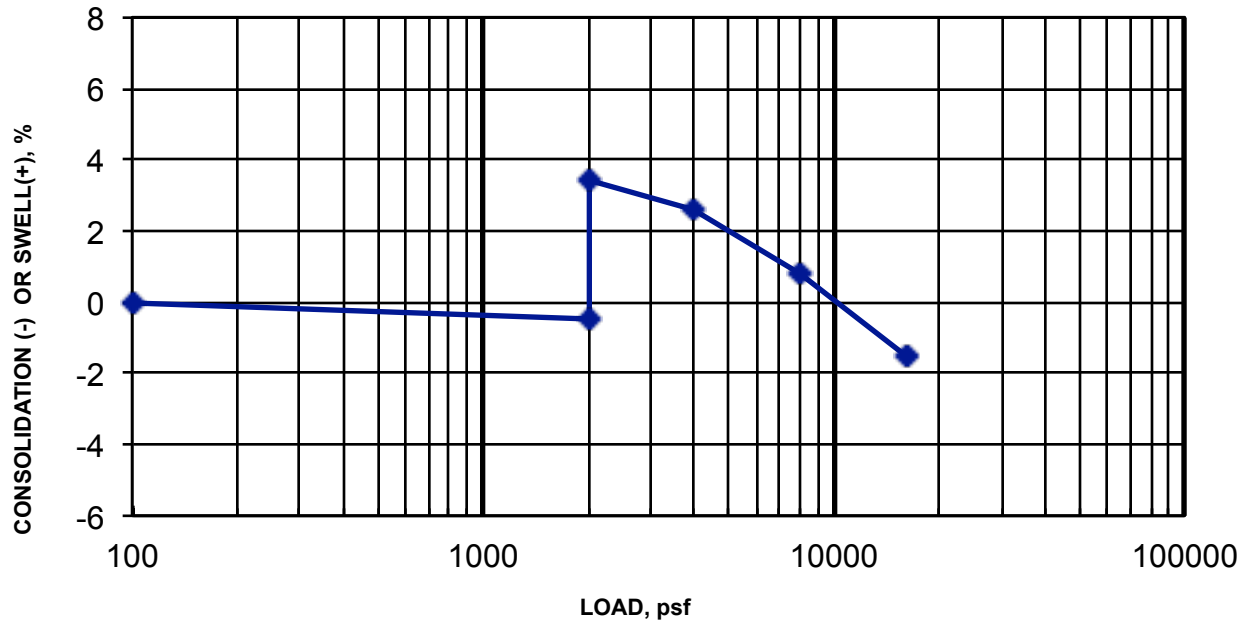
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 5 at 9 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	15.1%	**DRY DENSITY**	116 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 5 at 19 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	14.9%	**DRY DENSITY**	118 pcf

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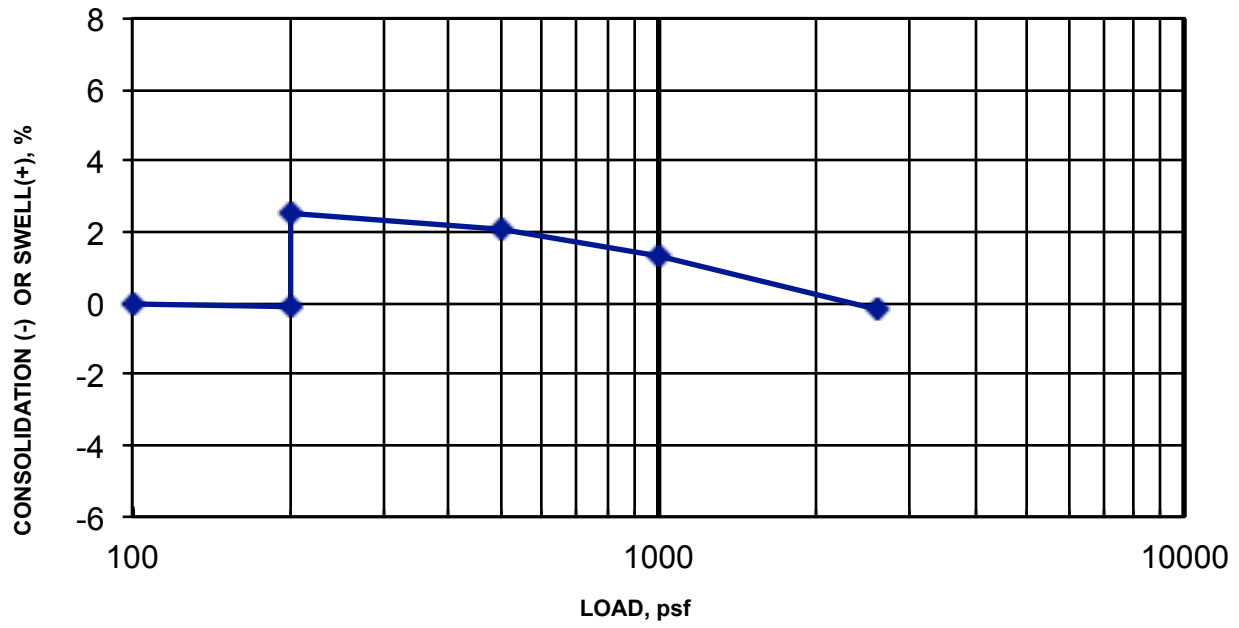
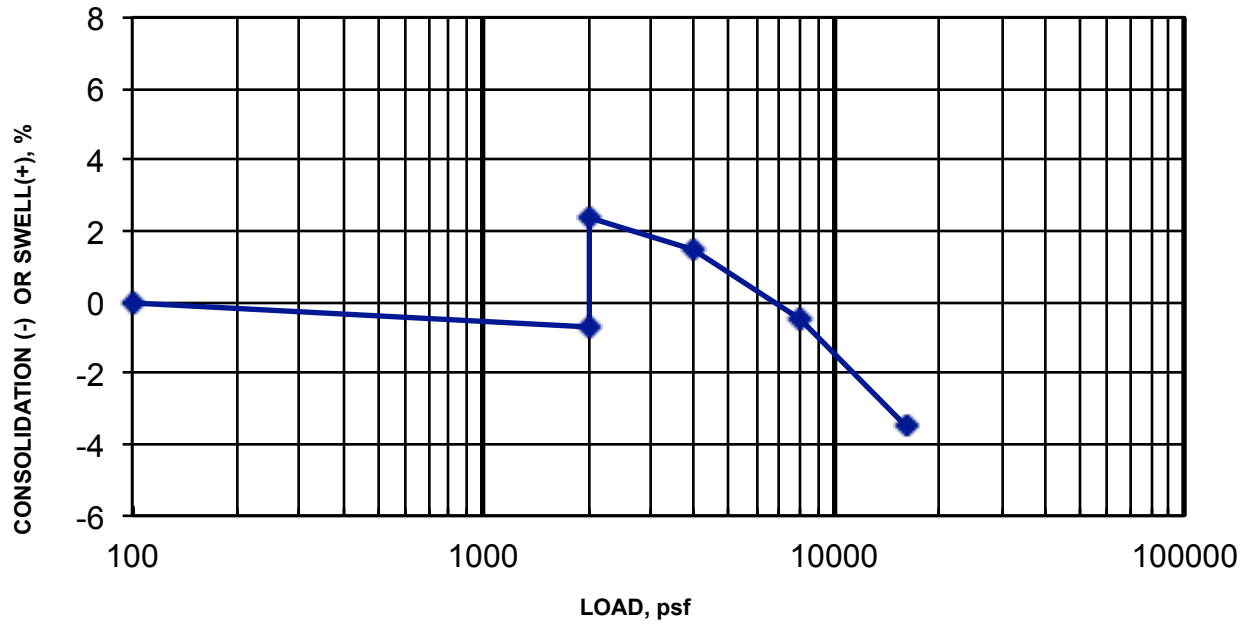
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 6 at 2 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Sandy Lean Clay		
PRE-TEST MOISTURE CONTENT	16.6%	**DRY DENSITY**	113 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 6 at 24 ft	**START DATE**	3/3/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	19.4%	**DRY DENSITY**	110 pcf

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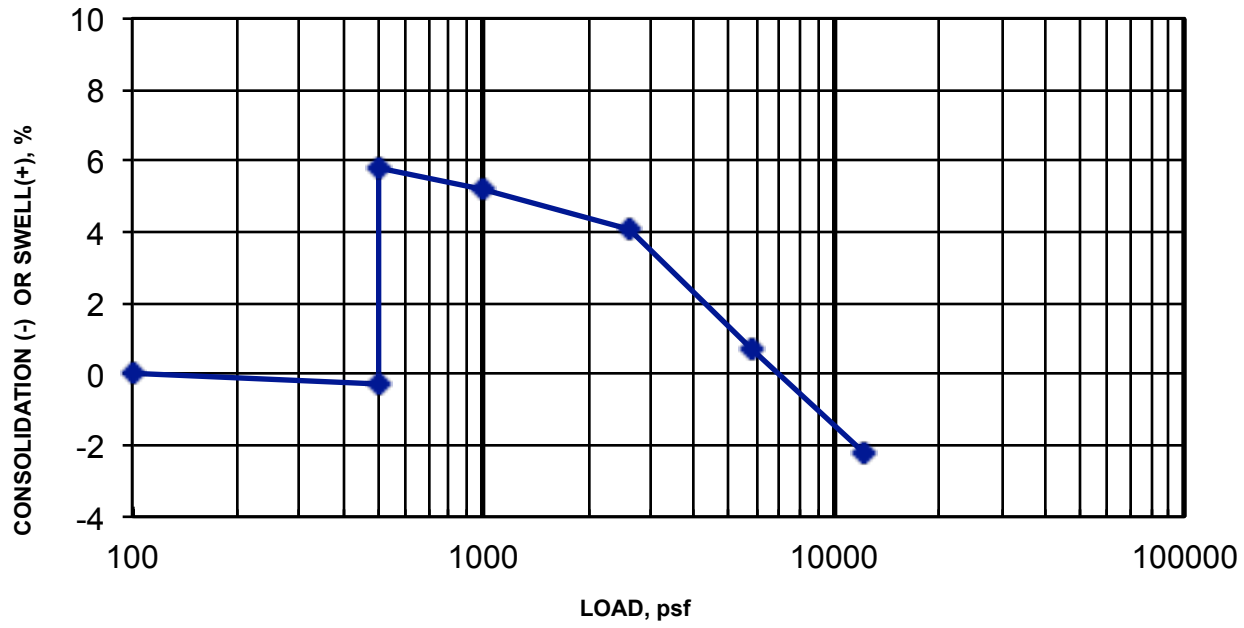
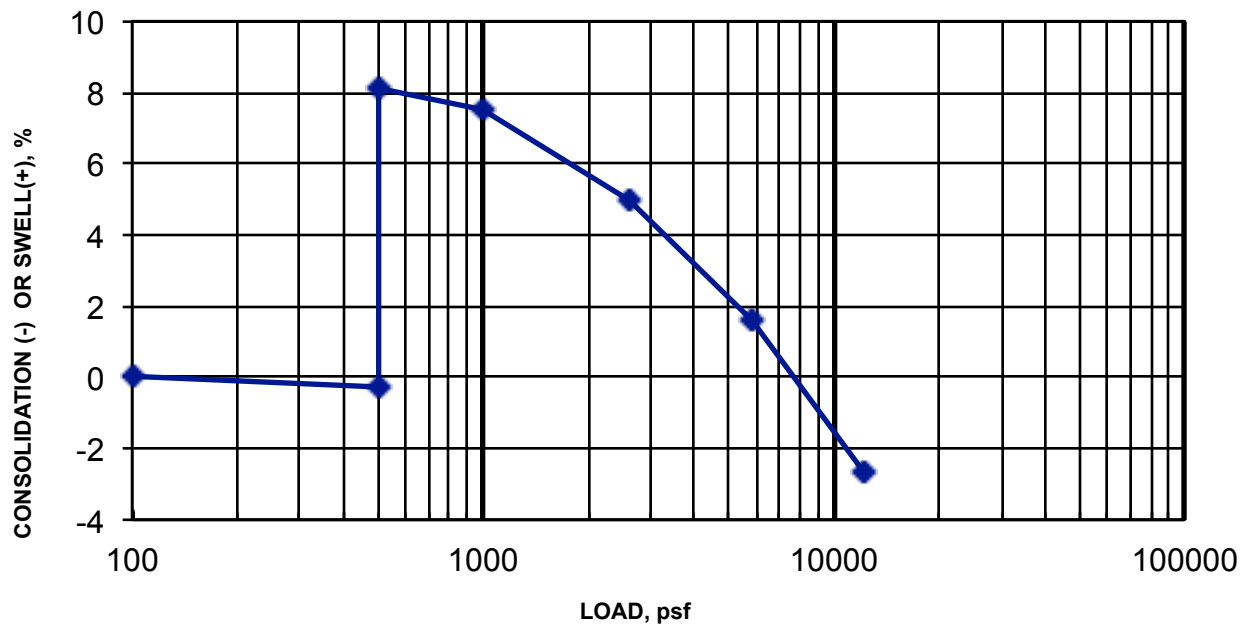
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 7 at 4 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Sandy Lean Clay		
PRE-TEST MOISTURE CONTENT	9.7%	**DRY DENSITY**	117 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.14
SAMPLE ID	Boring 7 at 9 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	19.0%	**DRY DENSITY**	114 pcf

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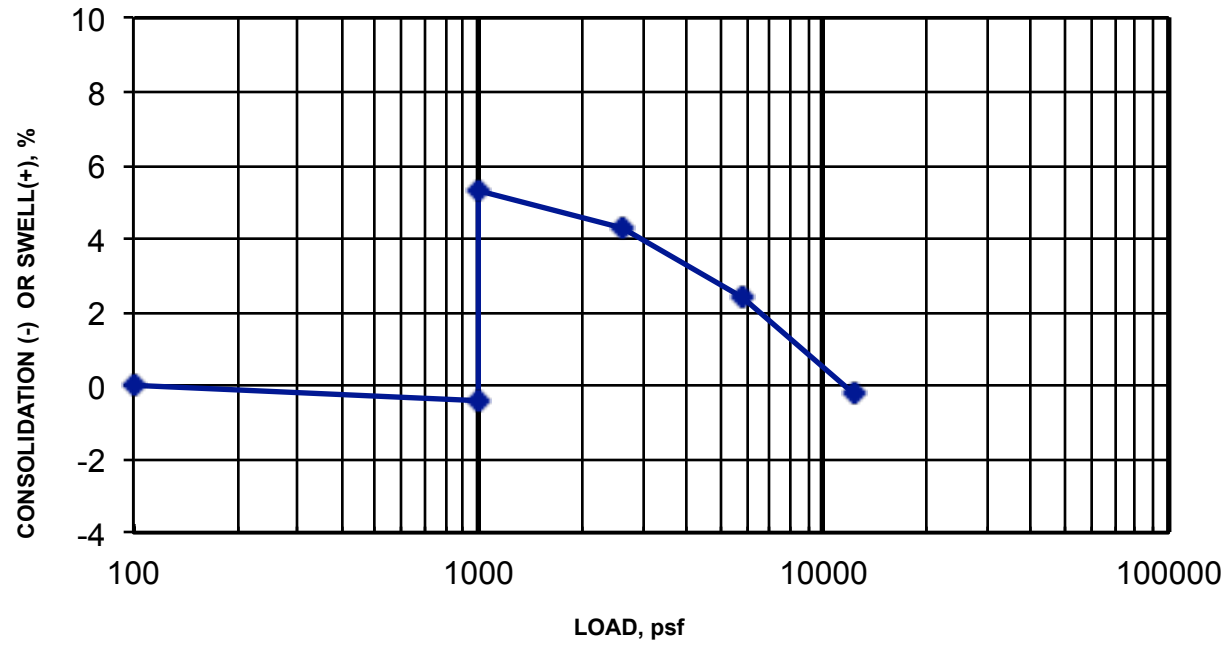
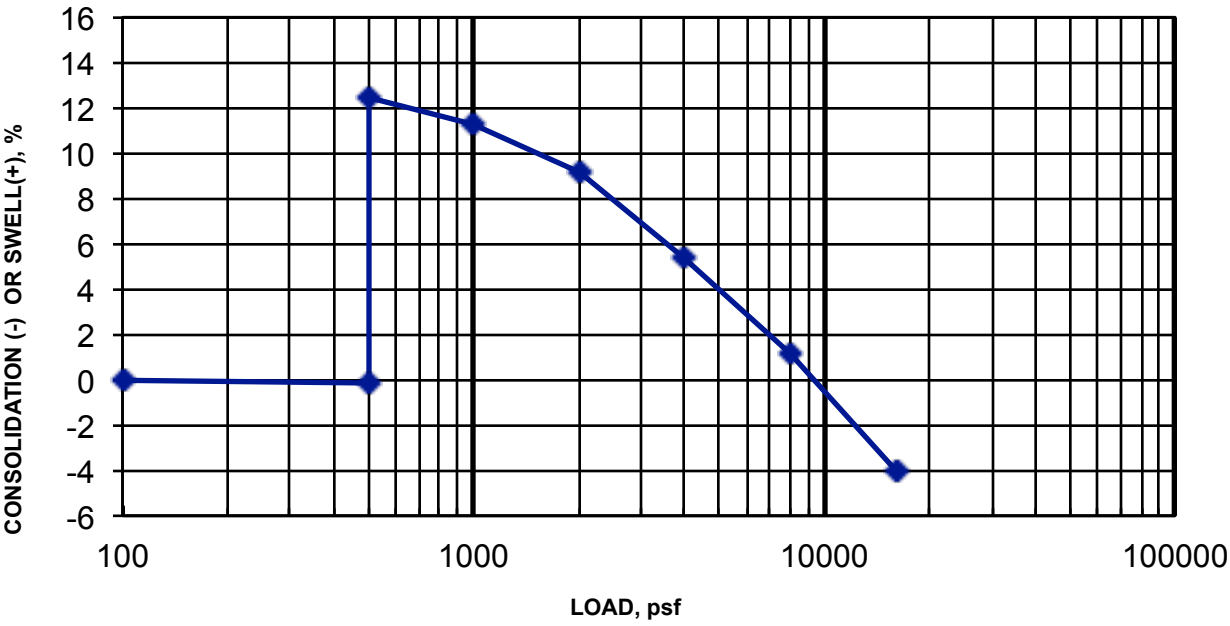
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.14
SAMPLE ID	Boring 7 at 14 ft	**START DATE**	3/3/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	11.8%	**DRY DENSITY**	123 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 8 at 4 ft	**START DATE**	2/25/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	15.5%	**DRY DENSITY**	114 pcf

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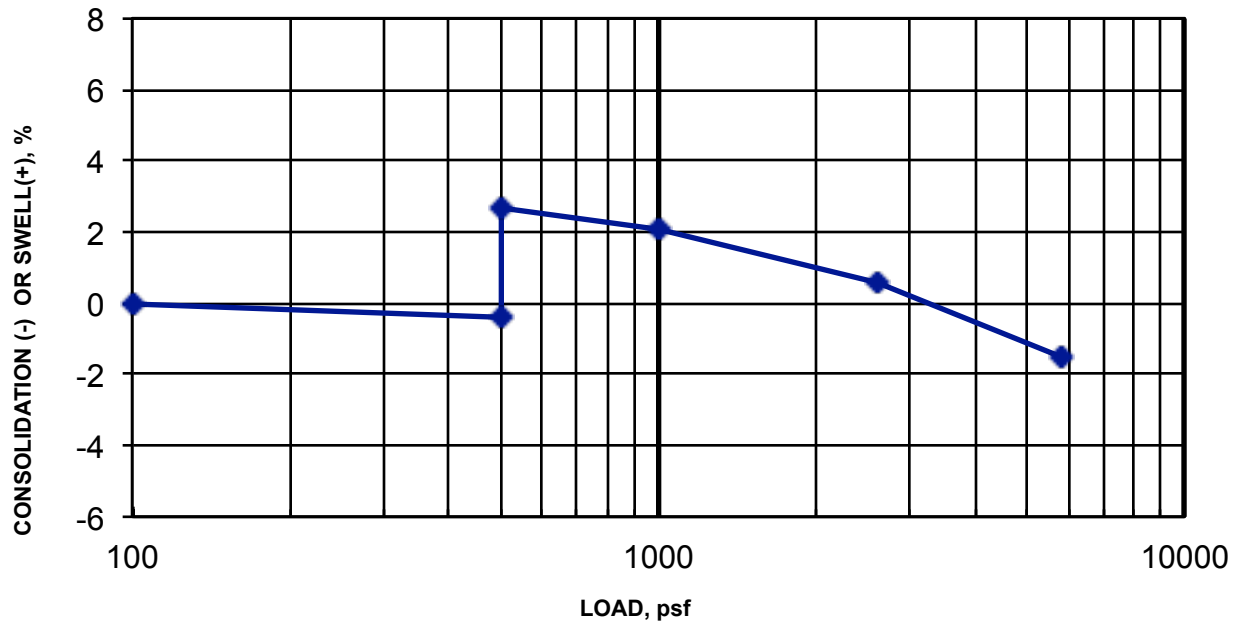
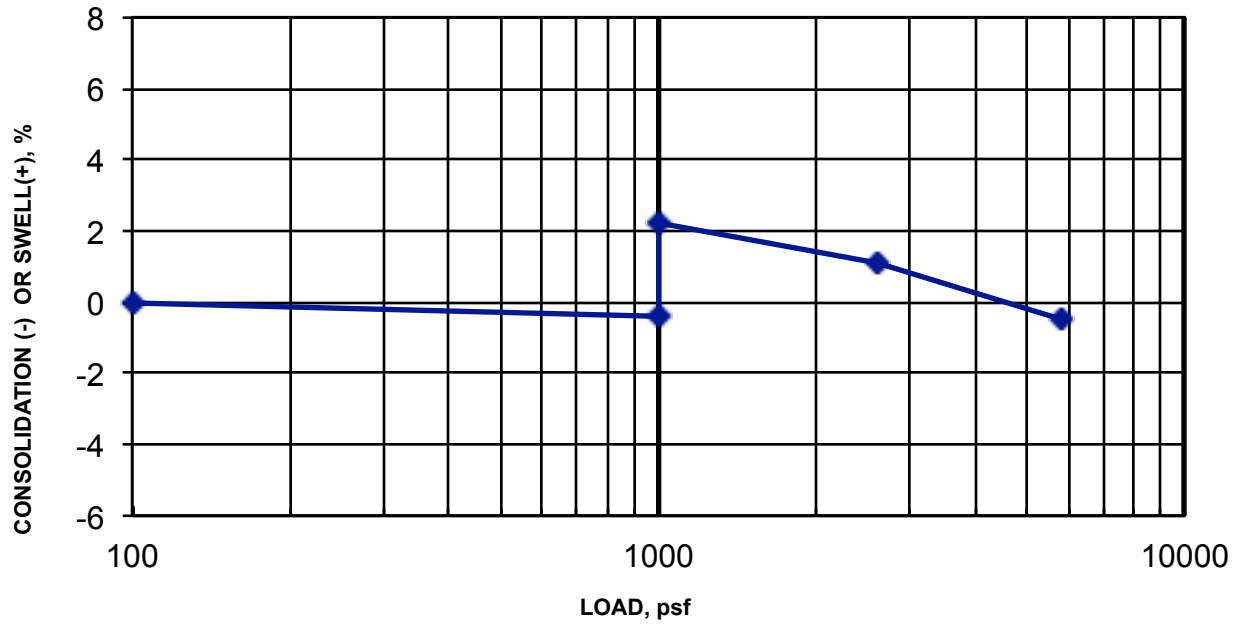
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 8 at 9 ft	**START DATE**	2/27/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	13.5%	**DRY DENSITY**	121 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 8 at 14 ft	**START DATE**	3/3/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	20.2%	**DRY DENSITY**	109 pcf

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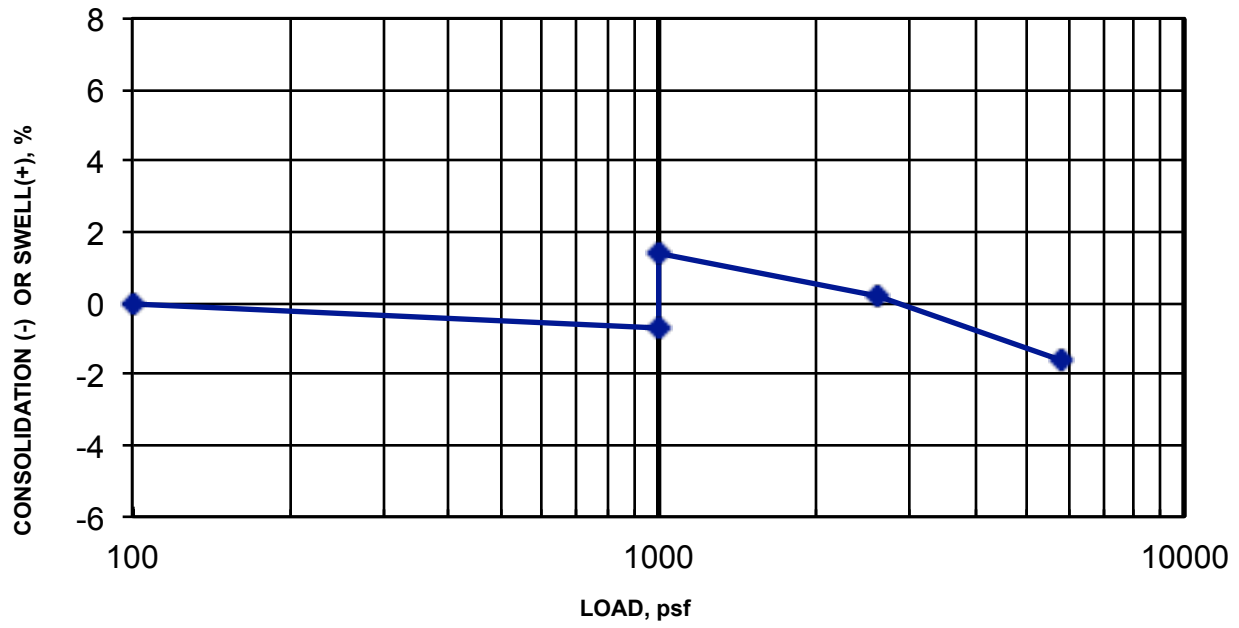
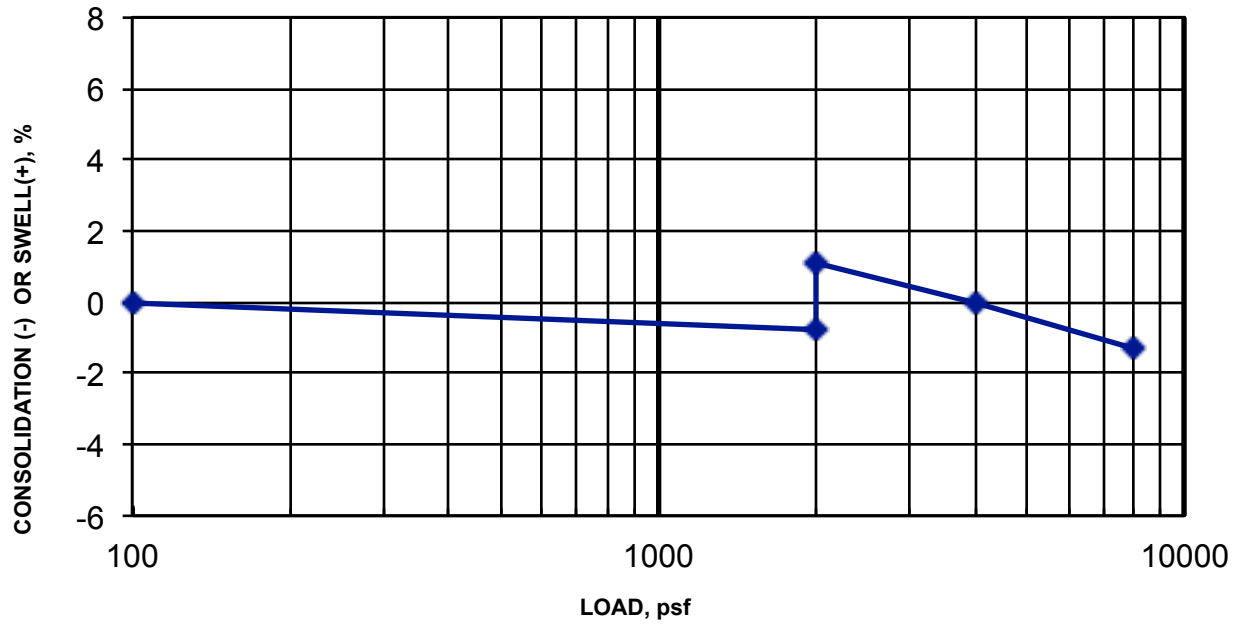
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.14
SAMPLE ID	Boring 8 at 19 ft	**START DATE**	3/3/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	16.5%	**DRY DENSITY**	114 pcf



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.13
SAMPLE ID	Boring 8 at 24 ft	**START DATE**	3/3/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	16.0%	**DRY DENSITY**	114 pcf

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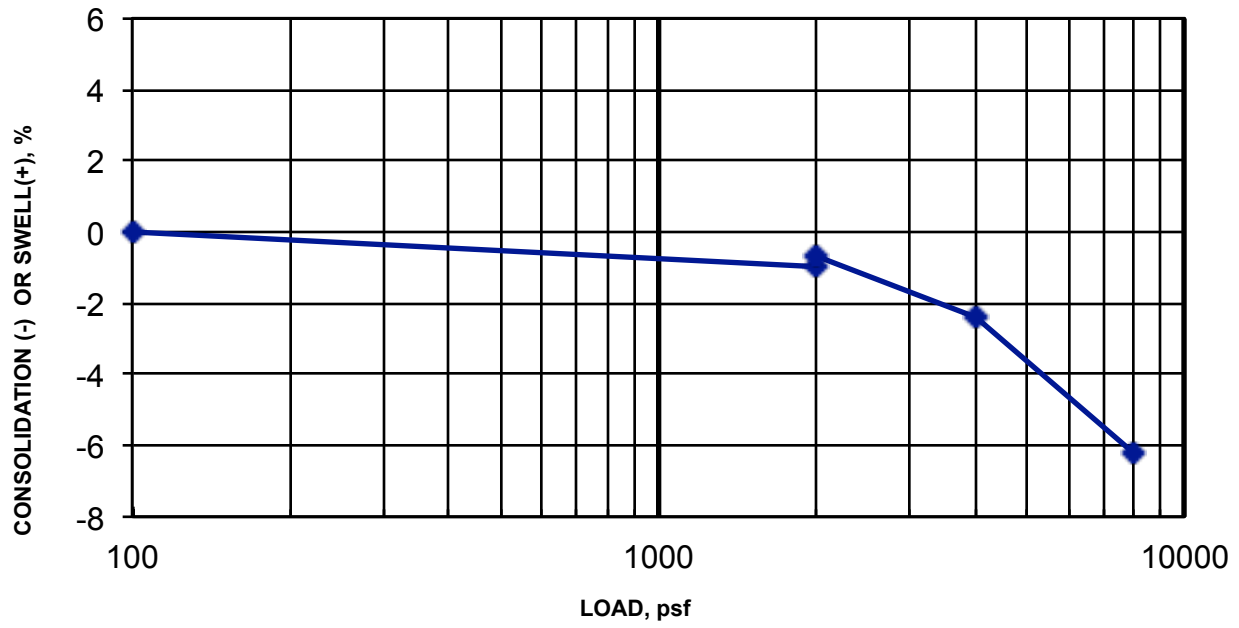
SWELL/CONSOLIDATION TESTING



PROJECT	Fairways at Vista Ridge	**PROJECT NO.**	12.139.14
SAMPLE ID	Boring 8 at 34 ft	**START DATE**	2/27/14
SAMPLE DESCRIPTION	Claystone Bedrock		
PRE-TEST MOISTURE CONTENT	14.2%	**DRY DENSITY**	108 pcf

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Fairways at Vista Ridge
Erie, Colorado
PCH Project No. 12.139.13

SUMMARY OF LABORATORY TEST RESULTS

Boring No.	Depth (ft)	Soil Description	Moisture Content (%)	Dry Density (pcf)	Swell (+) or Consolidation (-) (%)	Surchagre Pressure (psf)	Water Soluble Sulfate (ppm)	Passing #200 Sieve (%)	Atterberg Limits		
									LL	PL	PI
1	2	Fill - Clay/Claystone	10.5%	120	+7.9	500	300				
1	4	Claystone Bedrock	15.7%	115				96	51	17	34
1	9	Claystone Bedrock	15.3%	117	+16.9	500					
1	14	Claystone Bedrock	14.0%	117							
1	19	Claystone Bedrock	7.7%	128							
1	24	Claystone Bedrock	10.1%	125							
1	34	Claystone Bedrock	8.6%	121							
2	2	Lean Clay with Sand	17.0%	112				84	44	18	26
2	5	Lean Clay with Sand	10.3%	127	+6.4	500					
2	9	Claystone Bedrock	18.2%	115	+11.5	500					
2	14	Claystone Bedrock	16.1%	110							
2	19	Claystone Bedrock	14.1%	104							
2	24	Claystone Bedrock	13.5%	119	+5.6	2,000					
3	4	Sandy Lean Clay	9.6%	103							
3	9	Claystone Bedrock	10.2%	124	+6.5	500					
3	14	Claystone Bedrock	32.0%	106	+6.3	1,000					
3	19	Claystone Bedrock	17.4%	113	+2.8	2,000					
3	24	Claystone Bedrock	16.7%	113							
3	34	Claystone Bedrock	10.4%	118							
4	2	Fill - Sandy Lean Clay	13.4%	118	+0.4	500					
4	5	Sandy Lean Clay	11.6%	125	+6.5	500	400				
4	9	Sandy Lean Clay	7.5%	123							
4	14	Claystone/Sandstone Bedrock	10.5%	126	+0.7	1,000					
4	19	Claystone/Sandstone Bedrock	13.6%	105							
4	34	Claystone Bedrock	20.0%	109							

Fairways at Vista Ridge
Erie, Colorado
PCH Project No. 12.139.13

SUMMARY OF LABORATORY TEST RESULTS

Boring No.	Depth (ft)	Soil Description	Moisture Content (%)	Dry Density (pcf)	Swell (+) or Consolidation (-) (%)	Surchagre Pressure (psf)	Water Soluble Sulfate (ppm)	Passing #200 Sieve (%)	Atterberg Limits		
									LL	PL	PI
5	2	Sandy Lean Clay	11.9%	119				70	37	18	19
5	5	Sandy Lean Clay	6.6%	105	-4.1	500					
5	9	Claystone Bedrock	15.1%	116	+11.0	500					
5	14	Claystone Bedrock	15.9%	110							
5	19	Claystone Bedrock	14.9%	118	+3.9	2,000					
5	24	Claystone Bedrock	15.8%	110							
6	2	Sandy Lean Clay	16.6%	113	+2.6	200	300				
6	5	Claystone/Sandstone Bedrock	7.0%	123							
6	9	Claystone/Sandstone Bedrock	5.9%	111				68	39	18	21
6	14	Claystone/Sandstone Bedrock	5.1%	111							
6	19	Claystone/Sandstone Bedrock	3.5%	112							
6	24	Claystone Bedrock	19.4%	111	+3.1	2,000					
7	4	Sandy Lean Clay	9.7%	117	+6.1	500					
7	9	Claystone Bedrock	19.0%	114	+8.4	500		94	52	18	34
7	14	Claystone Bedrock	11.8%	123	+5.7	1,000					
7	19	Claystone Bedrock	11.6%	124							
7	24	Claystone/Sandstone Bedrock	10.0%	126							
8	4	Claystone Bedrock	15.5%	114	+12.5	500	1,600	99	58	19	39
8	9	Claystone Bedrock	13.5%	121	+3.1	500					
8	14	Claystone Bedrock	20.2%	109	+2.6	1,000					
8	19	Claystone Bedrock	16.5%	114	+2.1	1,000					
8	24	Claystone Bedrock	16.0%	114	+1.9	2,000					
8	29	Claystone Bedrock	14.8%	113							
8	34	Claystone Bedrock	14.2%	108	+0.3	2,000					

Fairways at Vista Ridge
Erie, Colorado
PCH Project No. 12.139.13

SUMMARY OF LABORATORY TEST RESULTS

Boring No.	Depth (ft)	Soil Description	Moisture Content (%)	Dry Density (pcf)	Swell (+) or Consolidation (-) (%)	Surchagre Pressure (psf)	Water Soluble Sulfate (ppm)	Passing #200 Sieve (%)	Atterberg Limits		
									LL	PL	PI

Boring No.	Depth (ft)	Soil Description	Moisture Content (%)	Dry Density (pcf)	Swell (+) or Consolidation (-) (%)	Surchagre Pressure (psf)	(Proctor) Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Atterberg Limits		
									LL	PL	PI
Comp.*	< 20 ft	Remolded Claystone(Borings 1 & 3)	19.8	104.4	+3.1	500	107.7	17.5	45	17	28
Comp.**	< 20 ft	Remolded Claystone(Borings 5, 7 & 8)	18.1	103.2	+4.0	500	108.0	18.0	48	17	31

*Composite sample of claystone bedrock from noted borings - Remolded to approximately 97% of standard Proctor dry density at about 2% above optimum moisture content

**Composite sample of claystone bedrock from noted borings - Remolded to approximately 96% of standard Proctor dry density at about optimum moisture content

APPENDIX C

GENERAL NOTES

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1⅜" I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
ST:	Thin-Walled Tube – 2.5" O.D., unless otherwise noted	PA:	Power Auger
RS:	Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA:	Hand Auger
CB:	California Barrel - 1.92" I.D., 2.5" O.D., unless otherwise noted	RB:	Rock Bit
BS:	Bulk Sample or Auger Sample	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value". For 2.5" O.D. California Barrel samplers (CB) the penetration value is reported as the number of blows required to advance the sampler 12 inches using a 140-pound hammer falling 30 inches, reported as "blows per inch," and is not considered equivalent to the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling
WCI:	Wet Cave in	WD:	While Drilling
DCI:	Dry Cave in	BCR:	Before Casing Removal
AB:	After Boring	ACR:	After Casing Removal

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

FINE-GRAINED SOILS			COARSE-GRAINED SOILS			BEDROCK		
(CB) Blows/Ft.	(SS) Blows/Ft.	Consistency	(CB) Blows/Ft.	(SS) Blows/Ft.	Relative Density	(CB) Blows/Ft.	(SS) Blows/Ft.	Consistency
< 3	0-2	Very Soft	0-5	< 3	Very Loose	< 24	< 20	Weathered
3-5	3-4	Soft	6-14	4-9	Loose	24-35	20-29	Firm
6-10	5-8	Medium Stiff	15-46	10-29	Medium Dense	36-60	30-49	Medium Hard
11-18	9-15	Stiff	47-79	30-50	Dense	61-96	50-79	Hard
19-36	16-30	Very Stiff	> 79	> 50	Very Dense	> 96	> 79	Very Hard
> 36	> 30	Hard						

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Terms of Other Constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Terms of Other Constituents	Percent of Dry Weight
Trace	< 5
With	5 – 12
Modifiers	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1-10
Medium	11-30
High	30+

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]					Soil Classification	
					Group Symbol	Group Name[B]
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]		GW	Well graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]		GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH		GM	Silty gravel[F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]		SW	Well graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]		SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH		SM	Silty sand[G,H,I]
			Fines classify as CL or CH		SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI > 7 and plots on or above "A" line[J]		CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]		ML	Silt[K,L,M]
		Organic	**Liquid limit - oven dried**	< 0.75	OL	Organic clay[K,L,M,N]
			Liquid limit - not dried			Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line		CH	Fat clay[K,L,M]
			PI plots below "A" line		MH	Elastic silt[K,L,M]
		Organic	Liquid limit - oven dried	< 0.75	OH	Organic clay[K,L,M,P]
			Liquid limit - not dried			Organic silt[K,L,M,Q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well graded gravel with silt, GW-GC well graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well graded sand with silt, SW-SC well graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

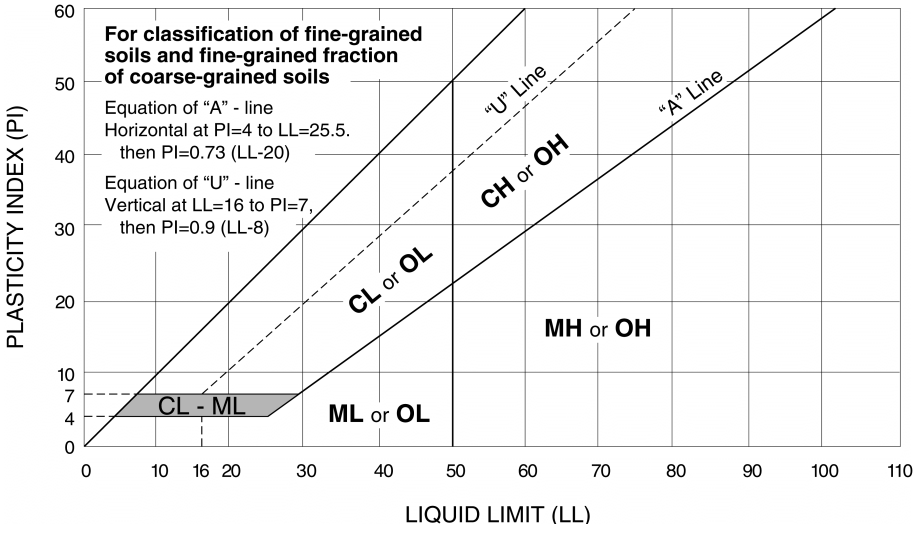
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



ROCK CLASSIFICATION
(Based on ASTM C-294)

Sedimentary Rocks

Sedimentary rocks are stratified materials laid down by water or wind. The sediments may be composed of particles or pre-existing rocks derived by mechanical weathering, evaporation or by chemical or organic origin. The sediments are usually indurated by cementation or compaction.

Chert Very fine-grained siliceous rock composed of micro-crystalline or cyrptocrystalline quartz, chalcedony or opal. Chert is various colored, porous to dense, hard and has a conchoidal to splintery fracture.

Claystone Fine-grained rock composed of or derived by erosion of silts and clays or any rock containing clay. Soft massive and may contain carbonate minerals.

Conglomerate Rock consisting of a considerable amount of rounded gravel, sand and cobbles with or without interstitial or cementing material. The cementing or interstitial material may be quartz, opal, calcite, dolomite, clay, iron oxides or other materials.

Dolomite A fine-grained carbonate rock consisting of the mineral dolomite [$CaMg(CO_3)_2$]. May contain noncarbonate impurities such as quartz, chert, clay minerals, organic matter, gypsum and sulfides. Reacts with hydrochloric acid (HCL).

Limestone A fine-grained carbonate rock consisting of the mineral calcite ($CaCO_3$). May contain noncarbonate impurities such as quartz, chert, clay minerals, organic matter, gypsum and sulfides. Reacts with hydrochloric acid (HCL).

Sandstone Rock consisting of particles of sand with or without interstitial and cementing materials. The cementing or interstitial material may be quartz, opal, calcite, dolomite, clay, iron oxides or other material.

Shale Fine-grained rock composed of or derived by erosion of silts and clays or any rock containing clay. Shale is hard, platy, of fissile may be gray, black, reddish or green and may contain some carbonate minerals (calcareous shale).

Siltstone Fine grained rock composed of or derived by erosion of silts or rock containing silt. Siltstones consist predominantly of silt sized particles (0.0625 to 0.002 mm in diameter) and are intermediate rocks between claystones and sandstones and may contain carbonate minerals.

LABORATORY TEST
SIGNIFICANCE AND PURPOSE

TEST	SIGNIFICANCE	PURPOSE
California Bearing Ratio	Used to evaluate the potential strength of subgrade soil, subbase, and base course material, including recycled materials for use in road and airfield pavements.	***Pavement Thickness Design***
Consolidation	Used to develop an estimate of both the rate and amount of both differential and total settlement of a structure.	***Foundation Design***
Direct Shear	Used to determine the consolidated drained shear strength of soil or rock.	***Bearing Capacity, Foundation Design, and Slope Stability***
Dry Density	Used to determine the in-place density of natural, inorganic, fine-grained soils.	***Index Property Soil Behavior***
Expansion	Used to measure the expansive potential of fine-grained soil and to provide a basis for swell potential classification.	***Foundation and Slab Design***
Gradation	Used for the quantitative determination of the distribution of particle sizes in soil.	***Soil Classification***
Liquid & Plastic Limit, Plasticity Index	Used as an integral part of engineering classification systems to characterize the fine-grained fraction of soils, and to specify the fine-grained fraction of construction materials.	***Soil Classification***
Permeability	Used to determine the capacity of soil or rock to conduct a liquid or gas.	***Groundwater Flow Analysis***
pH	Used to determine the degree of acidity or alkalinity of a soil.	***Corrosion Potential***
Resistivity	Used to indicate the relative ability of a soil medium to carry electrical currents.	***Corrosion Potential***
R-Value	Used to evaluate the potential strength of subgrade soil, subbase, and base course material, including recycled materials for use in road and airfield pavements.	***Pavement Thickness Design***
Soluble Sulfate	Used to determine the quantitative amount of soluble sulfates within a soil mass.	***Corrosion Potential***
Unconfined Compression	To obtain the approximate compressive strength of soils that possess sufficient cohesion to permit testing in the unconfined state.	***Bearing Capacity Analysis for Foundations***
Water Content	Used to determine the quantitative amount of water in a soil mass.	***Index Property Soil Behavior***

REPORT TERMINOLOGY
(Based on ASTM D653)

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Alluvium	Soil, the constituents of which have been transported in suspension by flowing water and subsequently deposited by sedimentation.
Aggregate Base Course	A layer of specified material placed on a subgrade or subbase usually beneath slabs or pavements.
Backfill	A specified material placed and compacted in a confined area.
Bedrock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Bench	A horizontal surface in a sloped deposit.
Caisson (Drilled Pier or Shaft)	A concrete foundation element cast in a circular excavation which may have an enlarged base. Sometimes referred to as a cast-in-place pier or drilled shaft.
Coefficient of Friction	A constant proportionality factor relating normal stress and the corresponding shear stress at which sliding starts between the two surfaces.
Colluvium	Soil, the constituents of which have been deposited chiefly by gravity such as at the foot of a slope or cliff.
Compaction	The densification of a soil by means of mechanical manipulation
Concrete Slab-on-Grade	A concrete surface layer cast directly upon a base, subbase or subgrade, and typically used as a floor system.
Differential Movement	Unequal settlement or heave between, or within foundation elements of structure.
Earth Pressure	The pressure exerted by soil on any boundary such as a foundation wall.
ESAL	Equivalent Single Axle Load, a criteria used to convert traffic to a uniform standard, (18,000 pound axle loads).
Engineered Fill	Specified material placed and compacted to specified density and/or moisture conditions under observations of a representative of a geotechnical engineer.
Equivalent Fluid	A hypothetical fluid having a unit weight such that it will produce a pressure against a lateral support presumed to be equivalent to that produced by the actual soil. This simplified approach is valid only when deformation conditions are such that the pressure increases linearly with depth and the wall friction is neglected.
Existing Fill (or Man-Made Fill)	Materials deposited throughout the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.

REPORT TERMINOLOGY
(Based on ASTM D653)

Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Finished Grade	The final grade created as a part of the project.
Footing	A portion of the foundation of a structure that transmits loads directly to the soil.
Foundation	The lower part of a structure that transmits the loads to the soil or bedrock.
Frost Depth	The depth at which the ground becomes frozen during the winter season.
Grade Beam	A foundation element or wall, typically constructed of reinforced concrete, used to span between other foundation elements such as drilled piers.
Groundwater	Subsurface water found in the zone of saturation of soils or within fractures in bedrock.
Heave	Upward movement.
Lithologic	The characteristics which describe the composition and texture of soil and rock by observation.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil, sometimes referred to as natural soil.
Optimum Moisture Content	The water content at which a soil can be compacted to a maximum dry unit weight by a given compactive effort.
Perched Water	Groundwater, usually of limited area maintained above a normal water elevation by the presence of an intervening relatively impervious continuous stratum.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Skin Friction (Side Shear)	The frictional resistance developed between soil and an element of the structure such as a drilled pier.
Soil (Earth)	Sediments or other unconsolidated accumulations of solid particles produced by the physical and chemical disintegration of rocks, and which may or may not contain organic matter.
Strain	The change in length per unit of length in a given direction.
Stress	The force per unit area acting within a soil mass.
Strip	To remove from present location.
Subbase	A layer of specified material in a pavement system between the subgrade and base course.
Subgrade	The soil prepared and compacted to support a structure, slab or pavement system.

Environmental Hazards Report: Please see the Preliminary Geotechnical Report (Section 10j) for Geotechnical, Environmental Hazards and Geologic characteristics.

Soils Report: Please see the Preliminary Geotechnical Report (Section 10j) for Soils, Environmental Hazards and Geologic characteristics.

LSC TRANSPORTATION CONSULTANTS, INC.

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October 30, 2014

Chartered Development Corporation
c/o Ward Ritter
3160 Village Vista Drive, Suite 104
Erie, CO 80516

Re: Montex North and South
Vista Ridge Zones 15 and 16
Trip Generation Comparison
Erie, CO
(LSC #140970)

Dear Mr. Ritter:

Per your request, we have completed this letter for Zone 16 of the Vista Ridge development in Erie, Colorado. The purpose of this letter is to compare trip generation from the currently proposed land use with the trip generation from the previously studied land use from the December, 2000 *Vista Ridge Traffic Impact Analysis* (TIA) by LSC and a recent trip generation comparison by LSC in September, 2013.

The currently proposed plan for the Vista Ridge development maintains the shopping center area at about 340,000 square feet. The residential development on the south portion will be reduced from 200 apartment units to 144 apartment units and one single-family detached unit. The northern portion will include 26 single-family detached, age-targeted dwelling units. The northern portion is actually in Zone 15, but was included in this analysis to show the entire site currently being proposed has a lower trip generation potential than the 200 apartment units previously assumed in Zone 16.

Table 1 shows the estimated trip generation potential from the 2000 LSC analysis (6th edition of the ITE *Trip Generation Manual*, 1997), for the trip generation comparison completed in September, 2013, and for the currently proposed land use based on the trip generation rates from the 9th edition of the ITE *Trip Generation Manual*, 2012.

Table 1 shows the currently proposed change in land use is expected to generate about 818 fewer weekday trips, about 63 fewer morning peak-hour trips, and about 155 fewer afternoon peak-hour trips than the original study. The findings in the December, 2000 *Vista Ridge TIA* are still applicable.

* * * * *

We trust this information will assist you in planning for the Montex North and South development.

Respectfully submitted,

LSC Transportation Consultants, Inc.

By: _____
Christopher S. McGranahan, P.E., PTOE

CSM/wc 10-30-14

Enclosures: Table 1

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Table 1
ESTIMATED TRAFFIC GENERATION
Montex North and South
Erie, CO
(LSC No. 140970; October; 2014)

Traffic Analysis Zone [2]	Land Use Description	Assumed Trip Generation Units		Generation Rates [1] Average Weekday Traffic	Peak-Hour AM In	Peak-Hour AM Out	Peak-Hour PM In	Peak-Hour PM Out	Percent External Traffic	External Trips Generated Average Weekday Traffic	Peak-Hour AM In	Peak-Hour AM Out	Peak-Hour PM In	Peak-Hour PM Out
Land Use and Trip Generation Approved Based on Vista Ridge TIA, December 2000 by LSC														
16	Office [3]	83	KSF [4]	11.01	1.37	0.19	0.25	1.24	90%	822	103	14	19	92
	Commercial [5]	392	KSF	41.84	0.56	0.36	1.89	2.05	75%	12,316	165	106	557	604
	Total Zone 16								**Total =**	**13,138**	**268**	**120**	**576**	**696**
Recent Trip Generation Comparison (September, 2013 by LSC)														
16	Shopping Center [6]	340.5	KSF	44.23	0.599	0.367	1.919	2.079	75%	11,295	153	94	490	531
	Apartments [7]	200.0	DU [8]	6.65	0.102	0.408	0.403	0.217	90%	1,197	18	73	73	39
									Total =	**12,492**	**171**	**167**	**563**	**570**
Currently Proposed Land Use														
16	Shopping Center [6]	340.5	KSF	44.23	0.599	0.367	1.919	2.079	75%	11,295	153	94	490	531
16 North	Single-Family - Age-Targeted [7]	26.0	DU [8]	6.60	0.132	0.353	0.397	0.238	90%	154	3	8	9	6
16 South	Single-Family [9]	1.0	DU	9.52	0.188	0.563	0.630	0.370	90%	9	0	1	1	0
16 South	Apartments [10]	144.0	DU	6.65	0.102	0.408	0.403	0.217	90%	862	13	53	52	28
									Total =	**12,320**	**169**	**156**	**552**	**565**
									Difference =	**-818**	**-99**	**36**	**-24**	**-131**
											AM =	**-63**	**PM =**	**-155**

Notes:

(1) *Trip Generation*, Institute of Transportation Engineers, 6th Edition, 1997 (previously proposed land use) and 9th Edition, 2012 (currently proposed land use).
(2) Refer to Figure 4 from December 2000 TIA for zone locations.
(3) ITE Land Use No. 710, General Office Building
(4) KSF = 1,000 square feet
(5) ITE Land Use No. 820, Shopping Center - formula rate
(6) ITE Land Use No. 820, Shopping Center - formula rate - assumes a floor area ratio of 0.15 on 49.82 acres plus a future 15.0 KSF Walgreens store
(7) Average of ITE Land Use No. 210, Single-Family Detached and ITE Land Use No. 251, Senior Adult Housing Detached
(8) DU = Dwelling Unit
(9) ITE Land Use No. 210, Single-Family Detached
(10) ITE Land Use No. 220, Apartments

prepared by
Enertia Consulting Group, LLC
1529 Market Street, Suite 200
Denver, CO 80202

Preliminary Utility Study

Montex North at Vista Ridge, Erie, Colorado

prepared for

Chartered Development Corp
3160 Village Vista Drive
Erie, CO 80516

LAND • ENERGY • INFRASTRUCTURE

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April 17, 2015

Mr. Martin Ostholthoff
Town of Erie
Community Development Director
645 Holbrook Street
P.O. Box 750
Erie, CO 80516

RE: Preliminary Utility Study Letter
Montex North at Vista Ridge

Dear Mr. Ostholthoff:

This Preliminary Utility Letter Report (Report) is being submitted to the Town of Erie in partial fulfillment of the Site Plan application requirements for Vista Ridge Filing No. 2, 1st Amendment (Montex North). The intent of this Report is to: (i) summarize the water demands and fire flow capacity of the proposed water system being submitted to the Town of Erie for review; (ii) determine sanitary sewer capacity requirements for the proposed 25-unit development in accordance with the Town of Erie Standards and Specifications.

Background Information

The Montex North project is a re-subdivision of Lot 2, Vista Ridge Filing No. 2 and is located in the Southwest Quarter of Section 33, Township 1 North, Range 68 West of the 6th Principle Meridian. The project is bounded to the north by Colorado National Golf Course, Vista Ridge Academy to the east, Primrose Preschool to the west and Ridge View Drive to the south. The adjacent major roadways are Mountain View Boulevard to the west, Sheridan Parkway to the east and East Baseline Road to the south. The proposed site consists of 4.04 acres. The developed parcel will consist of 25 single-family homes with a density of 6.2 dwelling units/acre. The construction will be Type V Construction. Connections will be made to an existing 12-inch waterline and 8-inch sanitary sewer located in Ridge View Drive. There is an existing water stub at the east end of the site which will be utilized for the proposed water system. An additional connection in Ridge View Drive will be made to provide a looped water system to the site. No sanitary stubs have been provided to the site.

Fire hydrant flow tests were performed on the two fire hydrants adjacent to the site in Ridge View Drive by Integrated Safety Services of Colorado on October 21, 2014. Data from these tests were used to determine the boundary conditions in the water analysis. The static pressure was 80 psi and the lowest residual pressure was 70 psi which equates to a head of 184.8 feet and 161.7 feet respectively.

An updated sanitary sewer analysis dated April 6, 2015 by Hurst and Associates has been attached and demonstrates that the existing sanitary sewer mains have capacity to accommodate the Montex North Development.

Water System

The proposed water system for Montex North is a looped system which connects to the existing 12-inch waterline in Ridge View Drive. The proposed water system consists of 1229 LF ~ 8-inch PVC, 4 blow offs

and 4 fire hydrants which will provide domestic potable water, fire protection and irrigation for the 25 single-family units and open space.

There are four dead end private drives on site with 8-inch waterline located within a tract. These drives are less than 150'. A hammerhead turnaround and a grasscrete fire department emergency access have been provided on Ridge View Court. Fire hydrants will be provided on the 8-inch looped water line. Per the Town of Erie Standards and Specification, for 1 and 2 family units, 1000 gpm for duration of 2 hours is required. Hydrant spacing is limited to 500 feet. One irrigation tap will be provided for open space areas.

To evaluate the water distribution system hydraulics and determine adequate design, the proposed water system was modeled assuming a full build out condition using Hazen-Williams Formula within Bentley WaterCAD version V8i software. From the fire hydrant flow tests, a hydraulic grade line curve was used to create a pump curve to simulate variable pressure readings. A Hazen-Williams Friction Coefficient of 100 was used for 8-inch and 12-inch pipe as outlined in the Town of Erie Standards and Specifications. The water demands calculated for the project were applied to the junctions throughout the system. The distribution system was modeled under four scenarios based on an open pipe system which include: average day demand, maximum day demand, maximum day demand with fire flow demand, and peak hour demand.

It was determined that each fire hydrant in the proposed water system is capable of providing 2317 gpm with a maximum velocity of 10 ft/sec during the maximum day demand. Pressures for all scenarios are within the operating pressure requirements outlined in the Town of Erie Standards and specifications.

The water calculations attached for reference.

Sanitary Sewer

The proposed Montex North sanitary system serves 25 single-family residential lots and consists of 1186 LF of 8-inch PVC sewer which will connect to an existing 8-inch PVC sanitary sewer located in Ridge View Drive south of the site.

The sanitary demands for the project were calculated using the requirements defined by the Town of Erie Standards and Specifications. A flow rate of 90 gpcd with residential multiplier of 3.0 was used to determine the Average Daily Flow Rate (0.010 cfs). A peaking factor of 5 was used to determine the Peak Flow Rate which resulted in 0.052 cfs. To accommodate homes with 9 foot basements, the sanitary sewer has been designed at the town's allowable minimum grade of 0.40%. Using Manning's Equation with a roughness coefficient of 0.013 and a pipe slope of 0.40% yields a capacity of 0.76 ft^3/sec at 80% depth for an 8-inch sewer.

The calculations and flow criteria are attached for reference.

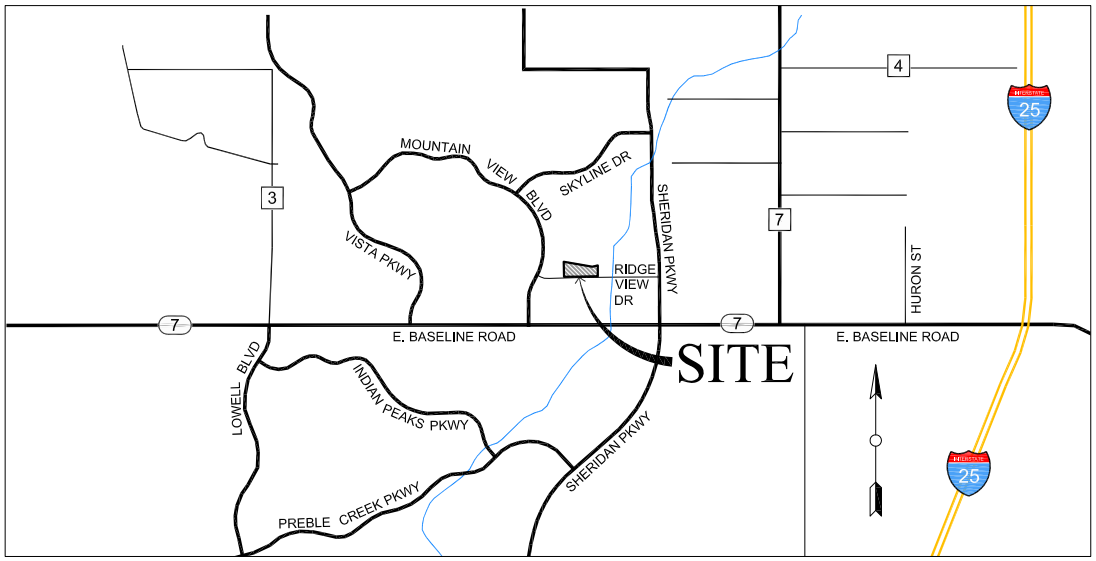
We trust that this Report is acceptable and complete. Please contact me at shawn.merz@enertiacg.com or (720) 502-6574 should you have any questions regarding this submittal.

Sincerely,

ENERTIA CONSULTING GROUP, LLC

Shawn Merz, PE, LEED AP
Senior Engineer

Enclosures


MOUNTAIN VIEW BLVD
SKYLINE DR
VISTA PKWY
RIDGE VIEW DR
SHERIDAN PKWY
HURON ST
E. BASELINE ROAD
E. BASELINE ROAD
SITE
LOWELL BLVD
INDIAN PEAKS PKWY
PREBLE CREEK PKWY
SHERIDAN PKWY
3
7
7
4
25
25

Montex North at Vista Ridge Water Demand Summary

Building Demand Breakdown

Node	Land Use	Units (EA)	Residential/Unit Multiplier	Avg. Demand (GPCD) (GPD/ACRE)	Average Day Demand GPM	Max Day/Avg Day Peaking Factor	Max Day Demand (GPM)	Max Hr/Avg Day Peaking Factor	Max Hour Demand (GPM)
J-2	Multi-Family Residential	2	3.00	140	0.58	2.60	1.52	3.90	2.28
J-4	Multi-Family Residential	4	3.00	140	1.17	2.60	3.03	3.90	4.55
J-5	Multi-Family Residential	2	3.00	140	0.58	2.60	1.52	3.90	2.28
J-7	Multi-Family Residential	1	3.00	140	0.29	2.60	0.76	3.90	1.14
J-10	Multi-Family Residential	5	3.00	140	1.46	2.60	3.79	3.90	5.69
J-11	Multi-Family Residential	4	3.00	140	1.17	2.60	3.03	3.90	4.55
J-12	Multi-Family Residential	4	3.00	140	1.17	2.60	3.03	3.90	4.55
J-13	Multi-Family Residential	3	3.00	140	0.88	2.60	2.28	3.90	3.41
		25			**7.29**		**18.96**		**28.44**

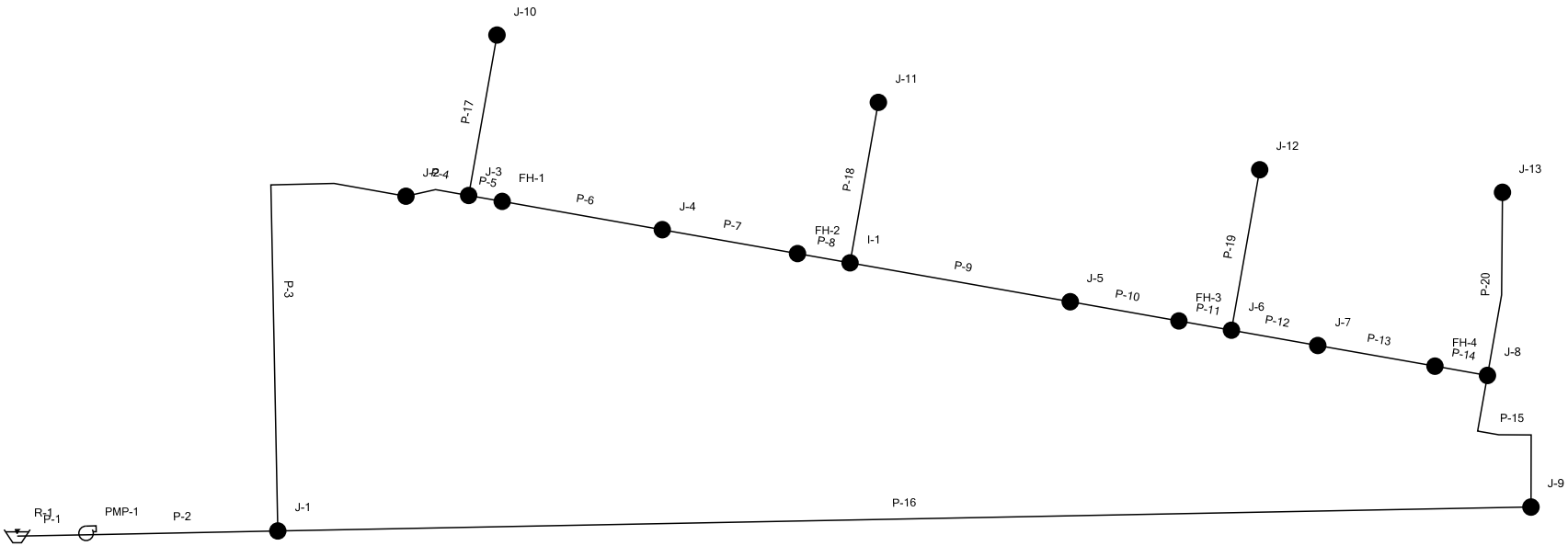
Irrigation Demand Breakdown

Node	Land Use	Irrigation Area (sf)	Irrigation Area (acres)	Irrigation Rate[1] (GPM/acre)	Average Day Demand (GPM)	Max Day Irrigation Rate[2] (GPM/acre)	Max Day Demand (GPM)	Peak Flow Rate (GPM/acre)	Max Hour Demand (GPM)
I-1	Irrigation Area 1	30,760	0.7062	1.55	1.09	15.84	11.19	23.50	16.59
		30,760	**0.71**		**1.09**		**11.19**		**16.59**

Montex-North-WaterCAD.wtg

Scenario: Base

Active Scenario: Base



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	0	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,427.30	0	184.80

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,427.30	78.7
32	J-2	5,247.30	0.00	5,427.30	77.9
34	J-3	5,248.13	0.00	5,427.30	77.5
36	FH-1	5,248.64	0.00	5,427.30	77.3
56	J-10	5,249.64	0.00	5,427.30	76.9
38	J-4	5,251.12	0.00	5,427.30	76.2
85	FH-2	5,253.22	0.00	5,427.30	75.3
40	I-1	5,254.02	0.00	5,427.30	75.0
58	J-11	5,254.81	0.00	5,427.30	74.6
44	J-5	5,256.77	0.00	5,427.30	73.8
79	FH-3	5,258.05	0.00	5,427.30	73.2
46	J-6	5,258.86	0.00	5,427.30	72.9
60	J-12	5,259.95	0.00	5,427.30	72.4
88	J-7	5,260.35	0.00	5,427.30	72.2
53	J-9	5,260.90	0.00	5,427.30	72.0
48	FH-4	5,262.36	0.00	5,427.30	71.4
50	J-8	5,263.26	0.00	5,427.30	71.0
77	J-13	5,263.95	0.00	5,427.30	70.7

Montex-North-WaterCAD.wtg

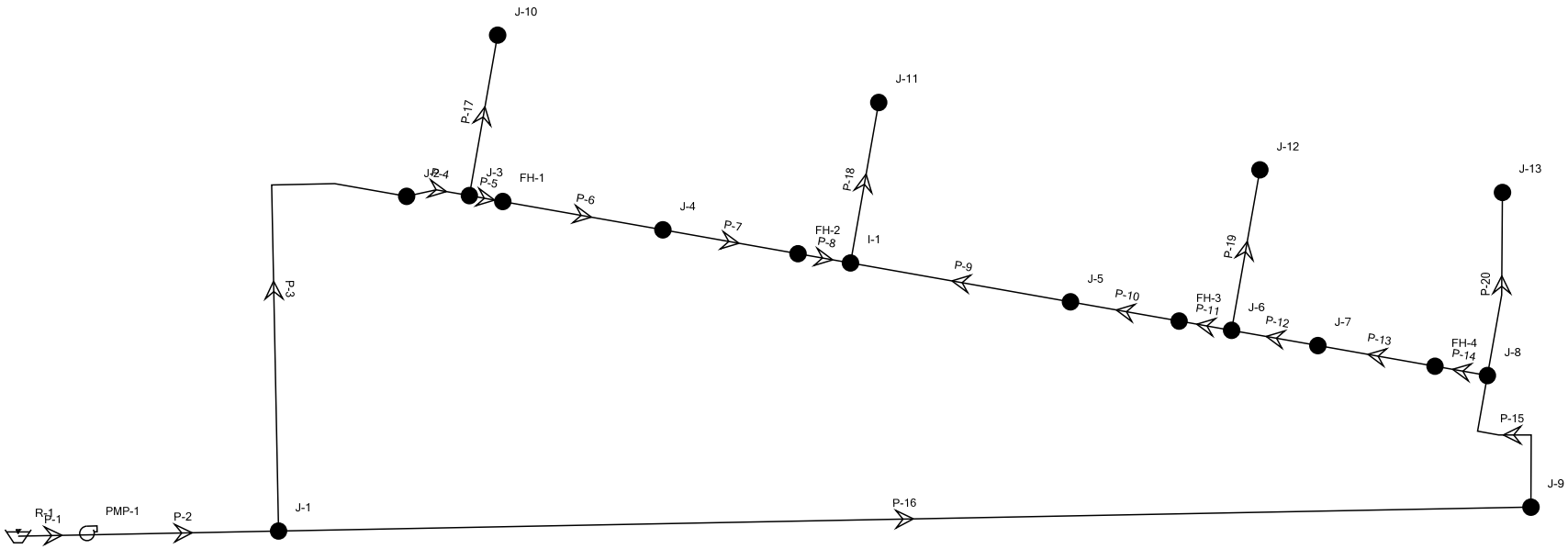
FlexTable: Pipe Table

Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	0.02	0.00	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	0.02	0.00	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	0.02	0.00	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	0.02	0.00	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	0.02	0.00	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	0.02	0.00	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	0.02	0.00	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	0.02	0.00	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	0.02	0.00	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	0.01	0.00	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	0.01	0.00	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	0.01	0.00	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	0.01	0.00	0.000
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	0.01	0.00	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	0.01	0.00	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	0.00	0.00	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	0.00	0.00	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	0.00	0.00	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	0.01	0.00	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	0.00	0.00	0.000

Montex-North-WaterCAD.wtg
Scenario: Average Day
Active Scenario: Average Day



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Average Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	8.39	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Average Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,427.02	8.39	184.52

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Average Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,427.02	78.6
32	J-2	5,247.30	0.58	5,427.02	77.8
34	J-3	5,248.13	0.00	5,427.02	77.4
36	FH-1	5,248.64	0.00	5,427.02	77.2
56	J-10	5,249.64	1.46	5,427.02	76.7
38	J-4	5,251.12	1.17	5,427.02	76.1
85	FH-2	5,253.22	0.00	5,427.02	75.2
40	I-1	5,254.02	1.09	5,427.02	74.8
58	J-11	5,254.81	1.17	5,427.02	74.5
44	J-5	5,256.77	0.58	5,427.02	73.7
79	FH-3	5,258.05	0.00	5,427.02	73.1
46	J-6	5,258.86	0.00	5,427.02	72.8
60	J-12	5,259.95	1.17	5,427.02	72.3
88	J-7	5,260.35	0.29	5,427.02	72.1
53	J-9	5,260.90	0.00	5,427.02	71.9
48	FH-4	5,262.36	0.00	5,427.02	71.2
50	J-8	5,263.26	0.00	5,427.02	70.9
77	J-13	5,263.95	0.88	5,427.02	70.6

Montex-North-WaterCAD.wtg
FlexTable: Pipe Table
Active Scenario: Average Day

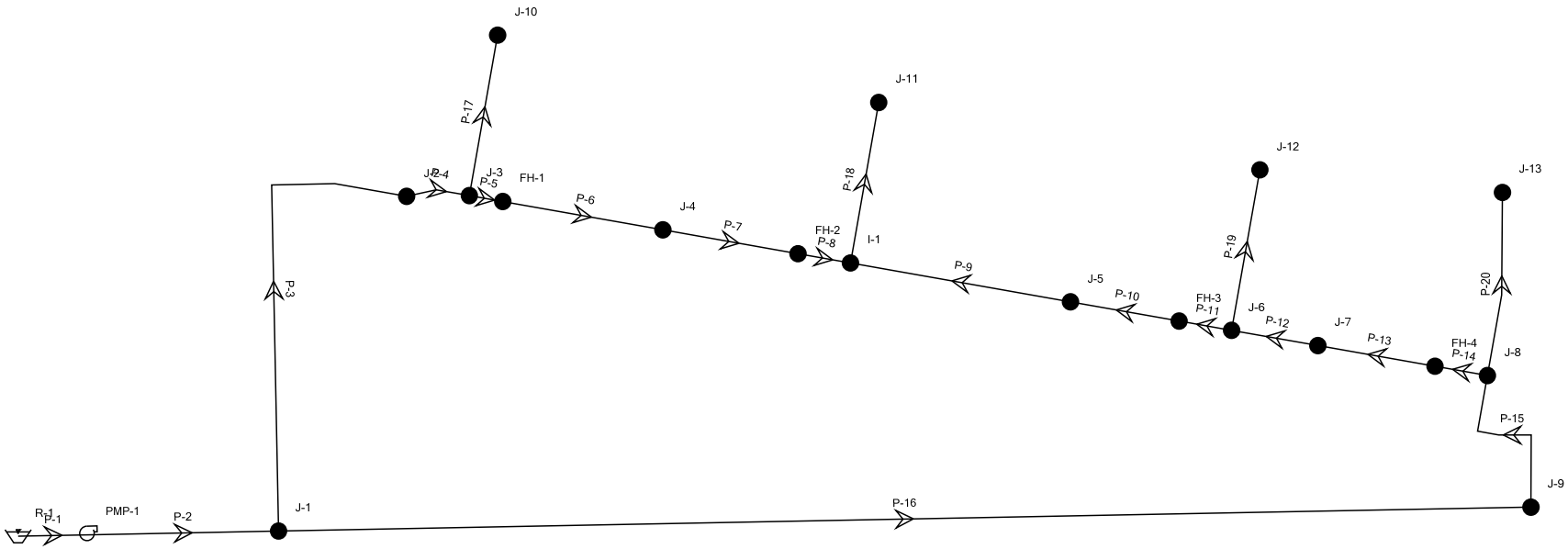
Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	8.39	0.02	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	8.39	0.02	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	4.16	0.03	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	3.58	0.02	0.000
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	2.12	0.01	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	2.12	0.01	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	1.46	0.01	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	1.17	0.01	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	1.17	0.01	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	0.95	0.01	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	0.95	0.01	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	0.88	0.01	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	-1.31	0.01	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	-1.89	0.01	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	-1.89	0.01	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	-3.06	0.02	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	-3.35	0.02	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	-3.35	0.02	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	-4.23	0.03	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	-4.23	0.01	0.000

Montex-North-WaterCAD.wtg

Scenario: Max Day

Active Scenario: Max Day



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Max Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	30.15	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Max Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,426.33	30.15	183.83

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Max Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,426.33	78.3
32	J-2	5,247.30	1.52	5,426.33	77.5
34	J-3	5,248.13	0.00	5,426.33	77.1
36	FH-1	5,248.64	0.00	5,426.33	76.9
56	J-10	5,249.64	3.79	5,426.33	76.4
38	J-4	5,251.12	3.03	5,426.33	75.8
85	FH-2	5,253.22	0.00	5,426.33	74.9
40	I-1	5,254.02	11.19	5,426.33	74.5
58	J-11	5,254.81	3.03	5,426.33	74.2
44	J-5	5,256.77	1.52	5,426.33	73.4
79	FH-3	5,258.05	0.00	5,426.33	72.8
46	J-6	5,258.86	0.00	5,426.33	72.5
60	J-12	5,259.95	3.03	5,426.33	72.0
88	J-7	5,260.35	0.76	5,426.33	71.8
53	J-9	5,260.90	0.00	5,426.33	71.6
48	FH-4	5,262.36	0.00	5,426.33	70.9
50	J-8	5,263.26	0.00	5,426.33	70.6
77	J-13	5,263.95	2.28	5,426.33	70.3

Montex-North-WaterCAD.wtg

FlexTable: Pipe Table

Active Scenario: Max Day

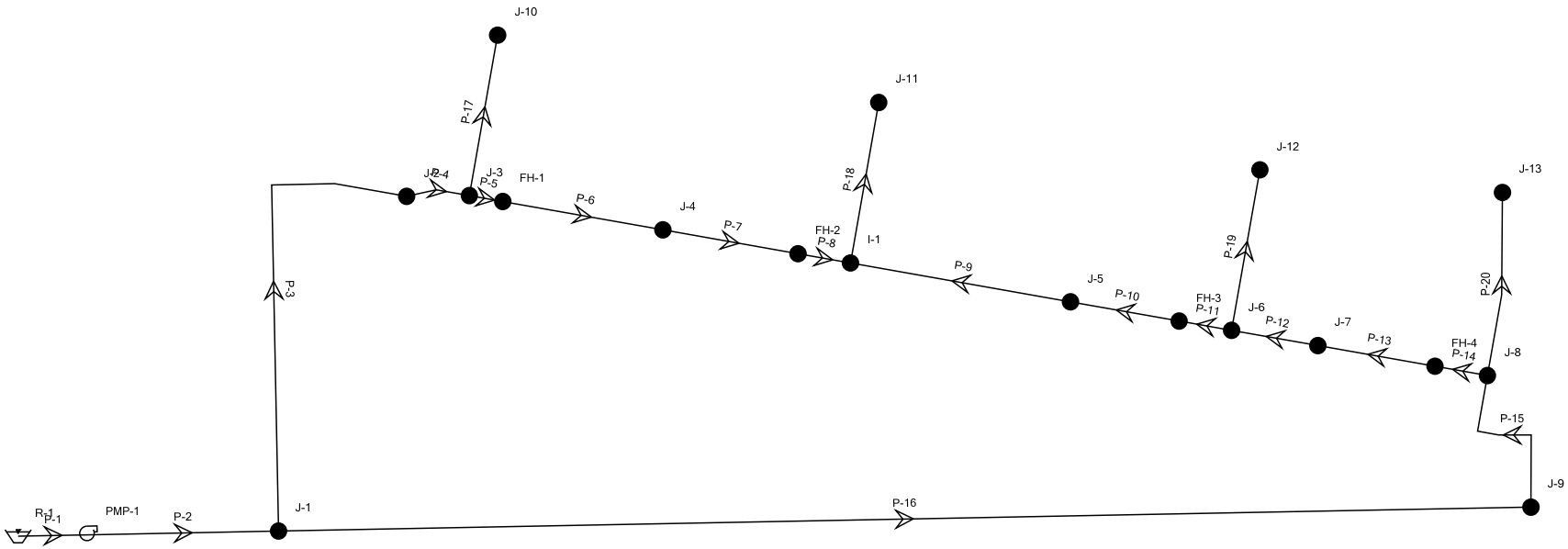
Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	30.15	0.09	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	30.15	0.09	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	15.08	0.10	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	13.56	0.09	0.000
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	9.77	0.06	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	9.77	0.06	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	6.74	0.04	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	6.74	0.04	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	3.79	0.02	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	3.03	0.02	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	3.03	0.02	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	2.28	0.01	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	-7.48	0.05	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	-9.00	0.06	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	-9.00	0.06	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	-12.03	0.08	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	-12.79	0.08	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	-12.79	0.08	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	-15.07	0.10	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	-15.07	0.04	0.000

Montex-North-WaterCAD.wtg

Scenario: Max Hour

Active Scenario: Max Hour



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	45.04	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,425.87	45.04	183.37

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,425.87	78.1
32	J-2	5,247.30	2.28	5,425.86	77.3
34	J-3	5,248.13	0.00	5,425.86	76.9
36	FH-1	5,248.64	0.00	5,425.86	76.7
56	J-10	5,249.64	5.69	5,425.86	76.2
38	J-4	5,251.12	4.55	5,425.86	75.6
85	FH-2	5,253.22	0.00	5,425.86	74.7
40	I-1	5,254.02	16.59	5,425.86	74.3
58	J-11	5,254.81	4.55	5,425.86	74.0
44	J-5	5,256.77	2.28	5,425.86	73.2
79	FH-3	5,258.05	0.00	5,425.86	72.6
46	J-6	5,258.86	0.00	5,425.86	72.3
60	J-12	5,259.95	4.55	5,425.86	71.8
88	J-7	5,260.35	1.14	5,425.86	71.6
53	J-9	5,260.90	0.00	5,425.86	71.4
48	FH-4	5,262.36	0.00	5,425.86	70.7
50	J-8	5,263.26	0.00	5,425.86	70.4
77	J-13	5,263.95	3.41	5,425.86	70.1

Montex-North-WaterCAD.wtg
FlexTable: Pipe Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	45.04	0.13	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	45.04	0.13	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	22.52	0.14	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	20.24	0.13	0.000
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	14.55	0.09	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	14.55	0.09	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	10.00	0.06	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	10.00	0.06	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	5.69	0.04	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	4.55	0.03	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	4.55	0.03	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	3.41	0.02	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	-11.14	0.07	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	-13.42	0.09	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	-13.42	0.09	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	-17.97	0.11	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	-19.11	0.12	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	-19.11	0.12	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	-22.52	0.14	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	-22.52	0.06	0.000

Montex-North-WaterCAD.wtg
Fire Flow Node FlexTable: Fire Flow Report
Active Scenario: Max Day + FF

Current Time: 0.000 hours

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Calculated Zone Lower Limit @ Total Flow Needed) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?	Velocity of Maximum Pipe (ft/s)
J-1	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-2	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-3	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-4	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
I-1	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-5	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-6	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-8	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-9	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-10	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-11	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-12	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-13	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-7	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
FH-4	True	1,500.00	2,317.66	1,500.00	2,317.66	20.0	49.1	48.7	35.3	J-13	True	10.00
FH-1	True	1,500.00	2,534.79	1,500.00	2,534.79	20.0	54.4	50.3	35.3	J-11	True	10.00
FH-3	True	1,500.00	2,653.99	1,500.00	2,653.99	20.0	50.2	49.3	28.8	J-12	True	10.00
FH-2	True	1,500.00	2,957.57	1,500.00	2,957.57	20.0	52.0	49.9	23.8	J-11	True	10.00

Report of Inspection/Test

Fire Hydrant #1

October 21, 2014

Integrated Safety Services of Colorado, LLC

9082 Marshall Ct.
Westminster, CO 80031

Phone: 303-278-1538
Fax: 303-278-1519

Property	**Owner/Agent**
Montex at Vista Ridge	Enertia Consulting Group, LLC
Mountain View Blvd/Ridge View Drive Erie, CO 80516	1437 Larimer St Denver, CO 80202
Shawn Merz (720)502-6574	Shawn Merz (720)502-6574

Conducted by: Matthew Foster
Inspection Ref: 73353

Print Date: 10/22/2014

Signatures

Inspector - Printed	Inspector - Signature	Date Completed	I state that the information on this form is correct at the time and place of my inspection, and all equipment tested at this time was left in operational condition upon completion of this inspection except as noted.
Signature on Original			

Hydrant Flow Test Inspection

Yes	Free from ice or water in barrel ?
Yes	Free from leaks or cracks at outlets and top of hydrants?
Yes	Threads,outlets,caps & stem in good condition and lubricated?
Yes	Pumper and nozzle caps are slightly more than hand tight?
NA	Exposed piping is properly secured and free from leaks or physical damage?
Yes	Is paint in good condition?
Yes	Operating nut not worn, twisted or broken?
Yes	Operating nut turns without difficulty?
Yes	Road box and shutoff valve is visible and accessible?
Yes	Hydrant flowed until clear (min 1 Minute)?
Yes	Dry Barrels drain in at least 1 hour?
NA	Dry barrels requiring pumping are identified?
Yes	Control valves operated through full range?
Yes	Hydrant shuts off completely?
NA	Strainers, if installed, not blocked and corrosion free?
NA	Strainers cleaned (if possible)?
NA	Monitor nozzles moved through full range?
NA	Monitor nozzle flowed acceptable water?
NA	Monitor nozzle lubricated?
NA	Backflow assembles, if installed, passed full flow test?

Fire Hydrant Flow Test 50%

1st Hyd E of 2998	Residual Hydrant Location
2nd Hyd E of 2998	Flow Hydrant Location
80	Static PSI
70	Residual PSI
17	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
695	Water Flow GPM

Fire Hydrant Flow Test 100%

1st Hyd E of 2998	Residual Hydrant Location
2nd Hyd E of 2998	Flow Hydrant Location
80	Static PSI
75	Residual PSI
22	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
791	Water Flow GPM

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Report of Inspection/Test

Fire Hydrant #2

October 21, 2014

Integrated Safety Services of Colorado, LLC
9082 Marshall Ct.
Westminster, CO 80031
Phone: 303-278-1538
Fax: 303-278-1519

Property	**Owner/Agent**
Montex at Vista Ridge	Enertia Consulting Group, LLC
Mountain View Blvd/Ridge View Drive Erie, CO 80516	1437 Larimer St Denver, CO 80202
Shawn Merz (720)502-6574	Shawn Merz (720)502-6574

Conducted by: Matthew Foster
Inspection Ref: 73354

Print Date: 10/22/2014

Signatures

Inspector - Printed	Inspector - Signature	Date Completed	I state that the information on this form is correct at the time and place of my inspection, and all equipment tested at this time was left in operational condition upon completion of this inspection except as noted.
Signature on Original			

Hydrant Flow Test Inspection

Yes	Free from ice or water in barrel ?
Yes	Free from leaks or cracks at outlets and top of hydrants?
Yes	Threads,outlets,caps & stem in good condition and lubricated?
Yes	Pumper and nozzle caps are slightly more than hand tight?
NA	Exposed piping is properly secured and free from leaks or physical damage?
Yes	Is paint in good condition?
Yes	Operating nut not worn, twisted or broken?
Yes	Operating nut turns without difficulty?
Yes	Road box and shutoff valve is visible and accessible?
Yes	Hydrant flowed until clear (min 1 Minute)?
Yes	Dry Barrels drain in at least 1 hour?
NA	Dry barrels requiring pumping are identified?
Yes	Control valves operated through full range?
Yes	Hydrant shuts off completely?
NA	Strainers, if installed, not blocked and corrosion free?
NA	Strainers cleaned (if possible)?
NA	Monitor nozzles moved through full range?
NA	Monitor nozzle flowed acceptable water?
NA	Monitor nozzle lubricated?
NA	Backflow assembles, if installed, passed full flow test?

Fire Hydrant Flow Test 50%

2nd Hyd E of 2998	Residual Hydrant Location
1st Hyd E of 2998	Flow Hydrant Location
72	Static PSI
75	Residual PSI
14	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
631	Water Flow GPM

Fire Hydrant Flow Test 100%

2nd Hyd E of 2998	Residual Hydrant Location
1st Hyd E of 2998	Flow Hydrant Location
72	Static PSI
90	Residual PSI
22	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
791	Water Flow GPM

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APPENDIX B

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION B101
GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m^2), used to determine the required fire flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases. The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the *fire code official* is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code.*

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General. The fire-flow calculation area shall be the total floor area of all floor levels within the *exterior walls*, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

B104.2 Area separation. Portions of buildings which are separated by *fire walls* without openings, constructed in accordance with the *International Building Code,* are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction. The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

Exception: Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One- and two-family dwellings. The minimum fire-flow and flow duration requirements for one- and two-family *dwellings* having a fire-flow calculation area that does not exceed 3,600 square feet (344.5 m^2) shall be 1,000 gallons per minute (3785.4 L/min) for 1 hour. Fire-flow and flow duration for *dwellings* having a fire-flow calculation area in excess of 3,600 square feet (344.5m^2) shall not be less than that specified in Table B105.1.

Exception: A reduction in required fire-flow of 50 percent, as *approved*, is allowed when the building is equipped with an *approved automatic sprinkler system.*

B105.2 Buildings other than one- and two-family dwellings. The minimum fire-flow and flow duration for buildings other than one- and two-family *dwellings* shall be as specified in Table B105.1.

Exception: A reduction in required fire-flow of up to 75 percent, as *approved*, is allowed when the building is provided with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in Table B105.1.

SECTION B106
REFERENCED STANDARDS

ICC	IBC—12	International Building Code	B104.2, Table B105.1
ICC	IWUIC—12	International Wildland-Urban Interface Code	B103.3
NFPA	1142—12	Standard on Water Supplies for Suburban and Rural Fire Fighting	B103.3

TABLE B105.1
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.

b. Measured at 20 psi residual pressure.

APPENDIX C

FIRE HYDRANT LOCATIONS AND DISTRIBUTION

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION C101 GENERAL

C101.1 Scope. Fire hydrants shall be provided in accordance with this appendix for the protection of buildings, or portions of buildings, hereafter constructed.

SECTION C102 LOCATION

C102.1 Fire hydrant locations. Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets.

SECTION C103 NUMBER OF FIRE HYDRANTS

C103.1 Fire hydrants available. The minimum number of fire hydrants available to a building shall not be less than that listed in Table C105.1. The number of fire hydrants available to a complex or subdivision shall not be less than that determined by spacing requirements listed in Table C105.1 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted.

SECTION C104 CONSIDERATION OF EXISTING FIRE HYDRANTS

C104.1 Existing fire hydrants. Existing fire hydrants on public streets are allowed to be considered as available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads.

SECTION C105 DISTRIBUTION OF FIRE HYDRANTS

C105.1 Hydrant spacing. The average spacing between fire hydrants shall not exceed that listed in Table C105.1.

Exception: The fire chief is authorized to accept a deficiency of up to 10 percent where existing fire hydrants provide all or a portion of the required fire hydrant service.

Regardless of the average spacing, fire hydrants shall be located such that all points on streets and access roads adjacent to a building are within the distances listed in Table C105.1.

TABLE C105.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more[e]	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers which cannot be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

d. Reduce by 50 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

HURST

CIVIL ENGINEERING
LAND PLANNING
SURVEYING

April 6, 2015

Matt Weiderspahn
Town of Erie
645 Holbrook
Erie, CO 80516

Re: Montex South Preliminary Plat

Dear Matt:

This is a response to your Phase III Utility Report comments for the Montex South Preliminary Plat dated February 25, 2014. The attached calculations and exhibits for the Vista Ridge existing sewer mains verify the assumptions of our letter dated July 31, 2013 and your Master Plan. The analysis includes the existing and proposed peak flows for the sewer system with the eastern wastewater basins of Vista Ridge. The main capacities are less than 50% of full flow capacity.

Sincerely,
HURST & ASSOCIATES, INC.

John W. Jorgenson, P.E.
State of Colorado No. 22730

JWJ/kw

Job No. 2142-5

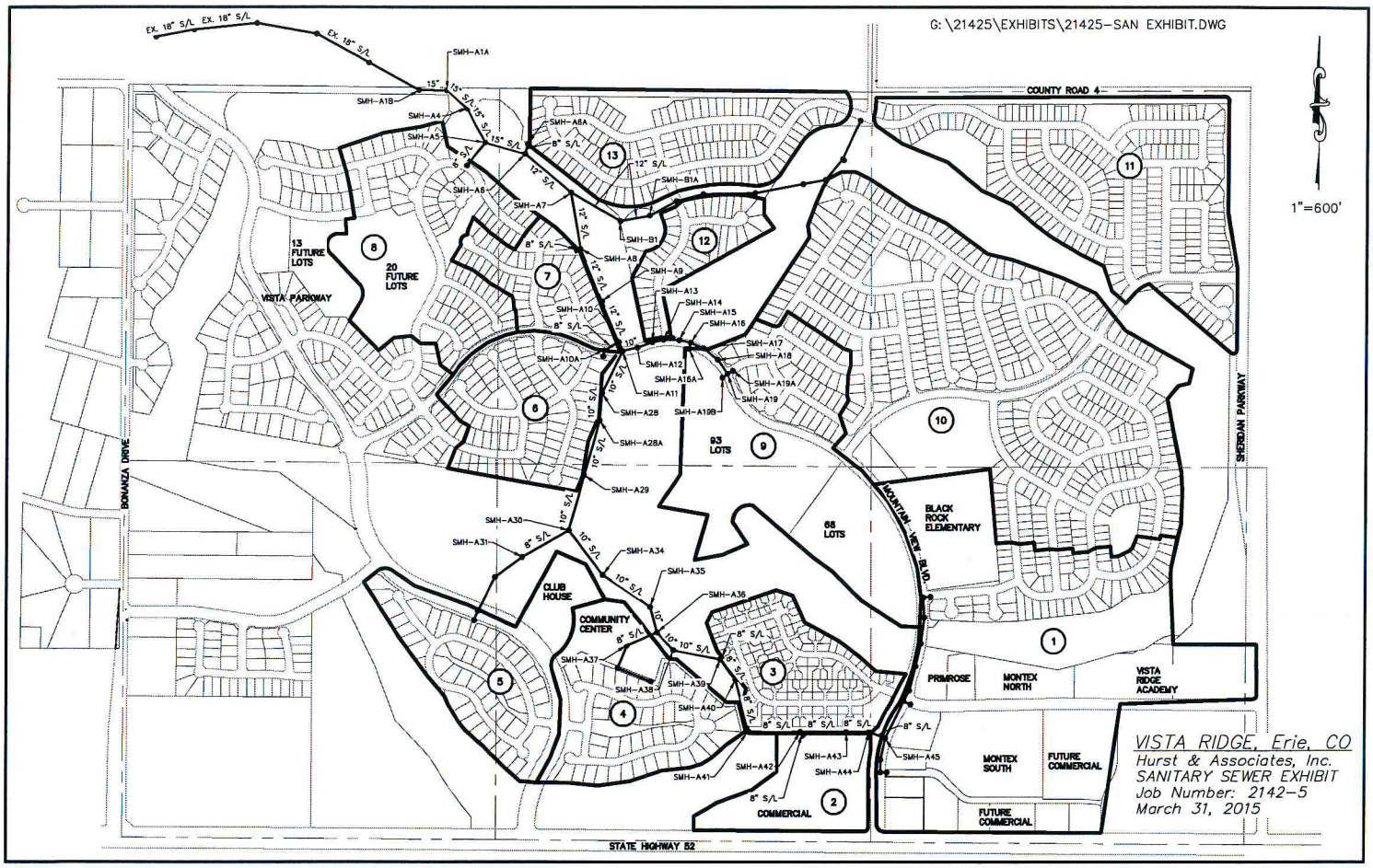
Analysis of Existing Vista Ridge Sanitary Sewer Main Capacities with Montex North & South Constructed

Down MH	Up MH	Note	As-Built ?	Pipe Size (inches)	Pipe Length (feet)	Pipe Slope (ft/ft)	Full Flow Pipe Capacity (cfs)	80% Depth Pipe Capacity (cfs)	Contributing Basins	Average Daily Flows (MGD)	Peaking Factor	Peak Flow Rate (MGD)	Peak Flow Rate (cfs)	Sufficient Pipe Capacity ?	% of Full Flow Capacity (cfs)
SMH-A1B	**SMH-A1A**		Yes	15	203.86	0.0074	**6.57**	6.42	1-13	0.30616	4.45	1.36170	**2.11**	YES	32.1%
SMH-A1A	**SM-A4**		Yes	15	195.41	0.0073	**6.52**	6.38	1-13	0.30616	4.45	1.36170	**2.11**	YES	32.3%
SMH-A4	**SMH-A5**		Yes	15	272.00	0.0047	**5.23**	5.12	1-13	0.30616	4.45	1.36170	**2.11**	YES	40.3%
SMH-A5	**SMH-A5A**	Pipe to SW	Yes	8	211.05	0.0685	**3.74**	3.65	8	0.01724	5.00	0.08621	**0.13**	YES	3.6%
SMH-A5	**SMH-A6**		Yes	15	293.66	0.0044	**5.06**	4.95	1-7, 9-13	0.28891	4.49	1.29752	**2.01**	YES	39.6%
SMH-A6	**SMH-A6A**	Stub to NW	Yes	8	76.61	0.0125	**1.60**	1.56	13	0.02042	5.00	0.10211	**0.16**	YES	9.9%
SMH-A6	**SMH-A7**		Yes	12	420.03	0.0123	**4.67**	4.56	1-7, 9-12	0.26849	4.55	1.22065	**1.89**	YES	40.4%
SMH-A7	**SMH-B1**	Pipe to SE	Yes	12	400.90	0.0182	**5.68**	5.55	10-12	0.10697	5.00	0.53484	**0.83**	YES	14.6%
SMH-A7	**SMH-A8**		Yes	12	401.81	0.0040	**2.66**	2.60	1-7, 9	0.16152	4.95	0.79937	**1.24**	YES	46.4%
SMH-A8	**Stub**	Stub to SW	No	8	2.00	0.0950	**4.40**	4.30	7	0.00870	5.00	0.04352	**0.07**	YES	1.5%
SMH-A8	**SMH-A9**		Yes	12	399.70	0.0203	**6.00**	5.86	1-6, 9	0.15282	5.00	0.76332	**1.18**	YES	19.7%
SMH-A9	**SMH-A10**		Yes	12	310.47	0.0142	**5.02**	4.90	1-6, 9	0.15282	5.00	0.76332	**1.18**	YES	23.5%
SMH-A10	**SMH-A10A**	Pipe to SW	Yes	8	117.07	0.0784	**4.00**	3.91	6	0.01356	5.00	0.06780	**0.10**	YES	2.6%
SMH-A10	**SMH-A11**		Yes	10	66.81	0.0302	**4.50**	4.40	1-5, 9	0.13926	5.00	0.69629	**1.08**	YES	23.9%
SMH-A11	**SMH-A12**	(Pipe to E)	Yes	8	104.43	0.1060	**4.65**	4.54	9	0.03432	5.00	0.17159	**0.27**	YES	5.7%
SMH-11	**SMH-A28**		Yes	10	331.11	0.0175	**3.43**	3.35	1-5	0.10494	5.00	0.52471	**0.81**	YES	23.7%
SMH-A28	**SMH-A28A**		Yes	10	191.94	0.0170	**3.38**	3.30	1-5	0.10494	5.00	0.52471	**0.81**	YES	24.0%
SMH-A28A	**SMH-A29**		Yes	10	399.74	0.0083	**2.36**	2.31	1-5	0.10494	5.00	0.52471	**0.81**	YES	34.4%
SMH-A29	**SMH-A30**		Yes	10	403.98	0.0591	**6.29**	6.15	1-5	0.10494	5.00	0.52471	**0.81**	YES	12.9%
SMH-30	**SMH-A31**	(Pipe to SW)	Yes	8	370.09	0.0328	**2.59**	2.53	5	0.01670	5.00	0.08350	**0.13**	YES	5.0%
SMH-30	**SMH-A34**		Yes	10	396.68	0.0045	**1.74**	1.70	1-4	0.08824	5.00	0.44120	**0.68**	YES	39.3%
SMH-A34	**SMH-A35**		Yes	10	398.97	0.0041	**1.66**	1.62	1-4	0.08824	5.00	0.44120	**0.68**	YES	41.2%
SMH-A35	**SMH-A36**		Yes	10	182.72	0.0069	**2.15**	2.10	1-4	0.08824	5.00	0.44120	**0.68**	YES	31.7%
SMH-A36	**SMH-A37**	(Pipe to SW)	No	8	230.05	0.0167	**1.85**	1.80	4	0.00800	5.00	0.04000	**0.06**	YES	3.4%
SMH-A36	**SMH-A38**		Yes	10	170.19	0.0060	**2.01**	1.96	1-3	0.08024	5.00	0.40120	**0.62**	YES	31.0%
SMH-A38	**SMH-A39**		Yes	10	339.33	0.0045	**1.74**	1.70	1-3	0.08024	5.00	0.40120	**0.62**	YES	35.7%
SMH-A39	**Stub**	(Stub to E)	No	8	2.00	0.0040	**0.90**	0.88	3	0.02310	5.00	0.11551	**0.18**	YES	19.8%
SMH-A39	**SMH-A40**		Yes	8	172.80	0.0165	**1.83**	1.79	1, 2	0.05714	5.00	0.28570	**0.44**	YES	24.1%
SMH-A40	**SMH-A40A**		Yes	8	191.84	0.0267	**2.33**	2.28	1, 2	0.05714	5.00	0.28570	**0.44**	YES	18.9%
SMH-A40A	**SMH-A41**		Yes	8	189.46	0.0226	**2.15**	2.10	1, 2	0.05714	5.00	0.28570	**0.44**	YES	20.6%
SMH-A41	**SMH-A42**		Yes	8	362.20	0.0291	**2.44**	2.38	1, 2	0.05714	5.00	0.28570	**0.44**	YES	18.1%
SMH-A42	**Stub**	(Stub to SW)	No	8	2.00	0.0050	**1.01**	0.99	2	0.00455	5.00	0.02275	**0.04**	YES	3.5%
SMH-A42	**SMH-A43**		Yes	8	325.79	0.0286	**2.42**	2.36	1	0.05259	5.00	0.26295	**0.41**	YES	16.8%
SMH-A43	**SMH-A44**		Yes	8	163.16	0.0056	**1.07**	1.04	1	0.05259	5.00	0.26295	**0.41**	YES	38.1%
SMH-A44	**SMH-A45**		Yes	8	125.28	0.0121	**1.57**	1.54	1	0.05259	5.00	0.26295	**0.41**	YES	25.9%

Peaking Factor = $3.65 / (ADF)^{0.167}$ =

* $2 \leq P.F. \geq 5$

Manning's Equation: $Q = 1.486 / n * A * (A / WP)^{2/3} * S^{1/2}$


G:\21425\EXHIBITS\21425-SAN EXHIBIT.DWG
1"=600'
COUNTY ROAD 4
BONANZA DRIVE
SHERIDAN PARKWAY
STATE HIGHWAY 52
VISTA PARKWAY
MOUNTAIN VIEW BLVD.
13 FUTURE LOTS
20 FUTURE LOTS
93 LOTS
65 LOTS
BLACK ROCK ELEMENTARY
CLUB HOUSE
COMMUNITY CENTER
PRIMROSE
MONTEX NORTH
VISTA RIDGE ACADEMY
MONTEX SOUTH
FUTURE COMMERCIAL
COMMERCIAL
VISTA RIDGE, Erie, CO
Hurst & Associates, Inc.
SANITARY SEWER EXHIBIT
Job Number: 2142-5
March 31, 2015

Basin 10 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	1046.3 residents	60 gal/capita/day	**62,775**	**0.06278**

*2.79 people unit

*375 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 10 Peak Flow Rate = 0.31388 MGD

Basin 10 Peak Flow Rate = 0.486 cfs

Basin 11 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	625.0 residents	60 gal/capita/day	**37,498**	**0.03750**

*2.79 people unit

*224 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 11 Peak Flow Rate = 0.18749 MGD

Basin 11 Peak Flow Rate = 0.290 cfs

Basin 12 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	111.6 residents	60 gal/capita/day	**6,696**	**0.00670**

*2.79 people unit

*40 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 12 Peak Flow Rate = 0.03348 MGD

Basin 12 Peak Flow Rate = 0.052 cfs

Basin 13 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	340.4 residents	60 gal/capita/day	**20,423**	**0.02042**

*2.79 people unit

*122 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 13 Peak Flow Rate = 0.10211 MGD

Basin 13 Peak Flow Rate = 0.158 cfs

Basin 5 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	128.3 residents	60 gal/capita/day	7,700	0.00770
*2.79 people unit				
*Vista Ridge Filing #1B-A has 46 lots.				
Golf Course Club House			9,000	0.00900
*Assumed (175 inside seats, 125 patio seats, & 30 gal/seat)				
Total			**16,700**	**0.01670**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 5 Peak Flow Rate = 0.08350 MGD

Basin 5 Peak Flow Rate = 0.129 cfs

Basin 6 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	226.0 residents	60 gal/capita/day	**13,559**	**0.01356**

*2.79 people unit

*81 lots of Vista Ridge F#3

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 6 Peak Flow Rate = 0.06780 MGD

Basin 6 Peak Flow Rate = 0.105 cfs

Basin 7 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	145.1 residents	60 gal/capita/day	**8,705**	**0.00870**

*2.79 people unit

*52 lots of Vista Ridge F#1J

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 7 Peak Flow Rate = 0.04352 MGD

Basin 7 Peak Flow Rate = 0.067 cfs

Basin 8 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	287.4 residents	60 gal/capita/day	**17,242**	**0.01724**

*2.79 people unit

*103 lots (VR F#1J, VR F#1K, and 20 future lots)

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 8 Peak Flow Rate = 0.08621 MGD

Basin 8 Peak Flow Rate = 0.133 cfs

Basin 9 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	572.0 residents	60 gal/capita/day	**34,317**	**0.03432**

*2.79 people unit

*205 lots (VR F#1Q, VR F#9, and Heritage @ VR)

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 9 Peak Flow Rate = 0.17159 MGD

Basin 9 Peak Flow Rate = 0.265 cfs

Basin 1 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Daily Flow (MGD)
Residential	661.2 residents	60 gal/capita/day	39,674	0.03967
*2.79 people unit				
*Montex North 28 units, Montex South 145 unts, & VR F1 64 units (Total=237 units)				
Blackrock Elementary	750 students	7 gal/student/day	5,250	0.00525
*2013-14 Attendance was 746 students.				
Primrose School	100 children	7 gal/student/day	700	0.00070
*Assumed				
Vista Ridge Academy	150 students	7 gal/student/day	1,050	0.00105
*123 students enrolled per www.greatschools.org				
Future Commercial Development	17.4 acres	340 gal/acre/day	5,916	0.00592
Total			**52,590**	**0.05259**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 1 Peak Flow Rate = 0.26295 MGD

Basin 1 Peak Flow Rate = 0.407 cfs

Basin 2 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Commercial Development	13.38 acres	340 gal/acre/day	**4,549**	**0.00455**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 2 Peak Flow Rate = 0.02275 MGD

Basin 2 Peak Flow Rate = 0.035 cfs

Basin 3 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	385.0 residents	60 gal/capita/day	**23,101**	**0.02310**

*2.79 people unit

*Vista Ridge F#5, 2nd Amendment has 138 lots.

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 3 Peak Flow Rate = 0.11551 MGD

Basin 3 Peak Flow Rate = 0.179 cfs

Basin 4 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	128.3 residents	60 gal/capita/day	7,700	0.00770
*2.79 people unit				
*Vista Ridge Filing #1B-B has 46 lots.				
VR Community Center & Pool			300	0.00030
*Assumed				
Total			**8,000**	**0.00800**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 4 Peak Flow Rate = 0.04000 MGD

Basin 4 Peak Flow Rate = 0.062 cfs

Montex North at Vista Ridge Sanitary Design Summary

Sanitary Sewer Design Flow

Land Use	Units/SF	Residential/Unit Multiplier	Unit Wastewater Flow Rate (GPCD) (GPD/ACRE)	Average Day Demand (GPD)	Average Day Demand (cfs)	Average Day Demand (MGD)	Wastewater Peaking Factor[1]	Max Day Demand (GPD)	Max Day Demand (cfs)	Max Day Demand (MGD)
Single Family Residential	25	3.00	90	6,750	0.010	0.007	5.00	33,750	0.052	0.034
				6,750	**0.010**	**0.007**		**33,750**	**0.052**	**0.034**

[1] $PF = 3.8/(ADF)^{0.17}$ (2.5 min, 5.0 max)

ATTACHMENT C

REFERRAL RESPONSE SUMMARY

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT Preliminary Plat:

AGENCY	Sent	Rec'd	Comments
ERIE:			
Com. Dev.	12/1	2/27	See letter
OSTAB	12/1	12/20	See letter
Parks & Rec	12/1	1/2	No conflicts
Public Works Engineering	12/1	2/13	See letter
Public Works Engineering	4/24	5/29	See letter
HOA'S			
Vista Ridge	12/1		
Metro Districts			
Vista Ridge	12/1	12/3	System development fees due at final plat
MTN. VIEW FIRE	12/1	12/18	See letter
NAT. RES.:			
CGS	12/1	12/16	See letter
SCHOOL DISTRICT:			
St. Vrain Valley	12/1		
TOWNS:			
Broomfield	12/1	12/3	No conflicts
TRANSPORTATION			
Felsburg/Holt/Ullevig	12/1	12/22	See letter
UTILITIES:			
Century Link	12/1		
Comcast	12/1		
United Power	12/1	12/18	No conflicts

Department of Community Development
Planning Division

TOWN OF ERIE
1874

The Town of Erie
645 Holbrook St.
P.O. Box 750
Erie, CO 80516
(303) 926-2773
FAX (303) 926-2706

Memo

To: Ward Ritter

From: R. Martin Ostholthoff

Date: February 27, 2015

Re: PP-14-00017 Vista Ridge Filing No. 2, 1st Amendment - Community Development Review Comments Development Review Team Meeting on February 5, 2015

Dear Ward,

Thank you for submitting the Preliminary Plat application for Vista Ridge Filing No. 2, 1st Amendment. The Development Review Team (DRT) met on Thursday, February 5, 2015. In attendance were Community Development and Public Works. Following are the comments from the meeting that need to be addressed and/or changed for the Preliminary Plat. Redlines of the plan sheets are attached as well for reference. All code references herein are for Title 10-UDC (Code) or the Vista Ridge Development Plan (VRDP).

Note that Public Works comments are being included under separate cover.

Please provide a written response to each of the comments below with your re-submission. Staff proposes to meet with you and your team to go over these comments prior to any re-submission.

General Information

1. Please update the Narrative to reflect changes being requested based on the new Site Plan concept discussed at our February 26th meeting.

Preliminary Plat – Sheet 1

1. Please remove the CERTIFICATE OF DEDICATION AND OWNERSHIP and replace with LEGAL DESCRIPTION.
2. Please note that changes being requested on the Site Plan application will require the updating of the TITLE BLOCK, GENREAL NOTES, LAND SUMMARY CHART and TRACT SUMMARY CHART; adjust accordingly.

Preliminary Plat – Sheet 2

1. Please update the preliminary plat to reflect changes based on the new Site Plan concept discussed at our February 26th meeting.
2. Please note that a separate Vacation application will need to be processed concurrent with the final plat for this property to vacate the existing 10-foot and 8-foot utility easements created by the Vista Ridge Filing No. 2 Final Plat.

3. Please note that the Town will need proof of the vacation of the Utility Easement recorded at reception no. 3148806 prior to recordation of a final plat for the subject property.

Preliminary Plat – Sheet 3

1. Please note that changes being requested on the Site Plan application will require the updating of information on this sheet; adjust accordingly

Since review is a cumulative process and dependent on various criteria, we reserve the right to provide further comment(s) and request additional information upon receipt of this requested information. Please do not hesitate to contact me at 303.926.2771 for further clarification or with any questions or concerns that you may have.

Town of Erie
Open Space and Trails Advisory Board

From: Town of Erie Open Space and Trails Advisory Board (OSTAB)
To: Marty Ostholthoff, Director, Community Development
Date: December 22, 2014

Subject: Montex North Referral – Preliminary Plat and Site Plan

Location: north side of Ridge View Drive.

OSTAB has reviewed the referral materials, compared them to Town planning documents, and has prepared the following comments, questions, and recommendations for the Town's consideration in evaluating this application.

Open Space and the Natural Areas Inventory (NAI):

Discussion: There are no NAI sites on this property. There are no proposed open space areas on this property. The open space obligation in the Town's Unified Development Plan (UDC) was met previous by Vista Ridge Development Corporation.

Recommendations: None

Trails:

Discussion: There are no existing spine trails nearby. There are no proposed spine trails on this property. The application does not contain any neighborhood trails.

We noted that exactly half of the dwelling units (13 of 26) are located in the rear (northern) portion of the property, and that those units do not have direct access to a sidewalk or neighborhood trail. There are sidewalks on the southern (Ridge View Drive) and western sides, but none on the northern and eastern sides. The impact is that residents of half of the dwelling units must utilize common driveways to walk anywhere, and that the only option of all residents who wish to walk even short distances is the sidewalk along Ridge View Drive. Since there are schools both immediately east and west of this property, that street has heavy traffic when the school day is starting and ending. There are also numerous cars and buses turning into the driveways of those schools at those times. As a result, we believe the attractiveness of this development would be greatly enhanced if it contained a perimeter trail.

Recommendation: Build a sidewalk along the northern and eastern borders of the property so that residents have an option of walking without having to use Ridge View Drive.

Please pass this referral letter to the Applicant, and appropriate town departments, boards, and commissions. Thank you for your attention to these matters. OSTAB is available to discuss any of the above in more detail as needed.

Sincerely,

Open Space and Trails Advisory Board

Denise Brady
Monica Kash
Kevin Chard
Dawn Fraser
Nicole Littman
Ken Martin (Chair)
Joe Martinez

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
___Town of Erie Engineering
X Town of Erie Parks & Recreation
___Vista Ridge HOA
___Mountain View Fire Protection District
___St. Vrain Valley School District
___Felsburg Holt & Ullevig
___Comcast Commercial & Residential
___XCEL Energy
___Town of Erie Community Development
___Town of Erie OSTAB
___Public Review
___Vista Ridge Metro District
___CGS
___City & County of Broomfield
___Century Link Communications
___United Power

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

This application is submitted to you for review and comment. Please reply by **Monday, December 22, 2014,** so that we may give full consideration to your comments. Any response not received by this date may be deemed to be a positive response to the Town of Erie. Email responses can be sent to mostholthoff@erieco.gov. If you have any questions about this application, please call 303-926-2771.

✓ We have reviewed this application and find no conflicts with our interests
___We have reviewed this application and find conflicts with our interests.
✓ See comments below or attached letter.

Comments: ALL TOE STADARDS & SPECIFICATIONS MUST BE MET, SECTION 1000, PARKS AND RECREATION CONSTRUCTION PAY PARTICULAR ATTENTION TO 1062.0 - MATERIALS (EDGING) AND 1042.03 SOD (TALL FESCUE).

Signature: Rob Crabb **Date:** January 2, 2015

Name (Please Print) Rob Crabb

TOWN OF ERIE
1874

Memo

To: Marty Ostholthoff
From: Matt Wiederspahn, P.E., CFM, Development Engineer
Date: February 13, 2014
Subject: **Montex North Preliminary Plat**
CC: Russell Pennington
Wendi Palmer

Comments for Preliminary Plats:

1. All Town owned utilities must be places in 30 foot utility easements.
2. Both water and sanitary sewer lines are in the private drives, so they must be a minimum 30 foot wide easement on a tract.

Comments for Phase II Drainage Study:

1. Drainage conveyance will need to be provided for the future development to the east. Similar to what was provided to this area from the west.
2. Basin S7 is proposed to drain off-site un-detained. All flows from developed lands must be detained and provide water quality.
3. At design points 2 and 3, the inlets are only designed for the minor storm. There is no discussion of the downstream major storm and overflow drainage paths and facilities.

Comments for Preliminary Construction Plans:

1. On sheet 4, curb underdrains need to be shown on the local roadway cross-section.
2. On sheet 7:
    a. The water and sewer line connections and drive accesses in Ridgeview Drive for Montex South need to shown.
    b. There is an existing water stub near the east property line that needs to be utilized instead of cutting a new connection into the water line in Ridgeview Drive.
    c. Details need to be provided for the emergency access drive onto Ridgeview Drive.
    d. The 4" water lines in the private drives will be public mains, so they are required to be a minimum 8" PVC lines.
    e. The blowouts at the end of the private drives need to be located in the pavement.
    f. All water and sewer lines will need to be a minimum of 10 feet offset from a lot line and located in a 30 foot easement.
    g. All water meters must be located in a utility easement.
    h. Inlet STCB-2 needs to have a 10 foot separation from the water line.
    i. Streetlights need to be shown on Ridgeview Court.
    j. Irrigation services need to be shown for Tracts B, C, D, and E.
    k. On Tract C, there is a gas line shown outside of an easement.
    l. There is an existing streetlight in the new Ridgeview Circle access to Ridgeview Drive that will need to be relocated.

3. On sheet 13, the water service and meter for Lot 4 will need to be located on Lot 4. It also cannot cross a tract with separate ownership.

Comments for Phase III Utility Report:

1. The report needs to be renamed to Preliminary Utility Study.
2. For the water model, actual water pressures need to be measured at nearby fire hydrants and be used as the base water pressure.
3. In the Max Day + Fire Flow table, the fire flows needed at nodes J-9,10,11, and 12 should be 0 as there are no hydrants at the end of those lines.

Department of Public Works

TOWN OF ERIE
1874

Memo

To: Marty Ostholthoff
From: Matt Wiederspahn, P.E., CFM, Development Engineer
Date: May 29, 2015
Subject: **Montex North Preliminary Plat**
CC: Russell Pennington
Wendi Palmer

Previous (February 2015) Comments for Preliminary Construction Plans:

2. On sheet 7:
   f. All water and sewer lines will need to be a minimum of 10 feet offset from a lot line and located in a 30 foot easement.
   Response: Water and sewer lines have been revised to be 10 feet offset from the lot lines and within a 30' easement. Additional easement along the west property line is being negotiated.
   h. Inlet STCB-2 needs to have a 10 foot separation from the water line.
   Response: 5' of separation has been provided from inlet STCB-2. With the proposed layout, it is not possible to provide 10 feet separation. Insulation have be provided if the town feels it is necessary.

   10 foot separations are a Town minimum and are required for more the insulation purposes, but also for health and future maintenance purposes. In addition, the 30 foot easement width is also a minimum and in order to have three utility lines in easement and meet the separation requirements, a wider easement is necessary. New construction must meet these minimums and the layout may need to be adjusted to achieve them.

Previous (February 2015) Comments for Phase III Utility Report:

3. In the Max Day + Fire Flow table, the fire flows needed at nodes J-9,10,11, and 12 should be 0 as there are no hydrants at the end of those lines.
   Response: The Max Day + Fire Flow table has been modified to only include the hydrant nodes.

   All nodes still need to be included in the Max Day + Fire Flow table. The only change requested was that in the Fire Flow Needed column, the value should be 0 instead of 1500 for nodes J-10, 11, 12, and 13.

New Comments for Preliminary Construction Plans:

1. A few water line profiles were added to the Preliminary Construction Plans and show pipe deflections without bends. While water line profiles are not required with the Preliminary Construction Plans, please keep in mind that the final plans must meet Town Standards which require all changes in direction of waterline pipe to have bends in all instances.

2. On sheet 7, walls are shown being constructed in a utility easement and one is over a sanitary sewer line. While an encroachment license agreement can be done at Final Plat to allow walls in the easement, they cannot be constructed over a utility line.
3. On sheet 8, there doesn't appear to be a water service shown for Lot 3.
4. On sheet 18:
    a. While the Standard Detail Table is acceptable for the Preliminary Construction Plans, the current version of all details will need to shown in the Final Construction Plans.
    b. In the Emergency Secondary Access detail:
        i. A curb cut will be required off of Ridge View Drive (See Town Detail SW4A) with removable bollards to prevent access.
        ii. The curb ramp of Ridge View Court will need to be relocated outside of the emergency access.
        iii. The actual "grasscrete or approved substitute" will need to be specified in the Final Construction Plans.

DEC 02 2014

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
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___Town of Erie Parks & Recreation
___Vista Ridge HOA
___Mountain View Fire Protection District
___St. Vrain Valley School District
___Felsburg Holt & Ullevig
___Comcast Commercial & Residential
___XCEL Energy
___Town of Erie Community Development
___Town of Erie OSTAB
___Public Review
X Vista Ridge Metro District
___CGS
___City & County of Broomfield
___Century Link Communications
___United Power

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

This application is submitted to you for review and comment. Please reply by **Monday, December 22, 2014,** so that we may give full consideration to your comments. Any response not received by this date may be deemed to be a positive response to the Town of Erie. Email responses can be sent to mostholthoff@erieco.gov. If you have any questions about this application, please call 303-926-2771.

X We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

___See comments below or attached letter.

Comments: Note that a System Development Fee of $56,846.84 is due upon Building Permit issuance!

Signature: Lisa Jacoby **Date:** 12/3/14

Name (Please Print) LISA JACOBY

12/2/14

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
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___Vista Ridge HOA
✓ Mountain View Fire Protection District
___St. Vrain Valley School District
___Felsburg Holt & Ullevig
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X We have reviewed this application and find no conflicts with our interests
___We have reviewed this application and find conflicts with our interests.
X See comments below or attached letter.

Comments:_____

Signature: _____ **Date:** 12/17/14

Name (Please Print) Luann Penfold

MOUNTAIN VIEW FIRE RESCUE
3561 North Stagecoach Road, Unit 200• Longmont, CO 80504
(303) 772-0710 • FAX (303) 651-7702

December 17, 2014

Mr. Marty Ostholthoff
Town of Erie, Community Development
P.O. Box 750
Erie, CO 80516

Dear Mr. Ostholthoff:

I have reviewed the submitted material pertaining to the Montex North preliminary plat and site plan located on the north side of Ridge View Drive between the Vista Academy and the Primrose School in Erie and shall make the following comments:

- Fire apparatus access is satisfactory as shown on the plans submitted. All roads must be completed with at least one layer of asphalt and street intersections signed before building permits may be issued.

- Fire hydrant locations is satisfactory as shown on the plans submitted. Fire hydrants must be approved by public works prior to the issuance of building permits.

We appreciate being involved in the planning process and should you have any questions, please contact me at 303-772-0710 x 1121.

Sincerely,

LuAnn Penfold
Fire Marshal

LMP/lp

cc: project file

lp12.04.14

COLORADO GEOLOGICAL SURVEY

1801 19th Street
Golden, Colorado 80401
303.384.2655

Karen Berry
State Geologist

December 16, 2014

Marty Ostholthoff
Community Development Services
Town of Erie
P.O. Box 750
Erie, CO 80516

Location:
SW¼ Section 33,
T1N, R68W of the 6th P.M.
40.0034, -105.0135

Subject: **Montex North – Site Plan and Preliminary Plat**
Town of Erie, Weld County, CO; CGS Unique No. WE-15-0015

Dear Marty:

Colorado Geological Survey has reviewed the Montex North site plan and preliminary plat referral. I understand the applicant proposes 26 single-family detached patio homes on approximately four acres located on the north side of Ridge View Drive, between 2998 and 3100 Ridge View Drive.

With this referral, I received a Development Referral requesting CGS's review (December 1, 2014), Vista Ridge Filing 2, 1st Amendment Site Plan and Preliminary Plat Land Use Applications (signed October 28, 2014), Montex North Site Plan and Preliminary Plat narratives (Enertia, November 3, 2014), a set of nine Site Plans (November 20, 2014), a set of three Preliminary Plat sheets (Lange Land Surveys, November 19, 2014), and a Preliminary Geotechnical Engineering Report (Pickering, Cole & Hivner [PCH], March 24, 2014).

The site is not undermined, and is not exposed to any geologic hazards that would preclude the proposed residential use and density. However, the site is underlain by very highly expansive clay fill, clay soils, and claystone bedrock at shallow depths that will cause significant damage to improvements unless carefully mitigated.

Very highly expansive soils and bedrock. Three of PCH's borings are located within the proposed Montex North development. Eight swell-consolidation tests were performed on clay fill, clay, and claystone samples. High to very high swell values of up to 16.9% when wetted under a 500 psf load were observed. PCH makes appropriate *preliminary* recommendations (pages 8-9) for mitigating the risk of structural damage associated with the very highly expansive soils and bedrock, including overexcavation and replacement with moisture-conditioned, properly compacted, low expansive fill to a depth of at least ten feet below lowest foundation bearing depths, and/or drilled pier foundations with structural floor systems.

Deep underdrain system. Because of the relatively small (4 acres), deep excavation that would be required if overexcavation is performed, the need for a deep underdrain system should be evaluated. This would help prevent the development of a shallow, perched water condition in the "bathtub" created by the overexcavation. Perched water can accumulate in the overexcavated and replaced soils as a result of disruption of historic groundwater flow through permeable zones in the upper bedrock and/or infiltration from the surface (and the adjacent, presumably irrigated golf course), potentially causing wetting and softening of foundation bearing soils, and excessive swell or settlement. The hydraulic conductivity of the upper bedrock zones beneath and surrounding the site (a function of the presence or absence of fractures, discontinuities, and permeable sandstone lenses and layers) should be a factor in determining whether an underdrain system is needed.

Additional, lot-specific investigations. Even after ground modifications (if implemented) and grading are complete, it is possible that some of the overexcavated and replaced fill will be moderate or higher swelling and some lots may require drilled pier foundations to resist uplift. Additional investigations, consisting of drilling, sampling, lab testing and analysis, will be needed on each lot, once grading is complete, to verify that swell potential values have been reduced to acceptable levels before shallow foundations and slab-on-grade floors are determined to be feasible. PCH's grading and surface drainage, subsurface drainage (including individual perimeter foundation drain systems, pages 9-10), floor system (pages 10-11), utility, concrete (sulfate attack-resistant Type V cement should be used in all foundation concrete and concrete that will be in contact with site soils), and preliminary pavement recommendations are valid.

Thank you for the opportunity to review and comment on this project. If you have questions or require further review, please call me at 303-384-2643, or e-mail carlson@mines.edu.

Sincerely,

Jill Carlson, C.E.G.
Engineering Geologist

PZ-14-00426

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

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___CGS
X City & County of Broomfield
___Century Link Communications
___United Power

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

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X We have reviewed this application and find no conflicts with our interests
___We have reviewed this application and find conflicts with our interests.
___See comments below or attached letter.

Comments:_____

Signature: _____ **Date:** 12-3-14

Name (Please Print) Anna Bertanzetti

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PLANNING

645 Holbrook • P.O. Box 750 • Erie, Colorado 80516 • Phone (303) 926-2770 -• Fax (303) 926-2706

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

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___We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

X See comments below or attached letter.

Comments:_____

_____

_____

_____

Signature: David E. Hattan **Date:** 12/22/14

Name (Please Print) Dave Hattan

FELSBURG HOLT & ULLEVIG

connecting and enhancing communities

December 22, 2014

MEMORANDUM

TO: Marty Ostolthoff

FROM: David E. Hattan, P.E.

SUBJECT: Review of Preliminary Plat, Site Plan, and Trip Generation
PROJECT: Montex North (Vista Ridge LLC)
FHU # 95-190

I have reviewed the written narrative, preliminary plat, site plan, and traffic generation letter for the proposed development of Montex North which is located on the north side of Ridge View Drive in the southeast corner of the Vista Ridge development. I have specifically looked at this information from the perspective of traffic engineering and transportation planning but not general civil or utility engineering. This development is relatively small with 26 "age-targeted" single family detached home units. All public access to this development will be at one location (Ridge View Circle) but an emergency only access will also be located on Ridge View Drive, slightly over 100 feet to the east. I have the following observations regarding this information:

Trip Generation Comparison

- This letter report is entitled *Montex North and South – Vista Ridge Zones 15 and 16 Trip Generation Comparison*, LSC Transportation Consultants, October 30, 2014. It compares the trip generation for both Montex North and South (144 apartment units). Similar information has been received regarding Montex South and a King Soopers anchored development also serviced by Ridge View Drive. More complete reviews of these other nearby development will be provided by the end of 2014 and in January, 2015. However, as much as possible, the comments on Montex North are based on our initial review of these other developments.
- Table 1 – Estimated Traffic Generation for Montex North and South. The trip generation for the 26 age-targeted single family units in Montex North is based on an average two Institute of Transportation Engineers (ITE) land uses. The same explanatory note was previously used (Trip Generation Comparison (September, 2013 by LSC) for 200 apartments. The end result is a trip generation rate that reduces the trip generation rate from 9.52 trips per day (tpd) to 6.60 tpd. It is difficult to reconcile this reduction with the design for these units that includes an attached, two-car garage with additional parking for two cars in each driveway. More (and less confusing) information must be provided before I can agree that the proposed rate is appropriate. This information could possibly be in the September 2013 comparison, but this document was not provided.
- The basic premise of the Montex studies is that their trip generation is less than originally calculated in 2000 for the overall development. The data is almost 15 years old and no specific information regarding Ridge View Drive was provided in the 2000 report. It is my recommendation that the traffic impact analyses for Montex North and South be coordinated closely with the analyses for the King Soopers development (which will need

6300 South Syracuse Way, Suite 600 Centennial, CO 80111 tel 303.721.1440 fax 303.721.0832
www.fhueng.com info@fhueng.com

to be revised also) in order to provide the Town of Erie with a complete picture of the traffic that will be using Ridge View Drive and the two intersections at each end – Sheridan Boulevard and Mountain View Drive.

- Ridge View Drive is a two-lane street with a continuous center left turn lane. This should provide convenient access to the development.

Preliminary Plat and Site Plan

- The intersection of Ridge View Circle with Ridge View Drive should line up opposite the east access (Ridge View Circle) in Montex South.
- The written narrative states that a pocket park is located in Montex South on the south side of Ridge View Drive. Without more information regarding traffic volumes on Ridge View Drive and the walking distances involved, it is hard to assess the utility of this park for Montex North residents.
- The dimensions of Ridge View Court and private drives shown in the Preliminary Plat do not meet standards for public streets in Erie. The written narrative states that "The propose Site Plan is generally consistent with the previously approved Site Plans within the planning area and is consistent with the Vista Ridge PD that governs the master development as a whole. In addition, the proposed Site Plan complies with the applicable design and development standards set forth in Chapter 2 thru 6 of the UDC," I do not have copies the previous Site Plans that are referred to and am not too familiar with the UDC. The appropriateness of these streets and driveways will need to be analyzed more closely by Town staff.
- Staff for emergency service provides will need to comment on the appropriateness of the separation between Ridge View Circle and the emergency access shown to the east.

Please call if you have any questions or need additional information.

Community Development Services
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Town of Erie, Colorado
Development Referral

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___Vista Ridge HOA
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___Vista Ridge Metro District
___CGS
___City & County of Broomfield
___Century Link Communications
X United Power

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

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X We have reviewed this application and find no conflicts with our interests
___We have reviewed this application and find conflicts with our interests.
___See comments below or attached letter.

Comments:_____

Signature: Kathy Rotello **Date:** 12/18/14

Name (Please Print) KATHY ROTELLO

ENERTIA CONSULTING GROUP LLC

1529 Market St., Suite 200
Denver, CO 80202
303.564.3435
shawn.merz@enertiacg.com

April 17, 2015

R. Martin Ostholthoff
Community Development Director
Town of Erie
Community Development Department
645 Holbrook Street
PO Box 750
Erie, CO 80516

Re: SP-14-00037, PP-14-00017 Vista Ridge Filing No. 2, 1st Amendment

Dear Mr. Ostholthoff:

This letter presents a response to the comments received on March 5, 2015 for the Preliminary Plat and Site Plan Submittals for Montex North at Vista Ridge.

Development Review Team (DRT) Preliminary Plat Comments (2/27/2015)

General Information

1. Please update the Narrative to reflect changes being requested based on the new Site Plan concept discussed at our February 26th meeting.
   Response: The Narrative has been updated to reflect the changes to the Site Plan.

Preliminary Plat – Sheet 1

1. Please remove the CERTIFICATE OF DEDICATION AND OWNERSHIP and replace with LEGAL DESCRIPTION.
   Response: Revised as requested.

2. Please note that changes being requested on the Site Plan application will require the updating of the TITLE BLOCK, GENREAL NOTES, LAND SUMMARY CHART and TRACT SUMMARY CHART; adjust accordingly.
   Response: Revised as requested.

Preliminary Plat – Sheet 2

1. Please update the preliminary plat to reflect changes based on the new Site Plan concept discussed at our February 26th meeting.
   Response: Noted. Changes have been reflected on the preliminary plat.

2. Please note that a separate Vacation application will need to be processed concurrent with the final plat for this property to vacate the existing 10-foot and 8-foot utility easements created by the Vista Ridge Filing No. 2 Final Plat.
   Response: Noted.

3. Please note that the Town will need proof of the vacation of the Utility Easement recorded at reception no. 3148806 prior to recordation of a final plat for the subject property.
   Response: Noted.

Preliminary Plat – Sheet 3 (now sheet 4)

1. Please note that changes being requested on the Site Plan application will require the updating of information on this sheet; adjust accordingly
   Response: Noted. Changes have been reflected on the preliminary plat.

Development Review Team (DRT) Site Plan Comments (2/27/2015)

General Information

1. Please update the Narrative to reflect changes being requested based on the new Site Plan concept discussed at our February 26th meeting.
   Response: The Narrative has been updated to reflect the changes to the Site Plan.

2. Please verify that the minimum lot frontage requirements of Section V.F.5.g (VRDP) are being complied with for each lot and the proposed dwelling unit model.
   Response: All lot frontages meet the 30-foot required frontage per V.F.5.g per the VRDP.

3. Please note that a letter approving the architectural plans needs to be submitted to the Town by James Spehalski.
   Response: Noted. Mr. Spehalski has been contacted and has provided a letter approving the architectural plans. The approval letter is included with this resubmittal.

Site Plan Sheets

1. Please note that changes being requested on the Site Plan application will require the updating of the TITLE BLOCK on all sheets, and updating the LAND USE TABULATION TABLE and PARKING INVENTORY TABLE on sheet C1; adjust accordingly.
   Response: Revised as requested.

2. Please delete the LAND USE TABULATION TABLE and PARKING INVENTORY TABLE on sheet C2, as the information of sheet 1 will suffice.
   Response: Revised as requested.

3. Please update all sheets to reflect the concept discussed at our February 26th meeting.
   Response: All sheets have been updated as requested.

4. With the relocated Emergency Access Drive, please update the signage locations on sheet C2 and update the roadway cross sections on sheet C4 as necessary.
   Response: Revised as requested.

5. Please revise sheets L2, L3 and L4 to reflect the open rail fence being the perimeter fence in lieu of the 5-foot solid fence (delete solid fence detail on sheet L4). Note that the undulating fencing requirement and masonry column requirement does not apply to the open fence.
   Response: Sheets L2, L3 and L4 have been revised to show the perimeter fence as open rail fence. Solid fence detail on sheet L4 remains to illustrate the fence that is predominately proposed at the rear yards of interior lots.

6. Please note that the area inlet on Lot 4 cannot be on an individual lot, relocate area inlet accordingly.
   Response: There are no area inlets located on Lot 4. The existing inlet is identified to be removed.

7. As the dry utility design progresses, please design the location of all ground mounted utility boxes (Xcel transformer boxes) to be a minimum of 100-feet from the intersection of Ridge View Drive and Ridge View Court to meet the intent of Section 6.4.G.9.a (UDC).
   Response: Noted.

Public Works Comments – Matt Wiederspahn, P.E. (2/13/2015)

Comments for Preliminary Plats:

1. All Town owned utilities must be places in 30 foot utility easements.
   Response: A 30 foot utility easement has been provided for all town owned utilities.

2. Both water and sanitary sewer lines are in the private drives, so they must be a minimum 30 foot wide easement on a tract.
   Response: A 30 foot utility easement has been provided for all town owned utilities.

Comments for Phase II Drainage Study:

1. Drainage conveyance will need to be provided for the future development to the east. Similar to what was provided to this area from the west.
   Response: A 24" pipe has been extended to the east for the future development.

2. Basin S7 is proposed to drain off-site un-detained. All flows from developed lands must be detained and provide water quality.
   Response: The runoff to the golf course has been minimized and is very small (Q_2=0.26 cfs, Q_{100}=1.26 cfs). Additionally, there is a small basin from the golf course (Basin OS5) which drains onto the Montex North Site. Flow from the golf course (Q_2=0.15 cfs, Q_{100}=2.68 cfs) exceeds the flow from Basin S9. The golf course runoff is captured in an area inlet between Buildings 15 and 18 and routed through the pond west of Primrose Preschool where detention and water quality is provided. This offsets the runoff to the golf course from Basin S9. Basin S9 water quality and detention will be provided in downstream ponds. Ultimately both basins end up in the same location.

3. At design points 2 and 3, the inlets are only designed for the minor storm. There is no discussion of the downstream major storm and overflow drainage paths and facilities.
   Response: Inlets have been sized for the major storm event and overflow drainage paths and facilities have been provided.

Comments for Preliminary Construction Plans:

1. On sheet 4, curb underdrains need to be shown on the local roadway cross-section.
   Response: The underdrains shown are provided for the sump line connections. These have been shown on the roadway cross-section.

2. On sheet 7:
   a. The water and sewer line connections and drive accesses in Ridgeview Drive for Montex South need to be shown.
      Response: The water and sewer line connections have been show as requested.

   b. There is an existing water stub near the east property line that needs to be utilized instead of cutting a new connection into the water line in Ridgeview Drive.
      Response: The water alignment has been revised to connect to the provided stub near the east property line.

   c. Details need to be provided for the emergency access drive onto Ridgeview Drive.
      Response: Details have been provided for the emergency access drive.

   d. The 4" water lines in the private drives will be public mains, so they are required to be a minimum 8" PVC lines.
      Response: The private drive waterlines have been upsized to 8" PVC lines. However, 4" water lines are adequate for 6 single-family homes and it is our recommendation that 4" water lines be used to avoid water quality issues. These waterlines are for domestic use only and not used for fire flow.

   e. The blowouts at the end of the private drives need to be located in the pavement.
      Response: Blowouts have been moved to be within the pavement.

f. All water and sewer lines will need to be a minimum of 10 feet offset from a lot line and located in a 30 foot easement.
Response: Water and sewer lines have been revised to be 10 feet offset from the lot lines and within a 30' easement. Additional easement along the west property line is being negotiated.

g. All water meters must be located in a utility easement.
Response: All water meters have been located in a utility easement.

h. Inlet STCB-2 needs to have a 10 foot separation from the water line.
Response: 5' of separation has been provided from inlet STCB-2. With the proposed layout, it is not possible to provide 10 feet of separation. Insulation have be provided if the town feels it is necessary.

i. Streetlights need to be shown on Ridgeview Court.
Response: Street lights on Ridge View Court have been shown.

j. Irrigation services need to be shown for Tracts B, C, D, and E.
Response: Irrigation services have been shown.

k. On Tract C, there is a gas line shown outside of an easement.
Response: Additional easement has been provided to include the existing gas line.

l. There is an existing streetlight in the new Ridgeview Circle access to Ridgeview Drive that will need to be relocated.
Response: Noted. The streetlight has been identified to be relocated.

3. On sheet 13, the water service and meter for Lot 4 will need to be located on Lot 4. It also cannot cross a tract with separate ownership.
Response: The water service and meter have been relocated to avoid crossing a tract with separate ownership and the meter has been located on Lot 4.

Comments for Phase III Utility Report:

1. The report needs to be renamed to Preliminary Utility Study.
Response: The report has been renamed to Preliminary Utility Study as requested.

2. For the water model, actual water pressures need to be measured at nearby fire hydrants and be used as the base water pressure.
Response: The model was based on actual pressures at the existing hydrants located in Ridge View Drive. These tests were performed by Integrated Safety Services of Colorado on October 21, 2014. The hydrant test reports have been included in the Preliminary Utility Study for reference.

3. In the Max Day + Fire Flow table, the fire flows needed at nodes J-9,10,11, and 12 should be 0 as there are no hydrants at the end of those lines.
Response: The Max Day + Fire Flow table has been modified to only include the hydrant nodes.

REFERRAL AGENCY COMMENTS:

Felsburg Holt & Ullevig (December 22, 2014)

Trip Generation Comparison

1. This letter report is entitled *Montex North and South – Vista Ridge Zones 15 and 16 Trip Generation Comparison*, LSC Transportation Consultants, October 30, 2014. It compares the trip generation for both Montex North and South (144 apartment units). Similar information has been

received regarding Montex South and a King Soopers anchored development also serviced by Ridge View Drive. More complete reviews of these other nearby development will be provided by the end of 2014 and in January, 2015. However, as much as possible, the comments on Montex North are based on our initial review of these other developments.
Response: Noted.

2. Table 1 – Estimated Traffic Generation for Montex North and South. The trip generation for the 26 age-targeted single family units in Montex North is based on an average two Institute of Transportation Engineers (ITE) land uses. The same explanatory note was previously used (Trip Generation Comparison (September, 2013 by LSC) for 200 apartments. The end result is a trip generation rate that reduces the trip generation rate from 9.52 trips per day (tpd) to 6.60 tpd. It is difficult to reconcile this reduction with the design for these units that includes an attached, two-car garage with additional parking for two cars in each driveway. More (and less confusing) information must be provided before I can agree that the proposed rate is appropriate. This information could possibly be in the September 2013 comparison, but this document was not provided.
Response: The proposed site plans have 25 age-targeted single family homes and 144 apartment units. Even with the standard rate of 9.52 trips per day (tpd) there will be an overall reduction from what was anticipated for this parcel in the Master TIS.

3. The basic premise of the Montex studies is that their trip generation is less than originally calculated in 2000 for the overall development. The data is almost 15 years old and no specific information regarding Ridge View Drive was provided in the 2000 report. It is my recommendation that the traffic impact analyses for Montex North and South be coordinated closely with the analyses for the King Soopers development (which will need to be revised also) in order to provide the Town of Erie with a complete picture of the traffic that will be using Ridge View Drive and the two intersections at each end – Sheridan Boulevard and Mountain View Drive.
Response: The Montex North development is the development of a parcel that has been anticipated and accounted for since the beginning of the Vista Ridge Development. Ridgeview Drive has been designed, reviewed and approved to be constructed to accommodate the proposed development of this, and the surrounding lots, both north and south of Ridgeview Dr. In addition, Montex North as residential has reduced the traffic contributing to Ridgeview Dr. Please refer to the Montex North TIS submitted with the first submittal for trip generation numbers.

4. Ridge View Drive is a two-lane street with a continuous center left turn lane. This should provide convenient access to the development.
Response: Noted.

Preliminary Plat and Site Plan

5. The intersection of Ridge View Circle with Ridge View Drive should line up opposite the east access (Ridge View Circle) in Montex South.
Response: Noted. Ridge View Circle on the north aligns with Ridge View Circle on the south.

6. The written narrative states that a pocket park is located in Montex South on the south side of Ridge View Drive. Without more information regarding traffic volumes on Ridge View Drive and the walking distances involved, it is hard to assess the utility of this park for Montex North residents.
Response: The residents from Montex North can easily access the park via multiple options; there are walks that route pedestrians from all homes to the park, only having to cross Ridgeview. In addition, parking spaces have been provided near the park for those who would prefer to drive to the park.

7. The dimensions of Ridge View Court and private drives shown in the Preliminary Plat do not meet standards for public streets in Erie. The written narrative states that "The propose Site Plan is generally consistent with the previously approved Site Plans within the planning area and is consistent with the Vista Ridge PD that governs the master development as a whole. In addition,

the proposed Site Plan complies with the applicable design and development standards set forth in Chapter 2 thru 6 of the UDC," I do not have copies the previous Site Plans that are referred to and am not too familiar with the UDC. The appropriateness of these streets and driveways will need to be analyzed more closely by Town staff.
Response: Ridge View Court and the private drives are private streets and meet the criteria outlined in the Vista Ridge Development Plan.

8. Staff for emergency service provides will need to comment on the appropriateness of the separation between Ridge View Circle and the emergency access shown to the east.
Response: Noted.

Town of Erie Open Space and Trails Advisory Board (December 22, 2014)

Open Space and the Natural Areas Inventory (NAI):

1. Discussion: There are no NAI sites on this property. There are no proposed open space areas on this property. The open space obligation in the Town's Unified Development Plan (UDC) was met previous by Vista Ridge Development Corporation.

   Recommendations: None
   Response: Noted.

Trails:

2. Discussion: There are no existing spine trails nearby. There are no proposed spine trails on this property. The application does not contain any neighborhood trails. We noted that exactly half of the dwelling units (13 of 26) are located in the rear (northern) portion of the property, and that those units do not have direct access to a sidewalk or neighborhood trail. There are sidewalks on the southern (Ridge View Drive) and western sides, but none on the northern and eastern sides. The impact is that residents of half of the dwelling units must utilize common driveways to walk anywhere, and that the only option of all residents who wish to walk even short distances is the sidewalk along Ridge View Drive. Since there are schools both immediately east and west of this property, that street has heavy traffic when the school day is starting and ending. There are also numerous cars and buses turning into the driveways of those schools at those times. As a result, we believe the attractiveness of this development would be greatly enhanced if it contained a perimeter trail.

   Recommendation: Build a sidewalk along the northern and eastern borders of the property so that residents have an option of walking without having to use Ridge View Drive.
   Response: Sidewalks adjacent to the golf course are not provided on other developments within Vista Ridge community and are discouraged by the golf course. Eliminating pedestrian trails adjacent to the golf course circumvents pedestrian trespassing and eliminates golfer/pedestrian interaction. In addition, there is concern for pedestrian safety from stray golf balls from the golf course.

Mountain View Fire Rescue (December 17, 2014)

1. Fire apparatus access is satisfactory as shown on the plans submitted. All roads must be completed with at least one layer of asphalt and street intersections signed before building permits may be issued.
   Response: Noted.

2. Fire hydrant locations is satisfactory as shown on the plans submitted. Fire hydrants must be approved by public works prior to the issuance of building permits.
   Response: Noted.

Colorado Geological Survey (December 16, 2014)

Colorado Geological Survey has reviewed the Montex North site plan and preliminary plat referral. I understand the applicant proposes 26 single-family detached patio homes on approximately four acres located on the north side of Ridge View Drive, between 2998 and 3100 Ridge View Drive.

With this referral, I received a Development Referral requesting CGS's review (December 1, 2014), Vista Ridge Filing 2, 1st Amendment Site Plan and Preliminary Plat Land Use Applications (signed October 28, 2014), Montex North Site Plan and Preliminary Plat narratives (Enertia, November 3, 2014), a set of nine Site Plans (November 20, 2014), a set of three Preliminary Plat sheets (Lange Land Surveys, November 19, 2014), and a Preliminary Geotechnical Engineering Report (Pickering, Cole & Hivner [PCH], March 24, 2014).

The site is not undermined, and is not exposed to any geologic hazards that would preclude the proposed residential use and density. However, the site is underlain by very highly expansive clay fill, clay soils, and claystone bedrock at shallow depths that will cause significant damage to improvements unless carefully mitigated.

Very highly expansive soils and bedrock. Three of PCH's borings are located within the proposed Montex North development. Eight swell-consolidation tests were performed on clay fill, clay, and claystone samples. High to very high swell values of up to 16.9% when wetted under a 500 psf load were observed. PCH makes appropriate *preliminary* recommendations (pages 8-9) for mitigating the risk of structural damage associated with the very highly expansive soils and bedrock, including overexcavation and replacement with moisture-conditioned, properly compacted, low expansive fill to a depth of at least ten feet below lowest foundation bearing depths, and/or drilled pier foundations with structural floor systems.

Deep underdrain system. Because of the relatively small (4 acres), deep excavation that would be required if overexcavation is performed, the need for a deep underdrain system should be evaluated. This would help prevent the development of a shallow, perched water condition in the "bathtub" created by the overexcavation. Perched water can accumulate in the overexcavated and replaced soils as a result of disruption of historic groundwater flow through permeable zones in the upper bedrock and/or infiltration from the surface (and the adjacent, presumably irrigated golf course), potentially causing wetting and softening of foundation bearing soils, and excessive swell or settlement. The hydraulic conductivity of the upper bedrock zones beneath and surrounding the site (a function of the presence or absence of fractures, discontinuities, and permeable sandstone lenses and layers) should be a factor in determining whether an underdrain system is needed.

Additional, lot-specific investigations. Even after ground modifications (if implemented) and grading are complete, it is possible that some of the overexcavated and replaced fill will be moderate or higher swelling and some lots may require drilled pier foundations to resist uplift. Additional investigations, consisting of drilling, sampling, lab testing and analysis, will be needed on each lot, once grading is complete, to verify that swell potential values have been reduced to acceptable levels before shallow foundations and slab-on-grade floors are determined to be feasible. PCH's grading and surface drainage, subsurface drainage (including individual perimeter foundation drain systems, pages 9-10), floor system (pages 10-11), utility, concrete (sulfate attack-resistant Type V cement should be used in all foundation concrete and concrete that will be in contact with site soils), and preliminary pavement recommendations are valid.

Response: Noted.

United Power (December 18, 2014)

No Comment.

Town of Erie Parks & Recreation (January 2, 2015)

1. All the standards and specifications must be met, section 1000, Parks and Recreation Construction. Pay particular attention to 1062.0 – Materials (Edging) and 1042.03 Sod (Tall Fescue).

Response: 6" deep edger is very expensive and difficult to acquire. 4" deep edger has been proposed.

City and County of Broomfield (December 3, 2014)

No Comment.

Vista Ridge Metro District (December 3, 2014)

1. Note that a System Development Fee of $56,846.84 is due upon Building Permit issuance.
Response: Noted.

Xcel Energy (December 22, 2014)

Public Service Company of Colorado (PSCo) has reviewed the plans for **Montex North / Vista Ridge F2 A1**. Please be aware PSCo owns and operates existing natural gas distribution facilities within the subject property. The property owner/developer/contractor must contact the **Builder's Call Line at 1-800-628-2121** and complete the application process for any new natural gas service or modification to existing facilities. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

PSCo requests the utility easements be dedicated to the Town of Erie for the benefit of the applicable utility providers for the installation, maintenance, and replacement of electric, gas, television, cable, and telecommunications facilities (Dry Utilities). Utility easements shall also be granted within any access easements and private streets in the subdivision including Tract A. Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, **including, without limitation, vegetation**. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form. Public Service Company also requests that all utility easements be depicted graphically on the preliminary and final plats. While these easements should accommodate the majority of utilities to be installed in the subdivision, some additional easements may be required as planning and building progresses.

As a safety precaution, PSCo would like to remind the developer to call the **Utility Notification Center at 1-800-922-1987** to have all utilities located prior to any construction.

Response: Noted.

We trust that our responses to the comments are acceptable and complete. Please do not hesitate to call should you have any questions.

Sincerely,

ENERTIA CONSULTING GROUP, LLC

Shawn Merz, PE, LEED A.P.
Senior Engineer

TOWN OF ERIE
PLANNING COMMISSION MEETING
July 15, 2015

SUBJECT:	**PUBLIC HEARING:** **Consideration of Resolution P15-22:** A Resolution Making Certain Findings Of Fact And Conclusions Favorable To The Site Plan For Vista Ridge Filing No. 2, 1st Amendment, Town Of Erie, County Of Weld, State Of Colorado.
PURPOSE:	Consideration of a Site Plan with 25 single family detached lots within the Vista Ridge Filing No. 2, 1st Amendment.
PROJECT NO.:	SP-14-00037
CODE:	Erie Municipal Code, Title 10
DEPARTMENT:	Community Development
PRESENTER:	R. Martin Ostholthoff, Director

STAFF RECOMMENDATION:

Staff finds the Site Plan for the Vista Ridge Filing No. 2, 1st Amendment in compliance with the Site Plan Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-22 recommending approval to the Board of Trustees with the following conditions of approval:

1. The Site Plan may only be signed and put into effect after a Final Plat for the property is recorded.
2. Technical corrections to Vista Ridge Filing No. 2, 1st Amendment Site Plan shall be made to the Town's satisfaction.

SUMMARY AND BACKGROUND OF SUBJECT MATTER:

Applicant:
Chartered Development Corporation
Ward Ritter
3160 Vista Village Drive, Suite 104
Erie, Colorado, 80516

Owner:
Montex (Vista Ridge, LLC)
Andy Chaikovsky
4915 Gaylord Street
Englewood, Colorado 80113

Location:
Vista Ridge Filing No. 2, 1st Amendment is located on the north side of Ridge View Drive between Mountain View Boulevard and Sheridan Boulevard and is highlighted in red on the below map.

Existing Conditions:

Zoning: Vista Ridge PD – Planned Development
Project Size: 4.036 Acres
Existing Use: Vacant Land

Adjacent Land-Use/Zoning:

	ZONING	LAND USE
NORTH	PD – Planned Development (Vista Ridge)	Golf course
EAST	PD – Planned Development (Vista Ridge)	Private school
SOUTH	PD – Planned Development (Vista Ridge)	Vacant Land (future residential and commercial)
WEST	PD – Planned Development (Vista Ridge)	Private school

Compliance with Town of Erie Comprehensive Plan:
The application is in Compliance with the Land Use designations on the Comprehensive Plan, Land Use Plan Map. This particular property allows High Density Residential, Medium Density Residential and Regional Commercial land uses.

Compliance with the Vista Ridge PD Development Plan:
The residential uses and density proposed are in compliance with the Vista Ridge PD Development Plan for Planning Area 7-3.

SITE SPECIFIC DEVELOPMENT INFORMATION:

The applicant proposal includes 25 single family residential lots in Vista Ridge Filing No. 2, 1st Amendment. The proposed lots are less than 5,000 square feet in size which requires separate Site Plan approval.

Development Data:

- Preliminary Plat Size: 4.036 acres
- Number of Residential Lots Proposed: 25 lots
- Number of Tracts: 3 tracts
- Gross Residential Density Proposed: 6.2 dwelling units per acre

Architecture:

- Architectural review of the single-family detached dwelling units was performed by the Vista Ridge Master HOA Architectural Review Committee and has been found to be in compliance with the Vista Ridge Design Guidelines.

Parking:

- 2 car garage for each unit and 2 additional parking spaces within the driveway of each lot.
- An additional 17 on-street parking spaces along Ridge View Court provides parking for guests.
- No parking is permitted on Ridge View Drive.

Lighting:

- Standard street lighting provided on all streets.
- Lighting fixture types on the townhomes are cut-off fixtures.

Landscaping, Parks and Trails:

- A 30 foot landscape buffer (Tracts B and C) is provided along Ridge View Drive in addition to landscaping within the right of way. These tracts will be owned and maintained by an HOA to be formed as part of a final plat.
- Park dedications per the Vista Ridge PD Development Plan have been previously satisfied. No parks are proposed within the development.
- The internal sidewalk system along Ridge View Court connects to the existing sidewalk along Ridge View Drive.

Open Space

- Open Space dedications per the Vista Ridge PD Development Plan have been previously satisfied. Two tracts are proposed as private opens space areas that will be owned and maintained by an HOA to be formed as part of a final plat.

SITE PLAN ANALYSIS:

The Site Plan for the single family development within Vista Ridge Filing No. 2, 1st Amendment was reviewed for conformance with Municipal Code, Title 10, Section 7.12.F.9 Approval Criteria. Staff finds the Site Plan in compliance with the Site Plan Approval Criteria as listed below.

a. The Site Plan is generally consistent with the Town's Comprehensive Master Plan;

Staff: The Site Plan is generally consistent with the 2005 Comprehensive Plan Land Use Plan Map land use designation of MDR-Medium Density Residential.

b. The Site Plan is generally consistent with any previously approved subdivision plat, planned development, or any other precedent plan or land use approval as applicable;

Staff: The Site Plan is consistent with the proposed Vista Ridge Filing No. 2, 1st Amendment Preliminary Plat and the Vista Ridge PD Development Plan.

c. The Site Plan complies with all applicable development and design standards set forth in this Code, including but not limited to the provisions in Chapter 2, Chapter 3, Chapter 4, and Chapter 6;

Staff: The Site Plan complies with all applicable development and design standards set forth in the UDC.

d. Any significant adverse impacts reasonably anticipated to result from the use will be mitigated or offset to the maximum extent practicable; and

Staff: No significant adverse impacts are anticipated with the proposed Site Plan.

e. The development proposed on the Site Plan and its general location is or will be compatible with the character of surrounding land uses.

Staff: The development proposed is compatible with the character of the surrounding land uses.

STAFF RECOMMENDATION:

Staff finds the Site Plan for the Vista Ridge Filing No. 2, 1st Amendment in compliance with the Site Plan Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-22 recommending approval to the Board of Trustees with the following conditions of approval:

1. The Site Plan may only be signed and put into effect after a Final Plat for the property is recorded.
2. Technical corrections to Vista Ridge Filing No. 2, 1st Amendment Site Plan shall be made to the Town's satisfaction.

NEIGHBORHOOD MEETING:

As required by the Municipal Code a Neighborhood Meeting was held on April 22, 2015 at 6:00 p.m. at the Vista Ridge Community Center. The required notice for the Neighborhood Meeting was provided.

PUBLIC NOTICE:

Notice of this Public Hearing has been provided as follows:

Published in the Colorado Hometown Weekly:	June 24, 2015
Property Posted as required:	June 26, 2015
Letters to Adjacent Property Owners:	June 26, 2015

Approved by:

R. Martin Ostholthoff
Community Development Director

Attachments:

A. Resolution P15-22
B. Application Materials
C. Referral Comments/Responses
D. Approved Architectural Plans

ATTACHMENT A

RESOLUTION NO. P15-22

A RESOLUTION MAKING CERTAIN FINDINGS OF FACT AND CONCLUSIONS FAVORABLE TO THE SITE PLAN FOR VISTA RIDGE FILING NO. 2, 1ST AMENDMENT, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission of the Town of Erie, Colorado, has received and considered the Site Plan for the single family residential lots in Vista Ridge Filing No. 2, 1st Amendment on Wednesday, July 15, 2015, on the application of the Montex (Vista Ridge, LLC), 4915 Gaylord Street, Englewood, CO 80113 for the following real property; to wit:

LOT 2, VISTA RIDGE FILING NO. 2, MINOR SUBDIVISION, A SUBDIVISION PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715 OF THE RECORDS OF THE WELD COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33 TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO; and

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE TOWN OF ERIE, COLORADO, as follows:

Section 1. Findings of Fact.

1. The applicant's application and supporting documents are in substantial compliance with the Town of Erie Municipal Code, Title 10.

2. The Site Plan has met Municipal Code, Title 10, Section 7.12.F.9 Approval Criteria:

   a. The Site Plan is generally consistent with the Town's Comprehensive Master Plan;

   b. The Site Plan is consistent with any previously approved subdivision plat, planned development, or any other precedent plan or land use approval as applicable;

   c. The Site Plan complies with all applicable development and design standards set forth in this Code, including but not limited to the provisions in Chapter 2, Chapter 3, Chapter 4, and Chapter 6;

   d. Any significant adverse impacts reasonably anticipated to result from the use will be mitigated or offset to the maximum extent practicable; and

   e. The development proposed on the Site Plan and its general location is or will be compatible with the character of surrounding land uses.

3. The Site Plan as proposed, with the following conditions, preserves the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado:

a. The Site Plan may only be signed and put into effect after a Final Plat for the property is recorded.

b. Technical corrections to Vista Ridge Filing No. 2, 1st Amendment Site Plan shall be made to the Town's satisfaction.

Section 2. Conclusions and Order Recommending Approval of the Site Plan for Vista Ridge Filing No. 2, 1st Amendment.

1. The applicant's application and supporting documents are in substantial compliance with the Town of Erie Municipal Code, Title 10.

2. The Site Plan has met Town of Erie Municipal Code, Title 10, Section 7.12.F.9 Approval Criteria.

3. The Site Plan as proposed, with the conditions above, preserves the health, safety, welfare and interest of the citizens of the Town of Erie, Colorado.

INTRODUCED, READ, SIGNED AND APPROVED this 14th day July 2015.

TOWN OF ERIE, PLANNING COMMISSION

_____

J. Eric Bottenhorn, Chair

ATTEST:

_____

Hallie Sawyer, Secretary

ATTACHMENT B

Print Form

TOWN OF ERIE
Community Development Department – Planning Division
645 Holbrook Street – PO Box 750 – Erie, CO 80516
Tel: 303.926.2770 – Fax: 303.926.2706 – Web: www.erieco.gov

LAND USE APPLICATION

Please fill in this form completely. Incomplete applications will not be processed.

STAFF USE ONLY

FILE NAME: VISTA RIDGE FIL. NO. 2, 1ST AMDT. SITE PLAN
FILE NO: SP-14-00037 DATE SUBMITTED: 11/4/14 FEES PAID: $1920.-

PROJECT/BUSINESS NAME: Montex North at Vista Ridge

PROJECT ADDRESS: Vista Ridge Filing 2 Lot 2

PROJECT DESCRIPTION: Residential development, providing 26 single family, ranch style patio homes.

LEGAL DESCRIPTION *(attach legal description if Metes & Bounds)*

Subdivision Name: Vista Ridge

Filing #: 2 Lot #: 2 Block #: Section: 33 Township: 1 North Range: 68 West

OWNER *(attach separate sheets if multiple)*

Name/Company: Montex (Vista Ridge, LLC)
Contact Person: Andy Chaikovsky
Address: 4915 Gaylord St
City/State/Zip: Englewood, CO 80113
Phone: 303.783.8425 Fax:
E-mail: achaikovsky@comcast.net

AUTHORIZED REPRESENTATIVE

Company/Firm: Chartered Development Corporation
Contact Person: Ward Ritter
Address: 3160 Village Vista Drive, #104
City/State/Zip: Erie, CO 80516
Phone: 303.545.2554 Fax:
E-mail: ward@charteredhomes.com

MINERAL RIGHTS OWNER *(attach separate sheets if multiple)*

Name/Company: N/A
Address:
City/State/Zip:

MINERAL LEASE HOLDER *(attach separate sheets if multiple)*

Name/Company: N/A
Address:
City/State/Zip:

LAND-USE & SUMMARY INFORMATION

Present Zoning: PD
Proposed Zoning: PD
Gross Acreage: 4.04
Gross Site Density (du/ac): 6.43/ac
Lots/Units Proposed: 26/26
Gross Floor Area:

SERVICE PROVIDERS

Electric: United Power
Metro District: Vista Ridge Metro District
Water *(if other than Town)*:
Gas: Excel Energy
Fire District: Mountain View Fire Protection District
Sewer *(if other than Town)*: Town of Erie

PAGE TWO MUST BE SIGNED AND NOTARIZED

DEVELOPMENT REVIEW FEES

ANNEXATION		SUBDIVISION	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☑ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☐ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☑ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☐ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☐ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: _____ Date: _____

Owner _____ Date: 10-28-14

Applicant: _____ Date: _____

STATE OF ~~COLORADO~~ Florida)
) ss.
County of Sarasota)

The foregoing instrument was acknowledged before me this 28th day of October, 2014, by Andrew Christopher Kniceley.

My commission expires: May 23, 2015

Witness my hand and official seal.

_____
Notary Public

R. CHRISTOPHER KNICELEY
Notary Public - State of Florida
My Comm. Expires May 23, 2015
Commission # EE 96510

DEVELOPMENT REVIEW FEES

ANNEXATION		SUBDIVISION	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☒ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☐ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☒ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☐ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☐ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: _____ Date: _____

Owner: _____ Date: _____

Applicant: [signature] president Date: 10/28/14

STATE OF COLORADO)
) ss.
County of Weld)

The foregoing instrument was acknowledged before me this 28 day of October, 2014, by Ward Ritter, president.

My commission expires: 1/29/18.
Witness my hand and official seal.

BRANDON CHANDLER
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144004192
MY COMMISSION EXPIRES JANUARY 29, 2018

[signature]
Notary Public

1437 Larimer St.
Denver, CO 80202
303•875•7131
bonner.gilmore@enertiacg.com

Mr. Marty Ostholthoff, Director of Community Development
Town of Erie
645 Holbrook Street
Erie, CO 80516

April 17, 2015

RE: Montex North – Site Plan Section 3 Written Narrative (North Parcel)

Dear Mr. Ostholthoff:

General project concept and purpose of the request:

Montex North at Vista Ridge is within Vista Ridge's Planning area 7-3 and is proposing 25 single-family detached home units. The proposed project is to provide ranch style patio homes with optional finished basements within the mixed use planning area. The project site is made up of 4.04 acres and is described as Lot 2 of Filing 2 of the Vista Ridge Planned Development. The project is bounded to the north by the 12th hole of Colorado National Golf Course, Vista Ridge Academy the east, Primrose Preschool to the west and Ridge View Drive to the south. Ridge View Drive to the south will provide access and egress to the site.

Vista Ridge Development Plan Amendment #6 permits up to 200 residential units within Planning Area 7-3. Article V, Section F (Medium/High Density Planning Area) Subsections 5.d, 5.e and 5.f of the Vista Ridge Development Plan have been amended to accommodate various encroachments into the setbacks.

The proposed Montex at Vista Ridge development is a Medium Density Residential project that matches the Towns Comprehensive Masterplan. The Town's Comprehensive Masterplan allows for Regional Commercial, Medium Density Residential and High Density Residential uses within these two parcels.

The proposed Site Plan is generally consistent with the previously approved Site Plans within in the planning area and is consistent with the Vista Ridge PD that governs the master development as a whole. In addition, the proposed Site Plan complies with the applicable design and development standards set forth in Chapters 2 thru 6 of the UDC.

The proposed site plan will be compatible with the surrounding land uses as they become developed over time. This corridor is primarily commercial with two existing schools. The addition of 25 single-family homes and ultimately 144 multi-family units (Montex South) will only help the commercial thrive, and provide a walkability and convenience aspect to the proposed development.

Architecture:

The homes are in a ranch patio home format, pioneered by the very successful Latitude at Vista Ridge (Filing#5) across Mountain View Boulevard to the west. Smaller and smarter than many conventional single-family homes, they provide up to date functional requirements for the age 50+ residents including a lock and leave lifestyle. The ranch format provides for a less intense aesthetic and the style is Colorado Casual with multiple types of hardboard siding and cultured

stone on the exteriors. Porches are featured where possible. Each home has an attached, direct access two car garage and two car parking on each driveway.

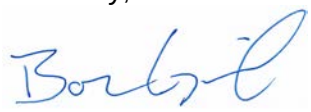
Development Schedule: The project will be constructed as a single phase and homes will be constructed as sales allow. The development is anticipated to begin construction late spring of 2015 with building permits being pulled by mid-summer 2015.

Integration: The proposed development is consistent with the overall master plan of the Vista Ridge Planned Development and the homes and configuration is currently being constructed within Filing 5 of Vista Ridge.

Brief description regarding the location, function and ownership/maintenance of public and private open space, parks, trails, common areas, common buildings: Passive open space is provided within Tracts B and C totaling 0.73 acres. In addition, a planned 0.25 acre pocket park will be provided interior to the proposed Montex South (adjacent, south of Ridge View Drive). The intent of the Montex South park is to meet the needs of the future residents providing possible amenities such as seating, barbeque grills, lawn and enhanced landscape areas. The pocket park will be privately owned and maintained as in Filing 5. No open space is provided. Detention and water quality will occur west of the site in a regional, off-site detention basin. No trails are proposed. Common areas are to be landscaped and privately owned and maintained. No common buildings are proposed.

Brief description regarding the substance of any existing or proposed covenants, special conditions, grants of easements, or other restrictions applying to the proposed subdivision: The proposed covenants will be consistent with PUD's in this marketplace and will govern private streets, architectural control, landscape maintenance, snow removal and common areas.

Sincerely,



Bonner Gilmore
Managing Partner

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

SP-14-00037

LAND USE TABULTION

LAND USE:	MULTI-FAMILY RESIDENTIAL
GROSS SITE AREA:	175,823 SF (4.04 AC) = 100.0%
HARDSCAPE:	98,782 SF (2.27 AC) = 56.2%
BUILDING FOOTPRINT:	*40,506 SF (0.93 AC) = 23.0%*
PARKING/ROADS:	*34,693 SF (0.80 AC) = 19.7%*
DRIVEWAYS:	*11,051 SF (0.25 AC) = 6.3%*
PATIOS:	*5,691 SF (0.13 AC) = 3.2%*
TRAILS & SIDEWALK:	*6,838 SF (0.16 AC) = 3.9%*
LANDSCAPE:	77,041 SF (1.77 AC) = 43.8%
PLANTED AREA	*77,041 SF (1.77 AC) = 43.8%*
EXISTING VEGITATION	*0 SF (0 AC) = 0.00%*
BUILDING SIZE:	1 STORY
PLAN P4 (1996 SF)	3
PLAN P6 (1563 SF)	7
PLAN P7 (1509 SF)	9
PLAN P8 (1666 SF)	6

PARKING INVENTORY (25 UNITS)

TYPE		#
	GARAGE (TRUCK) (42.7%)	50
	TANDEM (DRIVEWAY) (42.7%)	50
(P)	PARALLEL (23'X6' ON STREET) (12.0%)	14
(M)	MAIL (19'X9' ON STREET) (2.6%)	3
	TOTAL PARKING SPACES	117

PARKING NOTES:

1. NO DESIGNATED HANDICAP SPACES PROVIDED

SITE PLAN APPROVAL CERTIFICATE

THIS SITE PLAN HAS BEEN REVIEWED AND FOUND TO BE COMPLETE AND IN ACCORDANCE WITH APPLICABLE TOWN OF ERIE REGULATIONS

_____ _____

Director of Community Development — Date

_____ _____

Planning Commission Chair (if applicable) — Date

The undersigned as the owner or owners representative of lands described herein, hereby agrees on behalf of himself/herself, their heirs, successors, and assigns to develop and maintain the property described hereon in accordance with this approved Site Plan and in compliance with the town of Erie Unified Development Code and Municipal Code.

_____ _____

Owner Signature — Owner Name Printed

Acknowleged before me this _____ day of _____, 2015

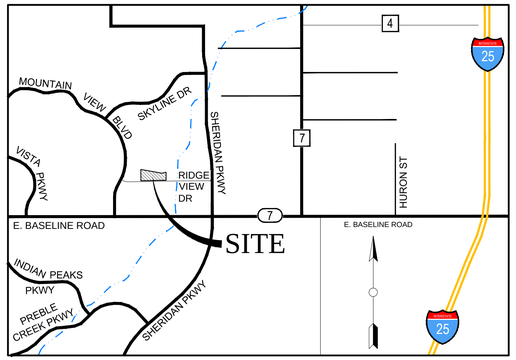
by_____ as _____.

Witness my hands and official seal

_____

Notary Public

My commission expires: _____



VICINITY MAP

SCALE 1"=2000'

SHEET INDEX

COVER SHEET	C1
SITE PLAN	C2
UTILITY PLAN	C3
GRADING / DRAINAGE PLAN	C4
LANDSCAPE NOTES	L1
LANDSCAPE PLAN	L2
LANDSCAPE PLAN	L3
LANDSCAPE PLAN	L4
PHOTOMETRIC PLAN	E1

ENGINEER

ENERTIA CONSULTING GROUP
1529 MARKET STREET
SUITE 200
DENVER, COLORADO 80202
303-875-7131
CONTACT: BONNER GILMORE

APPLICANT

CHARTERED HOMES OF COLORADO
1CHARTED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, CO 80516
303-545-2554
CONTACT: WARD RITTER

LANDSCAPE / PLANNER

HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE 110
BOULDER, COLORADO 80304
303-449-9105
CONTACT: RHONDA DICK, RLA

ELECTRICAL

RG ENGINEERING CONSULTANTS
2555 WALNUT STREET, SUITE B
DENVER, COLORADO 80205
303-355-5534
CONTACT: SOPHIA GISIN

ARCHITECT

WOODLEY ARCHITECTURAL GROUP
731 SOUTHPARK DRIVE, SUITE B
LITTLETON, COLORADO
303-531-5082
CONTACT: ADAM CASSELLA, AIA, LEED AP

SURVEYOR

LANGE LAND SURVEYS
9572 W. 58TH AVENUE
ARVADA, COLORADO 80002
720-242-9732
CONTACT: JON LANGE, PLS

LEGAL DESCRIPTION (FROM COMMITMENT):

LOT 2 OF "VISTA RIDGE FILING NO 2 - MINOR SUBDIVISION" (PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715), TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 175,823 SQUARE FEET OR 4.036 ACRES, MORE OR LESS.

MONTEX NORTH AT VISTA RIDGE
COVER SHEET

DRAWN BY: BC
APRVD BY: SM
DATE: 11/20/2014
REVISED: 04/17/2015

C1

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

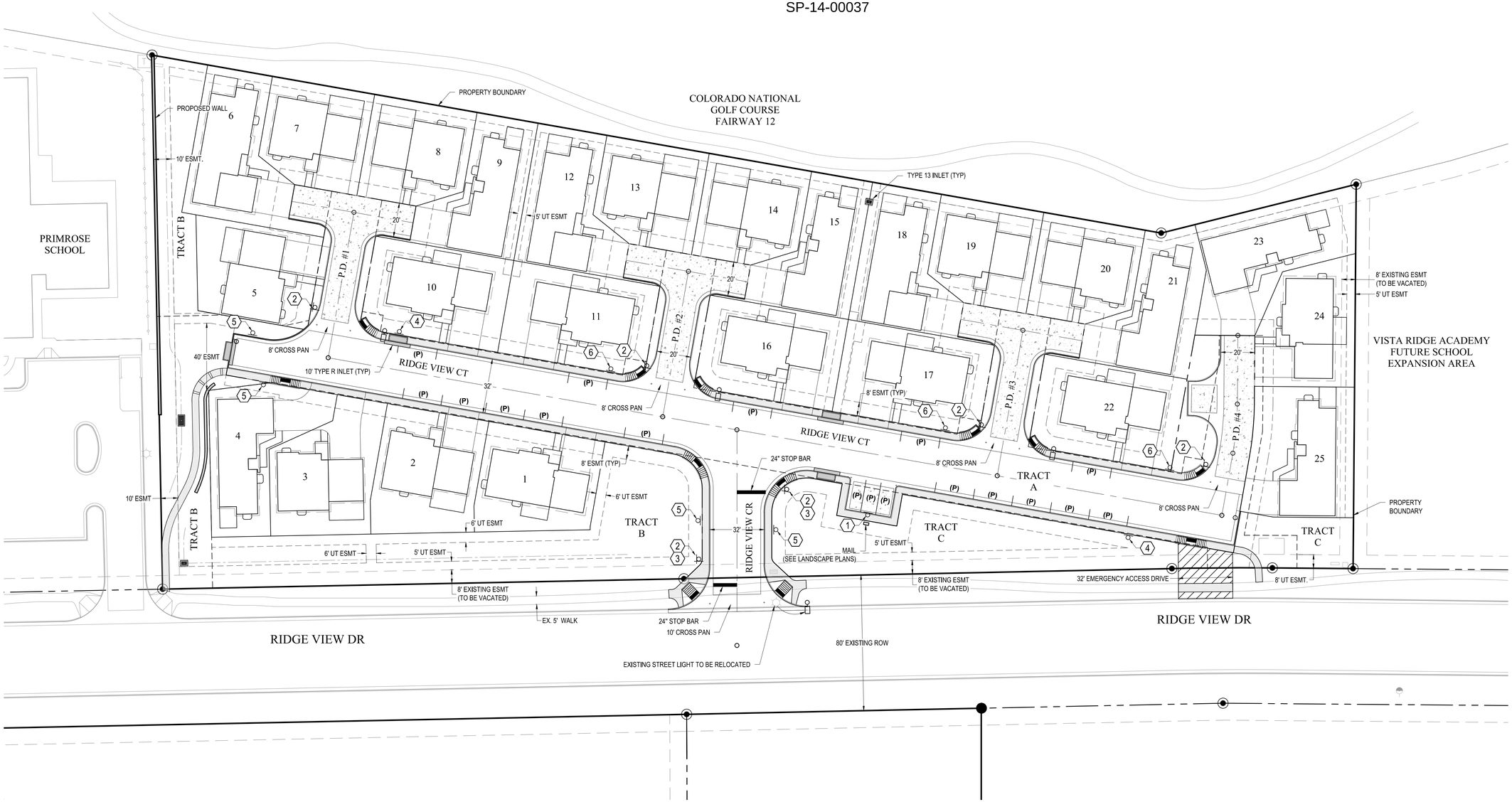
A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

SP-14-00037

GENERAL NOTES

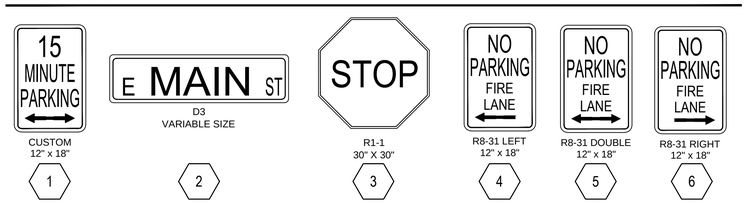
1. SEE PHOTOMETRIC PLAN FOR LOCATION, SIZE AND HEIGHT OF PROPOSED LIGHT FIXTURES.
2. ALL SIDEWALKS ARE 4' UNLESS OTHERWISE NOTED.
3. INTERIOR ROADWAYS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER.
4. RAILING, GUARD RAIL AND FENCE LOCATIONS ARE SHOWN ON THE LANDSCAPE PLAN.
5. ALL STORM DRAINS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER.



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER	M	MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR	UD	UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR	RIP-RAP	RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT	CP	CONCRETE PAVING	

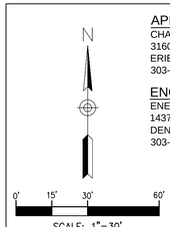
SIGNAGE LEGEND



SIGNAGE NOTES:

1. STREET NAME SIGNS AND POSTS AND BASES SHALL BE PER TOWN OF ERIE STANDARDS.
2. STOP SIGNS SHOULD BE PLACED BETWEEN PC AND 6' FROM PC FOLLOWING M.U.T.C.D. STANDARDS.

SITE PLAN



APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY: BC
APRVD BY: SM
DATE: 11/20/2014
REVISED: 04/17/2015

C2

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

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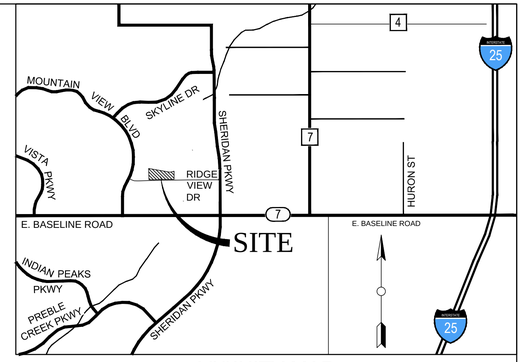

VICINITY MAP

SCALE 1"=2000'

TABLE OF LANDSCAPE REQUIREMENTS

REQUIREMENT REFERENCE	REQUIREMENT	QUANTITY	LANDSCAPE AREA REQUIRED	LANDSCAPE AREA PROVIDED	TREES REQUIRED	TREES PROVIDED
	One deciduous or ornamental street tree for every forty	700 [1]			18	18
10-6-4.E.1.a	(40) linear feet of street frontage or portion thereof	670 [2]			17	17
10-6-4.E.5.a	Minimum of seventy-five percent (75%) of the gross front yard area, excluding driveways, landscaped with live plant material	22,875	17,156	20,529		
10-6-4.E.5.b	Minimum of fifty percent (50%) of the combined side and rear yards landscaped with live plant material	21,124	10,562	10,563		

[1] Ridge View Drive (north side only)

[2] Ridge View Circle and Ridge View Court

MAINTENANCE CHART

LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN A NEAT, CLEAN AND HEALTHY CONDITION BY THE OWNER. THIS SHALL INCLUDE PROPER PRUNING, MOWING AND AERATION OF LAWNS, REPLACEMENT OF MULCH, WEEDING, REMOVAL OF LITTER AND THE REGULAR WATERING OF ALL PLANTINGS. SHOULD ANY PLANT MATERIAL DIE, THE OWNER, SUCCESSOR, OR THE ASSIGNS SHALL BE RESPONSIBLE FO THE REPLACEMENT OF PLANT(S) WITHIN ONE PLANTING SEASON. REPLACEMENT OF PLANT MATERIALS SHALL OCCUR AT THE FOLLOWING RATE:

TYPE	PLANT REPLACEMENT WITHIN 1 YEAR	PLANT REPLACEMENT WITHIN 2+ YEARS
TREE-DECIDUOUS	INCREASE CALIPER BY 1"	INCREASE CALIPER BY 1.5"
TREE-CONIFEROUS	INCREASE HEIGHT BY 1.5"	INCREASE HEIGHT BY 2"
SHRUB	REPLACE WITH PLANTS OF AT LEAST 1/2 MATURE SIZE	REPLACE WITH PLANTS OF AT LEAST 1/2 MATURE SIZE

NOTES

1. ONE MONUMENT SIGN PROPOSED ON SITE.
2. STREET LIGHTS AND/OR LANDSCAPE LIGHTS ARE PROPOSED ON SITE.
3. AUTOMATIC IRRIGATION SYSTEM FOR ALL OF THE LANDSCAPED AREA. IRRIGATION TAP IS LOCATED AT THE SOUTHWEST CORNER OF RIDGEVIEW CIRCLE AND RIDGEVIEW COURT, AS LABELED ON THE PLAN.
4. ALL LANDSCAPE AREAS TO BE PRIVATELY MAINTAINED.
5. IF TRANSFORMERS, GROUND MOUNTED HVAC EQUIPMENT, UTILITY PEDESTALS, ETC. ARE NOT SHOWN ON THE SITE PLAN, ADDITIONAL LANDSCAPING / SCREENING MAY BE REQUIRED BASED UPON FIELD CONDITIONS DISCOVERED VIA THE SITE INSPECTION BY STAFF, MADE PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY, OR FINAL INSPECTION AS APPLICABLE.

LANDSCAPE PLANT LIST

DECIDUOUS TREES

QTY	SYM	COMMON NAME	BOTANICAL NAME	SIZE
9	ABM	Maple, Autumn Blaze	Acer x freemanii 'Autumn Blaze'	2" cal. B&B
5	GRT	Golden Rain Tree	Koelreuteria paniculata	2" cal. B&B
7	MDT	Mayday Tree	Prunus padus	2" cal. B&B
9	OHB	Ohio Buckeye	Aesculus glabra	2" cal. B&B
12	WHB	Hackberry, Western	Celtis occidentalis	2" cal. B&B

ORNAMENTAL TREES

QTY	SYM	COMMON NAME	BOTANICAL NAME	SIZE
9	ABS	Serviceberry, Aut. Brilliance	Amelanchier x grandiflora 'Autumn Brilliance'	6' ht. clump, B&B
10	CHP	Pear, Chanticleer	Pyrus calleryana 'Chanticleer'	1-1/2" cal. B&B
12	HWM	Maple, Hot Wings Tatarian	Acer tataricum 'GarAnn'	1-1/2" cal. B&B
10	PKP	Plum, Princess Kay	Prunus nigra 'Princess Kay'	1-1/2" cal. B&B
11	RHT	Hawthorn, Russian	Crataegus ambigua	1-1/2" cal. B&B

EVERGREEN TREES

QTY	SYM	COMMON NAME	BOTANICAL NAME	SIZE
12	CBS	Spruce, Colorado Blue	Picea pungens 'Glauca'	6' min. height, B&B

DECIDUOUS SHRUBS

QTY	SYM	COMMON NAME	BOTANICAL NAME	SPACING	SIZE
27	ACT	Currant, Alpine	Ribes alpinum	4' o.c.	5 gal.
51	BMS	Spirea, Blue Mist	Caryopteris x cladonensis 'Dark Knight'	3' o.c.	5 gal.
35	CAC	Cranberry, Com. American	Viburnum trilobum 'Compactum'	4' o.c.	5 gal.
40	DBB	Burning Bush, Dwarf	Euonymus alatus 'Compacta'	5' o.c.	5 gal.
5	DBR	Rabbitbrush, Dwarf Blue	Chrysothamnus nauseosus nauseosus	2' o.c.	5 gal.
42	DNB	Ninebark, Diablo	Physcocarpus opulifolius 'Monlo'	5' o.c.	5 gal.
25	HSR	Rose, Hansa	Rosa hansa	4' o.c.	5 gal.
22	IDW	Dogwood, Isanti	Cornus sericea 'Isanti'	4' o.c.	5 gal.
25	MKL	Lilac, Miss Kim	Syringa patula 'Miss Kim'	3' o.c.	5 gal.
13	RTD	Dogwood, Red Twig	Cornus alba 'Kesserlingii'	5' o.c.	5 gal.

EVERGREEN SHRUBS

QTY	SYM	COMMON NAME	BOTANICAL NAME	SPACING	SIZE
12	ARJ	Juniper, Arcadia	Juniperus sabina 'Arcadia'	5' o.c.	5 gal.
35	BCJ	Juniper, Blue Chip	Juniperus sabina 'Blue Chip'	6' o.c.	5 gal.
62	BMJ	Juniper, Broadmoor	Juniperus sabina 'Broadmoor'	6' o.c.	5 gal.
57	CHM	Manzanita, Cheiftain	Arctostaphylos x coloradoensis 'Cheiftain'	6' o.c.	5 gal.
27	HGJ	Juniper, Hughes	Juniperus horizontalis 'Hughes'	6' o.c.	5 gal.

PERENNIALS

QTY	SYM	COMMON NAME	BOTANICAL NAME	SPACING	SIZE
9	ALD	Daisy, Alaska Shasta	Leucanthemum x superbum 'Alaska'	18" o.c.	1 gal.
8	BLM	Bee Balm	Monarda didyma	24" o.c.	1 gal.
8	CTF	Candytuft	Iberis sempervirens	18" o.c.	1 gal.
24	PKL	Periwinkle	Vinca minor	18" o.c.	1 gal.
6	RVL	Valerian, Red	Centranthus ruber	18" o.c.	1 gal.
3	SAJ	Sedum, Autumn Joy	Sedum spectible 'Autumn Joy'	18" o.c.	1 gal.
16	SAL	Salvia, May Night	Salvia nemorosa 'May Night'	18" o.c.	1 gal.
11	YCO	Columbine, Yellow	Aquilegia chrysantha	18" o.c.	1 gal.

ORNAMENTAL GRASSES

QTY	SYM	COMMON NAME	BOTANICAL NAME	SPACING	SIZE
16	BAG	Blue Avena Grass	Helichotrichon sempervirens	3' o.c.	1 gal.
21	DMG	Maiden Grass, Dwarf	Miscanthus sinensis 'Yaku Jima'	3' o.c.	1 gal.
26	HMS	Switch Grass, Heavy Metal	Panicum virgatum 'Heavy Metal'	2' o.c.	1 gal.
76	KFG	Feather Reed Grass, Karl Foerster	Calamagrostis x acutiflora 'Karl Foerster'	3' o.c.	1 gal.
11	KRF	Fountain Grass, Karley Rose	Pennisetum orientale 'Karley Rose'	3' o.c.	1 gal.

NOTE: IN THE EVENT OF A DISCREPANCY BETWEEN THE PLAN GRAPHIC AND THE LANDSCAPE LEGEND, THE PLANT MATERIAL QUANTITY AS DETERMINED BY THE PLAN GRAPHIC SHALL TAKE PRECEDENCE.

LANDSCAPE NOTES

1. ALL PLANT MATERIALS SHALL BE IN ACCORDANCE WITH AAN (American Association of Nurserymen) SPECIFICATIONS FOR NUMBER ONE GRADE.

2. ALL TURF AREAS SHALL BE IRRIGATED WITH AN UNDERGROUND AUTOMATIC POP-UP IRRIGATION SYSTEM PROVIDING FULL COVERAGE. ALL SHRUB BEDS AND TREES TO BE IRRIGATED WITH AN AUTOMATIC DRIP (TRICKLE) IRRIGATION SYSTEM. THE IRRIGATION SYSTEM IS TO BE ADJUSTED TO MEET THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL. IRRIGATION HEADS TO BE LOCATED A MINIMUM OF 5' FROM BUILDING FOUNDATION WALLS.

3. ALL TREES TO BE BALLED & BURLAPPED, CONTAINERIZED, OR ROOT CONTROL BAGS.

4. ALL SHRUB BEDS TO BE MULCHED WITH ROCK MULCH (3" AVERAGE DEPTH) ON LANDSCAPING FILTER FABRIC. INDIVIDUAL TREES IN SOD OR NATIVE SEED TO RECEIVE WOOD MULCH (3" AVERAGE DEPTH). ALL BEDS ADJACENT TO SOD TO BE BORDERED WITH LANDSCAPE EDGER. EDGER TO BE SET LEVEL WITH TOP OF SOD. EDGER TO ALSO BE INSTALLED TO SEPARATE WOOD MULCH AND ROCK MULCH.

5. OWNER SHALL ENSURE THAT THE LANDSCAPE PLANS ARE COORDINATED WITH THE PLANS DONE BY OTHER CONSULTANTS SO THE PROPOSED GRADING, STORM DRAINAGE, OR OTHER CONSTRUCTION DOES NOT CONFLICT NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS ON THIS PLAN.

6. ANY CHANGES IN SPECIES AND PLANT LOCATIONS DURING CONSTRUCTION AS REQUIRED BY SITE CONDITIONS OR AVAILABILITY NEED APPROVAL BY THE TOWN OF ERIE STAFF PRIOR TO INSTALLATION. OVERALL QUALITY AND DESIGN CONCEPT TO BE CONSISTENT WITH APPROVED LANDSCAPE PLANS. ANY CHANGES WILL BE PROVIDED TO OWNER AND THE TOWN OF ERIE FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

7. TURF GRASS WILL BE SODDED WITH A BLEND OF A MINIMUM OF THREE TURF-TYPE TALL FESCUE VARIETIES.

8. ALL SEEDED AREAS TO BE SEEDED WITH SEED MIXES. ANNUAL MOWING TO APPROXIMATELY 6" IN THE SPRING IS RECOMMENDED.

9. TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.

MONTEX NORTH AT VISTA RIDGE
LANDSCAPE PLAN

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

PLANNER / LANDSCAPE ARCHITECT:
HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE B
BOULDER, COLORADO 80304
303-449-9105

DRAWN BY: RD
APRVD BY: RD
DATE: 11/20/2014
REVISED: 04/17/2015

L1

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

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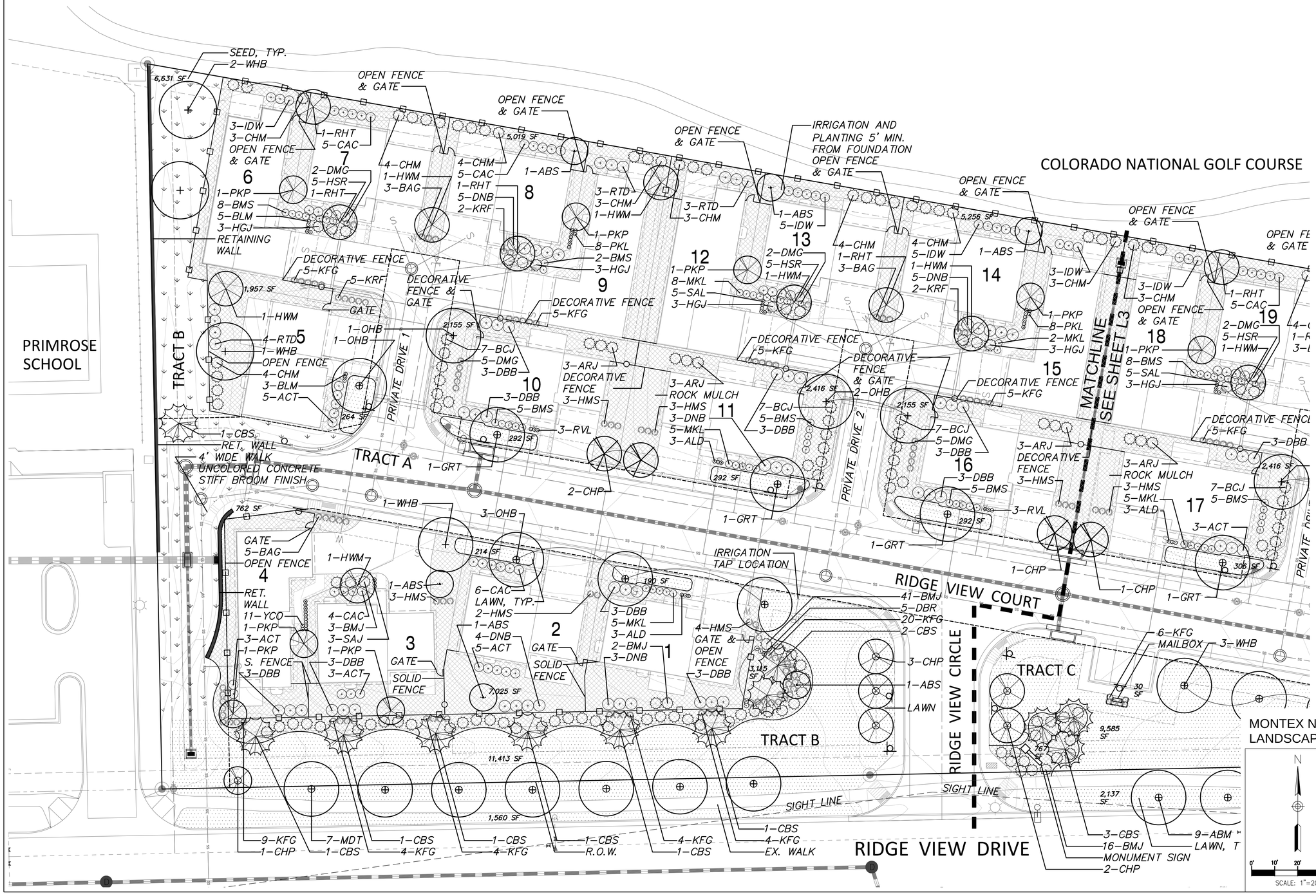

LEGEND

- DECIDUOUS TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUBS
- EVERGREEN SHRUBS
- PERENNIALS
- ORNAMENTAL GRASSES
- SHRUB BED
- SOD (TALL FESCUE BLEND)
- SG SEED
- EDGER
- SOLID FENCE
- OPEN FENCE
- TRAFFIC SIGN
- STREET LIGHT

NOTES

1. OPEN SPLIT-RAIL FENCING ADJACENT TO GOLF COURSE SHALL NOT EXCEED 42 INCHES IN HEIGHT.
2. SOLID FENCING SHALL NOT EXCEED 6 FEET IN HEIGHT.
3. THE POCKET PARK IS LOCATED IN PA 7-3B. INSTALLATION OF THE PARK SHALL BE THE RESPONSIBILITY OF THE DEVELOPER. MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER ASSOCIATION.
4. LANDSCAPING, IRRIGATION AND MAINTENANCE OF THE PRIVATE TRACTS AND THE PUBLIC R.O.W. SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR HOMEOWNER ASSOCIATION.

MONTEX NORTH AT VISTA RIDGE
LANDSCAPE PLAN

N

SCALE: 1"=20'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

PLANNER / LANDSCAPE ARCHITECT:
HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE B
BOULDER, COLORADO 80304
303-449-9105

DRAWN BY: RD
APRVD BY: RD
DATE: 11/20/2014
REVISED: 04/17/2015

L2

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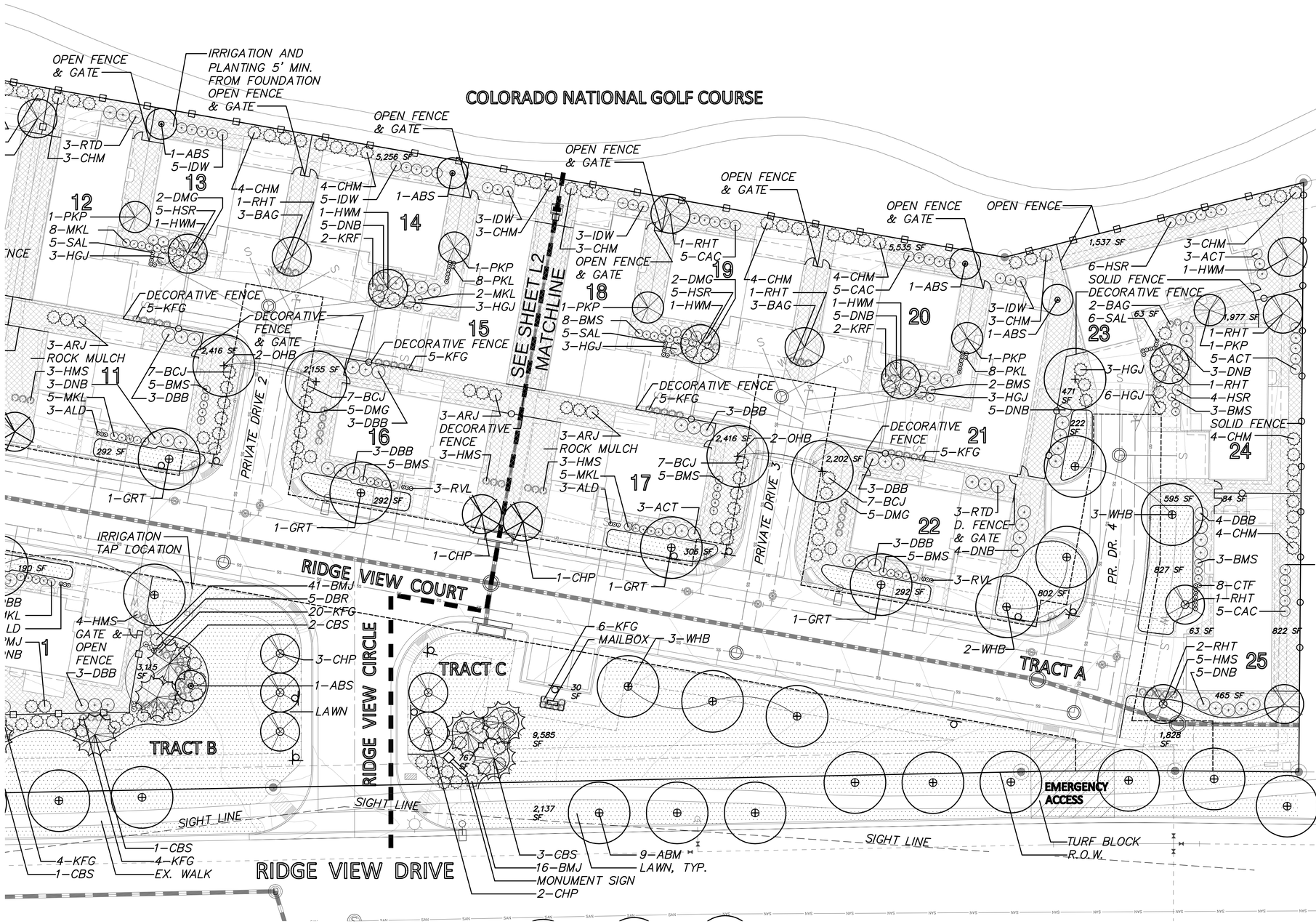

LEGEND

- DECIDUOUS TREE
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- DECIDUOUS SHRUBS
- EVERGREEN SHRUBS
- PERENNIALS
- ORNAMENTAL GRASSES
- SHRUB BED
- SOD (TALL FESCUE BLEND)
- SG SEED
- EDGER
- SOLID FENCE
- OPEN FENCE
- TRAFFIC SIGN
- STREET LIGHT

NOTES

1. OPEN SPLIT-RAIL FENCING ADJACENT TO GOLF COURSE SHALL NOT EXCEED 42 INCHES IN HEIGHT.

2. SOLID FENCING SHALL NOT EXCEED 6 FEET IN HEIGHT.

3. THE POCKET PARK IS LOCATED IN PA 7-3B. INSTALLATION OF THE PARK SHALL BE THE RESPONSIBILITY OF THE DEVELOPER. MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER ASSOCIATION.

4. LANDSCAPING, IRRIGATION AND MAINTENANCE OF THE PRIVATE TRACTS AND THE PUBLIC R.O.W. SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR HOMEOWNER ASSOCIATION.

VISTA RIDGE ACADEMY FUTURE EXPANSION AREA

IRRIGATION AND PLANTING 5' MIN. FROM FOUNDATION

MONTEX NORTH AT VISTA RIDGE
LANDSCAPE PLAN

N

SCALE: 1"=20'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

PLANNER / LANDSCAPE ARCHITECT:
HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE B
BOULDER, COLORADO 80304
303-449-9105

DRAWN BY: RD
APRVD BY: RD
DATE: 11/20/2014
REVISED: 04/17/2015

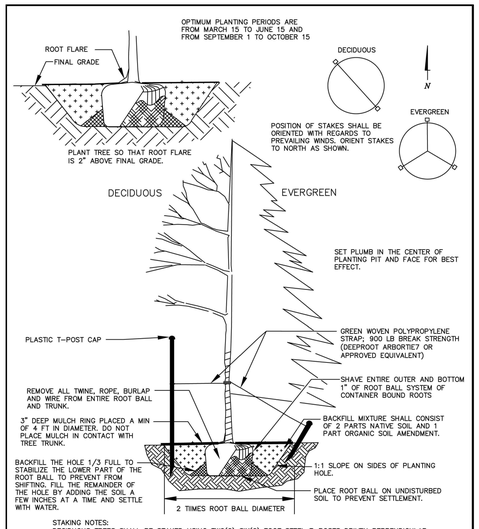
L3

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

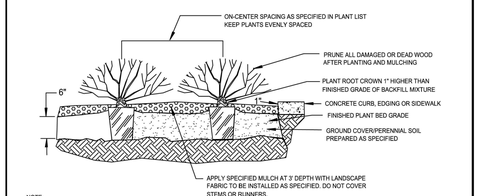
4.036 ACRES - 25 LOTS / 3 TRACTS

SP-14-00037



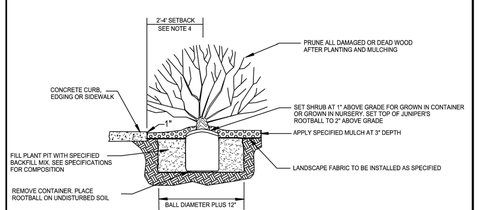
The Town of ERIE COLORADO

DRAWING TITLE: TREE PLANTING DETAIL
DRAWING NUMBER: P20A
DRAWN BY: D. JENKINS APPROVED BY: G. HEGNER DATE: 1/2014



NOTE:
1. HOLD MULCH GRADE 1" BELOW EDGE OF WALK, EDGING OR CURB. HOLD BACK PLANTS 12-18" FROM EDGES.
2. REMOVE ALL CONTAINERS & POTS PRIOR TO PLANTING.

GROUNDCOVER / PERENNIAL



SHRUB

NOTE:
1. DO NOT PLANT ANY PLANT WITH ROOTBALL NOT IN CONFORMANCE WITH COLORADO NURSERY ACT REQUIREMENTS
2. HOLD MULCH GRADE 1" BELOW EDGE OF WALK, EDGING OR CURB
3. SHRUBS NOT PLANTED WITHIN A MULCHED BED REQUIRE A 4" HIGH EARTH SAUCER TO BE CONSTRUCTED CONTAINING A 1' RADIUS AND 3' DEEP MULCH COLLAR.
4. USE A 2' TO 4' SETBACK DEPENDING ON SPECIES. SETBACK TO ACCOMODATE MATURE SPREAD OF SPECIES TO PREVENT OVERHANG.
5. REMOVE ALL CONTAINERS & POTS PRIOR TO PLANTING.

The Town of ERIE COLORADO

DRAWING TITLE: SHRUB & GROUNDCOVER/ PERENNIAL PLANTING DETAIL
DRAWING NUMBER: P20B
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 01/2006

Table 2. Shortgrass Prairie Native Seed Mixture. For use in open space native seeding less than 25 feet from road and trail edges, or within the top of slope above roadway/trail and inside the toe of slope below roadway/trail if sloped areas are present adjacent to roadway or trail. This mixture is for specific usage near trails or where shorter grasses are desired (such as smaller park sites). It is dominated by short to mid sized native prairie grasses (6-18 inches in height), but includes a few native wildflowers (identified with the *, below). Best for use along roads and trails and in smaller native seeded park areas. Be sure to over seed any swales or moist areas within this seeding type with the moist swale seed mixture (Table 3). While seeding is preferred beginning in late winter (after February 1st) this mixture may be used between October 30th and April 30th only without supplemental irrigation. If adequate supplemental irrigation is in place, this mixture may be seeded through June 15th.

COMMON NAME	SCIENTIFIC NAME	VARIETY	OZ/ACRE	PLS LBS/ACRE
Buffalograss	*Buchloe dactyliodes*	Native, Bison or Texoka		10
Blue grama	*Chondrosum gracile*	Lovington Alma,Native,or Hachita		8
Sand dropseed	*Sporobolus cryptandrus*	Common		4
Prairie Junegrass	*Loeleria macrantha*	Common		4
Hard Fescue	*Festuca brevipila*	'Durar'		4
Fringed sage*	*Artemisia frigida*	Common	1	
Purple prairie clover*	*Dalea purpurea*	Common	4	
Gayfeather*	*Liatris punctata*	Common	4	
Tansy aster*	*Machaeranthera tanacetafolia*	Common	3	
Yarrow*	*Achillea millefolium*	Western	2	
OUNCES			14	.875
SEEDING RATE POUNDS PLS/ACRE				**30.875**

SECONDARY ENTRYWAY SIGN PER VISTA RIDGE DEVELOPMENT PLAN ARTICLE VI, B.3.b
SIGN TO READ "THE FAIRWAYS"

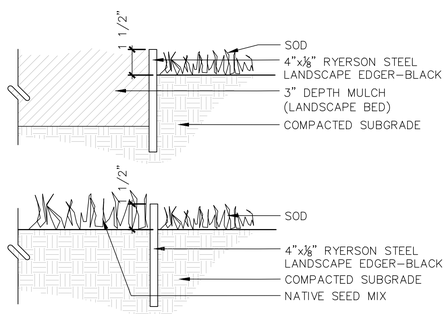
MONUMENT SIGN

SOLID FENCE TO BE 6 FEET MAXIMUM ABOVE FINISHED GRADE. FENCES TO COMPLEMENT ARCHITECTURE.

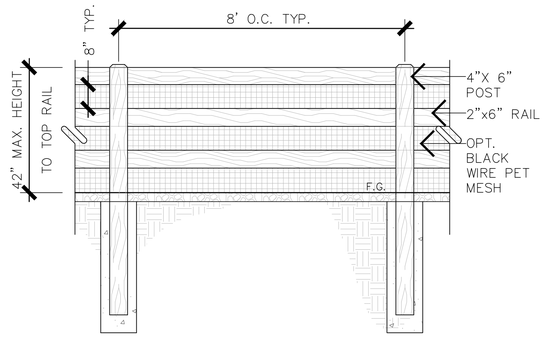
DECORATIVE FENCE

VITAL CLUSTER MAILBOX
CBU-13 TENANT CLUSTER MAILBOX. 2 PROPOSED.
COLOR: SANDSTONE

MAILBOX KIOSK



LANDSCAPE EDGER



OPEN FENCE

ELEVATION

MONTEX NORTH AT VISTA RIDGE
LANDSCAPE PLAN

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

PLANNER / LANDSCAPE ARCHITECT:
HURST & ASSOCIATES
2500 BROADWAY STREET, SUITE B
BOULDER, COLORADO 80304
303-449-9105

DRAWN BY: RD
APRVD BY: RD
DATE: 11/20/2014
REVISED: 04/17/2015

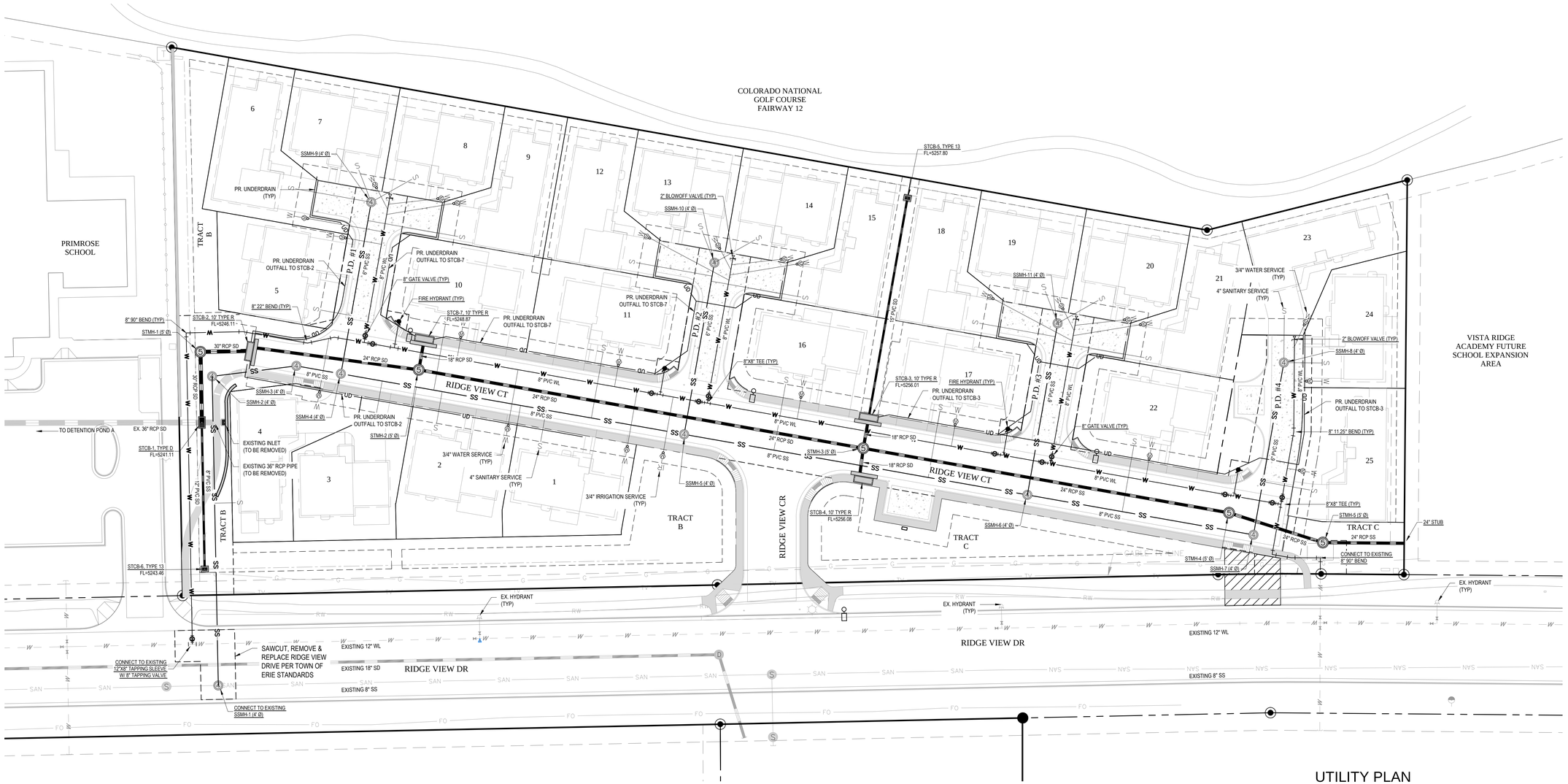
L4

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

SP-14-00037



UTILITY PLAN

LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

N

0' 15 30 60

SCALE: 1"=30'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY:	BC
APRVD BY:	SM
DATE:	11/20/2014
REVISED:	04/17/2015

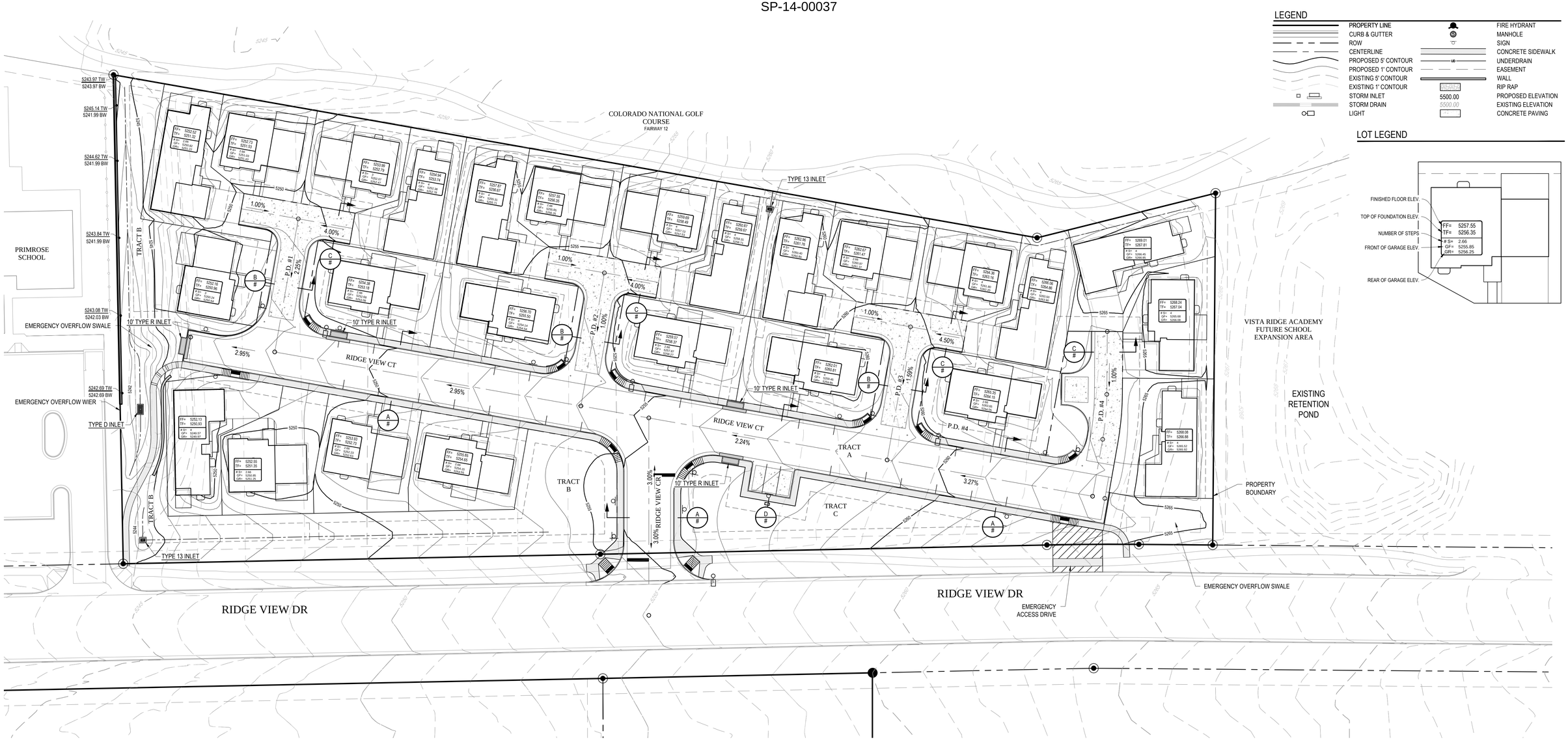
C3

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

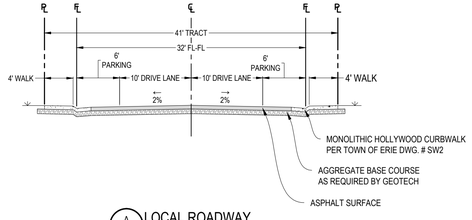
A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

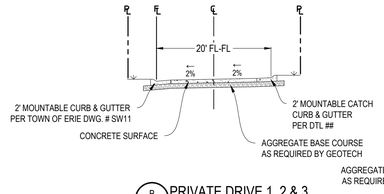
SP-14-00037



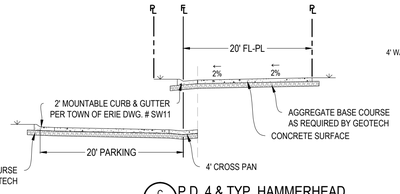
STREET SECTIONS



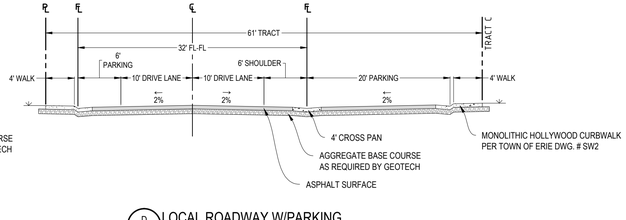
A/3 LOCAL ROADWAY SECTION
N.T.S.



B/3 PRIVATE DRIVE 1, 2 & 3 SECTION
N.T.S.

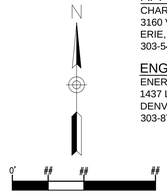


C/3 P.D. 4 & TYP. HAMMERHEAD SECTION
N.T.S.



D/3 LOCAL ROADWAY W/PARKING SECTION
N.T.S.

GRADING PLAN



APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY: BC
APRVD BY: SM
DATE: 11/20/2014
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C4

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4.036 ACRES - 25 LOTS / 3 TRACTS

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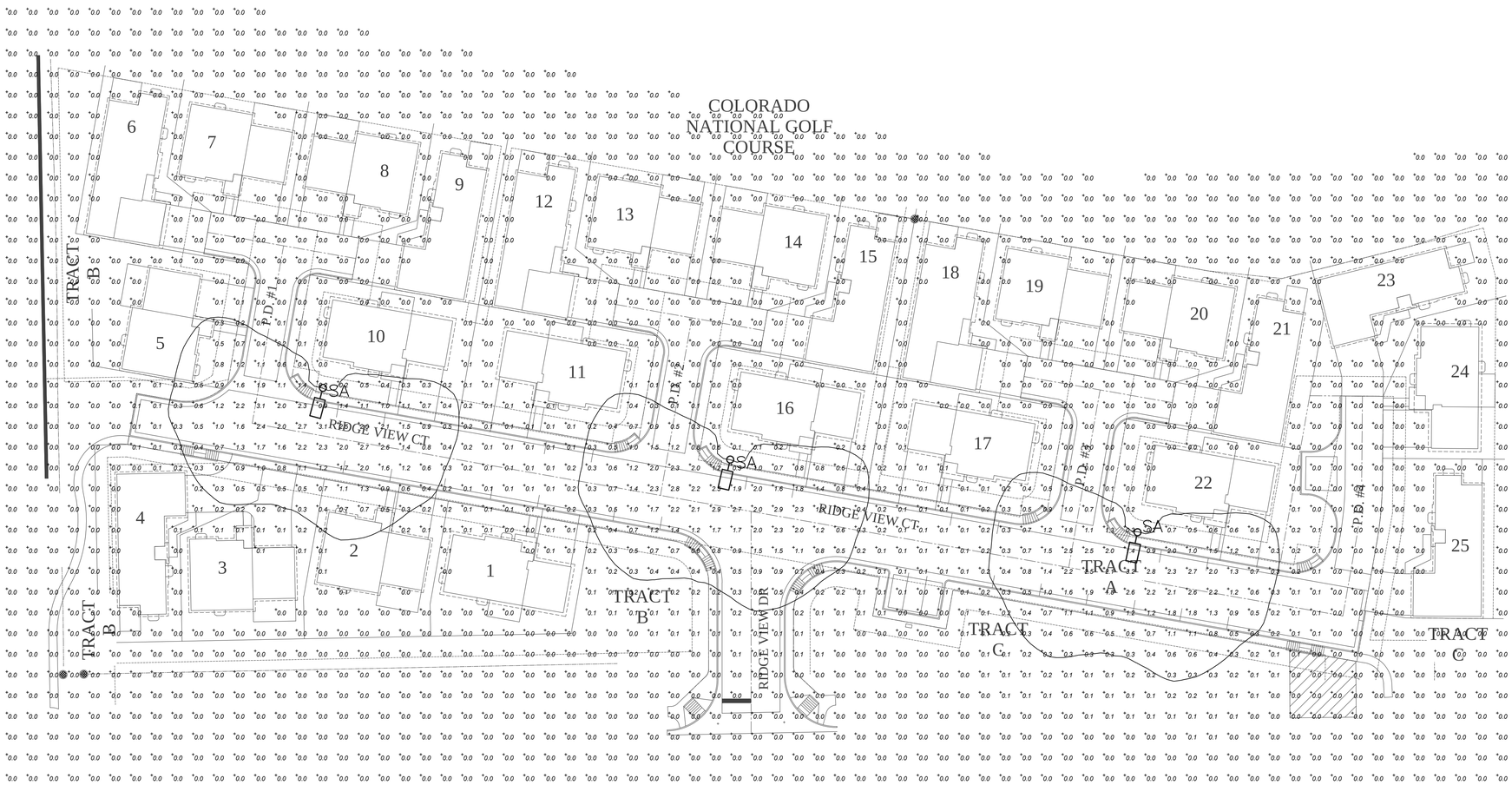
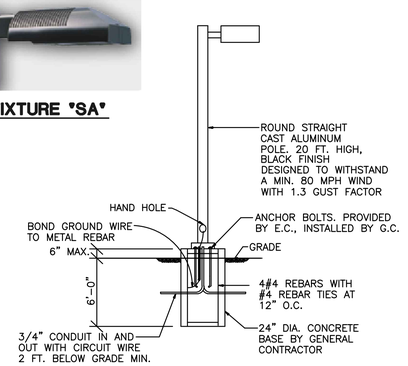


SITE PHOTOMETRIC PLAN

FIXTURE "SA"



FIXTURE SA INSTALLATION DETAIL

NO SCALE

SITE PHOTOMETRIC SUMMARY

AVERAGE = 0.2 FT. CANDLE
MINIMUM = 0.0 FT. CANDLE
MAXIMUM = 3.2 FT. CANDLE

LIGHTING FIXTURE SCHEDULE

ITEM	MANUFACTURER	CAT. NO.	LAMPS	WATT	MTG HEIGHT ABOVE GRADE	DESCRIPTION
SA	HEAD: KIM LIGHTING POLE: WJ WATLEY	1SA/SAR3 P70/80L 4K240/BL/A-32/NF0 RT34-20-DE9BLK-TXT-DTC	(80)4200K LED 350 MA 9700 LUMENS	92	20 FT. OVERALL HEIGHT	SINGLE HEAD LED POLE LIGHT ON ROUND 20 FT POLE. BLACK FINISH, TYPE III, "NEIGBOR FRIENDLY OPTICS"

MONTEX NORTH AT VISTA RIDGE
PHOTOMETRIC PLAN

N

0' 15' 30' 60'

SCALE: 1"=30'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ELECTRICAL:
RG ENGINEERING CONSULTANTS
2555 WALNUT STREET, SUITE B
DENVER, COLORADO 80205
303-355-5534

DRAWN BY: SG
APRVD BY: SG
DATE: 11/20/2014
REVISED: 4/17/2015

E1

prepared by
Enertia Consulting Group, LLC
1529 Market Street, Suite 200
Denver, CO 80202

Phase III Drainage Report

Montex North at Vista Ridge, Erie, Colorado

prepared for

Chartered Development Corp
3160 Village Vista Drive
Erie, CO 80516

LAND • ENERGY • INFRASTRUCTURE

ENGINEER'S CERTIFICATION

"I hereby certify that this Phase II Drainage Report for the design of Montex North at Vista Ridge was prepared by me (or under my direct supervision) in accordance with the provisions of the *Town of Erie Standards and Specifications for Design and Construction* for the owners thereof. I understand that the Town of Erie does not and will not assume liability for drainage facilities designed by others, including the designs presented in this report."

_____

Shawn C. Merz, PE
State of Colorado Registration No. 41241
For and on Behalf of Enertia Consulting Group

TOWN ACCEPTANCE

This report has been reviewed and found to be in general compliance with the *Town of Erie Standards and Specifications for Design and Construction* and other Town requirements. **THE ACCURACY AND VALIDITY OF THE ENGINEERING DESIGN, DETAILS, DIMENSIONS, QUANTITIES, AND CONCEPTS IN THIS REPORT REMAINS THE SOLE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.**

Accepted by: _____ Date: _____
Deputy Public Works Director

TABLE OF CONTENTS

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   A. Site Location 1
   B. Description of Property 1
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   B. Sub-Basin Description 2
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   A. Development Criteria Reference and Constraints 4
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4. DRAINAGE FACILITY DESIGN 5
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APPENDIX A – DRAINAGE MAP

APPENDIX B – HYDROLOGIC/HYDRAULIC COMPUTATIONS

- Impervious Calcs
- SF-2 Form
- 2-Year SF-3 Form
- 100-Year SF-3 Form
- Inlet Capacity Summary
- Street Capacity/Inlet Calcs
- 2-Year Pipe Sizing/HGL-EGL Calcs
- 100-Year Pipe Sizing/HGL-EGL Calcs
- Drainage Swale Capacity Calcs

APPENDIX C – REFERENCE DOCUMENTS

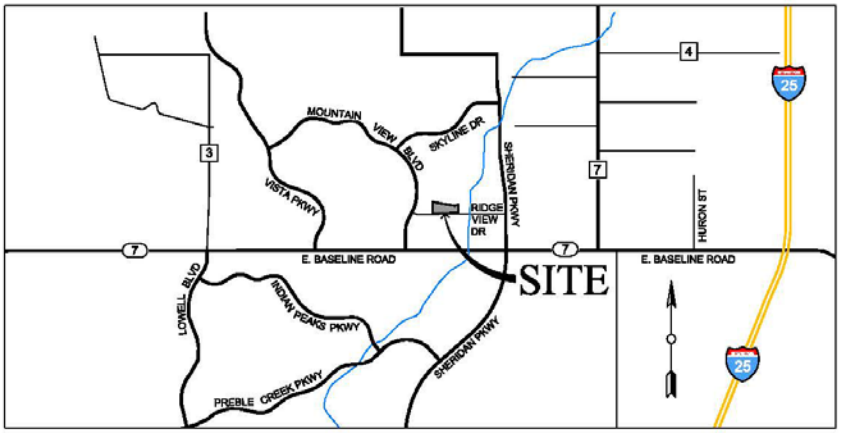
- Erie Criteria Sheets
- FIRM Map
- ALTA SURVEY
- Primrose School Final Drainage Report
- Primrose School Grading and Drainage Plan

1. GENERAL LOCATION AND DESCRIPTION

A. Site Location

The project site is a re-subdivision of Lot 2, Vista Ridge Filing No. 2 and is located in the Southwest Quarter of Section 33, Township 1 North, Range 68 West of the 6th Principle Meridian. The project is bounded to the north by Colorado National Golf Course, Vista Ridge Academy the east, Primrose Preschool to the west and Ridge View Drive to the south. The adjacent major roadways are Mountain View Boulevard to the west, Sheridan Parkway to the east and East Baseline Road to the south.

Montex at Vista Ridge Vicinity Map



B. Description of Property

The proposed site consists of 4.04 acres. The site is gently sloping from east to west with an existing slope of roughly 2.8%. Existing ground cover consists of natural grasses. There is a drainage swale along the western property line that collects runoff from the site and conveys the water to an inlet which drains to the detention pond west of Primrose Preschool (A3). To the east of the site, on the Vista Ridge Academy property, a retention pond has been constructed to capture runoff from the Vista Ridge Academy Site. There are no wetlands on the proposed site. The developed parcel will consist of 25 single-family homes with a density of 6.2 dwelling units/acre. There is an existing 10' utility easement along the north, west property line and an existing 8' utility easement along the east and south property line. There is also a pocket utility easement at the southeast corner of the site for a water stub to the site. The ALTA Survey for the site has been included in Appendix C.

The utility easement along the east, west and north property line will be reduced in size and pocket easements will be provided for transformers as part of this development.

2. DRAINAGE BASINS

A. Major Basin Description

Pond A3

The project is located within the FEMA Floodplain Panel 08013C0444J. This panel was not printed by FEMA. The FIRM Index notes this panel as having "*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED". Therefore the project is clear of any floodplain hazards. The project will discharge to a regional detention pond (Pond A3) west of Primrose Preschool where detention and water quality will be provided. This detention pond has a 100-year water surface elevation of 5232.89. The lowest elevation of the site is 5240.55 at the existing Type C inlet on the west side of the property. The pond is owned and maintained by the Vista Ridge Metro District. The existing site is not irrigated. However there is irrigation on the golf course to the north and the right-of-way to the south. Currently, the proposed site is vacant. This project will develop the infrastructure for 25 single-family residential homes.

B. Sub-Basin Description

Basin S1

Basin S1 consists of 0.93 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is 69% which results in Q_2=1.54 cfs and Q_{100}=5.75 cfs. This water will be collected with a 10' Type R on-grade inlet between lots 116 and 17 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S2

Basin S2 consists of 0.33 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is 43% which results in Q_2=0.34 cfs and Q_{100}=1.77 cfs. This water will be collected with a 10' Type R on-grade inlet at the southeast corner of Ridge View Court and Ridge View Circle and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S3

Basin S3 consists of 0.67 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and

landscaped open space areas. The imperviousness is 74% which results in Q_2=1.21 cfs and Q_{100}=4.29 cfs. This water will be collected with a 10' Type R on-grade inlet near lot 10 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S4

Basin S4 consists of 0.41 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is 78% which results in Q_2=0.81 cfs and Q_{100}=2.75 cfs. This water will be collected with a 10' Type R sump inlet between lots 4 and 5 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S5

Basin S5 consists of 0.45 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units, roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is anticipated to be 77% which results in Q_2=0.87 cfs and Q_{100}=2.98 cfs. This water will be collected with a 10' Type R sump inlet between lots 4 and 5 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S6

Basin S6 consists of 0.41 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space areas. The imperviousness is anticipated to be 21% which results in Q_2=0.25 cfs and Q_{100}=2.09 cfs. This water will be collected with a Type 13 sump inlet near lot 4 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S7

Basin S7 consists of 0.23 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space areas. The imperviousness is anticipated to be 29% which results in Q_2=0.21 cfs and Q_{100}=1.48 cfs. This water will be collected with a Type D sump inlet behind lot 4 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S8

Basin S8 consists of 0.23 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space area. The imperviousness is anticipated to be 53% which results in Q_2=0.28 cfs and Q_{100}=1.28 cfs. This basin will combine with basin OS4 & OS5 runoff. The combined water will be collected with a Type 13 sump inlet between lots 15 and 18 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin S9

Basin S9 consists of 0.09 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of single-family units and landscaped open space area. The imperviousness is anticipated to be 50% which results in Q_2=0.26 cfs and Q_{100}=1.26 cfs. This water will drain onto the golf course.

Basin S10
Basin S10 consists of 0.19 acres and currently is comprised of native grasses. In the developed condition, this basin will consist of roadway/drive/sidewalk paving and landscaped open space areas. The imperviousness is anticipated to be 42% which results in Q_2=0.09 cfs and Q_{100}=0.48 cfs. This water will drain onto Ridge View Drive.

Basin OS1
Basin OS1 is on the Vista Ridge Academy site and consists of 0.19 acres of native grasses. The imperviousness is 5% which results in Q_2=0.05 cfs and Q_{100}=0.92 cfs. This basin will drain between the houses and combine with basin S1 runoff.

Basin OS2
Basin OS2 is on the Vista Ridge Academy site and consists of 0.11 acres of native grasses. The imperviousness is 5% which results in Q_2=0.03 cfs and Q_{100}=0.54 cfs. This basin will drain between the houses and combine with basin S2 runoff.

Basin OS3
Basin OS3 is on the Vista Ridge Academy site and consists of 2.37 acres of native grasses and a small parking area. This area in anticipated to be developed in the future and an imperviousness of 95% has been assumed which results in Q_2=6.51 cfs and Q_{100}=19.36 cfs. This basin currently drains to a retention pond constructed within the basin.

Basin OS4
Basin OS2 is on the Vista Ridge Academy site and consists of 0.07 acres of native grasses. The imperviousness is 5% which results in Q_2=0.02 cfs and Q_{100}=0.35 cfs. This basin will combine with basin S8 & OS5 runoff. The combined water will be collected with a Type 13 sump inlet between lots 15 and 18 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

Basin OS5
Basin OS5 is on the Colorado National Golf Course. It is currently comprised of native grasses and irrigated grass turf. The basin is 0.57 acres. The imperviousness is 5% which results in Q_2=0.15 cfs and Q_{100}=2.68 cfs. This basin will drain to a grass swale along the north property line where it will combine with basin S8 & OS4 runoff. The combined water will be collected with a Type 13 sump inlet between lots 15 and 18 and conveyed in a storm sewer system to Detention Pond A3 west of Primrose Preschool.

A conservative time of concentration of 5 minutes has been assumed for all basins.

3. DRAINAGE DESIGN CRITERIA

A. Development Criteria Reference and Constraints

The site parcel is identified as Lot 2 in the Primrose Drainage Report. A 36-inch diameter pipe with a Type C Inlet was extended to the site to capture runoff. The anticipated 100-year runoff was determined to be 59.58 cfs. A drainage swale was constructed with the Primrose

Preschool construction which directs runoff to the inlet. The Vista Ridge Academy Site drainage east of the proposed development is divided in the middle by a high point. The eastern portion of Vista Ridge Academy drains east to an onsite detention pond and the western portion drains to the west. The western portion of the site consists of parking lot and undeveloped land. Runoff from the western basin drains to a retention pond which was constructed onsite restricting discharge from the project. A pipe stub and emergency swale will be constructed with the Montex North Development to convey future development to the detention pond. Vista Ridge Academy will need to control the emergency overflow from the retention pond and future development and convey it to the provided swale location. The Final Primrose Drainage Report has been included in Appendix C for reference.

B. Hydrological Criteria

Basin Runoff has been calculated using criteria from the Town of Erie *"STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS, 2014 Edition"*. The design storm return periods for residential land use are 2-year for the initial storm and 100-year for the major storm. Imperviousness values were selected using Table 800-3. One-hour rainfall depths of 1.01 for the 2-year design storm and 2.70 for the 100-year design storm were used to calculate the intensities using Urban Drainage equation RA-3. Using the rational method, runoffs for each basin were determined. Due to the small basin sizes the time of concentration was assumed to be 5 minutes for each basin. The hydrologic calculations are located in Appendix B.

C. Hydraulic Criteria

The maximum allowable runoff from the Project and Vista Ridge Academy may not exceed 59.6 cfs as outlined in the Primrose Preschool Final Drainage Report. During the 2-year event, the depth of flow for local roads may not overtop the curb and may extend to the crown of the road. Residential buildings are required to be no less than 12-inches above the 100-year water surface elevation and the water depth may not exceed 18-inches at the gutter flow line. A "Hollywood Monolithic Integral Curbwalk" will be used on this site. Therefore, the initial flow line depth will be limited to 4" and the major storm runoff has been limited to the back of the utility easement. Additional capacity will be required at the 10' type R inlet located at the low point at the west end of Ridge View Court, therefore 6" vertical curb will be provided in this area. This allows the flow to pond to 6" before spilling to the west.

D. Adaptations from Criteria

No adaptions are requested at this time.

4. DRAINAGE FACILITY DESIGN

A. General Concept

The site has been graded to drain from east to west which follows the historic drainage patterns. The Private Drives drain to Ridge View Court. Residential downspouts will discharge to the ground surface. The majority of onsite runoff drains to Ridge View Court and is captured in Type R inlets and conveyed to the detention facility via RCP piping.

Basin S9 cannot be captured and will discharge to Colorado National Golf Course, however this flow is small (Q_2=0.26 cfs, Q_{100}=1.26 cfs) and has been minimized. Additionally, there is a small basin from the golf course (Basin OS5) which drains onto the Montex North Site. Flow from the golf course (Q_2=0.15 cfs, Q_{100}=2.68 cfs) exceeds the flow from Basin S9. The golf course runoff is captured in an area inlet between Buildings 15 and 18 and routed through the pond west of Primrose Preschool where detention and water quality is provided. This offsets the runoff to the golf course from Basin S9. Basin S9 water quality and detention will be provided in downstream ponds. Ultimately both basins end up in the same location.

Basin S10 will not be collected in the Montex North storm drainage system. This is a small area from the high point in Ridge View Circle which cannot be captured and will discharge flow (Q_2=0.09 cfs, Q_{100}=0.48 cfs) to Ridge View Drive.

An existing retention pond is located on the Vista Ridge Academy site. This pond currently prevents the majority of water from draining onto the Montex North Site. A storm drain stub will be provided to the Vista Ridge Academy south of lot 25 for future development. This pipe has been sized to accommodate a 95% impervious development. A swale has also been provided at this location to accommodate any potential emergency overflow. The retention pond should be modified to control the emergency overflow location and prevent overflow from discharging to the proposed homes.

An emergency overflow has been provided at the 10’ Type R inlet between lots 4 and 5 (Design Point 4). This emergency overflow has been sized to pass all tributary flow (Basin OS1-OS-3, S1-S5). Should this inlet plug, water will be conveyed to a Type D sump area inlet west of lot 4 (Design Point 5). An additional emergency overflow has been provided at this location to convey water to the Primrose Preschool parking lot.

Additional area inlets have been provided to capture onsite flow from swales between lots 15 and 18 and behind lot 4.

B. Specific Details

The inlet and street capacities were sized using Urban Drainage and Flood Control District Street Capacity and Inlet Sizing spreadsheet. Two 10’ Type R on grade inlets have been located at the east side of the Ridge View Court and Ridge View Circle intersection. An additional 10’ Type R inlet has been provided near lot 10 and a 10’ Type R sump inlet has been provided at the Ridge View Court low point (Design Point 4) near the fire department turnaround between lots 4 and 5 at the western edge of the site.

The inlets have been provided to capture runoff and maintain street capacities at allowable depths during the initial and major storm event and have been spaced to meet the Town of Erie Design Criteria. The storm sewer system has been designed to capture and convey the 100-year storm event. The curb near the fire department turn-around at the west end of Ridge View Court has been transitioned from a 4” Hollywood Curb to a 6” vertical curb. 6-inches of ponding depth enables the 10’ type R sump inlet to capture the 100-year storm. Should this inlet plug, water will spill over and into the drainage swale along the west property line.

The existing Type C inlet onsite near the west property line will be removed and replaced closer to the property with a close mesh grate Type D Inlet to accommodate the site layout. An emergency overflow spillway has been designed at this location to provide 1.2' of depth. Assuming a clogging factor of 0.5, this inlet has a capacity of 20.5 cfs with 1.2' of ponding. Basin S7 has 1.48 cfs during the major design storm. Should this inlet plug, water will spill out into the Primrose Preschool parking lot and drain to pond A3. A capacity chart for the Type D inlet has been provided in Appendix B.

A Type 13 sump inlet has been provided between lots 15 and 18. This sump was set to a depth of 9" to capture the 100-year runoff from basins S8, OS4 and OS5. Should this inlet plug water will be conveyed onto the golf course.

Hydraulic Analysis was performed using the Hydraflow software within AutoCAD to size pipes and determine HGL's and EGL's. The pipes have been sized to keep the HGL and the EGL below the proposed ground surface.

Language has been included in the Final Plat to allow for drainage runoff and maintenance on all tracts and individual lots.

All hydrologic and hydraulic calculations are provided in Appendix B.

5. SUMMARY

The proposed Montex North Residential Development will fall within the drainage guidelines outlined in the Town of Erie Standards and Specification as well as the previous drainage studies. The proposed development will construct a storm sewer system to convey runoff to the provided 36-inch storm drainage stub and ultimately to the existing Pond A3 detention facility. No adverse impacts are anticipated to the existing detention facilities.

6. REFERENCES

STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS, Town of Erie, Colorado, 2014 Edition.

URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 1, 2 & 3., UDFCD, Denver, Colorado, Revised April 2008.

FINAL DRAINAGE REPORT – PRIMROSE SCHOOL, Hurst and Associates, Inc, May 8, 2007.

APPENDIX A

Drainage Map

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; A PORTION OF THE SOUTHWEST QUARTER OF 33, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPLE MERIDIAN, TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

4.036 ACRES - 25 LOTS / 3 TRACTS

SK-14-00020

DESIGN POINT SUMMARY TABLE

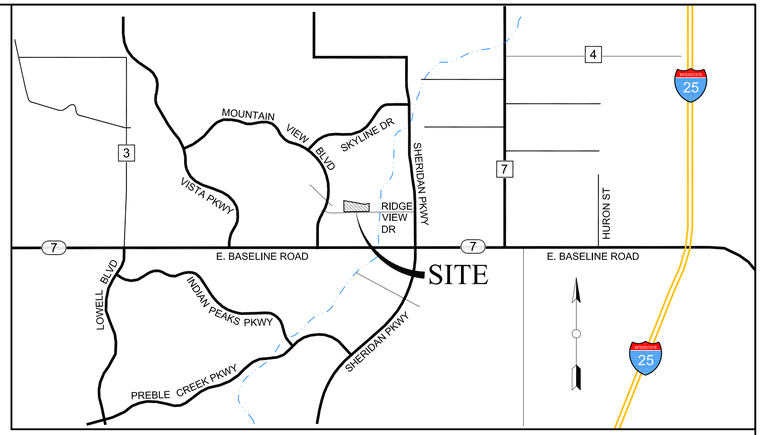
DESIGN POINT	Q_5 (CFS)	Q_{100} (CFS)	TRIBUTARY BASINS
1	1.54	10.88	S8, OS4, OS 5, S1, OS1
2	6.61	31.96	S8, OS4, OS 5, S1, OS1, S2, OS2
3	7.07	35.38	S8, OS4, OS 5, S1, OS1, S2, OS2, S3
4	8.07	40.58	S8, OS4, OS 5, S1, OS1, S2, OS2, S3, S4, S5
5	8.22	43.65	S8, OS4, OS 5, S1, OS1, S2, OS2, S3, S4, S5, S6, S7

BASIN RUNOFF SUMMARY TABLE

BASIN	AREA (AC)	Q_5 (CFS)	Q_{100} (CFS)
S1	0.93	1.54	5.75
S2	0.33	0.34	1.77
S3	0.67	1.21	4.29
S4	0.41	0.81	2.75
S5	0.45	0.87	2.98
S6	0.41	0.25	2.09
S7	0.29	0.21	1.48
S8	0.23	0.28	1.28
S9	0.23	0.26	1.26
S10	0.09	0.09	0.48
OS1	0.19	0.05	0.92
OS2	0.11	0.03	0.54
OS3	2.37	6.51	19.36
OS4	0.07	0.02	0.35
OS5	0.57	0.15	2.68

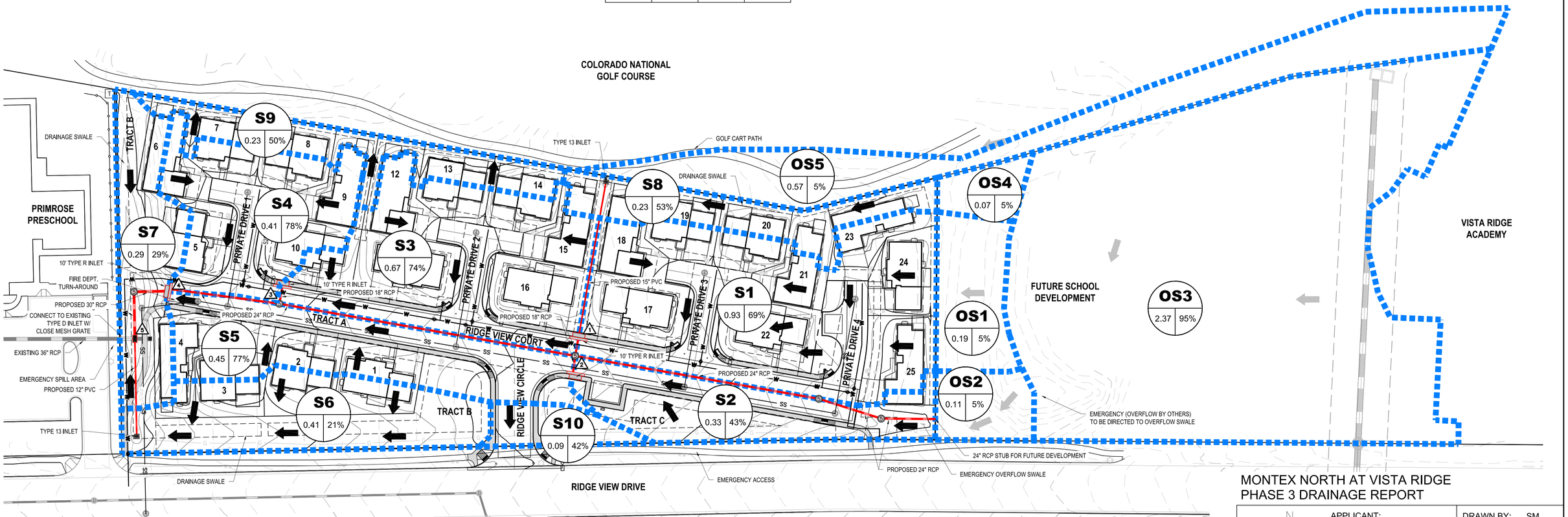
LEGEND

- PROPOSED CONDITION DRAINAGE BOUNDARY
- 5525 EXISTING CONTOUR
- 5525 PROPOSED CONTOUR
- EXISTING STORM DRAIN SYSTEM
- PROPOSED STORM DRAIN SYSTEM
- EXISTING DRAINAGE FLOW ARROW
- PROPOSED DRAINAGE FLOW ARROW
- XX BASIN IDENTIFICATION
- XX.X IMPERVIOUSNESS
- XX% AREA (ACRES)



GENERAL LOCATION MAP

SCALE 1"=2000'



MONTEX NORTH AT VISTA RIDGE
PHASE 3 DRAINAGE REPORT

N

0' 20' 40' 80'

SCALE: 1"=40'

APPLICANT:
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DRIVE, SUITE 104
ERIE, COLORADO 80516
303-545-2554

ENGINEER:
ENERTIA CONSULTING GROUP
1437 LARIMER STREET
DENVER, COLORADO 80202
303-875-7131

DRAWN BY: SM
APRVD BY: SM
DATE: 10/31/2014
REVISED: 4/2/2015

SHEET 1 OF 1

APPENDIX B

Calculations

ENERTIA CONSULTING GROUP

CALCULATED BY: SCM
DATE: 31-Mar-15

Montex North at Vista Ridge
Proposed Conditions Imperviousness Calculations

		Impervious Area			
Basin ID	**Total Basin Area (sf)**	**Building (sf)**	**Drives, Pvmt, Swk (sf)**	**Total Imp. (sf)**	**Imperviousness (%)**
S1	40,602			12,523	**69%**
S2	14,319			8,093	**43%**
S3	29,110			7,601	**74%**
S4	18,012			4,008	**78%**
S5	19,676			4,538	**77%**
S6	17,954			14,247	**21%**
S7	12,427			8,870	**29%**
S8	9,947			4,666	**53%**
S9	9,921			4,933	**50%**
S10	3,855			2,231	**42%**
OS1	8,430			422	**5%**
OS2	4,995			250	**5%**
OS3	103,340			98,173	**95%**
OS4	3,245			162	**5%**
OS5	24,624			1,231	**5%**

Total Site Imperviousness (%) = ***59%***

STANDARD FORM SF-2
TIME OF CONCENTRATION

CALCULATED BY: SCM
DATE: 31-Mar-15
CHECKED BY: JMM

PROJECT: Montex North at Vista Ridge
JOB NUMBER:

SUB-BASIN DATA					INITIAL/OVERLAND TIME (T_i)			TRAVEL TIME (T_t)					Tc CHECK (URBANIZED BASINS)			FINAL T_c	REMARKS							
DESIGN:	AREA	AREA IMP.	AREA	C_5	LENGTH	SLOPE	T_i	LENGTH	SLOPE	C_V	VEL.	T_t	COMP.	TOTAL	T_c=(L/180)+10			C_2	C_5	C_{100}	K_2	K_5	K_{100}	Imperv.
	SF	SF	Ac		Ft	%		Ft	%		FPS		T_c	LENGTH	MIN	MIN									%
(1)			(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)									
S1	40,602	28,079	0.93	0.52												5.0		0.48	0.52	0.67	0.00	0.04	0.19	69%
S2	14,319	6,226	0.33	0.36												5.0		0.30	0.36	0.59	0.00	0.07	0.29	43%
S3	29,110	21,509	0.67	0.57												5.0		0.53	0.57	0.70	0.00	0.04	0.17	74%
S4	18,012	14,004	0.41	0.60												5.0		0.57	0.60	0.73	0.00	0.03	0.16	78%
S5	19,676	15,138	0.45	0.59												5.0		0.56	0.59	0.72	0.00	0.03	0.16	77%
S6	17,954	3,707	0.41	0.26												5.0		0.17	0.26	0.55	0.00	0.09	0.38	21%
S7	12,427	3,557	0.29	0.30												5.0		0.22	0.30	0.57	0.00	0.08	0.35	29%
S8	9,947	5,281	0.23	0.41												5.0		0.36	0.41	0.61	0.00	0.06	0.25	53%
S9	9,921	4,988	0.23	0.40												5.0		0.34	0.40	0.60	0.00	0.06	0.26	50%
S10	3,855	1,624	0.09	0.36												5.0		0.29	0.36	0.59	0.00	0.07	0.30	42%
OS1	8,430	422	0.19	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
OS2	4,995	250	0.11	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
OS3	103,340	98,173	2.37	0.82												5.0		0.80	0.82	0.89	0.00	0.02	0.09	95%
OS4	3,245	162	0.07	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
OS5	24,624	1,231	0.57	0.18												5.0		0.08	0.18	0.52	0.00	0.11	0.44	5%
Total																								

STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

CALCULATED BY: SCM
DATE: 31-Mar-15
CHECKED BY: JMM

P_1= 1.01

PROJECT: Montex North at Vista Ridge
JOB NUMBER:
DESIGN STORM: 2-Year

* Negative flows indicate flow in storm sewer.

STREET	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
	DESIGN POINT	AREA DESIG.	AREA (Ac)	RUNOFF COEFF.	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Flow (cfs)	Flow (cfs)	Slope (%)	Size (in)	Length (ft)	Velocity (fps)	tt (min)	
		S1	0.93	0.48	5.0	0.45	3.43	1.54													
		S2	0.33	0.30	5.0	0.10	3.43	0.34													
		S3	0.67	0.53	5.0	0.35	3.43	1.21													
		S4	0.41	0.57	5.0	0.24	3.43	0.81													
		S5	0.45	0.56	5.0	0.25	3.43	0.87	5.0	0.49	3.43	1.68									Basin S4 & S5 C2=0.57, A=0.86 ac
		S6	0.41	0.17	5.0	0.07	3.43	0.25													
		S7	0.29	0.22	5.0	0.06	3.43	0.21													
		S8	0.23	0.36	5.0	0.08	3.43	0.28													
		S9	0.23	0.34	5.0	0.08	3.43	0.26													Offsite Flow
		S10	0.09	0.29	5.0	0.03	3.43	0.09													Offsite Flow
		OS1	0.19	0.08	5.0	0.01	3.43	0.05	5.0	0.47	3.43	1.59									Basin S1 & OS1 C2=0.42, A=1.12ac
		OS2	0.11	0.08	5.0	0.01	3.43	0.03	5.0	0.11	3.43	0.37									Basin S2 & OS2 C2=0.25, A=0.44ac
		OS3	2.37	0.80	5.0	1.90	3.43	6.51													Offsite Flow (Retention Pond)
		OS4	0.07	0.08	5.0	0.01	3.43	0.02													
		OS5	0.57	0.08	5.0	0.04	3.43	0.15	5.0	0.13	3.43	0.45									Basin S8, OS4 & OS5 C2=0.15, A=0.87

STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

CALCULATED BY: SCM
DATE: 31-Mar-15
CHECKED BY: JMM

P_1= 2.70

PROJECT: Montex North at Vista Ridge
JOB NUMBER:
DESIGN STORM: 100-Year

* Negative flows indicate flow in storm sewer.

STREET	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
	DESIGN POINT	AREA DESIG.	AREA (Ac)	RUNOFF COEFF.	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	tc (min)	CA (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Flow (cfs)	Flow (cfs)	Slope (%)	Size (in)	Length (ft)	Velocity (fps)	tt (min)	
		S1	0.93	0.67	5.0	0.63	9.16	5.75													
		S2	0.33	0.59	5.0	0.19	9.16	1.77													
		S3	0.67	0.70	5.0	0.47	9.16	4.29													
		S4	0.41	0.73	5.0	0.30	9.16	2.75													
		S5	0.45	0.72	5.0	0.33	9.16	2.98	5.0	0.63	9.16	5.73									Basin S4 & S5 C100=0.73, A=0.86 ac
		S6	0.41	0.55	5.0	0.23	9.16	2.09													
		S7	0.29	0.57	5.0	0.16	9.16	1.48													
		S8	0.23	0.61	5.0	0.14	9.16	1.28													
		S9	0.23	0.60	5.0	0.14	9.16	1.26													Offsite Flow
		S10	0.09	0.59	5.0	0.05	9.16	0.48													Offsite Flow
		OS1	0.19	0.52	5.0	0.10	9.16	0.92	5.0	0.73	9.16	6.67									Basin S1 & OS1 C100=0.65, A=1.12ac
		OS2	0.11	0.52	5.0	0.06	9.16	0.54	5.0	0.25	9.16	2.32									Basin S2 & OS2 C100=0.57, A=0.44ac
		OS3	2.37	0.89	5.0	2.11	9.16	19.36													Offsite Flow (Retention Pond)
		OS4	0.07	0.52	5.0	0.04	9.16	0.35													
		OS5	0.57	0.52	5.0	0.29	9.16	2.68	5.0	0.47	9.16	4.31									Basin S8, OS4 & OS5 C100=0.54, A=0.87

Inlet Capcity Summary

Basin S1 & OS1

Q_2 =	1.59 cfs	
Q_{100} =	6.67 cfs	
Q_2 (Carryover from other basins)=	0 cfs	
Q_{100} (Carryover from other basins)=	0 cfs	
Q_2 (Total)=	**1.59 cfs**	
Q_{100} (Total)=	**6.67 cfs**	
Inlet Type:	**10' Type R**	
Capture Per UDFCD Inlet Spreadsheet:	**6.12 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.55 cfs**	**to Basin S3**

Basin S2 & OS2

Q_2 =	0.37 cfs	
Q_{100} =	2.32 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.37 cfs**	
Q_{100} (Total)=	**2.32 cfs**	
Inlet Type:	**10' Type R**	
Capture Per UDFCD Inlet Spreadsheet:	**2.32 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Basin S6

Q_2 =	0.25 cfs	
Q_{100} =	2.09 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.25 cfs**	
Q_{100} (Total)=	**2.09 cfs**	
Inlet Type:	**Type 13**	
Max Sump Depth	6"	
Capture Per UDFCD Inlet Spreadsheet:	**2.64 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Basin S7

Q_2 =	0.21 cfs	
Q_{100} =	1.48 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.21 cfs**	
Q_{100} (Total)=	**1.48 cfs**	
Inlet Type:	**Type D**	
Max Sump Depth	1.7'	
Capture Per UDFCD Chart:	**30.00 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Basin S3

Q_2 =	1.21 cfs	
Q_{100} =	4.29 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.55 cfs	
Q_2 (Total)=	**1.21 cfs**	
Q_{100} (Total)=	**4.84 cfs**	
Inlet Type:	**10' Type R**	
Capture Per UDFCD Inlet Spreadsheet:	**4.81 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.03 cfs**	**to Basin S4 & S5**

Basin S4 & S5

Q_2 =	1.68 cfs	
Q_{100} =	5.73 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.03 cfs	
Q_2 (Total)=	**1.68 cfs**	
Q_{100} (Total)=	**5.76 cfs**	
Inlet Type:	**10' Type R**	
Max Sump Depth	6"	
Capture Per UDFCD Inlet Spreadsheet:	**5.76 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

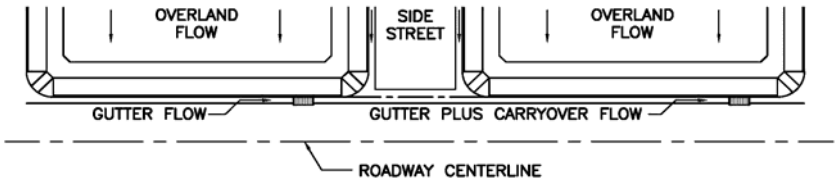
Basin S8, OS4 & OS5

Q_2 =	0.45 cfs	
Q_{100} =	4.31 cfs	
Q_2 (Carryover from other basins)=	0.00 cfs	
Q_{100} (Carryover from other basins)=	0.00 cfs	
Q_2 (Total)=	**0.45 cfs**	
Q_{100} (Total)=	**4.31 cfs**	
Inlet Type:	**Type 13**	
Max Sump Depth	9"	
Capture Per UDFCD Inlet Spreadsheet:	**4.55 cfs**	
Carryover (2-yr):	**0.00 cfs**	
Carryover (100-yr):	**0.00 cfs**	

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S1 & OS1



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	1.59	6.67	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

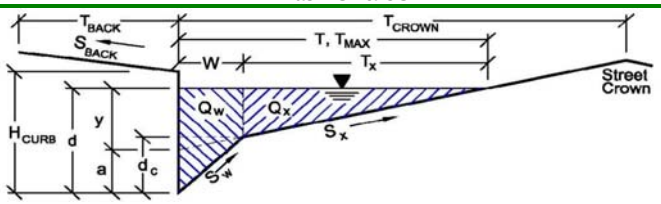
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.00**	**cfs**
Total Design Peak Flow, Q =	**1.59**	**6.67**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S1 & OS1



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.06**	**14.62**	**cfs**

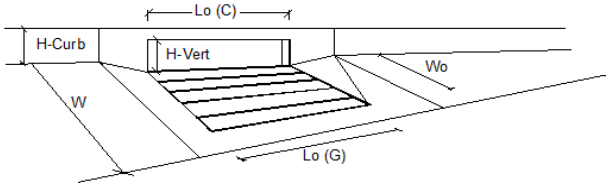
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: Montex North

Inlet ID: Basin S1 & OS1

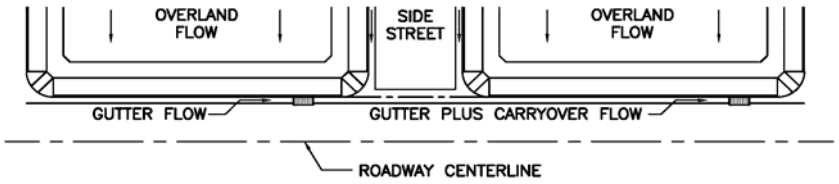


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.59**	**6.12**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.00**	**0.55**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**92**	**%**

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S2 & OS2



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	0.37	2.32	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

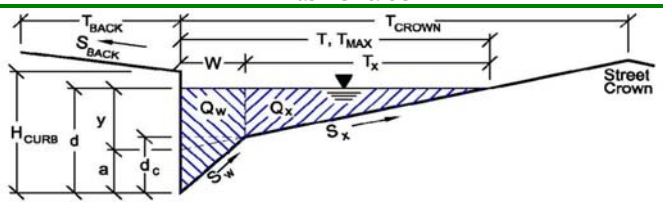
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.00**	**cfs**
Total Design Peak Flow, Q =	**0.37**	**2.32**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S2 & OS2



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.022	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.06**	**14.62**	**cfs**

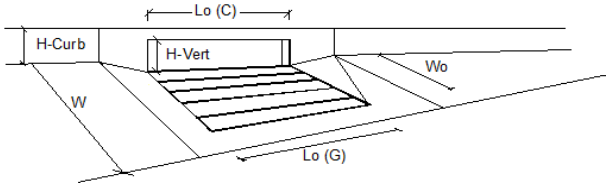
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: Montex North

Inlet ID: Basin S2 & OS2

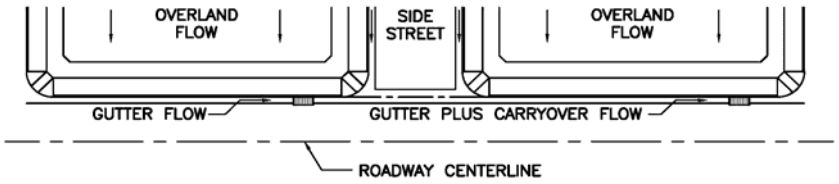


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.37**	**2.32**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.00**	**0.00**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100**	**%**

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S3



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	1.21	4.29	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

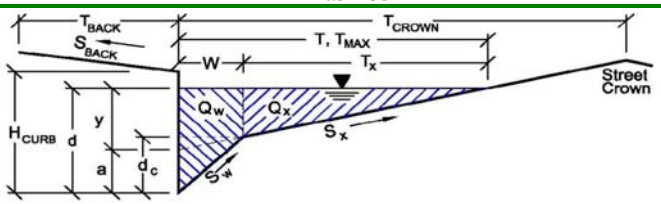
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.55**	**cfs**
Total Design Peak Flow, Q =	**1.21**	**4.84**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S3



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.86**	**15.54**	**cfs**

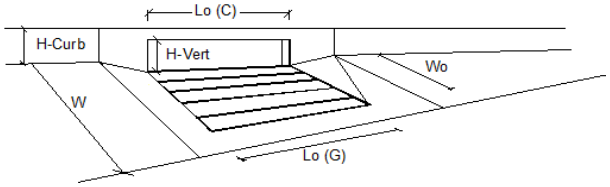
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

Project: Montex North

Inlet ID: Basin S3

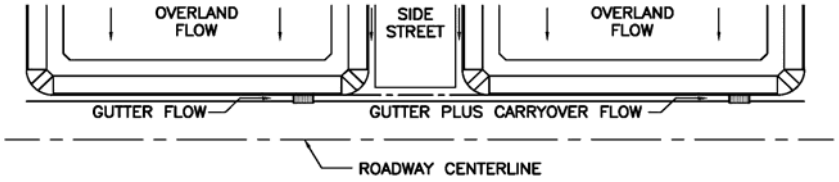


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.21**	**4.81**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.00**	**0.03**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**99**	**%**

Worksheet Protected

DESIGN PEAK FLOW FOR ONE-HALF OF STREET OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD

Project: Montex North
Inlet ID: Basin S4 & S5



Show Details

Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm	
*Q_{Known} =	1.68	5.73	cfs

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---

Geographic Information: (Enter data in the blue cells):

You cannot enter values for Q and use the Q calculator at the same time

Site Type:
- (●) Site is Urban
- ( ) Site is Non-Urban

Flows Developed For:
- (●) Street Inlets
- ( ) Area Inlets in a Median

Subcatchment Area =		Acres
Percent Imperviousness =		%
NRCS Soil Type =		A, B, C, or D

	Slope (ft/ft)	Length (ft)
Overland Flow =		
Gutter Flow =		

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^ C_3$

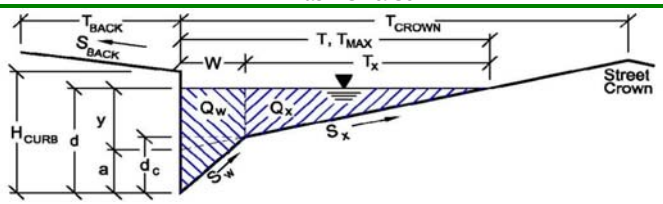
	Minor Storm	Major Storm	
Design Storm Return Period, T_r =			years
Return Period One-Hour Precipitation, P_1 =			inches
C_1 =			
C_2 =			
C_3 =			
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	**0.00**	**0.03**	**cfs**
Total Design Peak Flow, Q =	**1.68**	**5.76**	**cfs**

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Montex North

Inlet ID: Basin S4 & S5



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	12.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	16.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.030	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	16.0	16.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	6.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**5.86**	**15.54**	**cfs**

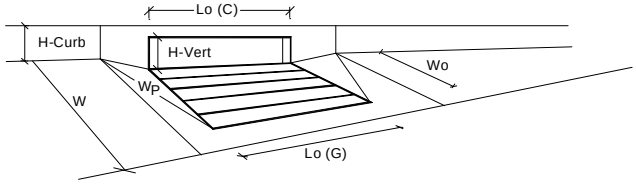
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET IN A SUMP OR SAG LOCATION

Project = Montex North

Inlet ID = Basin S4 & S5



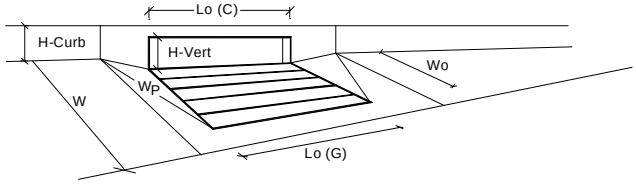
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**8.28**	**8.28**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	1.68	5.76	cfs

☑ Override Depths

INLET IN A SUMP OR SAG LOCATION

Project = Montex North

Inlet ID = Basin S6



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Valley Grate		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	N/A	N/A	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	N/A	N/A	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	N/A	N/A	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	N/A	N/A	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	N/A	N/A	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	N/A	N/A	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	N/A	N/A	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.64**	**2.64**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.25	2.09	cfs

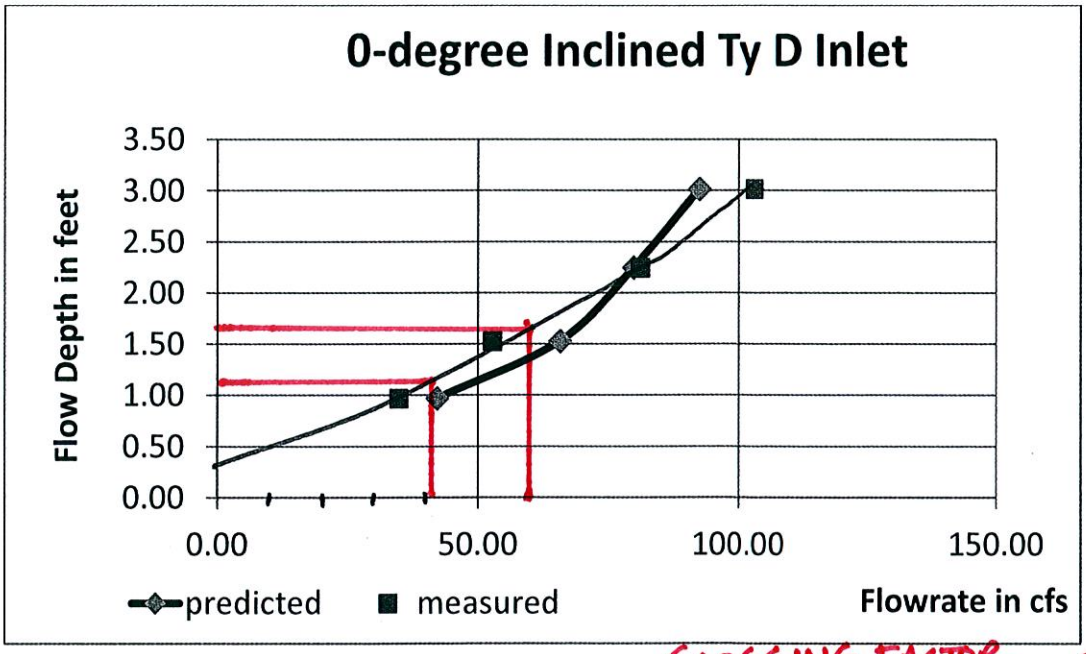
☑ Override Depths

PAGE 30 OF URBAN DRAINAGE HYDRAULIC CAPACITY OF CDOT TYPE C AND D AREA INLETS

Width of Grate	B	3.00		(input)
Inclined Length of Grate	L	6.00	ft	
Opening Ratio of Grate	n	0.70		(input)
Grate Discharge Coeff	Cd	0.79		(input)
Height of Box	Hb=	0.00	ft	
Inclined Angle	@	0.00	degree	(input)
Orifice/ Weir Coeff	Co=	0.53	Cw=	1.69
Orientation	Ko=	0		

BASIN S7

Water Depth H ft	Submerged Si Weir Length ft (X)	Inclined Left S Weir cfs	Inclined Right S Weir cfs	Base Weir cfs	Total Weir cfs	Total Orifice cfs	Predcited Flow cfs	Observed Flow cfs	Error %	Sq error cfs^2
0.97	6.00	16.89	16.89	8.44	42.22	52.28	**42.22**	**34.9**	-20.97%	53.58
1.53	6.00	33.41	33.41	16.70	83.52	65.63	**65.63**	**52.8**	-24.27%	164.26
2.25	6.00	59.63	59.63	29.82	149.08	79.62	**79.62**	**81.0**	1.73%	1.96
3.02	6.00	92.69	92.69	46.34	231.71	92.22	**92.22**	**103.3**	10.72%	122.57
										342.37

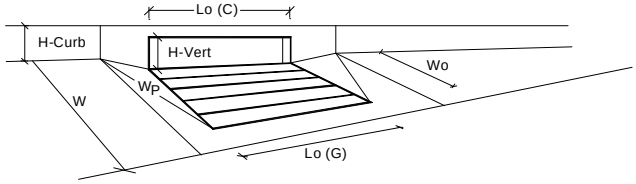


	CLOGGING FACTOR	CAPACITY
1.2' DEPTH → 41 CFS	0.5	20.5 CFS
1.7' DEPTH → 60 CFS	0.5	30 CFS

INLET IN A SUMP OR SAG LOCATION

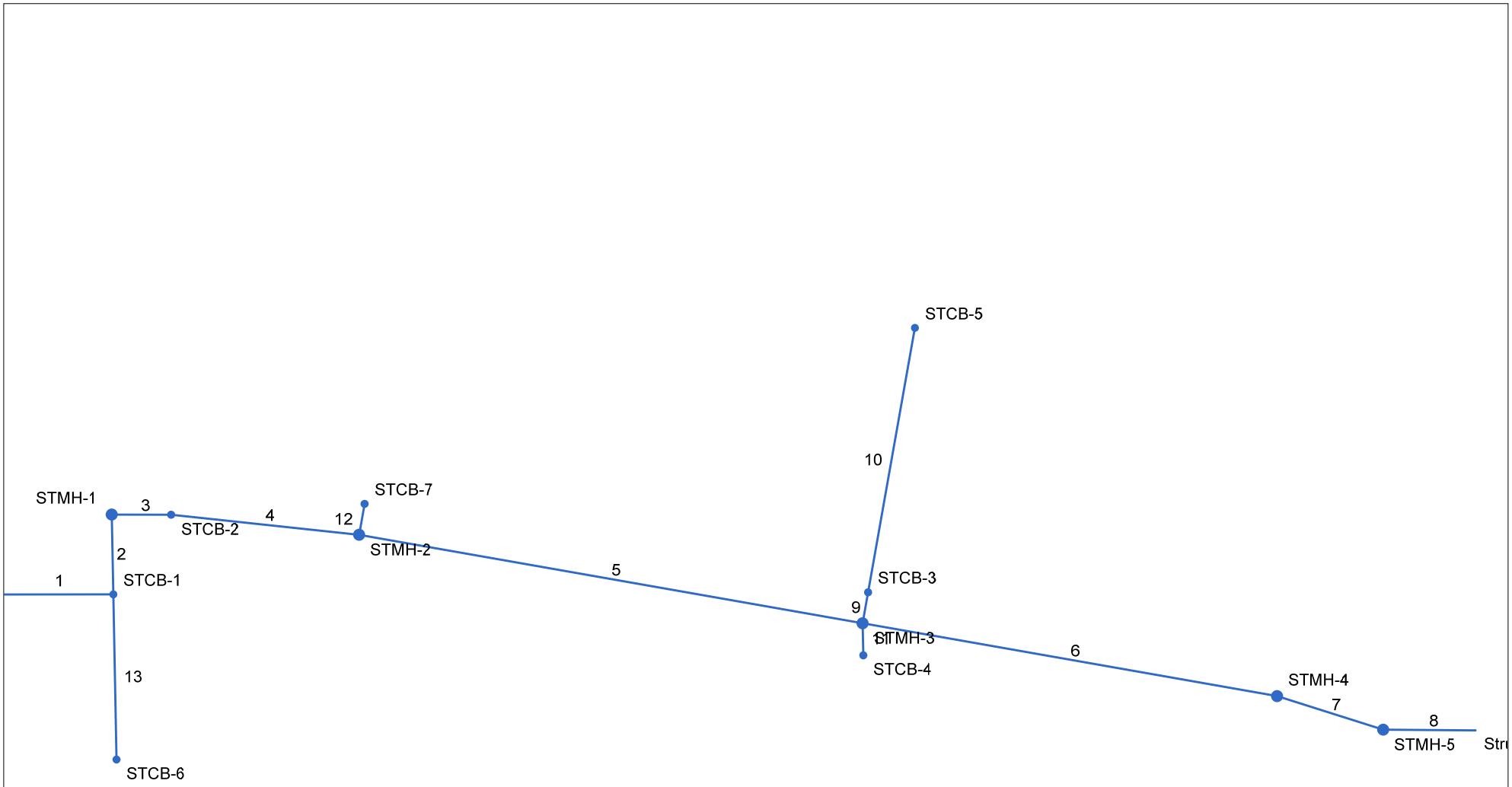
Project = Montex North

Inlet ID = Basin S8, OS4, OS5



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Valley Grate		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	9.0	inches
				☑ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	N/A	N/A	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	N/A	N/A	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	N/A	N/A	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	N/A	N/A	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	N/A	N/A	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	N/A	N/A	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	N/A	N/A	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.64**	**4.55**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.45	4.31	cfs

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2013 Plan



Project File: NORTH-2-YEAR.stm	Number of lines: 13	Date: 4/1/2015

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	59.298	-0.056	MH	0.00	0.29	0.22	5.0	5233.65	1.52	5234.55	36	Cir	0.013	1.00	5241.11	Pipe - (33)
2	1	40.657	-91.081	MH	0.00	0.00	0.00	0.0	5235.25	1.99	5236.06	30	Cir	0.013	1.00	5242.07	Pipe - (30)
3	2	30.112	91.284	MH	0.00	0.86	0.57	5.0	5236.16	6.01	5237.97	30	Cir	0.013	0.15	5246.13	Pipe - (29)
4	3	95.906	5.974	MH	0.00	0.00	0.00	0.0	5239.47	3.60	5242.92	24	Cir	0.013	1.00	5249.32	Pipe - (28)
5	4	259.315	3.886	MH	0.00	0.00	0.00	0.0	5243.12	3.00	5250.90	24	Cir	0.013	1.00	5256.46	Pipe - (27)
6	5	213.461	0.000	MH	0.00	0.00	0.00	0.0	5250.90	3.00	5257.30	24	Cir	0.013	0.16	5262.53	Pipe - (81)
7	6	56.501	7.587	MH	0.00	0.00	0.00	0.0	5257.53	2.00	5258.66	24	Cir	0.013	0.34	5264.15	Pipe - (80)
8	7	46.737	-17.125	None	0.00	2.37	0.80	5.0	5258.86	1.99	5259.79	24	Cir	0.013	1.00	5262.21	Pipe - (79)
9	5	16.000	-90.000	MH	0.00	1.12	0.42	5.0	5251.69	2.00	5252.01	18	Cir	0.013	0.15	5256.01	Pipe - (25)
10	9	136.750	0.000	MH	0.00	0.87	0.15	5.0	5252.32	0.99	5253.68	15	Cir	0.013	1.00	5257.80	Pipe - (78)
11	5	16.316	78.686	MH	0.00	0.44	0.25	5.0	5251.69	2.02	5252.02	18	Cir	0.013	1.00	5256.08	Pipe - (31)
12	4	16.001	-86.114	MH	0.00	0.67	0.53	5.0	5243.62	2.00	5243.94	18	Cir	0.013	1.00	5248.87	Pipe - (93)
13	1	84.126	88.953	MH	0.00	0.41	0.17	5.0	5236.75	2.00	5238.43	12	Cir	0.013	1.00	5243.46	Pipe - (82)

Project File: NORTH-2-YEAR.stm

Number of lines: 13

Date: 4/1/2015

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (33)	8.22	36	Cir	59.298	5233.65	5234.55	1.518	5234.56	5235.19	n/a	5235.19	End	Manhole
2	Pipe - (30)	8.01	30	Cir	40.657	5235.25	5236.06	1.992	5235.88	5236.69	n/a	5236.69	1	Manhole
3	Pipe - (29)	8.07	30	Cir	30.112	5236.16	5237.97	6.011	5236.69	5238.45	n/a	5238.45	2	Manhole
4	Pipe - (28)	7.07	24	Cir	95.906	5239.47	5242.92	3.597	5240.02	5243.47	n/a	5243.47	3	Manhole
5	Pipe - (27)	6.61	24	Cir	259.315	5243.12	5250.90	3.000	5243.68	5251.46	n/a	5251.46	4	Manhole
6	Pipe - (81)	6.16	24	Cir	213.461	5250.90	5257.30	2.998	5251.46	5257.84	n/a	5257.84	5	Manhole
7	Pipe - (80)	6.31	24	Cir	56.501	5257.53	5258.66	2.001	5258.13	5259.26	n/a	5259.26	6	Manhole
8	Pipe - (79)	6.44	24	Cir	46.737	5258.86	5259.79	1.990	5259.47	5260.40	n/a	5260.40	7	None
9	Pipe - (25)	1.54	18	Cir	16.000	5251.69	5252.01	1.999	5252.02	5252.34	n/a	5252.34	5	Manhole
10	Pipe - (78)	0.44	15	Cir	136.750	5252.32	5253.68	0.995	5252.54	5253.90	n/a	5253.90	9	Manhole
11	Pipe - (31)	0.37	18	Cir	16.316	5251.69	5252.02	2.023	5251.85	5252.18	n/a	5252.18	5	Manhole
12	Pipe - (93)	1.21	18	Cir	16.001	5243.62	5243.94	1.999	5243.91	5244.23	n/a	5244.23	4	Manhole
13	Pipe - (82)	0.24	12	Cir	84.126	5236.75	5238.43	1.997	5236.90	5238.58	n/a	5238.58	1	Manhole

Project File: NORTH-2-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

NOTES: Return period = 2 Yrs.

Hydraulic Grade Line Computations

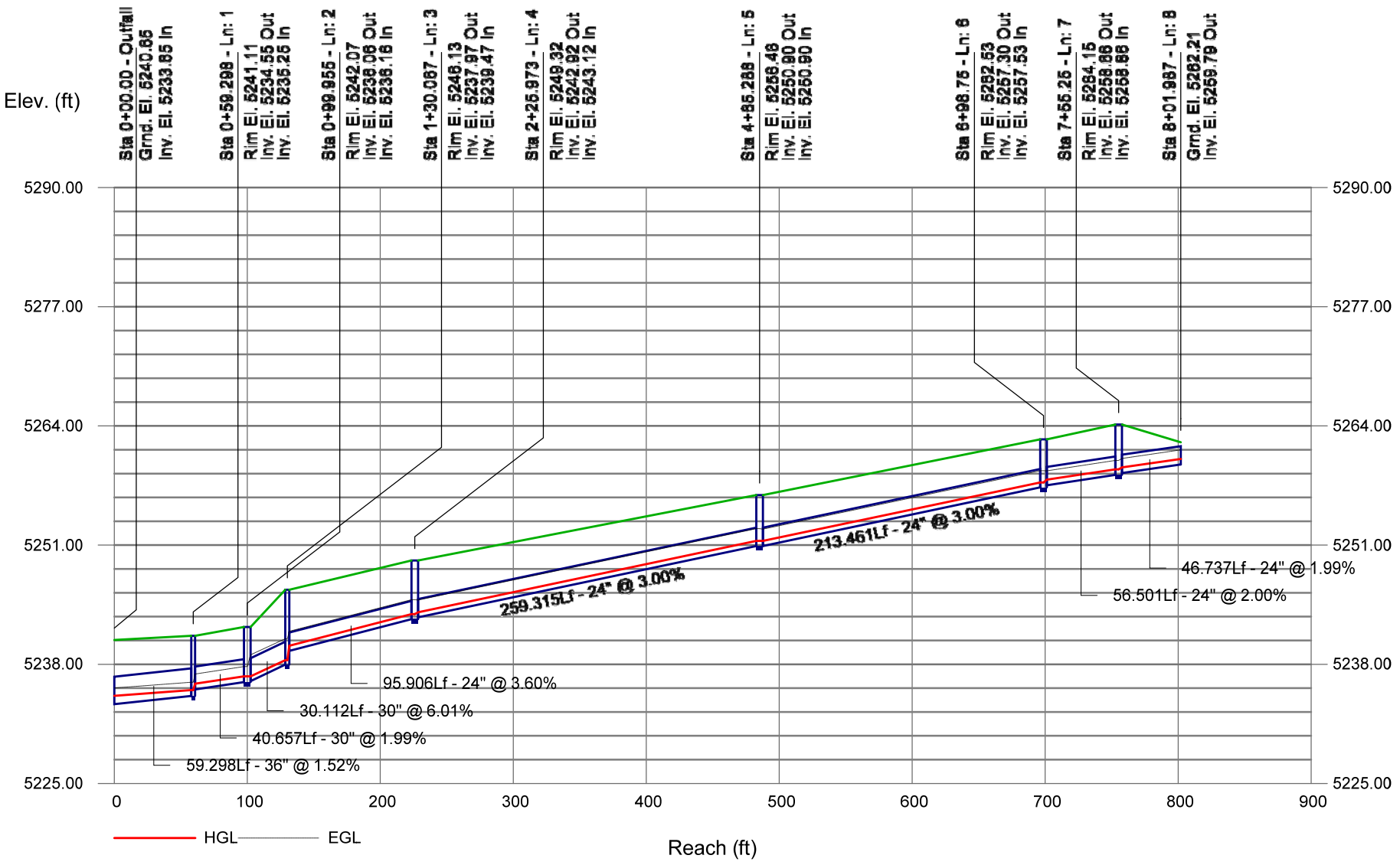
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	36	8.22	5233.65	5234.56	0.91	1.11	0.00	0.86	5235.42	0.000	59.298	5234.55	5235.19	0.64	1.11	7.43	0.86	5236.05	0.000	0.000	0.000	1.00	n/a
2	30	8.01	5235.25	5235.88	0.63*	0.97	0.00	1.06	5236.94	0.000	40.657	5236.06	5236.69	0.63	0.97	8.28	1.06	5237.75	0.000	0.000	0.000	1.00	n/a
3	30	8.07	5236.16	5236.69	0.53	0.66	0.00	2.34	5239.03	0.000	30.112	5237.97	5238.45	0.48	0.66	12.27	2.34	5240.79	0.000	0.000	0.000	0.15	n/a
4	24	7.07	5239.47	5240.02	0.55*	0.70	0.00	1.58	5241.60	0.000	95.906	5242.92	5243.47	0.55	0.70	10.08	1.58	5245.05	0.000	0.000	0.000	1.00	n/a
5	24	6.61	5243.12	5243.68	0.56*	0.71	0.00	1.34	5245.01	0.000	259.315	5250.90	5251.46	0.56	0.71	9.27	1.34	5252.79	0.000	0.000	0.000	1.00	n/a
6	24	6.16	5250.90	5251.46	0.56	0.68	0.00	1.28	5252.74	0.000	213.461	5257.30	5257.84	0.54	0.68	9.08	1.28	5259.12	0.000	0.000	0.000	0.16	n/a
7	24	6.31	5257.53	5258.13	0.60*	0.80	0.00	0.97	5259.11	0.000	56.501	5258.66	5259.26	0.60	0.80	7.92	0.97	5260.24	0.000	0.000	0.000	0.34	n/a
8	24	6.44	5258.86	5259.47	0.61*	0.81	0.00	0.98	5260.45	0.000	46.737	5259.79	5260.40	0.61	0.81	7.95	0.98	5261.38	0.000	0.000	0.000	1.00	n/a
9	18	1.54	5251.69	5252.02	0.33*	0.28	0.00	0.46	5252.47	0.000	16.000	5252.01	5252.34	0.33	0.28	5.42	0.46	5252.79	0.000	0.000	0.000	0.15	n/a
10	15	0.44	5252.32	5252.54	0.22*	0.15	0.00	0.14	5252.68	0.000	136.750	5253.68	5253.90	0.22	0.15	3.01	0.14	5254.04	0.000	0.000	0.000	1.00	n/a
11	18	0.37	5251.69	5251.85	0.16*	0.10	0.00	0.20	5252.05	0.000	16.316	5252.02	5252.18	0.16	0.10	3.57	0.20	5252.38	0.000	0.000	0.000	1.00	n/a
12	18	1.21	5243.62	5243.91	0.29*	0.24	0.00	0.40	5244.31	0.000	16.001	5243.94	5244.23	0.29	0.24	5.05	0.40	5244.63	0.000	0.000	0.000	1.00	n/a
13	12	0.24	5236.75	5236.90	0.15*	0.07	0.00	0.17	5237.07	0.000	84.126	5238.43	5238.58	0.15	0.07	3.28	0.17	5238.75	0.000	0.000	0.000	1.00	n/a

Project File: NORTH-2-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

Notes: * depth assumed. ; c = cir e = ellip b = box

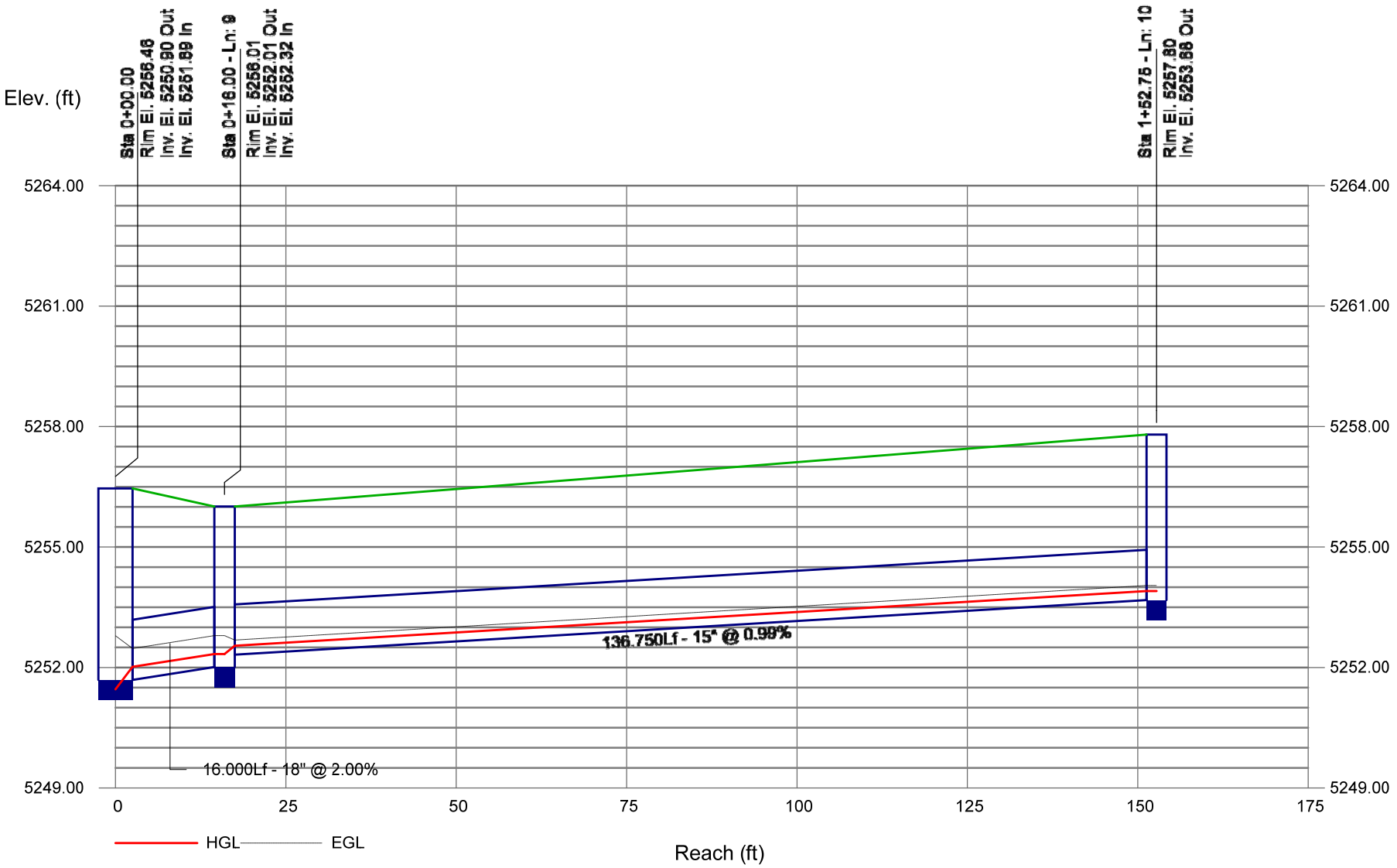
Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



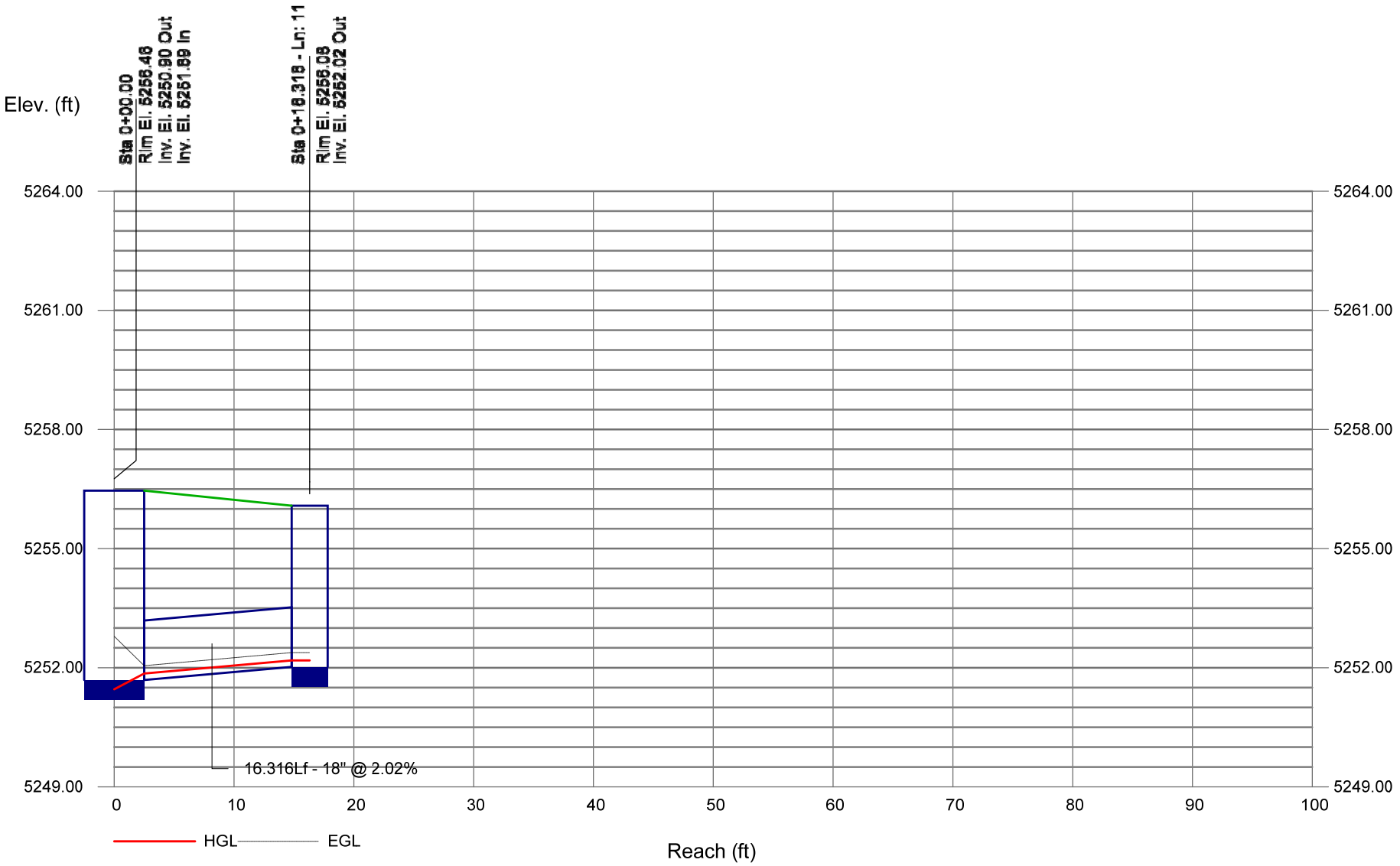
Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



Storm Sewer Profile

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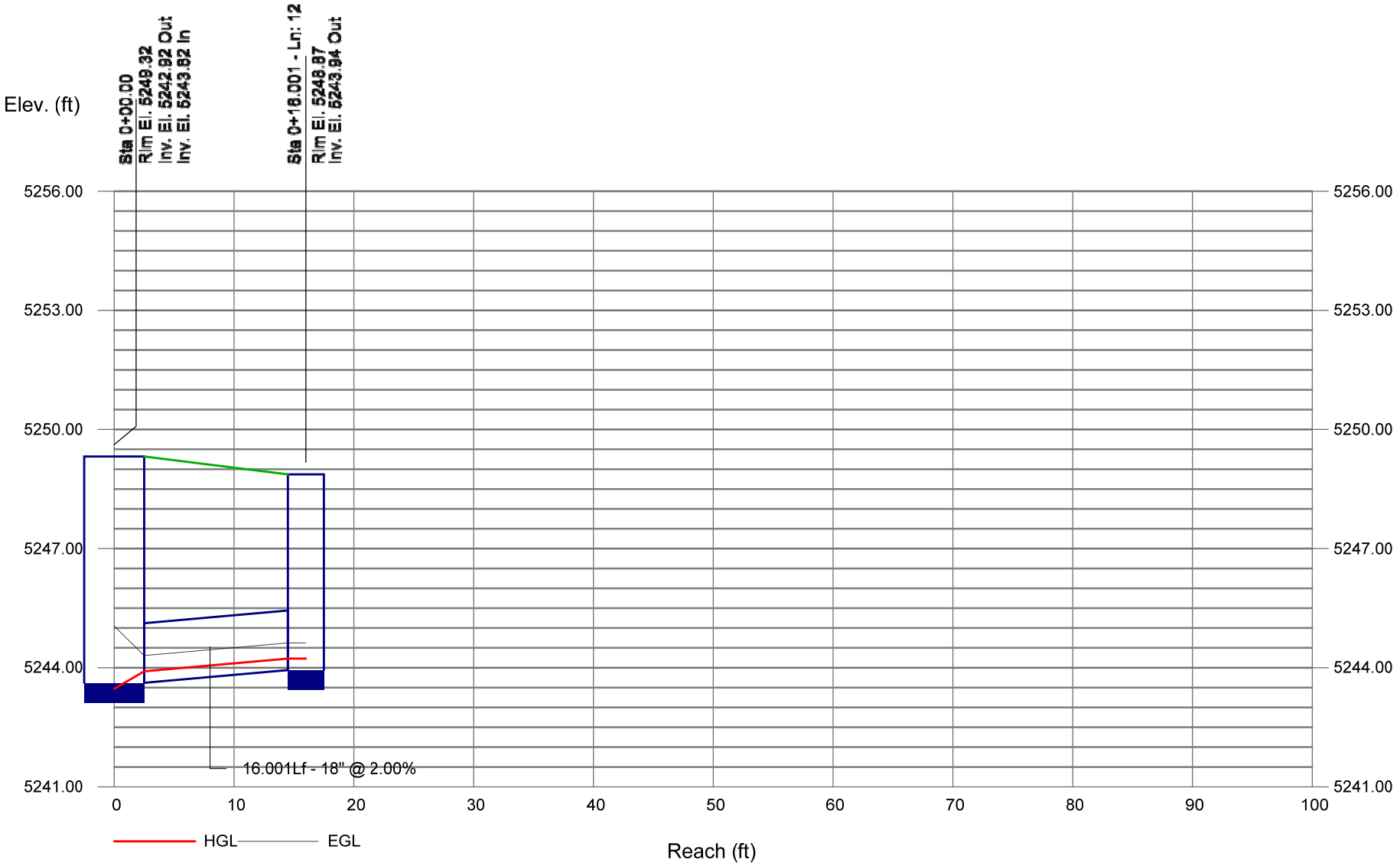
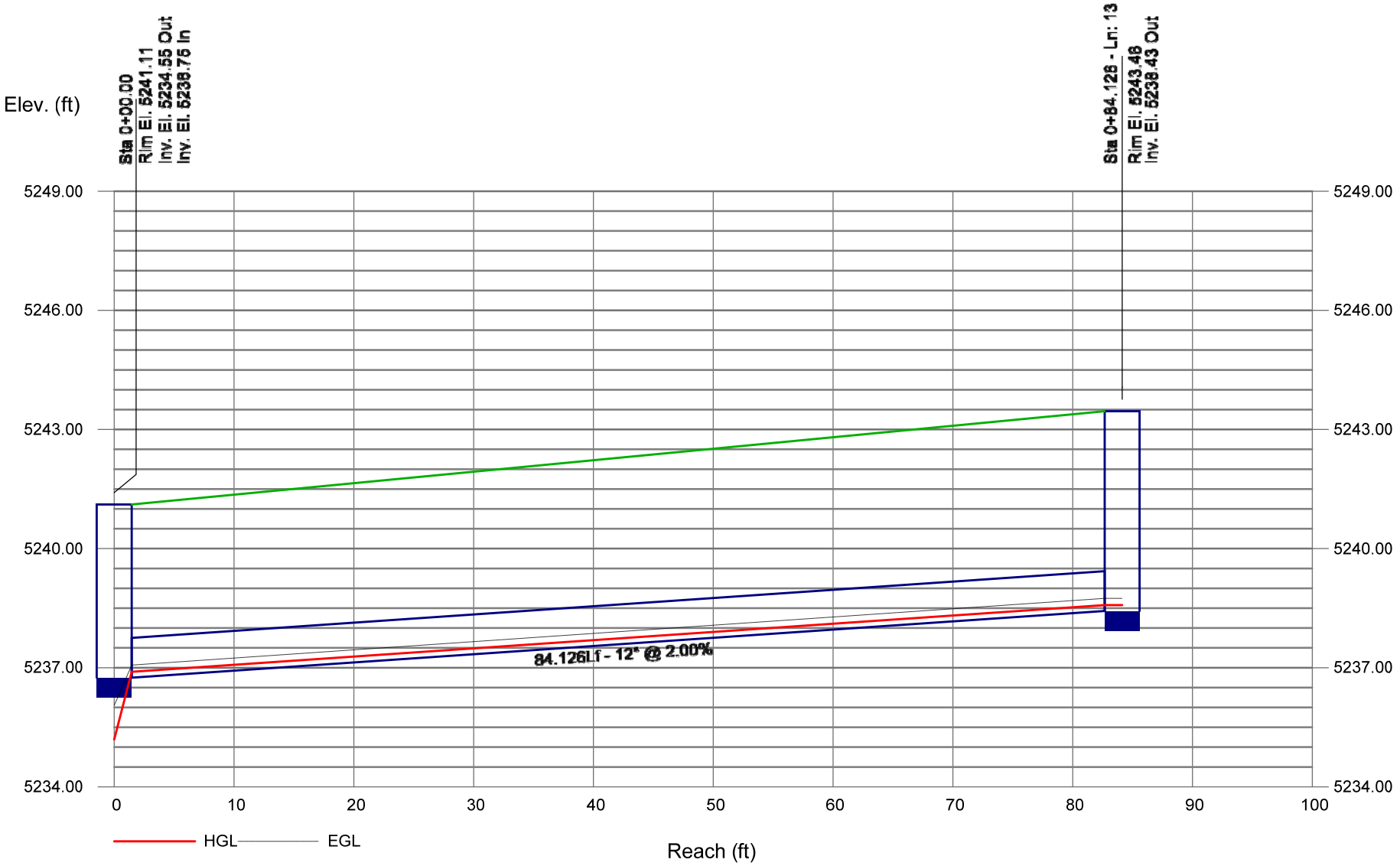
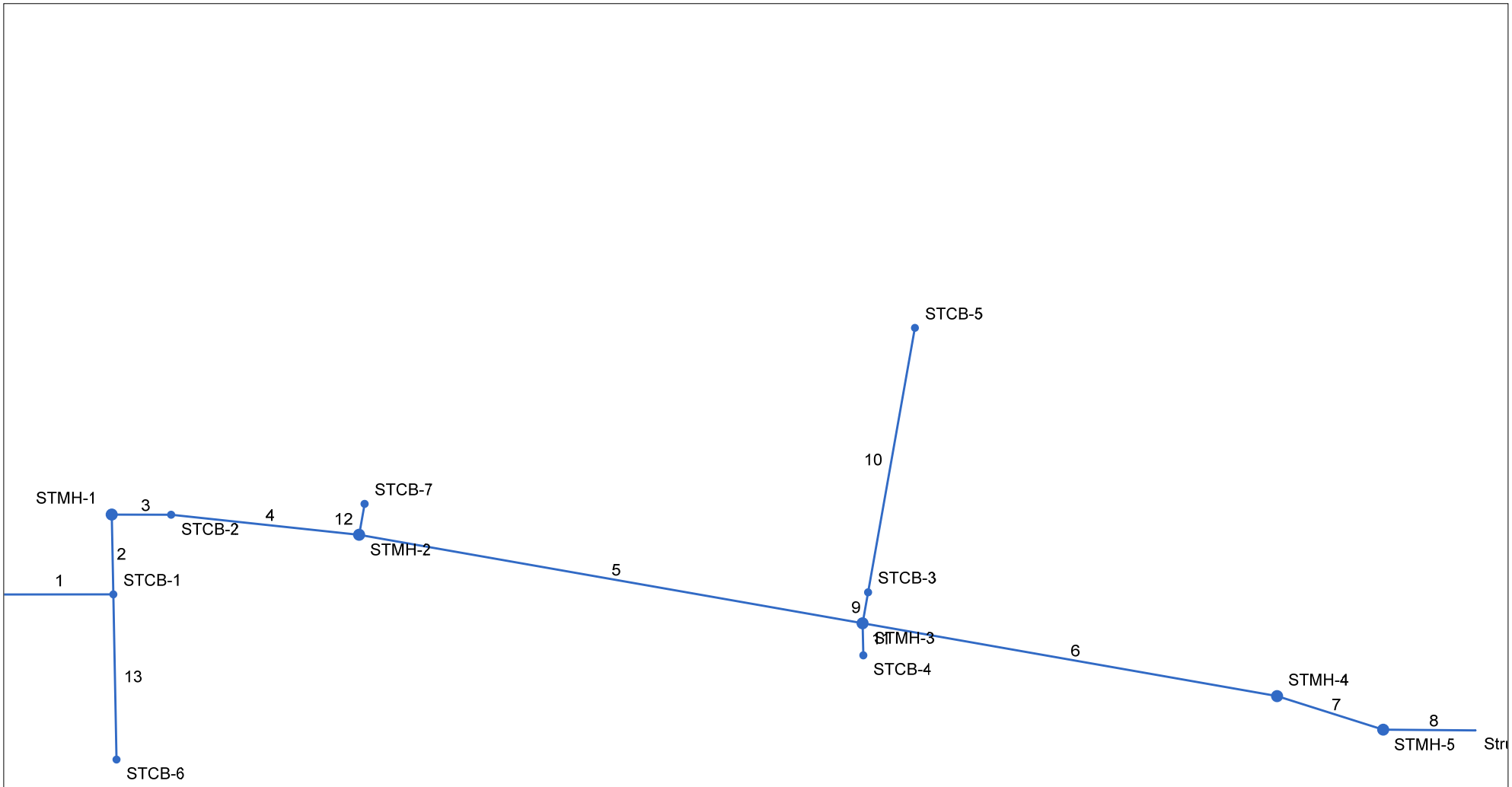


Storm Sewer Profile

Proj. file: NORTH-2-YEAR.stm



Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2013 Plan



Project File: NORTH-100-YEAR.stm	Number of lines: 13	Date: 4/1/2015

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	59.298	-0.056	MH	0.00	0.29	0.57	5.0	5233.65	1.52	5234.55	36	Cir	0.013	1.00	5241.11	Pipe - (33)
2	1	40.657	-91.081	MH	0.00	0.00	0.00	0.0	5235.25	1.99	5236.06	30	Cir	0.013	1.00	5242.07	Pipe - (30)
3	2	30.112	91.284	MH	0.00	0.86	0.73	5.0	5236.16	6.01	5237.97	30	Cir	0.013	0.15	5246.13	Pipe - (29)
4	3	95.906	5.974	MH	0.00	0.00	0.00	0.0	5239.47	3.60	5242.92	24	Cir	0.013	1.00	5249.32	Pipe - (28)
5	4	259.315	3.886	MH	0.00	0.00	0.00	0.0	5243.12	3.00	5250.90	24	Cir	0.013	1.00	5256.46	Pipe - (27)
6	5	213.461	0.000	MH	0.00	0.00	0.00	0.0	5250.90	3.00	5257.30	24	Cir	0.013	0.16	5262.53	Pipe - (81)
7	6	56.501	7.587	MH	0.00	0.00	0.00	0.0	5257.53	2.00	5258.66	24	Cir	0.013	0.34	5264.15	Pipe - (80)
8	7	46.737	-17.125	None	0.00	2.37	0.89	5.0	5258.86	1.99	5259.79	24	Cir	0.013	1.00	5262.21	Pipe - (79)
9	5	16.000	-90.000	MH	0.00	1.12	0.65	5.0	5251.69	2.00	5252.01	18	Cir	0.013	0.15	5256.01	Pipe - (25)
10	9	136.750	0.000	MH	0.00	0.87	0.54	5.0	5252.32	0.99	5253.68	15	Cir	0.013	1.00	5257.80	Pipe - (78)
11	5	16.316	78.686	MH	0.00	0.44	0.57	5.0	5251.69	2.02	5252.02	18	Cir	0.013	1.00	5256.08	Pipe - (31)
12	4	16.001	-86.114	MH	0.00	0.67	0.70	5.0	5243.62	2.00	5243.94	18	Cir	0.013	1.00	5248.87	Pipe - (93)
13	1	84.126	88.953	MH	0.00	0.41	0.55	5.0	5236.75	2.00	5238.43	12	Cir	0.013	1.00	5243.46	Pipe - (82)

Project File: NORTH-100-YEAR.stm | Number of lines: 13 | Date: 4/1/2015

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (33)	43.65	36	Cir	59.298	5233.65	5234.55	1.518	5235.76	5236.11	n/a	5236.11	End	Manhole
2	Pipe - (30)	40.45	30	Cir	40.657	5235.25	5236.06	1.992	5236.79	5237.60	n/a	5237.60	1	Manhole
3	Pipe - (29)	40.58	30	Cir	30.112	5236.16	5237.97	6.011	5237.60	5239.08	n/a	5239.08	2	Manhole
4	Pipe - (28)	35.38	24	Cir	95.906	5239.47	5242.92	3.597	5240.85	5244.30	n/a	5244.30	3	Manhole
5	Pipe - (27)	31.96	24	Cir	259.315	5243.12	5250.90	3.000	5244.49	5252.27	n/a	5252.27	4	Manhole
6	Pipe - (81)	19.53	24	Cir	213.461	5250.90	5257.30	2.998	5252.27	5258.30	n/a	5258.30	5	Manhole
7	Pipe - (80)	19.69	24	Cir	56.501	5257.53	5258.66	2.001	5258.67	5259.80	n/a	5259.80	6	Manhole
8	Pipe - (79)	19.82	24	Cir	46.737	5258.86	5259.79	1.990	5260.00	5260.93	n/a	5260.93	7	None
9	Pipe - (25)	10.88	18	Cir	16.000	5251.69	5252.01	1.999	5252.64	5252.96	n/a	5252.96	5	Manhole
10	Pipe - (78)	4.41	15	Cir	136.750	5252.32	5253.68	0.995	5253.08	5254.44	n/a	5254.44	9	Manhole
11	Pipe - (31)	2.36	18	Cir	16.316	5251.69	5252.02	2.023	5252.27	5252.42	n/a	5252.42	5	Manhole
12	Pipe - (93)	4.41	18	Cir	16.001	5243.62	5243.94	1.999	5244.30	5244.50	n/a	5244.50	4	Manhole
13	Pipe - (82)	2.12	12	Cir	84.126	5236.75	5238.43	1.997	5237.20	5238.88	n/a	5238.88	1	Manhole

Project File: NORTH-100-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

NOTES: Return period = 100 Yrs.

Hydraulic Grade Line Computations

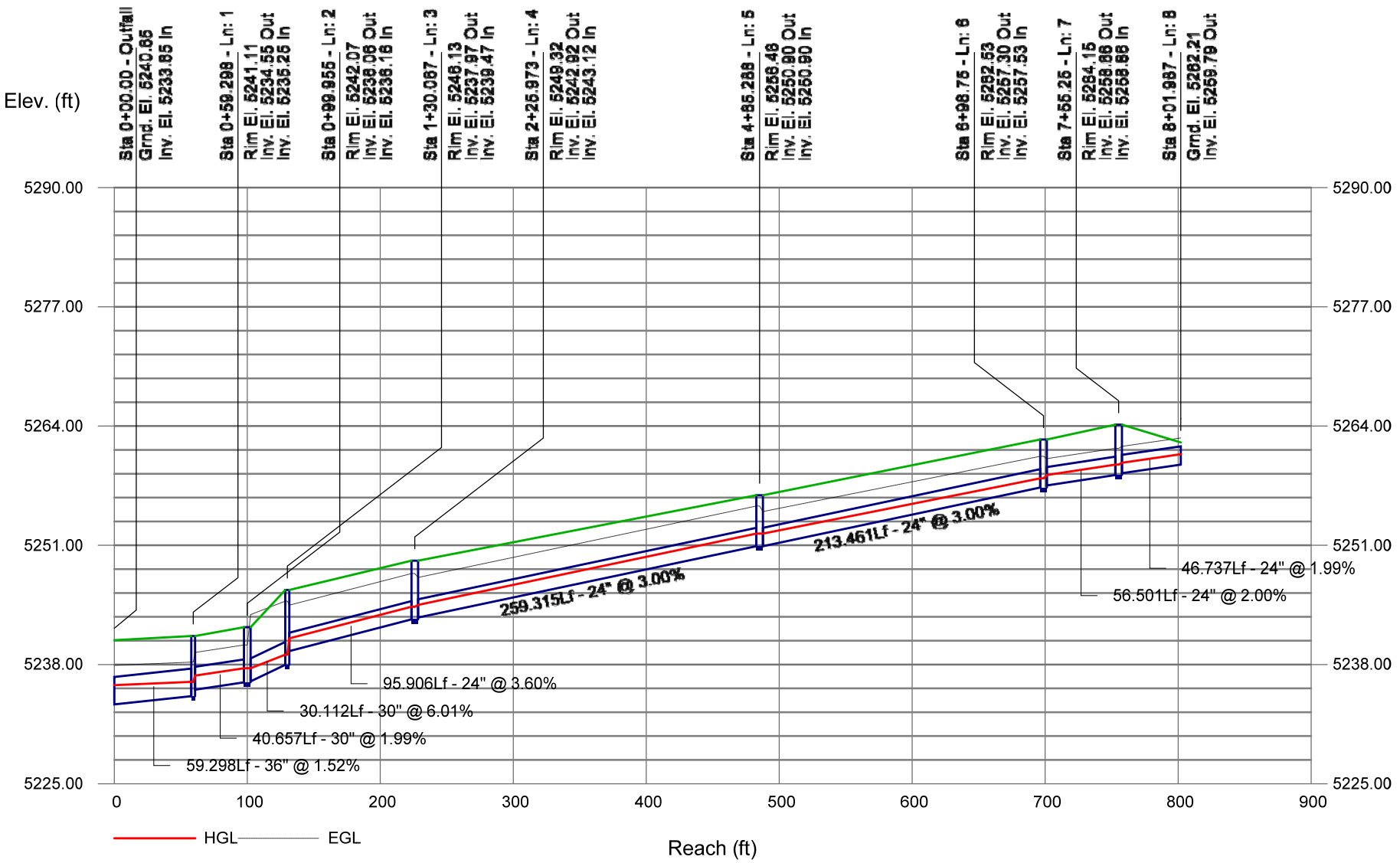
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	43.65	5233.65	5235.76	2.11	3.70	0.00	2.16	5237.92	0.000	59.298	5234.55	5236.11	1.56	3.70	11.79	2.16	5238.27	0.000	0.000	0.000	1.00	n/a
2	30	40.45	5235.25	5236.79	1.54*	3.17	0.00	2.53	5239.32	0.000	40.657	5236.06	5237.60	1.54	3.17	12.75	2.53	5240.13	0.000	0.000	0.000	1.00	n/a
3	30	40.58	5236.16	5237.60	1.44	2.09	0.00	5.84	5243.44	0.000	30.112	5237.97	5239.08	1.11	2.09	19.38	5.84	5244.92	0.000	0.000	0.000	0.15	n/a
4	24	35.38	5239.47	5240.85	1.38*	2.32	0.00	3.61	5244.47	0.000	95.906	5242.92	5244.30	1.38	2.32	15.25	3.61	5247.92	0.000	0.000	0.000	1.00	n/a
5	24	31.96	5243.12	5244.49	1.37*	2.30	0.00	3.00	5247.50	0.000	259.315	5250.90	5252.27	1.37	2.30	13.90	3.00	5255.28	0.000	0.000	0.000	1.00	n/a
6	24	19.53	5250.90	5252.27	1.37	1.57	0.00	2.41	5254.69	0.000	213.461	5257.30	5258.30	1.00	1.57	12.45	2.41	5260.71	0.000	0.000	0.000	0.16	n/a
7	24	19.69	5257.53	5258.67	1.13*	1.84	0.00	1.78	5260.45	0.000	56.501	5258.66	5259.80	1.13	1.84	10.70	1.78	5261.58	0.000	0.000	0.000	0.34	n/a
8	24	19.82	5258.86	5260.00	1.14*	1.85	0.00	1.78	5261.78	0.000	46.737	5259.79	5260.93	1.14	1.85	10.70	1.78	5262.71	0.000	0.000	0.000	1.00	n/a
9	18	10.88	5251.69	5252.64	0.95*	1.19	0.00	1.31	5253.95	0.000	16.000	5252.01	5252.96	0.95	1.19	9.18	1.31	5254.27	0.000	0.000	0.000	0.15	n/a
10	15	4.41	5252.32	5253.08	0.76*	0.78	0.00	0.50	5253.58	0.000	136.750	5253.68	5254.44	0.76	0.78	5.65	0.50	5254.94	0.000	0.000	0.000	1.00	n/a
11	18	2.36	5251.69	5252.27	0.58	0.38	0.00	0.59	5252.86	0.000	16.316	5252.02	5252.42	0.40	0.38	6.16	0.59	5253.01	0.000	0.000	0.000	1.00	n/a
12	18	4.41	5243.62	5244.30	0.68	0.60	0.00	0.83	5245.14	0.000	16.001	5243.94	5244.50	0.56	0.60	7.32	0.83	5245.33	0.000	0.000	0.000	1.00	n/a
13	12	2.12	5236.75	5237.20	0.45*	0.35	0.00	0.58	5237.79	0.000	84.126	5238.43	5238.88	0.45	0.35	6.13	0.58	5239.47	0.000	0.000	0.000	1.00	n/a

Project File: NORTH-100-YEAR.stm | Number of lines: 13 | Run Date: 4/1/2015

Notes: * depth assumed. ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: NORTH-100-YEAR.stm



Storm Sewer Profile

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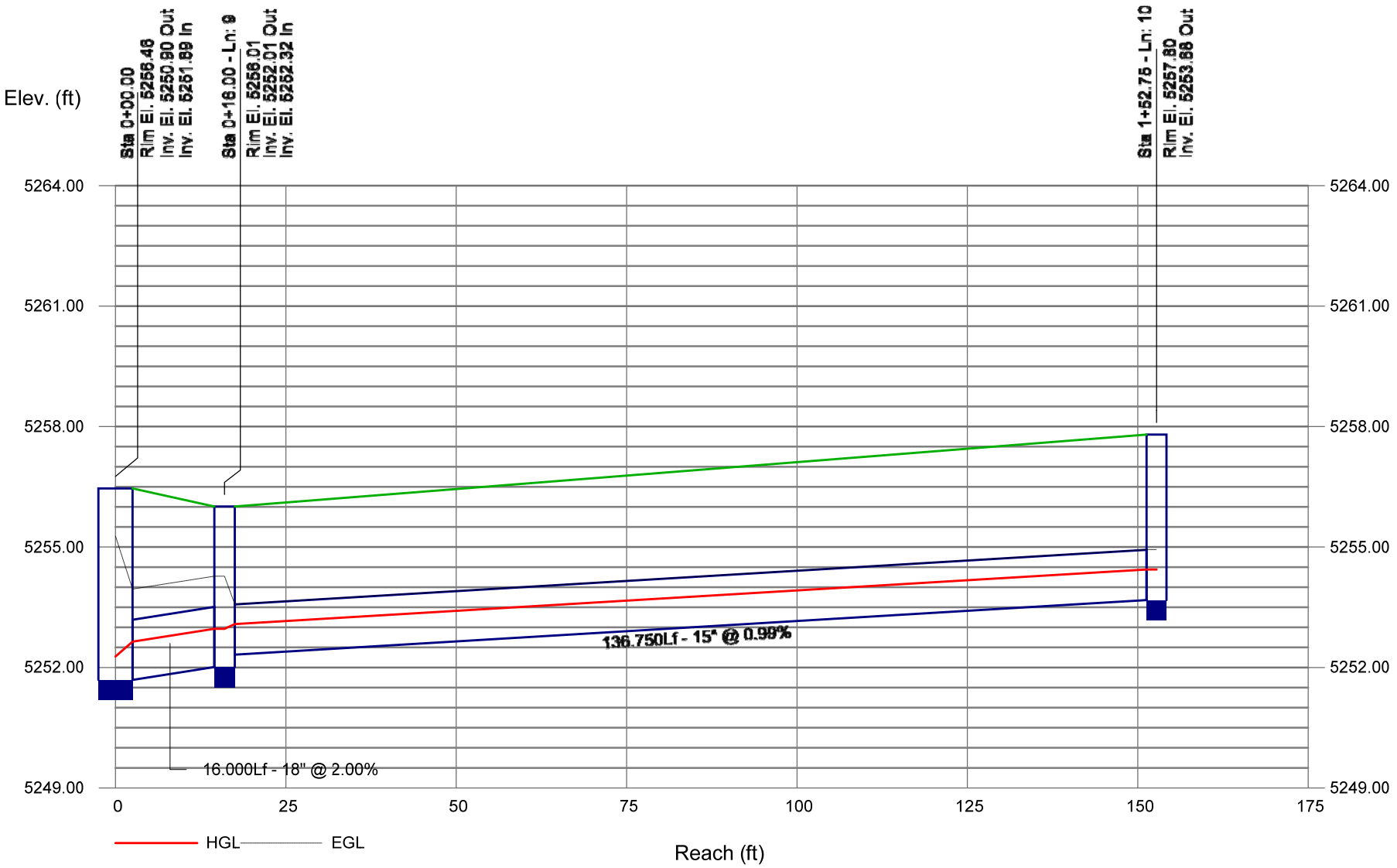

Storm Sewer Profile

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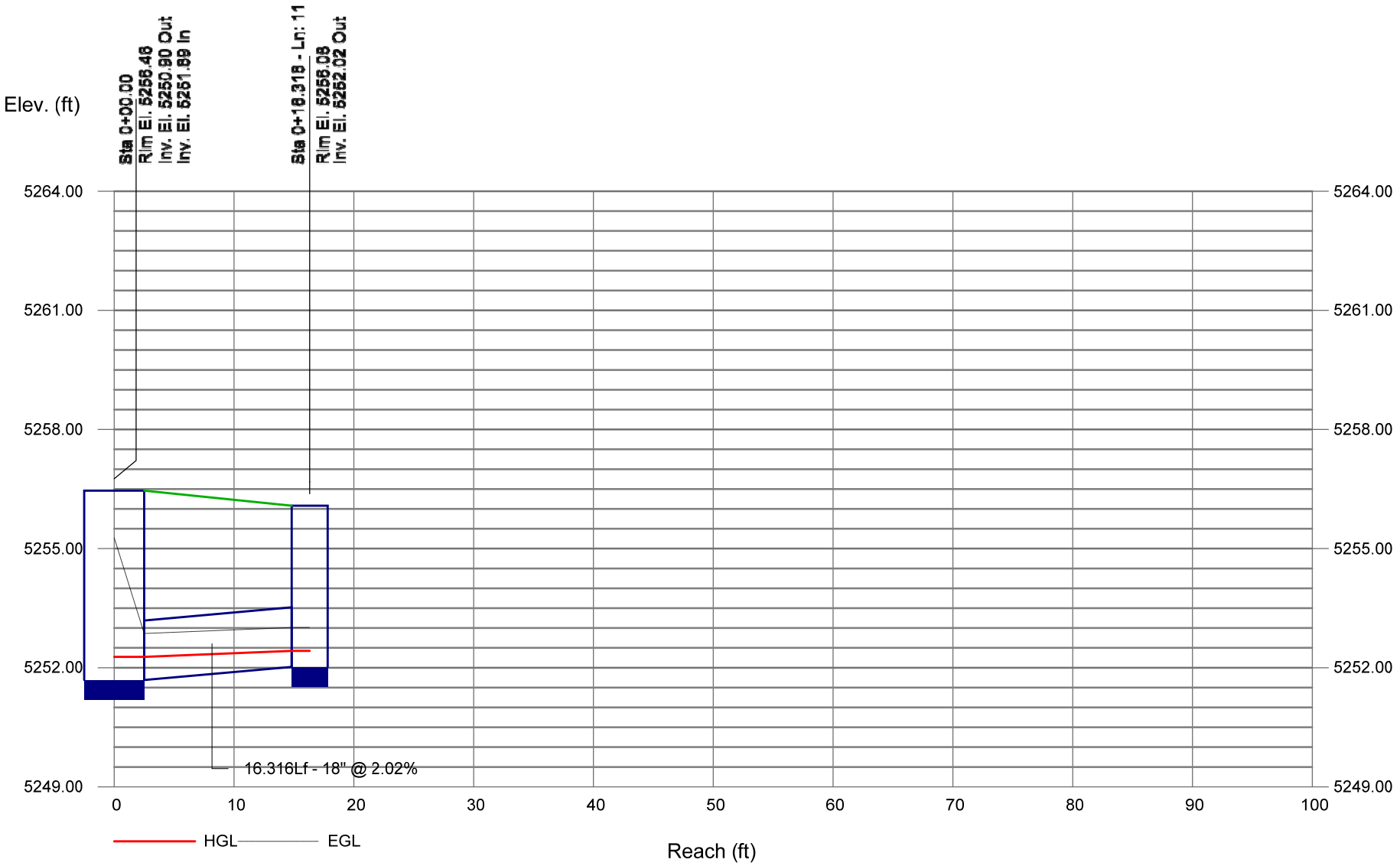

Storm Sewer Profile

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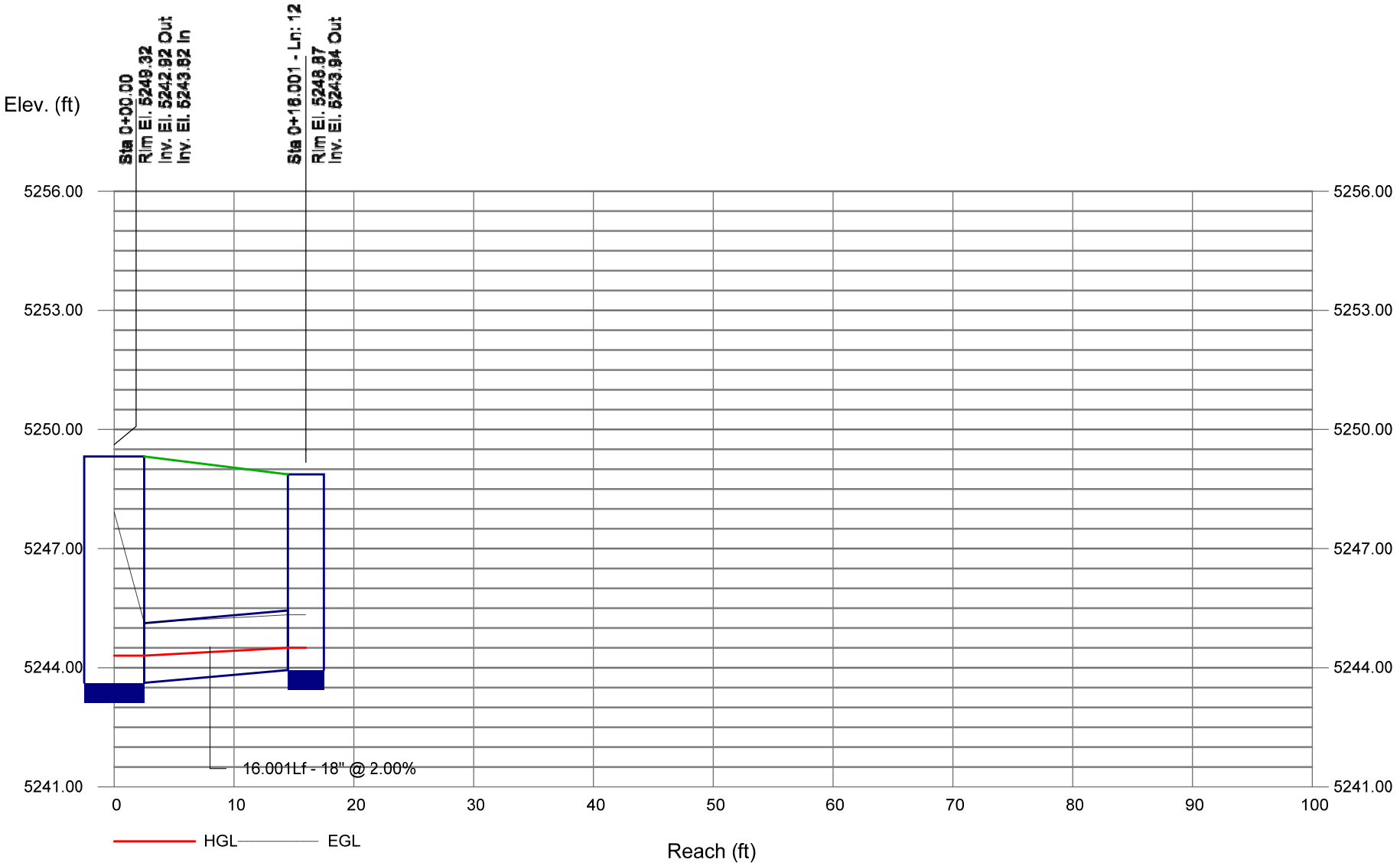

Storm Sewer Profile

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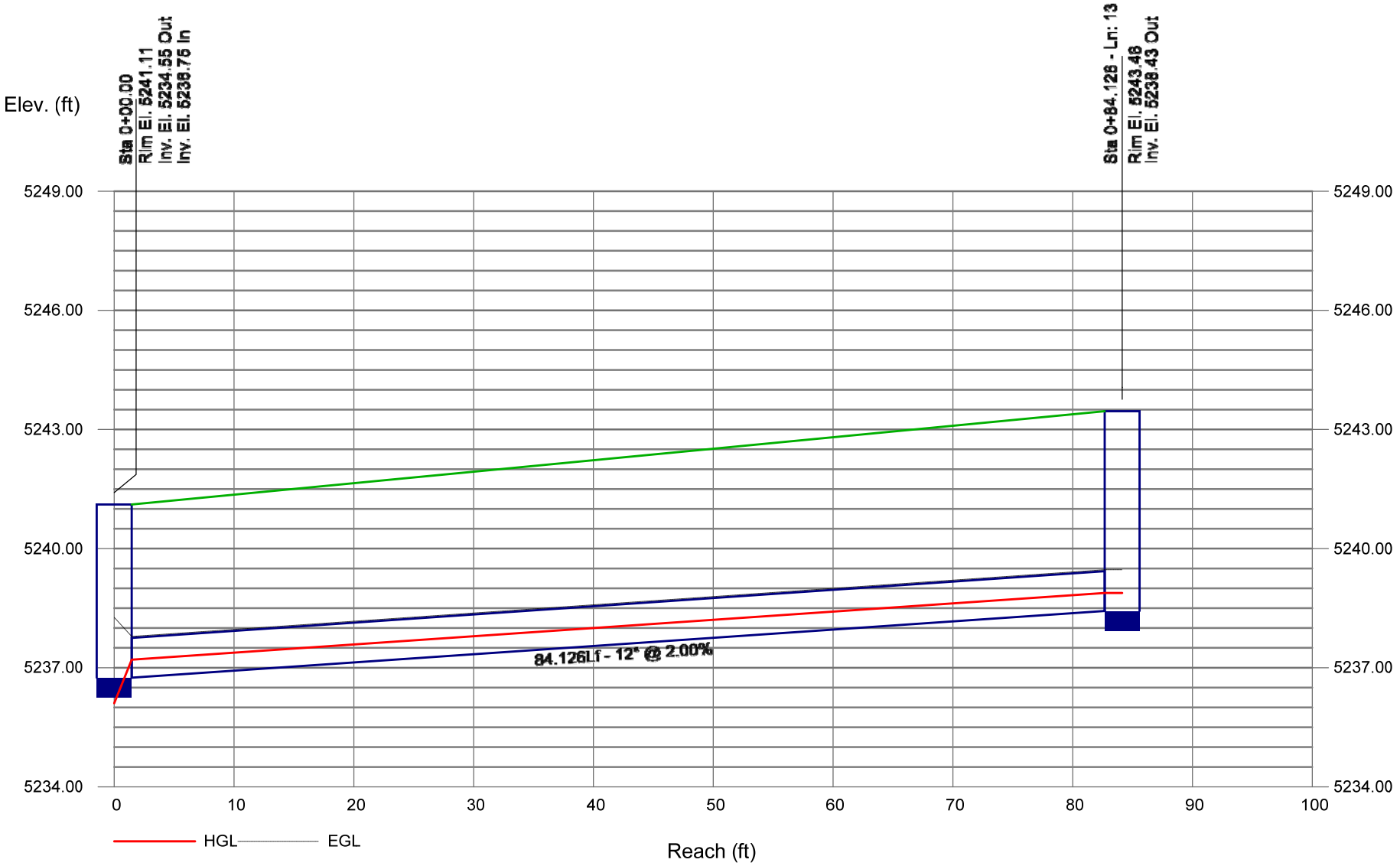


Channel Report

Swale Capacity Check Between House

Triangular

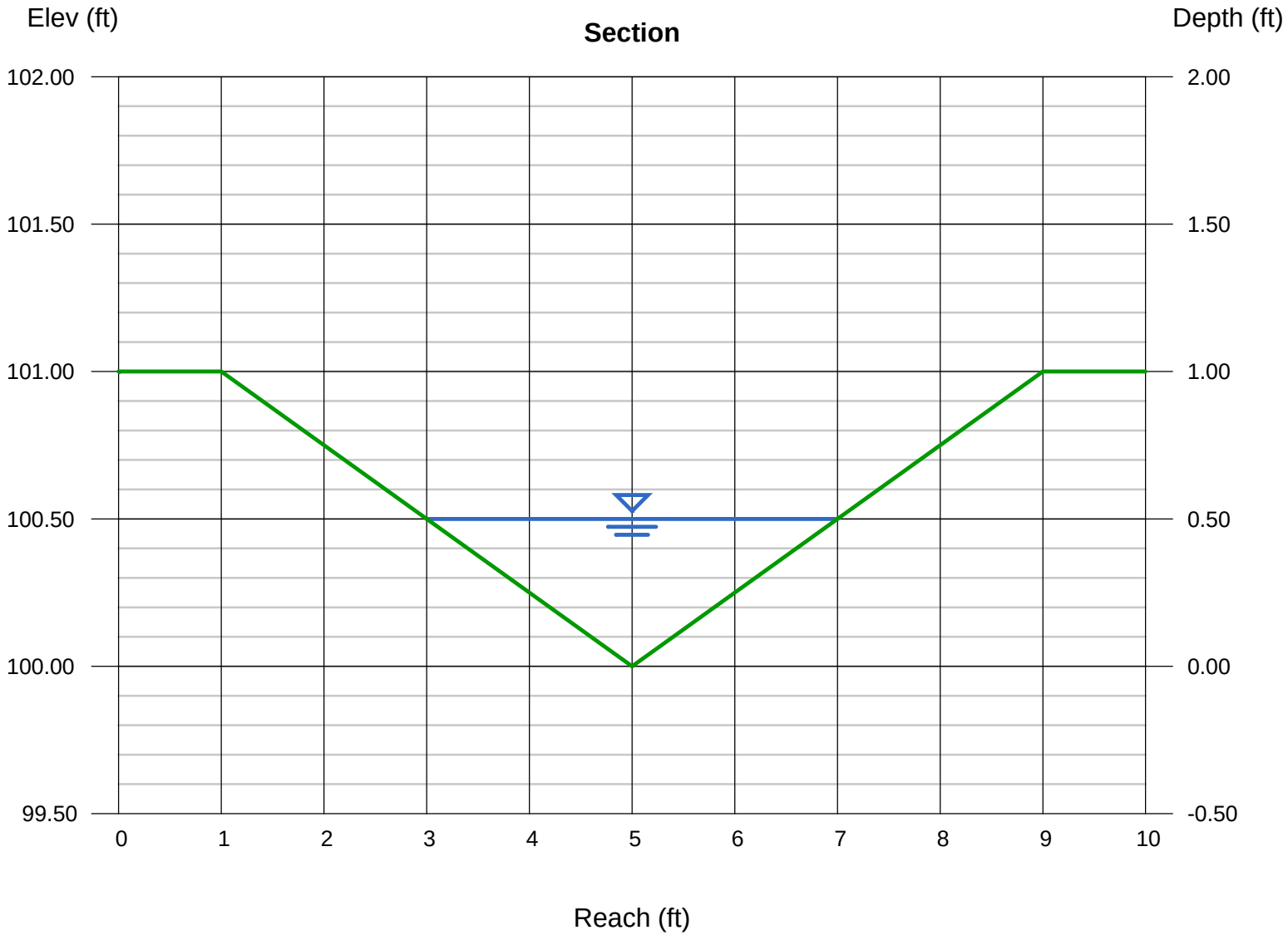
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.024

Calculations

Compute by:	Q vs Depth
No. Increments	= 10

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 3.404
Area (sqft)	= 1.00
Velocity (ft/s)	= 3.40
Wetted Perim (ft)	= 4.12
Crit Depth, Yc (ft)	= 0.54
Top Width (ft)	= 4.00
EGL (ft)	= 0.68



Channel Report

Vista Ridge Academy Overflow Swale

Trapezoidal

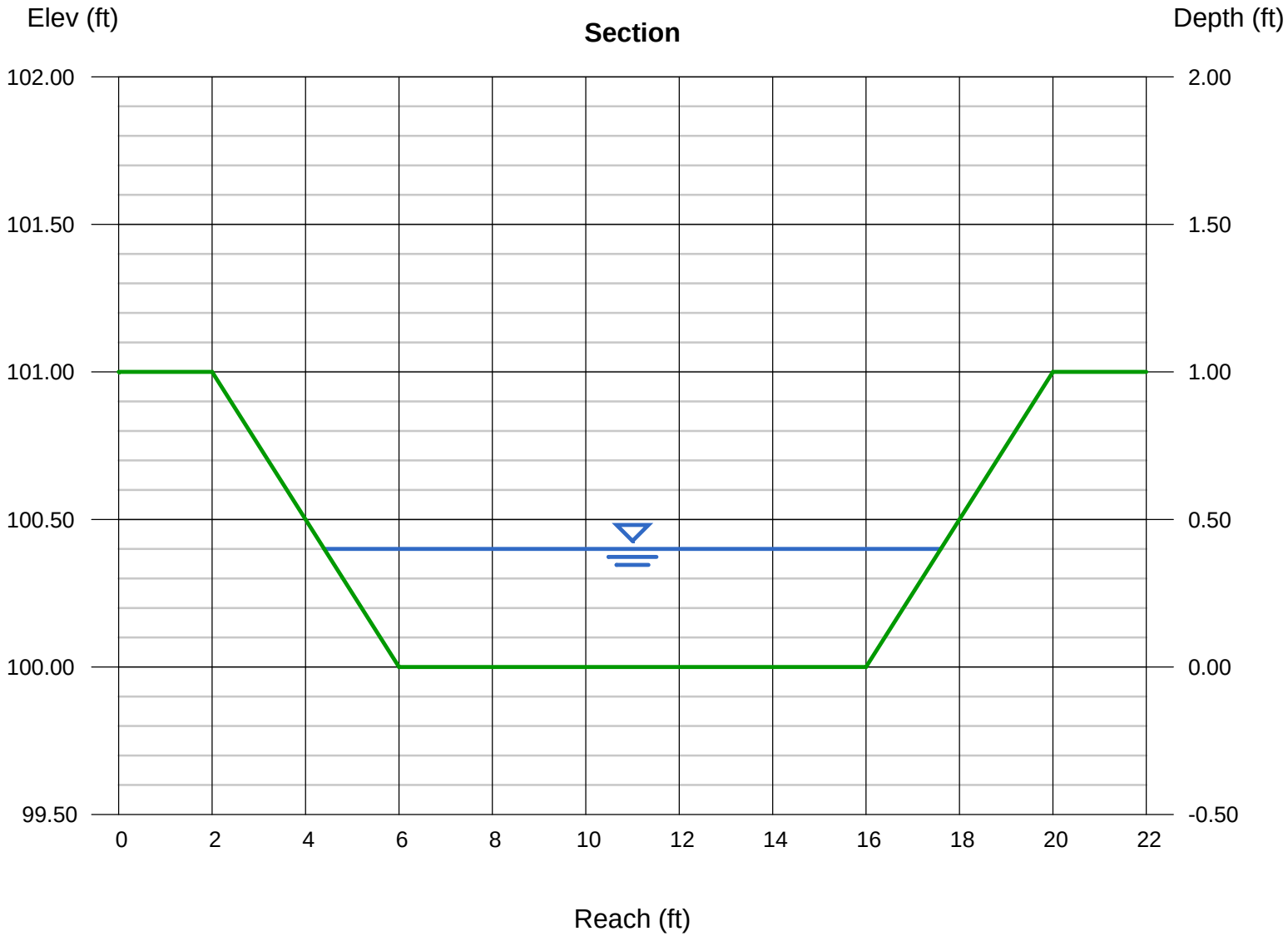
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.20
N-Value	= 0.024

Calculations

Compute by:	Known Q
Known Q (cfs)	= 20.82

Highlighted

Depth (ft)	= 0.40
Q (cfs)	= 20.82
Area (sqft)	= 4.64
Velocity (ft/s)	= 4.49
Wetted Perim (ft)	= 13.30
Crit Depth, Yc (ft)	= 0.48
Top Width (ft)	= 13.20
EGL (ft)	= 0.71



Weir Report

DESIGN POINT 4 EMERGENCY OVERFLOW

Rectangular Weir

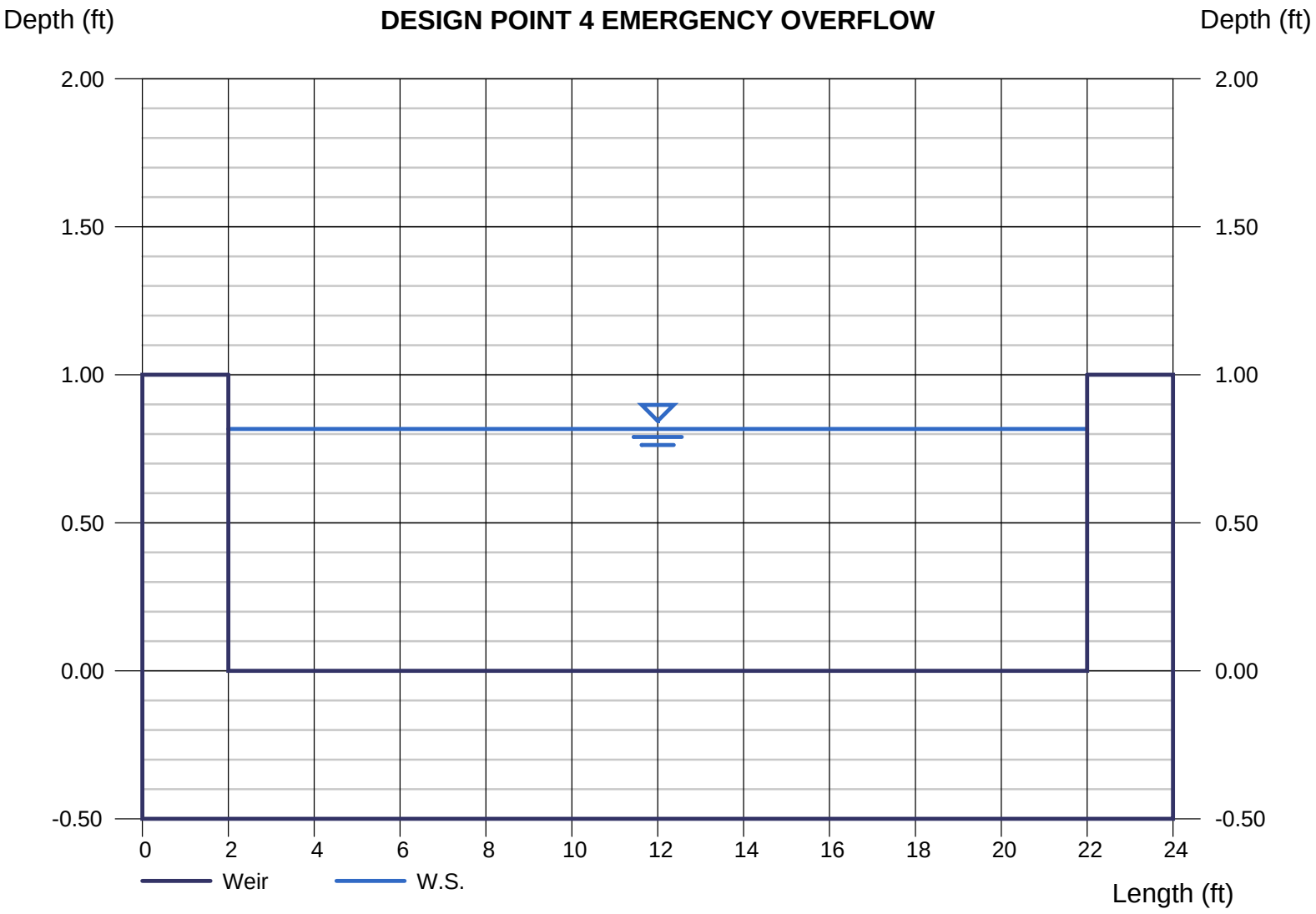
Crest	= Broad
Bottom Length (ft)	= 20.00
Total Depth (ft)	= 1.00

Calculations

Weir Coeff. Cw	= 2.60
Compute by:	Known Q
Known Q (cfs)	= 38.40

Highlighted

Depth (ft)	= 0.82
Q (cfs)	= 38.40
Area (sqft)	= 16.34
Velocity (ft/s)	= 2.35
Top Width (ft)	= 20.00



Weir Report

DESIGN POINT 5 EMERGENCY OVERFLOW

Rectangular Weir

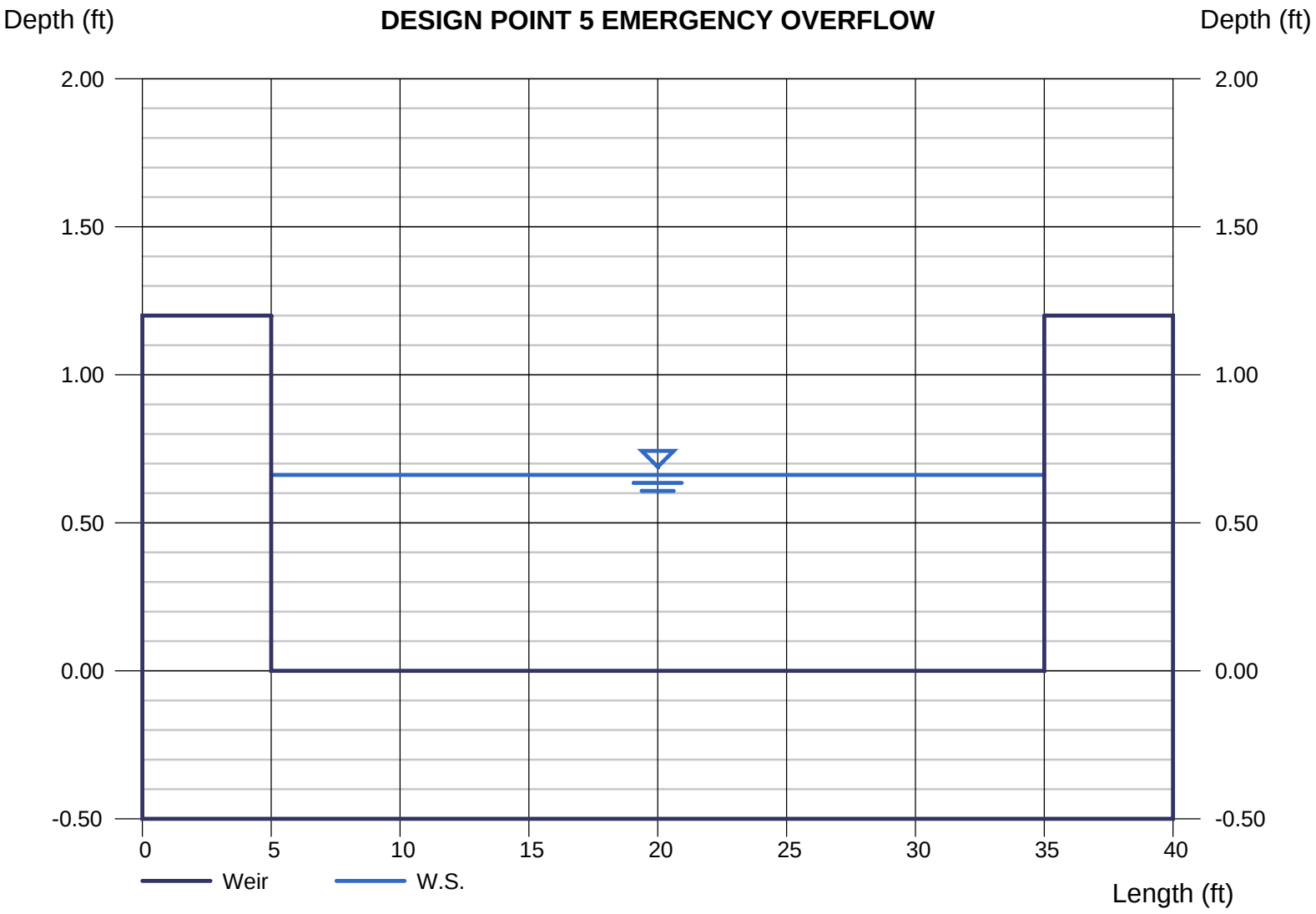
Crest	= Broad
Bottom Length (ft)	= 30.00
Total Depth (ft)	= 1.20

Calculations

Weir Coeff. Cw	= 2.60
Compute by:	Known Q
Known Q (cfs)	= 42.00

Highlighted

Depth (ft)	= 0.66
Q (cfs)	= 42.00
Area (sqft)	= 19.85
Velocity (ft/s)	= 2.12
Top Width (ft)	= 30.00



APPENDIX C

Reference Documents

DESIGN STORM RETURN PERIODS

Land Use or Zoning	Design Storm Return Period	
	Initial Storm	Major Storm
Residential	2-year	100-year
Business	5-year	100-year
Public Building Areas	5-year	100-year
Parks, Greenbelts, etc.	2-year	100-year
Open Channels and Drainage ways	10 year	100-year
Detention Facilities	Water Quality and 10 year	100-year

TABLE 800-3

PERCENT IMPERVIOUS FOR RATIONAL METHOD

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS
Business	
Commercial Areas	95
Neighborhood Areas	85
Residential	
Single-Family	*
Multi-Unit (detached)	60
Multi-Unit (attached)	75
1/2 Acre Lot or Larger	*
Apartments	80
Industrial	
Light Areas	80
Heavy Areas	90
Parks, Cemeteries	5
Playgrounds	10
Schools	50
Railroad Yard Areas	15
Undeveloped Areas	
Historic Flow Analysis	2
Greenbelts, Agricultural	2
Offsite Flow Analysis	
(when land use not defined)	45
Streets	
Paved	100
Gravel	40
Drives and Walks	90
Roofs	90
Lawns, Sandy Soil	0
Lawns, Clay Soil	0

Note: These Rational Formula coefficients may not be valid for large basins.

* Refer to Urban Storm Drainage Criteria Manual for percent impervious values.

813.06 Rainfall Intensities

The rainfall intensities to be used in the computation of runoff using the Rational Method shall be obtained from the Rainfall Intensity Duration Curves for the Town of Erie, included in these STANDARDS AND SPECIFICATIONS.

813.03 Runoff Computations, Colorado Urban Hydrograph Procedure (CUHP)

The CUHP method is generally applicable to basins greater than 90 acres. However, the CUHP is required for watershed areas larger than 160-acres. The procedures for the CUHP, as explained in the Urban Storm Drainage Criteria Manual, shall be followed in the preparation of drainage reports and storm drainage facility designs in the Town. The CUHP program requires the input of a design storm, either as a detailed hyetograph or as a 1-hour rainfall depth. The program for the latter using the 2-hour storm distribution recommended in the Urban Storm Drainage Criteria Manual generates a detailed hyetograph distribution. The 1-hour rainfall depths for the Town of Erie are presented in Table 800-2.

Table 800-2
TOWN OF ERIE
ONE-HOUR RAINFALL DEPTH

Design Storm	Rainfall Depth (in.)
2-Year	1.01
5-Year	1.43
10-Year	1.73
50-Year	2.40
100-Year	2.70

The hydrograph from the CUHP program must be routed through any proposed conveyance facility using UDSWM or a similar method.

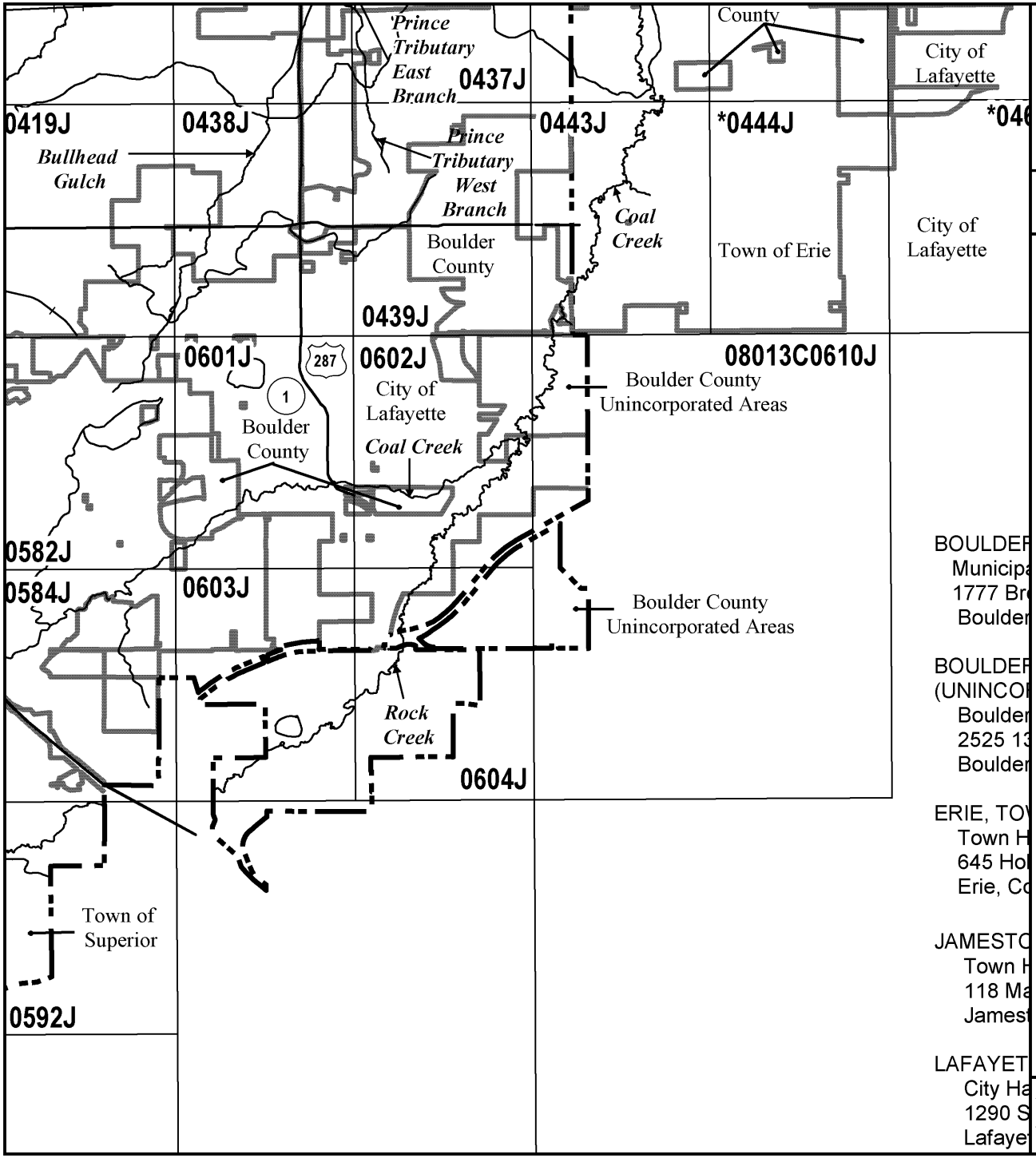
813.04 Runoff Computations, Rational Method

The Rational Method will be utilized for sizing storm sewers and for determining runoff magnitude from un-sewered areas. The limit of application of the Rational Method is approximately 160 acres. When the drainage basin exceeds 160 acres, the CUHP method shall be used.

The procedures for the Rational Method, as explained in the Urban Storm Drainage Criteria Manual, shall be followed in the preparation of drainage reports in the Town.

813.05 Runoff Coefficients

Rational method runoff coefficients: The runoff coefficient (C) to be used in conjunction with the Rational Method will be calculated using the percent imperviousness shown in Table 800-3 as explained in the Urban Storm Drainage Criteria Manual.



BOULDER
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Erie, Co

JAMESTO
Town H
118 Ma
Jamest

LAFAYET
City Ha
1290 S
Lafaye

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

SHEET 2 OF 2

PANELS PRINTED: 334, 342, 355, 357, 360, 365, 370, 376, 377, 378, 379, 385, 390, 391, 392, 393, 394, 401, 402, 403, 404, 407, 410, 411, 412, 413, 414, 416, 417, 418, 419, 429, 430, 435, 436, 437, 438, 439, 441, 443, 509, 530, 535, 557, 559, 560, 566, 567, 576, 577, 578, 579, 582, 583, 584, 586, 587, 591, 592, 601, 602, 603, 604, 610

(SEE SHEET 1 FOR ADDITIONAL PANELS PRINTED)

MAP NUMBER
08013CIND2B

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

08013C0394J	December 18, 20
08013C0401J	December 18, 20
08013C0402J	December 18, 20
08013C0403J	December 18, 20
08013C0404J	December 18, 20
08013C0407J	December 18, 20

COMMUNITY NAME	COMMUNITY NUMBER	
BOULDER, CITY OF	080024	0385, 0391, 0392, 0393, 0394, 040
BOULDER COUNTY UNINCORPORATED AREAS	080023	**0025, **0050, **0075, **0100, 0125, **0230, 0231, 0232, 0233, 0234, 024 0269, 0278, 0286, 0287, 0288, 0289, 0360, 0365, 0370, 0376, 0377, 03 0404, 0407, 0410, 0411, 0412, 0413, 0438, 0439, 0441, 0443, **0500, 050 **0575, 0576, 0577, 0578, 0579
ERIE, TOWN OF	080181	0429, 0435, 0436, 0437, 0438,
JAMESTOWN, TOWN OF	080216	
LAFAYETTE, CITY OF	080026	0418, 0419, 04
LONGMONT, CITY OF	080027	**0260, 0266, 0267, 0268, 02
LOUISVILLE, CITY OF	085076	0579, **
LYONS, TOWN OF	080029	
NEDERLAND, TOWN OF	080255	
SUPERIOR, TOWN OF	080203	057
*WARD, TOWN OF	080292	

*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

**PANEL NOT PRINTED

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

SHEET 2 OF 2

PANELS PRINTED: 334, 342, 355, 357, 360, 365, 370, 376, 377, 378, 379, 385, 390, 391, 392, 393, 394, 401, 402, 403, 404, 407, 410, 411, 412, 413, 414, 416, 417, 418, 419, 429, 430, 435, 436, 437, 438, 439, 441, 443, 509, 530, 535, 557, 559, 560, 566, 567, 576, 577, 578, 579, 582, 583, 584, 586, 587, 591, 592, 601, 602, 603, 604, 610

(SEE SHEET 1 FOR ADDITIONAL PANELS PRINTED)

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MAP REVISED
DECEMBER 18, 2012

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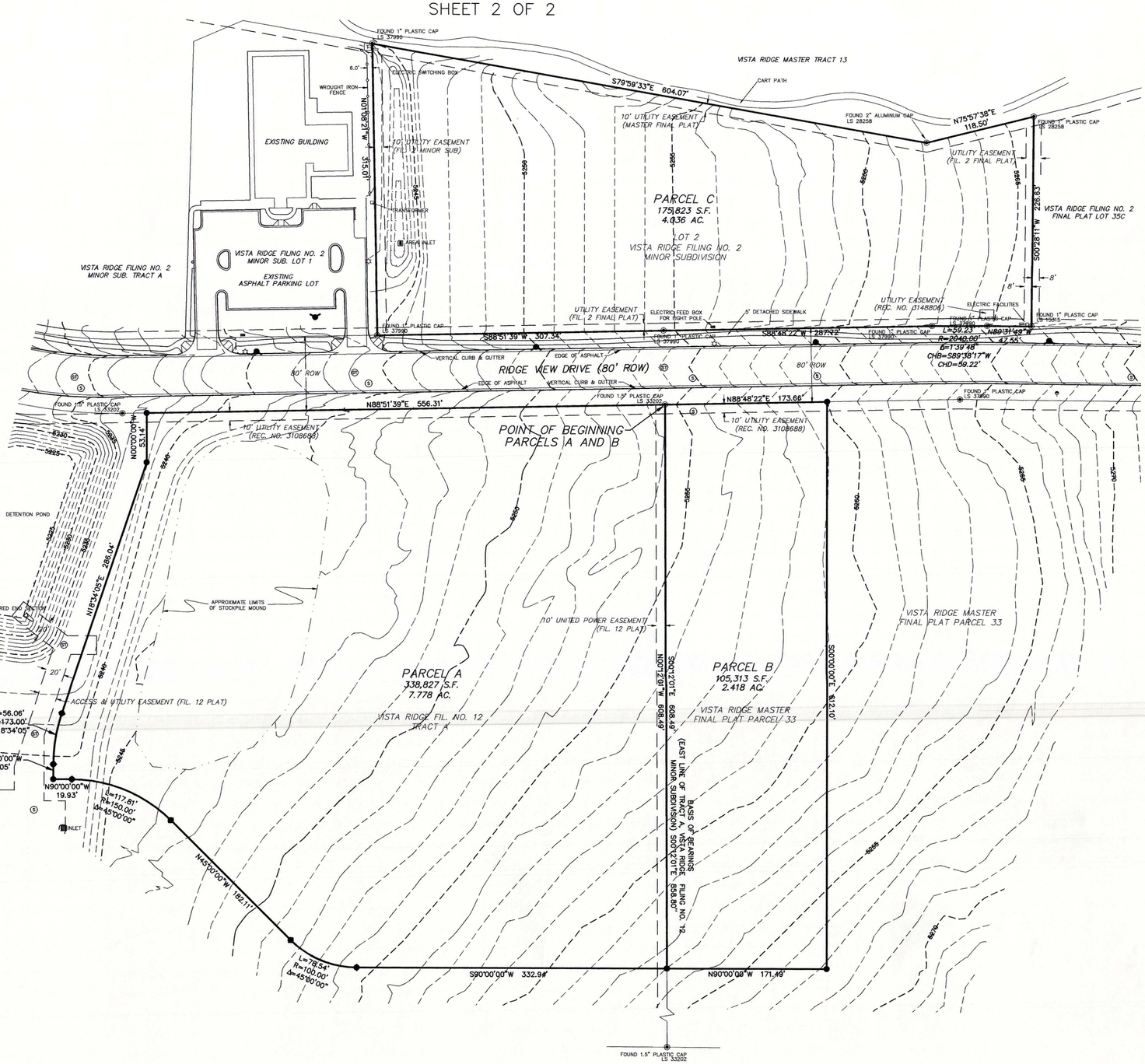
ALTA / ACSM LAND TITLE SURVEY
VISTA RIDGE COMMERCIAL AREA

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

SHEET 2 OF 2



SYMBOL LEGEND	
◉	MONUMENTED PROPERTY CORNER
●	SET #5 REBAR WITH PLASTIC CAP PLS 37908
(S)	SANITARY SEWER MANHOLE
(ST)	STORM SEWER MANHOLE
	FIRE HYDRANT
	6' TYPE"R" INLET
	FIBER OPTIC WARNING SIGN
T	TELEPHONE PEDESTAL
	HANDICAP RAMP
	LIGHT POLE
	CONTOUR-MAJOR
	CONTOUR-MINOR

N

0 30 60 120

SCALE: 1" = 60'

#	REVISIONS:	DATE:	BY:
1			
2			
3			
4			
5			
6			
7			
8			

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1" = 60'
DATE: 03/18/14
FILE NO. ALTA

JOB NUMBER: 1057-556

SHEET: 2 OF 2

ALTA / ACSM LAND TITLE SURVEY
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

PREPARED FOR:
CHARTERED DEVELOPMENT

Lange Land Surveys
9572 W. 58TH AVE. ARVADA, CO 80002
P:(720) 242-9732 F:(720) 242-9654

ALTA / ACSM LAND TITLE SURVEY
VISTA RIDGE COMMERCIAL AREA

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
SHEET 1 OF 2

LEGAL DESCRIPTION (FROM COMMITMENT):

PARCEL A:

A PORTION OF TRACT A OF "VISTA RIDGE FILING NO 12 MINOR SUBDIVISION" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF SAID TRACT A: THENCE S00°12'01"E, 608.49 FEET ALONG THE EASTERLY LINE OF SAID TRACT A (BASIS OF BEARINGS);
THENCE S90°00'00"W, 332.94 FEET;
THENCE 78.54 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 100.00 FEET, A CENTRAL ANGLE OF 45°00'00", AND A CHORD BEARING OF N67°30'00"W, 76.54 FEET;
THENCE N45°00'00"W, 182.11 FEET;
THENCE 117.81 FEET ALONG THE ARC OF A TANGENT CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 150.00 FEET, A CENTRAL ANGLE OF 45°00'00", AND A CHORD BEARING N67°30'00"W, 114.81 FEET;
THENCE N90°00'00"W, 19.93 FEET;
THENCE N00°00'00"W, 16.05 FEET;
THENCE 56.06 FEET ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, SAID CURVE HAVING A RADIUS OF 173.00 FEET, A CENTRAL ANGLE OF 18°34'05", AND A CHORD BEARING N09°17'02"E, 55.82 FEET;
THENCE N18°34'05"E, 286.04 FEET;
THENCE N00°00'00"W, 53.14' TO THE NORTHERLY LINE OF SAID TRACT A;
THENCE N88°51'39"E, 556.31 FEET ALONG THE SAID NORTHERLY LINE OF TRACT A TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 338,827 SQUARE FEET OR 7.778 ACRES, MORE OR LESS.

PARCEL B:

A PORTION OF PARCEL 33 OF "VISTA RIDGE MASTER FINAL PLAT" LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M. TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWESTERLY CORNER OF SAID PARCEL 33;
THENCE N 88° 48' 22" E, 173.66 FEET ALONG THE NORTHERLY LINE OF SAID PARCEL 33;
THENCE S00°00'00"E 612.10 FEET;
THENCE N90°00'00"W, 171.49 FEET TO THE WESTERLY LINE OF SAID PARCEL 33;
THENCE N00°12'01"W, 608.49 FEET ALONG SAID WESTERLY LINE OF PARCEL 33 TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 105,313 SQUARE FEET OR 2.418 ACRES, MORE OR LESS.

PARCEL C:

LOT 2 OF "VISTA RIDGE FILING NO 2 – MINOR SUBDIVISION" (PLAT RECORDED 11/15/2007 AT RECEPTION NO. 3517715), TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO.

SAID PARCEL CONTAINS 175,823 SQUARE FEET OR 4.036 ACRES, MORE OR LESS.

SURVEY CERTIFICATION:

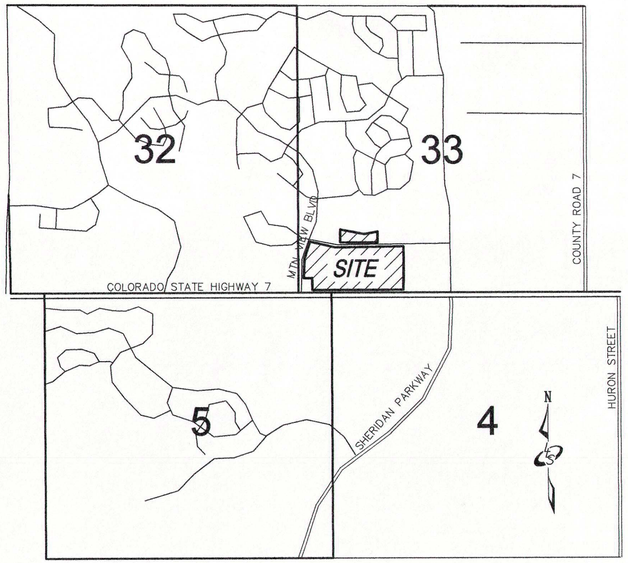
CERTIFIED TO:

CHARTERED DEVELOPMENT CORP.

FOR AND ON BEHALF OF LANGE LAND SURVEYS, LLC, I CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 2005, AND INCLUDES ITEMS 1–5 & 11A OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR LICENSED IN THE STATE OF COLORADO, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

DATE: 8/28/14

COLORADO REGISTERED JONATHAN R. LANGE 37908 PROFESSIONAL LAND SURVEYOR



VICINTY MAP
N.T.S.

GENERAL NOTES:

1. NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

2. BASIS OF BEARINGS: THE EASTERLY LINE OF TRACT A OF VISTA RIDGE FILING NO. 12 MINOR SUBDIVISION, ASSUMED TO BEAR S00°12'01"E, TO MATCH RECORDED PLATS. MONUMENTS DESCRIBED ON DRAWING.

3. FOUND PROPERTY CORNERS ARE DESCRIBED HEREON.

4. NO BUILDINGS ARE PRESENTLY LOCATED ON THIS PROPERTY.

6. THIS PROPERTY IS LOCATED IN ZONE C (AREAS OF MINIMAL FLOODING) ACCORDING TO FIRM COMMUNITY PANEL NUMBER 0802660970 D WITH A REVISION DATE OF 09/28/1990.

7. THE SUBJECT PROPERTY ABUTS UPON AND HAS INGRESS TO AND EGRESS FROM DULY DEDICATED AND ACCEPTED PUBLIC STREETS KNOWN AS RIDGE VIEW DRIVE.

8. PROPERTY IS CURRENTLY ZONED PD (PLANNED DEVELOPMENT).

9. TOTAL AREA OF THREE THE PARCELS IS 14.232 ACRES.

10. THE RECORD DESCRIPTION OF THE SUBJECT PROPERTY FORMS A MATHEMATICALLY CLOSED FIGURE AND, TO THE EXTENT ANY EASEMENT CANNOT BE LOCATED FROM ITS RECORD DESCRIPTION, A NOTATION IS MADE HEREON.

11. TWO PLATS HAVE BEEN RECORDED THAT AFFECT PARCELS: "VISTA RIDGE FILING NO. 2 FINAL PLAT", RECORDED 06/06/2003 AT RECEPTION NO. 3070387 AND "VISTA RIDGE FILING NO. 2 MINOR SUBDIVISION", RECORDED 11/15/2007 AT RECEPTION NO. 3517715, WHICH IS A REPLAT OF PARCEL 35B OF FILING NO. 2.

TITLE COMMITMENT NOTES:

THIS LAND SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY LANGE LAND SURVEYS, LLC. TO DETERMINE OWNERSHIP OF THIS PARCEL OF LAND, VERIFY THE DESCRIPTION SHOWN, VERIFY THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF THE ADJACENT PARCELS OF LAND, OR VERIFY EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHT-OF-WAY OR TITLE OF RECORD, LANGE LAND SURVEYS, LLC RELIED UPON ORDER NO. 25121037, WITH A DATE OF APRIL 11, 2014, PREPARED BY LAND TITLE GUARANTEE COMPANY.

THE FOLLOWING COMMENTS ARE IN REGARDS TO THE ABOVE REFERENCED ORDER NO.'S

SCHEDULE A

ITEM # COMMENT

1. NOTED ABOVE.

2., 3., 4. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

5. THE LEGAL DESCRIPTION OF THE LAND SURVEYED IS SHOWN HEREON, TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

SCHEDULE B – SECTION 1 (REQUIREMENTS)

ITEM # COMMENT

1.–5. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS. THIS ALTA/ACSM LAND TITLE SURVEY IS A RESPONSE TO THE REQUEST FOR A SURVEY.

SCHEDULE B – SECTION 2 (EXCEPTIONS)

ITEM # COMMENT

1.–14. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

15. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

16.–17. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

18. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

19.–20. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

21. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

22. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

23. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

24.–25. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

26. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

27.–29. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

30. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

31.–32. LANGE LAND SURVEYS, LLC DID NOT EXAMINE OR ADDRESS THESE ITEMS.

33. ITEM INTENTIONALLY DELETED.

34. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND DETERMINED IT DOES NOT AFFECT SUBJECT PROPERTY.

35. LANGE LAND SURVEYS, LLC EXAMINED THIS ITEM AND IT IS LOCATED AS SHOWN ON THIS SURVEY.

36.–41. LANGE LAND SURVEYS DID NOT EXAMINE OR ADDRESS THESE ITEMS.

#	REVISIONS:	DATE:	BY:
1			
2			
3			
4			
5			
6			
7			
8			

JOB NUMBER: 1057-556 SHEET: 1 OF 2

DRAWN BY: LC
CHECKED BY: JRL
SCALE: 1" = 60'
DATE: 03/18/14
FILE NO. ALTA

ALTA / ACSM LAND TITLE SURVEY
LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST
WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

PREPARED FOR:
CHARTERED DEVELOPMENT

Lange Land Surveys
9572 W. 58TH AVE. ARVADA, CO 80002
P:(720) 242-9732 F:(720) 242-9654

FINAL DRAINAGE REPORT
PRIMROSE SCHOOL
ERIE, COLORADO

Prepared For:
Children's Design Group
71 Market Place
Montgomery, AL 36117

Prepared By:
Hurst & Associates, Inc.
4999 Pearl East Circle
Suite 106
Boulder, CO 80301

Job No. 2410-01
May 8, 2007

TABLE OF CONTENTS

Introduction

Hydrologic/Hydraulic Analysis

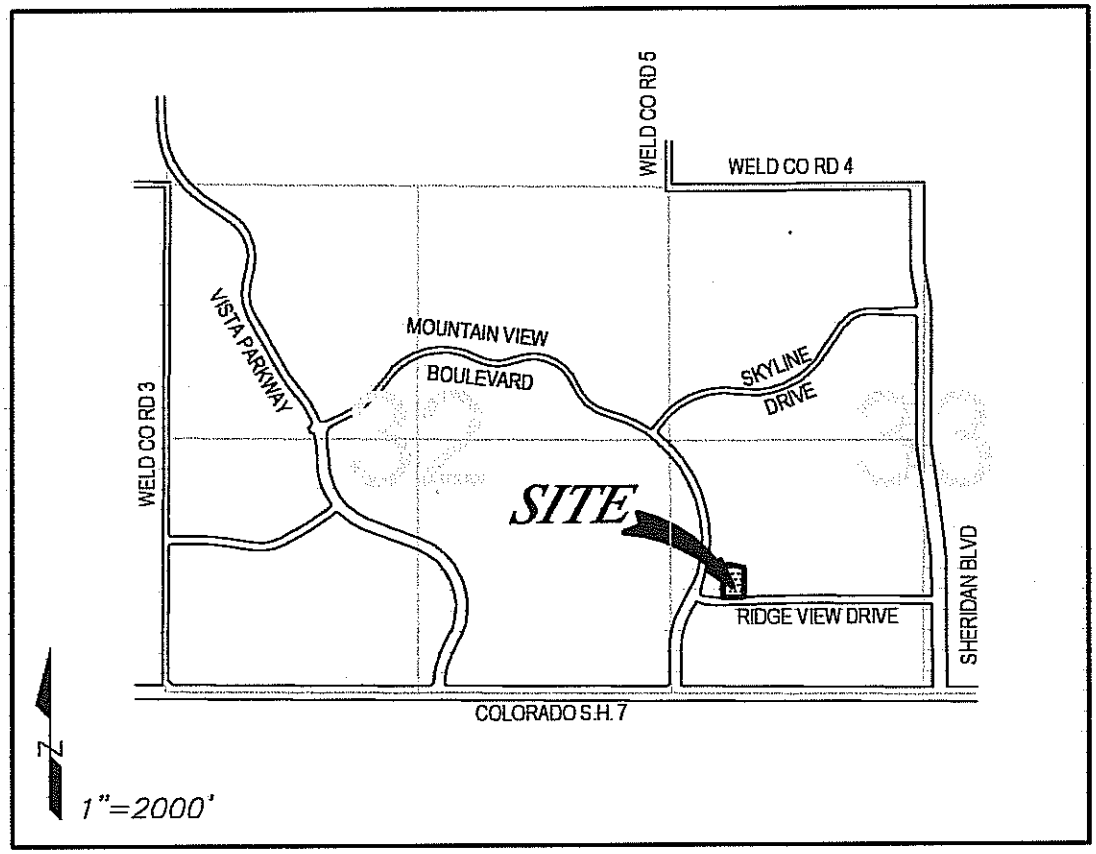
Drainage Facility Design

Erosion Control

Runoff Calculations ..... **Appendix A**

Storm Sewer Pipe Sizing & Inlet Analysis ..... **Appendix B**

Map Pocket - **Primrose School Drainage Plan**
Primrose School Grading Plan



VICINITY MAP

INTRODUCTION

This report presents the drainage concept and design of the drainage facilities of the proposed Primrose School. The Primrose School is to be built on Lot 2 of Vista Ridge Filing No. 2, Replat A. Lot 2 is located in the southwest one-quarter of Section 33, Township 1 North, Range 68 West of the Sixth Principal Meridian, Town of Erie, County of Weld, State of Colorado. The site is currently vacant. Runoff drains westerly to existing Vista Ridge Detention Pond A3. Runoff from Lot 3 of Vista Ridge Filing No. 2, Replat A and the western portion of the Vista Ridge Academy drains westerly across the Primrose School.

HYDROLOGIC/HYDRAULIC ANALYSIS

The stormwater runoff was determined using the Rational Method as presented in the *Urban Drainage and Flood Control District Manual*. Drainage basins were defined by the proposed grading and the locations of the proposed inlets and storm sewers. Times of concentration were developed for each basin. These times and the Time-Intensity-Frequency Curves from the Town of Erie's *Standards and Specifications for Design and Construction of Public Improvements* were used to determine the minor and major storm intensities and the corresponding runoff rates for each basin. According to the Town of Erie's *Standards and Specifications for Design and Construction of Public Improvements* the drainage facilities for the site must be designed using at least a 5-year initial storm return period and a 100-year major storm return period. Runoff calculations are located in **Appendix A**.

DRAINAGE CONCEPT

The drainage concept for the Primrose School is to convey the offsite flows from Lot 3 of Vista Ridge Filing No. 2, Replat A and the western portion of the Vista Ridge Academy along with

the runoff from the Primrose School to the existing Vista Ridge Detention Pond A3. Pond A3 was designed to detain flows from the Primrose School.

To avoid offsite flows from crossing the Primrose School during 100-year storm event, a 36 inch reinforced pipe is being extend to Lot 3. This pipe has the capacity to convey the developed 100-year flows from Lot 3 and the western portion of the Vista Ridge Academy. A Type 'C' inlet will be temporarily placed on the 36 inch pipe until Lot 3 is developed. **See Appendix B.**

APPENDIX A

RUNOFF CALCULATIONS

Primrose School
Job No.: 2410-1

Land Use	C_5	C_{100}
Roof	0.85	0.90
Grass	0.15	0.50
Walks	0.87	0.89
Pavement	0.88	0.93
Commercial	0.87	0.89

Basin	Total	Roof	Grass	Walks	Pavement	Comm.	C_5	C_{100}
	acres	*acres*	*acres*	*acres*	*acres*	*acres*		
A3A	1.13	0.25	0.37	0.08	0.43	0.00	**0.63**	**0.78**
A3B	2.95	0.00	0.00	0.00	0.00	2.95	**0.87**	**0.89**
A3C	4.92	0.00	0.88	0.12	0.00	3.92	**0.74**	**0.82**

Basin	Overland Flow			Travel Time in Channel				T_c (mins)	T_c Check		Final T_c (min = 5 mins)
	Length (ft)	Slope (%)	T_i (Fig. 2) (mins)	Length (ft)	Slope	Velocity (ft/sec) (fig.3-2)	T_t (mins)		Total Length (ft)	T_c = (L/180) +10 (mins)	
A3A	-	-	-	-	-	-	-	-	-	-	**5.0**
A3B	-	-	-	-	-	-	-	-	-	-	**5.0**
A3C	120	4.2	4.4	675	PIPE	5.0	2.3	6.6	795	14.4	**6.6**

Basin	Runoff		T_c (min)	Intensity		Design Flow	
	C5	C100		I_5 (in/hr)	I_{100} (in/hr)	Q_5 (cfs)	Q_{100} (cfs)
A3A	**0.63**	**0.78**	**5.0**	*5.00*	*9.40*	**3.58**	**8.29**
A3B	**0.87**	**0.89**	**5.0**	*5.00*	*9.40*	**12.83**	**24.68**
A3C	**0.74**	**0.82**	**6.6**	*4.60*	*8.65*	**16.77**	**34.90**

TABLE 800-3
RUNOFF COEFFICIENTS (C) FOR RATIONAL METHOD

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	FREQUENCY			
		2	5	10	100
Business					
Commercial Areas	95	.87	.87	.88	.89
Neighborhood Areas	70	.60	.65	.70	.80
Residential					
Single-Family	*	.40	.45	.50	.60
Multi-Unit (detached)	50	.45	.50	.60	.70
Multi-Unit (attached)	70	.60	.65	.70	.80
1/2 Acre Lot or Larger	*	.30	.35	.40	.60
Apartments	70	.65	.70	.70	.80
Industrial					
Light Areas	80	.71	.72	.76	.82
Heavy Areas	90	.80	.80	.85	.90
Parks, Cemeteries	7	.10	.18	.25	.45
Playgrounds	13	.15	.20	.30	.50
Schools	50	.45	.50	.60	.70
Railroad Yard Areas	20	.20	.25	.35	.45
Undeveloped Areas					
Historic Flow Analysis	2	(See "Lawns")			
Greenbelts, Agricultural					
Offsite Flow Analysis					
(when land use not defined)	45	.43	.47	.55	.65
Streets					
Paved	100	.87	.88	.90	.93
Gravel	40	.40	.45	.50	.60
Drives and Walks	96	.87	.87	.88	.89
Roofs	90	.80	.85	.90	.90
Lawns, Sandy Soil	0	.00	.01	.05	.20
Lawns, Clay Soil	0	.05	.15	.25	.50

Note: These Rational Formula coefficients may not be valid for large basins.

* Refer to Urban Storm Drainage Criteria Manual for percent impervious values.

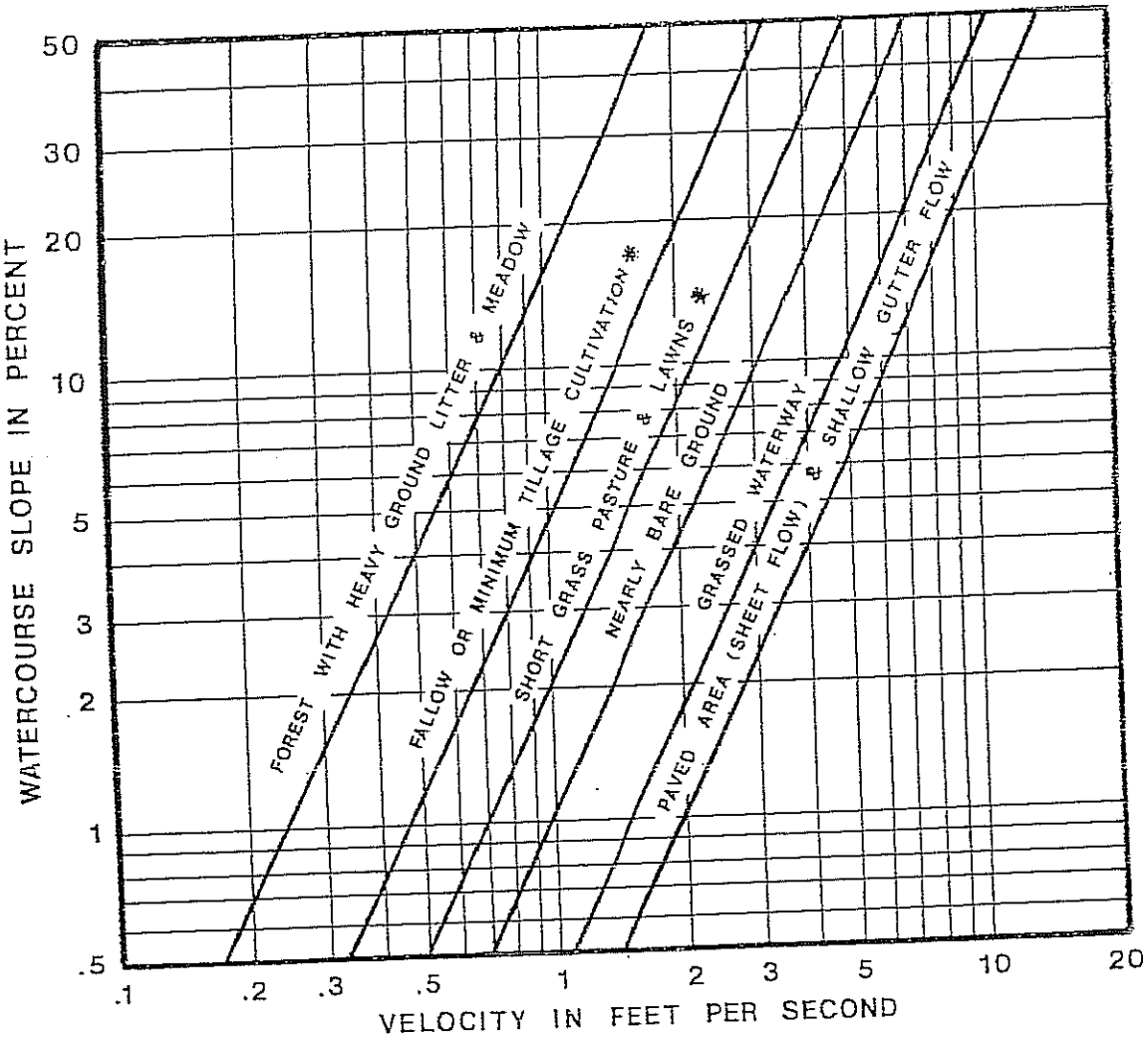


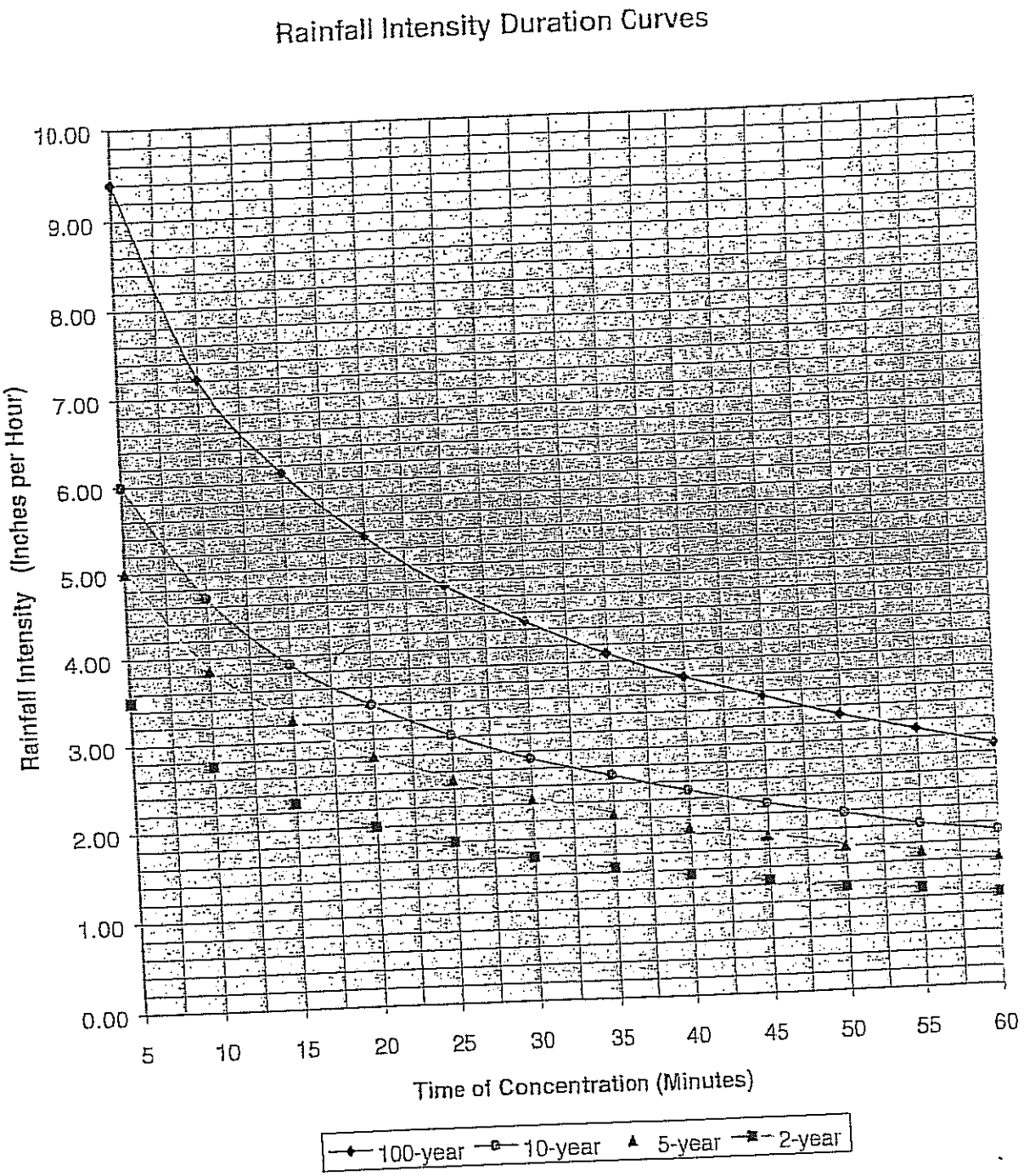
FIGURE 3-2. ESTIMATE OF AVERAGE FLOW VELOCITY FOR USE WITH THE RATIONAL FORMULA.

* MOST FREQUENTLY OCCURRING "UNDEVELOPED" LAND SURFACES IN THE DENVER REGION.

REFERENCE: "Urban Hydrology For Small Watersheds" Technical Release No. 55, USDA, SCS Jan. 1975.

813.06 Rainfall Intensities

The rainfall intensities to be used in the computation of runoff using the Rational Method shall be obtained from the Rainfall Intensity Duration Curves for the Town of Erie, included in these STANDARDS AND SPECIFICATIONS.



APPENDIX B

STORM SEWER PIPE SIZING & INLET ANALYSIS

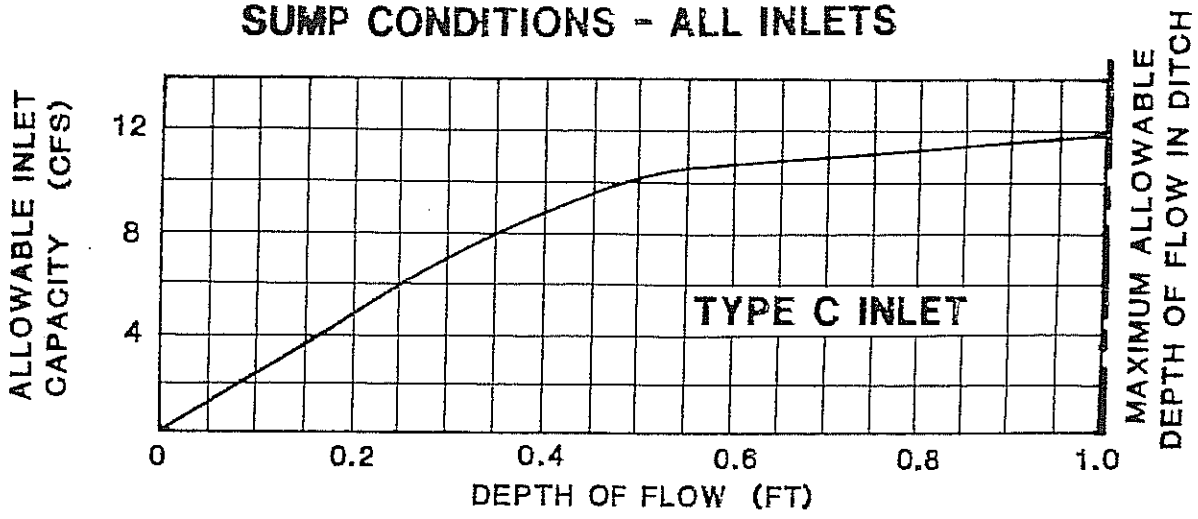
Primrose School
Job No.: 2410-1

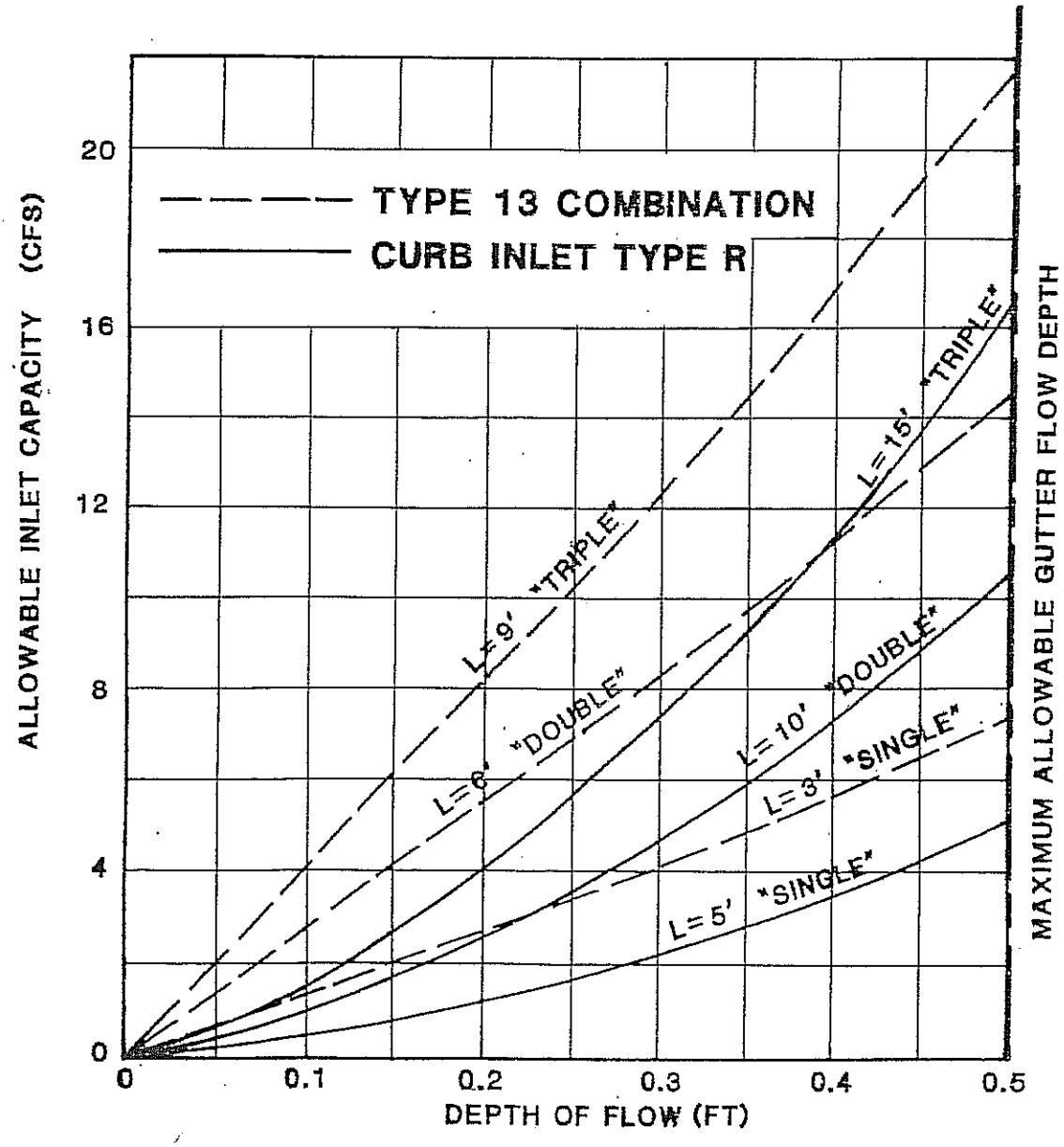
Type 'R' Inlets

Structure Number	Contributing Basins	Q_5 (cfs)	Q_{100} (cfs)	Condition	Depth of Flow (ft)	Inlet Type	Capacity (cfs)
SP-2	A3A	**3.58**	**8.29**	Sump	0.50	**5 Foot Single**	5.0

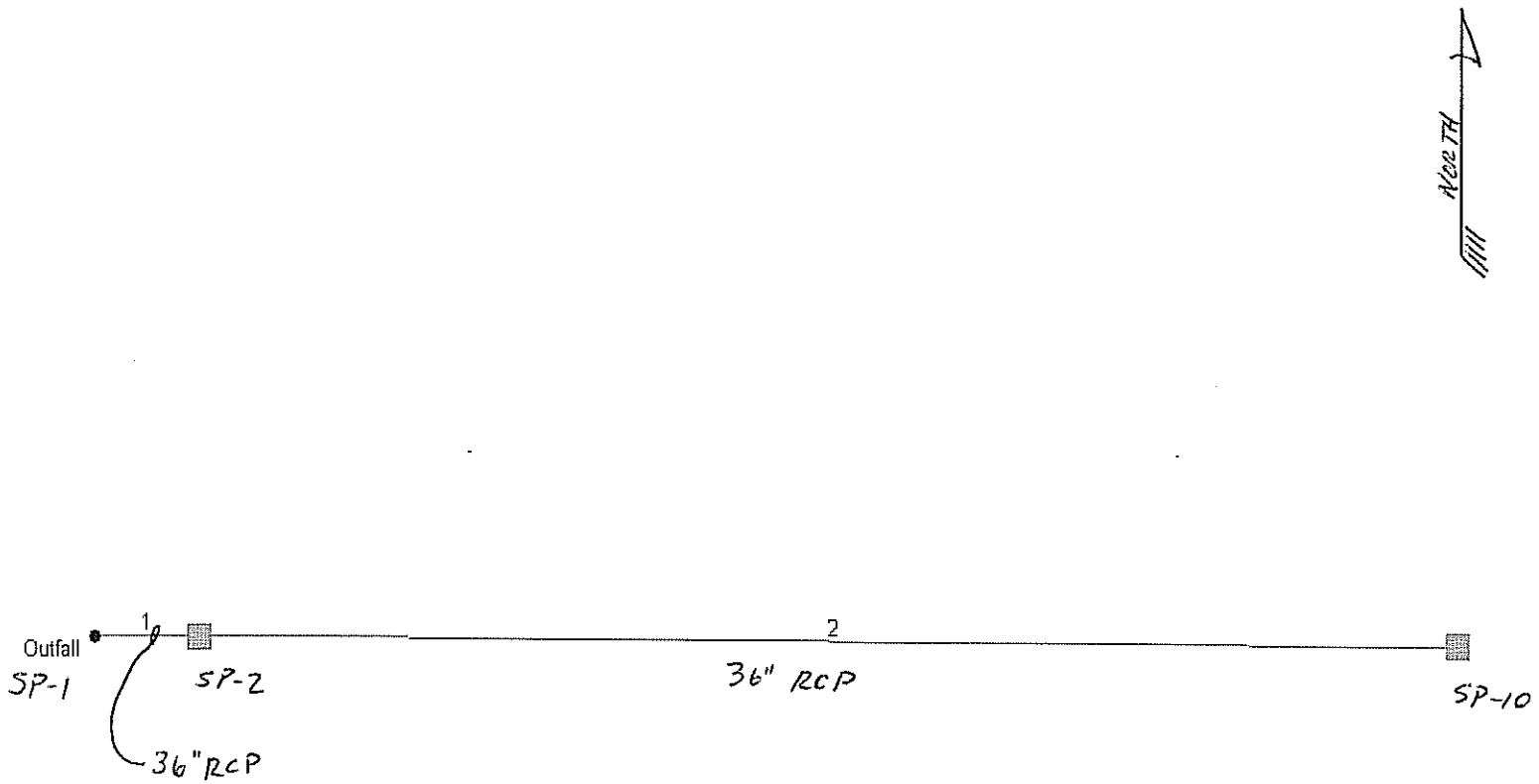
ALLOWABLE INLET CAPACITY

SUMP CONDITIONS - ALL INLETS





Hydraflow Plan View



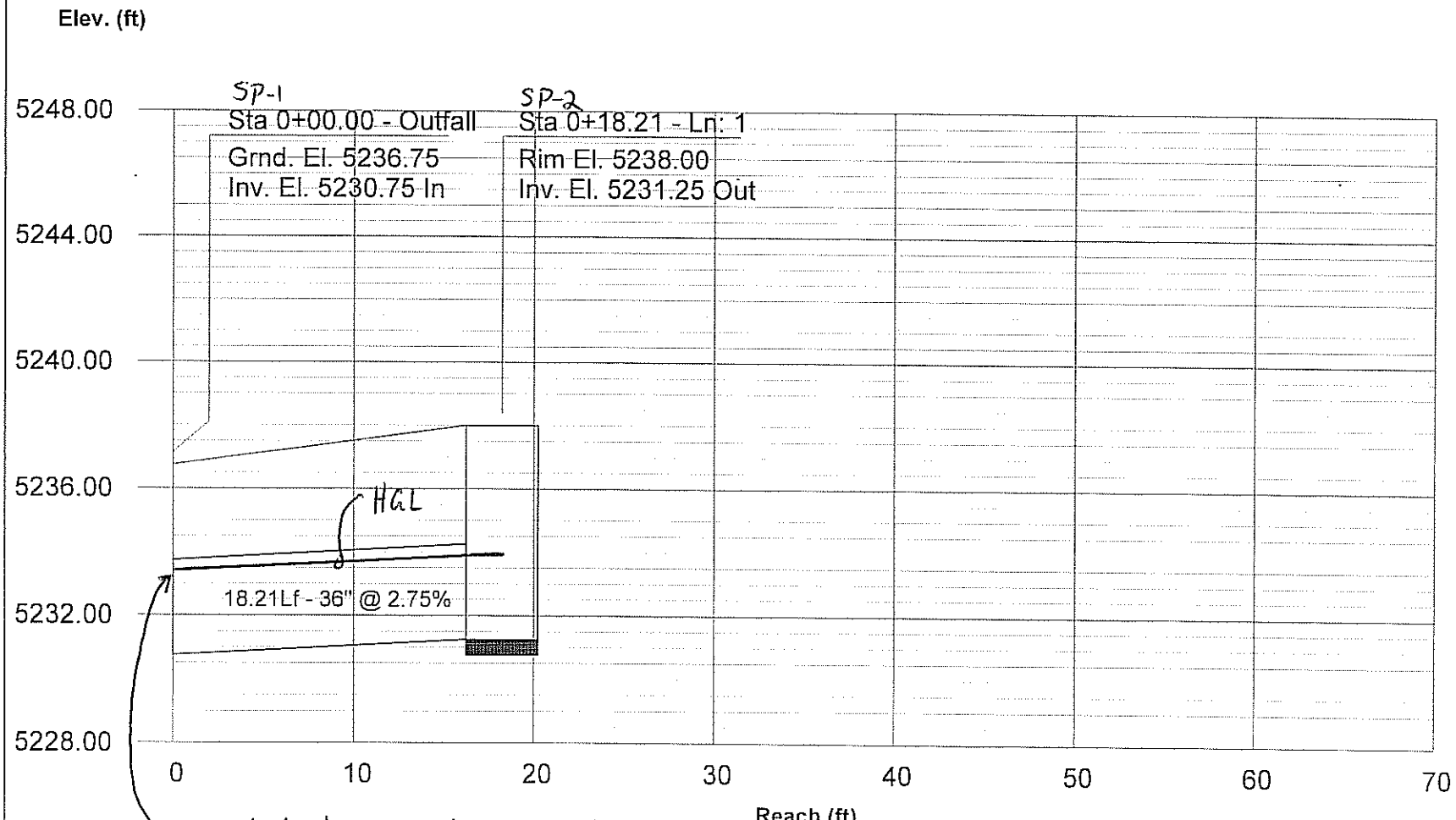
Project File: 241001B.stm

No. Lines: 2

05-03-2007

Storm Sewer Profile

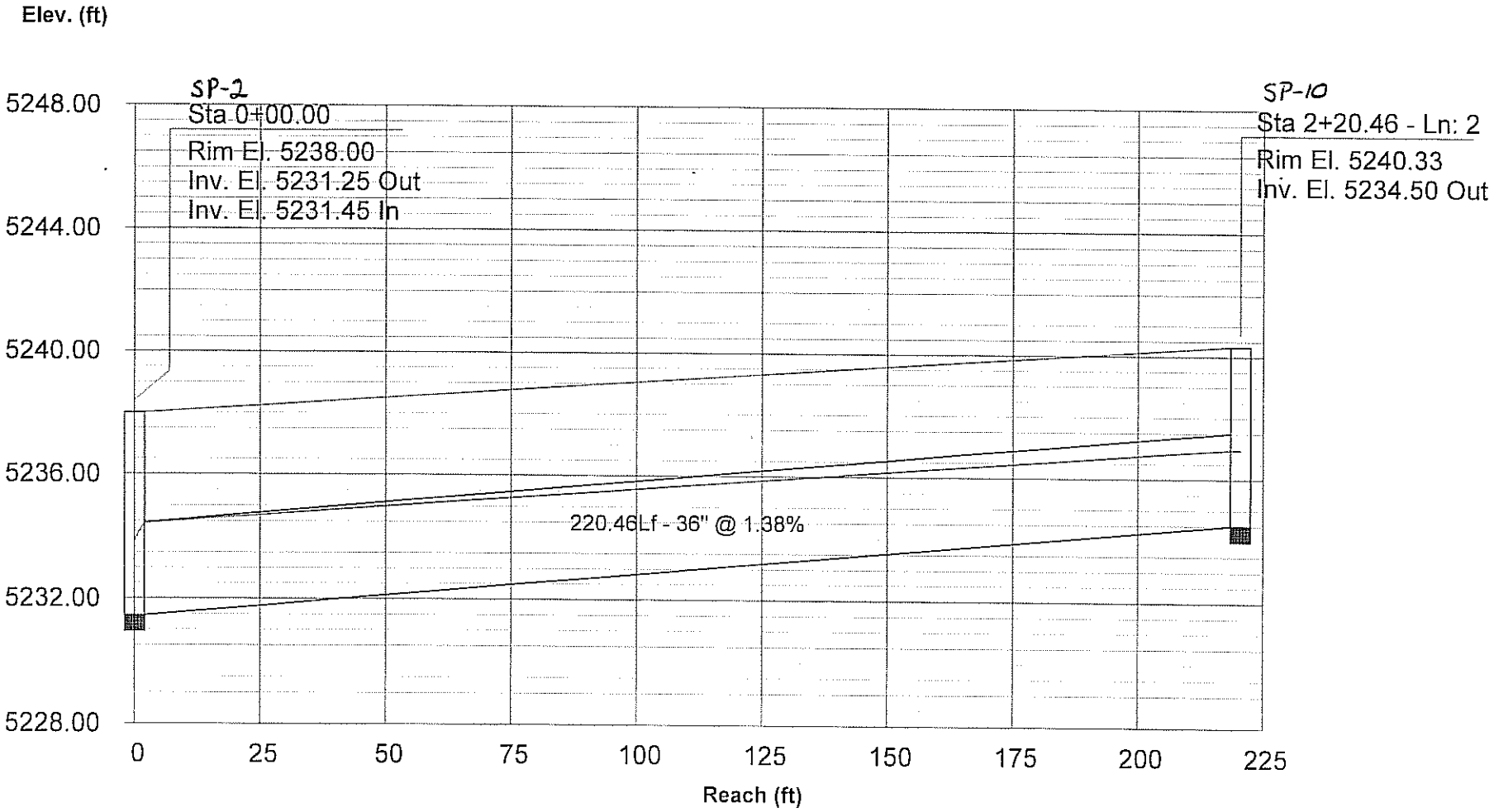
Proj. file: 241001B.stm



The hydraulic grade line was started at the 100-year W.S.E. of the detention pond. (5232.89)

Storm Sewer Profile

Proj. file: 241001B.stm



Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	18.2	0.0	Curb	67.87	0.00	0.00	0.0	5230.75	2.75	5231.25	36	Cir	0.013	0.50	5238.00	SP-1 TO SP-2
2	1	220.5	0.2	Grate	59.58	0.00	0.00	0.0	5231.45	1.38	5234.50	36	Cir	0.013	1.00	5240.33	SP-2 TO SP-10

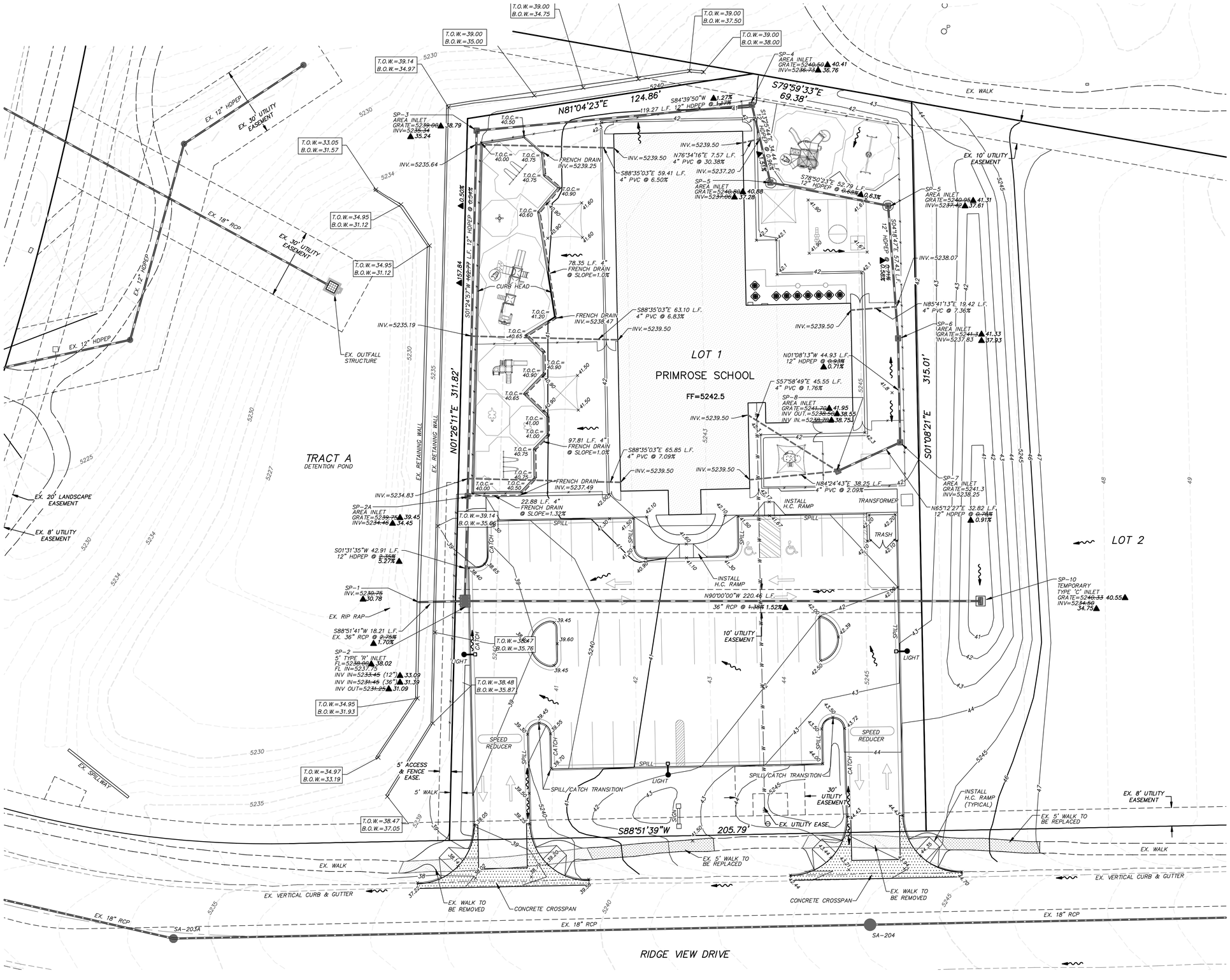
Project File: 241001B.stm | Number of lines: 2 | Date: 05-03-2007

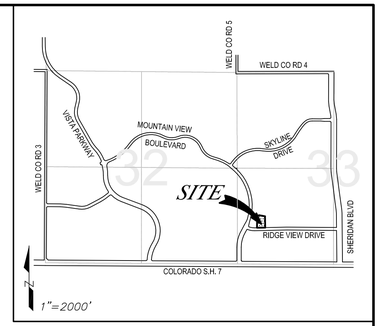
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
1	36	67.87	5230.75	5233.38	2.63	6.57	10.33	1.66	5235.04	0.935	18.2	5231.25	5233.88	2.63**	6.57	10.33	1.66	5235.54	0.935	0.935	n/a	0.50	n/a
2	36	59.58	5231.45	5234.44	2.98	7.06	8.43	1.11	5235.54	0.751	220	5234.50	5236.96	2.46**	6.20	9.60	1.43	5238.39	0.797	0.774	n/a	1.00	1.43

Project File: 241001B.stm | Number of lines: 2 | Run Date: 05-03-2007

Notes: ; ** Critical depth.





VICINITY MAP

THIS PLAN AND THE INFORMATION CONTAINED HEREON ACCURATELY REPRESENT THE "AS BUILT" CONDITION OF THE IMPROVEMENTS AS SHOWN AS OF 07/14/08.

▲ AS-BUILT BY
HURST & ASSOCIATES, INC.
CONSULTING ENGINEERS
4999 Pearl East Circle, Suite 106
Boulder, Colorado 80301 (303) 449-9105
07/14/08

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- Manhole
- Existing Manhole
- Thrust Block
- Proposed Water Valve
- Existing Water Valve
- Proposed Fire Hydrant
- Existing Fire Hydrant
- Plug
- Blowoff
- Proposed Water Line
- Existing Wate Line
- Proposed Sewer Line
- Existing Sewer Line
- Proposed Storm Line
- Existing Storm Line
- 10' Type 'R' Inlet
- 5' Type 'R' Inlet

ALL UTILITIES ARE PROPOSED UNLESS OTHERWISE NOTED

72 HOURS BEFORE YOU DIG
CALL THE UTILITY NOTIFICATION CENTER OF COLORADO (U.N.C.C.)
1-800-922-1987
GAS, ELECTRIC, TELEPHONE, CATV AND PANHANDLE EASTERN PIPELINE LOCATIONS

PRIMROSE SCHOOL
VISTA RIDGE FILING NO. 2
MINOR SUBDIVISION, LOT 1
GRADING & DRAINAGE PLAN

SCALE	HOR. 1"=20' VERT. N/A
DESIGN/APPR.	JJ
DRAWN BY	GLG
DATE	11/14/07

HURST & ASSOCIATES, INC.
CONSULTING ENGINEERS
4999 Pearl East Circle, Suite 106
Boulder, Colorado 80301 (303) 449-9105

FILE G:\21423\PARCEL 35B-2\CONST\24101-GG SHEET 3 OF 8

Area Grading Plan: See Section 13d Construction Documents.

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT

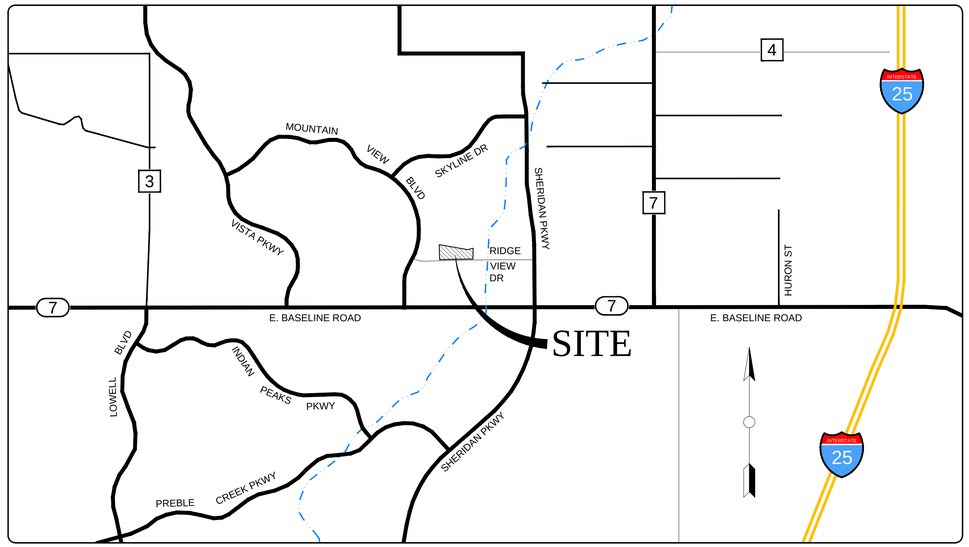
CIVIL CONSTRUCTION DOCUMENTS

A RESUBDIVISION OF: LOT 2, VISTA RIDGE FILING NO. 2; LOCATED IN THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST WEST OF THE 6TH P.M., TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

SHEET INDEX

SHEET INDEX

SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION	SUBMITTAL 1 NOVEMBER. 03, 2014	SUBMITTAL 2 APRIL 17, 2015	REV	
1	CVR-1.0	COVER SHEET	●	●		
2	GEN-2.0	GENERAL NOTES	●	●		
3	SIT-3.0	SITE PLAN	●	●		
4	OGP-4.0	OVERALL GRADING PLAN	●	●		
5	DGP-4.1	DETAIL GRADING PLAN 1	●	●		
6	DGP-4.2	DETAIL GRADING PLAN 2	●	●		
7	GDT-4.3	GRADING DETAILS		●		
8	OUP-5.0	OVERALL UTILITY PLAN	●	●		
9	RDW-6.1	RIDGE VIEW CT STA: 0+50 TO 7+25	●	●		
10	RDW-6.2	RIDGE VIEW CR & P.D. #2	●	●		
11	RDW-6.3	PRIVATE DRIVES #1, #3 & #4		●		
12	STM-7.1	STORM DRAIN STA: 0+00 TO 5+00	●	●		
13	STM-7.2	STORM DRAIN STA: 5+00 TO 9+00		●		
14	SAN-8.1	SANITARY - MAIN STA: -0+25 TO 8+25	●	●		
15	SAN-8.2	SANITARY LATERALS	●	●		
16	WAT-9.0	WATER PLAN	●	●		
17	WAT-9.1	WATER CROSSING PROFILES		●		
18	DTL-10.0	GENERAL DETAILS		●		



VICINITY MAP

SCALE 1" = 1500'

PROJECT TEAM

OWNER
CHARTERED DEVELOPMENT CORP.
3160 VILLAGE VISTA DR, STE. 104
ERIE, CO 80516
CONTACT: WARD RITTER
(303) 545-2554

ENGINEER
ENERTIA CONSULTING GROUP, LLC
1437 LARIMER STREET
DENVER, COLORADO 80202
CONTACT: SHAWN MERZ, PE
(720) 502-6574

ARCHITECT
WOODLEY ARCHITECTURAL GROUP
731 SOUTH PARK DR, STE. B
LITTLETON, COLORADO 80120

PLANNER
HURST & ASSOCIATES
2500 BROADWAY STREET, STE. 110
BOULDER, COLORADO 80304
(303) 449-9105

SURVEYOR
LANGE LAND SURVEYS
9572 W. 58TH AVE.
ARVADA, CO 80002
(720) 242-9732

ELECTRICAL ENGINEER
RG ENGINEERING CONSULTANTS INC.
2555 WALNUT ST, SUITE B.,
DENVER, CO 80205

LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR		EXISTING TREE
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR	RIP-RAP	RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	5500.00	EXISTING ELEVATION

LIST OF ABBREVIATIONS

R.O.W.	=	RIGHT OF WAY	SW	=	SWALE	FL	=	FLOW LINE
S/W	=	SIDEWALK	TC	=	TOP OF CURB	PI	=	POINT OF INFLECTION
FL	=	FLOWLINE	NTS	=	NOT TO SCALE	LT	=	LEFT
CB	=	CATCH BASIN	HP	=	HIGH POINT	RT	=	RIGHT
FF	=	FINISHED FLOOR	LP	=	LOW POINT	MH	=	MANHOLE
TF	=	TOP OF FOOTING ELEVATION	INV	=	INVERT	PC	=	POINT OF CURVATURE
FG	=	FINISH GRADE ELEVATION	LF	=	LINEAR FEET	PT	=	POINT OF TANGENCY
EOC	=	EDGE OF CONCRETE	STA	=	STATION	PVC	=	POLYVINYL CHLORINE PIPE
EL	=	ELEVATION	TOP	=	TOP OF PIPE	RCP	=	REINFORCED CONCRETE PIPE
FH	=	FIRE HYDRANT	BOP	=	BOTTOM OF PIPE	SF	=	SILT FENCE
HP	=	HIGH POINT	SD	=	STORM DRAIN	BW	=	BACK OF WALK
LP	=	LOW POINT	SS	=	SANITARY SEWER	EX	=	EXISTING
PD	=	PRIVATE DRIVE	WL	=	WATER LINE	PROP	=	PROPOSED
HH	=	HAMMER HEAD	CL	=	CENTERLINE	CY	=	CUBIC YARDS

BENCHMARK

- GEODETIC COORDINATES ARE BASED ON NAD 83 (1992)
- ORTHOMETRIC HEIGHTS ARE BASED ON NAVD 88
- STATE PLANE COORDINATES ARE BASED ON THE COLORADO NORTH ZONE (501)
- UNITS ARE US SURVEY FEET (SFT)

- PROJECT (GROUND) COORDINATES ARE MODIFIED STATE PLANE
- PROJECT COMBINED FACTOR = 0.999716267

- PROJECT COORDINATES WERE MODIFIED TO GROUND AT NGS 1ST ORDER HORIZONTAL CONTROL MARK "LUCY". THE MARK IS A CITY OF BROOMFIELD 3 1/4" BRASS DISK SET INTO 18" ROUND CONCRETE POST, FLUSH WITH THE GROUND. THE LOCATION OF THE MARK MATCHES THE NGS DATA SHEET "STATION DESCRIPTION".

- DESIGNATION = LUCY
- NGS PID - A13578
- NAD 83 (1992) COORDINATES
- LATITUDE = 40°00'00.35831" (N)
- LONGITUDE = 105°00'41.28278" (W)
- ELLP. HEIGHT - 5240.15 SFT
- NAVD 88 ELEVATION - 5297.00 SFT

- STATE PLANE COORDINATES NORTH ZONE (501)
- N=1,243,260.09 SFT
- E=3,136,862.48 SFT

- MODIFIED STATE PLANE COORDINATES (GROUND)
- N=1,243,612.94 SFT
- E=3,137,752.76 SFT

- PROJECT BENCHMARK:
- "LUCY" AS DESCRIBED ABOVE
- NAVD 88 ELEVATION = 5297.00 SFT

BASIS OF BEARING

THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 1 NORTH, RANGE 68 WEST, OF THE 6TH P.M. WHICH BEARS NORTH 00°12'01"

ENGINEER CERTIFICATION

ALL WORK SHALL BE CONSTRUCTED TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. THIS DRAWING HAS BEEN REVIEWED AND FOUND TO BE IN GENERAL COMPLIANCE WITH THESE STANDARDS AND OTHER TOWN REQUIREMENTS. THE ENGINEERING DESIGN AND CONCEPTS REMAINS THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.

ACCEPTED BY: _____ DATE
DIRECTOR OF PUBLIC WORKS

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS FOR MONTEX - NORTH AT VISTA RIDGE WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

ENGINEER: _____ DATE
SHAWN MERZ, P.E. 41241

FOR AND ON BEHALF OF
ENERTIA CONSULTING GROUP, LLC.

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	DSGN	DR	CHK	APVD	REVISION
		SM	BC	BG	SM	

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

COVER SHEET

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	1 CVR-1.0.DWG
DWG	CVR-1.0
SHEET	1 OF 18

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF ENERTIA CONSULTING GROUP AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF ENERTIA CONSULTING GROUP

GENERAL NOTES – CONSTRUCTION

1. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST "STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" BY THE TOWN OF ERIE. COPIES OF THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS MAY BE OBTAINED FROM THE TOWN OF ERIE WEB SITE. CONTRACTOR SHALL HAVE A SET ON SITE AT ALL TIMES.

2. THE OWNER SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE TOWN OF ERIE ENGINEERING STAFF AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THOSE IN ATTENDANCE SHALL INCLUDE THE OWNER, HIS ENGINEER, THE TOWN OF ERIE ENGINEERING STAFF, REPRESENTATIVES OF THE CONTRACTORS AND OTHER AFFECTED AGENCIES. PLANS SIGNED AND ACCEPTED BY THE TOWN OF ERIE WILL BE DISTRIBUTED AT THE PRE-CONSTRUCTION MEETING. CONTRACTOR SHALL HAVE (1) COPY OF THE SIGNED PLANS ON SITE AT ALL TIMES.

3. THE TOWN OF ERIE, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES
NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT. THE OWNER AND DESIGN ENGINEER UNDERSTAND THAT THE RESPONSIBILITY FOR THE ENGINEERING ADEQUACY OF THE FACILITIES DEPICTED IN THIS DOCUMENT LIES SOLELY WITH THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. REPORT ALL DISCREPANCIES TO THE DESIGN ENGINEER IMMEDIATELY.

4. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL OBTAIN ANY/ALL WRITTEN AGREEMENTS FOR INGRESS AND EGRESS TO THE WORK SITE FROM ADJACENT PRIVATE PROPERTY OWNERS. A COPY OF ALL AGREEMENTS SHALL BE PROVIDED TO THE TOWN. ACCESS TO ANY ADJACENT PRIVATE PROPERTY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

5. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF ERIE ENGINEERING STAFF. THE TOWN RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO TOWN STANDARDS AND SPECIFICATIONS. INSPECTIONS AND ONSITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE BY THE TOWN ENGINEERING STAFF OF THE CONTRACTORS" CONTRACTUAL COMMITMENT. REQUESTS FOR INSPECTION BY THE TOWN OF ERIE SHALL BE MADE BY THE CONTRACTOR A MINIMUM OF TWENTYFOUR (24) HOURS IN ADVANCE.

6. CONSTRUCTION WATER IS AVAILABLE TO THE CONTRACTOR AS ESTABLISHED IN THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE TOWN OF ERIE REGARDING CURRENT REGULATIONS, FEES AND REQUIRED AGREEMENTS RELATED TO THE PROVISION OF CONSTRUCTION WATER.

7. THE CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH THE AFFECTED UTILITY COMPANIES AND SHALL NOTIFY THE UTILITY NOTIFICATION CENTER, PHONE NUMBER 811, FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

8. UTILITIES IN THE AREA OF CONSTRUCTION ARE APPROXIMATE ONLY. THEY HAVE BEEN LOCATED FROM FIELD INVESTIGATION AND THE BEST AVAILABLE UTILITY RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL CONTACT ALL RESPECTIVE UTILITIES AND HAVE ALL UTILITIES FIELD-LOCATED PRIOR TO CONSTRUCTION. IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE TOWN OF ERIE ENGINEERING STAFF AND DESIGN ENGINEER PRIOR TO PROCEEDING.

9. THE CONTRACTOR SHALL NOTIFY TOWN OF ERIE ENGINEERING STAFF OF ANY PROBLEM IMPACTING WATER AND WASTE WATER FACILITIES THAT WOULD POTENTIALLY REQUIRE A VARIANCE FROM THE APPROVED PLANS AND SPECIFICATIONS. ANY VARIANCE FROM THE APPROVED DOCUMENTS SHALL BE AT THE SOLE DISCRETION OF THE TOWN OF ERIE ENGINEERING STAFF.

10. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE SPECIFICATIONS AND PERMITS NECESSARY TO PERFORM THE PROPOSED WORK.

11. AS-BUILT DRAWINGS AND A CD INCLUDING AUTOCAD AND PDF FILES, AS REQUIRED IN THE SPECIFICATIONS, ARE TO BE SUBMITTED BY THE OWNER/DEVELOPER PRIOR TO SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE CONSTRUCTION.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY EXISTING SIGNS, STRUCTURES, FENCES, ETC., ENCOUNTERED ON THE JOB AND RESTORING THEM TO THEIR ORIGINAL CONDITION.

13. THE CONTRACTOR IS RESPONSIBLE FOR:
A. NOTIFYING THE TOWN OF ERIE UTILITY CUSTOMERS OF POTENTIAL SERVICE OUTAGES, AND COORDINATE WITH THE TOWN OF ERIE FOR DETERMINATION OF MINIMUM TIME REQUIREMENT.

B. NOTIFYING THE TOWN OF ERIE ENGINEERING STAFF IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START-UP. THE CONTRACTOR SHALL NOTIFY THE TOWN OF ERIE FORTY-EIGHT (48) HOURS PRIOR TO RESTART.

C. IN THE EVENT OF AN AFTER HOURS EMERGENCY, CALL 303-441-4444.

D. NOTIFYING THE MOUNTAIN VIEW FIRE PROTECTION DISTRICT OF ALL STREET CLOSURES AND EXISTING FIRE HYDRANTS TAKEN OUT OF SERVICE A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

14. PRIOR TO INSTALLATION OF UTILITY MAINS, ROAD CONSTRUCTION MUST HAVE PROGRESSED TO AT LEAST THE "SUB-GRADE" STAGE.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. A CONSTRUCTION DEWATERING PERMIT MUST BE OBTAINED FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE). GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS OR EROSION OF ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. THE USE OF ANY SANITARY SEWER TO DISPOSE OF TRENCH WATER WILL NOT BE PERMITTED. NO CONCRETE SHALL BE PLACED WHERE GROUNDWATER IS VISIBLE OR UNTIL THE GROUNDWATER TABLE HAS BEEN LOWERED BELOW THE PROPOSED IMPROVEMENTS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, THE TOWN OF ERIE, AND THE DESIGN ENGINEER AT THE TIME OF THE OCCURRENCE

16. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO RESOLVE CONSTRUCTION PROBLEMS WITH THE TOWN OF ERIE DUE TO CHANGED CONDITIONS ENCOUNTERED BY THE CONTRACTOR DURING THE PROGRESS OF ANY PORTION OF THE PROPOSED WORK. IF, IN THE OPINION OF THE TOWN OF ERIE, PROPOSED ALTERATIONS TO THE SIGNED CONSTRUCTION PLANS INVOLVES SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK, OR TO THE FUTURE CONTIGUOUS PUBLIC OR PRIVATE IMPROVEMENTS, THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING REVISED PLANS TO THE TOWN OF ERIE FOR REVIEW, PRIOR TO ANY FURTHER CONSTRUCTION RELATED TO THAT PORTION OF THE WORK.

17. DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. THE TOWN OF ERIE OR THE DESIGN ENGINEER EXERCISE NO CONTROLS OVER THE SAFETY OR ADEQUACY OF ANY EQUIPMENT, BUILDING COMPONENTS, SCAFFOLDING, FORMS OR OTHER WORK AIDS USED IN OR ABOUT THE PROJECT, OR IN THE SUPERINTENDING OF THE SAME. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE DESIGN ENGINEER OR THE TOWN. THE TOWN OF ERIE ENGINEERING STAFF, OR ANY CONTRACTED ENGINEER, ARE NOT RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE PROJECT SITE, NOR FOR COMPLIANCE BY THE APPROPRIATE PARTY OF ANY REGULATIONS RELATING THERETO.

18. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.

19. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING A STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES FOR ANY PROJECT DISTURBING OVER ONE ACRE FROM BOTH THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND THE TOWN OF ERIE.

20. EACH TYPE OF CONSTRUCTION SHALL BE COMPLETED BY A CONTRACTOR THAT HAS DEMONSTRATED ACCEPTABLE QUALIFICATIONS TO THE TOWN AND IS A LICENSED CONTRACTOR IN THE TOWN OF ERIE.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL DURING CONSTRUCTION. ALL TRAFFIC CONTROLS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION. A PLAN SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING.

22. ALL BACKFILL SHALL CONFORM TO THE TRENCH DETAIL LOCATED IN THE TOWN OF ERIE STANDARDS & SPECIFICATIONS.

23. THE CONTRACTOR SHALL IMMEDIATELY REMOVE ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS.

24. THE CONTRACTOR SHALL REPAIR ANY EXCAVATION OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.

25. THE CONTRACTOR SHALL RENEW OR REPLACE ANY EXISTING TRAFFIC STRIPING AND/OR PAVEMENT MARKINGS, WHICH HAVE BEEN EITHER REMOVED OR THE EFFECTIVENESS OF WHICH HAS BEEN REDUCED DURING HIS OPERATION. RENEWAL OF PAVEMENT STRIPING AND MARKING SHALL BE DONE IN CONFORMANCE WITH THE TOWN OF ERIE STANDARD SPECIFICATIONS.

26. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE EVERY MEASURE NECESSARY TO COMPLY WITH ANY STATE, COUNTY OR TOWN DUST CONTROL ORDINANCE.

27. CONSTRUCTION VEHICLES SHALL USE TRUCK ROUTES DESIGNATED BY THE TOWN.

28. THE OWNER/DEVELOPER WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF THE IMPROVEMENTS FOR A MINIMUM OF TWO (2) YEARS FROM THE DATE OF SUBSTANTIAL COMPLETION/ CONSTRUCTION ACCEPTANCE OF THE IMPROVEMENTS BY THE TOWN OF ERIE. ANY FAILURE DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE OWNER/CONTRACTOR TO THE SATISFACTION OF THE TOWN OF ERIE AT NO EXPENSE TO THE TOWN.

29. THE DESIGN ENGINEER SHALL PERFORM SUFFICIENT INSPECTIONS AND SURVEYS DURING GRADING AND CONSTRUCTION SO THAT AN OPINION CAN BE RENDERED AND VERIFIED IN WRITING AS TO COMPLIANCE WITH THE PLANS AND CODES WITHIN THE DESIGN ENGINEER'S PURVIEW.

30. THE SOILS ENGINEER SHALL PERFORM SUFFICIENT INSPECTIONS DURING GRADING AND CONSTRUCTION SO THAT AN OPINION CAN BE RENDERED AND VERIFIED IN WRITING AS TO COMPLIANCE WITH THE PLANS AND CODES WITHIN THE SOILS ENGINEER'S PURVIEW.

GENERAL NOTES – GRADING

1. ALL CONSTRUCTION ACTIVITIES THAT DISTURBS ONE OR MORE ACRES OF LAND, AS WELL AS ACTIVITIES THAT DISTURB LESS THAN ONE ACRE OF LAND, BUT IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT, MUST COMPLY WITH BOTH LOCAL AND STATE REGULATIONS REGARDING STORMWATER DRAINAGE ON CONSTRUCTION SITES. OWNERS OR CONTRACTORS MUST OBTAIN A COLORADO STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) AND EITHER A PUBLIC IMPROVEMENT PERMIT OR A GRADING AND STORMWATER QUALITY PERMIT FROM THE TOWN OF ERIE. CONTRACTOR SHALL:

A. MAINTAIN A COPY OF THE STORM WATER MANAGEMENT PLAN (SWMP) ONSITE AT ALL TIMES. THE SWMP MUST BE MAINTAINED AND MADE AVAILABLE TO TOWN OF ERIE INSPECTORS UPON REQUEST.

B. INSTALL AND MAINTAIN EROSION, SEDIMENT, AND MATERIALS MANAGEMENT CONTROL BMPS AS SPECIFIED IN THE SWMP.

C. INSPECT ALL BEST MANAGEMENT PRACTICES (BMPS) AT LEAST EVERY FOURTEEN (14) DAYS AND WITHIN TWENTY FOUR (24) HOURS AFTER ANY PRECIPITATION OR SNOWMELT EVENT THAT CAUSES SURFACE RUNOFF.

D. MAINTAIN INSPECTION AND MAINTENANCE RECORDS OF BMPS ONSITE WITH THE SWMP. COPIES OF THESE REPORTS SHALL BE PROVIDED TO THE TOWN OF ERIE ENGINEERING STAFF.

E. BASED ON INSPECTIONS PERFORMED BY THE PERMIT HOLDER OR BY TOWN PERSONNEL, MODIFICATIONS TO THE SWMP WILL BE NECESSARY IF AT ANY TIME THE SPECIFIED BMPS DO NOT MEET THE OBJECTIVES OF THE PERMIT. ALL MODIFICATIONS SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REFERENCED INSPECTION, AND SHALL BE RECORDED ON THE OWNER'S COPY OF THE SWMP.

F. THE OPERATOR SHALL AMEND THE SWMP WHENEVER THERE IS A SIGNIFICANT CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR DISCHARGE OF POLLUTANTS TO THE RECEIVING WATERS, OR IF THE SWMP PROVES TO BE INEFFECTIVE IN ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.

G. INSTALLATION AND MAINTENANCE OF BMPS SHALL BE SUPERVISED BY PERSONNEL CERTIFIED IN EROSION AND SEDIMENT CONTROL.

2. ALL SITE GRADING (EXCAVATION, EMBANKMENT, AND COMPACTION) SHALL CONFORM TO THE RECOMMENDATIONS OF THE LATEST SOILS INVESTIGATION FOR THIS PROPERTY AND SHALL FURTHER BE IN CONFORMANCE WITH THE TOWN OF ERIE "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION.

3. ALL GRADING AND FILLING OPERATIONS SHALL BE OBSERVED, INSPECTED AND TESTED BY A LICENSED SOILS ENGINEER. ALL TEST RESULTS SHALL BE SUBMITTED TO THE TOWN OF ERIE ENGINEERING STAFF.

4. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID ANY DAMAGE TO EXISTING FOLIAGE THAT LIES IN THE PROJECT AREA UNLESS DESIGNATED FOR REMOVAL AND SHALL BE LIABLE FOR SUCH DAMAGE AT HIS/HER EXPENSE.

5. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE RE-VEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS.

6. TEMPORARY VEGETATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR IMMEDIATE INSTALLATION. SEEDING WILL BE DONE ACROSS THE SLOPE FOLLOWING THE CONTOURS. VEGETATION SHALL CONFORM TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION. SEEDED AREAS SHALL BE IRRIGATED IN ACCORDANCE WITH THE TOWN OF ERIE'S STANDARDS AND SPECIFICATIONS.

7. AT ALL TIMES, A WATER TRUCK SHALL BE ON-SITE AND THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND-CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN FUGITIVE DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE OWNER/DEVELOPER SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.

8. FILL SLOPES SHALL BE COMPACTED BY MEANS OF SHEEPSFOOT COMPACTOR OR OTHER SUITABLE EQUIPMENT. COMPACTING SHALL CONTINUE UNTIL SLOPES ARE STABLE AND THERE IS NOT AN APPRECIABLE AMOUNT OF LOOSE SOIL ON THE SLOPES.

9. TEMPORARY CUT/FILL SLOPES SHALL ABIDE BY THE SOILS REPORT. PERMANENT SLOPES SHALL BE AS SHOWN ON PLANS.

10. DEPTH OF MOISTURE-DENSITY CONTROL SHALL BE FULL DEPTH ON ALL EMBANKMENT AND SIX (6) INCHES ON THE BASE OF CUTS AND FILLS.

11. OUTLET SIDES OF ALL STORM PIPES SHALL BE GRADED TO DRAIN AND SHALL HAVE SUFFICIENT EROSION PROTECTION.

12. THE PERMITTEE OR HIS AGENT SHALL NOTIFY THE SITE GEOTECHNICAL ENGINEER WHEN THE GRADING OPERATION IS READY FOR EACH OF THE FOLLOWING INSPECTIONS:

A. INITIAL INSPECTION WHEN THE PERMITTEE IS READY TO BEGIN WORK, BUT NOT LESS THAN TWO (2) DAYS BEFORE ANY GRADING OR GRUBBING IS STARTED.

B. AFTER THE NATURAL GROUND OR BEDROCK IS EXPOSED AND PREPARED TO RECEIVE FILL, BUT BEFORE FILL IS PLACED.

C. EXCAVATION INSPECTION AFTER THE EXCAVATION IS STARTED BUT BEFORE THE VERTICAL DEPTH OF THE EXCAVATION EXCEEDS TEN (10) FEET.

D. FILL INSPECTION AFTER THE FILL PLACEMENT IS STARTED, BUT BEFORE THE FILL EXCEEDS TEN (10) FEET.

GENERAL NOTES – ROADWAY

1. ALL STATIONING IS BASED ON CENTERLINE OF ROADWAYS UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL PREPARE THE SUBGRADE BY SCARIFYING THE UPPER ONE (1) FOOT OF THE SUBGRADE IN CUT AREAS OR AREAS WITH LITTLE OR NO FILL, UNLESS SPECIFIED IN THE SOILS REPORT. THE WORK SHALL CONFORM TO THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
3. PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL ALL UNDERGROUND UTILITIES HAVE BEEN INSTALLED, TESTED AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.
4. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO SUPERVISE AND CERTIFY THAT PROPER COMPACTION HAS BEEN OBTAINED BY SUBCONTRACTORS AND AGENCIES CONCERNING UTILITY LINE BACKFILL INCLUDING, BUT NOT LIMITED TO, SEWER, WATER, ELECTRICAL, GAS AND LANDSCAPE IRRIGATION LINES AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF AND THE SOILS ENGINEER.
5. STREET PAVING SHALL NOT START UNTIL:
   - A. A SOILS REPORT AND PAVEMENT DESIGN IS ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.
   - B. ALL STREETS ARE COMPACTED IN ACCORDANCE WITH THE SOILS REPORT AND THE TOWN OF ERIE SPECIFICATIONS.
   - C. ALL COMPACTION TEST REPORTS HAVE BEEN SUBMITTED TO THE TOWN ENGINEERING STAFF PRIOR TO PROOF ROLLS.
   - D. PROOF ROLLS ARE PERFORMED USING SINGLE AXLE, FIVE (5) TON TRUCK AND MONITORED BY THE TOWN OF ERIE ENGINEERING STAFF.
6. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL UTILITY MANHOLE COVERS AND ACCESS LIDS TO GRADE.
7. ALL CONCRETE SHALL BE A MINIMUM OF CLASS B, IN CONFORMANCE WITH CDOT STANDARDS.
8. ALL CONCRETE EDGES MUST BE ROUNDED TO A FOURTH (1/4) INCH RADIUS, EXCEPT WHERE SHOWN OTHERWISE ON DRAWINGS.
9. ONE HALF (1/2) INCH EXPANSION JOINTS SHALL BE INSTALLED AT ALL CURB RETURNS, CURB CUTS AND EXISTING STRUCTURES. CONTROL JOINTS SHALL BE INSTALLED AT TEN (10) FOOT INTERVALS, HALF STONES ARE NOT ALLOWED.
10. BEFORE PLACING OF ASPHALT THE SUBGRADE SHALL RECEIVE A GROUND STERILANT APPLIED AT A RATE IN ACCORDANCE TO MANUFACTURERS RECOMMENDATIONS.
11. TACK COAT SHALL BE USED PRIOR TO OVERLAY, (CSS-1H), 50:50 DILUTION, 0.10 GAL/SY. ALL EDGES ABUTTING NEW PAVEMENT SHALL BE TACKED.
12. WHEN IT IS REQUIRED TO MATCH EXISTING PAVEMENT, EXISTING PAVEMENT SHALL BE SAW CUT IN A MANNER TO AFFECT A SMOOTH, VERTICAL STRAIGHT CUT EDGE.
13. ALL SAWCUT EDGES OF EXISTING PAVEMENT SHALL BE CLEAN AND COATED WITH TACK COAT PRIOR TO PLACING NEW PAVEMENT ADJACENT TO THE EXISTING PAVEMENT.
14. ALL ASPHALT SHALL BE ONE FOURTH (1/4) INCH ABOVE CONCRETE EDGES, MANHOLE COVERS AND ACCESS LIDS.
15. SIGNAGE AND STRIPING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, THE COLORADO DEPARTMENT OF TRANSPORTATION M&S STANDARDS, AND THE TOWN OF ERIE STANDARD DESIGN CRITERIA AND STANDARD CONSTRUCTION REQUIREMENTS.
16. THE PURCHASE AND INSTALLATION OF STREET NAME SIGNS SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR. THE OWNER/CONTRACTOR SHALL SECURE THE APPROVAL OF THE TOWN OF ERIE ENGINEERING STAFF FOR TYPE AND LOCATION OF THE STREET NAME SIGNS PRIOR TO INSTALLATION.
17. ALL NEW ROADWAY SECTIONS SHALL HAVE SUBGRADE PREPARATION AND INITIAL ASPHALT PAVEMENT PLACED WITH A 1% CROWN. FINAL OVERLAY IS TO BE PLACED WITH A 2% CROWN. SEE DETAIL ST7 IN THE "STANDARD DETAILS-STREET" FOR MORE INFORMATION.
18. DETERMINATION OF CROWN FOR CUL DE SAC PAVING SHALL BE EVALUATED ON A CASE BY CASE BASIS.

GENERAL NOTES – STORM DRAIN

1. EXCEPT WHERE NOTED, ALL STORM SEWER PIPE SHALL BE REINFORCED CONCRETE, CLASS III AND SHALL CONFORM TO REQUIREMENTS OF ASTM C76. ALL RCP SHALL HAVE RUBBER GASKETED JOINTS AND SHALL CONFORM TO REQUIREMENTS OF ASTM C443, AND SHALL PROVIDE WATERTIGHT PERFORMANCE CHARACTERISTICS.
2. TONGUE AND GROOVE JOINTS SHALL NOT BE ALLOWED.
3. THE MINIMUM COVERAGE FOR ALL STORM DRAINAGE PIPES SHALL BE 1.5 FEET FOR CLASS III PIPE AND 1 FOOT FOR CLASS IV PIPE.
4. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. ALL MANHOLES SHALL BE CONCRETE AND CONFORM TO CDOT STANDARD M-604-20.
6. THE MINIMUM MANHOLE DIAMETER SHALL BE AS SPECIFIED BELOW:

PIPE DIAMETER	MANHOLE SIZE
15" TO 18"	4' DIAMETER
21" TO 42"	5' DIAMETER
48" TO 54"	6' DIAMETER
60" AND LARGER	BOX BASE MANHOLE

7. ALL STREET INLETS SHALL BE CURB OPENING TYPE R, CONFORMING TO CDOT STANDARD M-604-12, EXCEPT WHERE OTHERWISE NOTED.
8. ALL INLET ACCESS COVERS SHALL HAVE THE WORDS "NO DUMPING –DRAINS TO RIVERS" AND "STORM SEWER" CAST INTO THE COVER PER TOWN OF ERIE STANDARD DETAIL.
9. ALL END SECTIONS SHALL CONFORM TO CDOT STANDARD M-603-10.
10. WHERE RIPRAP IS CALLED FOR ON THE PLANS FOR EROSION CONTROL, IT SHALL CONFORM TO THE URBAN STORM DRAINAGE CRITERIA MANUAL SPECIFICATIONS (LATEST REVISION).

GENERAL NOTES – SEWER

1. THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING SEWERS TO BE CONNECTED TO PRIOR TO CONSTRUCTION STAKING.
2. CONNECTION TO EXISTING TOWN OF ERIE LINES WILL BE PERMITTED UPON SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE NEW SANITARY SEWER SYSTEM. EXISTING PIPE AT THE POINT OF CONNECTION SHALL NOT BE "BROKEN OUT" UNTIL THE NEW SYSTEM IS ACCEPTED. IF CONNECTING TO AN EXISTING MANHOLE, THE NEW LINE SHALL BE PLUGGED UNTIL THE NEW SYSTEM IS ACCEPTED.
3. MINIMUM VERTICAL SEPARATIONS BETWEEN ALL UTILITY PIPES SHALL BE EIGHTEEN (18) INCHES. IF VERTICAL SEPARATIONS ARE LESS THAN EIGHTEEN (18) INCHES, THE UTILITY PIPES SHALL BE REINFORCED AND PROTECTED AS REQUIRED BY CURRENT TOWN STANDARD SPECIFICATIONS.
4. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE-HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
5. ALL SANITARY SEWER SERVICES AND WATER SERVICES ARE TO BE TEN (10) FEET APART.
6. SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHTS OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A GREEN PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH AN "S" or "X".
7. THE LENGTH OF SANITARY SEWER LINE IS THE HORIZONTAL DISTANCE BETWEEN CENTER OF MANHOLE TO CENTER OF MANHOLE. THEREFORE, THE DISTANCES INDICATED ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND MANHOLE DIMENSIONS.
8. SERVICE LINE CONNECTIONS TO DEAD END MANHOLES THAT HAVE NO FURTHER POSSIBILITY OF EXTENSION SHALL BE ALLOWED AND SHALL HAVE A MINIMUM DROP OF 0.75 X MAIN DIAMETER. SERVICE LINE CONNECTINGS TO IN-LINE MANHOLES ARE NOT PERMITTED. MINIMUM SERVICE LINE SLOPE; 4 INCHES=2%; 6 INCHES= 1%; 8 INCHES=0.4%.
9. ALL FOUR (4) THROUGH FIFTEEN (15) INCH SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) AND SHALL BE IN ACCORDANCE WITH ASTM D-3034-SDR35, "STANDARD SPECIFICATION FOR PVC SEWER PIPE AND FITTINGS". ANY SANITARY SEWER HAVING A DEPTH IN EXCESS OF FIFTEEN (15) FEET SHALL BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
10. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
11. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE SEWER PIPE.
12. PRECAST CONCRETE MANHOLE SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C0478. MANHOLE STEPS SHALL BE POLYPROPYLENE COVERED STEEL CONFORMING TO ASTM. D-4101 AND ASTMA-615. CAST IRON RING AND COVER SHALL CONFORM TO ASTM A-48.
13. MANHOLES SHALL BE A MINIMUM FOUR (4) FOOT DIAMETER AND CONSTRUCTED PER THE STANDARDS AND SPECIFICATIONS.
14. THE CONTRACTOR SHALL TAKE CARE TO PROPERLY SHAPE ALL MANHOLE INVERTS AND BENCHES IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS, TO PROMOTE SMOOTH FLOW THROUGH THE MANHOLE. INVERTS OF LINES INTERSECTING AT 90 DEGREES AND AT HIGHLY DIVERGENT OR FLAT SLOPES ARE ESPECIALLY CRITICAL. MANHOLE INVERTS SHALL BE CONSTRUCTED WITH A SMOOTH TROWEL FINISH, AND BENCH FINISHED WITH A LIGHT BROOMED, NON-SKID, FINISH.
15. SEWER TEES AND/OR WYES SHALL BE STAKED BY A SURVEY CREW. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER "AS-CONSTRUCTED" LOCATION OF TEES AND WYES. ALL SERVICE LINES ARE FOUR (4) INCH UNLESS OTHERWISE NOTED.
16. THE CONTRACTOR, AT THE OWNER'S EXPENSE, WILL MAKE ALL SEWER SERVICE TAPS.
17. PRIOR TO BACKFILL THE TOWN OF ERIE ENGINEERING STAFF SHALL INSPECT ALL SANITARY SEWER MAINS AND SERVICE EXTENSIONS.
18. MANHOLE RIMS SHALL BE SET AT AN ELEVATION RELATIVE TO THE PAVEMENT, IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS. WHETHER THE MANHOLE IS AT PAVED OR UNPAVED GRADE, A MINIMUM OF ONE (1) AND A MAXIMUM OF FOUR (4) CONCRETE RINGS SHALL BE USED TO ADJUST THE RIM ELEVATION TO FINAL GRADE. THE MAXIMUM ACCEPTABLE VERTICAL ADJUSTMENT UTILIZING CONCRETE RINGS IS EIGHTEEN (18) INCHES.
19. A SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE NEW SANITARY SEWER MAINS IS CONTINGENT UPON THE RECEIPT OF COPIES OF:
   - A. SANITARY SEWER TRENCH COMPACTION TEST RESULT.
   - B. RECORD DRAWINGS, BOTH MYLAR AND ELECTRONIC FILES.

   AND THE SANITARY SEWER SYSTEM BEING TESTED IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS WHICH INCLUDES:
   - A. LOW PRESSURE AIR TEST 100% OF THE NEW SYSTEM.
   - B. VACUUM TEST 100% OF THE NEW SYSTEM MANHOLES.
   - C. JET VACUUM 100% OF THE NEW SYSTEM.

GENERAL NOTES – WATER

1. AT ALL POINTS OF CONNECTION OF NEW WATER MAINS TO EXISTING MAINS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING AND VERIFYING LOCATION OF THE EXISTING LINES PRIOR TO ANY CONSTRUCTION.
2. EXCEPT IN CASE OF AN EMERGENCY, VALVES ON THE TOWN OF ERIE WATER SYSTEM SHALL BE OPERATED BY OR UNDER THE DIRECTION OF THE APPROPRIATE TOWN OF ERIE PERSONNEL. THE CONTRACTOR SHALL GIVE THE TOWN OF ERIE ENGINEERING STAFF 48 HOURS NOTICE TO ARRANGE FOR OPERATING VALVES. BOTH THE CONTRACTOR AND THE APPROPRIATE TOWN OF ERIE PERSONNEL SHALL BE PRESENT WHEN THE VALVES ARE OPERATED.
3. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE-HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
4. ALL WATER LINES SHALL HAVE A MINIMUM OF FOUR AND ONE-HALF (4½) FEET OF COVER AND BE LOCATED A MINIMUM OF TEN (10) FEET FROM THE SANITARY SEWER AND THREE (3) FEET FROM THE EDGE OF CONCRETE CURB AND GUTTER PAN.
5. ANY DEFLECTION REQUIRED UNDER (VERTICALLY) OR AROUND (HORIZONTALLY) EXISTING UTILITIES SHALL BE MADE USING BENDS. HORIZONTAL BENDS SHALL REQUIRE THRUST BLOCKS AND VERTICAL BENDS SHALL REQUIRE HARNESS RODS. ANY ABRUPT CHANGE IN LINE OR GRADE SHALL REQUIRE FITTINGS.
6. WHEN IT IS NECESSARY TO DEPRESS WATER LINES AT UTILITY CROSSINGS, A MINIMUM CLEARANCE OF ONE AND ONE-HALF (1-1/2) FEET SHALL BE MAINTAINED BETWEEN OUTSIDES OF PIPE.
7. DEFLECTION OF PIPE SHALL CONFORM TO AMERICAN WATER WORKS ASSOCIATION (AWWA) AND/OR EIGHTY (80%) PERCENT OF MANUFACTURERS RECOMMENDED MAXIMUM DEFLECTION, WHICH EVER IS MORE STRINGENT. A COPY OF THE MANUFACTURES RECOMMENDATIONS SHALL BE SUBMITTED TO THE TOWN.
8. DISTANCES FOR WATER LINES ARE THE HORIZONTAL DISTANCE BETWEEN THE CENTERS OF THE FITTINGS. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.
9. ALL WATER LINE VALVES SHALL BE SET ADJACENT TO THE TEE, EXCEPT FOR POINTS THAT FALL IN THE FLOW LINE OF A CONCRETE CROSS PAN. IN WHICH CASE, THE VALVE SHALL BE LOCATED SO THAT SURFACE DRAINAGE DOES NOT INFILTRATE THE VALVE BOX. VALVE BOXES SHALL BE SET AT AN ELEVATION IN ACCORDANCE WITH TOWN PAVING REQUIREMENTS.
10. ALL WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE PIPE UNLESS SPECIFIED OTHERWISE. NOMINAL PVC PIPE SIZES 6-INCH THROUGH 12-INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C-900, PRESSURE CLASS 150 (DR18). NOMINAL PVC PIPE SIZES 16-INCH THROUGH 24-INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C-905, PRESSURE CLASS 165 (DR25). ALL PVC PIPES SHALL HAVE OUTSIDE DIAMETERS EQUIVALENT TO CAST IRON PIPE.
11. FIRE HYDRANT ASSEMBLY INCLUDES THE FIRE HYDRANT, SIX (6) INCH VALVE, AND SIX (6) INCH PIPE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
12. ALL FITTINGS SHALL BE MADE FROM DUCTILE IRON, FURNISHED WITH MECHANICAL JOINT ENDS OR INTEGRAL RESTRAINED JOINTS, AND SHALL HAVE A PRESSURE RATING OF 350 PSI.
13. POLYETHYLENE WRAPPING SHALL BE INSTALLED AROUND ALL DUCTILE IRON PIPES, FITTINGS, VALVES, FIRE HYDRANT BARRELS AND ROD AND CLAMPS. THE POLYETHYLENE SHALL HAVE A MINIMUM THICKNESS OF EIGHT (8) MILS, IN ACCORDANCE WITH AWWA STANDARD C-105.
14. ALL WATER LINE PIPE SHALL BE PROVIDED WITH A MINIMUM GAGE SIZE OF #14 AWG INSULATED; MULTI-STRAND COPPER WIRE. SPLICES IN TRACER WIRE SHALL BE CAPPED IN WATER PROOF GEL CAP TYPE CONNECTORS SUITED FOR DIRECT BURY APPLICATION (3M TYPE DBY-6 LOW VOLTAGE OR EQUAL). WIRE SHALL BE ATTACHED TO TOP OF WATER LINE WITH 2-INCH WIDE PVC TAPE @ 5-FT INTERVALS ALONG PIPE. TRACER WIRE SHALL EXTEND TO THE SURFACE AND BE COILED IN A LOCATE BOX AT THE BACKSIDE OF EITHER EACH FIRE HYDRANT OR VALVE. UNDER THE SUPERVISION OF TOWN OF ERIE ENGINEERING STAFF, TEST SHALL BE MADE BY THE CONTRACTOR @ THE COMPLETION OF CONSTRUCTION TO INSURE THAT THE TRACER WIRES CARRY A CONTINUOUS CURRENT BETWEEN ALL ACCESS POINTS.
15. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE WATER PIPE.
16. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
17. VALVES SHALL OPEN COUNTER CLOCKWISE. VALVES 12-INCH AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. LARGER VALVES SHALL BE BUTTERFLY VALVES.
18. VALVE BOXES SHALL BE RAISED TO ONE-FOURTH (1/4) INCH BELOW GRADE AFTER COMPLETION OF SURFACE PAVING OR FINAL GRADING. VALVE BOXES IN NON-PAVED AREAS SHALL HAVE A CONCRETE COLLAR AROUND THE VALVE LID IN ACCORDANCE WITH THE DETAIL.
19. ALL SERVICE LINE TAPS SHALL HAVE DOUBLE STRAP BRASS TAPPING SADDLES. (ROMAC 202B OR APPROVED EQUAL).
20. ALL RESIDENTIAL WATER TAPS SHALL BE THREE-QUARTER (3/4) INCH OR AS REQUIRED BY THE CURRENT BUILDING CODE.
21. ALL WATER SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHT OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A BLUE PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH A "V" or "W".
22. CONCRETE THRUST BLOCKS AND/OR "MEGA-LUG" MECHANICAL RESTRAINTS ARE REQUIRED AT ALL MECHANICAL FITTINGS. THRUST BLOCKS MAY NOT BE REQUIRED IF PIPE RESTRAINT IS PROVIDED IN ACCORDANCE WITH RESTRAINED PIPE DETAIL.
23. NO WORK SHALL BE BACKFILLED (INCLUDING BEDDING MATERIAL ABOVE THE SPRING LINE OF THE PIPE) UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE TOWN OF ERIE ENGINEERING STAFF.
24. ONLY ONE CONNECTION TO THE EXISTING WATER DISTRIBUTION SYSTEM SHALL BE MADE UNTIL ALL HYDROSTATIC TESTING, CHLORINATION AND FLUSHING HAS BEEN COMPLETED.
25. DISINFECTION AND HYDROSTATIC TESTING SHALL BE DONE IN THE PRESENCE OF A TOWN OF ERIE ENGINEERING STAFF. CONTACT THE TOWN OF ERIE DEPARTMENT OF PUBLIC WORKS, FORTY-EIGHT (48) HOURS PRIOR TO DISINFECTING AND/OR TESTING.
26. DISINFECTION AND FLUSHING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO DEPARTMENT OF HEALTH AND THE PROCEDURE SET FORTH IN AWWA C651, "STANDARD FOR DISINFECTING WATER MAINS". THE CHLORINATION OF THE WATER LINE SHALL BE PERFORMED PRIOR TO THE HYDROSTATIC TESTING. ALL VALVES, FIRE HYDRANTS AND OTHER APPURTENANCES SHALL BE OPERATED WHILE PIPELINE IS FILLED WITH THE CHLORINATING AGENT TO INSURE THAT HIGH CHLORINE CONTACT IS MADE WITH ALL INTERNAL SURFACES.
27. ALL WATER LINES SHALL BE HYDROSTATIC TESTED. PRESSURE AND LEAKAGE TESTS SHALL BE CONDUCTED ACCORDING TO THE APPLICABLE SECTIONS OF AWWA C600/605 TO A MINIMUM PRESSURE OF ONE HUNDRED AND FIFTY (150) POUNDS PER SQUARE (PSI) INCH AT THE LOW POINT OF THE SECTION BEING TESTED FOR THE DURATION OF TWO (2) HOURS. THE MAXIMUM LENGTH OF LINE TO BE TESTED SHALL BE ONE THOUSAND (1,000) FEET. ALL JOINTS IN CONNECTIONS ARE TO BE WATERTIGHT WITHIN TOLERANCES ALLOWED BY THE SPECIFICATIONS IN AWWA C600/605. ANY LEAKAGE THAT IS DISCOVERED BY OBSERVATION OR TESTS SHALL BE LOCATED AND MADE WATERTIGHT BY THE CONTRACTOR. PRESSURE AND LEAKAGE TESTS SHALL NOT BE CONDUCTED UNTIL THE LINE HAS PASSED ALL REQUIRED DISINFECTION TESTS.
28. SUBSTANTIAL COMPLETION/CONSTRUCTION ACCEPTANCE OF THE NEW WATER LINES ARE CONTINGENT UPON RECEIVING COPIES OF:
   - A. WATER TRENCH COMPACTION TEST RESULTS
   - B. HYDRO STATIC TESTING OF 100% OF THE SYSTEM
   - C. HEALTH DEPARTMENT TESTS. (CHLORINE AND/OR CLEAR WATER AS REQUIRED)
29. ALL METER PITS AND CURB STOPS SHALL BE PROTECTED AT THE TIME OF INSTALLATION WITH A MINIMUM OF THREE (3) T-POSTS AND ORANGE SAFETY FENCE. THE T-POST AND SAFETY FENCE SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL THE LANDSCAPING IS INSTALLED.

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NO.	DATE	REVISION

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ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

GENERAL NOTES

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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"

DATE	APRIL 17, 2014
FILE	2 GEN-2.0.DWG
DWG	GEN-2.0
SHEET	2 OF 18

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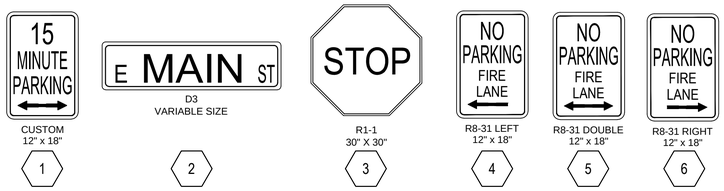
LEGEND

PROPERTY LINE		FIRE HYDRANT
CURB & GUTTER		MANHOLE
ROW		SIGN
CENTERLINE		CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UG	UNDERDRAIN
PROPOSED 1' CONTOUR		EASEMENT
EXISTING 5' CONTOUR		WALL
EXISTING 1' CONTOUR		RIP RAP
STORM INLET	5500.00	PROPOSED ELEVATION
STORM DRAIN	5500.00	EXISTING ELEVATION
LIGHT		CONCRETE PAVING

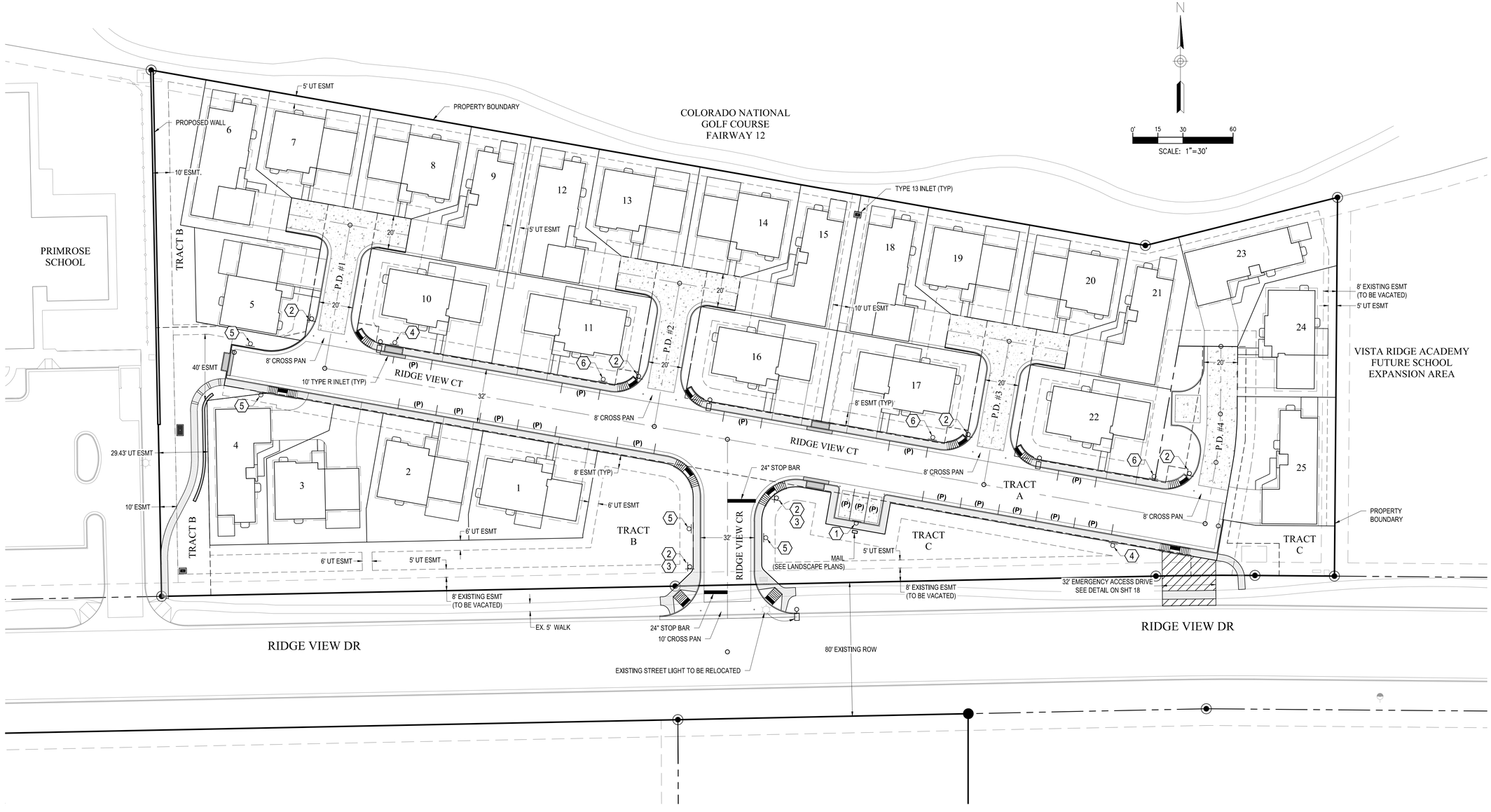
SIGNAGE LEGEND



SIGNAGE NOTES:
1. ALL SIGNS AND POSTS AND BASES SHALL BE PER TOWN OF ERIE STANDARDS.
2. STOP SIGNS SHOULD BE PLACED BETWEEN PC AND 6' FROM PC FOLLOWING M.U.T.C.D. STANDARDS.

GENERAL NOTES

1. SEE PHOTOMETRIC PLAN FOR LOCATION, SIZE AND HEIGHT OF PROPOSED LIGHT FIXTURES.
2. ALL SIDEWALKS ARE 4' UNLESS OTHERWISE NOTED.
3. INTERIOR ROADWAYS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER.
4. RAILING AND FENCE LOCATIONS ARE SHOWN ON THE LANDSCAPE PLAN.
5. ALL STORM DRAINS ARE PRIVATE AND SHALL BE MAINTAINED BY THE OWNER.
6. (P) DESIGNATES PARKING SPACES. ON STREET PARKING IS NOT STRIPED.



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REVISION		SM	BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

SITE PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	3 SIT-3.0.DWG
DWG	SIT-3.0
SHEET	3 OF18

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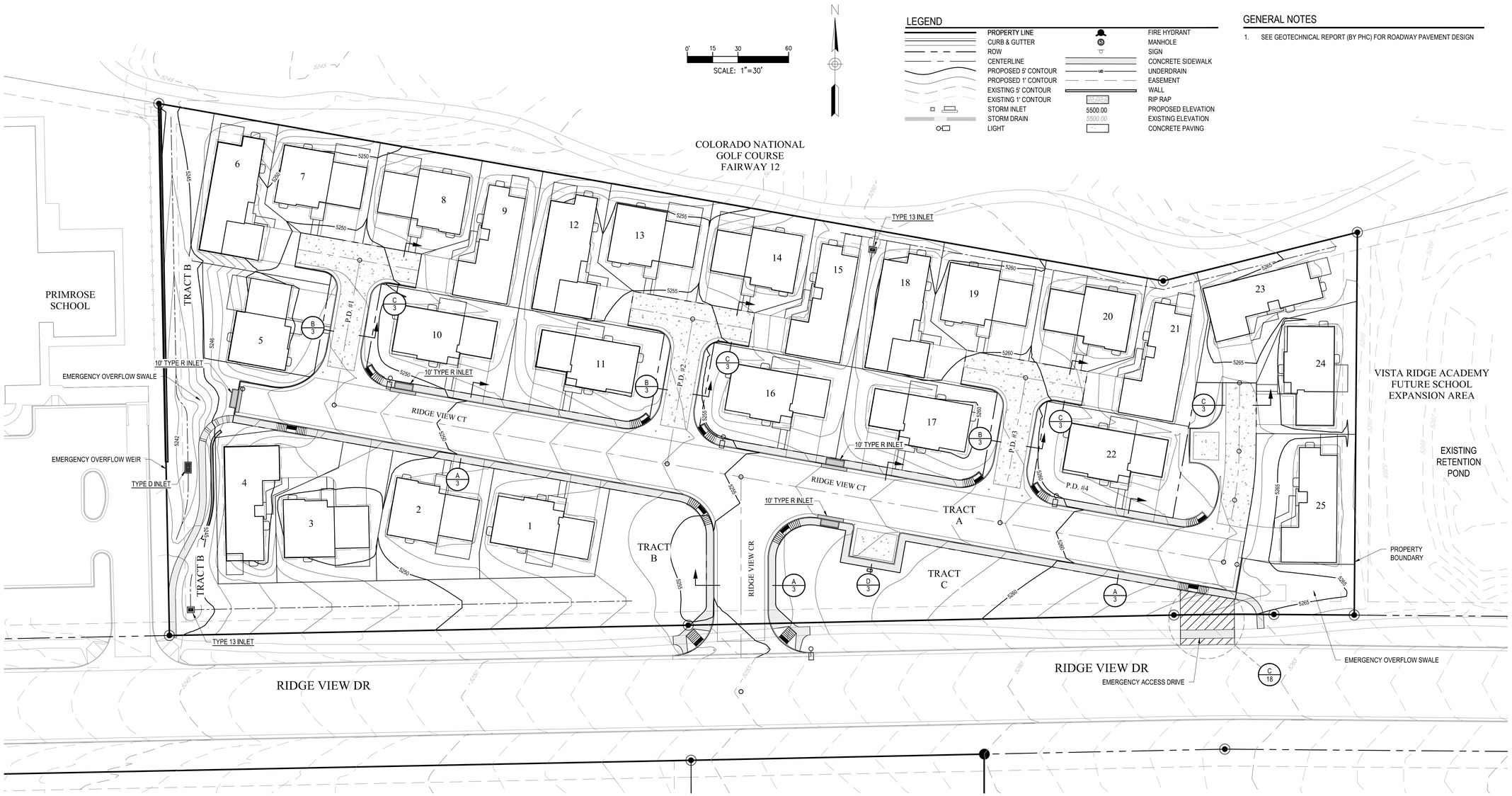
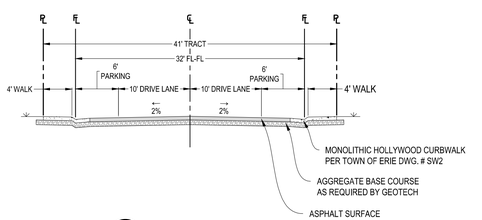
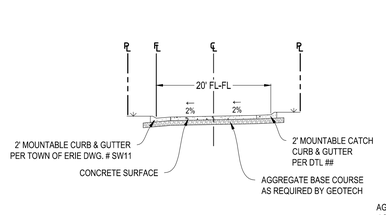


GENERAL NOTES

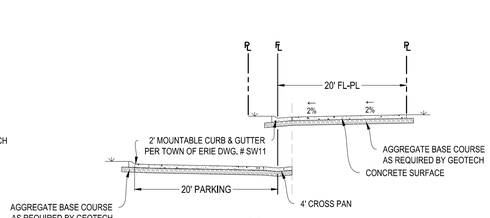
1. SEE GEOTECHNICAL REPORT (BY PHC) FOR ROADWAY PAVEMENT DESIGN



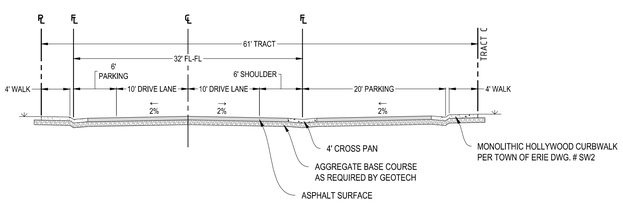
A/3 LOCAL ROADWAY SECTION
N.T.S.



B/3 PRIVATE DRIVE 1, 2 & 3 SECTION
N.T.S.



C/3 P.D. 4 & TYP. HAMMERHEAD SECTION
N.T.S.



D/3 LOCAL ROADWAY W/PARKING SECTION
N.T.S.

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OVERALL GRADING PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	4 OGP-4.0.DWG
DWG	OGP-4.0
SHEET	4 OF18

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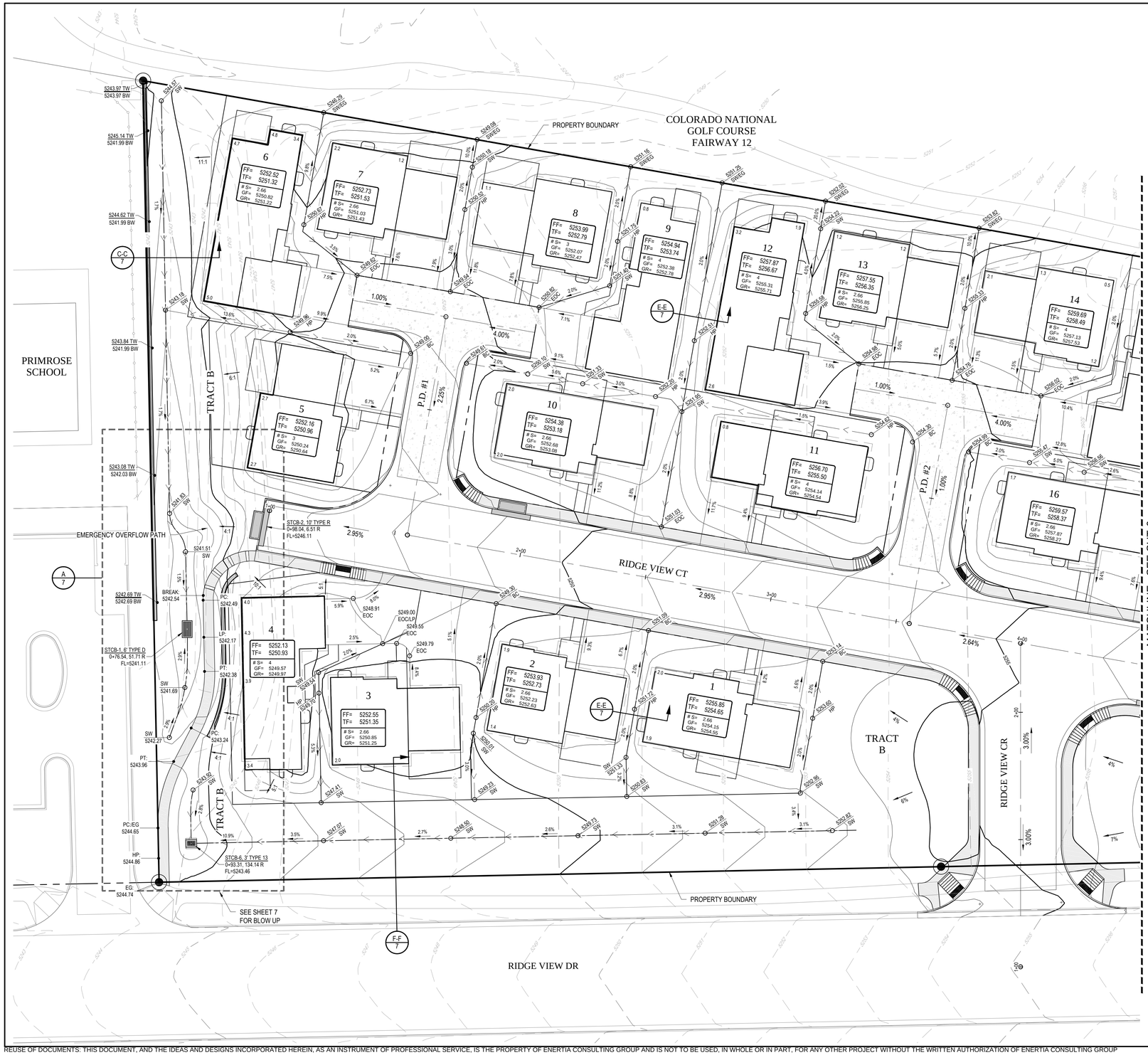
PROPERTY BOUNDARY
COLORADO NATIONAL GOLF COURSE FAIRWAY 12
PRIMROSE SCHOOL
TRACT B
P.D. #1
P.D. #2
RIDGE VIEW CT
RIDGE VIEW DR
RIDGE VIEW CR
TRACT B
TRACT B
EMERGENCY OVERFLOW PATH
PROPERTY BOUNDARY
SEE SHEET 7 FOR BLOW UP
MATCHLINE - SEE SHT 6
6
FF= 5252.52
TF= 5251.32
# S= 2.66
GF= 5250.82
GR= 5251.22
7
FF= 5252.73
TF= 5251.53
# S= 2.66
GF= 5251.03
GR= 5251.43
8
FF= 5253.99
TF= 5252.79
# S= 3
GF= 5252.07
GR= 5252.47
9
FF= 5254.94
TF= 5253.74
# S= 4
GF= 5252.38
GR= 5252.78
12
FF= 5257.87
TF= 5256.67
# S= 4
GF= 5255.31
GR= 5255.71
13
FF= 5257.55
TF= 5256.35
# S= 2.66
GF= 5255.85
GR= 5256.25
14
FF= 5259.69
TF= 5258.49
# S= 4
GF= 5257.13
GR= 5257.53
5
FF= 5252.16
TF= 5250.96
# S= 3
GF= 5250.24
GR= 5250.64
10
FF= 5254.38
TF= 5253.18
# S= 2.66
GF= 5252.68
GR= 5253.08
11
FF= 5256.70
TF= 5255.50
# S= 4
GF= 5254.14
GR= 5254.54
16
FF= 5259.57
TF= 5258.37
# S= 2.66
GF= 5257.87
GR= 5258.27
4
FF= 5252.13
TF= 5250.93
# S= 4
GF= 5249.57
GR= 5249.97
3
FF= 5252.55
TF= 5251.35
# S= 2.66
GF= 5250.85
GR= 5251.25
2
FF= 5253.93
TF= 5252.73
# S= 2.66
GF= 5252.23
GR= 5252.63
1
FF= 5255.85
TF= 5254.65
# S= 2.66
GF= 5254.15
GR= 5254.55
STCB-2, 10' TYPE R
0+98.04, 6.51 R
FL=5246.11
STCB-1, 6' TYPE D
0+76.54, 51.71 R
FL=5241.11
STCB-6, 3' TYPE 13
0+93.31, 134.14 R
FL=5243.46
5243.97 TW
5243.97 BW
5245.14 TW
5241.99 BW
5244.62 TW
5241.99 BW
5243.84 TW
5241.99 BW
5243.08 TW
5242.03 BW
5242.69 TW
5242.69 BW
BREAK: 5242.54
PC: 5242.49
LP: 5242.17
PT: 5242.38
PC: 5243.24
PT: 5243.96
PC/EG 5244.65
HP: 5244.86
EG: 5244.74
SW 5241.69
SW 5242.27
5241.51 SW
5243.18 SW
5241.65 SW
5247.92 SW
5247.41 SW
5247.37 SW
5248.50 SW
5248.73 SW
5251.78 SW
5252.82 SW
5248.91 EOC
5249.00 EOC/LP
5249.55 EOC
5249.79 EOC
5250.01 SW
5250.33 SW
5250.83 SW
5249.23 SW
5250.10 SW
5250.66 HP
5255.59 HP
5256.13 HP
5256.98 EOC
5254.68 EOC
5254.79 EOC
5256.02 EOC
5256.98 HP
5256.98 SW
5254.98 BC
5254.89 BC
5254.39 BC
5249.61 BC
5249.45 EOC
5249.94 EOC
5249.98 HP
5250.70 HP
5251.17 HP
5251.33 SW
5251.66 SW
5252.70 HP
5253.15 HP
5253.18 SW
5253.42 HP
5254.25 SW
5253.82 SWEG
5253.00 SWEG
5251.29 SWEG
5251.15 SWEG
5249.68 SWEG
5249.32 SWEG
5246.29 SWEG
5244.42 SW
5243.18 SW
5240.85 HP
5240.85 EOC
5240.85 SW
5241.33 SW
5241.86 SW
5242.33 SW
5242.70 SW
5243.41 SW
5244.47 SW
5244.98 SW
5245.47 SW
5246.98 SW
5247.98 SW
5248.98 SW
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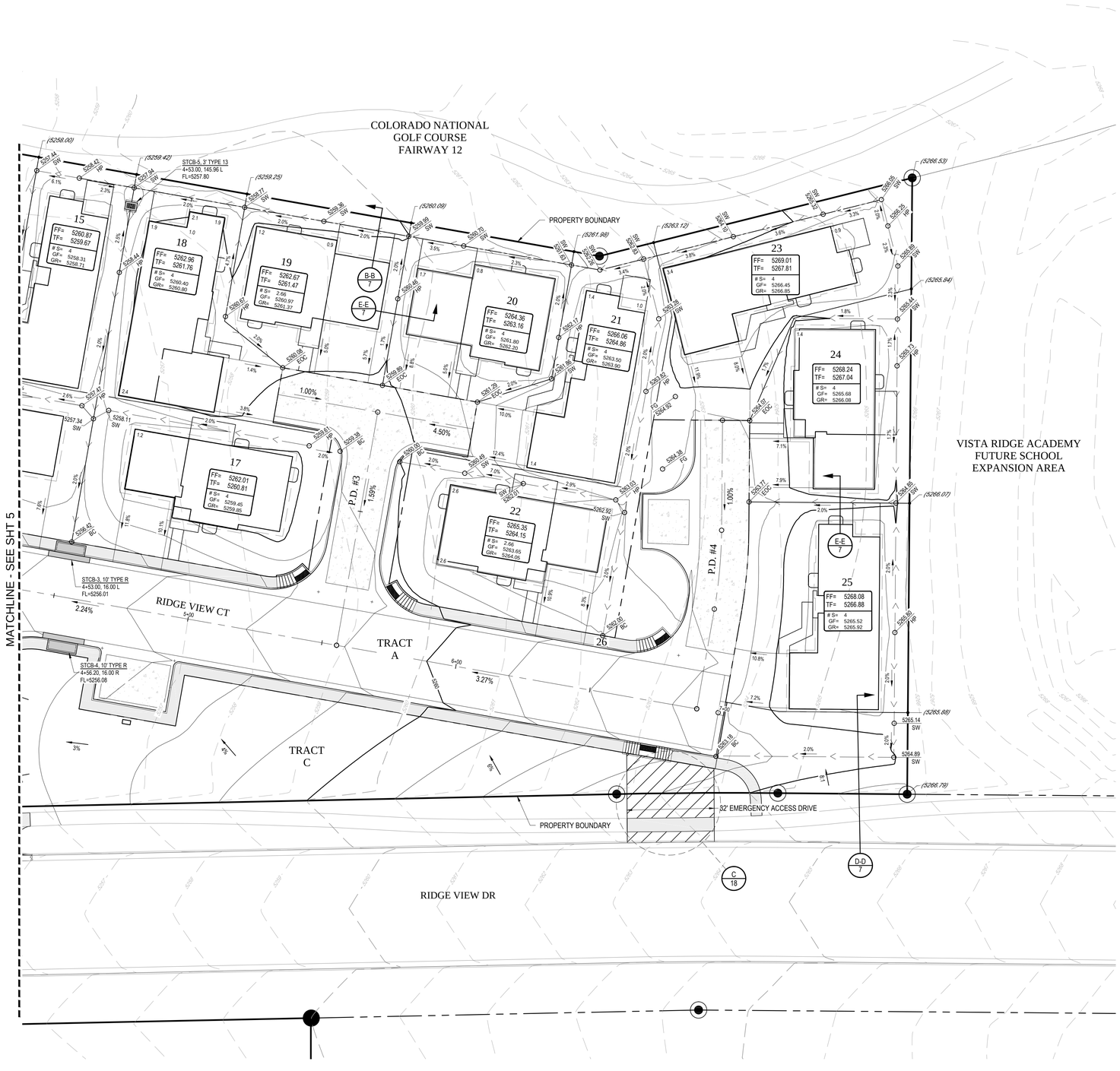
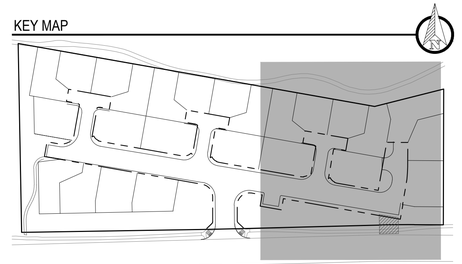
5250.98 SW
5251.98 SW
5252.98 SW
5253.98 SW
5254.98 SW
5255.98 SW
5256.98 SW
5257.98 SW
5258.98 SW
5259.98 SW
5260.98 SW
5261.98 SW
5262.98 SW
5263.98 SW
5264.98 EOC
5256.13 HP
5255.59 HP
5254.98 EOC
5254.98 BC



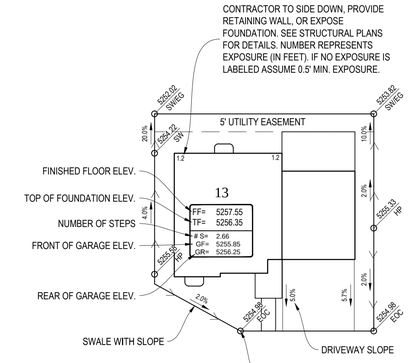
KEY MAP



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

TYPICAL LOT LEGEND



N

0' 10 20 40

SCALE: 1"=20'

PRELIMINARY
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NO.	DATE	REVISION	DR	CHK	BG	APVD	SM
DSGN	SM		BC				

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

DETAIL GRADING PLAN 2

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	6 DGP-4.2.DWG
DWG	DGP-4.2
SHEET	6 OF18

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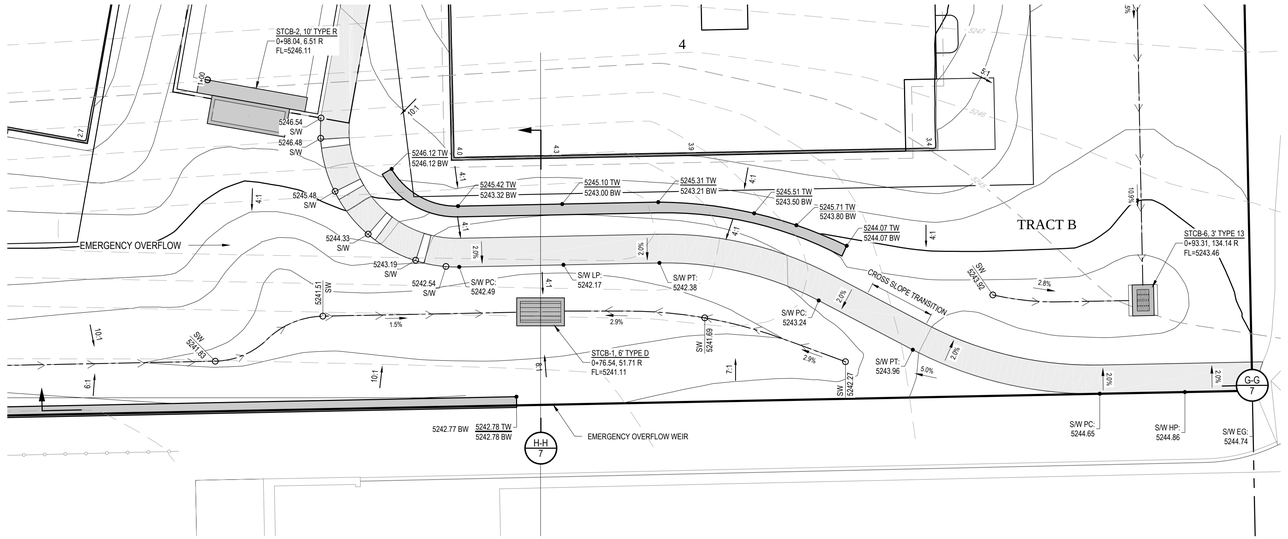
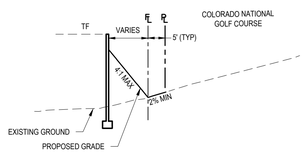
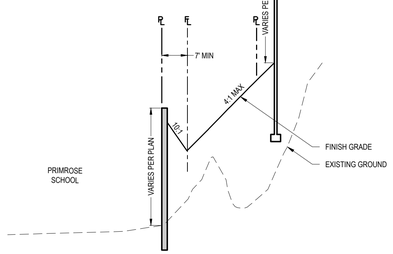


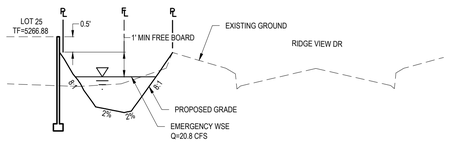
A 7 TRACT B BLOW-UP
H:1"=20'
V: 1"=2"



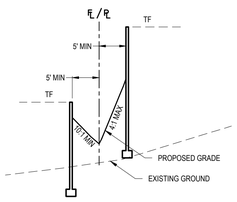
B-B 7 NORTH SWALE SECTION
H:1"=20'
V: 1"=2"



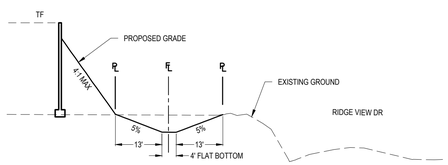
C-C 7 WEST SWALE/WALL SECTION
H:1"=20'
V: 1"=2"



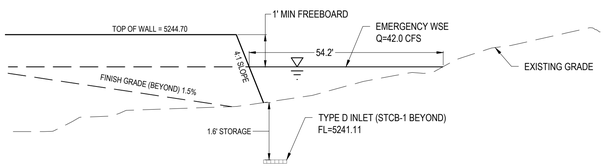
D-D 7 EMERGENCY OVERFLOW SWALE SECTION
H:1"=20'
V: 1"=2"



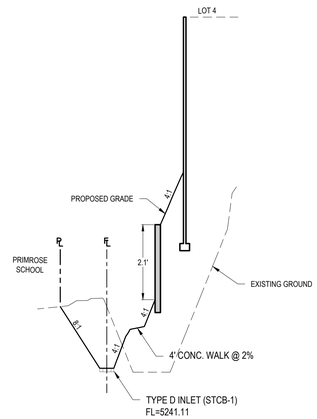
E-E 7 TYPICAL SIDE LOT SWALE SECTION
H:1"=20'
V: 1"=2"



F-F 7 SOUTH SWALE SECTION
H:1"=20'
V: 1"=2"



G-G 7 EMERGENCY OVERFLOW WIER SECTION
H:1"=20'
V: 1"=2"



H-H 7 STCB-1 SUMP SECTION
H:1"=20'

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DSGN	SM		BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

GRADING DETAILS

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	7 GDT-4.3.DWG
DWG	GDT-4.3
SHEET	7 OF18

NOTES

1. ALL UNDERDRAIN TO BE 4" PVC WITH A MINIMUM DEPTH OF 2.5' AND A MINIMUM SLOPE OF 2%.

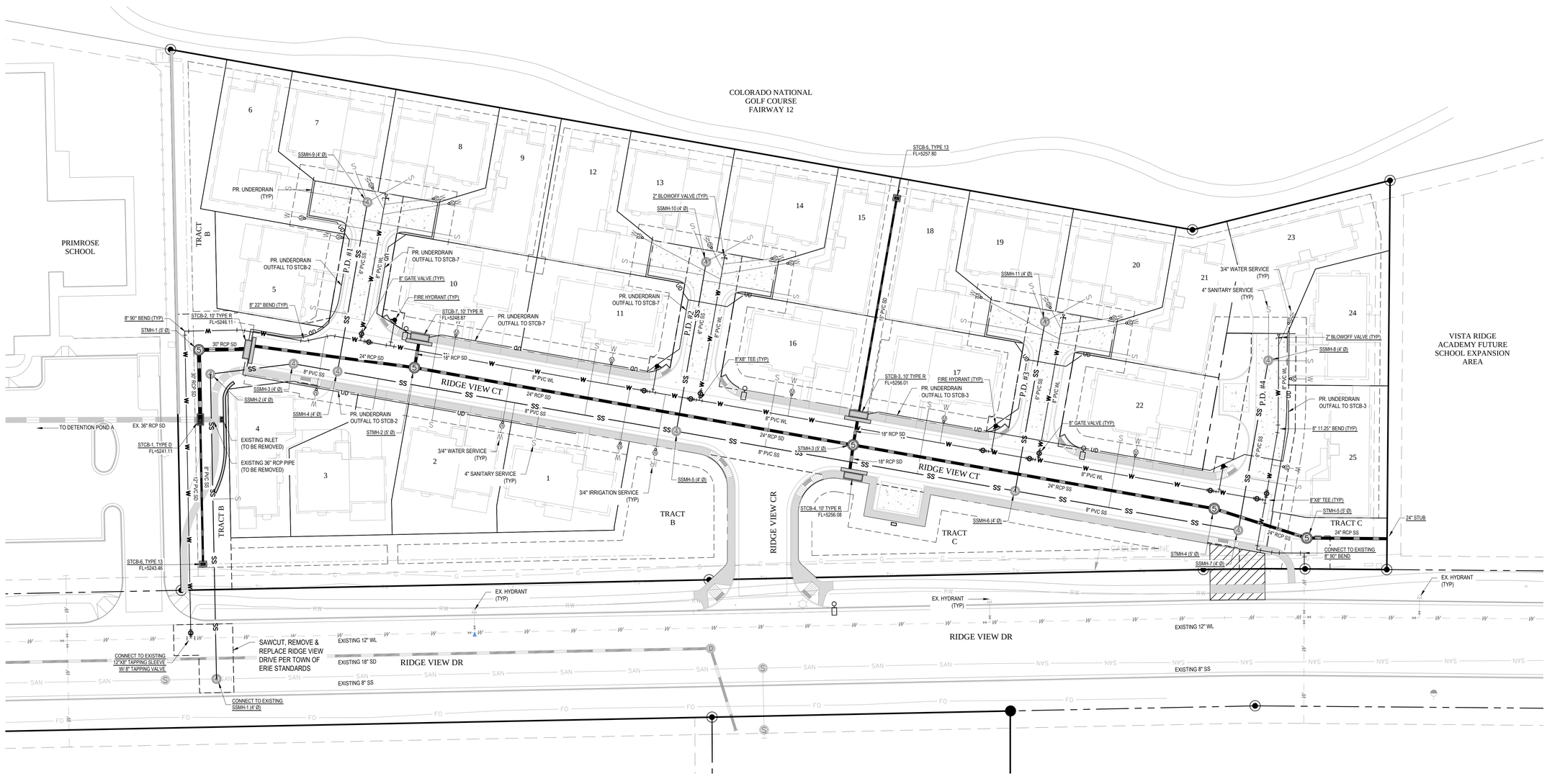
LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR	5520.00	RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

N

0' 15 30 60

SCALE: 1"=30'



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		SM	BC	BG		SM

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1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

OVERALL UTILITY PLAN

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	8 OUP-5.0.DWG
DWG	OUP-5.0
SHEET	8 OF18

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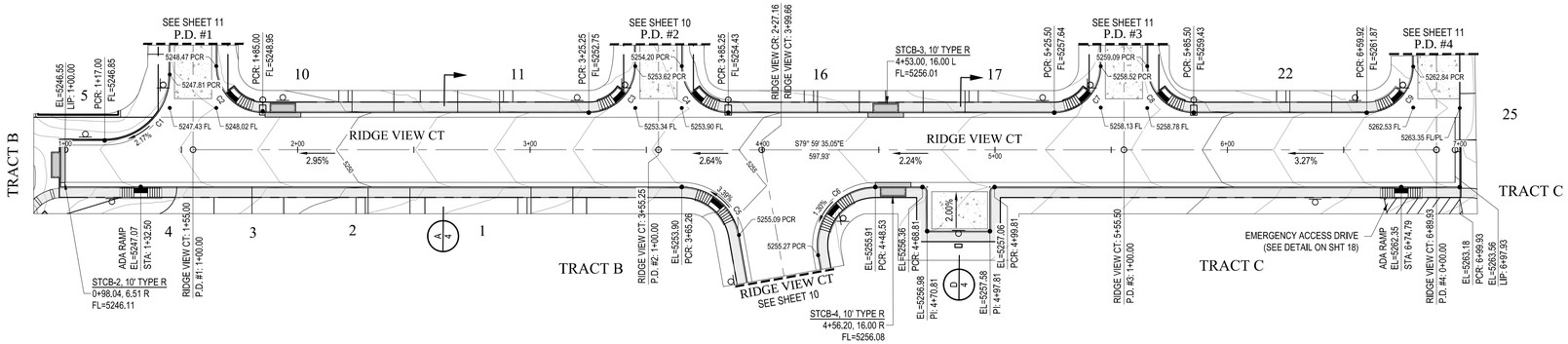
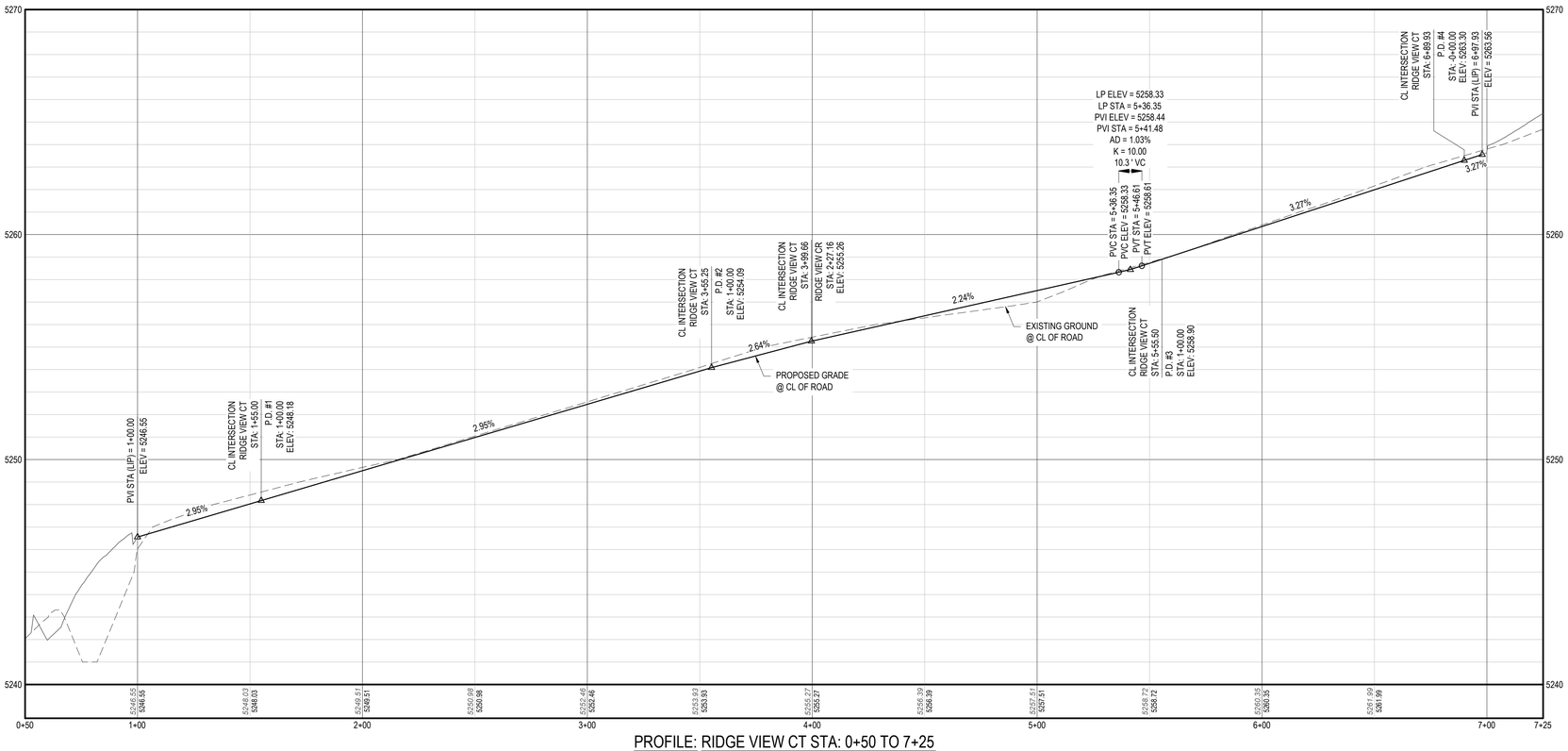


PLAN: RIDGE VIEW CT STA: 0+50 TO 7+25

HORIZONTAL SCALE: 1" = 30'

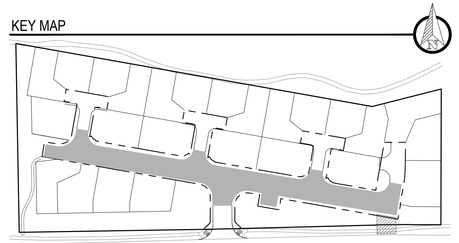


PROFILE: RIDGE VIEW CT STA: 0+50 TO 7+25

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3

KEY MAP

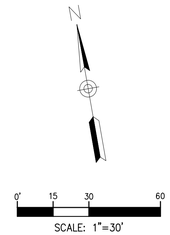


LEGEND

PROPERTY LINE	FIRE HYDRANT
CURB & GUTTER	MANHOLE
ROW	SIGN
CENTERLINE	CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UNDERDRAIN
PROPOSED 1' CONTOUR	EASEMENT
EXISTING 5' CONTOUR	WALL
EXISTING 1' CONTOUR	RIP RAP
STORM INLET	PROPOSED ELEVATION
STORM DRAIN	EXISTING ELEVATION
LIGHT	CONCRETE PAVING

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	44.35'	28.00'	90°44'08"	N54°38'17"E	39.86'
C2	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C3	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C4	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C5	34.90'	25.00'	79°59'33"	N39°59'46"W	32.14'
C6	43.64'	25.00'	100°00'27"	S50°00'14"W	38.31'
C7	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C8	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C9	31.24'	20.00'	89°30'36"	N55°15'10"E	28.16'



PRELIMINARY
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NO.	DATE	DR	CHK	APVD
DSGN	SM	BC	BG	SM

REVISION

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR. STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
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TOWN OF ERIE, COLORADO

RIDGE VIEW CT STA: 0+50 TO 7+25
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	9 RDW-6.1.DWG
DWG	RDW-6.1
SHEET	9 OF18

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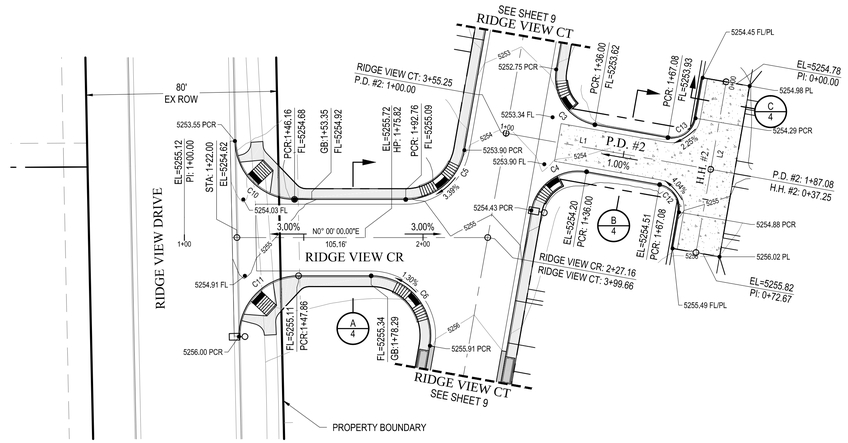
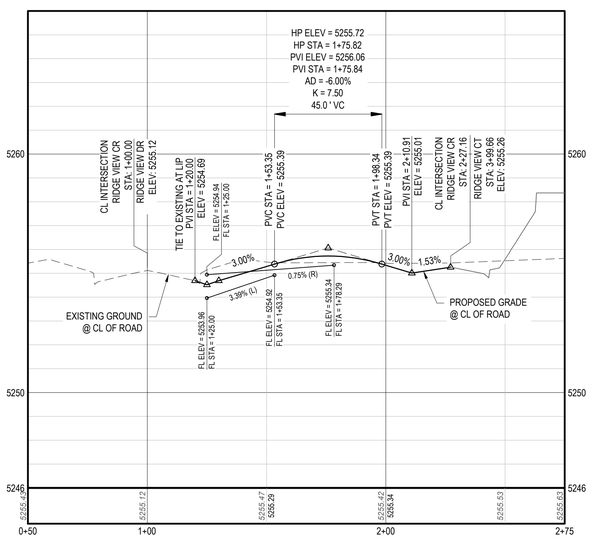


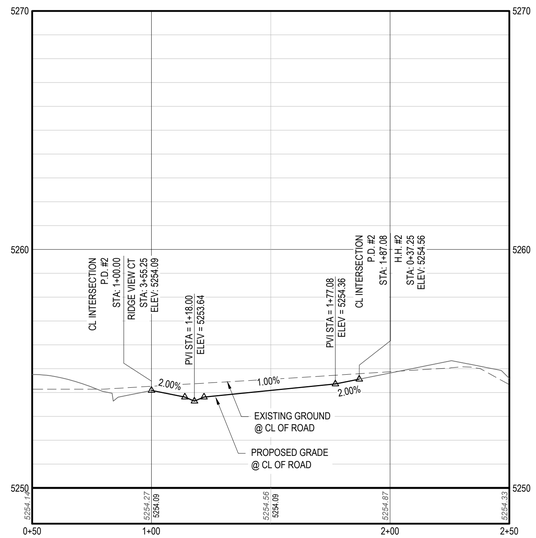
PLAN: RIDGE VIEW CR & P.D. #2

HORIZONTAL SCALE: 1" = 30'



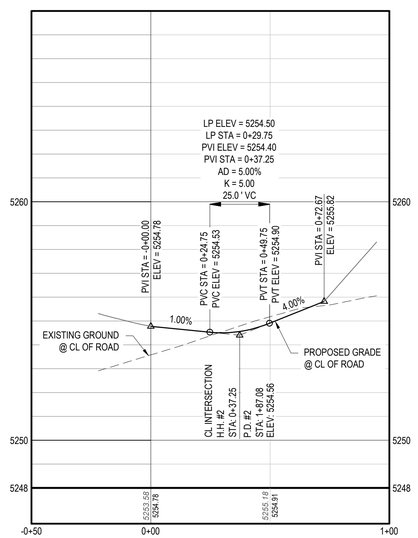
PROFILE: RIDGE VIEW CR STA: 0+50 TO 2+75

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: P.D. #2 STA: 0+50 TO 2+50

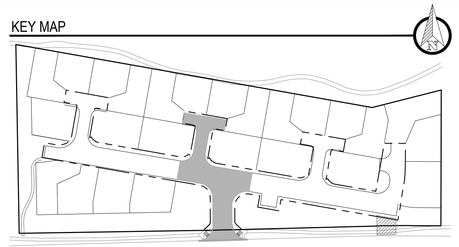
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: H.H. #2 STA: -0+50 TO 1+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

KEY MAP



LEGEND

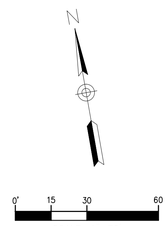
PROPERTY LINE	FIRE HYDRANT
CURB & GUTTER	MANHOLE
ROW	SIGN
CENTERLINE	CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UNDERDRAIN
PROPOSED 1' CONTOUR	EASEMENT
EXISTING 5' CONTOUR	WALL
EXISTING 1' CONTOUR	RIP RAP
STORM INLET	5500.00 PROPOSED ELEVATION
STORM DRAIN	5500.00 EXISTING ELEVATION
LIGHT	CONCRETE PAVING

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C3	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C4	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C5	34.90'	25.00'	79°59'33"	N39°59'46"W	32.14'
C6	43.64'	25.00'	100°00'27"	S50°00'14"W	38.30'
C10	38.77'	25.00'	88°51'39"	N44°25'49"E	35.00'
C11	39.79'	25.00'	91°11'38"	S45°35'49"E	35.72'
C12	15.71'	10.00'	90°00'00"	S55°00'27"W	14.14'
C13	15.71'	10.00'	90°00'00"	N34°59'33"W	14.14'

LINE TABLE

LINE NO.	LENGTH	DIRECTION
L1	87.08'	N10°00'27"E
L2	72.67'	N79°59'33"W



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NOT FOR CONSTRUCTION

NO.	DATE	DR	CHK	REVISION	APVD
DSGN	SM	BC	BG		SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

RIDGE VIEW CR & P.D. #2
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	10 RDW-6.2.DWG
DWG	RDW-6.2
SHEET	10 OF18

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LEGEND

PROPERTY LINE		FIRE HYDRANT
CURB & GUTTER	M	MANHOLE
ROW		SIGN
CENTERLINE		CONCRETE SIDEWALK
PROPOSED 5' CONTOUR	UD	UNDERDRAIN
PROPOSED 1' CONTOUR		EASEMENT
EXISTING 5' CONTOUR		WALL
EXISTING 1' CONTOUR	RIP RAP	RIP RAP
STORM INLET	5500.00	PROPOSED ELEVATION
STORM DRAIN	5500.00	EXISTING ELEVATION
LIGHT		CONCRETE PAVING

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	44.35'	28.00'	90°44'08"	N54°38'17"E	39.86'
C2	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C7	31.42'	20.00'	90°00'00"	N55°00'27"E	28.28'
C8	31.42'	20.00'	90°00'00"	S34°59'33"E	28.28'
C9	31.24'	20.00'	89°30'36"	N55°15'10"E	28.16'
C14	25.06'	15.00'	95°44'21"	N38°58'46"W	22.25'
C15	23.56'	15.00'	90°00'00"	N45°28'11"E	21.21'

LINE TABLE

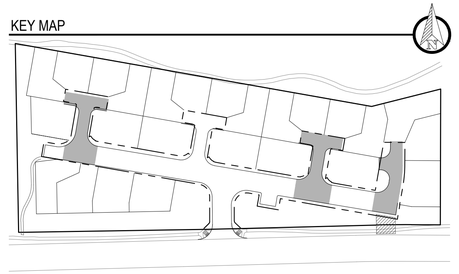
LINE NO.	LENGTH	DIRECTION
L3	87.08'	N10°00'27"E
L4	72.67'	S79°59'33"E
L5	87.08'	N10°00'27"E
L6	72.67'	S79°59'33"E
L7	37.24'	N10°00'27"E
L8	40.47'	N0°28'11"E

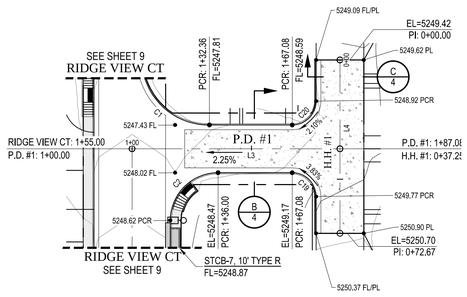
N

0' 15 30 60

SCALE: 1"=30'

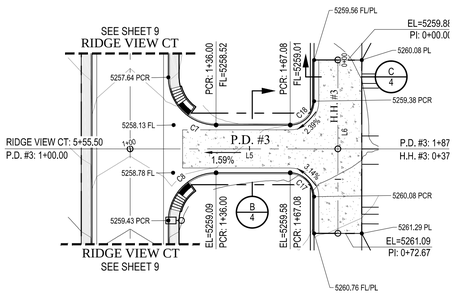
KEY MAP





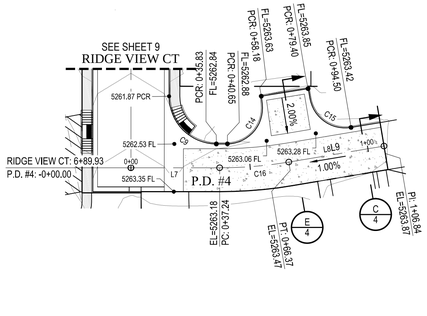
PLAN: PRIVATE DRIVE #1

HORIZONTAL SCALE: 1" = 30'



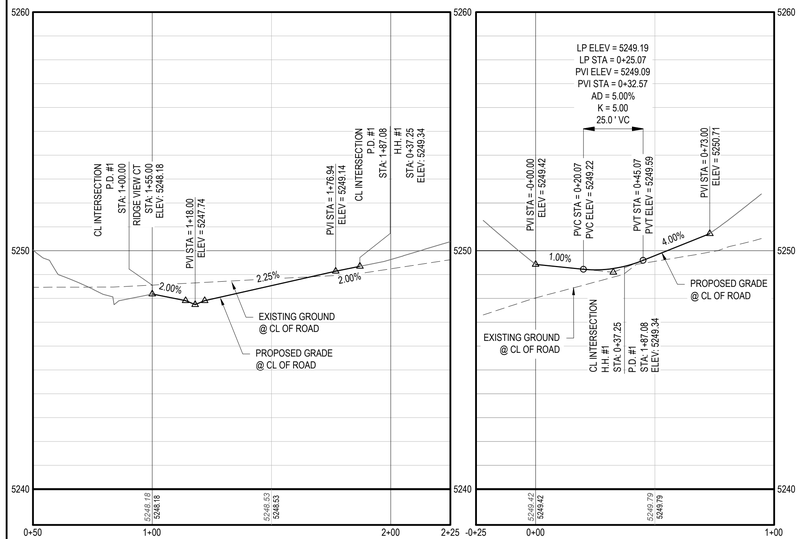
PLAN: PRIVATE DRIVE #3

HORIZONTAL SCALE: 1" = 30'



PLAN: PRIVATE DRIVE #4

HORIZONTAL SCALE: 1" = 30'

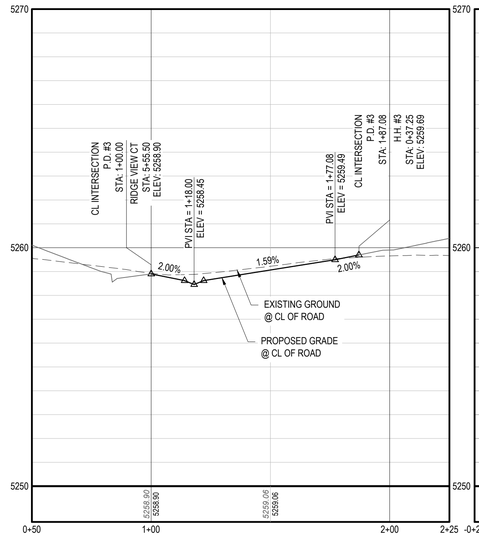


PROFILE: P.D. #1 STA: 0+50 TO 2+25

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

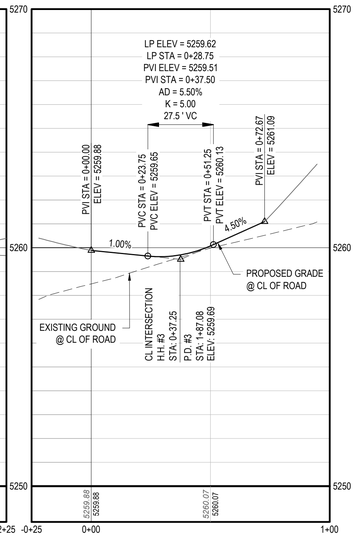
PROFILE: H.H. #1 STA: -0+25 TO 1+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



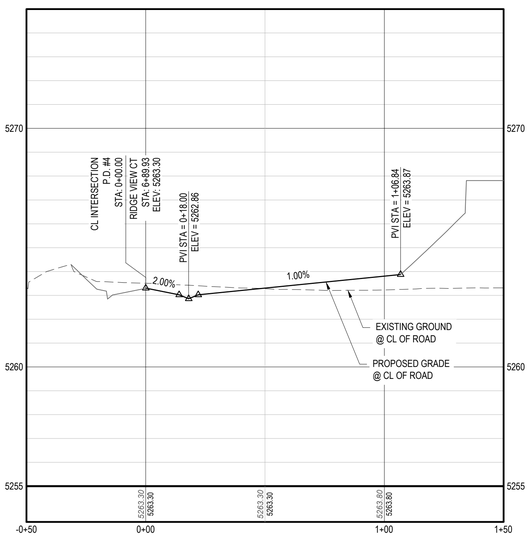
PROFILE: P.D. #3 STA: 0+50 TO 2+25

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: H.H. #3 STA: -0+25 TO 1+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: P.D. #4 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

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NO.	DATE	REVISION	CHK	APVD
DSGN	SM	DR BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

PRIVATE DRIVES #1, #3 & #4
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	11 RDW-6.3.DWG
DWG	RDW-6.3
SHEET	11 OF 18

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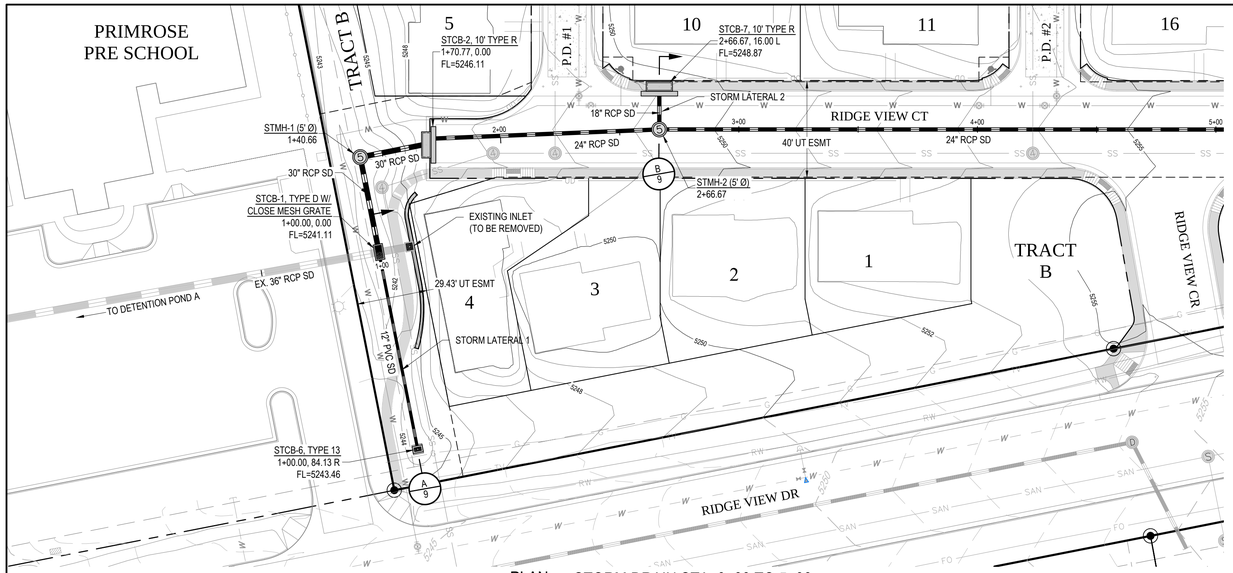
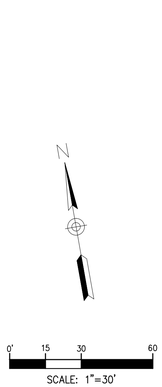
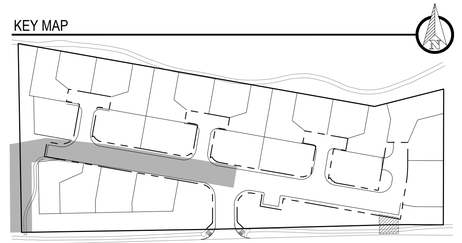


PLAN: STORM DRAIN STA: 0+00 TO 5+00

HORIZONTAL SCALE: 1" = 30'

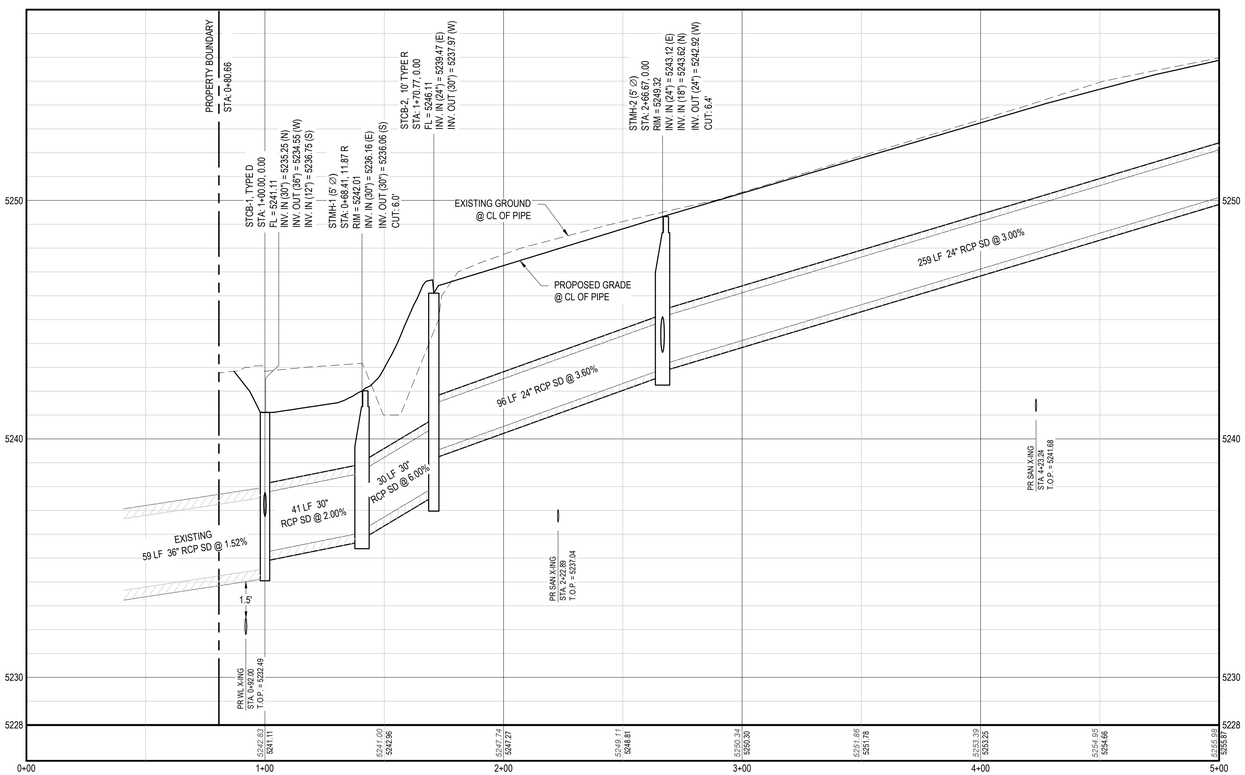


KEY MAP



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	



PROFILE: STORM SEWER - MAIN STA: 0+00 TO 5+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

A/9 STM LATERAL 1
PROFILE
H: 1"=30'
V: 1"=3'

B/9 STM LATERAL 2
PROFILE
H: 1"=30'
V: 1"=3'

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NO.	DATE	DSGN

REVISION | DR | BC | CHK | BG | APVD | SM

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1529 MARKET STREET
DENVER, COLORADO 80202

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ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
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STORM DRAIN STA: 0+00 TO 5+00
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	12 STM-7.1.DWG
DWG	STM-7.1
SHEET	12 OF18

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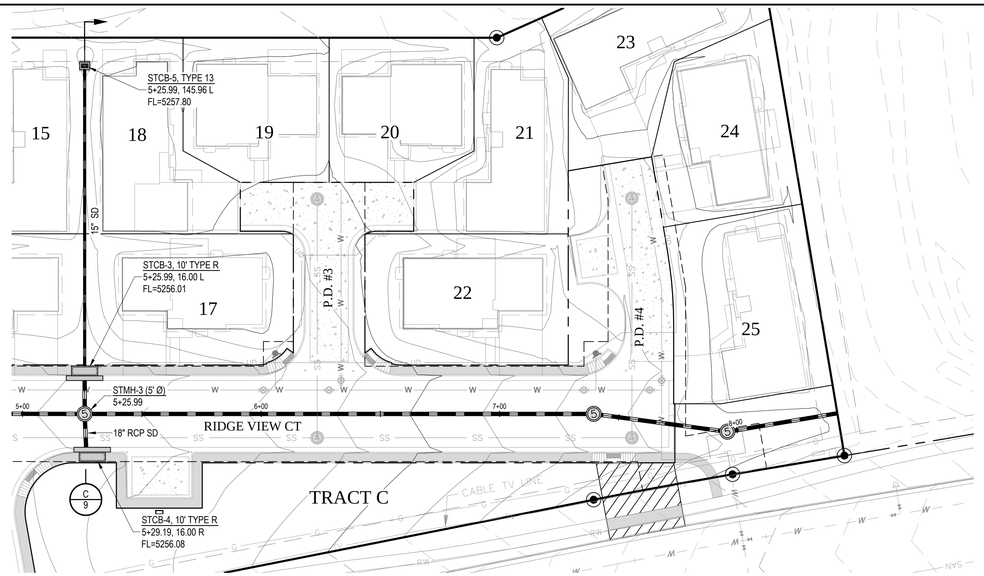
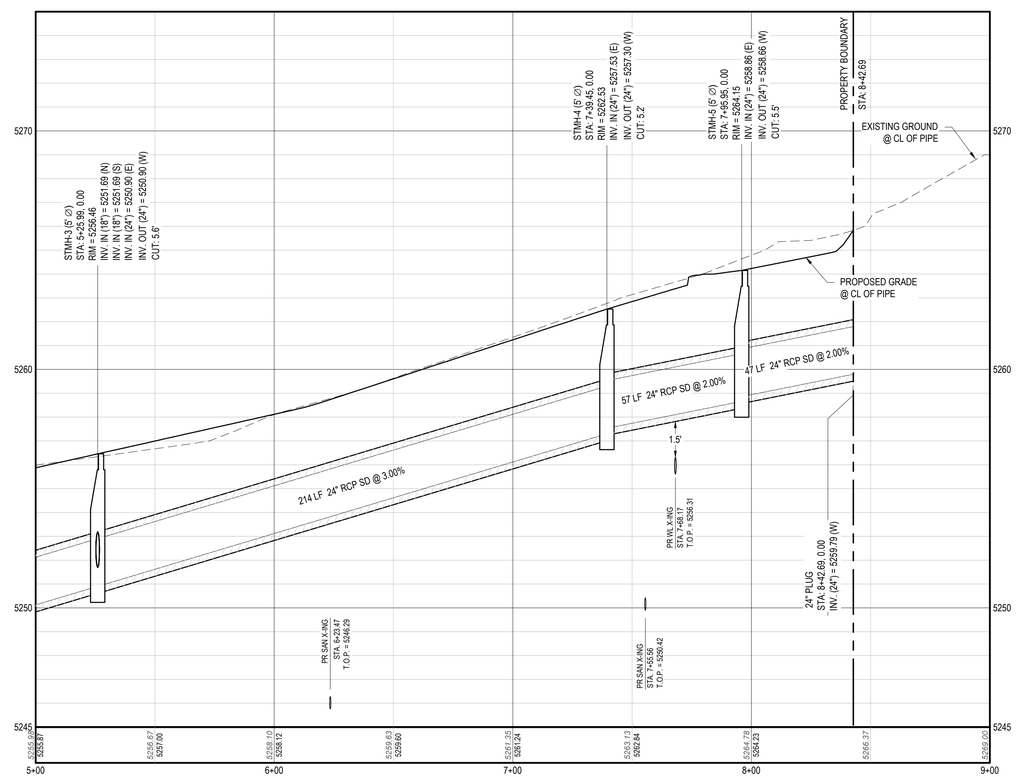


PLAN: STORM DRAIN STA: 5+00 TO 9+00

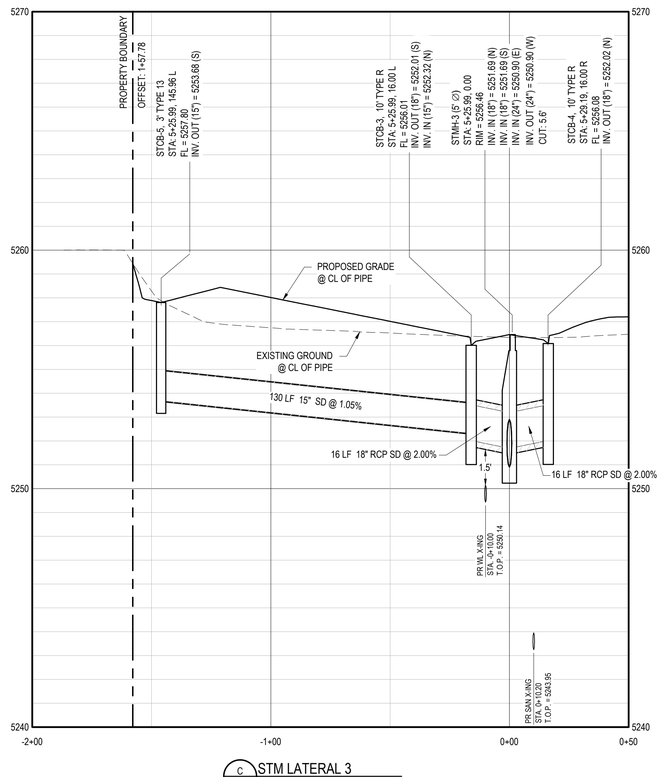
HORIZONTAL SCALE: 1" = 30'



PROFILE: STORM SEWER - MAIN STA: 5+00 TO 9+00

HORIZONTAL SCALE: 1" = 30'

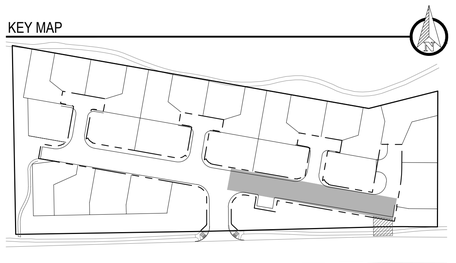
VERTICAL SCALE: 1" = 3'



C/9 STM LATERAL 3 PROFILE

H: 1"=30'
V: 1"=3'

KEY MAP



LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

N

0' 15 30 60

SCALE: 1"=30'

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NO.	DATE	DSGN	DR	CHK	APVD
		SM	BC	BG	SM

REVISION

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CHARTERED HOMES OF COLORADO
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ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
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TOWN OF ERIE, COLORADO

STORM DRAIN STA: 5+00 TO 9+00
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	13 STM-7.2.DWG
DWG	STM-7.2
SHEET	13 OF18

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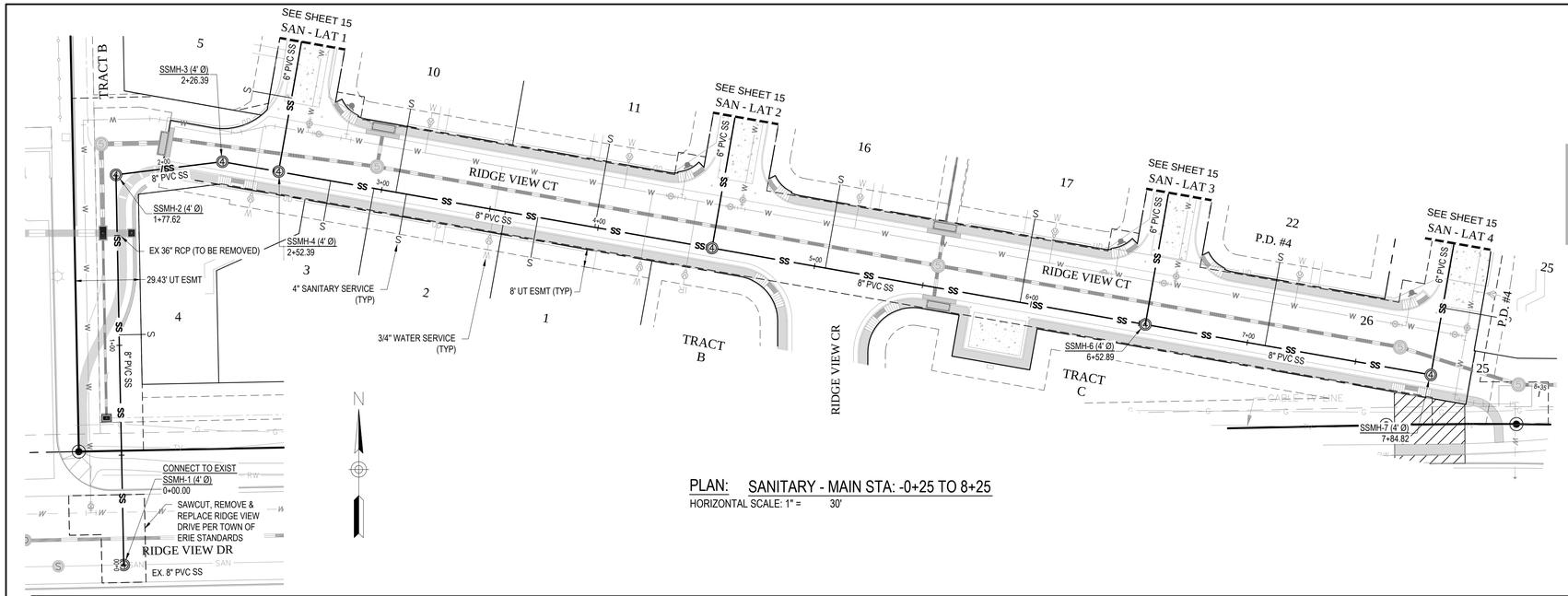
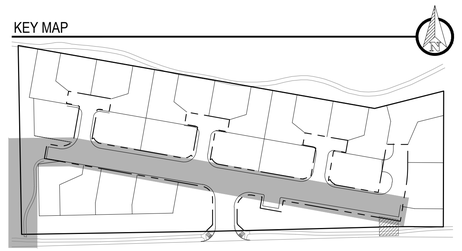


PLAN: SANITARY - MAIN STA: -0+25 TO 8+25

HORIZONTAL SCALE: 1" = 30'

KEY MAP



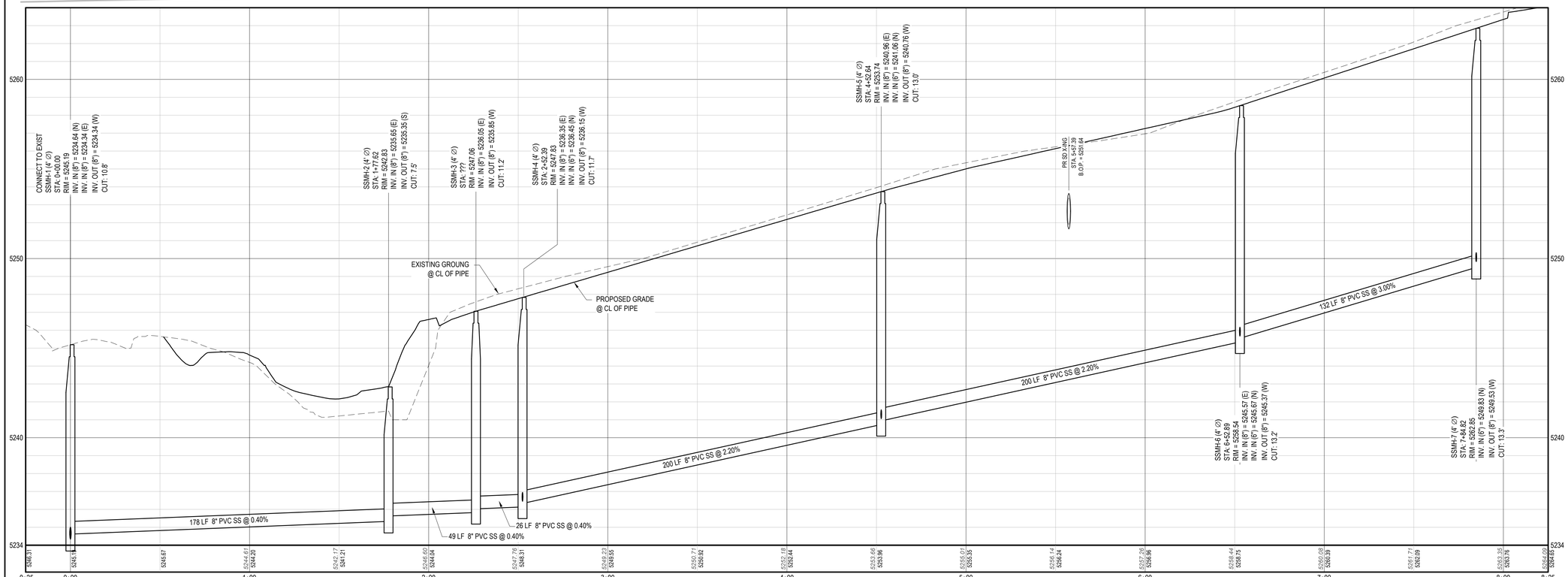
LEGEND

PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR	5500	UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR	5500	RIP RAP	
STORM INLET		PROPOSED ELEVATION	5500.00
STORM DRAIN		EXISTING ELEVATION	5500.00
LIGHT		CONCRETE PAVING	

NOTES

1. SEE SHEET 18 FOR SANITARY SEWER SERVICE TABLE AND DETAIL.
2. CONTRACTOR TO VERIFY EXISTING SANITARY INVERTS IN RIDGE VIEW DRIVE PRIOR TO CONSTRUCTION.

SCALE: 1"=30'



PROFILE: SANITARY SEWER - MAIN STA: -0+25 TO 8+25

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

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NO.	DATE	DSGN
	REVISION	
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	CHK	BC
	APVD	BG
		SM

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SANITARY - MAIN STA: -0+25 TO 8+25
PLAN & PROFILE

NOT FOR CONSTRUCTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	14 SAN-8.1.DWG
DWG	SAN-8.1
SHEET	14 OF18

LEGEND

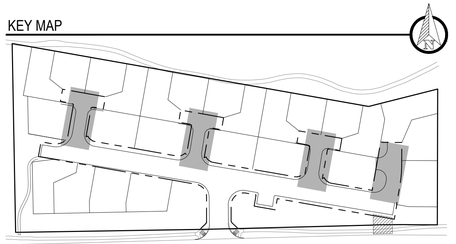
PROPERTY LINE		FIRE HYDRANT	
CURB & GUTTER		MANHOLE	
ROW		SIGN	
CENTERLINE		CONCRETE SIDEWALK	
PROPOSED 5' CONTOUR		UNDERDRAIN	
PROPOSED 1' CONTOUR		EASEMENT	
EXISTING 5' CONTOUR		WALL	
EXISTING 1' CONTOUR		RIP RAP	
STORM INLET	5500.00	PROPOSED ELEVATION	
STORM DRAIN	5500.00	EXISTING ELEVATION	
LIGHT		CONCRETE PAVING	

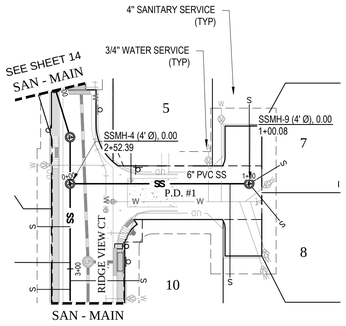
N

0' 20 40 80

SCALE: 1"=40'

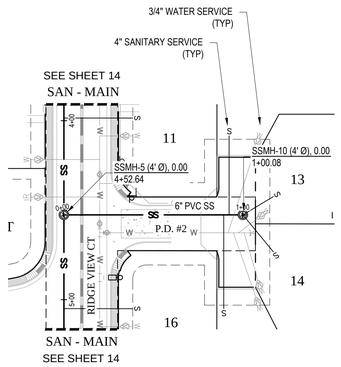
KEY MAP





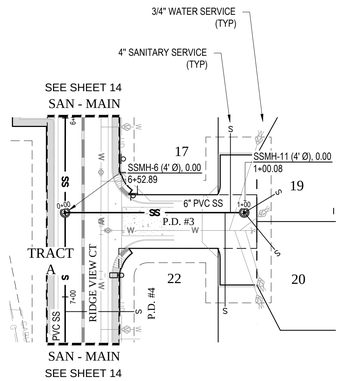
PLAN: SANITARY - LATERAL 1

HORIZONTAL SCALE: 1" = 40'



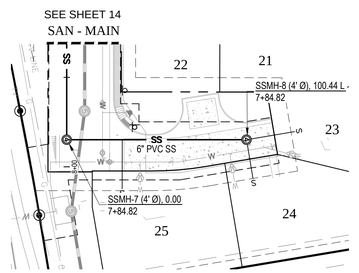
PLAN: SANITARY - LATERAL 2

HORIZONTAL SCALE: 1" = 40'



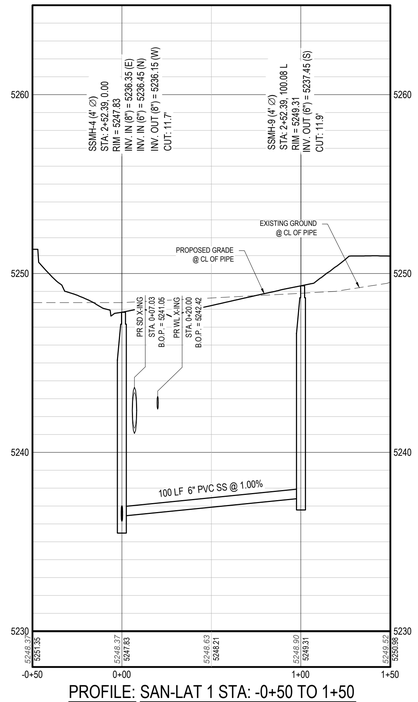
PLAN: SANITARY - LATERAL 3

HORIZONTAL SCALE: 1" = 40'



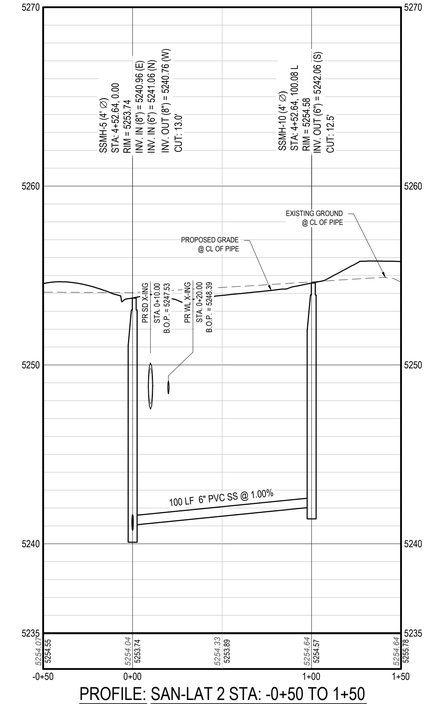
PLAN: SANITARY - LATERAL 4

HORIZONTAL SCALE: 1" = 40'



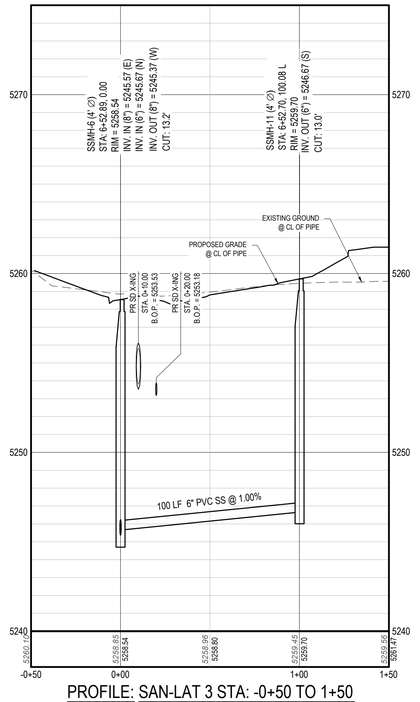
PROFILE: SAN-LAT 1 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



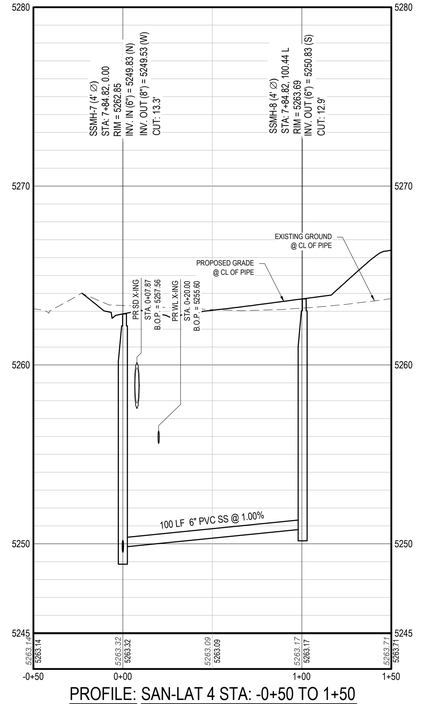
PROFILE: SAN-LAT 2 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



PROFILE: SAN-LAT 3 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



PROFILE: SAN-LAT 4 STA: -0+50 TO 1+50

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISION	DR	CHK	APVD
DSGN	SM		BC	BG	SM

ENERTIA CONSULTING GROUP
1529 MARKET STREET
DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
3160 VILLAGE VISTA DR, STE 104
ERIE, COLORADO 80516

MONTEX - NORTH
AT VISTA RIDGE
CIVIL CONSTRUCTION DOCUMENTS
TOWN OF ERIE, COLORADO

SANITARY LATERALS
PLAN & PROFILE

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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
FILE	15 SAN-8.2.DWG
DWG	SAN-8.2
SHEET	15 OF 18

LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR	UD	UNDERDRAIN
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR	RIP-RAP	RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	5500.00	EXISTING ELEVATION
	LIGHT	CP	CONCRETE PAVING

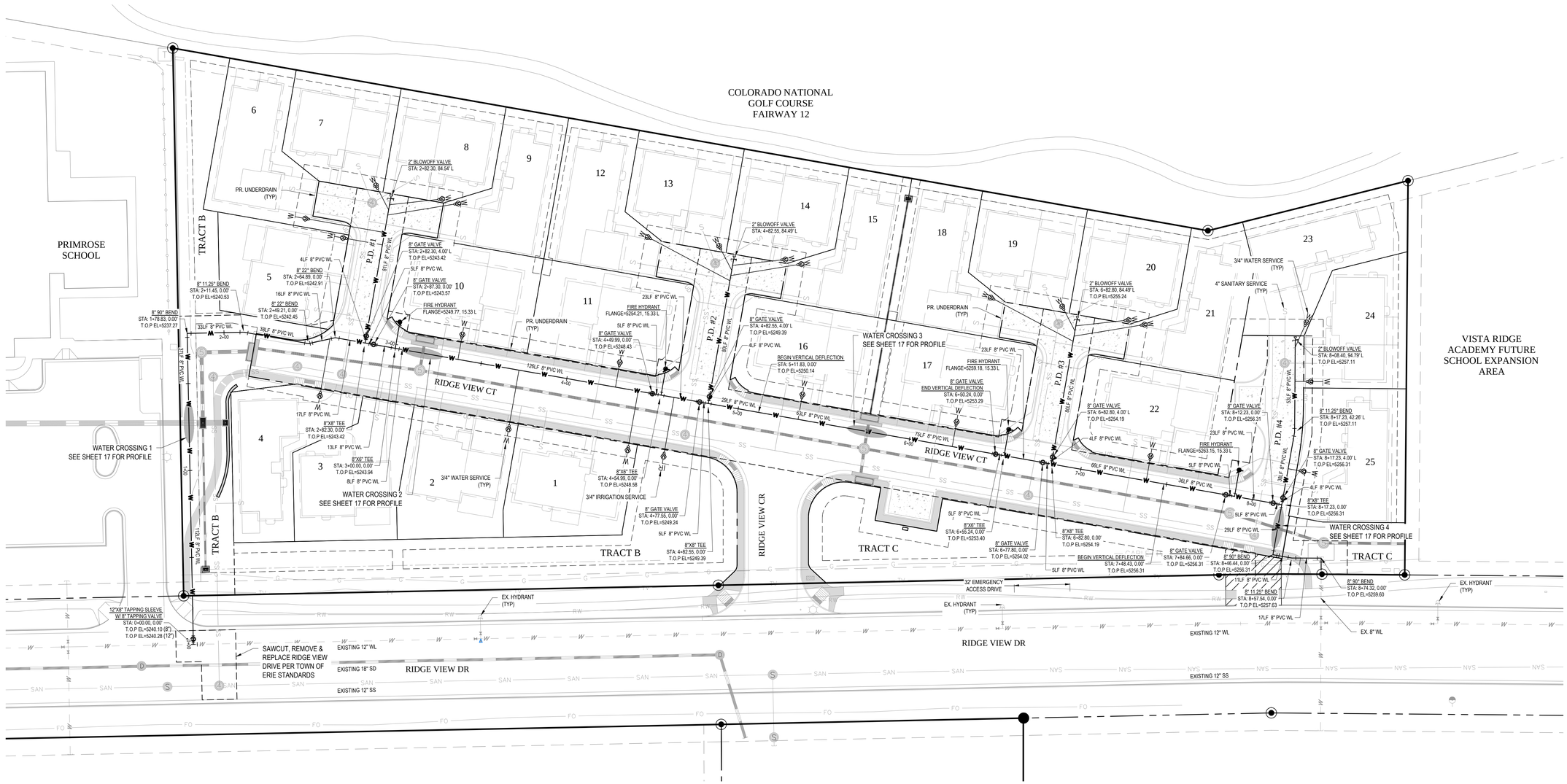
NOTES

1. ALL DOMESTIC WATER SERVICES TO BE 3/4" TYPE K COPPER UNLESS OTHERWISE NOTED
2. CURB STOP & WATER METERS PER TOWN OF ERIE STANDARD DETAIL W11 - W13

N

0' 15 30 60

SCALE: 1"=30'



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NO.	DATE	DSGN	DR	CHK	APVD	REVISION
		SM	BC	BG	SM	

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DENVER, COLORADO 80202

CHARTERED HOMES OF COLORADO
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MONTEX - NORTH AT VISTA RIDGE
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TOWN OF ERIE, COLORADO

WATER PLAN

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DATE	APRIL 17, 2014
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DWG	WAT-9.0
SHEET	16 OF18

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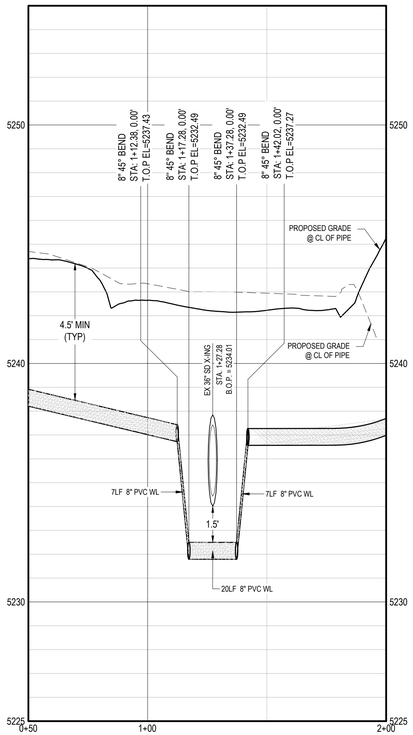
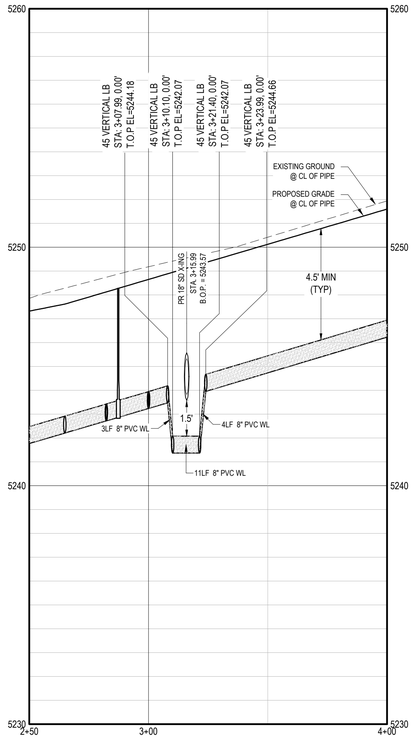
LEGEND

	PROPERTY LINE		FIRE HYDRANT
	CURB & GUTTER		MANHOLE
	ROW		SIGN
	CENTERLINE		CONCRETE SIDEWALK
	PROPOSED 5' CONTOUR	UD	UNDERDRAIN
	PROPOSED 1' CONTOUR		EASEMENT
	EXISTING 5' CONTOUR		WALL
	EXISTING 1' CONTOUR	RIP-RAP	RIP RAP
	STORM INLET	5500.00	PROPOSED ELEVATION
	STORM DRAIN	*5500.00*	EXISTING ELEVATION
	LIGHT	CP	CONCRETE PAVING



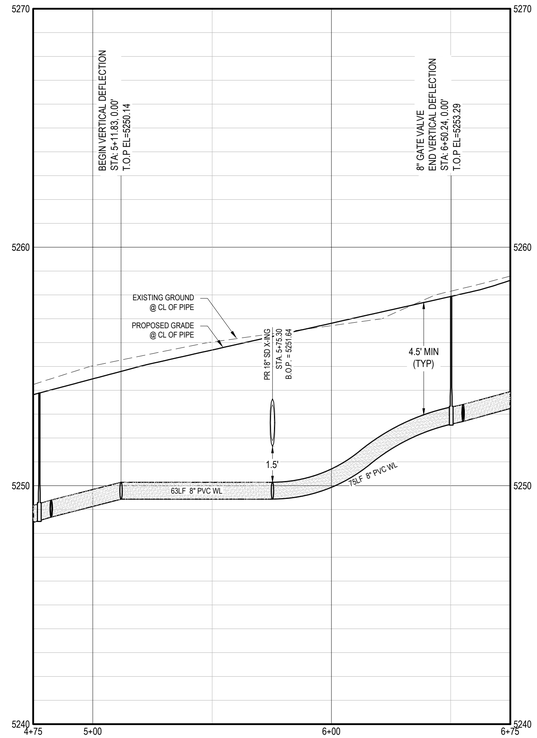
PROFILE: WATER CROSSING 1

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



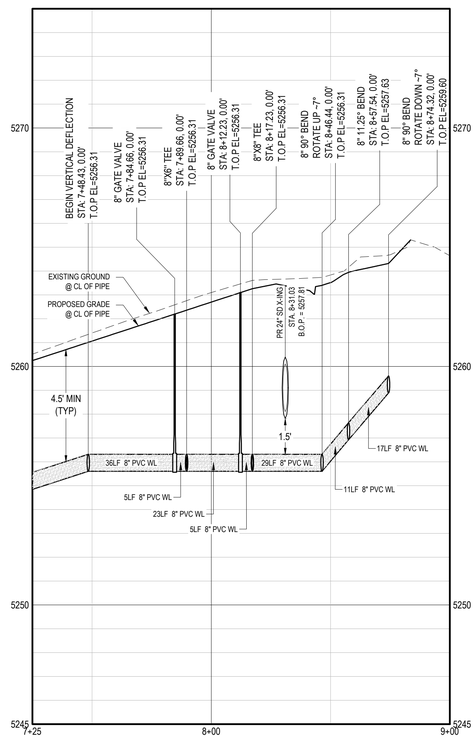
PROFILE: WATER CROSSING 2

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: WATER CROSSING 3

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3



PROFILE: WATER CROSSING 4

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3

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DSGN	SM		BC	BG	SM

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WATER CROSSING PROFILES

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VERIFY SCALE
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ORIGINAL DRAWING.
0 1"

DATE	APRIL 17, 2014
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DWG	WAT-9.1
SHEET	17 OF18

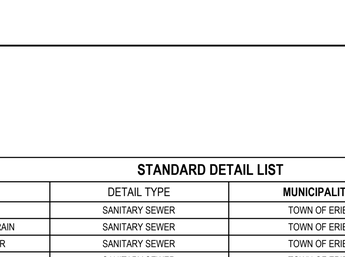
STANDARD DETAIL LIST

ITEM	DETAIL TYPE	MUNICIPALITY	DETAIL ID
STANDARD MANHOLE	SANITARY SEWER	TOWN OF ERIE	SS3A & SS3B
MANHOLE W/ PRIVATE UNDERDRAIN	SANITARY SEWER	TOWN OF ERIE	SS4
24" MANHOLE RING AND COVER	SANITARY SEWER	TOWN OF ERIE	SS6
TRENCH DETAIL	SANITARY SEWER	TOWN OF ERIE	SS8
TRENCH W/ PRIVATE UNDERDRAIN	SANITARY SEWER	TOWN OF ERIE	SS9
SERVICE MAINTENANCE LINE	SANITARY SEWER	TOWN OF ERIE	SS10
TYPICAL MH BASE CHANNELIZATION	SANITARY SEWER	TOWN OF ERIE	SS11A & SS11B
MANHOLE STEPS	SANITARY SEWER	TOWN OF ERIE	SS12
STEEL MARKER POST	SANITARY SEWER	TOWN OF ERIE	SS14
DOMESTIC SEWER TAPPING	SANITARY SEWER	TOWN OF ERIE	SS15
SEWER SERVICE CONNECTION	SANITARY SEWER	TOWN OF ERIE	SS18
PIPE CROSSING SUPPORT PAD	SANITARY SEWER	TOWN OF ERIE	SS19
DITCH OR PIPE CROSSING	SANITARY SEWER	TOWN OF ERIE	SS21
CURB INLET TYPE R	STORM DRAIN	CDOT	M-604-12
MANHOLES	STORM DRAIN	CDOT	M-604-20
MANHOLE STEPS	STORM DRAIN	TOWN OF ERIE	STM9
INLET & INLET COVER	STORM DRAIN	TOWN OF ERIE	STM10
FIRE HYDRANTS, MAINS & VALVES	WATERLINE	TOWN OF ERIE	W7
POLYETHYLENE WRAP	WATERLINE	TOWN OF ERIE	W9
POTABLE SERVICE LINE - ATTACHED WALK	WATERLINE	TOWN OF ERIE	W11A
WATER METER PIT - ⅝" x ¾", ¾" & 1" METER	WATERLINE	TOWN OF ERIE	W12A
1½" & 2" METER MANHOLE METER PIT	WATERLINE	TOWN OF ERIE	W13
MECHANICAL JOINT RESTRAINT	WATERLINE	TOWN OF ERIE	W17
COMBINATION FLANGED HARNESS LUG	WATERLINE	TOWN OF ERIE	W18
JOINT RESTRAINT	WATERLINE	TOWN OF ERIE	W19
TAPPING TEE AND VALVE	WATERLINE	TOWN OF ERIE	W21
DOMESTIC WATER TAPPING	WATERLINE	TOWN OF ERIE	W22
CONCRETE ENCASEMENT	WATERLINE	TOWN OF ERIE	W23
CROSSING STORM AND SANITARY SEWERS	WATERLINE	TOWN OF ERIE	W25
12" OR SMALLER WATERLINE LOWERING	WATERLINE	TOWN OF ERIE	W27
TRENCH DETAIL	WATERLINE	TOWN OF ERIE	W35
STANDARD VALVE AND BOX	WATERLINE	TOWN OF ERIE	W38
MONOLITHIC INTEGRAL CURBWALK	STREET	TOWN OF ERIE	SW2
CONCRETE CROSS PAN	STREET	TOWN OF ERIE	SW3
DRIVE CUT - ATTACHED WALK	STREET	TOWN OF ERIE	SW4B
MOUNTABLE CURB SECTION	STREET	TOWN OF ERIE	SW11
CURB RAMPS	STREET	CDOT	M-608-1

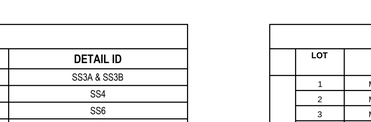
SANITARY SEWER SERVICE TABLE

	LOT	D/S MH	MAIN INV @ D/S MH	DISTANCE to D/S MH3	MAIN SLOPE (%)	MAIN INVERT	TEE INVERT AT MAIN2 3	SERVICE LENGTH TO FOUNDATION4	MIN SERVICE SLOPE (%)	SERVICE INVERT AT FOUNDATION (SIF)	MIN. HEIGHT FROM SIF TO TOF4	MIN. TOF ELEVATION1	DESIGN TOF ELEVATION
Montex North	1	MH-4	5236.35	119.8	0.0220	5238.99	5240.19	26	0.02	5240.71	13.3	5254.0	5254.65
	2	MH-4	5236.35	59.0	0.0220	5237.65	5238.85	26	0.02	5239.36	13.3	5252.7	5252.73
	3	MH-4	5236.35	24.0	0.0220	5236.88	5238.08	67	0.02	5239.41	11.9	5251.3	5251.35
	4	MH-1	5234.64	104.8	0.0040	5235.06	5236.26	15	0.02	5236.56	13.3	5249.9	5250.93
	5	MH-4	5236.45	34.0	0.0100	5236.79	5237.99	27	0.02	5238.53	12.4	5250.9	5250.96
	6	MH-4	5237.45	CONNECTS TO MANHOLE		5237.45	5237.95	75	0.02	5239.46	11.9	5251.4	5251.32
	7	MH-9	5237.45	CONNECTS TO MANHOLE		5237.45	5237.95	40	0.02	5238.75	12.8	5251.6	5251.53
	8	MH-9	5237.45	CONNECTS TO MANHOLE		5237.45	5237.95	40	0.02	5238.75	13.3	5252.1	5252.79
	9	MH-4	5237.45	89.3	0.0100	5238.34	5239.54	84	0.02	5241.23	12.5	5253.7	5253.74
	10	MH-4	5237.35	54.2	0.0220	5238.54	5239.74	46	0.02	5240.66	12.5	5253.2	5253.18
	11	MH-4	5237.35	146.1	0.0220	5240.56	5241.76	46	0.02	5242.68	12.8	5255.5	5255.5
	12	MH-5	5241.06	92.3	0.0100	5241.98	5243.18	75	0.02	5244.69	12.0	5256.7	5256.67
	13	MH-10	5242.06	CONNECTS TO MANHOLE		5242.06	5242.56	40	0.02	5243.36	13.0	5256.4	5256.35
	14	MH-10	5242.06	CONNECTS TO MANHOLE		5242.06	5242.56	40	0.02	5243.36	13.3	5256.7	5258.49
	15	MH-5	5241.06	89.3	0.0100	5241.95	5243.15	84	0.02	5244.84	13.3	5258.2	5259.67
	16	MH-5	5240.96	52.4	0.0220	5242.11	5243.31	46	0.02	5244.23	13.3	5257.6	5258.37
	17	MH-5	5240.96	142.4	0.0220	5244.09	5245.29	46	0.02	5246.21	13.3	5259.5	5260.81
	18	MH-6	5245.67	92.3	0.0100	5246.59	5247.79	75	0.02	5249.30	12.5	5261.8	5261.76
	19	MH-11	5246.67	CONNECTS TO MANHOLE		5246.67	5247.17	40	0.02	5247.97	13.3	5261.3	5261.47
	20	MH-11	5246.67	CONNECTS TO MANHOLE		5246.67	5247.17	40	0.02	5247.97	13.3	5261.3	5263.16
	21	MH-6	5245.67	89.3	0.0100	5246.56	5247.76	84	0.02	5249.45	13.3	5262.8	5264.86
	22	MH-6	5245.57	55.3	0.0300	5247.23	5248.43	46	0.02	5249.35	13.3	5262.7	5264.15
	23	MH-8	5250.83	CONNECTS TO MANHOLE		5250.83	5251.33	66	0.02	5252.65	13.3	5266.0	5267.81
	24	MH-8	5250.83	CONNECTS TO MANHOLE		5250.83	5251.33	57	0.02	5252.46	13.3	5265.8	5267.04
	25	MH-7	5249.83	31.0	0.0100	5250.14	5251.34	61	0.02	5252.55	13.3	5265.9	5266.88

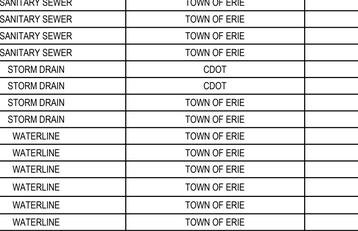
NOTES:
1. TABLE IS PROVIDED FOR INFORMATION ONLY. CONTRACTOR TO VERIFY 2% MINIMUM SERVICE GRADE AND A MINIMUM DEPTH OF 13.3' BELOW TOP OF FOUNDATION PRIOR TO CONSTRUCTING FOUNDATION.
2. ASSUMED TEE ELEVATION OF SANITARY SERVICE EQUALS MAIN INV. + 1.2'. ALL SERVICES THAT ARE CONNECTED DIRECTLY TO MANHOLES WILL NOT REQUIRE A TEE.
3. SERVICES THAT ARE CONNECTED DIRECTLY TO MANHOLES ARE SET 0.5 FT ABOVE INVERT OUT.
4. REFER TO THE TYPICAL SERVICE DETAIL ON SHEET 18 OF THE VISTA RIDGE FILING NO. 2, 1ST AMENDMENT CIVIL CONSTRUCTION DOCUMENTS.



A 18 PRIVATE DRIVE INTERSECTION CURB RAMP PLAN
NTS

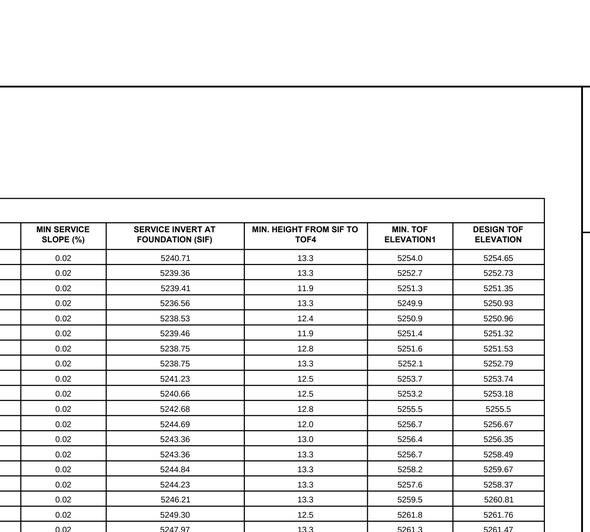


A-A SECTION A-A
NTS



B 18 UNDERDRAIN TRENCH SECTION
NTS

C 18 EMERGENCY SECONDARY ACCESS PLAN
NTS



D 18 TYPICAL SANITARY SERVICE DETAIL (SERVICE TYPICAL AND MAY VARY DEPENDING ON CONSTRAINTS)
NTS

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REVISION

NO.	DATE	DR	CHK	APVD
DSGN	SM	BC	BG	SM

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GENERAL DETAILS

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0 1"

DATE	APRIL 17, 2014
FILE	18 DTL-10.0.DWG
DWG	DTL-10.0
SHEET	18 OF18

Final Landscape Construction Plans: See Section 11c Landscape Plans.

prepared by
Enertia Consulting Group, LLC
1529 Market Street, Suite 200
Denver, CO 80202

Preliminary Utility Study

Montex North at Vista Ridge, Erie, Colorado

prepared for

Chartered Development Corp
3160 Village Vista Drive
Erie, CO 80516

LAND • ENERGY • INFRASTRUCTURE

1437 Larimer St.
Denver, CO 80202
303•875•7131
shawn.merz@enertiacg.com

April 17, 2015

Mr. Martin Ostholthoff
Town of Erie
Community Development Director
645 Holbrook Street
P.O. Box 750
Erie, CO 80516

RE: Preliminary Utility Study Letter
Montex North at Vista Ridge

Dear Mr. Ostholthoff:

This Preliminary Utility Letter Report (Report) is being submitted to the Town of Erie in partial fulfillment of the Site Plan application requirements for Vista Ridge Filing No. 2, 1st Amendment (Montex North). The intent of this Report is to: (i) summarize the water demands and fire flow capacity of the proposed water system being submitted to the Town of Erie for review; (ii) determine sanitary sewer capacity requirements for the proposed 25-unit development in accordance with the Town of Erie Standards and Specifications.

Background Information

The Montex North project is a re-subdivision of Lot 2, Vista Ridge Filing No. 2 and is located in the Southwest Quarter of Section 33, Township 1 North, Range 68 West of the 6th Principle Meridian. The project is bounded to the north by Colorado National Golf Course, Vista Ridge Academy to the east, Primrose Preschool to the west and Ridge View Drive to the south. The adjacent major roadways are Mountain View Boulevard to the west, Sheridan Parkway to the east and East Baseline Road to the south. The proposed site consists of 4.04 acres. The developed parcel will consist of 25 single-family homes with a density of 6.2 dwelling units/acre. The construction will be Type V Construction. Connections will be made to an existing 12-inch waterline and 8-inch sanitary sewer located in Ridge View Drive. There is an existing water stub at the east end of the site which will be utilized for the proposed water system. An additional connection in Ridge View Drive will be made to provide a looped water system to the site. No sanitary stubs have been provided to the site.

Fire hydrant flow tests were performed on the two fire hydrants adjacent to the site in Ridge View Drive by Integrated Safety Services of Colorado on October 21, 2014. Data from these tests were used to determine the boundary conditions in the water analysis. The static pressure was 80 psi and the lowest residual pressure was 70 psi which equates to a head of 184.8 feet and 161.7 feet respectively.

An updated sanitary sewer analysis dated April 6, 2015 by Hurst and Associates has been attached and demonstrates that the existing sanitary sewer mains have capacity to accommodate the Montex North Development.

Water System

The proposed water system for Montex North is a looped system which connects to the existing 12-inch waterline in Ridge View Drive. The proposed water system consists of 1229 LF ~ 8-inch PVC, 4 blow offs

and 4 fire hydrants which will provide domestic potable water, fire protection and irrigation for the 25 single-family units and open space.

There are four dead end private drives on site with 8-inch waterline located within a tract. These drives are less than 150'. A hammerhead turnaround and a grasscrete fire department emergency access have been provided on Ridge View Court. Fire hydrants will be provided on the 8-inch looped water line. Per the Town of Erie Standards and Specification, for 1 and 2 family units, 1000 gpm for duration of 2 hours is required. Hydrant spacing is limited to 500 feet. One irrigation tap will be provided for open space areas.

To evaluate the water distribution system hydraulics and determine adequate design, the proposed water system was modeled assuming a full build out condition using Hazen-Williams Formula within Bentley WaterCAD version V8i software. From the fire hydrant flow tests, a hydraulic grade line curve was used to create a pump curve to simulate variable pressure readings. A Hazen-Williams Friction Coefficient of 100 was used for 8-inch and 12-inch pipe as outlined in the Town of Erie Standards and Specifications. The water demands calculated for the project were applied to the junctions throughout the system. The distribution system was modeled under four scenarios based on an open pipe system which include: average day demand, maximum day demand, maximum day demand with fire flow demand, and peak hour demand.

It was determined that each fire hydrant in the proposed water system is capable of providing 2317 gpm with a maximum velocity of 10 ft/sec during the maximum day demand. Pressures for all scenarios are within the operating pressure requirements outlined in the Town of Erie Standards and specifications.

The water calculations attached for reference.

Sanitary Sewer

The proposed Montex North sanitary system serves 25 single-family residential lots and consists of 1186 LF of 8-inch PVC sewer which will connect to an existing 8-inch PVC sanitary sewer located in Ridge View Drive south of the site.

The sanitary demands for the project were calculated using the requirements defined by the Town of Erie Standards and Specifications. A flow rate of 90 gpcd with residential multiplier of 3.0 was used to determine the Average Daily Flow Rate (0.010 cfs). A peaking factor of 5 was used to determine the Peak Flow Rate which resulted in 0.052 cfs. To accommodate homes with 9 foot basements, the sanitary sewer has been designed at the town's allowable minimum grade of 0.40%. Using Manning's Equation with a roughness coefficient of 0.013 and a pipe slope of 0.40% yields a capacity of 0.76 ft^3/sec at 80% depth for an 8-inch sewer.

The calculations and flow criteria are attached for reference.

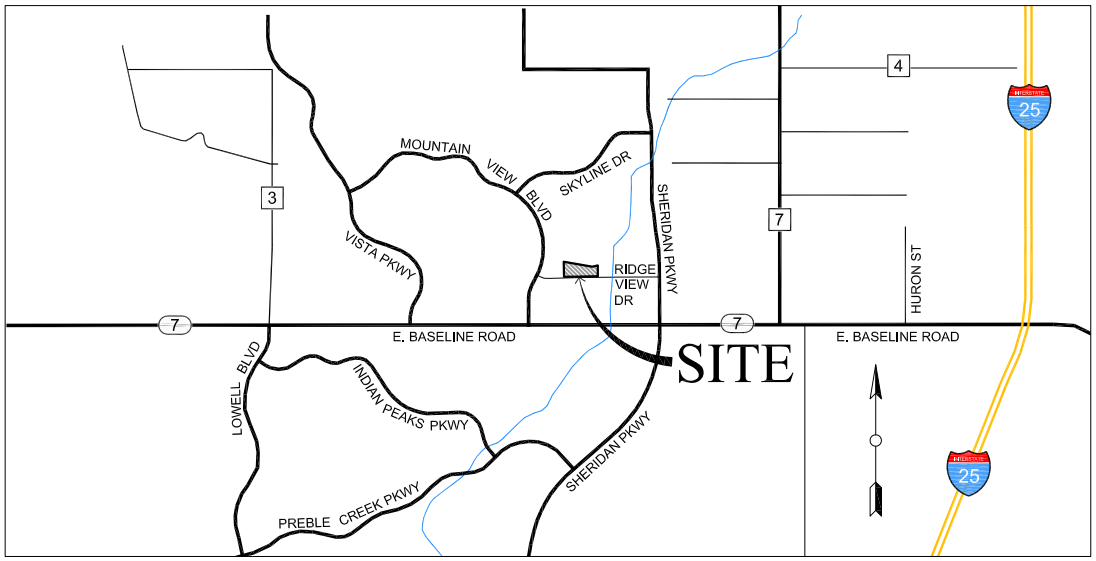
We trust that this Report is acceptable and complete. Please contact me at shawn.merz@enertiacg.com or (720) 502-6574 should you have any questions regarding this submittal.

Sincerely,

ENERTIA CONSULTING GROUP, LLC

Shawn Merz, PE, LEED AP
Senior Engineer

Enclosures


MOUNTAIN VIEW BLVD
SKYLINE DR
VISTA PKWY
RIDGE VIEW DR
SHERIDAN PKWY
HURON ST
E. BASELINE ROAD
E. BASELINE ROAD
SITE
LOWELL BLVD
INDIAN PEAKS PKWY
PREBLE CREEK PKWY
SHERIDAN PKWY
3
7
7
4
25
25

Montex North at Vista Ridge Water Demand Summary

Building Demand Breakdown

Node	Land Use	Units (EA)	Residential/Unit Multiplier	Avg. Demand (GPCD) (GPD/ACRE)	Average Day Demand GPM	Max Day/Avg Day Peaking Factor	Max Day Demand (GPM)	Max Hr/Avg Day Peaking Factor	Max Hour Demand (GPM)
J-2	Multi-Family Residential	2	3.00	140	0.58	2.60	1.52	3.90	2.28
J-4	Multi-Family Residential	4	3.00	140	1.17	2.60	3.03	3.90	4.55
J-5	Multi-Family Residential	2	3.00	140	0.58	2.60	1.52	3.90	2.28
J-7	Multi-Family Residential	1	3.00	140	0.29	2.60	0.76	3.90	1.14
J-10	Multi-Family Residential	5	3.00	140	1.46	2.60	3.79	3.90	5.69
J-11	Multi-Family Residential	4	3.00	140	1.17	2.60	3.03	3.90	4.55
J-12	Multi-Family Residential	4	3.00	140	1.17	2.60	3.03	3.90	4.55
J-13	Multi-Family Residential	3	3.00	140	0.88	2.60	2.28	3.90	3.41
		25			**7.29**		**18.96**		**28.44**

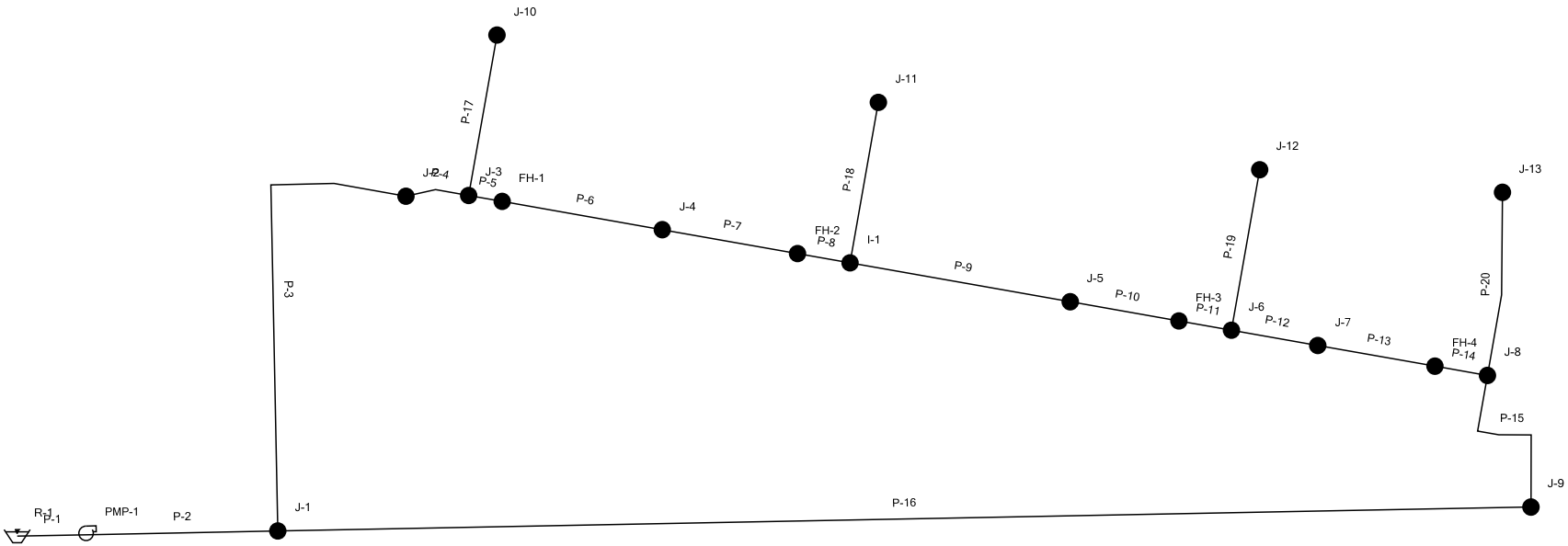
Irrigation Demand Breakdown

Node	Land Use	Irrigation Area (sf)	Irrigation Area (acres)	Irrigation Rate[1] (GPM/acre)	Average Day Demand (GPM)	Max Day Irrigation Rate[2] (GPM/acre)	Max Day Demand (GPM)	Peak Flow Rate (GPM/acre)	Max Hour Demand (GPM)
I-1	Irrigation Area 1	30,760	0.7062	1.55	1.09	15.84	11.19	23.50	16.59
		30,760	**0.71**		**1.09**		**11.19**		**16.59**

Montex-North-WaterCAD.wtg

Scenario: Base

Active Scenario: Base



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	0	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,427.30	0	184.80

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,427.30	78.7
32	J-2	5,247.30	0.00	5,427.30	77.9
34	J-3	5,248.13	0.00	5,427.30	77.5
36	FH-1	5,248.64	0.00	5,427.30	77.3
56	J-10	5,249.64	0.00	5,427.30	76.9
38	J-4	5,251.12	0.00	5,427.30	76.2
85	FH-2	5,253.22	0.00	5,427.30	75.3
40	I-1	5,254.02	0.00	5,427.30	75.0
58	J-11	5,254.81	0.00	5,427.30	74.6
44	J-5	5,256.77	0.00	5,427.30	73.8
79	FH-3	5,258.05	0.00	5,427.30	73.2
46	J-6	5,258.86	0.00	5,427.30	72.9
60	J-12	5,259.95	0.00	5,427.30	72.4
88	J-7	5,260.35	0.00	5,427.30	72.2
53	J-9	5,260.90	0.00	5,427.30	72.0
48	FH-4	5,262.36	0.00	5,427.30	71.4
50	J-8	5,263.26	0.00	5,427.30	71.0
77	J-13	5,263.95	0.00	5,427.30	70.7

Montex-North-WaterCAD.wtg

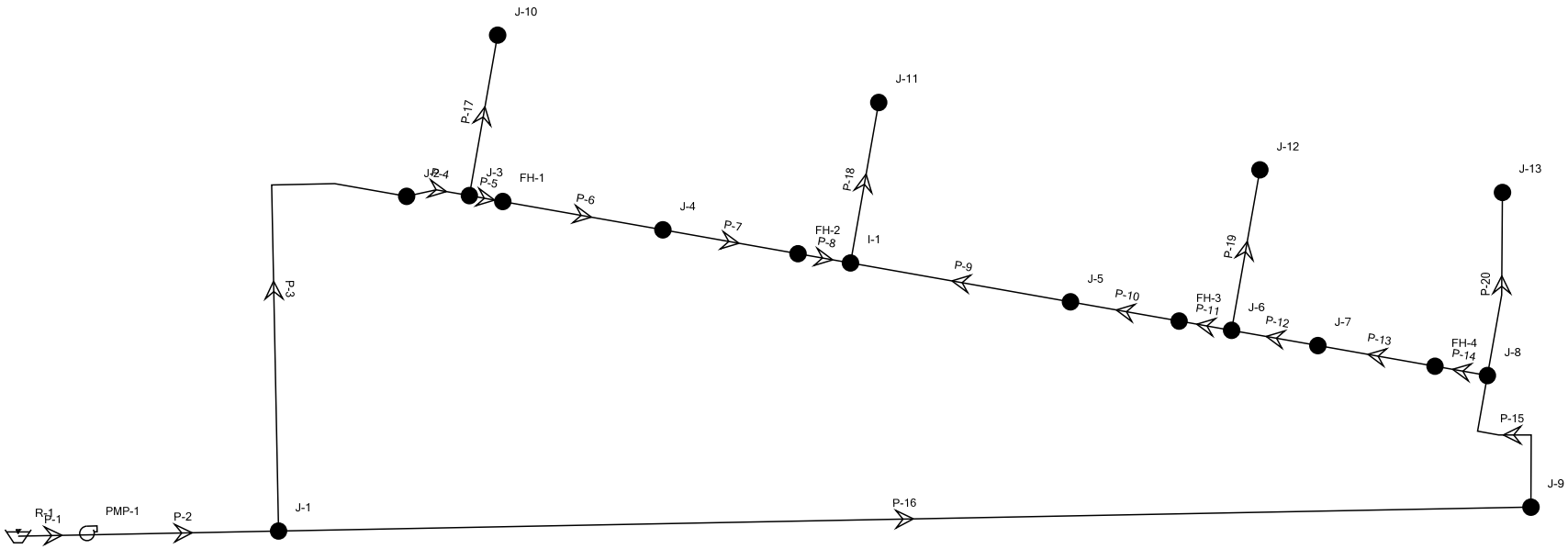
FlexTable: Pipe Table

Active Scenario: Base

Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	0.02	0.00	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	0.02	0.00	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	0.02	0.00	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	0.02	0.00	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	0.02	0.00	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	0.02	0.00	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	0.02	0.00	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	0.02	0.00	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	0.02	0.00	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	0.01	0.00	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	0.01	0.00	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	0.01	0.00	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	0.01	0.00	0.000
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	0.01	0.00	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	0.01	0.00	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	0.00	0.00	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	0.00	0.00	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	0.00	0.00	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	0.01	0.00	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	0.00	0.00	0.000

Montex-North-WaterCAD.wtg
Scenario: Average Day
Active Scenario: Average Day



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Average Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	8.39	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Average Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,427.02	8.39	184.52

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Average Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,427.02	78.6
32	J-2	5,247.30	0.58	5,427.02	77.8
34	J-3	5,248.13	0.00	5,427.02	77.4
36	FH-1	5,248.64	0.00	5,427.02	77.2
56	J-10	5,249.64	1.46	5,427.02	76.7
38	J-4	5,251.12	1.17	5,427.02	76.1
85	FH-2	5,253.22	0.00	5,427.02	75.2
40	I-1	5,254.02	1.09	5,427.02	74.8
58	J-11	5,254.81	1.17	5,427.02	74.5
44	J-5	5,256.77	0.58	5,427.02	73.7
79	FH-3	5,258.05	0.00	5,427.02	73.1
46	J-6	5,258.86	0.00	5,427.02	72.8
60	J-12	5,259.95	1.17	5,427.02	72.3
88	J-7	5,260.35	0.29	5,427.02	72.1
53	J-9	5,260.90	0.00	5,427.02	71.9
48	FH-4	5,262.36	0.00	5,427.02	71.2
50	J-8	5,263.26	0.00	5,427.02	70.9
77	J-13	5,263.95	0.88	5,427.02	70.6

Montex-North-WaterCAD.wtg
FlexTable: Pipe Table
Active Scenario: Average Day

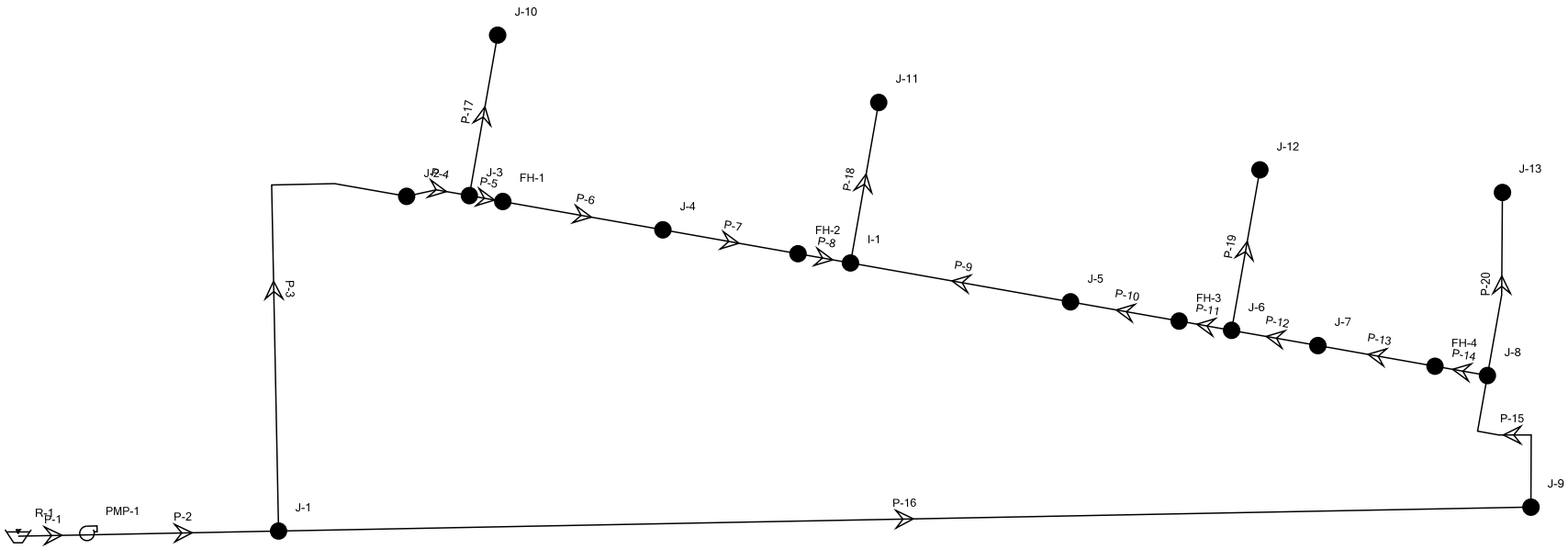
Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	8.39	0.02	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	8.39	0.02	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	4.16	0.03	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	3.58	0.02	0.000
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	2.12	0.01	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	2.12	0.01	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	1.46	0.01	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	1.17	0.01	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	1.17	0.01	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	0.95	0.01	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	0.95	0.01	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	0.88	0.01	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	-1.31	0.01	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	-1.89	0.01	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	-1.89	0.01	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	-3.06	0.02	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	-3.35	0.02	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	-3.35	0.02	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	-4.23	0.03	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	-4.23	0.01	0.000

Montex-North-WaterCAD.wtg

Scenario: Max Day

Active Scenario: Max Day



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Max Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	30.15	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Max Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,426.33	30.15	183.83

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Max Day

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,426.33	78.3
32	J-2	5,247.30	1.52	5,426.33	77.5
34	J-3	5,248.13	0.00	5,426.33	77.1
36	FH-1	5,248.64	0.00	5,426.33	76.9
56	J-10	5,249.64	3.79	5,426.33	76.4
38	J-4	5,251.12	3.03	5,426.33	75.8
85	FH-2	5,253.22	0.00	5,426.33	74.9
40	I-1	5,254.02	11.19	5,426.33	74.5
58	J-11	5,254.81	3.03	5,426.33	74.2
44	J-5	5,256.77	1.52	5,426.33	73.4
79	FH-3	5,258.05	0.00	5,426.33	72.8
46	J-6	5,258.86	0.00	5,426.33	72.5
60	J-12	5,259.95	3.03	5,426.33	72.0
88	J-7	5,260.35	0.76	5,426.33	71.8
53	J-9	5,260.90	0.00	5,426.33	71.6
48	FH-4	5,262.36	0.00	5,426.33	70.9
50	J-8	5,263.26	0.00	5,426.33	70.6
77	J-13	5,263.95	2.28	5,426.33	70.3

Montex-North-WaterCAD.wtg

FlexTable: Pipe Table

Active Scenario: Max Day

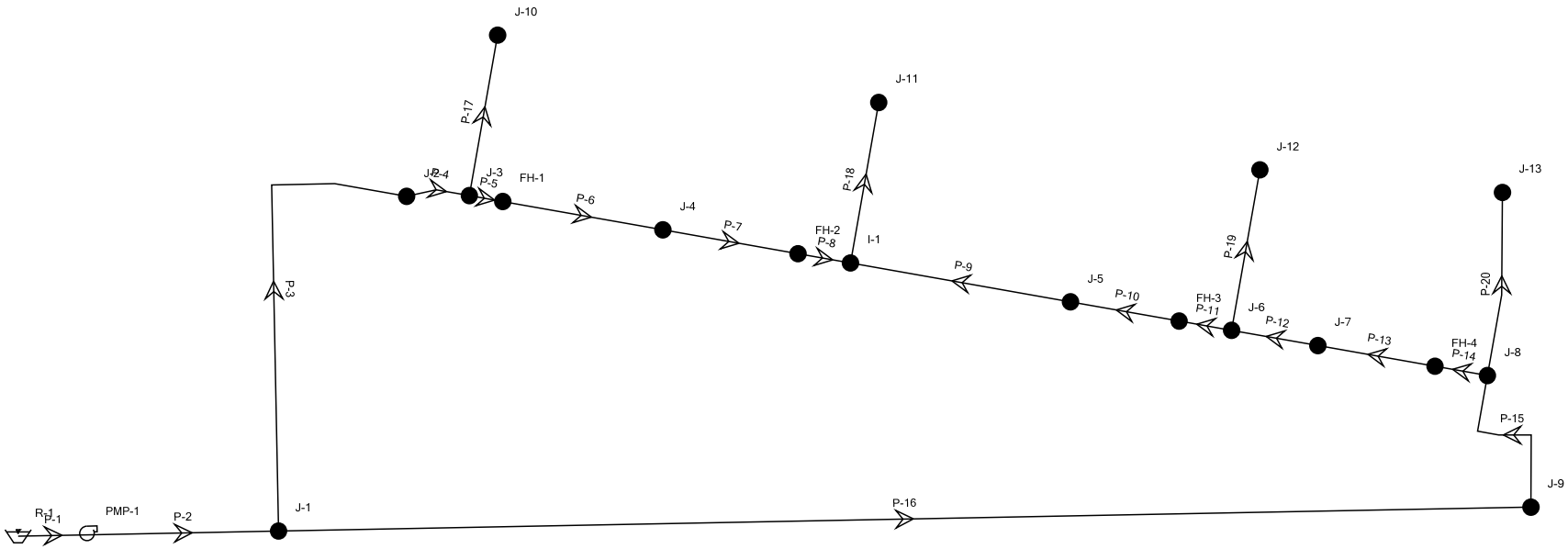
Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	30.15	0.09	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	30.15	0.09	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	15.08	0.10	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	13.56	0.09	0.000
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	9.77	0.06	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	9.77	0.06	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	6.74	0.04	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	6.74	0.04	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	3.79	0.02	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	3.03	0.02	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	3.03	0.02	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	2.28	0.01	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	-7.48	0.05	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	-9.00	0.06	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	-9.00	0.06	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	-12.03	0.08	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	-12.79	0.08	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	-12.79	0.08	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	-15.07	0.10	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	-15.07	0.04	0.000

Montex-North-WaterCAD.wtg

Scenario: Max Hour

Active Scenario: Max Hour



Montex-North-WaterCAD.wtg
FlexTable: Reservoir Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
29	R-1	5,242.50	<None>	45.04	5,242.50

Montex-North-WaterCAD.wtg
FlexTable: Pump Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
64	PMP-1	5,242.50	Connection	On	5,242.50	5,425.87	45.04	183.37

Montex-North-WaterCAD.wtg
FlexTable: Junction Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
30	J-1	5,245.30	0.00	5,425.87	78.1
32	J-2	5,247.30	2.28	5,425.86	77.3
34	J-3	5,248.13	0.00	5,425.86	76.9
36	FH-1	5,248.64	0.00	5,425.86	76.7
56	J-10	5,249.64	5.69	5,425.86	76.2
38	J-4	5,251.12	4.55	5,425.86	75.6
85	FH-2	5,253.22	0.00	5,425.86	74.7
40	I-1	5,254.02	16.59	5,425.86	74.3
58	J-11	5,254.81	4.55	5,425.86	74.0
44	J-5	5,256.77	2.28	5,425.86	73.2
79	FH-3	5,258.05	0.00	5,425.86	72.6
46	J-6	5,258.86	0.00	5,425.86	72.3
60	J-12	5,259.95	4.55	5,425.86	71.8
88	J-7	5,260.35	1.14	5,425.86	71.6
53	J-9	5,260.90	0.00	5,425.86	71.4
48	FH-4	5,262.36	0.00	5,425.86	70.7
50	J-8	5,263.26	0.00	5,425.86	70.4
77	J-13	5,263.95	3.41	5,425.86	70.1

Montex-North-WaterCAD.wtg
FlexTable: Pipe Table
Active Scenario: Max Hour

Current Time: 0.000 hours

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
65	P-1	36	R-1	PMP-1	12.0	PVC	100.0	0.000	45.04	0.13	0.000
66	P-2	98	PMP-1	J-1	12.0	PVC	100.0	0.000	45.04	0.13	0.000
33	P-3	249	J-1	J-2	8.0	PVC	100.0	0.000	22.52	0.14	0.000
35	P-4	33	J-2	J-3	8.0	PVC	100.0	0.000	20.24	0.13	0.000
37	P-5	18	J-3	FH-1	8.0	PVC	100.0	0.000	14.55	0.09	0.000
39	P-6	84	FH-1	J-4	8.0	PVC	100.0	0.000	14.55	0.09	0.000
86	P-7	71	J-4	FH-2	8.0	PVC	100.0	0.000	10.00	0.06	0.000
87	P-8	28	FH-2	I-1	8.0	PVC	100.0	0.000	10.00	0.06	0.000
57	P-17	84	J-3	J-10	8.0	PVC	100.0	0.000	5.69	0.04	0.000
59	P-18	84	I-1	J-11	8.0	PVC	100.0	0.000	4.55	0.03	0.000
61	P-19	84	J-6	J-12	8.0	PVC	100.0	0.000	4.55	0.03	0.000
78	P-20	95	J-8	J-13	8.0	PVC	100.0	0.000	3.41	0.02	0.000
82	P-9	116	I-1	J-5	8.0	PVC	100.0	0.000	-11.14	0.07	0.000
80	P-10	57	J-5	FH-3	8.0	PVC	100.0	0.000	-13.42	0.09	0.000
81	P-11	28	FH-3	J-6	8.0	PVC	100.0	0.000	-13.42	0.09	0.000
89	P-12	45	J-6	J-7	8.0	PVC	100.0	0.000	-17.97	0.11	0.000
51	P-14	28	FH-4	J-8	8.0	PVC	100.0	0.000	-19.11	0.12	0.000
90	P-13	62	J-7	FH-4	8.0	PVC	100.0	0.000	-19.11	0.12	0.000
54	P-15	94	J-8	J-9	8.0	PVC	100.0	0.000	-22.52	0.14	0.000
55	P-16	648	J-9	J-1	12.0	PVC	100.0	0.000	-22.52	0.06	0.000

Montex-North-WaterCAD.wtg
Fire Flow Node FlexTable: Fire Flow Report
Active Scenario: Max Day + FF

Current Time: 0.000 hours

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Calculated Zone Lower Limit @ Total Flow Needed) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?	Velocity of Maximum Pipe (ft/s)
J-1	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-2	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-3	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-4	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
I-1	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-5	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-6	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-8	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-9	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-10	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-11	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-12	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-13	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-7	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
FH-4	True	1,500.00	2,317.66	1,500.00	2,317.66	20.0	49.1	48.7	35.3	J-13	True	10.00
FH-1	True	1,500.00	2,534.79	1,500.00	2,534.79	20.0	54.4	50.3	35.3	J-11	True	10.00
FH-3	True	1,500.00	2,653.99	1,500.00	2,653.99	20.0	50.2	49.3	28.8	J-12	True	10.00
FH-2	True	1,500.00	2,957.57	1,500.00	2,957.57	20.0	52.0	49.9	23.8	J-11	True	10.00

Report of Inspection/Test

Fire Hydrant #1

October 21, 2014

Integrated Safety Services of Colorado, LLC

9082 Marshall Ct.
Westminster, CO 80031

Phone: 303-278-1538
Fax: 303-278-1519

Property	**Owner/Agent**
Montex at Vista Ridge	Enertia Consulting Group, LLC
Mountain View Blvd/Ridge View Drive Erie, CO 80516	1437 Larimer St Denver, CO 80202
Shawn Merz (720)502-6574	Shawn Merz (720)502-6574

Conducted by: Matthew Foster
Inspection Ref: 73353

Print Date: 10/22/2014

Signatures

Inspector - Printed	Inspector - Signature	Date Completed	I state that the information on this form is correct at the time and place of my inspection, and all equipment tested at this time was left in operational condition upon completion of this inspection except as noted.
Signature on Original			

Hydrant Flow Test Inspection

Yes	Free from ice or water in barrel ?
Yes	Free from leaks or cracks at outlets and top of hydrants?
Yes	Threads,outlets,caps & stem in good condition and lubricated?
Yes	Pumper and nozzle caps are slightly more than hand tight?
NA	Exposed piping is properly secured and free from leaks or physical damage?
Yes	Is paint in good condition?
Yes	Operating nut not worn, twisted or broken?
Yes	Operating nut turns without difficulty?
Yes	Road box and shutoff valve is visible and accessible?
Yes	Hydrant flowed until clear (min 1 Minute)?
Yes	Dry Barrels drain in at least 1 hour?
NA	Dry barrels requiring pumping are identified?
Yes	Control valves operated through full range?
Yes	Hydrant shuts off completely?
NA	Strainers, if installed, not blocked and corrosion free?
NA	Strainers cleaned (if possible)?
NA	Monitor nozzles moved through full range?
NA	Monitor nozzle flowed acceptable water?
NA	Monitor nozzle lubricated?
NA	Backflow assembles, if installed, passed full flow test?

Fire Hydrant Flow Test 50%

1st Hyd E of 2998	Residual Hydrant Location
2nd Hyd E of 2998	Flow Hydrant Location
80	Static PSI
70	Residual PSI
17	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
695	Water Flow GPM

Fire Hydrant Flow Test 100%

1st Hyd E of 2998	Residual Hydrant Location
2nd Hyd E of 2998	Flow Hydrant Location
80	Static PSI
75	Residual PSI
22	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
791	Water Flow GPM

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Report of Inspection/Test

Fire Hydrant #2

October 21, 2014

Integrated Safety Services of Colorado, LLC
9082 Marshall Ct.
Westminster, CO 80031
Phone: 303-278-1538
Fax: 303-278-1519

Property	**Owner/Agent**
Montex at Vista Ridge	Enertia Consulting Group, LLC
Mountain View Blvd/Ridge View Drive Erie, CO 80516	1437 Larimer St Denver, CO 80202
Shawn Merz (720)502-6574	Shawn Merz (720)502-6574

Conducted by: Matthew Foster
Inspection Ref: 73354

Print Date: 10/22/2014

Signatures

Inspector - Printed	Inspector - Signature	Date Completed	I state that the information on this form is correct at the time and place of my inspection, and all equipment tested at this time was left in operational condition upon completion of this inspection except as noted.
Signature on Original			

Hydrant Flow Test Inspection

Yes	Free from ice or water in barrel ?
Yes	Free from leaks or cracks at outlets and top of hydrants?
Yes	Threads,outlets,caps & stem in good condition and lubricated?
Yes	Pumper and nozzle caps are slightly more than hand tight?
NA	Exposed piping is properly secured and free from leaks or physical damage?
Yes	Is paint in good condition?
Yes	Operating nut not worn, twisted or broken?
Yes	Operating nut turns without difficulty?
Yes	Road box and shutoff valve is visible and accessible?
Yes	Hydrant flowed until clear (min 1 Minute)?
Yes	Dry Barrels drain in at least 1 hour?
NA	Dry barrels requiring pumping are identified?
Yes	Control valves operated through full range?
Yes	Hydrant shuts off completely?
NA	Strainers, if installed, not blocked and corrosion free?
NA	Strainers cleaned (if possible)?
NA	Monitor nozzles moved through full range?
NA	Monitor nozzle flowed acceptable water?
NA	Monitor nozzle lubricated?
NA	Backflow assembles, if installed, passed full flow test?

Fire Hydrant Flow Test 50%

2nd Hyd E of 2998	Residual Hydrant Location
1st Hyd E of 2998	Flow Hydrant Location
72	Static PSI
75	Residual PSI
14	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
631	Water Flow GPM

Fire Hydrant Flow Test 100%

2nd Hyd E of 2998	Residual Hydrant Location
1st Hyd E of 2998	Flow Hydrant Location
72	Static PSI
90	Residual PSI
22	Pitot PSI
2 1/2	Orifice Size
9	Discharge Coefficient
791	Water Flow GPM

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APPENDIX B

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION B101
GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m^2), used to determine the required fire flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases. The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the *fire code official* is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code.*

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General. The fire-flow calculation area shall be the total floor area of all floor levels within the *exterior walls*, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

B104.2 Area separation. Portions of buildings which are separated by *fire walls* without openings, constructed in accordance with the *International Building Code,* are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction. The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

Exception: Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One- and two-family dwellings. The minimum fire-flow and flow duration requirements for one- and two-family *dwellings* having a fire-flow calculation area that does not exceed 3,600 square feet (344.5 m^2) shall be 1,000 gallons per minute (3785.4 L/min) for 1 hour. Fire-flow and flow duration for *dwellings* having a fire-flow calculation area in excess of 3,600 square feet (344.5m^2) shall not be less than that specified in Table B105.1.

Exception: A reduction in required fire-flow of 50 percent, as *approved*, is allowed when the building is equipped with an *approved automatic sprinkler system.*

B105.2 Buildings other than one- and two-family dwellings. The minimum fire-flow and flow duration for buildings other than one- and two-family *dwellings* shall be as specified in Table B105.1.

Exception: A reduction in required fire-flow of up to 75 percent, as *approved*, is allowed when the building is provided with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in Table B105.1.

SECTION B106
REFERENCED STANDARDS

ICC	IBC—12	International Building Code	B104.2, Table B105.1
ICC	IWUIC—12	International Wildland-Urban Interface Code	B103.3
NFPA	1142—12	Standard on Water Supplies for Suburban and Rural Fire Fighting	B103.3

TABLE B105.1
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.

b. Measured at 20 psi residual pressure.

APPENDIX C

FIRE HYDRANT LOCATIONS AND DISTRIBUTION

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION C101 GENERAL

C101.1 Scope. Fire hydrants shall be provided in accordance with this appendix for the protection of buildings, or portions of buildings, hereafter constructed.

SECTION C102 LOCATION

C102.1 Fire hydrant locations. Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets.

SECTION C103 NUMBER OF FIRE HYDRANTS

C103.1 Fire hydrants available. The minimum number of fire hydrants available to a building shall not be less than that listed in Table C105.1. The number of fire hydrants available to a complex or subdivision shall not be less than that determined by spacing requirements listed in Table C105.1 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted.

SECTION C104 CONSIDERATION OF EXISTING FIRE HYDRANTS

C104.1 Existing fire hydrants. Existing fire hydrants on public streets are allowed to be considered as available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads.

SECTION C105 DISTRIBUTION OF FIRE HYDRANTS

C105.1 Hydrant spacing. The average spacing between fire hydrants shall not exceed that listed in Table C105.1.

Exception: The fire chief is authorized to accept a deficiency of up to 10 percent where existing fire hydrants provide all or a portion of the required fire hydrant service.

Regardless of the average spacing, fire hydrants shall be located such that all points on streets and access roads adjacent to a building are within the distances listed in Table C105.1.

TABLE C105.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more[e]	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers which cannot be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

d. Reduce by 50 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

HURST

CIVIL ENGINEERING
LAND PLANNING
SURVEYING

April 6, 2015

Matt Weiderspahn
Town of Erie
645 Holbrook
Erie, CO 80516

Re: Montex South Preliminary Plat

Dear Matt:

This is a response to your Phase III Utility Report comments for the Montex South Preliminary Plat dated February 25, 2014. The attached calculations and exhibits for the Vista Ridge existing sewer mains verify the assumptions of our letter dated July 31, 2013 and your Master Plan. The analysis includes the existing and proposed peak flows for the sewer system with the eastern wastewater basins of Vista Ridge. The main capacities are less than 50% of full flow capacity.

Sincerely,
HURST & ASSOCIATES, INC.

John W. Jorgenson, P.E.
State of Colorado No. 22730

JWJ/kw

Job No. 2142-5

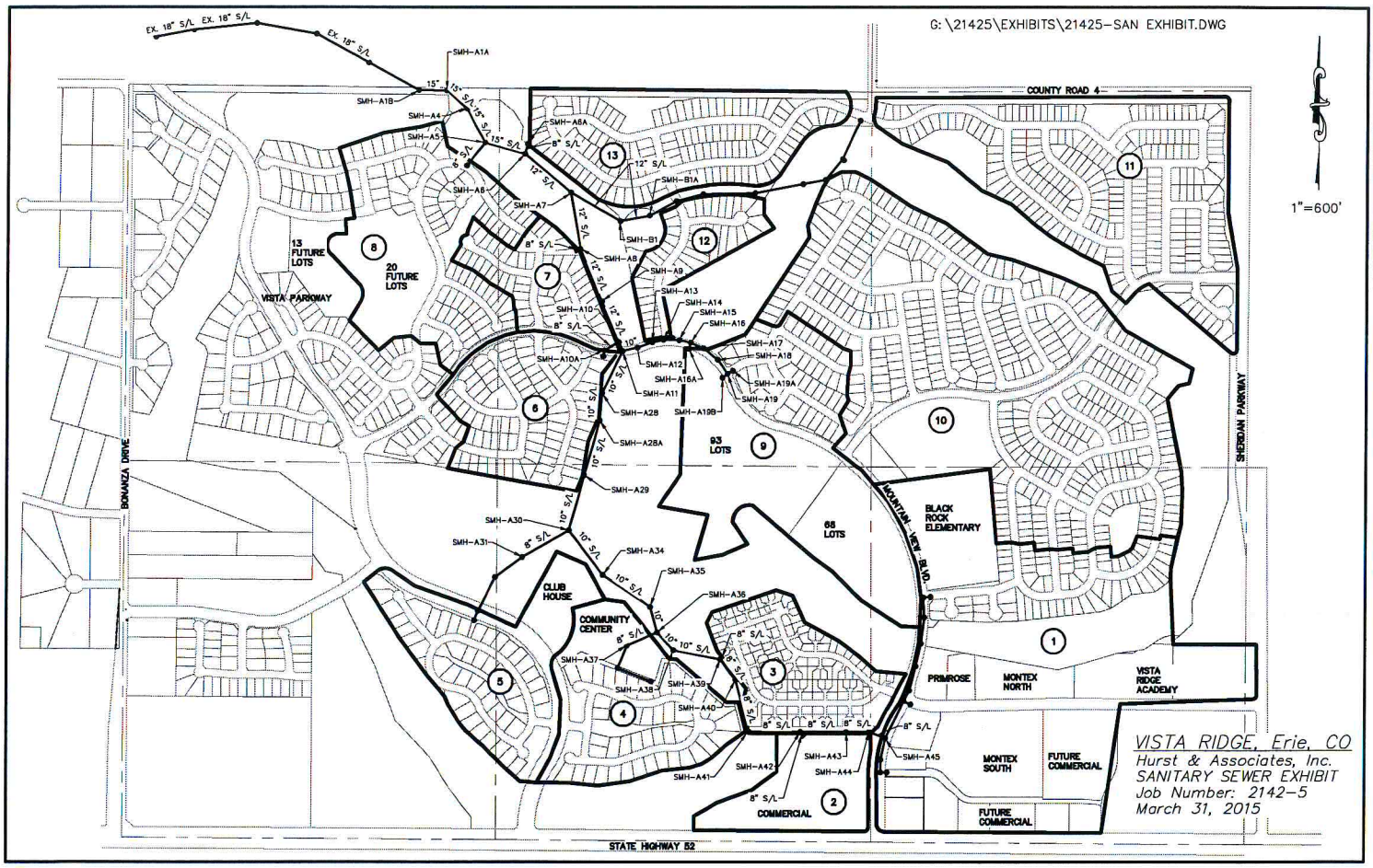
Analysis of Existing Vista Ridge Sanitary Sewer Main Capacities with Montex North & South Constructed

Down MH	Up MH	Note	As-Built ?	Pipe Size (inches)	Pipe Length (feet)	Pipe Slope (ft/ft)	Full Flow Pipe Capacity (cfs)	80% Depth Pipe Capacity (cfs)	Contributing Basins	Average Daily Flows (MGD)	Peaking Factor	Peak Flow Rate (MGD)	Peak Flow Rate (cfs)	Sufficient Pipe Capacity ?	% of Full Flow Capacity (cfs)
SMH-A1B	**SMH-A1A**		Yes	15	203.86	0.0074	**6.57**	6.42	1-13	0.30616	4.45	1.36170	**2.11**	YES	32.1%
SMH-A1A	**SM-A4**		Yes	15	195.41	0.0073	**6.52**	6.38	1-13	0.30616	4.45	1.36170	**2.11**	YES	32.3%
SMH-A4	**SMH-A5**		Yes	15	272.00	0.0047	**5.23**	5.12	1-13	0.30616	4.45	1.36170	**2.11**	YES	40.3%
SMH-A5	**SMH-A5A**	Pipe to SW	Yes	8	211.05	0.0685	**3.74**	3.65	8	0.01724	5.00	0.08621	**0.13**	YES	3.6%
SMH-A5	**SMH-A6**		Yes	15	293.66	0.0044	**5.06**	4.95	1-7, 9-13	0.28891	4.49	1.29752	**2.01**	YES	39.6%
SMH-A6	**SMH-A6A**	Stub to NW	Yes	8	76.61	0.0125	**1.60**	1.56	13	0.02042	5.00	0.10211	**0.16**	YES	9.9%
SMH-A6	**SMH-A7**		Yes	12	420.03	0.0123	**4.67**	4.56	1-7, 9-12	0.26849	4.55	1.22065	**1.89**	YES	40.4%
SMH-A7	**SMH-B1**	Pipe to SE	Yes	12	400.90	0.0182	**5.68**	5.55	10-12	0.10697	5.00	0.53484	**0.83**	YES	14.6%
SMH-A7	**SMH-A8**		Yes	12	401.81	0.0040	**2.66**	2.60	1-7, 9	0.16152	4.95	0.79937	**1.24**	YES	46.4%
SMH-A8	**Stub**	Stub to SW	No	8	2.00	0.0950	**4.40**	4.30	7	0.00870	5.00	0.04352	**0.07**	YES	1.5%
SMH-A8	**SMH-A9**		Yes	12	399.70	0.0203	**6.00**	5.86	1-6, 9	0.15282	5.00	0.76332	**1.18**	YES	19.7%
SMH-A9	**SMH-A10**		Yes	12	310.47	0.0142	**5.02**	4.90	1-6, 9	0.15282	5.00	0.76332	**1.18**	YES	23.5%
SMH-A10	**SMH-A10A**	Pipe to SW	Yes	8	117.07	0.0784	**4.00**	3.91	6	0.01356	5.00	0.06780	**0.10**	YES	2.6%
SMH-A10	**SMH-A11**		Yes	10	66.81	0.0302	**4.50**	4.40	1-5, 9	0.13926	5.00	0.69629	**1.08**	YES	23.9%
SMH-A11	**SMH-A12**	(Pipe to E)	Yes	8	104.43	0.1060	**4.65**	4.54	9	0.03432	5.00	0.17159	**0.27**	YES	5.7%
SMH-11	**SMH-A28**		Yes	10	331.11	0.0175	**3.43**	3.35	1-5	0.10494	5.00	0.52471	**0.81**	YES	23.7%
SMH-A28	**SMH-A28A**		Yes	10	191.94	0.0170	**3.38**	3.30	1-5	0.10494	5.00	0.52471	**0.81**	YES	24.0%
SMH-A28A	**SMH-A29**		Yes	10	399.74	0.0083	**2.36**	2.31	1-5	0.10494	5.00	0.52471	**0.81**	YES	34.4%
SMH-A29	**SMH-A30**		Yes	10	403.98	0.0591	**6.29**	6.15	1-5	0.10494	5.00	0.52471	**0.81**	YES	12.9%
SMH-30	**SMH-A31**	(Pipe to SW)	Yes	8	370.09	0.0328	**2.59**	2.53	5	0.01670	5.00	0.08350	**0.13**	YES	5.0%
SMH-30	**SMH-A34**		Yes	10	396.68	0.0045	**1.74**	1.70	1-4	0.08824	5.00	0.44120	**0.68**	YES	39.3%
SMH-A34	**SMH-A35**		Yes	10	398.97	0.0041	**1.66**	1.62	1-4	0.08824	5.00	0.44120	**0.68**	YES	41.2%
SMH-A35	**SMH-A36**		Yes	10	182.72	0.0069	**2.15**	2.10	1-4	0.08824	5.00	0.44120	**0.68**	YES	31.7%
SMH-A36	**SMH-A37**	(Pipe to SW)	No	8	230.05	0.0167	**1.85**	1.80	4	0.00800	5.00	0.04000	**0.06**	YES	3.4%
SMH-A36	**SMH-A38**		Yes	10	170.19	0.0060	**2.01**	1.96	1-3	0.08024	5.00	0.40120	**0.62**	YES	31.0%
SMH-A38	**SMH-A39**		Yes	10	339.33	0.0045	**1.74**	1.70	1-3	0.08024	5.00	0.40120	**0.62**	YES	35.7%
SMH-A39	**Stub**	(Stub to E)	No	8	2.00	0.0040	**0.90**	0.88	3	0.02310	5.00	0.11551	**0.18**	YES	19.8%
SMH-A39	**SMH-A40**		Yes	8	172.80	0.0165	**1.83**	1.79	1, 2	0.05714	5.00	0.28570	**0.44**	YES	24.1%
SMH-A40	**SMH-A40A**		Yes	8	191.84	0.0267	**2.33**	2.28	1, 2	0.05714	5.00	0.28570	**0.44**	YES	18.9%
SMH-A40A	**SMH-A41**		Yes	8	189.46	0.0226	**2.15**	2.10	1, 2	0.05714	5.00	0.28570	**0.44**	YES	20.6%
SMH-A41	**SMH-A42**		Yes	8	362.20	0.0291	**2.44**	2.38	1, 2	0.05714	5.00	0.28570	**0.44**	YES	18.1%
SMH-A42	**Stub**	(Stub to SW)	No	8	2.00	0.0050	**1.01**	0.99	2	0.00455	5.00	0.02275	**0.04**	YES	3.5%
SMH-A42	**SMH-A43**		Yes	8	325.79	0.0286	**2.42**	2.36	1	0.05259	5.00	0.26295	**0.41**	YES	16.8%
SMH-A43	**SMH-A44**		Yes	8	163.16	0.0056	**1.07**	1.04	1	0.05259	5.00	0.26295	**0.41**	YES	38.1%
SMH-A44	**SMH-A45**		Yes	8	125.28	0.0121	**1.57**	1.54	1	0.05259	5.00	0.26295	**0.41**	YES	25.9%

Peaking Factor = $3.65 / (ADF)^{0.167}$ =

* $2 \leq P.F. \geq 5$

Manning's Equation: $Q = 1.486 / n * A * (A / WP)^{2/3} * S^{1/2}$


G:\21425\EXHIBITS\21425-SAN EXHIBIT.DWG
1"=600'
COUNTY ROAD 4
BONANZA DRIVE
SHERIDAN PARKWAY
STATE HIGHWAY 52
VISTA PARKWAY
MOUNTAIN VIEW BLVD.
13 FUTURE LOTS
20 FUTURE LOTS
93 LOTS
65 LOTS
BLACK ROCK ELEMENTARY
CLUB HOUSE
COMMUNITY CENTER
PRIMROSE
MONTEX NORTH
VISTA RIDGE ACADEMY
MONTEX SOUTH
FUTURE COMMERCIAL
COMMERCIAL
VISTA RIDGE, Erie, CO
Hurst & Associates, Inc.
SANITARY SEWER EXHIBIT
Job Number: 2142-5
March 31, 2015

Basin 10 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	1046.3 residents	60 gal/capita/day	**62,775**	**0.06278**

*2.79 people unit

*375 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 10 Peak Flow Rate = 0.31388 MGD

Basin 10 Peak Flow Rate = 0.486 cfs

Basin 11 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	625.0 residents	60 gal/capita/day	**37,498**	**0.03750**

*2.79 people unit

*224 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 11 Peak Flow Rate = 0.18749 MGD

Basin 11 Peak Flow Rate = 0.290 cfs

Basin 12 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	111.6 residents	60 gal/capita/day	**6,696**	**0.00670**

*2.79 people unit

*40 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 12 Peak Flow Rate = 0.03348 MGD

Basin 12 Peak Flow Rate = 0.052 cfs

Basin 13 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	340.4 residents	60 gal/capita/day	**20,423**	**0.02042**

*2.79 people unit

*122 lots

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 13 Peak Flow Rate = 0.10211 MGD

Basin 13 Peak Flow Rate = 0.158 cfs

Basin 5 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	128.3 residents	60 gal/capita/day	7,700	0.00770
*2.79 people unit				
*Vista Ridge Filing #1B-A has 46 lots.				
Golf Course Club House			9,000	0.00900
*Assumed (175 inside seats, 125 patio seats, & 30 gal/seat)				
Total			**16,700**	**0.01670**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 5 Peak Flow Rate = 0.08350 MGD

Basin 5 Peak Flow Rate = 0.129 cfs

Basin 6 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	226.0 residents	60 gal/capita/day	**13,559**	**0.01356**

*2.79 people unit

*81 lots of Vista Ridge F#3

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 6 Peak Flow Rate = 0.06780 MGD

Basin 6 Peak Flow Rate = 0.105 cfs

Basin 7 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	145.1 residents	60 gal/capita/day	**8,705**	**0.00870**

*2.79 people unit

*52 lots of Vista Ridge F#1J

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 7 Peak Flow Rate = 0.04352 MGD

Basin 7 Peak Flow Rate = 0.067 cfs

Basin 8 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	287.4 residents	60 gal/capita/day	**17,242**	**0.01724**

*2.79 people unit

*103 lots (VR F#1J, VR F#1K, and 20 future lots)

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 8 Peak Flow Rate = 0.08621 MGD

Basin 8 Peak Flow Rate = 0.133 cfs

Basin 9 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	572.0 residents	60 gal/capita/day	**34,317**	**0.03432**

*2.79 people unit

*205 lots (VR F#1Q, VR F#9, and Heritage @ VR)

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 9 Peak Flow Rate = 0.17159 MGD

Basin 9 Peak Flow Rate = 0.265 cfs

Basin 1 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Daily Flow (MGD)
Residential	661.2 residents	60 gal/capita/day	39,674	0.03967
*2.79 people unit				
*Montex North 28 units, Montex South 145 unts, & VR F1 64 units (Total=237 units)				
Blackrock Elementary	750 students	7 gal/student/day	5,250	0.00525
*2013-14 Attendance was 746 students.				
Primrose School	100 children	7 gal/student/day	700	0.00070
*Assumed				
Vista Ridge Academy	150 students	7 gal/student/day	1,050	0.00105
*123 students enrolled per www.greatschools.org				
Future Commercial Development	17.4 acres	340 gal/acre/day	5,916	0.00592
Total			**52,590**	**0.05259**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 1 Peak Flow Rate = 0.26295 MGD

Basin 1 Peak Flow Rate = 0.407 cfs

Basin 2 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Commercial Development	13.38 acres	340 gal/acre/day	**4,549**	**0.00455**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 2 Peak Flow Rate = 0.02275 MGD

Basin 2 Peak Flow Rate = 0.035 cfs

Basin 3 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	385.0 residents	60 gal/capita/day	**23,101**	**0.02310**

*2.79 people unit

*Vista Ridge F#5, 2nd Amendment has 138 lots.

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 3 Peak Flow Rate = 0.11551 MGD

Basin 3 Peak Flow Rate = 0.179 cfs

Basin 4 Peak Flow Rate Calculations

Land Uses		Unit Wastewater Flow Rate	Average Daily Flow (gal/day)	Average Daily Flow (MGD)
Residential	128.3 residents	60 gal/capita/day	7,700	0.00770
*2.79 people unit				
*Vista Ridge Filing #1B-B has 46 lots.				
VR Community Center & Pool			300	0.00030
*Assumed				
Total			**8,000**	**0.00800**

Peaking Factor = 3.65 / $(ADF)^{0.167}$ = 5.00

* 2 ≤ P.F. ≥ 5

Basin 4 Peak Flow Rate = 0.04000 MGD

Basin 4 Peak Flow Rate = 0.062 cfs

Montex North at Vista Ridge Sanitary Design Summary

Sanitary Sewer Design Flow

Land Use	Units/SF	Residential/Unit Multiplier	Unit Wastewater Flow Rate (GPCD) (GPD/ACRE)	Average Day Demand (GPD)	Average Day Demand (cfs)	Average Day Demand (MGD)	Wastewater Peaking Factor[1]	Max Day Demand (GPD)	Max Day Demand (cfs)	Max Day Demand (MGD)
Single Family Residential	25	3.00	90	6,750	0.010	0.007	5.00	33,750	0.052	0.034
				6,750	**0.010**	**0.007**		**33,750**	**0.052**	**0.034**

[1] $PF = 3.8/(ADF)^{0.17}$ (2.5 min, 5.0 max)

ATTACHMENT C

REFERRAL RESPONSE SUMMARY

VISTA RIDGE FILING NO. 2, 1ST AMENDMENT Site Plan:

AGENCY	Sent	Rec'd	Comments
ERIE:			
Com. Dev.	12/1	2/27	See letter
OSTAB	12/1	12/20	See letter
Parks & Rec	12/1	1/2	No conflicts
Public Works Engineering	12/1	2/13	See letter
Public Works Engineering	4/24	5/29	See letter
HOA'S			
Vista Ridge	12/1		
Metro Districts			
Vista Ridge	12/1	12/3	System development fees due at final plat
MTN. VIEW FIRE	12/1	12/18	See letter
NAT. RES.:			
CGS	12/1	12/16	See letter
SCHOOL DISTRICT:			
St. Vrain Valley	12/1		
TOWNS:			
Broomfield	12/1	12/3	No conflicts
TRANSPORTATION			
Felsburg/Holt/Ullevig	12/1	12/22	See letter
UTILITIES:			
Century Link	12/1		
Comcast	12/1		
United Power	12/1	12/18	No conflicts

Department of Community Development
Planning Division

TOWN OF ERIE
1874

The Town of Erie
645 Holbrook St.
P.O. Box 750
Erie, CO 80516
(303) 926-2773
FAX (303) 926-2706

Memo

To: Ward Ritter

From: R. Martin Ostholthoff

Date: February 27, 2015

Re: SP-14-00037 Vista Ridge Filing No. 2, 1st Amendment Site Plan - Community Development Review Comments Development Review Team Meeting on February 5, 2015

Dear Ward,

Thank you for submitting the Site Plan application for Vista Ridge Filing No. 2, 1st Amendment. The Development Review Team (DRT) met on Thursday, February 5, 2015. In attendance were Community Development and Public Works. Following are the comments from the meeting that need to be addressed and/or changed for the Site Plan. All code references herein are for Title 10-UDC (Code) or the Vista Ridge Development Plan (VRDP).

Note that Public Works comments are being included under separate cover.

Please provide a written response to each of the comments below with your re-submission. Staff proposes to meet with you and your team to go over these comments prior to any re-submission.

General Information

1. Please update the Narrative to reflect changes being requested based on the new Site Plan concept discussed at our February 26th meeting.

2. Please verify that the minimum lot frontage requirements of Section V.F.5.g (VRDP) are being complied with for each lot and the proposed dwelling unit model.

3. Please note that a letter approving the architectural plans needs to be submitted to the Town by James Spehalski.

Site Plan Sheets

1. Please note that changes being requested on the Site Plan application will require the updating of the TITLE BLOCK on all sheets, and updating the LAND USE TABULATION TABLE and PARKING INVENTORY TABLE on sheet C1; adjust accordingly.

2. Please delete the LAND USE TABULATION TABLE and PARKING INVENTORY TABLE on sheet C2, as the information of sheet 1 will suffice.

3. Please update all sheets to reflect the concept discussed at our February 26th meeting.

4. With the relocated Emergency Access Drive, please update the signage locations on sheet C2 and update the roadway cross sections on sheet C4 as necessary.

5. Please revise sheets L2, L3 and L4 to reflect the open rail fence being the perimeter fence in lieu of the 5-foot solid fence (delete solid fence detail on sheet L4). Note that the undulating fencing requirement and masonry column requirement does not apply to the open fence.

6. Please note that the area inlet on Lot 4 cannot be on an individual lot, relocate area inlet accordingly.

7. As the dry utility design progresses, please design the location of all ground mounted utility boxes (Xcel transformer boxes) to be a minimum of 100-feet from the intersection of Ridge View Drive and Ridge View Court to meet the intent of Section 6.4.G.9.a (UDC).

Since review is a cumulative process and dependent on various criteria, we reserve the right to provide further comment(s) and request additional information upon receipt of this requested information. Please do not hesitate to contact me at 303.926.2771 for further clarification or with any questions or concerns that you may have.

Town of Erie
Open Space and Trails Advisory Board

From: Town of Erie Open Space and Trails Advisory Board (OSTAB)
To: Marty Ostholthoff, Director, Community Development
Date: December 22, 2014

Subject: Montex North Referral – Preliminary Plat and Site Plan

Location: north side of Ridge View Drive.

OSTAB has reviewed the referral materials, compared them to Town planning documents, and has prepared the following comments, questions, and recommendations for the Town's consideration in evaluating this application.

Open Space and the Natural Areas Inventory (NAI):

Discussion: There are no NAI sites on this property. There are no proposed open space areas on this property. The open space obligation in the Town's Unified Development Plan (UDC) was met previous by Vista Ridge Development Corporation.

Recommendations: None

Trails:

Discussion: There are no existing spine trails nearby. There are no proposed spine trails on this property. The application does not contain any neighborhood trails.

We noted that exactly half of the dwelling units (13 of 26) are located in the rear (northern) portion of the property, and that those units do not have direct access to a sidewalk or neighborhood trail. There are sidewalks on the southern (Ridge View Drive) and western sides, but none on the northern and eastern sides. The impact is that residents of half of the dwelling units must utilize common driveways to walk anywhere, and that the only option of all residents who wish to walk even short distances is the sidewalk along Ridge View Drive. Since there are schools both immediately east and west of this property, that street has heavy traffic when the school day is starting and ending. There are also numerous cars and buses turning into the driveways of those schools at those times. As a result, we believe the attractiveness of this development would be greatly enhanced if it contained a perimeter trail.

Recommendation: Build a sidewalk along the northern and eastern borders of the property so that residents have an option of walking without having to use Ridge View Drive.

Please pass this referral letter to the Applicant, and appropriate town departments, boards, and commissions. Thank you for your attention to these matters. OSTAB is available to discuss any of the above in more detail as needed.

Sincerely,

Open Space and Trails Advisory Board

Denise Brady
Monica Kash
Kevin Chard
Dawn Fraser
Nicole Littman
Ken Martin (Chair)
Joe Martinez

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
___Town of Erie Engineering
X Town of Erie Parks & Recreation
___Vista Ridge HOA
___Mountain View Fire Protection District
___St. Vrain Valley School District
___Felsburg Holt & Ullevig
___Comcast Commercial & Residential
___XCEL Energy
___Town of Erie Community Development
___Town of Erie OSTAB
___Public Review
___Vista Ridge Metro District
___CGS
___City & County of Broomfield
___Century Link Communications
___United Power

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

This application is submitted to you for review and comment. Please reply by **Monday, December 22, 2014,** so that we may give full consideration to your comments. Any response not received by this date may be deemed to be a positive response to the Town of Erie. Email responses can be sent to mostholthoff@erieco.gov. If you have any questions about this application, please call 303-926-2771.

✓ We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

✓ See comments below or attached letter.

Comments: ALL TOE STADARDS & SPECIFICATIONS MUST BE MET, SECTION 1000, PARKS AND RECREATION CONSTRUCTION PAY PARTICULAR ATTENTION TO 1062.0 - MATERIALS (EDGING) AND 1042.03 SOD (TALL FESCUE).

Signature: Rob Crabb **Date:** January 2, 2015

Name (Please Print) Rob Crabb

TOWN OF ERIE
1874

Memo

To: Marty Ostholthoff
From: Matt Wiederspahn, P.E., CFM, Development Engineer
Date: February 13, 2014
Subject: **Montex North Preliminary Plat**
CC: Russell Pennington
Wendi Palmer

Comments for Preliminary Plats:

1. All Town owned utilities must be places in 30 foot utility easements.
2. Both water and sanitary sewer lines are in the private drives, so they must be a minimum 30 foot wide easement on a tract.

Comments for Phase II Drainage Study:

1. Drainage conveyance will need to be provided for the future development to the east. Similar to what was provided to this area from the west.
2. Basin S7 is proposed to drain off-site un-detained. All flows from developed lands must be detained and provide water quality.
3. At design points 2 and 3, the inlets are only designed for the minor storm. There is no discussion of the downstream major storm and overflow drainage paths and facilities.

Comments for Preliminary Construction Plans:

1. On sheet 4, curb underdrains need to be shown on the local roadway cross-section.
2. On sheet 7:
    a. The water and sewer line connections and drive accesses in Ridgeview Drive for Montex South need to shown.
    b. There is an existing water stub near the east property line that needs to be utilized instead of cutting a new connection into the water line in Ridgeview Drive.
    c. Details need to be provided for the emergency access drive onto Ridgeview Drive.
    d. The 4" water lines in the private drives will be public mains, so they are required to be a minimum 8" PVC lines.
    e. The blowouts at the end of the private drives need to be located in the pavement.
    f. All water and sewer lines will need to be a minimum of 10 feet offset from a lot line and located in a 30 foot easement.
    g. All water meters must be located in a utility easement.
    h. Inlet STCB-2 needs to have a 10 foot separation from the water line.
    i. Streetlights need to be shown on Ridgeview Court.
    j. Irrigation services need to be shown for Tracts B, C, D, and E.
    k. On Tract C, there is a gas line shown outside of an easement.
    l. There is an existing streetlight in the new Ridgeview Circle access to Ridgeview Drive that will need to be relocated.

3. On sheet 13, the water service and meter for Lot 4 will need to be located on Lot 4. It also cannot cross a tract with separate ownership.

Comments for Phase III Utility Report:

1. The report needs to be renamed to Preliminary Utility Study.
2. For the water model, actual water pressures need to be measured at nearby fire hydrants and be used as the base water pressure.
3. In the Max Day + Fire Flow table, the fire flows needed at nodes J-9,10,11, and 12 should be 0 as there are no hydrants at the end of those lines.

TOWN OF ERIE
1874

Memo

To: Marty Ostholthoff
From: Matt Wiederspahn, P.E., CFM, Development Engineer
Date: May 29, 2015
Subject: **Montex North Preliminary Plat**
CC: Russell Pennington
Wendi Palmer

Previous (February 2015) Comments for Preliminary Construction Plans:

2. On sheet 7:
   f. All water and sewer lines will need to be a minimum of 10 feet offset from a lot line and located in a 30 foot easement.
   Response: Water and sewer lines have been revised to be 10 feet offset from the lot lines and within a 30' easement. Additional easement along the west property line is being negotiated.
   h. Inlet STCB-2 needs to have a 10 foot separation from the water line.
   Response: 5' of separation has been provided from inlet STCB-2. With the proposed layout, it is not possible to provide 10 feet separation. Insulation have be provided if the town feels it is necessary.

   10 foot separations are a Town minimum and are required for more the insulation purposes, but also for health and future maintenance purposes. In addition, the 30 foot easement width is also a minimum and in order to have three utility lines in easement and meet the separation requirements, a wider easement is necessary. New construction must meet these minimums and the layout may need to be adjusted to achieve them.

Previous (February 2015) Comments for Phase III Utility Report:

3. In the Max Day + Fire Flow table, the fire flows needed at nodes J-9,10,11, and 12 should be 0 as there are no hydrants at the end of those lines.
   Response: The Max Day + Fire Flow table has been modified to only include the hydrant nodes.

   All nodes still need to be included in the Max Day + Fire Flow table. The only change requested was that in the Fire Flow Needed column, the value should be 0 instead of 1500 for nodes J-10, 11, 12, and 13.

New Comments for Preliminary Construction Plans:

1. A few water line profiles were added to the Preliminary Construction Plans and show pipe deflections without bends. While water line profiles are not required with the Preliminary Construction Plans, please keep in mind that the final plans must meet Town Standards which require all changes in direction of waterline pipe to have bends in all instances.

2. On sheet 7, walls are shown being constructed in a utility easement and one is over a sanitary sewer line. While an encroachment license agreement can be done at Final Plat to allow walls in the easement, they cannot be constructed over a utility line.
3. On sheet 8, there doesn't appear to be a water service shown for Lot 3.
4. On sheet 18:
    a. While the Standard Detail Table is acceptable for the Preliminary Construction Plans, the current version of all details will need to shown in the Final Construction Plans.
    b. In the Emergency Secondary Access detail:
        i. A curb cut will be required off of Ridge View Drive (See Town Detail SW4A) with removable bollards to prevent access.
        ii. The curb ramp of Ridge View Court will need to be relocated outside of the emergency access.
        iii. The actual "grasscrete or approved substitute" will need to be specified in the Final Construction Plans.

DEC 02 2014

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
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Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

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X We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

___See comments below or attached letter.

Comments: Note that a System Development Fee of $56,846.84 is due upon Building Permit issuance!

Signature: Lisa Jacoby **Date:** 12/3/14

Name (Please Print) LISA JACOBY

12/2/14

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
___Town of Erie Engineering
___Town of Erie Parks & Recreation
___Vista Ridge HOA
✓ Mountain View Fire Protection District
___St. Vrain Valley School District
___Felsburg Holt & Ullevig
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X We have reviewed this application and find no conflicts with our interests
___We have reviewed this application and find conflicts with our interests.
X See comments below or attached letter.

Comments:_____

_____

_____

_____

Signature: _____ **Date:** 12/17/14

Name (Please Print) Lori Penfold

MOUNTAIN VIEW FIRE RESCUE
3561 North Stagecoach Road, Unit 200• Longmont, CO 80504
(303) 772-0710 • FAX (303) 651-7702

December 17, 2014

Mr. Marty Ostholthoff
Town of Erie, Community Development
P.O. Box 750
Erie, CO 80516

Dear Mr. Ostholthoff:

I have reviewed the submitted material pertaining to the Montex North preliminary plat and site plan located on the north side of Ridge View Drive between the Vista Academy and the Primrose School in Erie and shall make the following comments:

- Fire apparatus access is satisfactory as shown on the plans submitted. All roads must be completed with at least one layer of asphalt and street intersections signed before building permits may be issued.

- Fire hydrant locations is satisfactory as shown on the plans submitted. Fire hydrants must be approved by public works prior to the issuance of building permits.

We appreciate being involved in the planning process and should you have any questions, please contact me at 303-772-0710 x 1121.

Sincerely,

LuAnn Penfold
Fire Marshal

LMP/lp

cc: project file

lp12.04.14

COLORADO GEOLOGICAL SURVEY

1801 19th Street
Golden, Colorado 80401
303.384.2655

Karen Berry
State Geologist

December 16, 2014

Marty Ostholthoff
Community Development Services
Town of Erie
P.O. Box 750
Erie, CO 80516

Location:
SW¼ Section 33,
T1N, R68W of the 6th P.M.
40.0034, -105.0135

Subject: **Montex North – Site Plan and Preliminary Plat**
Town of Erie, Weld County, CO; CGS Unique No. WE-15-0015

Dear Marty:

Colorado Geological Survey has reviewed the Montex North site plan and preliminary plat referral. I understand the applicant proposes 26 single-family detached patio homes on approximately four acres located on the north side of Ridge View Drive, between 2998 and 3100 Ridge View Drive.

With this referral, I received a Development Referral requesting CGS's review (December 1, 2014), Vista Ridge Filing 2, 1st Amendment Site Plan and Preliminary Plat Land Use Applications (signed October 28, 2014), Montex North Site Plan and Preliminary Plat narratives (Enertia, November 3, 2014), a set of nine Site Plans (November 20, 2014), a set of three Preliminary Plat sheets (Lange Land Surveys, November 19, 2014), and a Preliminary Geotechnical Engineering Report (Pickering, Cole & Hivner [PCH], March 24, 2014).

The site is not undermined, and is not exposed to any geologic hazards that would preclude the proposed residential use and density. However, the site is underlain by very highly expansive clay fill, clay soils, and claystone bedrock at shallow depths that will cause significant damage to improvements unless carefully mitigated.

Very highly expansive soils and bedrock. Three of PCH's borings are located within the proposed Montex North development. Eight swell-consolidation tests were performed on clay fill, clay, and claystone samples. High to very high swell values of up to 16.9% when wetted under a 500 psf load were observed. PCH makes appropriate *preliminary* recommendations (pages 8-9) for mitigating the risk of structural damage associated with the very highly expansive soils and bedrock, including overexcavation and replacement with moisture-conditioned, properly compacted, low expansive fill to a depth of at least ten feet below lowest foundation bearing depths, and/or drilled pier foundations with structural floor systems.

Deep underdrain system. Because of the relatively small (4 acres), deep excavation that would be required if overexcavation is performed, the need for a deep underdrain system should be evaluated. This would help prevent the development of a shallow, perched water condition in the "bathtub" created by the overexcavation. Perched water can accumulate in the overexcavated and replaced soils as a result of disruption of historic groundwater flow through permeable zones in the upper bedrock and/or infiltration from the surface (and the adjacent, presumably irrigated golf course), potentially causing wetting and softening of foundation bearing soils, and excessive swell or settlement. The hydraulic conductivity of the upper bedrock zones beneath and surrounding the site (a function of the presence or absence of fractures, discontinuities, and permeable sandstone lenses and layers) should be a factor in determining whether an underdrain system is needed.

Additional, lot-specific investigations. Even after ground modifications (if implemented) and grading are complete, it is possible that some of the overexcavated and replaced fill will be moderate or higher swelling and some lots may require drilled pier foundations to resist uplift. Additional investigations, consisting of drilling, sampling, lab testing and analysis, will be needed on each lot, once grading is complete, to verify that swell potential values have been reduced to acceptable levels before shallow foundations and slab-on-grade floors are determined to be feasible. PCH's grading and surface drainage, subsurface drainage (including individual perimeter foundation drain systems, pages 9-10), floor system (pages 10-11), utility, concrete (sulfate attack-resistant Type V cement should be used in all foundation concrete and concrete that will be in contact with site soils), and preliminary pavement recommendations are valid.

Thank you for the opportunity to review and comment on this project. If you have questions or require further review, please call me at 303-384-2643, or e-mail carlson@mines.edu.

Sincerely,

Jill Carlson, C.E.G.
Engineering Geologist

PZ-14-00426

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
___Town of Erie Community Development
___Town of Erie Engineering
___Town of Erie OSTAB
___Town of Erie Parks & Recreation
___Public Review
___Vista Ridge HOA
___Vista Ridge Metro District
___Mountain View Fire Protection District
___CGS
___St. Vrain Valley School District
X City & County of Broomfield
___Felsburg Holt & Ullevig
___Century Link Communications
___Comcast Commercial & Residential
___United Power
___XCEL Energy

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

Location: North side of Ridge View Drive between Vista Academy & The Primrose School

Legal Description: See Attached Materials

This application is submitted to you for review and comment. Please reply by **Monday, December 22, 2014,** so that we may give full consideration to your comments. Any response not received by this date may be deemed to be a positive response to the Town of Erie. Email responses can be sent to mostholthoff@erieco.gov. If you have any questions about this application, please call 303-926-2771.

X We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

___See comments below or attached letter.

Comments:_____

_____

_____

_____

Signature: _____ **Date:** 12-3-14

Name (Please Print) Anna Bertanzetti

RECEIVED
DEC -2 2014
PLANNING

645 Holbrook • P.O. Box 750 • Erie, Colorado 80516 • Phone (303) 926-2770 -• Fax (303) 926-2706

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
___Town of Erie Community Development
___Town of Erie Engineering
___Town of Erie OSTAB
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X See comments below or attached letter.

Comments:_____

_____

_____

_____

Signature: David E. Hattan **Date:** 12/22/14

Name (Please Print) Dave Hattan

FELSBURG HOLT & ULLEVIG

connecting and enhancing communities

December 22, 2014

MEMORANDUM

TO: Marty Ostolthoff

FROM: David E. Hattan, P.E.

SUBJECT: Review of Preliminary Plat, Site Plan, and Trip Generation
PROJECT: Montex North (Vista Ridge LLC)
FHU # 95-190

I have reviewed the written narrative, preliminary plat, site plan, and traffic generation letter for the proposed development of Montex North which is located on the north side of Ridge View Drive in the southeast corner of the Vista Ridge development. I have specifically looked at this information from the perspective of traffic engineering and transportation planning but not general civil or utility engineering. This development is relatively small with 26 "age-targeted" single family detached home units. All public access to this development will be at one location (Ridge View Circle) but an emergency only access will also be located on Ridge View Drive, slightly over 100 feet to the east. I have the following observations regarding this information:

Trip Generation Comparison

- This letter report is entitled *Montex North and South – Vista Ridge Zones 15 and 16 Trip Generation Comparison*, LSC Transportation Consultants, October 30, 2014. It compares the trip generation for both Montex North and South (144 apartment units). Similar information has been received regarding Montex South and a King Soopers anchored development also serviced by Ridge View Drive. More complete reviews of these other nearby development will be provided by the end of 2014 and in January, 2015. However, as much as possible, the comments on Montex North are based on our initial review of these other developments.
- Table 1 – Estimated Traffic Generation for Montex North and South. The trip generation for the 26 age-targeted single family units in Montex North is based on an average two Institute of Transportation Engineers (ITE) land uses. The same explanatory note was previously used (Trip Generation Comparison (September, 2013 by LSC) for 200 apartments. The end result is a trip generation rate that reduces the trip generation rate from 9.52 trips per day (tpd) to 6.60 tpd. It is difficult to reconcile this reduction with the design for these units that includes an attached, two-car garage with additional parking for two cars in each driveway. More (and less confusing) information must be provided before I can agree that the proposed rate is appropriate. This information could possibly be in the September 2013 comparison, but this document was not provided.
- The basic premise of the Montex studies is that their trip generation is less than originally calculated in 2000 for the overall development. The data is almost 15 years old and no specific information regarding Ridge View Drive was provided in the 2000 report. It is my recommendation that the traffic impact analyses for Montex North and South be coordinated closely with the analyses for the King Soopers development (which will need

to be revised also) in order to provide the Town of Erie with a complete picture of the traffic that will be using Ridge View Drive and the two intersections at each end – Sheridan Boulevard and Mountain View Drive.

- Ridge View Drive is a two-lane street with a continuous center left turn lane. This should provide convenient access to the development.

Preliminary Plat and Site Plan

- The intersection of Ridge View Circle with Ridge View Drive should line up opposite the east access (Ridge View Circle) in Montex South.
- The written narrative states that a pocket park is located in Montex South on the south side of Ridge View Drive. Without more information regarding traffic volumes on Ridge View Drive and the walking distances involved, it is hard to assess the utility of this park for Montex North residents.
- The dimensions of Ridge View Court and private drives shown in the Preliminary Plat do not meet standards for public streets in Erie. The written narrative states that "The propose Site Plan is generally consistent with the previously approved Site Plans within the planning area and is consistent with the Vista Ridge PD that governs the master development as a whole. In addition, the proposed Site Plan complies with the applicable design and development standards set forth in Chapter 2 thru 6 of the UDC," I do not have copies the previous Site Plans that are referred to and am not too familiar with the UDC. The appropriateness of these streets and driveways will need to be analyzed more closely by Town staff.
- Staff for emergency service provides will need to comment on the appropriateness of the separation between Ridge View Circle and the emergency access shown to the east.

Please call if you have any questions or need additional information.

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Building Department
___Town of Erie Engineering
___Town of Erie Parks & Recreation
___Vista Ridge HOA
___Mountain View Fire Protection District
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X United Power

Planner: Marty Ostholthoff **Date: December 1, 2014**

Project: Montex North **Applicant: Montex (Vista Ridge LLC)**

Description: Preliminary Plat and Site Plan

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___We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

___See comments below or attached letter.

Comments:_____

_____

_____

_____

Signature: Kathy Rotello **Date:** 12/18/14

Name (Please Print) KATHY ROTELLO

645 Holbrook • P.O. Box 750 • Erie, Colorado 80516 • Phone (303) 926-2770 -• Fax (303) 926-2706

ENERTIA CONSULTING GROUP LLC

1529 Market St., Suite 200
Denver, CO 80202
303.564.3435
shawn.merz@enertiacg.com

April 17, 2015

R. Martin Ostholthoff
Community Development Director
Town of Erie
Community Development Department
645 Holbrook Street
PO Box 750
Erie, CO 80516

Re: SP-14-00037, PP-14-00017 Vista Ridge Filing No. 2, 1st Amendment

Dear Mr. Ostholthoff:

This letter presents a response to the comments received on March 5, 2015 for the Preliminary Plat and Site Plan Submittals for Montex North at Vista Ridge.

Development Review Team (DRT) Preliminary Plat Comments (2/27/2015)

General Information

1. Please update the Narrative to reflect changes being requested based on the new Site Plan concept discussed at our February 26th meeting.
   Response: The Narrative has been updated to reflect the changes to the Site Plan.

Preliminary Plat – Sheet 1

1. Please remove the CERTIFICATE OF DEDICATION AND OWNERSHIP and replace with LEGAL DESCRIPTION.
   Response: Revised as requested.

2. Please note that changes being requested on the Site Plan application will require the updating of the TITLE BLOCK, GENREAL NOTES, LAND SUMMARY CHART and TRACT SUMMARY CHART; adjust accordingly.
   Response: Revised as requested.

Preliminary Plat – Sheet 2

1. Please update the preliminary plat to reflect changes based on the new Site Plan concept discussed at our February 26th meeting.
   Response: Noted. Changes have been reflected on the preliminary plat.

2. Please note that a separate Vacation application will need to be processed concurrent with the final plat for this property to vacate the existing 10-foot and 8-foot utility easements created by the Vista Ridge Filing No. 2 Final Plat.
   Response: Noted.

3. Please note that the Town will need proof of the vacation of the Utility Easement recorded at reception no. 3148806 prior to recordation of a final plat for the subject property.
   Response: Noted.

Preliminary Plat – Sheet 3 (now sheet 4)

1. Please note that changes being requested on the Site Plan application will require the updating of information on this sheet; adjust accordingly
   Response: Noted. Changes have been reflected on the preliminary plat.

Development Review Team (DRT) Site Plan Comments (2/27/2015)

General Information

1. Please update the Narrative to reflect changes being requested based on the new Site Plan concept discussed at our February 26th meeting.
   Response: The Narrative has been updated to reflect the changes to the Site Plan.

2. Please verify that the minimum lot frontage requirements of Section V.F.5.g (VRDP) are being complied with for each lot and the proposed dwelling unit model.
   Response: All lot frontages meet the 30-foot required frontage per V.F.5.g per the VRDP.

3. Please note that a letter approving the architectural plans needs to be submitted to the Town by James Spehalski.
   Response: Noted. Mr. Spehalski has been contacted and has provided a letter approving the architectural plans. The approval letter is included with this resubmittal.

Site Plan Sheets

1. Please note that changes being requested on the Site Plan application will require the updating of the TITLE BLOCK on all sheets, and updating the LAND USE TABULATION TABLE and PARKING INVENTORY TABLE on sheet C1; adjust accordingly.
   Response: Revised as requested.

2. Please delete the LAND USE TABULATION TABLE and PARKING INVENTORY TABLE on sheet C2, as the information of sheet 1 will suffice.
   Response: Revised as requested.

3. Please update all sheets to reflect the concept discussed at our February 26th meeting.
   Response: All sheets have been updated as requested.

4. With the relocated Emergency Access Drive, please update the signage locations on sheet C2 and update the roadway cross sections on sheet C4 as necessary.
   Response: Revised as requested.

5. Please revise sheets L2, L3 and L4 to reflect the open rail fence being the perimeter fence in lieu of the 5-foot solid fence (delete solid fence detail on sheet L4). Note that the undulating fencing requirement and masonry column requirement does not apply to the open fence.
   Response: Sheets L2, L3 and L4 have been revised to show the perimeter fence as open rail fence. Solid fence detail on sheet L4 remains to illustrate the fence that is predominately proposed at the rear yards of interior lots.

6. Please note that the area inlet on Lot 4 cannot be on an individual lot, relocate area inlet accordingly.
   Response: There are no area inlets located on Lot 4. The existing inlet is identified to be removed.

7. As the dry utility design progresses, please design the location of all ground mounted utility boxes (Xcel transformer boxes) to be a minimum of 100-feet from the intersection of Ridge View Drive and Ridge View Court to meet the intent of Section 6.4.G.9.a (UDC).
   Response: Noted.

Public Works Comments – Matt Wiederspahn, P.E. (2/13/2015)

Comments for Preliminary Plats:

1. All Town owned utilities must be places in 30 foot utility easements.
   Response: A 30 foot utility easement has been provided for all town owned utilities.

2. Both water and sanitary sewer lines are in the private drives, so they must be a minimum 30 foot wide easement on a tract.
   Response: A 30 foot utility easement has been provided for all town owned utilities.

Comments for Phase II Drainage Study:

1. Drainage conveyance will need to be provided for the future development to the east. Similar to what was provided to this area from the west.
   Response: A 24" pipe has been extended to the east for the future development.

2. Basin S7 is proposed to drain off-site un-detained. All flows from developed lands must be detained and provide water quality.
   Response: The runoff to the golf course has been minimized and is very small (Q_2=0.26 cfs, Q_{100}=1.26 cfs). Additionally, there is a small basin from the golf course (Basin OS5) which drains onto the Montex North Site. Flow from the golf course (Q_2=0.15 cfs, Q_{100}=2.68 cfs) exceeds the flow from Basin S9. The golf course runoff is captured in an area inlet between Buildings 15 and 18 and routed through the pond west of Primrose Preschool where detention and water quality is provided. This offsets the runoff to the golf course from Basin S9. Basin S9 water quality and detention will be provided in downstream ponds. Ultimately both basins end up in the same location.

3. At design points 2 and 3, the inlets are only designed for the minor storm. There is no discussion of the downstream major storm and overflow drainage paths and facilities.
   Response: Inlets have been sized for the major storm event and overflow drainage paths and facilities have been provided.

Comments for Preliminary Construction Plans:

1. On sheet 4, curb underdrains need to be shown on the local roadway cross-section.
   Response: The underdrains shown are provided for the sump line connections. These have been shown on the roadway cross-section.

2. On sheet 7:
   a. The water and sewer line connections and drive accesses in Ridgeview Drive for Montex South need to be shown.
      Response: The water and sewer line connections have been show as requested.

   b. There is an existing water stub near the east property line that needs to be utilized instead of cutting a new connection into the water line in Ridgeview Drive.
      Response: The water alignment has been revised to connect to the provided stub near the east property line.

   c. Details need to be provided for the emergency access drive onto Ridgeview Drive.
      Response: Details have been provided for the emergency access drive.

   d. The 4" water lines in the private drives will be public mains, so they are required to be a minimum 8" PVC lines.
      Response: The private drive waterlines have been upsized to 8" PVC lines. However, 4" water lines are adequate for 6 single-family homes and it is our recommendation that 4" water lines be used to avoid water quality issues. These waterlines are for domestic use only and not used for fire flow.

   e. The blowouts at the end of the private drives need to be located in the pavement.
      Response: Blowouts have been moved to be within the pavement.

f. All water and sewer lines will need to be a minimum of 10 feet offset from a lot line and located in a 30 foot easement.
Response: Water and sewer lines have been revised to be 10 feet offset from the lot lines and within a 30' easement. Additional easement along the west property line is being negotiated.

g. All water meters must be located in a utility easement.
Response: All water meters have been located in a utility easement.

h. Inlet STCB-2 needs to have a 10 foot separation from the water line.
Response: 5' of separation has been provided from inlet STCB-2. With the proposed layout, it is not possible to provide 10 feet of separation. Insulation have be provided if the town feels it is necessary.

i. Streetlights need to be shown on Ridgeview Court.
Response: Street lights on Ridge View Court have been shown.

j. Irrigation services need to be shown for Tracts B, C, D, and E.
Response: Irrigation services have been shown.

k. On Tract C, there is a gas line shown outside of an easement.
Response: Additional easement has been provided to include the existing gas line.

l. There is an existing streetlight in the new Ridgeview Circle access to Ridgeview Drive that will need to be relocated.
Response: Noted. The streetlight has been identified to be relocated.

3. On sheet 13, the water service and meter for Lot 4 will need to be located on Lot 4. It also cannot cross a tract with separate ownership.
Response: The water service and meter have been relocated to avoid crossing a tract with separate ownership and the meter has been located on Lot 4.

Comments for Phase III Utility Report:

1. The report needs to be renamed to Preliminary Utility Study.
Response: The report has been renamed to Preliminary Utility Study as requested.

2. For the water model, actual water pressures need to be measured at nearby fire hydrants and be used as the base water pressure.
Response: The model was based on actual pressures at the existing hydrants located in Ridge View Drive. These tests were performed by Integrated Safety Services of Colorado on October 21, 2014. The hydrant test reports have been included in the Preliminary Utility Study for reference.

3. In the Max Day + Fire Flow table, the fire flows needed at nodes J-9,10,11, and 12 should be 0 as there are no hydrants at the end of those lines.
Response: The Max Day + Fire Flow table has been modified to only include the hydrant nodes.

REFERRAL AGENCY COMMENTS:

Felsburg Holt & Ullevig (December 22, 2014)

Trip Generation Comparison

1. This letter report is entitled *Montex North and South – Vista Ridge Zones 15 and 16 Trip Generation Comparison*, LSC Transportation Consultants, October 30, 2014. It compares the trip generation for both Montex North and South (144 apartment units). Similar information has been

received regarding Montex South and a King Soopers anchored development also serviced by Ridge View Drive. More complete reviews of these other nearby development will be provided by the end of 2014 and in January, 2015. However, as much as possible, the comments on Montex North are based on our initial review of these other developments.
Response: Noted.

2. Table 1 – Estimated Traffic Generation for Montex North and South. The trip generation for the 26 age-targeted single family units in Montex North is based on an average two Institute of Transportation Engineers (ITE) land uses. The same explanatory note was previously used (Trip Generation Comparison (September, 2013 by LSC) for 200 apartments. The end result is a trip generation rate that reduces the trip generation rate from 9.52 trips per day (tpd) to 6.60 tpd. It is difficult to reconcile this reduction with the design for these units that includes an attached, two-car garage with additional parking for two cars in each driveway. More (and less confusing) information must be provided before I can agree that the proposed rate is appropriate. This information could possibly be in the September 2013 comparison, but this document was not provided.
Response: The proposed site plans have 25 age-targeted single family homes and 144 apartment units. Even with the standard rate of 9.52 trips per day (tpd) there will be an overall reduction from what was anticipated for this parcel in the Master TIS.

3. The basic premise of the Montex studies is that their trip generation is less than originally calculated in 2000 for the overall development. The data is almost 15 years old and no specific information regarding Ridge View Drive was provided in the 2000 report. It is my recommendation that the traffic impact analyses for Montex North and South be coordinated closely with the analyses for the King Soopers development (which will need to be revised also) in order to provide the Town of Erie with a complete picture of the traffic that will be using Ridge View Drive and the two intersections at each end – Sheridan Boulevard and Mountain View Drive.
Response: The Montex North development is the development of a parcel that has been anticipated and accounted for since the beginning of the Vista Ridge Development. Ridgeview Drive has been designed, reviewed and approved to be constructed to accommodate the proposed development of this, and the surrounding lots, both north and south of Ridgeview Dr. In addition, Montex North as residential has reduced the traffic contributing to Ridgeview Dr. Please refer to the Montex North TIS submitted with the first submittal for trip generation numbers.

4. Ridge View Drive is a two-lane street with a continuous center left turn lane. This should provide convenient access to the development.
Response: Noted.

Preliminary Plat and Site Plan

5. The intersection of Ridge View Circle with Ridge View Drive should line up opposite the east access (Ridge View Circle) in Montex South.
Response: Noted. Ridge View Circle on the north aligns with Ridge View Circle on the south.

6. The written narrative states that a pocket park is located in Montex South on the south side of Ridge View Drive. Without more information regarding traffic volumes on Ridge View Drive and the walking distances involved, it is hard to assess the utility of this park for Montex North residents.
Response: The residents from Montex North can easily access the park via multiple options; there are walks that route pedestrians from all homes to the park, only having to cross Ridgeview. In addition, parking spaces have been provided near the park for those who would prefer to drive to the park.

7. The dimensions of Ridge View Court and private drives shown in the Preliminary Plat do not meet standards for public streets in Erie. The written narrative states that "The propose Site Plan is generally consistent with the previously approved Site Plans within the planning area and is consistent with the Vista Ridge PD that governs the master development as a whole. In addition,

the proposed Site Plan complies with the applicable design and development standards set forth in Chapter 2 thru 6 of the UDC," I do not have copies the previous Site Plans that are referred to and am not too familiar with the UDC. The appropriateness of these streets and driveways will need to be analyzed more closely by Town staff.
Response: Ridge View Court and the private drives are private streets and meet the criteria outlined in the Vista Ridge Development Plan.

8. Staff for emergency service provides will need to comment on the appropriateness of the separation between Ridge View Circle and the emergency access shown to the east.
Response: Noted.

Town of Erie Open Space and Trails Advisory Board (December 22, 2014)

Open Space and the Natural Areas Inventory (NAI):

1. Discussion: There are no NAI sites on this property. There are no proposed open space areas on this property. The open space obligation in the Town's Unified Development Plan (UDC) was met previous by Vista Ridge Development Corporation.

   Recommendations: None
   Response: Noted.

Trails:

2. Discussion: There are no existing spine trails nearby. There are no proposed spine trails on this property. The application does not contain any neighborhood trails. We noted that exactly half of the dwelling units (13 of 26) are located in the rear (northern) portion of the property, and that those units do not have direct access to a sidewalk or neighborhood trail. There are sidewalks on the southern (Ridge View Drive) and western sides, but none on the northern and eastern sides. The impact is that residents of half of the dwelling units must utilize common driveways to walk anywhere, and that the only option of all residents who wish to walk even short distances is the sidewalk along Ridge View Drive. Since there are schools both immediately east and west of this property, that street has heavy traffic when the school day is starting and ending. There are also numerous cars and buses turning into the driveways of those schools at those times. As a result, we believe the attractiveness of this development would be greatly enhanced if it contained a perimeter trail.

   Recommendation: Build a sidewalk along the northern and eastern borders of the property so that residents have an option of walking without having to use Ridge View Drive.
   Response: Sidewalks adjacent to the golf course are not provided on other developments within Vista Ridge community and are discouraged by the golf course. Eliminating pedestrian trails adjacent to the golf course circumvents pedestrian trespassing and eliminates golfer/pedestrian interaction. In addition, there is concern for pedestrian safety from stray golf balls from the golf course.

Mountain View Fire Rescue (December 17, 2014)

1. Fire apparatus access is satisfactory as shown on the plans submitted. All roads must be completed with at least one layer of asphalt and street intersections signed before building permits may be issued.
   Response: Noted.

2. Fire hydrant locations is satisfactory as shown on the plans submitted. Fire hydrants must be approved by public works prior to the issuance of building permits.
   Response: Noted.

Colorado Geological Survey (December 16, 2014)

Colorado Geological Survey has reviewed the Montex North site plan and preliminary plat referral. I understand the applicant proposes 26 single-family detached patio homes on approximately four acres located on the north side of Ridge View Drive, between 2998 and 3100 Ridge View Drive.

With this referral, I received a Development Referral requesting CGS's review (December 1, 2014), Vista Ridge Filing 2, 1st Amendment Site Plan and Preliminary Plat Land Use Applications (signed October 28, 2014), Montex North Site Plan and Preliminary Plat narratives (Enertia, November 3, 2014), a set of nine Site Plans (November 20, 2014), a set of three Preliminary Plat sheets (Lange Land Surveys, November 19, 2014), and a Preliminary Geotechnical Engineering Report (Pickering, Cole & Hivner [PCH], March 24, 2014).

The site is not undermined, and is not exposed to any geologic hazards that would preclude the proposed residential use and density. However, the site is underlain by very highly expansive clay fill, clay soils, and claystone bedrock at shallow depths that will cause significant damage to improvements unless carefully mitigated.

Very highly expansive soils and bedrock. Three of PCH's borings are located within the proposed Montex North development. Eight swell-consolidation tests were performed on clay fill, clay, and claystone samples. High to very high swell values of up to 16.9% when wetted under a 500 psf load were observed. PCH makes appropriate *preliminary* recommendations (pages 8-9) for mitigating the risk of structural damage associated with the very highly expansive soils and bedrock, including overexcavation and replacement with moisture-conditioned, properly compacted, low expansive fill to a depth of at least ten feet below lowest foundation bearing depths, and/or drilled pier foundations with structural floor systems.

Deep underdrain system. Because of the relatively small (4 acres), deep excavation that would be required if overexcavation is performed, the need for a deep underdrain system should be evaluated. This would help prevent the development of a shallow, perched water condition in the "bathtub" created by the overexcavation. Perched water can accumulate in the overexcavated and replaced soils as a result of disruption of historic groundwater flow through permeable zones in the upper bedrock and/or infiltration from the surface (and the adjacent, presumably irrigated golf course), potentially causing wetting and softening of foundation bearing soils, and excessive swell or settlement. The hydraulic conductivity of the upper bedrock zones beneath and surrounding the site (a function of the presence or absence of fractures, discontinuities, and permeable sandstone lenses and layers) should be a factor in determining whether an underdrain system is needed.

Additional, lot-specific investigations. Even after ground modifications (if implemented) and grading are complete, it is possible that some of the overexcavated and replaced fill will be moderate or higher swelling and some lots may require drilled pier foundations to resist uplift. Additional investigations, consisting of drilling, sampling, lab testing and analysis, will be needed on each lot, once grading is complete, to verify that swell potential values have been reduced to acceptable levels before shallow foundations and slab-on-grade floors are determined to be feasible. PCH's grading and surface drainage, subsurface drainage (including individual perimeter foundation drain systems, pages 9-10), floor system (pages 10-11), utility, concrete (sulfate attack-resistant Type V cement should be used in all foundation concrete and concrete that will be in contact with site soils), and preliminary pavement recommendations are valid.

Response: Noted.

United Power (December 18, 2014)

No Comment.

Town of Erie Parks & Recreation (January 2, 2015)

1. All the standards and specifications must be met, section 1000, Parks and Recreation Construction. Pay particular attention to 1062.0 – Materials (Edging) and 1042.03 Sod (Tall Fescue).

Response: 6" deep edger is very expensive and difficult to acquire. 4" deep edger has been proposed.

City and County of Broomfield (December 3, 2014)

No Comment.

Vista Ridge Metro District (December 3, 2014)

1. Note that a System Development Fee of $56,846.84 is due upon Building Permit issuance.

Response: Noted.

Xcel Energy (December 22, 2014)

Public Service Company of Colorado (PSCo) has reviewed the plans for **Montex North / Vista Ridge F2 A1**. Please be aware PSCo owns and operates existing natural gas distribution facilities within the subject property. The property owner/developer/contractor must contact the **Builder's Call Line at 1-800-628-2121** and complete the application process for any new natural gas service or modification to existing facilities. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

PSCo requests the utility easements be dedicated to the Town of Erie for the benefit of the applicable utility providers for the installation, maintenance, and replacement of electric, gas, television, cable, and telecommunications facilities (Dry Utilities). Utility easements shall also be granted within any access easements and private streets in the subdivision including Tract A. Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, **including, without limitation, vegetation**. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form. Public Service Company also requests that all utility easements be depicted graphically on the preliminary and final plats. While these easements should accommodate the majority of utilities to be installed in the subdivision, some additional easements may be required as planning and building progresses.

As a safety precaution, PSCo would like to remind the developer to call the **Utility Notification Center at 1-800-922-1987** to have all utilities located prior to any construction.

Response: Noted.

We trust that our responses to the comments are acceptable and complete. Please do not hesitate to call should you have any questions.

Sincerely,

ENERTIA CONSULTING GROUP, LLC

Shawn Merz, PE, LEED A.P.
Senior Engineer

ATTACHMENT D

MARATHON
LAND COMPANY

April 7, 2015

Ward Ritter
Chartered Homes
3160 Village Vista Drive, Suite 104
Erie, CO 80516

RE: VISTA RIDGE MASTER HOA - CONSENT TO IMPROVEMENTS
Vista Ridge, Filing No. 2 – 1st Amendment
Plan 4, 6, 7 & 8 - Elevations A & B

Dear Ward:

Enclosed for your files is the master HOA Architectural Review Committee Consent to Improvements for Architectural Design and Materials document for the above referenced lot.

In addition, as developer, do not perform any lot specific reviews, such as reviews of plot and grading plans, but only review architectural plans and color schemes proposed by builders to ensure overall architectural compatibility and cohesiveness within Vista Ridge community,

Should you have any questions on the above referenced subject, please contact me at 303-920-9400.

Sincerely,

James R. Spehalski
Marathon Land Company
On behalf of Vista Ridge Development Corporation,
Vista Ridge Master HOA Declarant

C: Holly Thede, Management Specialists w/ plans attached

CONSENT TO IMPROVEMENTS

This Consent to Improvements ("Consent") is given this **7th day of April, 2015**, by the Architectural Review Committee of the Vista Ridge Master Homeowners Association, Inc. to **Chartered Homes** ("Builder") and is given in contemplation of the following facts and circumstances:

A. Builder is the owner of real property known as **Vista Ridge Filing No. 2 - 1st Amendment** and incorporated herein by this reference (the "Property").

B. The ownership and use of the Property is subject to:

1. The Vista Ridge Development Plan and Vista Ridge Development Guide recorded September 15, 2000 at Reception No. 2793940 in the Office of the Clerk and Recorder of Weld County, Colorado ("Development Guide");

2. The Master Declaration of Covenants, Conditions and Restrictions for Vista Ridge recorded December 14, 2001 at Reception No. 2909244 in the Office of the Clerk and Recorder of Weld County, Colorado ("HOA Declaration"); and

C. The Development Guide requires that the Vista Ridge Master Homeowners Association ("Association") will appoint an architectural control committee that will review and approve all models and elevations of homes to be constructed.

D. The HOA Declaration provides for the appointment of an Architectural Review Committee to review all Improvements made to a lot, but exempts Builder from such review insofar as the Developer Covenants require Builder to obtain approval of Vista Ridge Development Corporation prior to making any improvements on the Property.

E. In order to comply with the Development Guide, the Architectural Review Committee of the Vista Ridge Master Homeowners Association, Inc. has reviewed and, by this consent, is willing to acknowledge its approval of Builder's **Architectural Design;**

1. **Model Plan 4, 6, 7 & 8 - Elevations A & B, prepared by Woodley Architectural Group, dated 3/2/15.**

NOW, THEREFORE, in consideration of the foregoing, the Architectural Review Committee of the Vista Ridge Master Homeowners Association, Inc., having reviewed Builder's proposed model(s) and elevation(s) of home(s) to be constructed on the Property, hereby approves such model(s) and elevation(s).

Dated this 7th day of April, 2015.

VISTA RIDGE MASTER HOMEOWNERS ASSOCIATION ARCHITECTURAL REVIEW COMMITTEE

By:

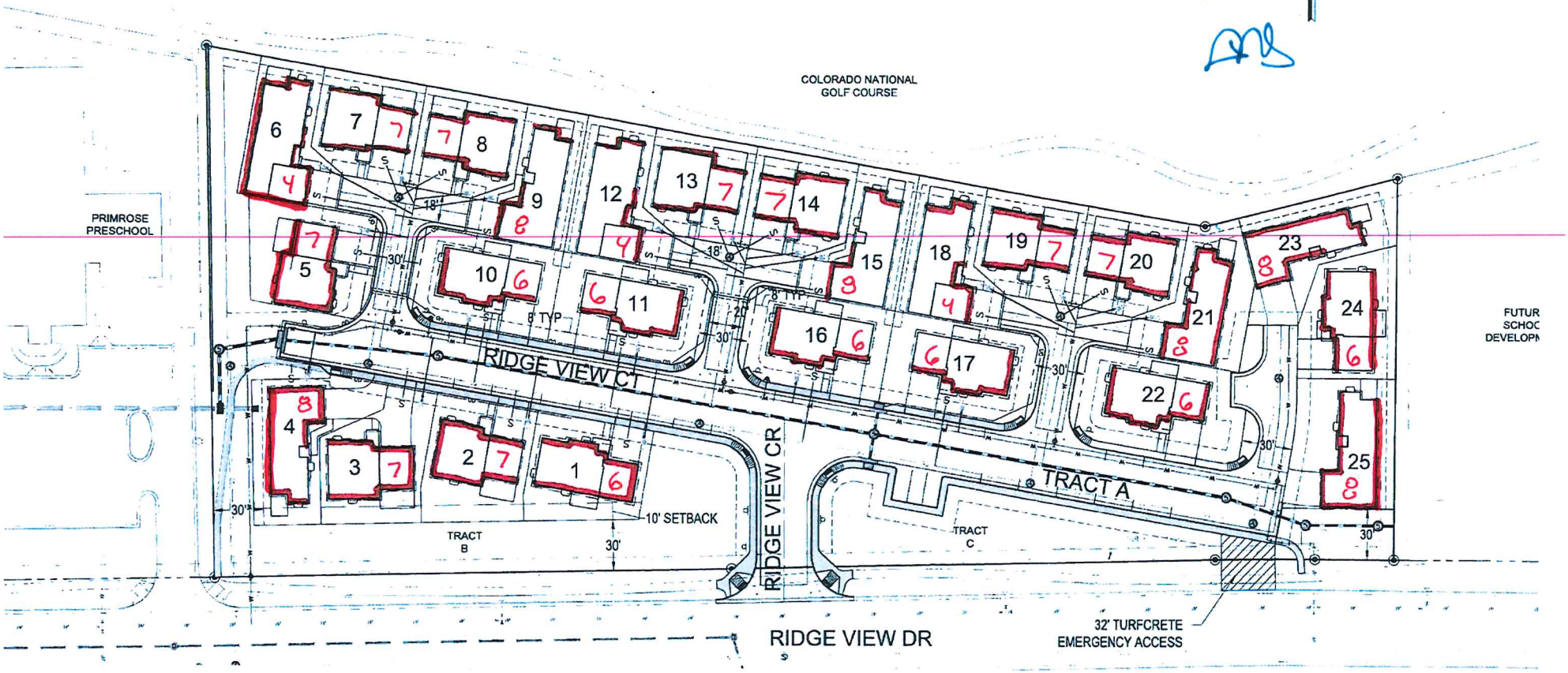
James Spehalski, Member

CHARCOAL HOMES

VISTA RIDGE FILING NO. 2 1ST AMEND.

4/7/15

ARCHITECTURE DESIGN REVIEW MAP.



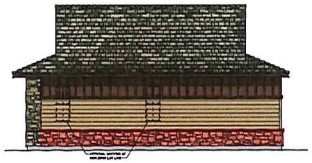
= ENHANCED STONE / MASONRY ELEVATIONS.

6 = PLAN NUMBER.

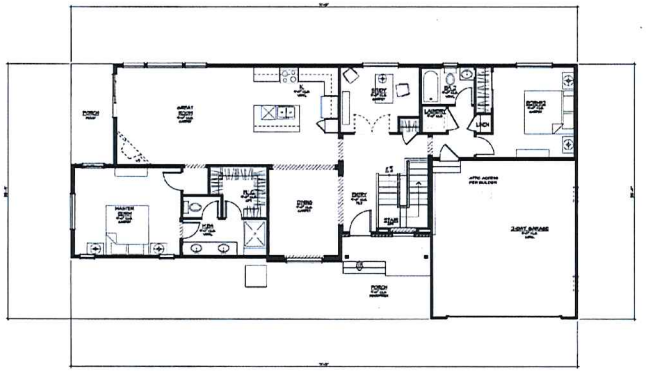
RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION



FRONT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or street

03.02.15

PLAN 4 | ELEVATION A

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

CHARTERED DEVELOPMENT CORP

THE FAIRWAYS AT VISTA RIDGE

woodley architectural group,inc
colorado // 731 southpark dr. suite B
littleton, co 80120 / 303 683.7231
california // 2943 pullman st. suite A
santa ana, ca 92705 / 949 553.8919

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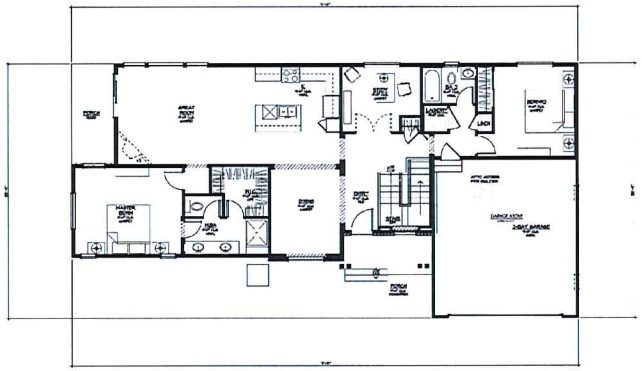
RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION

FRONT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or street

03.02.15

PLAN 4 | ELEVATION B

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

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littleton, co 80120 / 303 683.7231
california // 2943 pullman st. suite A
santa ana, ca 92705 / 949 553.8919

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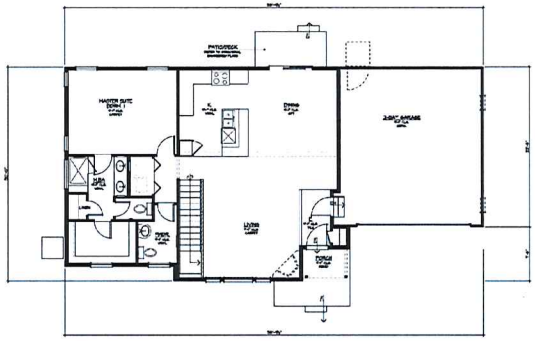
FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevatons not fronting the golf course or a street.

03.02.15

PLAN 6 | ELEVATION A

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

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littleton, co 80120 / 303 683.7231
california // 2943 pullman st. suite A
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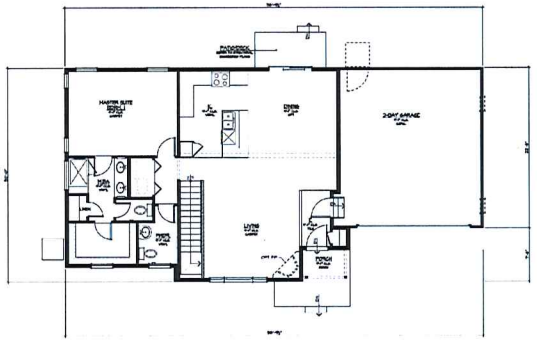
FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or a street.

03.02.15

PLAN 6 | ELEVATION B

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

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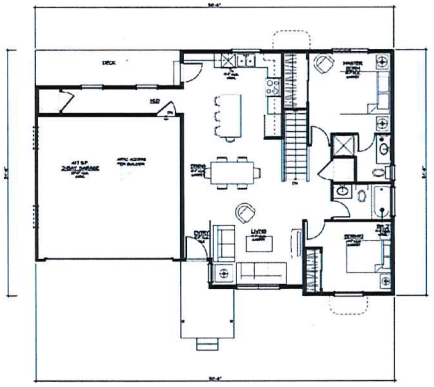
FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or a street.

03.02.15

PLAN 7 | ELEVATION A

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

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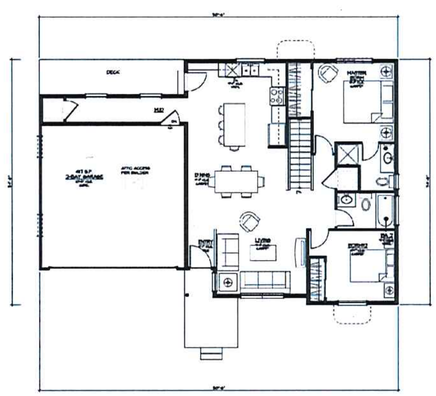
FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or a street.

03.02.15

PLAN 7 | ELEVATION B

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

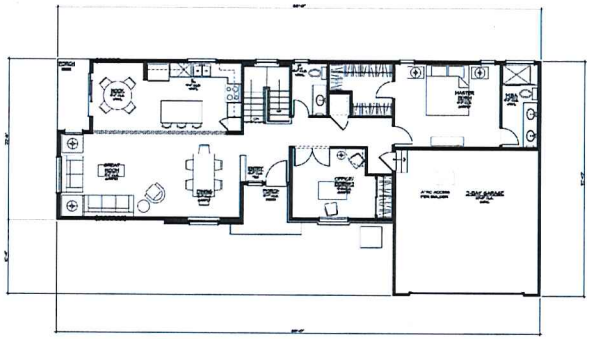
woodley architectural group,inc
colorado // 731 southpark dr. suite B littleton, co 80120 / 303 683.7231
california // 2943 pullman st. suite A santa ana, ca 92705 / 949 553.8919

LEFT ELEVATION

REAR ELEVATION

RIGHT ELEVATION

FRONT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or a street.

03.02.15

PLAN 8 | ELEVATION A

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

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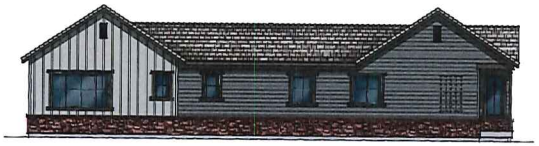
littleton, co 80120 / 303.683.7231
california // 2943 pullman st. suite A
santa ana, ca 92705 / 949.553.8919

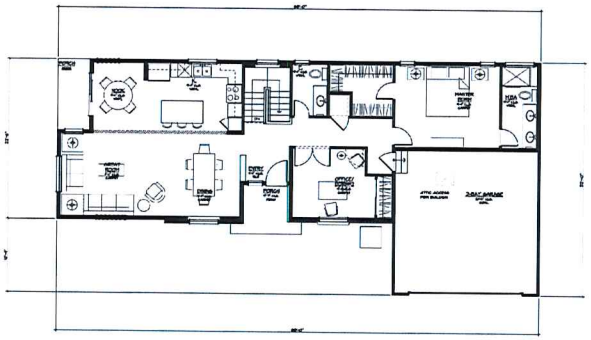
LEFT ELEVATION

REAR ELEVATION



RIGHT ELEVATION

FRONT ELEVATION



FIRST FLOOR
SCALE : 1/8" = 1'-0"

SHEET DATA

Indicates no stone to be installed on these elevations where not fronting the golf course or a street.

03.02.15

PLAN 8 | ELEVATION B

FAIRWAYS AT VISTA RIDGE | CHARTERED DEVELOPMENT CORPORATION

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california // 2943 pullman st. suite A
santa ana, ca 92705 / 949 553.8919

TOWN OF ERIE
PLANNING COMMISSION MEETING
July 15, 2015

SUBJECT:	**PUBLIC HEARING:** **Consideration of Resolution P15-23:** A Resolution Regarding The Hearing On Canyon Creek PD Amendment No. 9, Adopting Certain Findings Of Fact And Conclusions Favorable To The PD Amendment.
PURPOSE:	Consideration of a PD-Planned Development Amendment in the Canyon Creek Subdivision to amend: 1. Land Use Categories. 2. Architectural standards for proposed single family patio homes. 3. Lot sizes and setbacks.
PROJECT NO.:	PDA-000204-2015
CODE REVIEW:	Erie Municipal Code, Title 10
DEPARTMENT:	Community Development
PRESENTER:	Deborah Bachelder AICP, Senior Planner

STAFF RECOMMENDATION:

Staff finds the Canyon Creek PD Amendment No. 9 application in general compliance with the PD Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-23 recommending approval to the Board of Trustees.

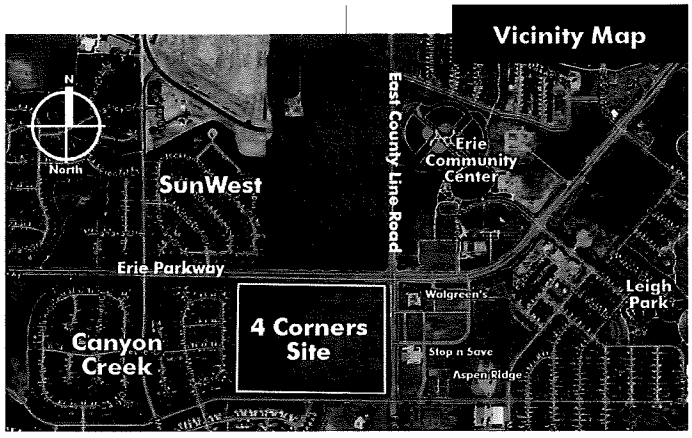
SUMMARY AND BACKGROUND OF SUBJECT MATTER:

Applicant: RMCS, LLC
21 South Sunset Street
Longmont, Colorado, 80501

Owners: Erie Commercial Venture, LLC
7720 East Belleview Avenue, Suite 350

Location:

The portion of the Canyon Creek PD Amendment No. 9 that is being modified is located in the Canyon Creek Subdivision Filing No. 10 (4 Corners Site) which is located on the southwest corner of Erie Parkway and County Line Road.



Existing Conditions – Canyon Creek Filing No. 10:

Zoning: Canyon Creek PD – Planned Development

Project Size: 46.6 Acres

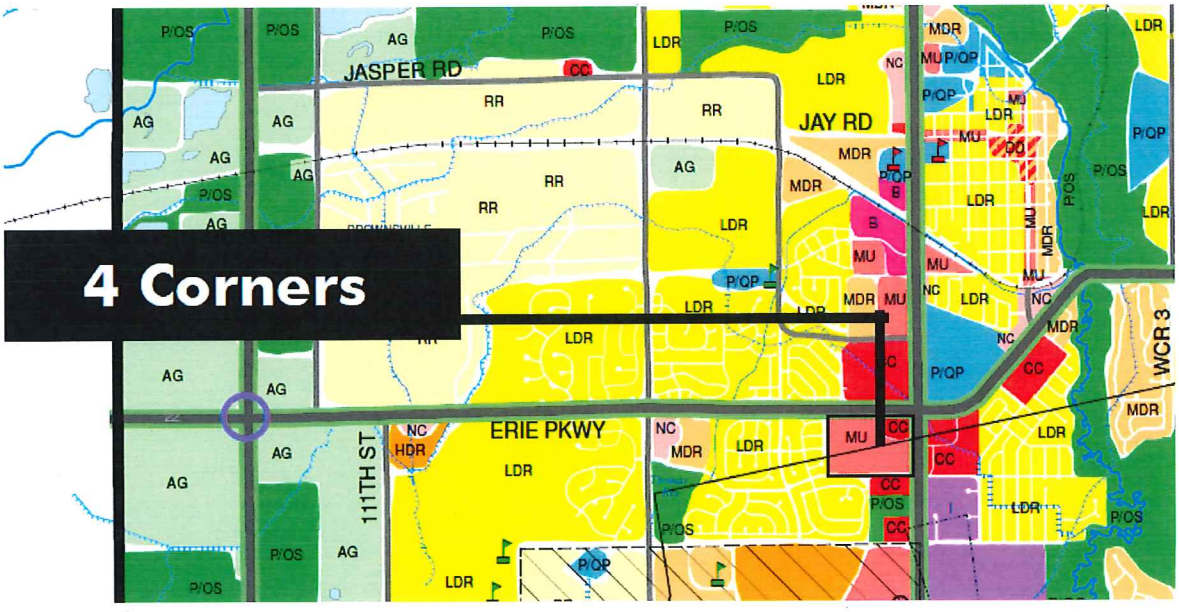
Existing Use: Vacant Lot

Adjacent Land-Use/Zoning – to Canyon Creek Filing No. 10:

	ZONING	LAND USE
NORTH	CC – Community Commercial CMU – Community Mixed Use LR – Low Density Residential	Rex Ranch – Vacant Commercial Rex Ranch – Vacant Mixed Use Sunwest – Single Family Residential
SOUTH	PD – Planned Development	Canyon Creek Filing 6: Church Canyon Creek Filing 6 – Single Family Residential
EAST	CC – Community Commercial	Commercial Uses / Charter School
WEST	PD – Planned Development	Canyon Creek Filing 5 – Single Family Residential

Compliance with Town of Erie Comprehensive Plan:

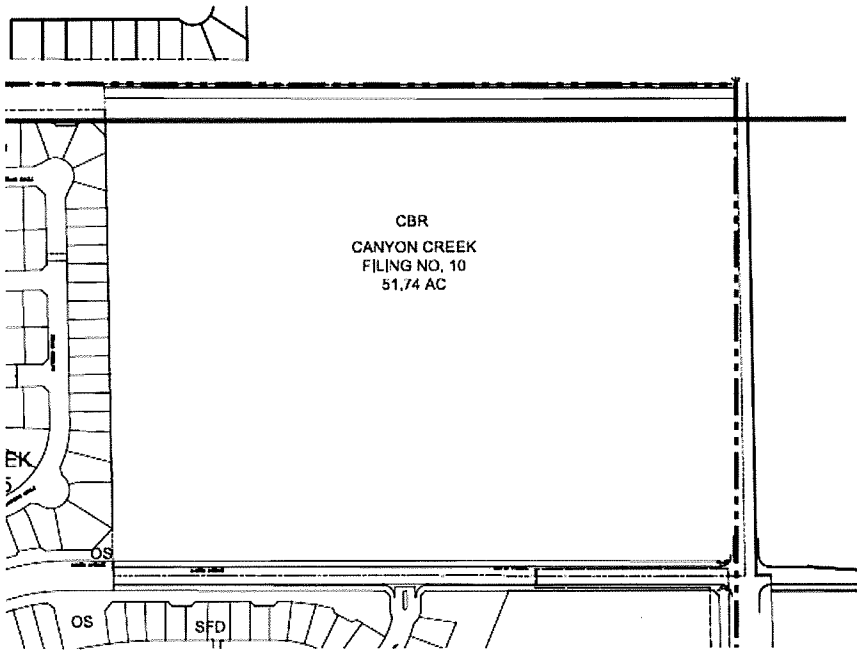
The application is in general Compliance with the Land Use designations on the Comprehensive Plan, Land Use Plan Map. This property allows for MU – Mixed Use and CC – Community Commercial land uses.



Existing Canyon Creek PD Amendment No. 8:

As illustrated on the PD map below, the Canyon Creek Filing No. 10 area of the PD is currently designated on the PD zoning map as 51.74 acres of CBR – Commercial / Business / Retail.

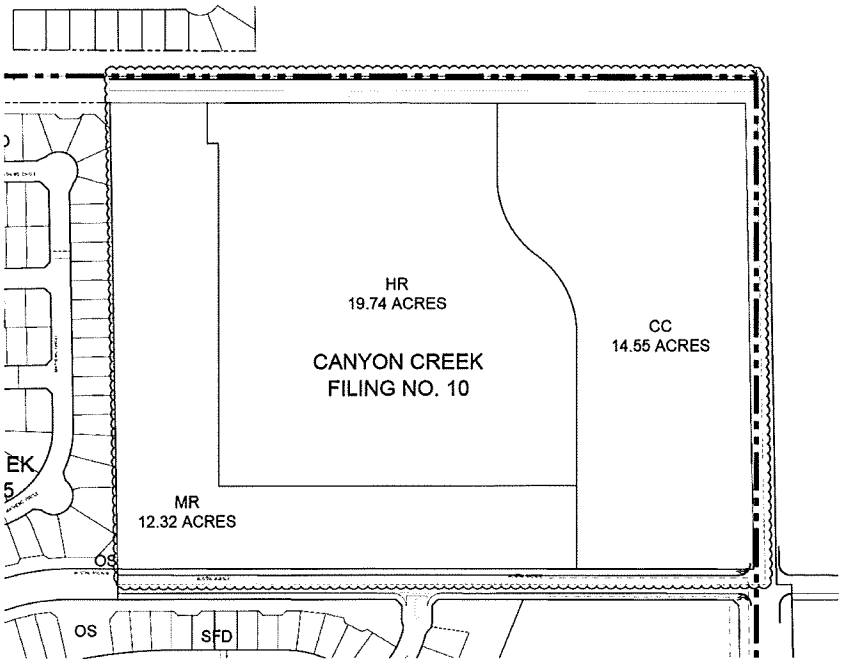
Existing Canyon Creeks PD Amendment No. 8 Map



Proposed Canyon Creek PD Amendment No. 9:

Canyon Creek PD Amendment No. 9 proposes amendments to create a mixed use neighborhood with a variety of commercial and residential dwelling types.

Proposed Canyon Creeks PD Amendment No. 9 Map



Proposed Land Uses:

As illustrated on the PD Amendment No. 9 map above, the proposal for the Canyon Creek Filing No. 10 portion of the Canyon Creek PD is to designate three Principal Land Uses: 14.55 acres of CC-Community Commercial; 19.74 acres of HR-High Density Residential; and, 12.32 acres of MR-Medium Density Residential.

The Canyon Creek PD Amendment No. 9 CC-Community Commercial Land Use, HR-High Density Residential Land Use, and MR-Medium Density Residential Land Use will follow the Unified Development Code Table of Permitted Uses in CC-Community Commercial, HR-High Density Residential, and MR-Medium Density Residential zone districts.

Minor modifications to the Permitted Uses are found in Table II on Sheet 2 of the PD Amendment document. PD Amendment No. 9 will allow Single Family Detached – Patio homes as a use by right, with the same architectural design guidelines as were adopted in Canyon Creek Filing No. 9 for the Boulder Creek Neighborhoods patio home development, within the HR-High Density Residential Land Use and MR-Medium Density Residential Land Use. Additionally, within 200 feet of the existing single family homes in Canyon Creek Filing 5, the applicant has proposed that the housing be restricted to alley loaded single family patio homes or duplexes. This will ensure an appropriate housing transition from the existing single family homes to the new development in Filing 10.

Number of Dwelling Units:

PD Amendment No. 9 sets the maximum number of dwelling units in Canyon Creek Filing 10 as:

Land Use	Maximum Units	Minimum Density	Maximum Density
MR-Medium Density Residential:	107	5	10
High Density Residential:	393	10	20
Total:	500		

The proposed density range for the MR Land Use is the same as the Unified Development Code. The proposed density range for the HR Land Use is the same as the Unified Development Code with the density bonus option the UDC offers as an incentive to encourage a mix of dwelling unit types.

Lot Sizes:

Canyon Creek PD Amendment No. 9 also proposes minimum lot sizes and minimum lot widths based on residential use types. Adjacent is the proposed table of new minimum lot sizes and widths for Canyon Creek Filing No. 10 (modification occurring in bubbled portion of the table):

III. MINIMUM LOT SIZES (per Planning Area)

PLANNING AREA (Filing No.)	PRINCIPAL LAND USE	MIN. RES. LOT AREA (sq. feet)	MIN. INTERIOR RES. LOT WIDTH (feet)	MIN. CORNER RES. LOT WIDTH (feet)
Filing No.1		5,000	50'	60'
Filing No.2		5,000	50'	60'
Filing No.3		5,000	50'	60'
Filing No.4		5,000	50'	60'
Filing No.5		5,000	50'	60'
Filing No.6		5,000	50'	60'
Filing No.7		5,000	50'	60'
Filing No.8		N/A	N/A	N/A
Filing No.9 SFD		9,500	80'	90'
Filing No.9 SFD-P		5,500	35'	40'
Filing No.9 TH		1,450	20'	35'
Filing No.10 MR & HR	SFD - Alley Loaded	3,150	30'	35'
Filing No.10 MR & HR	SFD - Patio Alley Loaded	3,800	30'	35'
Filing No.10 MR & HR	Duplex	2,250 per DU	25'	30'
Filing No.10 MR & HR	Town Home - Alley Loaded	1,450 per DU	NA	NA
Filing No.10 MR & HR	Multifamily	1,250 per DU	NA	NA

As reference for comparison; the table below is the Town's Municipal Code standard minimum lot sizes for our HR – High Density Residential and MR – Medium Density Residential Land Use areas.

Zone District	Minimum Lot Area	Minimum Lot Width
HR – High Density Residential	5,000 Single Family 2,500 Multifamily	50 feet Single Family 60 feet Single Family corner lot No minimum lot width for Multifamily
MR – Medium Density Residential	5,000 Single Family 2,500 Multifamily	50 feet Single Family 60 feet Single Family corner lot No minimum lot width for Multifamily

Setbacks:

Below is the proposed table of minimum setbacks for the proposed land uses in Canyon Creek Filing No. 10 (modification occurring in bubbled portion of the table):

IV. MINIMUM SET BACK TO *PRINCIPAL* BUILDINGS
All setbacks measured from the Property Line (PL) to the structure as noted.

Multiple principal buildings on a single lot shall be separated a distance equal to the distance that would be required if they were separated by a lot line.

PLANNING AREA (Filing No.)	FRONT YARD (feet)		SIDE YARD (feet)		REAR YARD (feet)
	To garage	To bldg.	Interior lot	Along street	
Filing No.1 - **SFD**	20'	20'	5'	15'	15'
Filing No.2 - **SFD**	20'	20'	5'	15'	15'
Filing No.3 - **SFD**	20'	20'	5'	15'	15'
Filing No.4 - **SFD**	20'	20'	5'	15'	15'
Filing No.5 - **SFD**	20'	20'	5'	15'	15'
- **DC**	20'	20'	10'	20'	20'
- **MDR**	20'	10'	5/0'*/***	5'	5'
Filing No.6 - **SFD**	20'	20'	5'**	15'*	15'
- **RA**	20'	20'	10'	20'	20'
- **CBR**	N/A	20'	5/0'*	20'	20'
Filing No.7 - **SFD**	20'	20'	5'	15'	15'
Filing No.8 - **MDR**	20'	15'	5/0'*	10'	15'
Filing No.9 - **SFD**	25'	25'	10'	20'	20'
- **TH****		5'	5/0'/*	5'	5'
- **SFD-P****	20'	15'*****	5'	10'	10'
Filing No. 10 -**MR** * / ****	20'/ 15' *****	10'	5'/0'	10'	20' / 5' Alley Loaded Garage
- **HR** * / ****	20'/ 15' *****	10'	10'/0'	10'	20' / 5' Alley Loaded Garage
-**CC** * / ******	NA	20'	10'/0'	20'	20'

As reference for comparison; the table below is the Town's Municipal Code standard setbacks.

Zone District	Front Yard to Garage	Front Yard to Building	Side Yard Interior Lot Line	Side Yard to Street	Rear Yard
MR – Low Density Residential	20'	20'	5'/0' for attached dwelling unit	20"	20"
HR – High Density Residential	20'	20'	10'/0' for attached dwelling unit	20'	20'
CC – Community Commercial		20'	10'/0' for attached units	20'	20'

The PD Amendment proposes to use the same setback encroachment language approved for the SFD-P and TH in Canyon Creek Filing No. 9 for the HR – High Density Residential and MR – Medium Density Residential Land Use areas. The encroachment language proposed for the CC – Community Commercial Land Use area states:

****** Awnings, blade signs, incidental architectural features such as cornices, eaves, canopies, chimneys, bay windows, ornamental features and other similar architectural features may project not more than five (5) feet into any required setback.

Maximum Building Height:

Adjacent is the proposed table of maximum building heights for the proposed land uses in Canyon Creek Filing No. 10 (modification occurring in bubbled portion of the table):

The HR – High Density Residential Land Use area includes a requirement that the proposed 45 foot building height maximum be limited to a three story building with the allowance of a mezzanine/entresol (mid-story level) within the building.

VI. ADDITIONAL STANDARDS

PLANNING AREA (Filing No.)	MIN. SETBACK BETWEEN BUILDINGS (feet)	MAX. LOT COVERAGE (percent %)		MAX BLDG. HEIGHT (feet)	
		Principal	Accessory *	Principal	Accessory
Filing No. 1 - **SFD**	10'	30%	30%	35'	25'
Filing No. 2 - **SFD**	10'	30%	30%	35'	25'
Filing No. 3 - **SFD**	10'	30%	30%	35'	25'
Filing No. 4 - **SFD**	10'	30%	30%	35'	25'
Filing No. 5 - **SFD**	10'	30%	30%	35'	25'
- **DC**	10'	30%	30%	35'	25'
- **MDR**	10'	***NA***	***NA***	25'	25'
Filing No. 6 - **SFD**	10'	***NA***	***NA***	35'	25'
- **RA**	10'	30%	30%	45'**	25'
- **CBR**	10'	30%	30%	35'	25'
Filing No. 7 - **SFD**	10'	***NA***	***NA***	35'	25'
Filing No. 8 - **MDR**	10'	***NA***	***NA***	35'	25'
Filing No. 9 - **SFD**	10'	30%	30%	35'	25'
-TH	0'	***NA***	***NA***	35'	NOT PERMITTED
-SFD-P	0'	***NA***	***NA***	35'	NOT PERMITTED
Filing No. 10 - **MR**	NA	***NA***	***NA***	35'	25'
-HR* **	NA	***NA***	***NA***	45'	25'
-CC	NA	***NA***	***NA***	45'	25'

*** Maximum coverage of required yard**

**** - 55' permitted for the domed portion of the church structure only.**

- A cross may be placed on top of the domed portion, however the dome may not exceed 55 feet and the total height of the dome and cross may not exceed 60

- A bell tower is permitted but shall not be considered an appurtenance and shall not exceed 45 feet in height.

***** A three story maximum mezzanine or entresol space is permitted only if it has an interior entrance connection to the third floor unit, does not have a separate exterior entrance, and the building height remains at or under 45 feet.**

As reference for comparison; the table below is the Town's Municipal Code standard maximum building height for our CC – Community Commercial, HR – High Density Residential and MR – Medium Density Residential Land Use areas.

Zone District	Maximum Height
CC – Community Commercial	45 feet/3 stories max.
HR – High Density Residential	Principal: 35 feet Accessory: 25 feet
MR – Medium Density Residential	Principal: 35 feet Accessory: 25 feet

STAFF ANALYSIS:

Canyon Creek PD Amendment No. 9 was reviewed for conformance with Municipal Code, Title 10, UDC Section 10.7.23 C.9. Approval Criteria. Staff finds the Canyon Creek PD Amendment No. 9 application in compliance with the Approval Criteria as listed below.

a. The PD district zoning is generally consistent with the purpose of the PD zone district as set forth in UDC Sections 2.5 and 7.6.

   Staff: It is generally consistent.

b. The modification to the UDC regulations is based on creative and innovative design and amenities incorporated in the PD zone district that could not otherwise be achieved through other standard zoning districts or through another modification processes such as Alternative Equivalent Compliance in UDC Subsection 6.1.C or the PUD Overlay District in UDC Subsection 2.7.D.

   Staff: The modification allows for the construction of a mixed use neighborhood at the crossroads of the Towns primary principal arterial streets (Erie Parkway and County Line Road).

c. The PD zoning district will promote the public health, safety, and general welfare.

   Staff: The PD Amendment promotes the public health, safety and general welfare.

d. The PD zoning district is generally consistent with the Town of Erie Comprehensive Master Plan; Transportation Master Plan; Parks, Recreation, Open Space, and Trails Master Plan, and other pertinent Town plan and policy documents.

   Staff: The PD Amendment is generally consistent with the Town of Erie master plans.

e. Adequate and sufficient public safety, utility facilities and services, recreation facilities, parks, open space, and schools are available to serve the property, while maintaining sufficient levels of service to existing development.

   Staff: Adequate facilities are available to serve the property and existing development.

f. The PD zone district provides adequate vehicular circulation and parking facilities in terms of traffic volumes, convenience, safety, access, screening and noise.

   Staff: All proposed vehicular facilities will meet the Town requirements at the time of plat application.

g. A pedestrian and bicycle circulation system that provides connections to adjacent properties, existing and future trails, parks, open space, recreational facilities, schools, and other places of public gathering.

Staff: Adequate pedestrian and bicycle circulation are proposed in the supporting Sketch Plan application.

h. The PD zone district is not likely to result in significant adverse impacts to the natural environment, and significant scenic and historic features.

Staff: Significant adverse impacts are not anticipated.

i. The PD zone district will not result in significant adverse impacts on properties in the vicinity of the PD zone district, or such impacts will be substantially mitigated.

Staff: Adequate access onto the adjacent principal arterial streets to help mitigate any vehicular impacts on the adjacent properties and the supporting Sketch Plan application has indicated that an emphasis will be made to provide safe pedestrian access through the site. Significant adverse impacts are not anticipated.

j. Proposed uses will be compatible in scale with uses on properties in the vicinity of the PD zone district.

Staff: The proposed development will provide a transition of residential uses from the proposed commercial to the existing land uses that is compatible in scale.

k. The residential areas of a PD zone district allocate a variety of housing types and densities appropriate to the size of the residential development area.

Staff: The PD Amendment allows for diversification of the housing within Canyon Creek.

l. Visual relief is provided through building placement, shortened or interrupted street vistas, visual access to open space, parks, and other design methods.

Staff: The Sketch Plan that supports the PD Amendment provides visual relief through the use of alleys and common open spaces.

m. The modifications permitted in the PD zone district have been made in exchange for greater public benefits that would not have otherwise be achieved through development under another zone district.

Staff: The PD Amendment will allow for a wider diversity of housing and commercial options within the Canyon Creek Subdivision.

STAFF RECOMMENDATION:

Staff finds the Canyon Creek PD Amendment No. 9 application in general compliance with the PD Approval Criteria and recommends the Planning Commission adopt draft Resolution No. P15-23 recommending approval to the Board of Trustees.

NEIGHBORHOOD MEETING:

As required by the Municipal Code a Neighborhood Meeting was held on June 26th at 6:00 p.m. in the Erie Community Center. The required notice for the Neighborhood Meeting was provided.

PUBLIC NOTICE:

Notice of this Public Hearing has been provided as follows:

Published in the Colorado Hometown Weekly:	June 24, 2015
Property Posted as required:	June 26, 2015
Letters to Adjacent Property Owners:	June 26, 2015

Approved by:

R. Martin Ostholthoff
Community Development Director

Attachments:

A. Resolution P15-23
B. Application Materials
C. Neighborhood Meeting Summary

ATTACHMENT A

RESOLUTION NO. P15-23

A RESOLUTION REGARDING THE HEARING ON CANYON CREEK PD AMENDMENT NO. 9, ADOPTING CERTAIN FINDINGS OF FACT AND CONCLUSIONS FAVORABLE TO THE PD AMENDMENT.

WHEREAS, the Planning Commission of the Town of Erie, Colorado, considered Canyon Creek PD Amendment No. 9 at a public hearing on Wednesday, July 15, 2015, on the application of Erie Commercial Venture, LLLP, 6950 East Belleview Avenue, Suite 202, Greenwood Village, Colorado, for the PD Amendment of the following real property; to wit:

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado;

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE TOWN OF ERIE, COLORADO, AS FOLLOWS:

Section 1. Findings of Fact.

1. The applicant's application and supporting documents are in substantial compliance with the Town of Erie Municipal Code, Title 10.

2. Following a duly noticed and conducted public hearing, the Planning Commission determined that the application meets the approval criteria in Municipal Code Title 10, Section 10.7.23 C.9. Approval Criteria:

   a The PD district zoning is generally consistent with the purpose of the PD zone district as set forth in UDC Sections 2.5 and 7.6.

   b The modification to the UDC regulations is based on creative and innovative design and amenities incorporated in the PD zone district that could not otherwise be achieved through other standard zoning districts or through another modification processes such as Alternative Equivalent Compliance in UDC Subsection 6.1.C or the PUD Overlay District in UDC Subsection 2.7.D.

   c The PD zoning district will promote the public health, safety, and general welfare.

   d The PD zoning district is generally consistent with the Town of Erie Comprehensive Master Plan; Transportation Master Plan; Parks, Recreation, Open Space, and Trails Master Plan, and other pertinent Town plan and policy documents.

   e Adequate and sufficient public safety, utility facilities and services, recreation facilities, parks, open space, and schools are available to serve the property, while maintaining sufficient levels of service to existing development.

   f The PD zone district provides adequate vehicular circulation and parking facilities in terms of traffic volumes, convenience, safety, access, screening and noise.

   g A pedestrian and bicycle circulation system that provides connections to adjacent properties, existing and future trails, parks, open space, recreational facilities, schools, and other places of public gathering.

h The PD zone district is not likely to result in significant adverse impacts to the natural environment, and significant scenic and historic features.

i The PD zone district will not result in significant adverse impacts on properties in the vicinity of the PD zone district, or such impacts will be substantially mitigated.

j Proposed uses will be compatible in scale with uses on properties in the vicinity of the PD zone district.

k The residential areas of a PD zone district allocate a variety of housing types and densities appropriate to the size of the residential development area.

l Visual relief is provided through building placement, shortened or interrupted street vistas, visual access to open space, parks, and other design methods.

m The modifications permitted in the PD zone district have been made in exchange for greater public benefits that would not have otherwise be achieved through development under another zone district.

3. That the proposed Canyon Creek Planned Development Amendment No. 9 will preserve the health, safety, welfare, and interest of the citizens of Erie, Colorado.

Section 2. Conclusions and Order Recommending Approval to the Board of Trustees for Canyon Creek PD Amendment No. 9.

1. The applicant's application and supporting documents are in substantial compliance with Municipal Code, Title 10.
2. Based on the above Findings of Fact, the Planning Commission hereby forwards the Canyon Creek PD Amendment No. 9 application to the Board of Trustees with the Planning Commission's recommendation for approval.

INTRODUCED, READ, SIGNED AND APPROVED this 15th day of July 2015.

TOWN OF ERIE, PLANNING COMMISSION

By: _____
J. Eric Bottenhorn, Chair

ATTEST:

By: _____
Hallie S. Sawyer, Secretary

ATTACHMENT B

CANYON CREEK
PD AMENDMENT NO. 9

PCS Group, Inc.
1001 16th Street
Denver, CO 80265

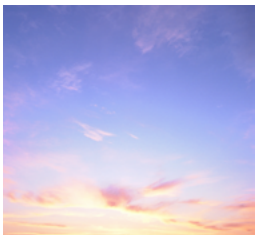
OZ Architecture
3003 Larimer Street
Denver, CO 80205

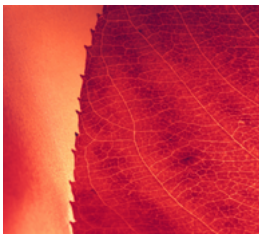
J3 Engineering
6505 S. Paris St., Suite B
Centennial, CO 80111

Contents:

1. Cover Letter, Project Team and Application Fee
2. ALTA land title survey
3. Copies of Special Agreements
4. Narrative and Comparative Chart
5. PD-DP Plan
6. Development Reports

Cover Letter, Project Team and Application Fee





February 20, 2015

Town of Erie
Martin Ostholthoff
Community Development Director
645 Holbrook Street
Erie, Colorado 80516

Re: Canyon Creek PD Amendment No. 9 (also known as Four Corners)

Dear Mr. Ostholthoff,

RMCS is pleased to submit the attached land use application requesting approval of Canyon Creek PD Amendment No.9 (also known as Four Corners). Moreover, it is our understanding, that we will work together in good faith with the Town of Erie, to generate a Service Plan (funding district only) for Four Corners in addition to exploring the possibility of incorporating Four Corners into an Urban Renewal Authority District. These proposed funding mechanisms will allow RMCS to compete within the market-place while providing a significantly higher level of both public and private infrastructure as envisioned in the submittal documents.

RMCS is a local privately owned company that has worked hard, throughout the front range of Colorado, to earn a reputation for fostering and developing high quality, distinct master planned neighborhoods. Through strong partnerships with municipalities, we strive to create finance mechanisms that allow for an expedited build out of innovative public infrastructure. Uniquely designed public and private improvements will set a standard of quality for Four Corners that the residents and visitors of Erie will enjoy for generations to come.

The Four Corners proposes a strong mix of uses, including but not limited to, anchored commercial space complimented by a new restaurant and shopping district, single family detached patio homes, paired ranch homes, ranch style town homes, multi-family homes, and generous public spaces and amenities. In conclusion, we feel that our proposal furthers the goals established in the Town of Erie's Comprehensive Plan and will generate one of Erie's most innovative neighborhoods.

Respectfully,

Justin McClure
RMCS, Inc.

Project Team

applicant:
RMCS, Inc.
21 South Sunset Street, Longmont CO 80503
tel. 303.475.2106 - contact: Justin McClure

planning consultant:
PCS Group, Inc.
#3 Independence Plaza B180,
1001 16th Street, Denver, Colorado 80265
tel. 720.259.8248 - contact: Paul Shoukas

engineering consultant:
J3 Engineering
6505 S. Paris St., Ste B Centennial, CO 80111
tel. 303.368.5601 - contact: Jason Margraf

transportation consultant:
LSC Transportation Consultants
1889 York Street, Denver, CO 80206
tel. 303.333.1105 - contact: Chris McGranahan

survey consultant:
Bell Surveying Company
500 Kalamath Street, Denver, CO 80204
tel. 303.629.0165 - contact: William Barnes

geologic & geotechnical consultant:
CTL Thompson, Inc.
1971 W. 12th Avenue, Denver, CO 80204
tel. 303.626.7645 - contact: Matt Monteith

mining engineer:
Mining-Geotechnical Consulting
11225 W. Coal Mine, Littleton, CO 80127
tel. 720.035.5842 - contact: Kanaan Hanna

architect:
OZ Architecture, Inc.
3003 Larimer Street, Denver, CO 80205
tel. 303.861.5704 - contact: Rob Rydel

Print Form

TOWN OF ERIE
Community Development Department – Planning Division
645 Holbrook Street – PO Box 750 – Erie, CO 80516
Tel: 303.926.2770 – Fax: 303.926.2706 – Web: www.erieco.gov

LAND USE APPLICATION

Please fill in this form completely. Incomplete applications will not be processed.

STAFF USE ONLY

FILE NAME:

FILE NO: DATE SUBMITTED: FEES PAID:

PROJECT/BUSINESS NAME: Four Corners

PROJECT ADDRESS: Vacant Land (southwest corner of Erie Parkway and County Line Road)

PROJECT DESCRIPTION: The Canyon Creek PD Amendment No. 9 is a proposal for a 47 acre mixed use community consisting of tenant anchored commercial space flanked by a local retail shopping district (including restaurants), alley loaded patio homes, paired ranch homes, multi-family homes, and generous public spaces and amenities.

LEGAL DESCRIPTION *(attach legal description if Metes & Bounds)*

Subdivision Name:

Filing #: Lot #: Block #: Section: 24 Township: 1 North Range: 69 West

OWNER *(attach separate sheets if multiple)*

Name/Company: Erie Commercial Venture , LLLP
Contact Person: A. L. (Sid) Overton
Address: 6950 East Belleview Ave. Suite 202
City/State/Zip: Greenwood Village, CO 80111
Phone: 303.779.5900 Fax: 303.779.6006
E-mail: sidoverton@oalaw.net

AUTHORIZED REPRESENTATIVE

Company/Firm: RMCS, Inc.
Contact Person: Justin McClure
Address: 21 South Sunset Street
City/State/Zip: Longmont, CO 80501
Phone: 720.524.3620 Fax:
E-mail: justinrmcs@gmail.com

MINERAL RIGHTS OWNER *(attach separate sheets if multiple)*

Name/Company: ECV Minerals, LLC
Address: 7720 East Belleview Ave. Suite 350
City/State/Zip: Greenwood Village, CO 80111

MINERAL LEASE HOLDER *(attach separate sheets if multiple)*

Name/Company: N/A
Address:
City/State/Zip:

LAND-USE & SUMMARY INFORMATION

Present Zoning: CBR
Proposed Zoning: CC, HR, MR
Gross Acreage: 46.613
Gross Site Density (du/ac): 11.4
Lots/Units Proposed: 530
Gross Floor Area: 170,688

SERVICE PROVIDERS

Electric: Xcel Energy
Metro District: Pending
Water *(if other than Town)*:
Gas: Xcel Energy
Fire District: Mountain View Fire Protection District
Sewer *(if other than Town)*:

PAGE TWO MUST BE SIGNED AND NOTARIZED

DEVELOPMENT REVIEW FEES			
ANNEXATION		**SUBDIVISION**	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☐ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☐ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☐ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☐ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☑ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: ERIE COMMERCIAL VENTURE, LLLP Date: 2/10/2015
By: A. L. (Sid) Overton, General Partner

Owner: _____ Date: _____

Applicant: RMCS, Inc. Date: 2/10/2015
By: Justin McClure, Vice President

STATE OF COLORADO)
) ss.
County of Arapahoe)

The foregoing instrument was acknowledged before me this 10th day of February, 2015 by A. L. (Sid) Overton, General Partner of Erie Commercial Venture, LLLP

My commission expires: 8/7/2017.
Witness my hand and official seal.

SARAH J. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094025068
MY COMMISSION EXPIRES AUGUST 7, 2017

Notary Public

TOWN OF ERIE
Land Use Application Form
RMCS, Inc., Applicant

ACKNOWLEDGMENT

STATE OF COLORADO)
)
COUNTY OF ARAPAHOE)

The foregoing instrument was acknowledged before my on this 10th day of February, 2015 by Justin McClure, Vice President of RMCS, Inc.

Witness my hand and official seal.

SARAH J. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094025068
MY COMMISSION EXPIRES AUGUST 7, 2017

Notary Public

My commission expires: August 7, 2017

Erie Commercial Venture, LLLP

A.L. (Sid) Overton, General Partner
6950 E. Belleview Avenue, Suite 202
Greenwood Village, Colorado 80111
Tel. 303-779-5900

February 10, 2015

Martin Ostholthoff, Director
Department of Community Development
Town of Erie
645 Holbrook Street
Erie, Colorado 80516

RE: Letter of Authorization for the submittal of a PD Rezoning Application, Sketch Plan, Zoning Agreement, and Metropolitan District Service Plans (Entitlement Application) to amend the Canyon Creek PD Filing No. 10, approximately 46.613 acres in Erie, Colorado (Property)

Dear Marty:

As you are aware, Erie Commercial Venture, LLLP, is the owner of the above referenced Property, the subject of the Entitlement Application. Erie Commercial Venture, LLLP, as owner, hereby authorizes the applicant, RMCS, LLC, to process the Entitlement Application on behalf of the owner. Accordingly, any rezoning, land use or subdivision change, will be subject to further and final approval by Erie Commercial Venture, LLP, before any change is recorded against the property.

Sincerely,

A.L. (Sid) Overton, General Partner

State of Colorado)
) ss.
County of Arapahoe)

Subscribed and sworn to before me, a notary public, by A. L. (Sid) Overton, General Partner of Erie Commercial Venture, LLLP, a Colorado limited liability limited partnership, on this 10th day of February, 2015.

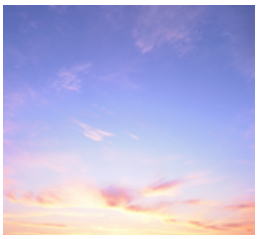
Witness my hand and official seal.

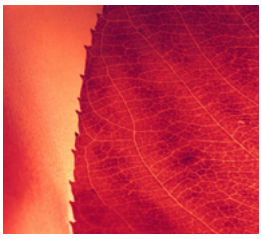
SARAH J. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094025068
MY COMMISSION EXPIRES AUGUST 7, 2017

Notary Public

My commission expires: August 7, 2017

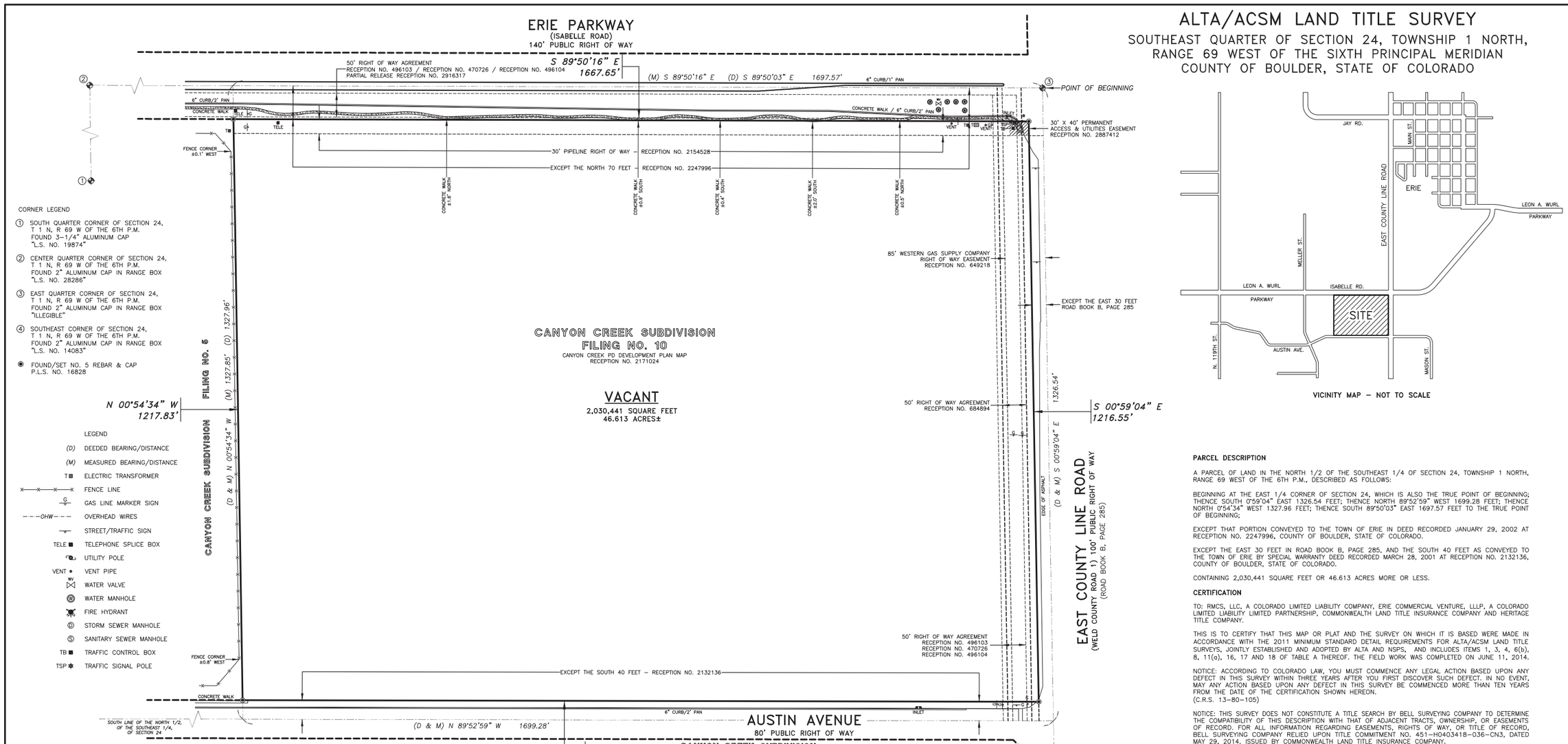
ALTA
land title
survey





ALTA/ACSM LAND TITLE SURVEY

SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN COUNTY OF BOULDER, STATE OF COLORADO



CORNER LEGEND

① SOUTH QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 3-1/4" ALUMINUM CAP "L.S. NO. 19874"

② CENTER QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "L.S. NO. 28286"

③ EAST QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "ILLEGIBLE"

④ SOUTHEAST CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M., FOUND 2" ALUMINUM CAP IN RANGE BOX "L.S. NO. 14083"

◉ FOUND/SET NO. 5 REBAR & CAP P.L.S. NO. 16828

LEGEND

(D)	DEEDED BEARING/DISTANCE
(M)	MEASURED BEARING/DISTANCE
T■	ELECTRIC TRANSFORMER
x—x—x	FENCE LINE
G	GAS LINE MARKER SIGN
—OHW—	OVERHEAD WIRES
—▫—	STREET/TRAFFIC SIGN
TELE ■	TELEPHONE SPLICE BOX
	UTILITY POLE
VENT •	VENT PIPE
WV	WATER VALVE
Ⓦ	WATER MANHOLE
	FIRE HYDRANT
Ⓓ	STORM SEWER MANHOLE
Ⓢ	SANITARY SEWER MANHOLE
TB ■	TRAFFIC CONTROL BOX
TSP ✱	TRAFFIC SIGNAL POLE

VICINITY MAP – NOT TO SCALE

PARCEL DESCRIPTION

A PARCEL OF LAND IN THE NORTH 1/2 OF THE SOUTHEAST 1/4 OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH P.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE EAST 1/4 CORNER OF SECTION 24, WHICH IS ALSO THE TRUE POINT OF BEGINNING; THENCE SOUTH 0°59'04" EAST 1326.54 FEET; THENCE NORTH 89°52'59" WEST 1699.28 FEET; THENCE NORTH 0°54'34" WEST 1327.96 FEET; THENCE SOUTH 89°50'03" EAST 1697.57 FEET TO THE TRUE POINT OF BEGINNING;

EXCEPT THAT PORTION CONVEYED TO THE TOWN OF ERIE IN DEED RECORDED JANUARY 29, 2002 AT RECEPTION NO. 2247996, COUNTY OF BOULDER, STATE OF COLORADO.

EXCEPT THE EAST 30 FEET IN ROAD BOOK B, PAGE 285, AND THE SOUTH 40 FEET AS CONVEYED TO THE TOWN OF ERIE BY SPECIAL WARRANTY DEED RECORDED MARCH 28, 2001 AT RECEPTION NO. 2132136, COUNTY OF BOULDER, STATE OF COLORADO.

CONTAINING 2,030,441 SQUARE FEET OR 46.613 ACRES MORE OR LESS.

CERTIFICATION

TO: RMCS, LLC, A COLORADO LIMITED LIABILITY COMPANY, ERIE COMMERCIAL VENTURE, LLLP, A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, COMMONWEALTH LAND TITLE INSURANCE COMPANY AND HERITAGE TITLE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 3, 4, 6(b), 8, 11(a), 16, 17 AND 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JUNE 11, 2014.

NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON. (C.R.S. 13-80-105)

NOTICE: THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY BELL SURVEYING COMPANY TO DETERMINE THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF ADJACENT TRACTS, OWNERSHIP, OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY, OR TITLE OF RECORD, BELL SURVEYING COMPANY RELIED UPON TITLE COMMITMENT NO. 451-H0403418-036-CN3, DATED MAY 29, 2014, ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY.

CERTIFICATION DEFINED

THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A REGISTERED PROFESSIONAL SURVEYOR IN THE PRACTICE OF LAND SURVEYING, CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OF FINDINGS WHICH ARE THE SUBJECT OF THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

COPIES OF THIS DOCUMENT MAY BE MADE AND DISTRIBUTED TO OTHER PARTIES FOR REFERENCE PURPOSES AND REVIEW, HOWEVER, ONLY PRINTS OF THIS SURVEY BEARING ORIGINAL SIGNATURE AND WET SEAL BY THE SURVEYOR NAMED HEREON SHALL BE CONSIDERED VALID CERTIFIED DOCUMENTS.

DEAN O. DANIELSON
P.L.S. NO. 16828
DATE OF SURVEY: 6/11/2014

DEAN O. DANIELSON
REGISTERED
16828
LAND SURVEYOR
STATE OF COLORADO

COUNTY SURVEYORS CERTIFICATE

DEPOSITED THIS ___ DAY OF _____, 20___
AT _____ M. IN BOOK _____ OF THE COUNTY SURVEYOR'S LAND SURVEY/RIGHT OF WAY SURVEYS AT PAGE _____, RECEPTION NUMBER _____

COUNTY SURVEYOR BY DEPUTY COUNTY SURVEYOR

THE SUBJECT PROPERTY LIES WITHIN OR PARTIALLY WITHIN THE LEGAL DESCRIPTION OR EXHIBITS FOUND IN THE FOLLOWING RECORDED INSTRUMENTS AND IN ACCORDANCE WITH THE TITLE COMMITMENT MAY THEREFORE BE SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED THEREIN. (COMMONWEALTH LAND TITLE INSURANCE COMPANY COMMITMENT NO. 451-H0403418-036-CN3)

10. AN UNDIVIDED INTEREST IN ALL OIL, GAS AND OTHER MINERALS AS CONVEYED TO WALLACE H. GRANT BY MINERAL DEED, RECORDED AUGUST 24, 1981 AT RECEPTION NO. 460729, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)

11. AN UNDIVIDED INTEREST IN ALL OIL, GAS AND OTHER MINERALS CONVEYED TO DOUGLAS GRANT BY MINERAL DEED, RECORDED AUGUST 24, 1981 AT RECEPTION NO. 460730, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)

12. AN UNDIVIDED 1/4 INTEREST IN ALL OIL, GAS AND OTHER MINERALS CONVEYED TO SUSAN J. TROUDT, MARIAN J. BOTTINELLI AND CARLA JOHNSON HOBBS DBA JOHNSON FARMS BY MINERAL DEED, RECORDED SEPTEMBER 23, 1981 AT RECEPTION NO. 465242, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)

13. A RIGHT OF WAY FOR PIPELINES AND APPURTENANCES GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY BY THE INSTRUMENT RECORDED MAY 26, 1982 AT RECEPTION NO. 496103, AND RECORDED SEPTEMBER 21, 1981 AT RECEPTION NO. 470726, PARTIAL RELEASE OF RIGHT OF WAY RECORDED MARCH 13, 2008 AT RECEPTION NO. 2916317, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

14. A RIGHT OF WAY FOR PIPELINES AND APPURTENANCES GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY BY THE INSTRUMENT RECORDED MAY 26, 1982 AT RECEPTION NO. 496104, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

15. A RIGHT OF WAY FOR PIPELINES GRANTED TO WESTERN GAS SUPPLY COMPANY BY THE INSTRUMENT RECORDED SEPTEMBER 28, 1984 AT RECEPTION NO. 649218, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

16. ANY ASSESSMENT OR LIEN OF THE ERIE WATER AND SANITATION DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED JANUARY 17, 1985 AT RECEPTION NO. 667325. (NOT PLOTTABLE – REFER TO DOCUMENT)

17. ANY ASSESSMENT OR LIEN OF THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED SEPTEMBER 24, 1997 AT RECEPTION NO. 1733175. (NOT PLOTTABLE – REFER TO DOCUMENT)

18. A RIGHT OF WAY FOR PIPELINES GRANTED TO VESSELS OIL AND GAS COMPANY BY THE INSTRUMENT RECORDED APRIL 25, 1985 AT RECEPTION NO. 684894, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

19. A RIGHT OF WAY FOR PIPELINES GRANTED TO HS GATHERING, L.L.C., BY THE INSTRUMENT RECORDED MAY 30, 2001 AT RECEPTION NO. 2154528, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

20. THE EFFECT OF CANYON CREEK PD DEVELOPMENT PLAN MAP RECORDED JULY 9, 2001 AT RECEPTION NO. 2171024. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

21. TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS SPECIFIED UNDER THE GRANT OF PERMANENT ACCESS AND UTILITIES EASEMENT BY AND BETWEEN ERIE COMMERCIAL VENTURES, LLLP, A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, AND TOWN OF ERIE, A COLORADO MUNICIPAL CORPORATION, RECORDED OCTOBER 3, 2007 AT RECEPTION NO. 2887412. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)

22. ASSIGNMENTS AND CONVEYANCES OF MINERAL INTERESTS TO JOHNSON DEVELOPMENT COMPANY IN INSTRUMENTS RECORDED JULY 13, 2001 AT RECEPTION NO. 2173368 AND INSTRUMENTS RECORDED APRIL 3, 2001 AT RECEPTION NOS. 2134267 THROUGH 2134284 INCLUSIVE, INCLUSIVE, AND MINERAL DEED RECORDED MAY 1, 2008 AT RECEPTION NO. 2927263. (NOT PLOTTABLE – REFER TO DOCUMENT)

23. QUIT CLAIM, ASSIGNMENT, BILL OF SALE AND CONVEYANCE OF INTERESTS AS RECORDED OCTOBER 17, 2002 AT RECEPTION NO. 2344511, AND ANY AND ALL ASSIGNMENTS OR LEASES THERETO. (NOT PLOTTABLE – REFER TO DOCUMENT)

24. MINERAL RIGHTS AS CONVEYED TO ECV MINERALS, LLC IN MINERAL DEED RECORDED MAY 1, 2008 AT RECEPTION NO. 2927263. (NOT PLOTTABLE – REFER TO DOCUMENT)

25. TERMS CONDITIONS PROVISIONS AS SET FORTH IN THE WELL ABANDONMENT AGREEMENT AS RECORDED MAY 1, 2008 AT RECEPTION NO. 2927262. (NOT PLOTTABLE – REFER TO DOCUMENT)

26. TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE RESTRICTIVE COVENANT AND NON-DISTURBANCE AGREEMENT RECORDED MAY 29, 2008 AT RECEPTION NO. 2932960. (NOT PLOTTABLE – REFER TO DOCUMENT)

27. OIL AND GAS LEASE FROM ECV MINERALS, LLC TO ENCANA OIL & GAS USA INC. AS RECORDED JULY 2, 2008 AT RECEPTION NO. 2941006. (NOT PLOTTABLE – REFER TO DOCUMENT)

28. ALL OF THE FOLLOWING DOCUMENTS AS THEY RELATE TO MINERAL INTERESTS, WELLBORE SPECIFIC DECLARATION OF POOLING AS RECORDED SEPTEMBER 22, 2009 AT RECEPTION NO. 3031124, OPERATING AGREEMENT AND FINANCING STATEMENT AS RECORDED JUNE 16, 2010 AT RECEPTION NO. 03080637, QUITCLAIM DEED AS TO OIL GAS AND MINERAL INTERESTS AS RECORDED FEBRUARY 11, 2011 AT RECEPTION NO. 3132655, ASSIGNMENT, BILL OF SALE AND CONVEYANCE FROM ENCANA OIL & GAS TO KERR -MCGEE GATHERING LLC AS RECORDED APRIL 14, 2011 AT RECEPTION NO. 3143701. (NOT PLOTTABLE – REFER TO DOCUMENT)

GENERAL NOTES:

1. VISIBLE SURFACE UTILITY APPURTENANCES HAVE BEEN LOCATED USING THE STANDARD OF CARE PREVAILING AMONG PROFESSIONAL LAND SURVEYORS PRACTICING IN THE METROPOLITAN AREA. NO OTHER REPRESENTATIONS OF UTILITY LOCATIONS ARE MADE OR IMPLIED. BEFORE COMMENCING ANY EXCAVATION THE UTILITIES SHOULD BE FIELD LOCATED BY CALLING UTILITY LOCATES AT 811.

2. THE SUBJECT PROPERTY LIES WITHIN THE FLOOD HAZARD AREA DESIGNATED AS "ZONE X" IN ACCORDANCE WITH F.E.M.A. PANEL 441 OF 615, MAP NUMBER 08013C0441J, DATED DECEMBER 18, 2012.

   ZONE X – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

3. BEARINGS BASED ON THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN AS BEARING S 00°59'04" E (MONUMENTS DESCRIBED ON PLAT).

4. NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.

5. NO OBSERVABLE EVIDENCE OR KNOWLEDGE OF ANY CHANGES IN STREET RIGHT OF WAY LINES EITHER COMPLETED OR PROPOSED, AND AVAILABLE FROM THE CONTROLLING JURISDICTION. NO OBSERVABLE EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.

6. NO OBSERVABLE EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

7. CANYON CREEK PD DEVELOPMENT PLAN – FILING NO. 10

   PRINCIPAL LAND USES:
   COMMERCIAL / BUSINESS / RETAIL (CBR)
   OPEN SPACE, PARKS & RECREATION FACILITIES (OS)

   MINIMUM SET BACK TO PRINCIPAL BUILDINGS:
   FRONT – 20 FEET
   SIDE (INTERIOR LOT) – 10 FEET
   SIDE (ALONG STREET) – 20 FEET
   REAR – 20 FEET
   BUILDING HEIGHT – 35 FEET

   MINIMUM SET BACK TO ACCESSORY BUILDINGS:
   FRONT – 30 FEET
   SIDE (INTERIOR LOT) – 5 FEET
   SIDE (ALONG STREET) – 20 FEET
   REAR – 5 FEET
   BUILDING HEIGHT – 25 FEET

   ZONING COMPLIANCE AND REQUIREMENTS NOT PROVIDED TO SURVEYOR.

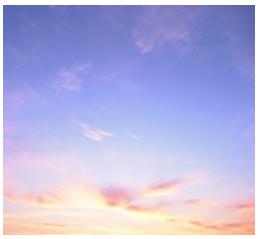
GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

ALTA/ACSM LAND TITLE SURVEY		
ORDERED BY: OVERTON & ASSOCIATES, LLC 6950 EAST BELLEVIEW AVENUE #202 GREENWOOD VILLAGE, COLORADO 80111	REVISION: PREV: 0710-113	DRAWN: WB
BELL SURVEYING COMPANY 500 KALAMATH STREET DENVER, COLORADO 80204 303-629-0165 FAX 303-629-0168 www.BELLSURVEYING.com	SCALE: 1"=100' DATE: 6/11/2014 DRAWING NO.: 1406-102	

Special Agreements



oil and gas lease

restrictive covenant and non-disturbance agreement

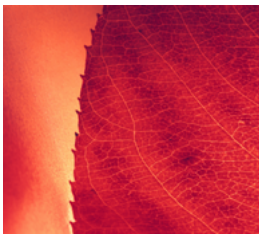
well abandonment agreement

well abandonment agreement

well abandonment agreement

license agreement for signage

license agreement for signage



custom farming agreement

sign lease advertising agreement

mineral estate waiver

OIL AND GAS LEASE

THIS AGREEMENT, Made and entered into this 30th day of May, 2008, by and between **ECV Minerals, LLC, a Colorado limited liability company**, whose post office address is 7720 East Belleview Avenue, Suite 350, Greenwood Village, Colorado 80111, hereinafter called Lessor, and **EnCana Oil & Gas (USA), Inc.**, whose post office address is 370 17th Street, Suite 1700, Denver, Colorado 80202, hereinafter called Lessee:

WITNESSETH, That the said Lessor, for and in consideration of **Ten and More ($10.00)** DOLLARS, cash in hand paid, the receipt of which is hereby acknowledged, and the covenants and agreements hereinafter contained, has granted, demised, leased and let, and by these presents does grant, demise, lease and let exclusively unto the said Lessee, the land hereinafter described, with the exclusive right for the purpose of mining, exploring by geophysical and other methods, and operating for and producing therefrom oil and all gas of whatsoever nature or kind, with rights of way and easements for laying pipe lines, and erection of structures thereon to produce, save and take care of said products, all that certain tract of land situated in the County of Boulder, State of Colorado, described as follows, to-wit:

Township 1 North, Range 69 West, 6th PM
Section 24: A tract of land in the N/2SE/4 described as follows:
Beginning at the E¼ corner section of Section 24, which is also the True Point of Beginning; thence S0°59'04" E. 1326.54'; thence N89°52'59" W. 1699.28'; thence N0°54'34" W. 1327.96'; thence S89°50'03" E. 1697.57' to the True Point of Beginning;
Containing a total of **51.74** acres, more or less.

Said Lands are subject to NO SURFACE OCCUPANCY

1. It is agreed that this lease shall remain in force for a term of three (3) years from this date and as long thereafter as oil or gas of whatsoever nature or kind is produced from said leased premises or on acreage pooled therewith, or drilling operations are continued as hereinafter provided. If, at the expiration of the primary term of this lease, oil or gas is not being produced on the leased premises or on acreage pooled therewith but Lessee is then engaged in drilling or re-working operations thereon, then this lease shall continue in force so long as operations are being continuously prosecuted on the leased premises or on acreage pooled therewith; and operations shall be considered to be continuously prosecuted if not more than one hundred eighty (180) days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of a subsequent well. If after discovery of oil or gas on said land or on acreage pooled therewith, the production thereof should cease from any cause after the primary term, this lease shall not terminate if Lessee commences additional drilling or re-working operations within one hundred eighty (180) days from date of cessation of production or from date of completion of dry hole. Drilling operations shall be deemed to be commenced when the first material is placed on the leased premises or when the first work, other than surveying or staking the location, is done thereon which is necessary for such operations. If oil or gas shall be discovered and produced as a result of such operations at or after the expiration of the primary term of this lease, this lease shall continue in force so long as oil or gas is produced from the lease premises or on acreage pooled therewith.
2. This is a **PAID-UP LEASE.** In consideration of the down cash payment, Lessor agrees that Lessee shall not be obligated, except as otherwise provided herein, to commence or continue any operations during the primary term. Lessee may at any time or times during or after the primary term surrender this lease as to all or any portion of said land and as to any strata or stratum by delivering to Lessor or by filing for record a release or releases, and be relieved of all obligation thereafter accruing as to the acreage surrendered.
3. In consideration of the premises the said Lessee covenants and agrees:

1st. To deliver to the credit of Lessor, free of cost in the pipe to which Lessee may connect his wells, the equal three-sixteenth (3/16th) part of all oil produced and saved from the leased premises, or at the Lessee's option, may pay to the Lessor for such three-sixteenth (3/16th) royalty, three-sixteenth (3/16th) of the then market value at the mouth of the well of all oil produced and saved hereunder by the Lessee from the leased premises.

2nd. To pay Lessor for gas of whatsoever nature or kind (with all of its constituents) produced and sold or used off the leased premises, or used in the manufacture of products therefrom, three-sixteenths (3/16th) of the gross proceeds received for the gas sold, used off the premises, or in the manufacture of products therefrom, but in no event more than three-sixteenth (3/16th) of the actual amount received by the Lessee, said payments to be made monthly. During any period (whether before or after expiration of the primary term hereof) when gas is not being so sold or used and the well or wells are shut in and there is no current production of oil or operations on said leased

premises sufficient to keep this lease in force, Lessee shall pay or tender a royalty of One Dollar ($1.00) per year per net royalty acre retained hereunder, such payment or tender to be made, on or before the anniversary date of this lease next ensuing after the expiration of ninety (90) days from the date such well is shut in and thereafter on the anniversary date of this lease during the period such well is shut in, to the royalty owners or to the royalty owner's credit in the rental depository bank hereinafter designated. When such a payment or tender is made it will be considered that gas is being produced within the meaning of the entire lease.

3rd. To pay Lessor for gas produced from any oil well and used off the premises, or for the manufacture of casing-head gasoline or dry commercial gas, three-sixteenth (3/16th) of the gross proceeds, at the mouth of the well, received by Lessee for the gas during the time such gas shall be used, said payments to be made monthly.

4. If said Lessor owns a less interest in the above described land than the entire and undivided fee simple estate therein, then the royalties (including any shut-in gas royalty) herein provided for shall be paid the said Lessor only in the proportion which Lessor's interest bears to the whole and undivided fee.

5. The rights of Lessor and Lessee hereunder may be assigned in whole or part. No change in ownership of Lessor's interest (by assignment or otherwise) shall be binding on Lessee until Lessee has been furnished with notice, consisting of certified copies of all recorded instruments or documents and other information necessary to establish a complete chain of record title from Lessor, and then only with respect to payments thereafter made. No other kind of notice, whether actual or constructive, shall be binding on Lessee. No present or future division of Lessor's ownership as to different portions or parcels of said land shall operate to enlarge the obligations or diminish the rights of Lessee, and all Lessee's operations may be conducted without regard to any such division. If all or any part of this lease is assigned, no leasehold owner shall be liable for any act or omission of any other leasehold owner.

6. Lessee is hereby granted the right at any time and from time to time to unitize, pool or combine the leased premises or any portion or portions thereof, as to all strata or any stratum or strata, with any other lands as to all strata or any stratum or strata, for the production primarily of oil or primarily of gas with or without distillate. However, no unit for the production primarily of oil shall embrace more than 160 acres, or for the production primarily of gas with or without distillate more than 160 acres; provided that if any governmental regulation shall prescribe a spacing pattern for the development of the field or allocate a producing allowable based on acreage per well, then any such unit may embrace as much additional acreage as may be so prescribed or as may be used in such allocation of allowable. Operations upon and production from the unit shall be treated as if such operations were upon or such production were from the leased premises whether or not the well or wells are located thereon. The entire acreage within a unit shall be treated for all purposes as if it were covered by and included in this lease except that the royalty on production from the unit shall be as below provided, and except that in calculating the amount of any rentals or shut in gas royalties, only that part of the acreage originally leased and then actually embraced by this lease shall be counted. In respect to production from the unit, Lessee shall pay Lessor, in lieu of other royalties thereon, only such proportion of the royalties stipulated herein as the amount of his acreage placed in the unit, or his royalty interest therein on an acreage basis bears to the total acreage in the unit.

7. All express or implied covenants of this lease shall be subject to all Federal and State Laws, Executive Orders, Rules or Regulations, and this lease shall not be terminated, in whole or in part, nor Lessee held liable in damages, for failure to comply therewith, if compliance is prevented by, or if such failure is the result of, any such Law, Order, Rule or Regulation.

8. Lessor hereby warrants and agrees to defend the title to the lands herein described.

9. Should any one or more of the parties hereinabove named as Lessor fail to execute this lease, it shall nevertheless be binding upon all such parties who do execute it as Lessor. The word "Lessor", as used in this lease, shall mean any one or more or all of the parties who execute this lease as Lessor. All the provisions of this lease shall be binding on the heirs, successors and assigns of Lessor and Lessee.

10. Additional Provisions. This Lease is being entered into by Lessor with the specific understanding that no right has been granted to Lessee under the terms of this Lease to enter onto the surface of the lands that are the subject to this Lease ("Surface Estate") for any purpose whatsoever. Notwithstanding any other provision herein contained, Lessee acknowledges and agrees that it shall have no right to enter onto the Surface Estate for any purpose whatsoever. In addition to the foregoing, Lessee hereby specifically agrees to the following:

a. This Lease is specifically made subject to, and Lessee agrees to be bound by, the provisions contained in the Restrictive Covenant and Non-Disturbance Agreement, recorded on May 29, 2008, recorded at Reception Number 2932960, in the real property records of Boulder County, Colorado, between Erie Commercial Venture, LLLP, the owner of the Surface Estate, and ECV Minerals, LLC, the owner of the mineral estate.

b. Lessee hereby specifically agrees not to interfere with, hinder or delay, in any manner whatsoever, the development of the Surface Estate.

c. Lessee, for itself and its successors and/or assigns, (i) hereby waives any right to receive notice of the development of the Surface Estate pursuant C.R.S. §24-65.5-103(5), and (ii) hereby waives any right to object to the development of the Surface Estate pursuant to C.R.S. §24-65.5-103.3.

d. Lessee releases and holds harmless, and indemnifies, Lessor, its successors and assigns, of and from any and all liability for loss or damage of any kind or nature to persons or property, now or hereafter upon the Surface Estate, including without limitation environmental loss or damage, arising directly or indirectly from Lessee's acts, or the acts or failure to act of Lessee's officers, agents, employees, independent contractors or assigns.

IN WITNESS WHEREOF, this instrument is executed as of the date first above written.

ECV Minerals, LLC,
a Colorado limited liability company

BY _____
A.L. (Sid) Overton, Manager

BY _____
Stanley R. Medsker, Manager

ACKNOWLEDGMENT

STATE OF COLORADO)
) ss.
COUNTY OF Arapahoe)

On this 30th day of May, 2008, before me personally appeared A. L. (Sid) Overton,, known to me to be the Manager of ECV Minerals, LLC, and that he executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company, for the uses and purposes therein set forth.

My Commission Expires: 10/12/2010

(SEAL)

Lisa M. Morris
Notary Public

LISA M. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires Oct. 12, 2010

STATE OF COLORADO)
) ss.
COUNTY OF Arapahoe)

On this 30th day of May, 2008, before me personally appeared Stanley R. Medsker,, known to me to be the Manager of ECV Minerals, LLC, and that he executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company, for the uses and purposes therein set forth.

My Commission Expires: 10/12/2010

(SEAL)

Lisa M. Morris
Notary Public

LISA M. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires Oct. 12, 2010

2932960 05/29/2008 10:53:47 AM
COVENANT RF: $31.00 DF: $0.00 Page: 1 of 6
Electronically recorded in Boulder County Colorado.

RESTRICTIVE COVENANT AND NON-DISTURBANCE AGREEMENT

THIS RESTRICTIVE COVENANT AND NON-DISTURBANCE AGREEMENT ("Agreement") is made and entered into as of the 28 day of May, 2008 by and among Erie Commercial Venture, LLLP, a Colorado limited liability limited partnership, whose principal business address is 7720 East Belleview Avenue, Suite 350, Greenwood Village, Colorado 80111 (hereinafter "Erie Commercial"), and ECV Minerals, LLC, a Colorado limited liability company, whose principal business address is 7720 East Belleview Avenue, Suite 350, Greenwood Village, Colorado 80111 (hereinafter "ECV Minerals"). ECV Minerals and Erie Commercial may each be referred to herein, individually, as a "Party", or collectively, as "the Parties", each term shall include their respective successors and assigns.

RECITALS

WHEREAS, Erie Commercial is the owner of certain real property consisting of approximately 46.613 acres located in Boulder County, Colorado, as legally described in Exhibit A, attached hereto, and incorporated herein by reference ("Erie Commercial Property").

WHEREAS, Erie Commercial and/or its successors or assigns, desire to develop the Erie Commercial Property for commercial, retail or residential uses.

WHEREAS, Erie Commercial desires to obtain certain assurances by the mineral interest owner underlying the Erie Commercial Property that the surface of the Erie Commercial Property shall not be used for oil or gas production, which would significantly harm the ability of Erie Commercial to develop the Erie Commercial Property.

WHEREAS, ECV Minerals is the owner of all of the mineral interests, specifically including oil and gas, underlying the Erie Commercial Property ("ECV Mineral Estate").

WHEREAS, ECV Minerals and Erie Commercial desire to enter into this Agreement by virtue of which ECV Minerals shall covenant and agree that all future owners or lessee's of the ECV Mineral Estate shall be specifically restricted from any use of the surface of the Erie Commercial Property for any purpose except as specifically set forth herein.

WHEREAS, the Parties wish to memorialize their agreement in writing as hereinafter set forth.

AGREEMENT

NOW THEREFORE, in consideration of (1) the sum of Ten and no/100 ($10.00) Dollars, (2) for the promises and covenants herein contained, and (3) for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound, the Parties hereby agree as follows:

1. Restrictive Covenant/Non-Disturbance Agreement. ECV Minerals shall not, nor shall ECV Minerals permit any future owner or lessee of the ECV Mineral Estate underlying the Erie Commercial Property, to use the surface of the Erie Commercial Property, or the area five hundred (500) feet immediately below the surface of the Erie Commercial Property for (i) the

purpose of surveying by geological, geophysical and all other methods; (ii) mining, drilling or operating for oil and gas; (iii) drilling any wells for oil and gas; (iv) laying pipelines; (v) building tanks, power stations or any other structures on the Erie Commercial Property; or (vi) in any way extracting or producing oil and gas from the mineral interests owned by ECV Minerals to the extent that the surface of the Erie Commercial Property, or the area five hundred (500) feet immediately below the surface of the Erie Commercial Property is used for such purposes.

2. Cooperation. In consideration of Paragraph 1, Erie Commercial, on behalf of itself and its successors and assigns, hereby agrees not to object to or hinder ECV Minerals, its successors, assigns and future lessees, in ECV Minerals's efforts, or the efforts of a future lessee of ECV Minerals, in obtaining all necessary permits, licenses and other approvals from state, county and municipal authorities to permit or authorize ECV Minerals, its successors and assigns, or a future lessee of ECV Minerals, to drill and/or recomplete well(s) under the Erie Commercial Property, provided such drilling is from surface location(s) other then the Erie Commercial Property, to include an exception location(s) under the Rules and Regulations of the Colorado Oil & Gas Conservation Commission for any such well(s).

3. Covenants of any Future Lease. For the consideration recited herein, ECV Minerals shall include an appropriate provision in any future mineral lease for the ECV Mineral Estate to effectuate the restrictive covenants contained in this Agreement.

4. Term of Restrictive Covenants. The term of this Agreement, and the restrictive covenants contained herein, shall be perpetual.

5. Reservation. ECV Minerals reserves unto itself such rights in the ECV Mineral Estate subject to this Agreement for any purpose which does not interfere with the restrictive covenants granted herein.

6. Recording. This Agreement, and any amendments hereto, shall be recorded in the real property records of the Clerk and Recorder of Boulder County, Colorado.

7. Notice of Development. Pursuant to C.R.S. §24-65.5-103(5), a mineral estate owner may waive the right to notice of the development of the surface estate under C.R.S. §24-65.5-103. This Agreement prevents the use of the surface estate of the Erie Commercial Property by the owner(s) of the mineral estate, and as such, ECV Minerals, for itself and its successors and/or assigns, (i) hereby waives any right to receive notice of the development of the surface estate pursuant C.R.S. §24-65.5-103(5), and (ii) hereby waives any right to object to the development of the surface estate pursuant to C.R.S. §24-65.5-103.3.

8. Agreement Binding. This Agreement, and the restrictive covenants contained herein, shall be binding upon and shall inure to the successors and assigns of the Parties hereto, and shall be a covenant running with the land for so long as ECV Minerals or its successors and/or assigns, are the oil, gas or mineral interest owner or lessee of the mineral interests under the Erie Commercial Property.

9. Miscellaneous Provisions.

A. No Third Party Beneficiaries. This Agreement is entered into between and for the

benefit of Erie Commercial and ECV Minerals and no other party. The Parties hereto disclaim and do not intend that any third party rely on or claim to benefit from this Agreement.

B. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Colorado. The Parties hereto agree to submit to the jurisdiction of the federal and state courts of the State of Colorado with respect to the breach or interpretation of this Agreement or the enforcement of any and all rights, duties, liabilities, obligations, powers, and other relations between the Parties arising under this Agreement. The Parties hereby waive any right to trial by jury in any subsequent litigation between them where such litigation arises out of, is related to, or is in connection with any provision of this Agreement or any exhibit thereto, whether the Agreement is asserted as the basis for a claim, counterclaim or a crossclaim, or a defense to a claim, counterclaim or crossclaim.

C. Attorneys' Fees. The prevailing Party to any suit arising out of this Agreement shall be entitled to reasonable attorneys' fees, plus expenses and costs of court.

D. Entire Agreement. This Agreement, including Exhibit A (Legal Description), constitutes the sole and entire agreement between the Parties with respect to the subject matter hereof and supersedes any prior or contemporaneous letter of intent, agreement or understanding, whether written or oral, if any, between the parties with respect to such subject matter. THERE ARE NO ORAL AGREEMENTS CONCERNING THE SUBJECT MATTER OF THIS AGREEMENT.

E. Construction. This Agreement shall not be construed more strictly against one Party than against the other merely by virtue of the fact that it may have been prepared by counsel for one of the Parties, it being recognized that all of the Parties have contributed substantially and materially to the preparation of this Agreement, and as such, the language and all parts of this Agreement shall be in all cases construed in accordance with their fair meaning. The Recitals to this Agreement shall be deemed a substantive part of this Agreement. The subject headings of the paragraphs and subparagraphs of this Agreement are included for purposes of convenience only, and shall not affect the construction or interpretation of any of the provisions of this Agreement.

F. Counterparts. This Agreement may be executed in multiple counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

G. Further Agreements. The Parties agree to execute such other and further written agreements which may be necessary and required to fully implement and carry out the intent of the Parties to this Agreement so as to conclude a full and final settlement of all issues between the Parties, and which such written agreement(s) shall be consistent with, and not in conflict with this Agreement between the Parties.

H. Amendments. This Agreement may be modified only by a further written agreement signed by all of the Parties hereto.

I. Adequate Consideration. All Parties acknowledge and agree that the covenants and promises contained herein are good and sufficient consideration for their respective obligations required hereunder.

J. Severability. If any provision of this Agreement is deemed to be illegal, invalid or unenforceable for any reason, the remaining provisions of this Agreement shall be unaffected, and this Agreement shall continue in full force and effect.

IN WITNESS WHEREOF, the Parties hereto have executed this Restrictive Covenant and Non-Disturbance Agreement on the dates adjacent to each Parties signature below.

"Erie Commercial"

Erie Commerical Ventures, LLLP, a Colorado limited liability limited partnership

By: _____ May 28, 2008
A. L. (Sid) Overton, General Partner — Date

By: _____ May 28, 2008
Stanley R. Medsker, General Partner — Date

"ECV Minerals"

ECV Minerals, LLC, a Colorado limited liability company

By: _____ May 28, 2008
A. L. (Sid) Overton, Manager — Date

By: _____ May 28, 2008
Stanley R. Medsker, Manager — Date

STATE OF Colorado)

COUNTY OF Arapahoe)

The foregoing Restrictive Covenant and Non-Disturbance Agreement was voluntarily executed and acknowledged before me, a notary public, by A. L. (Sid) Overton, as General Partner of Erie Commercial Venture, LLLP, a Colorado limited liability limited partnership, and as Manager of ECV Minerals, LLC, a Colorado limited liability company, on this 28th day of May, 2008.

WITNESS MY HAND AND OFFICIAL SEAL

Lisa M. Morris
Notary Public

My commission expires: 10/12/2010

Address 12943 Lafayette St. #B
Thornton CO 80241

STATE OF Colorado)

COUNTY OF Arapahoe)

LISA M. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires Oct. 12, 2010

The foregoing Restrictive Covenant and Non-Disturbance Agreement was voluntarily executed and acknowledged before me, a notary public, by Stanley R. Medsker, as General Partner of Erie Commercial Venture, LLLP, a Colorado limited liability limited partnership, and as Manager of ECV Minerals, LLC, a Colorado limited liability company, on this 28th day of May, 2008.

WITNESS MY HAND AND OFFICIAL SEAL

Lisa M. Morris
Notary Public

My commission expires: 10/12/2010

Address 12943 Lafayette St. #B
Thornton CO 80241

LISA M. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
My Commission Expires Oct. 12, 2010

2932960 05/29/2008 10:53:47 AM
COVENANT RF: $31.00 DF: $0.00 Page: 6 of 6
Electronically recorded in Boulder County Colorado.

EXHIBIT A

Erie Commercial Ventures, LLLP
Property Description

PARCEL DESCRIPTION

A PARCEL OF LAND IN THE N ½ OF THE SE ¼ OF SECTION 24, T1N, R69W OF THE 6TH P.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE E ¼ CORNER OF SECTION 24, WHICH IS ALSO THE TRUE POINT OF BEGINNING; THENCE S 0°59'04" E, 1326.54 FEET; THENCE N 89°52'59" W, 1699.28 FEET; THENCE N 0°54'34" W, 1327.96 FEET, THENCE S 89°50'03" E, 1697.57 FEET TO THE TRUE POINT OF BEGINNING;

EXCEPT THAT PORTION CONVEYED TO THE TOWN OF ERIE IN DEED RECORDED JANUARY 29, 2002 AT RECEPTION NO. 2247996, COUNTY OF BOULDER, STATE OF COLORADO.

CONTAINING 2,030,441 SQUARE FEET OR 46.613 ACRES MORE OR LESS.

EXCEPT THE EAST 30 FEET IN ROAD BOOK B, PAGE 285, AND THE SOUTH 40 FEET AS CONVEYED TO THE TOWN OF ERIE BY SPECIAL WARRANTY DEED RECORDED MARCH 28, 2001 AT RECEPTION NO. 2132136.

County of Boulder
State of Colorado

2927262 05/01/2008 12:32:43 PM
AG RF: $26.00 DF: $0.00 Page: 1 of 5
Electronically recorded in Boulder County Colorado.

WELL ABANDONMENT AGREEMENT

THIS AGREEMENT is made and entered into this 25th day of January, 2001, by and between North American Resources Company ("NARCO"), with offices at 1700 Broadway, Suite 2000, Denver, Colorado 80290 and Johnson Development Company ("Johnson"), with offices at 4380 South Syracuse Street, Denver, Colorado 80237.

RECITALS

1. Johnson either owns or has an option to purchase the entire S/2 of Section 24, Township 1 North, Range 69 West, Boulder County, Colorado ("Property").

2. The property is subject to the following oil and gas leases ("Leases"), to-wit:

a. Oil and gas lease dated August 20, 1981, from Maxine Johnson Haley Trust, James S. Haley, Trustee, as lessor, to J. Michael McGhee ("McGhee"), as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466152.

b. Oil and gas lease dated August 20, 1981, from Susan J. Troudt, Marian J. Bottinelli, Carla Johnson Hobbs, d/b/a Johnson Farms, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466151.

c. Oil and gas lease dated August 18, 1981, from Wallace H. Grant and Douglas Grant, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466154.

d. Oil and gas lease dated August 7, 1981, from The Longmont National Bank and Lorraine Miller as Co-Trustees of the Carl A. Miller Trust, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466153.

3. NARCO has succeeded to all of the working interests of McGhee under the Leases.

4. NARCO operates two oil and gas wells on the Property known as the Erie Eight E Unit #1 located in the SE/4SE/4 of Section 24 ("Erie #1") and the Erie Eight E Unit #2 located in the SW/4SW/4 of Section 24 ("Erie #2") in which NARCO presently owns all the working interest. The Erie #1 and Erie #2 may be hereinafter collectively referred to as the "Wells."

5. Johnson wishes to develop the property free of the Wells and subsequent drilling.

6. NARCO and Johnson enter into this Agreement to provide for NARCO to plug and abandon the Wells, among other things, in exchange for certain payments from Johnson to NARCO as provided herein.

TERMS AND PROVISIONS

NOW, THEREFORE, in consideration of the covenants and the mutual benefits set forth herein, including the representations set forth in the recitals, the parties agree as follows:

1. Plugging and Abandonment of Erie #2 Well and Reclamation

NARCO shall plug and abandon the Erie #2 well and remove all equipment and production facilities from the wellsite and also reclaim and remediate the surface of the wellsite and all associated production facilities and pits, access and gas flowlines from the Erie #2 wellhead to the gas transmission line in accordance with the rules and regulations of the Colorado Oil and Gas Conservation Commission ("COGCC") on or before March 1, 2001. The completion of remediation at this site may be extended if unexpected complications are encountered, but NARCO will diligently pursue said remediation until it is completed. NARCO will provide Johnson notice of such extension as soon as it is practicable with an explanation of the cause of the delay.

APPL. RECORDING RETURN TO:
MARK OVERTON
7200 E. BELLEVIEW AVE #330
GREENWOOD VILLAGE, CO. 80111

FANTC

HO 206316 / HC135322

1

2. Plugging and Abandonment of Erie #1 Well and Reclamation

NARCO shall plug and abandon the Erie #1 well and remove all equipment and production facilities from the wellsite and also reclaim and remediate the surface of the wellsite and all associated production facilities and pits, access and gas flowlines from the Erie #1 wellhead to the gas transmission line in accordance with the rules and regulations of the Colorado Oil and Gas Conservation Commission ("COGCC"). This will be accomplished within fifty (50) days after receiving written notice from Johnson.

3. Wellhead Equipment and Production Facilities

NARCO shall continue to own the wellhead equipment and associated production facilities and equipment as to each respective well.

4. Purchase Price

As consideration for the terms and provisions contained herein, Johnson agrees to pay NARCO $500,000.00 as follows:

a. Johnson shall pay NARCO the sum of $250,000 in the form of a certified cashier's check contemporaneous with the execution of this agreement.

b. Johnson shall pay NARCO the sum of $125,000 ("Second Payment") in the form of a certified cashier's check to NARCO within five (5) business days of Johnson's receiving a copy of the successful final reclamation inspection of the Erie #2 wellsite and reclaimed areas in accordance with COGCC Rule 1004.c.

c. Johnson shall pay NARCO the sum of $125,000 ("Third Payment") in the form of a certified cashier's check to NARCO within five (5) business days of Johnson receiving a copy of the successful final reclamation inspection of the Erie #1 wellsite and reclaimed areas in accordance with COGCC Rule 1004.c.

d. Until such time as each well is plugged and abandoned, NARCO shall continue to receive all revenue attributable to the production as to each well, and shall continue to disburse those proceeds from each well attributable to the respective landowner and overriding royalty owner interests.

e. In the event that NARCO fails or refuses to plug and abandon the Erie #2 well and reclaim the surface of the wellsite and all associated production facilities and pits, access roads and pipelines as set forth above (hereinafter referred to as the "Work", whether referencing the Erie #2 well or the Erie #1 well) on or before February 15, 2001 (First Abandonment Date), the parties agree that, after the First Abandonment Date, Johnson may engage a contractor to perform the Work and that such contractor shall be the agent of NARCO and not of Johnson. In such event, the Second Payment shall be reduced by all of the costs incurred by the contractor to perform the work.

f. In the event that NARCO fails or refuses to plug and abandon and complete the Work for the Erie #1 well on or before March 15, 2001 (Second Abandonment Date), the parties agree that, after the Second Abandonment Date, Johnson will engage a contractor to perform the Work and that such contractor shall be the agent of NARCO and not of Johnson. In such event, the Third Payment shall be reduced by all of the costs incurred by the contractor to perform the work.

g. If NARCO is rendered unable to perform the plugging, abandoning and subsequent restoration of the property, wholly or in part, by force majeure preventing it from carrying out its obligations to do so, it shall be automatically granted such time as is necessary for the obligations to be completed over and above the times stated herein. "Force majeure" shall be defined herein as any act of God, strike, lockout or other industrial disturbance, act of the public enemy, war, public riot, lightning, storm, flood or other act of nature, explosion, governmental action, governmental delay, restraint or inaction, unavailability of equipment or qualified labor, whether specifically enumerated herein or otherwise, which is not reasonably in control of NARCO. NARCO will use all reasonable efforts to remedy the force majeure as quickly as is practicable.

h. Should the payments detailed in 4.a, 4.b, or 4.c above not be tendered in a timely manner, Johnson agrees to pay NARCO the sum so indicated plus interest at a rate of 8% per annum compounded weekly.

5. Use of the Surface of the Property

a. From and after the date of this agreement, NARCO shall not drill any other well on the property or extend its surface use of the property (with the exception of paragraph 5.b. below) beyond the current surface uses for the Wells. NARCO further agrees not to deepen or sidetrack either of the Wells.

b. Notwithstanding the foregoing, NARCO shall retain and have a continuing right of ingress and egress to both the surface and subsurface facilities currently located upon or under the Lands, including but not limited to, roads, flow lines and pipelines used in connection with the wells owned and operated by them and operations that are not located on the lands. The entire cost, risk and expense of rerouting any such roads, flowlines and pipelines shall be borne by Johnson exclusive of and in addition to those amounts set forth in Paragraphs 4a, 4b and 4c above, and shall be subject to the advance approval of NARCO as operator of such wells, which approval shall not be unreasonable withheld. The total cost of any installation and or relocation of any transmission line incurred by NARCO shall be paid by Johnson to NARCO upon completion for the relocation of said pipeline(s) and within thirty (30) days after Johnson receives from NARCO an invoice for such costs. In addition, immediately after the relocation of the line, all authorized parties agree to amend the Right-of-Way Agreements set forth below to correctly reflect the change in legal description of the relocated transmission line. Under no circumstances shall NARCO be prohibited from flowing gas through its transmission line at any time.

c. In addition to those rights listed above, NARCO excepts from this agreement and expressly reserves unto itself all right, title and interest for any Right-of-Way and/or Easement NARCO may have covering the above described lands which apply to its transmission line which lies approximately along the southern and eastern edge of the Property, including, but not limited to, the following Right-of-Way Agreements listed herewith:

1. Right-of-Way Agreement dated 3/22/88, filed 4/22/88 in folio 1525, reception #00914407, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

2. Right-of-Way Agreement dated 4/22/85, filed 4/25/85 in folio 1350, reception #00684984, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

3. Right-of-Way Agreement dated 4/22/85, filed 4/25/85 in folio 1350, reception #00684895, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

6. Indemnification

a. Johnson shall defend, indemnify and hold NARCO harmless from and against all claims, losses and liabilities, including court costs, expert witness fees and reasonable attorney's fees that arise from the non-payment of any portion of the purchase price for the landowners royalty and/or overriding royalty and Johnson, as future owner of any interest in the mineral estate for the Property, hereby waives its rights to any portion of the purchase price.

b. Notwithstanding the provisions of Article 4 above, Johnson shall have the right to seek injunctive relief against NARCO for violating the terms of this agreement by drilling any additional oil and gas wells or for not plugging and abandoning the wells in a timely manner.

c. Should either party hereto be in breach of the provisions of this agreement, the aggrieved party shall provide written notice to the party inbreach, and the party in breachwill have thirty (30) days after receipt of such notice to rectify the breach. This time period may be extended for reasons of force majeure as provided herein.

7. Surrender of Leases

a. NARCO shall surrender and release all of its oil and gas leasehold interests to the respective lessors or each lease at the time the Erie #1 well is plugged and abandoned, and no later than the time Johnson is required to make the Third Payment as described in article 4.c. above. NARCO shall not be obligated to surrender any of its interests hereunder if it has not received all sums due and owing to it by Johnson under this agreement or if Johnson is in default of a material term of this agreement.

b. The surrender and release of the leasehold interests described in Article 7.a. shall be evidenced in releases in the form attached to this agreement as Exhibit "A".

8. Restriction on Assignment

NARCO shall not assign any interest it owns in the Leases or in either the Erie #1 well or the Erie #2 well except pursuant to the terms of this agreement.

9. NARCO's Representations and Warranties

NARCO represents and warrants that, to the best of its knowledge, NARCO is owner of 100% of the working interest in the wells and all of the oil and gas leasehold interest in the Property.

10. Successors and Assigns

This Agreement shall be binding and inure to the heirs, successors and assigns of both Johnson and NARCO.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative effective as of the date first written above.

JOHNSON DEVELOPMENT COMPANY
by its attorney-in-fact:
Bruce L. Likoff
~~C. Howard Johnson, President~~
Bruce L. Likoff

NORTH AMERICAN RESOURCES COMPANY
T. Schmidtke
Terry C. Schmidtke, Vice President

ACKNOWLEDGMENTS

Province of Alberta)
) ss.
Country of Canada)

The foregoing instrument was acknowledged before me on this 25th day of January 2001 by Terry C. Schmidtke, in his capacity as Vice President of North American Resources Company.

Witness my hand and official seal.

My Commission Expires: 12/31/2003

Notary Public

STATE OF COLORADO)
CITY AND) ss.
COUNTY OF DENVER)

BEFORE ME, the undersigned, a Notary Public in and for said County and State, on this 31st day of January, 2001, personally appeared Bruce L. Likoff in his capacity as attorney-in-fact for Johnson Development Company, and who executed the within and foregoing instrument of his own free and voluntary act and deed for the benefit of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this 31st day of January, 2001.

My Commission Expires:
December 5, 2001

Notary Public

2927262 05/01/2008 12:32:43 PM
AG RF: $26.00 DF: $0.00 Page: 5 of 5
Electronically recorded in Boulder County Colorado.

EXHIBIT "A"

Attached to and made a part of that certain Well Abandonment Agreement dated January 25, 2001 by and between Johnson Development Company and North American Resources Company.

RELEASE OF OIL AND GAS LEASE

STATE OF COLORADO
COUNTY OF BOULDER

WHEREAS, North American Resources Company, with offices at 1700 Broadway, Suite 2000, Denver, CO 80290, is the owner of a leasehold interest in the oil and gas leases described below covering the described lands situated in the County of Boulder, State of Colorado, to-wit:

Township 1 North, Range 69 West, 6th P.M.
Section 24: S/2

said leases being recorded in the records of the Boulder County Clerk and Recorder.

NOW, THEREFORE, North American Resources Company does hereby release, relinquish and surrender to the lessors, their respective heirs, assigns and legal representatives, all right, title and interest in and to the following oil and gas leases:

a. Oil and gas lease dated August 20, 1981, from Maxine Johnson Haley Trust, James S. Haley, Trustee, as lessor, to J. Michael McGhee ("McGhee"), as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466152.

b. Oil and gas lease dated August 20, 1981, from Susan J. Troudt, Marian J. Bottinelli, Carla Johnson Hobbs, d/b/a Johnson Farms, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466151.

c. Oil and gas lease dated August 18, 1981, from Wallace H. Grant and Douglas Grant, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466154.

d. Oil and gas lease dated August 7, 1981, from The Longmont National Bank and Lorraine Miller as Co-Trustees of the Carl A. Miller Trust, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466153.

Executed this 25th day of January, 2001 and effective as of the same date.

ATTEST:

Rachel L. Desrochers

NORTH AMERICAN RESOURCES COMPANY

T. Schmidtke

Terry C. Schmidtke
Vice President

END OF DOCUMENT

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AG RF. $26.00 DF: $0.00 Page: 1 of 5
Electronically recorded in Boulder County Colorado.

WELL ABANDONMENT AGREEMENT

THIS AGREEMENT is made and entered into this 25th day of January, 2001, by and between North American Resources Company ("NARCO"), with offices at 1700 Broadway, Suite 2000, Denver, Colorado 80290 and Johnson Development Company ("Johnson"), with offices at 4380 South Syracuse Street, Denver, Colorado 80237.

RECITALS

1. Johnson either owns or has an option to purchase the entire S/2 of Section 24, Township 1 North, Range 69 West, Boulder County, Colorado ("Property").

2. The property is subject to the following oil and gas leases ("Leases"), to-wit:

a. Oil and gas lease dated August 20, 1981, from Maxine Johnson Haley Trust, James S. Haley, Trustee, as lessor, to J. Michael McGhee ("McGhee"), as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466152.

b. Oil and gas lease dated August 20, 1981, from Susan J. Troudt, Marian J. Bottinelli, Carla Johnson Hobbs, d/b/a Johnson Farms, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466151.

c. Oil and gas lease dated August 18, 1981, from Wallace H. Grant and Douglas Grant, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466154.

d. Oil and gas lease dated August 7, 1981, from The Longmont National Bank and Lorraine Miller as Co-Trustees of the Carl A. Miller Trust, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466153.

3. NARCO has succeeded to all of the working interests of McGhee under the Leases.

4. NARCO operates two oil and gas wells on the Property known as the Erie Eight E Unit #1 located in the SE/4SE/4 of Section 24 ("Erie #1") and the Erie Eight E Unit #2 located in the SW/4SW/4 of Section 24 ("Erie #2") in which NARCO presently owns all the working interest. The Erie #1 and Erie #2 may be hereinafter collectively referred to as the "Wells."

5. Johnson wishes to develop the property free of the Wells and subsequent drilling.

6. NARCO and Johnson enter into this Agreement to provide for NARCO to plug and abandon the Wells, among other things, in exchange for certain payments from Johnson to NARCO as provided herein.

TERMS AND PROVISIONS

NOW, THEREFORE, in consideration of the covenants and the mutual benefits set forth herein, including the representations set forth in the recitals, the parties agree as follows:

1. Plugging and Abandonment of Erie #2 Well and Reclamation

NARCO shall plug and abandon the Erie #2 well and remove all equipment and production facilities from the wellsite and also reclaim and remediate the surface of the wellsite and all associated production facilities and pits, access and gas flowlines from the Erie #2 wellhead to the gas transmission line in accordance with the rules and regulations of the Colorado Oil and Gas Conservation Commission ("COGCC") on or before March 1, 2001. The completion of remediation at this site may be extended if unexpected complications are encountered, but NARCO will diligently pursue said remediation until it is completed. NARCO will provide Johnson notice of such extension as soon as it is practicable with an explanation of the cause of the delay.

AFTER RECORDING RETURN TO:
MARK OVERTON
7730 E. BELLEVIEW AVE #350
GREENWOOD VILLAGE, CO. 80111

FATCO

HD 206316 / HD 135322

1

2. Plugging and Abandonment of Erie #1 Well and Reclamation

NARCO shall plug and abandon the Erie #1 well and remove all equipment and production facilities from the wellsite and also reclaim and remediate the surface of the wellsite and all associated production facilities and pits, access and gas flowlines from the Erie #1 wellhead to the gas transmission line in accordance with the rules and regulations of the Colorado Oil and Gas Conservation Commission ("COGCC"). This will be accomplished within fifty (50) days after receiving written notice from Johnson.

3. Wellhead Equipment and Production Facilities

NARCO shall continue to own the wellhead equipment and associated production facilities and equipment as to each respective well.

4. Purchase Price

As consideration for the terms and provisions contained herein, Johnson agrees to pay NARCO $500.000.00 as follows:

a. Johnson shall pay NARCO the sum of $250,000 in the form of a certified cashier's check contemporaneous with the execution of this agreement.

b. Johnson shall pay NARCO the sum of $125,000 ("Second Payment") in the form of a certified cashier's check to NARCO within five (5) business days of Johnson's receiving a copy of the successful final reclamation inspection of the Erie #2 wellsite and reclaimed areas in accordance with COGCC Rule 1004.c.

c. Johnson shall pay NARCO the sum of $125,000 ("Third Payment") in the form of a certified cashier's check to NARCO within five (5) business days of Johnson receiving a copy of the successful final reclamation inspection of the Erie #1 wellsite and reclaimed areas in accordance with COGCC Rule 1004.c.

d. Until such time as each well is plugged and abandoned, NARCO shall continue to receive all revenue attributable to the production as to each well, and shall continue to disburse those proceeds from each well attributable to the respective landowner and overriding royalty owner interests.

e. In the event that NARCO fails or refuses to plug and abandon the Erie #2 well and reclaim the surface of the wellsite and all associated production facilities and pits, access roads and pipelines as set forth above (hereinafter referred to as the "Work", whether referencing the Erie #2 well or the Erie #1 well) on or before February 15, 2001 (First Abandonment Date), the parties agree that, after the First Abandonment Date, Johnson may engage a contractor to perform the Work and that such contractor shall be the agent of NARCO and not of Johnson. In such event, the Second Payment shall be reduced by all of the costs incurred by the contractor to perform the work.

f. In the event that NARCO fails or refuses to plug and abandon and complete the Work for the Erie #1 well on or before March 15, 2001 (Second Abandonment Date), the parties agree that, after the Second Abandonment Date, Johnson will engage a contractor to perform the Work and that such contractor shall be the agent of NARCO and not of Johnson. In such event, the Third Payment shall be reduced by all of the costs incurred by the contractor to perform the work.

g. If NARCO is rendered unable to perform the plugging, abandoning and subsequent restoration of the property, wholly or in part, by force majeure preventing it from carrying out its obligations to do so, it shall be automatically granted such time as is necessary for the obligations to be completed over and above the times stated herein. "Force majeure" shall be defined herein as any act of God, strike, lockout or other industrial disturbance, act of the public enemy, war, public riot, lightning, storm, flood or other act of nature, explosion, governmental action, governmental delay, restraint or inaction, unavailability of equipment or qualified labor, whether specifically enumerated herein or otherwise, which is not reasonably in control of NARCO. NARCO will use all reasonable efforts to remedy the force majeure as quickly as is practicable.

h. Should the payments detailed in 4.a, 4.b, or 4.c above not be tendered in a timely manner, Johnson agrees to pay NARCO the sum so indicated plus interest at a rate of 8% per annum compounded weekly.

5. Use of the Surface of the Property

a. From and after the date of this agreement, NARCO shall not drill any other well on the property or extend its surface use of the property (with the exception of paragraph 5.b. below) beyond the current surface uses for the Wells. NARCO further agrees not to deepen or sidetrack either of the Wells.

b. Notwithstanding the foregoing, NARCO shall retain and have a continuing right of ingress and egress to both the surface and subsurface facilities currently located upon or under the Lands, including but not limited to, roads, flow lines and pipelines used in connection with the wells owned and operated by them and operations that are not located on the lands. The entire cost, risk and expense of rerouting any such roads, flowlines and pipelines shall be borne by Johnson exclusive of and in addition to those amounts set forth in Paragraphs 4a, 4b and 4c above, and shall be subject to the advance approval of NARCO as operator of such wells, which approval shall not be unreasonable withheld. The total cost of any installation and or relocation of any transmission line incurred by NARCO shall be paid by Johnson to NARCO upon completion for the relocation of said pipeline(s) and within thirty (30) days after Johnson receives from NARCO an invoice for such costs. In addition, immediately after the relocation of the line, all authorized parties agree to amend the Right-of-Way Agreements set forth below to correctly reflect the change in legal description of the relocated transmission line. Under no circumstances shall NARCO be prohibited from flowing gas through its transmission line at any time.

c. In addition to those rights listed above, NARCO excepts from this agreement and expressly reserves unto itself all right, title and interest for any Right-of-Way and/or Easement NARCO may have covering the above described lands which apply to its transmission line which lies approximately along the southern and eastern edge of the Property, including, but not limited to, the following Right-of-Way Agreements listed herewith:

1. Right-of-Way Agreement dated 3/22/88, filed 4/22/88 in folio 1525, reception #00914407, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

2. Right-of-Way Agreement dated 4/22/85, filed 4/25/85 in folio 1350, reception #00684984, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

3. Right-of-Way Agreement dated 4/22/85, filed 4/25/85 in folio 1350, reception #00684895, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

6. Indemnification

a. Johnson shall defend, indemnify and hold NARCO harmless from and against all claims, losses and liabilities, including court costs, expert witness fees and reasonable attorney's fees that arise from the non-payment of any portion of the purchase price for the landowners royalty and/or overriding royalty and Johnson, as future owner of any interest in the mineral estate for the Property, hereby waives its rights to any portion of the purchase price.

b. Notwithstanding the provisions of Article 4 above, Johnson shall have the right to seek injunctive relief against NARCO for violating the terms of this agreement by drilling any additional oil and gas wells or for not plugging and abandoning the wells in a timely manner.

c. Should either party hereto be in breach of the provisions of this agreement, the aggrieved party shall provide written notice to the party inbreach, and the party in breachwill have thirty (30) days after receipt of such notice to rectify the breach. This time period may be extended for reasons of force majeure as provided herein.

7. Surrender of Leases

a. NARCO shall surrender and release all of its oil and gas leasehold interests to the respective lessors or each lease at the time the Erie #1 well is plugged and abandoned, and no later than the time Johnson is required to make the Third Payment as described in article 4.c. above. NARCO shall not be obligated to surrender any of its interests hereunder if it has not received all sums due and owing to it by Johnson under this agreement or if Johnson is in default of a material term of this agreement.

b. The surrender and release of the leasehold interests described in Article 7.a. shall be evidenced in releases in the form attached to this agreement as Exhibit "A".

8. Restriction on Assignment

NARCO shall not assign any interest it owns in the Leases or in either the Erie #1 well or the Erie #2 well except pursuant to the terms of this agreement.

9. NARCO's Representations and Warranties

NARCO represents and warrants that, to the best of its knowledge, NARCO is owner of 100% of the working interest in the wells and all of the oil and gas leasehold interest in the Property.

10. Successors and Assigns

This Agreement shall be binding and inure to the heirs, successors and assigns of both Johnson and NARCO.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative effective as of the date first written above.

JOHNSON DEVELOPMENT COMPANY
by its attorney-in-fact:
Bruce L. Likoff
~~C. Howard Johnson, President~~
Bruce L. Likoff

NORTH AMERICAN RESOURCES COMPANY
T. Schmidtke
Terry C. Schmidtke, Vice President

ACKNOWLEDGMENTS

Province of Alberta)
) ss.
Country of Canada)

The foregoing instrument was acknowledged before me on this 25th day of January 2001 by Terry C. Schmidtke, in his capacity as Vice President of North American Resources Company.

Witness my hand and official seal.

My Commission Expires: 12/31/2003

Notary Public

STATE OF COLORADO)
CITY AND) ss.
COUNTY OF DENVER)

BEFORE ME, the undersigned, a Notary Public in and for said County and State, on this 31st day of January, 2001, personally appeared Bruce L. Likoff in his capacity as attorney-in-fact for Johnson Development Company, and who executed the within and foregoing instrument of his own free and voluntary act and deed for the benefit of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this 31st day of January, 2001.

My Commission Expires:
December 5, 2001

Notary Public

2927262 05/01/2008 12:32:43 PM
AG RF: $26.00 DF: $0.00 Page: 5 of 5
Electronically recorded in Boulder County Colorado.

EXHIBIT "A"

Attached to and made a part of that certain Well Abandonment Agreement dated January 25, 2001 by and between Johnson Development Company and North American Resources Company.

RELEASE OF OIL AND GAS LEASE

STATE OF COLORADO
COUNTY OF BOULDER

WHEREAS, North American Resources Company, with offices at 1700 Broadway, Suite 2000, Denver, CO 80290, is the owner of a leasehold interest in the oil and gas leases described below covering the described lands situated in the County of Boulder, State of Colorado, to-wit:

Township 1 North, Range 69 West, 6th P.M.
Section 24: S/2

said leases being recorded in the records of the Boulder County Clerk and Recorder.

NOW, THEREFORE, North American Resources Company does hereby release, relinquish and surrender to the lessors, their respective heirs, assigns and legal representatives, all right, title and interest in and to the following oil and gas leases:

a. Oil and gas lease dated August 20, 1981, from Maxine Johnson Haley Trust, James S. Haley, Trustee, as lessor, to J. Michael McGhee ("McGhee"), as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466152.

b. Oil and gas lease dated August 20, 1981, from Susan J. Troudt, Marian J. Bottinelli, Carla Johnson Hobbs, d/b/a Johnson Farms, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466151.

c. Oil and gas lease dated August 18, 1981, from Wallace H. Grant and Douglas Grant, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466154.

d. Oil and gas lease dated August 7, 1981, from The Longmont National Bank and Lorraine Miller as Co-Trustees of the Carl A. Miller Trust, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466153.

Executed this 25th day of January, 2001 and effective as of the same date.

ATTEST:

Rachel A. Desrochers

NORTH AMERICAN RESOURCES COMPANY

T. Schmidtke

Terry C. Schmidtke
Vice President

END OF DOCUMENT

2927263 05/01/2008 12:32:43 PM
WD RF: $16.00 DF: $0.00 Page: 1 of 3
Electronically recorded in Boulder County Colorado.

MINERAL DEED CONTAINING SPECIAL WARRANTY OF TITLE

THIS MINERAL DEED CONTAINING SPECIAL WARRANTY OF TITLE ("Deed"), is made this 30 day of April, 2008, between Johnson Development Company, a Colorado corporation, whose address is 4380 South Syracuse Street, Suite 510, Denver, Colorado 80237, hereinafter called Grantor, and ECV Minerals, LLC, a Colorado limited liability company, whose address is 7720 East Belleview Avenue, Suite 350, Greenwood Village, Colorado 80111, hereinafter called Grantee.

In consideration of ten dollars ($10.00) and other valuable consideration, the receipt of which is hereby acknowledged, Grantor grants, bargains, sells, conveys, transfers and assigns to Grantee all of Grantor's right, title, and interest in and to the mineral estate in the lands described on Exhibit 1 attached hereto (the "Lands"), including any and all of the oil, gas and other hydrocarbon minerals owned by Grantor in and under the Lands (the "Mineral Interests").

By this Deed, Grantee is also conveyed any and all of the rights of ingress and egress owned by the Grantor for the purposes of mining, drilling, exploring, operating and developing the Lands for oil, gas and other hydrocarbon minerals and storing, handling, transporting and marketing the same from the Lands.

THIS DEED IS MADE WITHOUT REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR STATUTORY, except that Grantor, for itself and its successors and assigns, warrants to and agrees with Grantee, and its successors and assigns, that the Mineral Interests are free and clear of all mineral leases, claims, liens, security interests, burdens, and encumbrances, of any kind or nature, created by, through or under Grantor, and Grantor shall warrant and forever defend the title of Grantee, its successors and assigns, to the Mineral Interests against all persons now or hereafter claiming an interest therein by, through or under Grantor.

Grantor agrees to execute such further documents as may be reasonably necessary to more fully and effectively grant, convey and assign to Grantee the rights, interests and properties conveyed hereby.

TO HAVE AND TO HOLD, the Lands unto the Grantee, its successors and assigns forever.

IN WITNESS WHEREOF, Grantor has executed this Deed on the date set forth above.

JOHNSON DEVELOPMENT COMPANY, a Colorado corporation

By: M. Clementina Martins
M. Clementina Martins, Vice-President of Sales

AFTER RECORDING RETURN TO:
MAIL OVER TO:
7720 E. BELLEVIEW AVE #350
GREENWOOD VILLAGE, CO. 80111

FAITO

H0206316 / H0138322

2

2927263 05/01/2006 12:32:43 PM
WD RF: $16.00 DF: $0.00 Page: 2 of 3
Electronically recorded in Boulder County Colorado.

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

The foregoing Mineral Deed Containing Special Warranty of Title was voluntarily executed and acknowledged before me, a notary public, by M. Clementina Martins, as Vice-President of Sales of Johnson Development Company, a Colorado corporation, on this 30th day of April, 2008.

Witness my hand and official seal.

My commission expires: 6/10/11

Gillian P. Godfrey
Notary Public
NOTARY PUBLIC
STATE OF COLORADO

My commission expires 06/10/2011

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WD RF: $16.00 DF: $0.00 Page: 3 of 3
Electronically recorded in Boulder County Colorado.

EXHIBIT 1

Mineral Interests Legal Description

PARCEL DESCRIPTION

A PARCEL OF LAND IN THE N ½ OF THE SE ¼ OF SECTION 24, T1N, R69W OF THE 6TH P.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE E ¼ CORNER OF SECTION 24, WHICH IS ALSO THE TRUE POINT OF BEGINNING; THENCE S 0°59'04" E, 1326.54 FEET; THENCE N 89°52'59" W, 1699.28 FEET; THENCE N 0°54'34" W, 1327.96 FEET, THENCE S 89°50'03" E, 1697.57 FEET TO THE TRUE POINT OF BEGINNING;

CONTAINING 51.74 ACRES MORE OR LESS.

County of Boulder
State of Colorado

WELL ABANDONMENT AGREEMENT

THIS AGREEMENT is made and entered into this 25th day of January, 2001, by and between North American Resources Company ("NARCO"), with offices at 1700 Broadway, Suite 2000, Denver, Colorado 80290 and Johnson Development Company ("Johnson"), with offices at 4380 South Syracuse Street, Denver, Colorado 80237.

RECITALS

1. Johnson either owns or has an option to purchase the entire S/2 of Section 24, Township 1 North, Range 69 West, Boulder County, Colorado ("Property").

2. The property is subject to the following oil and gas leases ("Leases"), to-wit:

a. Oil and gas lease dated August 20, 1981, from Maxine Johnson Haley Trust, James S. Haley, Trustee, as lessor, to J. Michael McGhee ("McGhee"), as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466152.

b. Oil and gas lease dated August 20, 1981, from Susan J: Troudt, Marian J. Bottinelli, Carla Johnson Hobbs, d/b/a Johnson Farms, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466151.

c. Oil and gas lease dated August 18, 1981, from Wallace H. Grant and Douglas Grant, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466154.

d. Oil and gas lease dated August 7, 1981, from The Longmont National Bank and Lorraine Miller as Co-Trustees of the Carl A. Miller Trust, as lessor, to J. Michael McGhee, as lessee, a copy of which was recorded on September 30, 1981, in the Clerk and Recorder's Office for Boulder County at Book 1182, Reception No. 466153.

3. NARCO has succeeded to all of the working interests of McGhee under the Leases.

4. NARCO operates two oil and gas wells on the Property known as the Erie Eight E Unit #1 located in the SE/4SE/4 of Section 24 ("Erie #1") and the Erie Eight E Unit #2 located in the SW/4SW/4 of Section 24 ("Erie #2") in which NARCO presently owns all the working interest. The Erie #1 and Erie #2 may be hereinafter collectively referred to as the "Wells."

5. Johnson wishes to develop the property free of the Wells and subsequent drilling.

6. NARCO and Johnson enter into this Agreement to provide for NARCO to plug and abandon the Wells, among other things, in exchange for certain payments from Johnson to NARCO as provided herein.

TERMS AND PROVISIONS

NOW, THEREFORE, in consideration of the covenants and the mutual benefits set forth herein, including the representations set forth in the recitals, the parties agree as follows:

1. Plugging and Abandonment of Erie #2 Well and Reclamation

NARCO shall plug and abandon the Erie #2 well and remove all equipment and production facilities from the wellsite and also reclaim and remediate the surface of the wellsite and all associated production facilities and pits, access and gas flowlines from the Erie #2 wellhead to the gas transmission line in accordance with the rules and regulations of the Colorado Oil and Gas Conservation Commission ("COGCC") on or before March 1, 2001. The completion of remediation at this site may be extended if unexpected complications are encountered, but NARCO will diligently pursue said remediation until it is completed. NARCO will provide Johnson notice of such extension as soon as it is practicable with an explanation of the cause of the delay.

2. Plugging and Abandonment of Erie #1 Well and Reclamation

NARCO shall plug and abandon the Erie #1 well and remove all equipment and production facilities from the wellsite and also reclaim and remediate the surface of the wellsite and all associated production facilities and pits, access and gas flowlines from the Erie #1 wellhead to the gas transmission line in accordance with the rules and regulations of the Colorado Oil and Gas Conservation Commission ("COGCC"). This will be accomplished within fifty (50) days after receiving written notice from Johnson.

3. Wellhead Equipment and Production Facilities

NARCO shall continue to own the wellhead equipment and associated production facilities and equipment as to each respective well.

4. Purchase Price

As consideration for the terms and provisions contained herein, Johnson agrees to pay NARCO $500,000.00 as follows:

a. Johnson shall pay NARCO the sum of $250,000 in the form of a certified cashier's check contemporaneous with the execution of this agreement.

b. Johnson shall pay NARCO the sum of $125,000 ("Second Payment") in the form of a certified cashier's check to NARCO within five (5) business days of Johnson's receiving a copy of the successful final reclamation inspection of the Erie #2 wellsite and reclaimed areas in accordance with COGCC Rule 1004.c.

c. Johnson shall pay NARCO the sum of $125,000 ("Third Payment") in the form of a certified cashier's check to NARCO within five (5) business days of Johnson receiving a copy of the successful final reclamation inspection of the Erie #1 wellsite and reclaimed areas in accordance with COGCC Rule 1004.c.

d. Until such time as each well is plugged and abandoned, NARCO shall continue to receive all revenue attributable to the production as to each well, and shall continue to disburse those proceeds from each well attributable to the respective landowner and overriding royalty owner interests.

e. In the event that NARCO fails or refuses to plug and abandon the Erie #2 well and reclaim the surface of the wellsite and all associated production facilities and pits, access roads and pipelines as set forth above (hereinafter referred to as the "Work", whether referencing the Erie #2 well or the Erie #1 well) on or before February 15, 2001 (First Abandonment Date), the parties agree that, after the First Abandonment Date, Johnson may engage a contractor to perform the Work and that such contractor shall be the agent of NARCO and not of Johnson. In such event, the Second Payment shall be reduced by all of the costs incurred by the contractor to perform the work.

f. In the event that NARCO fails or refuses to plug and abandon and complete the Work for the Erie #1 well on or before March 15, 2001 (Second Abandonment Date), the parties agree that, after the Second Abandonment Date, Johnson will engage a contractor to perform the Work and that such contractor shall be the agent of NARCO and not of Johnson. In such event, the Third Payment shall be reduced by all of the costs incurred by the contractor to perform the work.

g. If NARCO is rendered unable to perform the plugging, abandoning and subsequent restoration of the property, wholly or in part, by force majeure preventing it from carrying out its obligations to do so, it shall be automatically granted such time as is necessary for the obligations to be completed over and above the times stated herein. "Force majeure" shall be defined herein as any act of God, strike, lockout or other industrial disturbance, act of the public enemy, war, public riot, lightning, storm, flood or other act of nature, explosion, governmental action, governmental delay, restraint or inaction, unavailability of equipment or qualified labor, whether specifically enumerated herein or otherwise, which is not reasonably in control of NARCO. NARCO will use all reasonable efforts to remedy the force majeure as quickly as is practicable.

h. Should the payments detailed in 4.a, 4.b, or 4.c above not be tendered in a timely manner, Johnson agrees to pay NARCO the sum so indicated plus interest at a rate of 8% per annum compounded weekly.

5. Use of the Surface of the Property

a. From and after the date of this agreement, NARCO shall not drill any other well on the property or extend its surface use of the property (with the exception of paragraph 5.b. below) beyond the current surface uses for the Wells. NARCO further agrees not to deepen or sidetrack either of the Wells.

b. Notwithstanding the foregoing, NARCO shall retain and have a continuing right of ingress and egress to both the surface and subsurface facilities currently located upon or under the Lands, including but not limited to, roads, flow lines and pipelines used in connection with the wells owned and operated by them and operations that are not located on the lands. The entire cost, risk and expense of rerouting any such roads, flowlines and pipelines shall be borne by Johnson exclusive of and in addition to those amounts set forth in Paragraphs 4a, 4b and 4c above, and shall be subject to the advance approval of NARCO as operator of such wells, which approval shall not be unreasonable withheld. The total cost of any installation and or relocation of any transmission line incurred by NARCO shall be paid by Johnson to NARCO upon completion for the relocation of said pipeline(s) and within thirty (30) days after Johnson receives from NARCO an invoice for such costs. In addition, immediately after the relocation of the line, all authorized parties agree to amend the Right-of-Way Agreements set forth below to correctly reflect the change in legal description of the relocated transmission line. Under no circumstances shall NARCO be prohibited from flowing gas through its transmission line at any time.

c. In addition to those rights listed above, NARCO excepts from this agreement and expressly reserves unto itself all right, title and interest for any Right-of-Way and/or Easement NARCO may have covering the above described lands which apply to its transmission line which lies approximately along the southern and eastern edge of the Property, including, but not limited to, the following Right-of-Way Agreements listed herewith:

1. Right-of-Way Agreement dated 3/22/88, filed 4/22/88 in folio 1525, reception #00914407, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

2. Right-of-Way Agreement dated 4/22/85, filed 4/25/85 in folio 1350, reception #00684984, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

3. Right-of-Way Agreement dated 4/22/85, filed 4/25/85 in folio 1350, reception #00684895, Boulder County Clerk and Recorder, together with any applicable permits or licenses.

6. Indemnification

a. Johnson shall defend, indemnify and hold NARCO harmless from and against all claims, losses and liabilities, including court costs, expert witness fees and reasonable attorney's fees that arise from the non-payment of any portion of the purchase price for the landowners royalty and/or overriding royalty and Johnson, as future owner of any interest in the mineral estate for the Property, hereby waives its rights to any portion of the purchase price.

b. Notwithstanding the provisions of Article 4 above, Johnson shall have the right to seek injunctive relief against NARCO for violating the terms of this agreement by drilling any additional oil and gas wells or for not plugging and abandoning the wells in a timely manner.

c. Should either party hereto be in breach of the provisions of this agreement, the aggrieved party shall provide written notice to the party inbreach, and the party in breachwill have thirty (30) days after receipt of such notice to rectify the breach. This time period may be extended for reasons of force majeure as provided herein.

7. Surrender of Leases

a. NARCO shall surrender and release all of its oil and gas leasehold interests to the respective lessors or each lease at the time the Erie #1 well is plugged and abandoned, and no later than the time Johnson is required to make the Third Payment as described in article 4.c. above. NARCO shall not be obligated to surrender any of its interests hereunder if it has not received all sums due and owing to it by Johnson under this agreement or if Johnson is in default of a material term of this agreement.

b. The surrender and release of the leasehold interests described in Article 7.a. shall be evidenced in releases in the form attached to this agreement as Exhibit "A".

8. Restriction on Assignment

NARCO shall not assign any interest it owns in the Leases or in either the Erie #1 well or the Erie #2 well except pursuant to the terms of this agreement.

9. NARCO's Representations and Warranties

NARCO represents and warrants that, to the best of its knowledge, NARCO is owner of 100% of the working interest in the wells and all of the oil and gas leasehold interest in the Property.

10. Successors and Assigns

This Agreement shall be binding and inure to the heirs, successors and assigns of both Johnson and NARCO.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative effective as of the date first written above.

JOHNSON DEVELOPMENT COMPANY
by its attorney-in-fact:
Bruce L. Likoff
~~C. Howard Johnson, President~~
Bruce L. Likoff

NORTH AMERICAN RESOURCES COMPANY
T Schmidtke
Terry C. Schmidtke, Vice President

2003

ACKNOWLEDGMENTS

Province of Alberta)
) ss.
Country of Canada)

The foregoing instrument was acknowledged before me on this 25th 26th day of January 2001 by Terry C. Schmidtke, in his capacity as Vice President of North American Resources Company.

Witness my hand and official seal.

My Commission Expires: 12/31/2003

Rachel L. Desroche
Notary Public

State of Hawaii

STATE OF COLORADO)
CITY AND) ss.
COUNTY OF DENVER)

BEFORE ME, the undersigned, a Notary Public in and for said County and State, on this 31st day of January, 2001, personally appeared Bruce L. Likoff in his capacity as attorney-in-fact for Johnson Development Company, and who executed the within and foregoing instrument of his own free and voluntary act and deed for the benefit of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this 31st day of January, 2001.

My Commission Expires:
December 5, 2001

Robert J. Bre
Notary Public

DODGE SIGN COMPANY

LICENSE AGREEMENT FOR SIGNAGE

THIS LICENSE AGREEMENT is entered into this 1st day of May, 2013, by and between Erie Commercial Ventures LLLP and Dodge Sign Company

A. Landowners own property at southwest corner of Erie Pkwy & County Line Rd Erie, Colorado
B. Dodge Signs wishes to install a sign, advertising the community, on the property.
C. Landowners have agreed to allow Dodge Signs to install and leave the sign at the property under the terms and conditions below.

In consideration of the mutual covenants contained herein, Landowners and Dodge Sign Company hereby agree as follows:

1. Landowners hereby grant a license to Dodge Signs to use the portion of the Landowners' Property necessary for placement of the sign, beginning on the date this agreement is date and extending to the 31 day of December 2013.

2. Dodge Sign Company shall pay the Landowners the sum of $150.00 and no/100s dollars per month for the license. If the license is extended, Dodge Signs shall pay on a monthly basis.

3. Dodge Signs may opt out of Agreement at any time with 15-day written notice to Landowners. Landowners may opt out of Agreement at any time with 15-day written notice.

4. At the end of the term, as it may be extended, Dodge Signs shall cause the sign to be removed and any holes to be filled that may have been caused by the existence of the sign on the Property. Landowners hereby grant permission to Dodge Sign Company to enter upon the Property upon 24 hours notice by Dodge Signs to Landowners for the purpose of erecting, changing and removing the sign and filling any holes caused by the sign.

5. Dodge Sign Company shall be responsible for reasonable cost and expenses incurred by Landowners for any damage that may be caused to Landowners' Property due to tipping or falling of the sign by acts of nature, such as wind. Dodge Signs shall not be responsible for any damages cause by actions or inactions of Landowners or of Landowners licensees, invitees, agents, employees, contractors or the like.

6. Landowner shall be responsible for submitting an invoice to Dodge Signs each month for payment of the agreement.

7. Contract is void if sign is required to be taken down by order of city, county, or state

Landowners: Erie Commercial Venture, LLLP	**Dodge Sign Company:**
Signature: By:	**Signature:** Mike Adams
Name: A.L. Sid Overton, General Partner	**Name:** Mike Adams
Date: May 1, 2013	**Date:** May 1, 2013

Sid Overton

To: Peyton Forni
Subject: RE: D.R. Horton Sign Lease Agreement

Hi Peyton: I have signed and attached a copy of the LIcense Agreement For Signage which you sent to me yesterday, via email. We need to receive payment for the month of August, 2013 and each month thereafter that D.R. Horton continues to use the sign on our property. We believe that D.R. Horton first placed a sign on our property in late 2012 without our approval, and we are attempting to verify that information from the photographer. Therefore, this agreement shall not constitute a waiver. by Erie Commercial Venture, LLLP, of past signage use on our property by D.R. Horton. We are forwarding this attached copy of the signed agreement to you in reliance on immediate payment for the month commecing in August 1, 2013, and advance payment for each month of signage use thereafter. Thank you.
A. L. Sid Overton, General Partner, Erie Commercial Venture, LLLP

A. L. (Sid) Overton, Esq.
Overton, & Associates, LLC
6950 E. Belleview Avenue, Suite 202
Greenwood Village, Colorado 80111
Telephone: (303) 779-5900
Fax: (303) 779-6006
E-Mail: sidoverton@oalaw.net

CONFIDENTIALITY NOTICE

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From: Peyton Forni [mailto:PForni@drhorton.com]
Sent: Monday, August 19, 2013 4:58 PM
To: SIDOVERTON@OALAW.NET
Subject: D.R. Horton Sign Lease Agreement

Hi Sid,

Thanks again for allowing us to put a sign on your property. We really appreciate it.

I have attached the document with my signature. Please sign it and return it to me and the process will be underway.

Have a great weekend!

D·R·HORTON® DHI Listed NYSE
America's Builder

LICENSE AGREEMENT FOR SIGNAGE

THIS LICENSE AGREEMENT ("Agreement") is entered into this 14th **day of** August, **2013, by and between** Erie Commercial Ventures LLLP **(together "Landowners") and D.R. Horton, Inc. ("DR Horton").**

A. Landowners own property at Southwest corner of Erie Pkwy & Cty Line Rd Erie, Colorado (the "Property")
B. D.R. Horton wishes to install a sign, advertising the community ("the sign"), on the property.
C. Landowners have agreed to allow D.R. Horton to install and leave the sign at the Property under the terms and conditions below.

In consideration of the mutual covenants contained herein, Landowners and DR Horton hereby agree as follows:

1. Landowners hereby grant a license to D.R. Horton to use the portion of the Landowners' Property necessary for placement of the Sign, beginning on the date this Agreement is dated and extending to the 31 day of December 2015.

2. D.R. Horton shall pay Landowners the sum of $150.00 and no/100s Dollars ($150.00) per month for the license. If the license is extended, D.R. Horton shall pay on a monthly basis.

3. D.R. Horton may opt out of Agreement at any time with 15-day written notice to Landowners. Landowners may opt out of Agreement at any time with 15-day written notice.

4. At the end of the term, as it may be extended, D.R. Horton shall cause the sign to be removed and any holes to be filled that may have been caused by the existence of the sign on the Property. Landowners hereby grant permission to D.R. Horton to enter upon the Property upon 24 hours notice by D.R. Horton to Landowners for the purpose of erecting, changing and removing the sign and filling any holes caused by the sign.

5. D.R. Horton shall be responsible for reasonable cost and expenses incurred by Landowners for any damage that may be caused to Landowners' Property due to tipping or falling of the sign by acts of nature, such as wind. D.R. Horton shall not be responsible for any damages caused by actions or inactions of Landowners or of Landowners licensees, invitees, agents, employees, contractors or the like.

6. This agreement shall commence as of August 1, 2013.

LANDOWNERS:
ERIE COMMERCIAL VENTURE, LLLP

By: _____
A. L. Overton, Gen. Partner

Date: Aug. 19, 2013

DR Horton, Inc.:

Signature: _____
Name: Brittani Farmi
Date: 8.15.13

CUSTOM FARMING AGREEMENT

THIS **AGREEMENT**, is made and entered into by and between ERIE COMMERCIAL VENTURE, LLLP, a Colorado limited liability limited partnership, 6950 East Belleview Avenue, Suite 202, Greenwood Village, Colorado 80111 hereinafter referred to as "Owner"; and Virgil C. Harmon, 308 Westview Road, Erie, Colorado 80516 hereinafter referred to as "Farmer".

A. Owner is the owner of the following described premises (hereinafter referred to as "the Premises") as situated in the County of Boulder, and State of Colorado, to wit:

Approximately 46 acres of vacant farm land located at the southwest corner of Erie Commons Parkway and County Line Road, Erie Colorado, of which 40 acres will be farmed under the terms of this agreement.

B. Farmer owns and operates a farming operation at one or more farms located in Boulder/ Weld County, Colorado area; and

C. Owner and Farmer mutually desire to enter into an agreement whereby Owner shall engage Farmer to provide custom farming services to Owner on the Premises as more fully hereinafter described.

THEREFORE, in consideration of the fees to be paid to Farmer by Owner, as hereinafter described, the receipt and sufficiency of which is hereby acknowledged, and for other good and valuable consideration, Owner and Farmer hereby agree as follows:

1. Farmer agrees to provide the following custom farming services to Owner:
   - A. to disc certain parts of the soil on the Premises, as mutually agreed between Owner and Farmer; and/or
   - B. to cultivate certain parts of the soil on the Premises, as mutually agreed between Owner and Farmer; and /or
   - C. to plant and seed certain parts of the soil on the Premises, as mutually agreed between Owner and Farmer; and/or
   - D. to apply weed-control spray to the growing weeds on certain parts of the Premises, as mutually agreed between Owner and Farmer.
   - ~~E. to cut and swath (or rake) the grass (hay) growing on certain parts of the soil on the Premises, as mutually agreed between Owner and Farmer; and/or~~
   - ~~F. to bale and stack the baled grass (hay) which has been cut on certain parts of the Premises;~~ and
   - G. To remove all tractors, trucks, harvestors, cultivators and other farm equipment and machinery from the premises when not in use on the premises.
   - I. To assist Owner in locating a market, or purchaser, to purchase the crops produced on the Premises each year.

J. To plant and seed the wheat, barley, oats or other small seed crops by the end of October of each year.

~~K. To Cut, bale and stack the grass (hay) by the end of _____ of each year; and~~

L. To contract for a custom harvester to harvest the wheat, barley, oats, and/or other small seed crops by the end of July of each year, at a price and on terms acceptable to Owner.

2. Owner agrees to following:

A. To directly pay the supplier for the cost of seed, fertilizer and/or weed control spray , unless otherwise agreed to with Farmer.

B. To pay Farmer for all reasonable fees and costs, based upon the agreed rates set forth below, billed by Farmer to Owner, for custom farming services and costs, within 30 days of receipt of a Billing Statement for said services and costs, from Farmer.

C. To periodically confer with Farmer, to discuss and decide the custom farming services to be provided to Owner, by Farmer, and to verbally agree upon the following:

(1) the number and location of the acres on the Premises to be affected;
(2) the custom farming service to be performed; and
(3) the estimated cost of said custom farming service.

D. .To use said premises as a farm for growing wheat, barley, oats, hay and other small grains.

3. Agreed Rates for Custom Farming Services:

A. Disc Plowing - $25 per acre
B. Cultivating - $25 per acre
C. Planting and seeding - $30 per acre
~~D. Cutting/swathing - $_____ per acre~~
~~E. Baling and stacking - $_____ bale~~
F. Custom Harvesting – As negotiated with a third party harvester.

4. Assignment Prohibition

A. Farmer understands and agrees that this agreement shall not be assigned by Farmer, without the prioer written consent of Owner.

5. Crop Production Bonus

A. As a further incentive to Farmer, Owner shall pay Farmer a crop production bonuse equal to 10 percent of the net proceeds received by Farmer for the the sale of the crops produced each year. Said bonus payment shall be paid to Farmer not later than 30 day after Owner receives the final payment(s) for the crops for the production year.

6. Termination

A. This agreement may be terminated by either party, upon the delivery of 90 days prior written notice of termination to the other party. In the event said notice of

termination is delivered by Owner to Farmer, Owner shall pay Farmer for all custom farming services rendered, and reasonable costs incurred, up to the date and time of receipt of said notice of termination by Farmer. Likewise, in the event said notice of termination is delivered by Farmer to Owner, Farmer shall assist, and fully cooperate with, Owner in the obtaining of a successor Farmer to provide said custom farming services to Owner.

This agreement is executed on the 20 day of October, 2010.

Owner:

Erie Commercial Venture, LLLP

By: _____
A. L. Sid Overton General Partner

Farmer:

_____

Sid Overton

From: Sid Overton
Sent: Monday, August 26, 2013 5:55 PM
To: 'Barry Goff'
Subject: RE: Fusion Advertising Agreement ERIE COMMERCIAL VENTURE LLLP
Attachments: Advertising Sign Lease from Richmond Amerian Homes 8-26-13.pdf

Hi Barry: I have revised and signed the attached proposed Advertising Sign lease agreement between Erie Commericial Venture, LLLP, Lessor, and Fusion Sign & Design, Lessee re Richmond American Homes, Advertiser. Please note that Paragraph 2, Line 3, of the lease agreement, as prepared by you, correctly stated the advance rent to be $200.00 per month. So we corrected the incorrrect amount shown in line 7. Upon receipt of the advance payment of $200.00, and a duplicate of the attached lease agreement, signed by an authorized agent or representative of the Lessee, you will be permitted to immediately place the sign on the property. We have also signed and attached a Form W-9 for income tax purposes. Thank you. Sid Overton

A. L. (Sid) Overton, Esq.
Overton, & Associates, LLC
6950 E. Belleview Avenue, Suite 202
Greenwood Village, Colorado 80111
Telephone: (303) 779-5900
Fax: (303) 779-6006
E-Mail: sidoverton@oalaw.net

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From: Barry Goff [mailto:barry@fusionsign.com]
Sent: Monday, August 19, 2013 2:56 PM
To: sidoverton@oalaw.net
Subject: Fusion Advertising Agreement ERIE COMMERCIAL VENTURE LLLP

Mr Overton, attached are the documents needed for the Richmond American sign. Please review and let me know if this is acceptable, thanks and call with any questions or concerns.

FUSION
Sign and Design

Barry Goff
Service Manager

Fusion Sign and Design
4109 Wagon Trail Ave.
Las Vegas, NV 89118
T: 702.949.0760
F: 702.991.0103
C: 702.622.0065

FUSION
Sign and Design

Sign Lease Advertising Agreement

Company Name: FUSION SIGN AND DESIGN

Advertiser: ___RICHMOND AMERICAN HOMES

Project: ___DAY BREAK AND ERIE COMMONS

Company requests the use of your property, as described below, to install and maintain an advertising sign.

Property Location: ___County Rd 1/Erie Pkwy

Parcel #: _146524000019___

$200.00 for 1 sign month to month, payable to the following:

Name: _ ERIE COMMERCIAL VENTURE LLLP__

Address:

Telephone: _303-779-5900__ SSN or Federal Tax I.D. # 84-1474626

Terms & Conditions:

1. I / we hereby grant to Fusion Sign and Design the right to enter the Property for the purpose of placing or causing placement of a _3'x 3' _ directional sign in approximately the location shown on the attached drawing. The sign will be installed by Fusion Sign and Design or its contractors in conformance with any governmental ordinances, rules and regulations. Lessee and its contractors shall maintain the sign and keep it in good repair at no cost to Lessor. Lessor grants Fusion Sign and Design, its employees, agents, or representatives, the right to access the Property seven days per week, between the hours of 7:00 a.m. and 7:00 p.m. for the purpose of placing, replacing, maintaining and/or removing the signage.
2. This Lease Agreement becomes effective upon execution. The term of this Lease Agreement shall be one year from the date of execution, and may be extended from time to time for additional one year terms by a writing executed by both parties. The Lessee agrees to pay rent in the amount of $200.00_ per month, payable in advance. In the event this Lease Agreement is terminated for any reason on any day other than the day of the month upon which the Lease Agreement payments are due, the amount due by Lessee will be pro-rated and any amounts paid by Lessee to Lessor which are unused shall be returned to Lessee by Lessor within 10 days of termination by either party.
3. Lessee or Lessor may terminate this Lease Agreement at any time, for any reason or no reason, upon delivery of written notice to the other party delivered to the address below by overnight courier service, US Mail, or facsimile with evidence of delivery. Lessee shall remove the sign within thirty (30) days of termination of this Lease Agreement. Lessee may, at Lessee's election, remove the sign from the Property at any time when Lessee no longer owns any lots in a community being advertised on the sign and this Lease Agreement shall automatically terminate upon such removal.

4. Lessee shall have no liability or responsibility for the maintenance, repair or condition of the Property upon which the signage is located, and shall further have no liability or responsibility for the actions or inactions of the Lessor with respect to the Property. Lessor agrees to hereby assume all liability for and agrees to indemnify and hold harmless Lessee from and against any and all claims, liabilities and causes of action arising out of or in any way related to (a) hazardous materials or conditions that are not placed on the Property or caused by Lessee or its agents, (b) latent defects, or (c) Lessor's actions or inactions.
5. Lessor hereby covenants and agrees that it is the current owner of the above-referenced property, there are no other owners of the property who need to execute this Lease Agreement, and the undersigned is/are fully authorized to enter into this Lease Agreement. In the event of sale or transfer of the property by Lessor, Lessor covenants and agrees to disclose the existence of this Lease Agreement and any conveyance shall be subject to this Lease Agreement.
6. Lessor shall be responsible for all taxes associated with the payments due hereunder, including but not limited to, sales taxes and taxes upon Lessor's income and property.
7. This lease shall commence on September 1, 2013, contingent upon advance payment of $200.00 rent by Lessee to Lessor.

Acceptance;

LESSEE: Fusion Sign & Design

By: _____

Date: _____

LESSOR: Erie Commercial Venture, LLLP

By: _____
A. L. Sid Overton, General Partner

Date: August 26, 2013

ECV Minerals, LLC

6950 E. Belleview Avenue, Suite 202
Greenwood Village, Colorado 80111
303-779-5900

February 10, 2015

Martin Ostholthoff, Director
Department of Community Development
Town of Erie
645 Holbrook Street
Erie, Colorado 80526

RE: Notice of Mineral Estate Waiver for the Property Located in the North ½ of the SE ¼ of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.

Dear Marty,

ECV Minerals, LLC is the owner of the mineral estate of the property described above. This letter is to notify you that ECV Minerals, LLC waives its right to notice under 24-65.5-103 C.R.S. concerning the notice requirements for mineral estate owners, as it specifically relates to a land use application submitted, or to be submitted, by RMCS, LLC. Please feel free to use this letter to satisfy said land use application notice requirements for the Town of Erie Colorado.

Sincerely,

ECV Minerals, LLC

A.L. (Sid) Overton, Manager

State of Colorado)
) ss.
County of Arapahoe)

Subscribed and sworn to before me, a notary public, by A. L. (Sid) Overton, Manager of ECV Mineral, LLC, a Colorado limited liability company, on this 10 day of February, 2015.

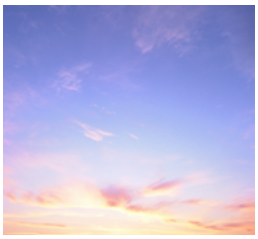
Witness my hand and official seal.

SARAH J. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094025068
MY COMMISSION EXPIRES AUGUST 7, 2017

Notary Public

My commission expires: August 7, 2017

Written Statement (Narrative)



section a:

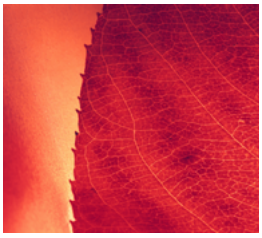
General project concept and purpose of the request.

section b:

Relationship to existing land use and adjacent properties.

section c:

Property Analysis.



section d:

Town's Comprehensive Plan and Approval criteria.

section a:

GENERAL PROJECT CONCEPT AND PURPOSE OF THE REQUEST.

Project Concept

RMCS Inc., is pleased to present this introduction for Canyon Creek PD Amendment No. 9 (also known as Four Corners). The Four Corners application covers a portion of land located in the North One-Half of the Southeast One-Quarter of Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado. This document addresses the property's proposed rezoning and associated rationale for the application.

Four Corners is envisioned as a vibrant mixed use community with a very strong emphasis on public and private amenities, diverse housing options, and most importantly, uniquely designed commercial space supported by restaurants and a shopping district. Four Corners will cater to a balanced range of uses and activities where people live, shop, reside and build their families. The proposed project plans to provide its residents with a sense of community, while also giving the Four Corners intersection a sense of identity.

A great deal of attention has been paid to maintaining a human scale in everything from street widths and a pedestrian friendly environment, to the commercial and retail uses along East County Line Road. By mixing both residential and commercial uses with recreational opportunities, the intent of this PD Amendment is to create a social and economic balance not commonly found in typical new residential developments. This plan proposes to bring all of these ingredients together to create a scale

and style of living which encourages residents to greet their neighbors from their front porches, and walk their children to the nearby shops and parks that serve the surrounding residents. This plan hopes to foster in the community an unparalleled sense of pride in their neighborhood and the Town in which they live.

Purpose of the Request

The principal land uses and associated permitted uses found in the Canyon Creek PD Amendment No.8 are referred to as Business Commercial (BC) and Commercial/Business/Retail (CBR), which are not consistent with current zoning districts in the Town of Erie. This proposal re-defines the CBR portion of property to be more consistent with the Town's 2005 Comprehensive Plan, and the Town's Unified Development Code (UDC).

The property has been identified as Mixed Use & Community Commercial within the Town of Erie's 2005 Comprehensive Plan and is designated as Planned Development on the Town's zoning map. The principal land uses for the proposed Four Corners is a combination of principal land uses as defined in the Unified Development Code which include Community Commercial (CC), Medium Density Residential (MR) and High Density Residential (HR).

The proposed plan encourages a flexible approach to development that will promote a more balanced mix of residential and commercial uses for the community. An update to the Town's Unified Development Code was prepared concurrent with the last Comprehensive Plan, revising many of the key ideas and policies that have been codified within this site plan giving this project a solid foundation for implementation. The proposed site plan is aligned with the Town's Comprehensive Plan's goals and policies, and provides focused guidance as the community continues to grow.

The proposed development encourages smart, compact growth, and proposes a maximum number of 500 dwelling units on the property, for a maximum overall density of approximately 15.6 dwelling units per acre. The clustered design approach, the transition between different densities and uses, and diverse housing is consistent with the spirit and intent of the residential and commercial policies set

forth in the Town's Comprehensive Plan.

Proposed Variations from the Principal Land Uses

The site plan proposes Community Commercial, Medium and High Density Residential principal land uses with a PD Development Plan to accommodate diversified housing products, and to allow for a more creative approach to the clustering and the planning of parcels within the overall development of the property. The PD Overlay will limit the number of units allowed within the property to 500 Units. In order to ensure compatibility with our surrounding neighbors, the PD will establish development areas, and transitional densities. The PD Overlay will also be necessary to allow for dimensional standards that support the housing variations proposed to facilitate the Town of Erie Housing Diversity requirements.

Public Benefits

The site plan identifies a landscape area to serve both as an outdoor recreational amenity, and as a transition from the commercial retail and shopping district to the high and medium density residential uses within the development. As requested by the Town of Erie, the plan proposes to enhance areas with the associated trails along County Line Road and Erie Parkway. These trails serve as a major pedestrian corridor and connection to the Town of Erie's Community Center. The remainder of the property will be preserved as non-dedicated green space areas with an internal trail network.

Proposed Development Time line

The proposed development timeline and phasing is dependent on project approvals and market conditions. A proposed date of final zoning approval is requested by July of 2015.

Utilities and Public Services

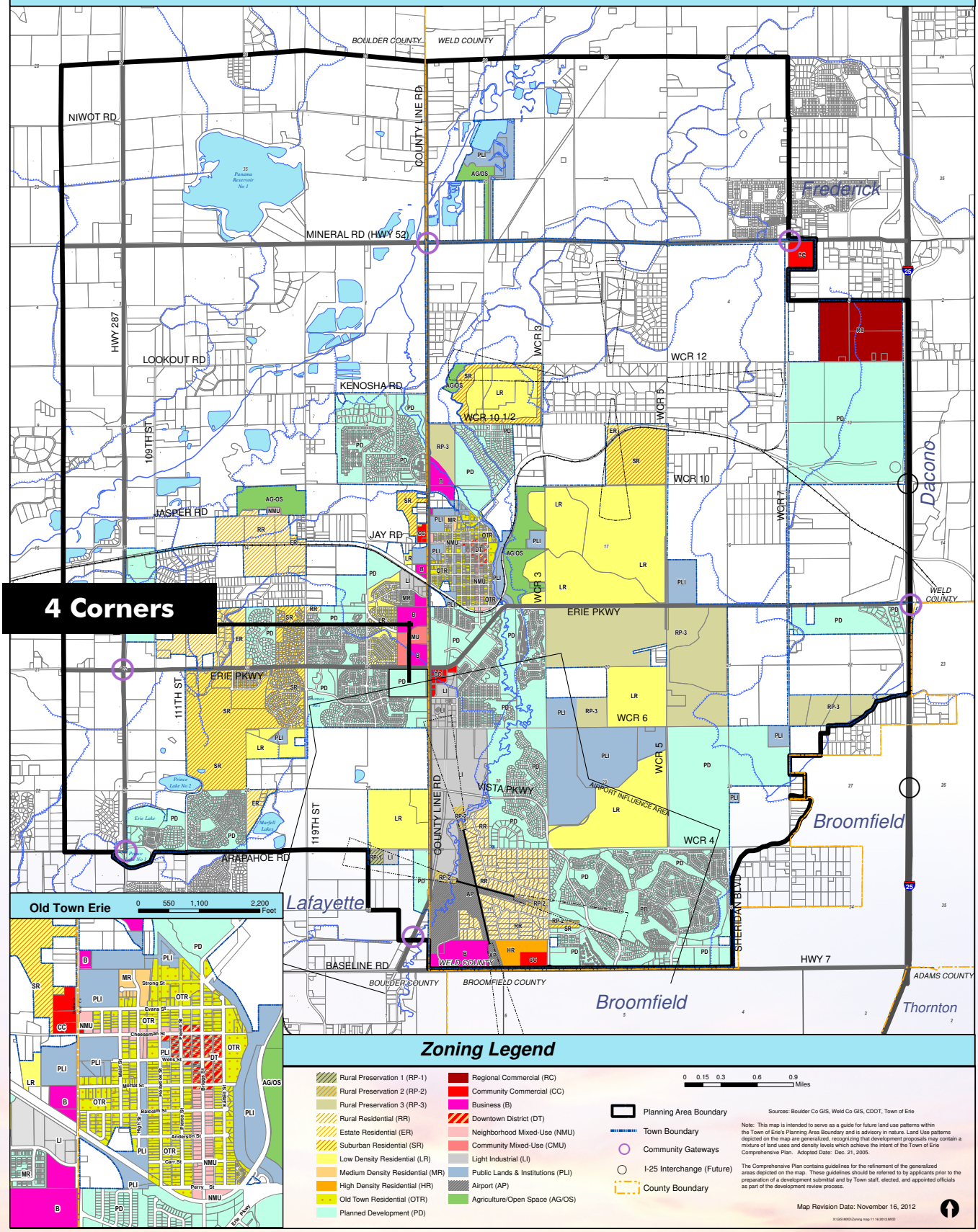
The property was originally part of the Homestake PUD, which was amended and approved by the Town in 2001 to the current Canyon Creek PD. Town services were anticipated for a commercial and retail zoned property. The public infrastructure that was anticipated for Four Corners area by the Canyon Creek PD includes schools within the St. Vrain Valley School District, Mountain View Fire Protection District, Police protection, water and sewer services provided by the Town of Erie and utilities provided by Excel.

As the existing zoning is being amended, the proposed land uses would anticipate public services as well as utilities to the site.

Status of Mineral Rights

A portion of the Four Corners property was part of the Marfel and Pinnacle Mine, which encompassed much of the surrounding area to the North beyond the site. The property was undermined for minerals mainly consisting of coal. For further information please reference the Geotechnical report conducted by CTL Thompson.

Town of Erie, Colorado
Zoning Map



Zoning Legend

- Rural Preservation 1 (RP-1)
- Rural Preservation 2 (RP-2)
- Rural Preservation 3 (RP-3)
- Rural Residential (RR)
- Estate Residential (ER)
- Suburban Residential (SR)
- Low Density Residential (LR)
- Medium Density Residential (MR)
- High Density Residential (HR)
- Old Town Residential (OTR)
- Planned Development (PD)
- Regional Commercial (RC)
- Community Commercial (CC)
- Business (B)
- Downtown District (DT)
- Neighborhood Mixed-Use (NMU)
- Community Mixed-Use (CMU)
- Light Industrial (LI)
- Public Lands & Institutions (PLI)
- Airport (AP)
- Agriculture/Open Space (AG/OS)

0 0.15 0.3 0.6 0.9 Miles

- Planning Area Boundary
- Town Boundary
- Community Gateways
- I-25 Interchange (Future)
- County Boundary

Sources: Boulder Co GIS, Weld Co GIS, CDOT, Town of Erie

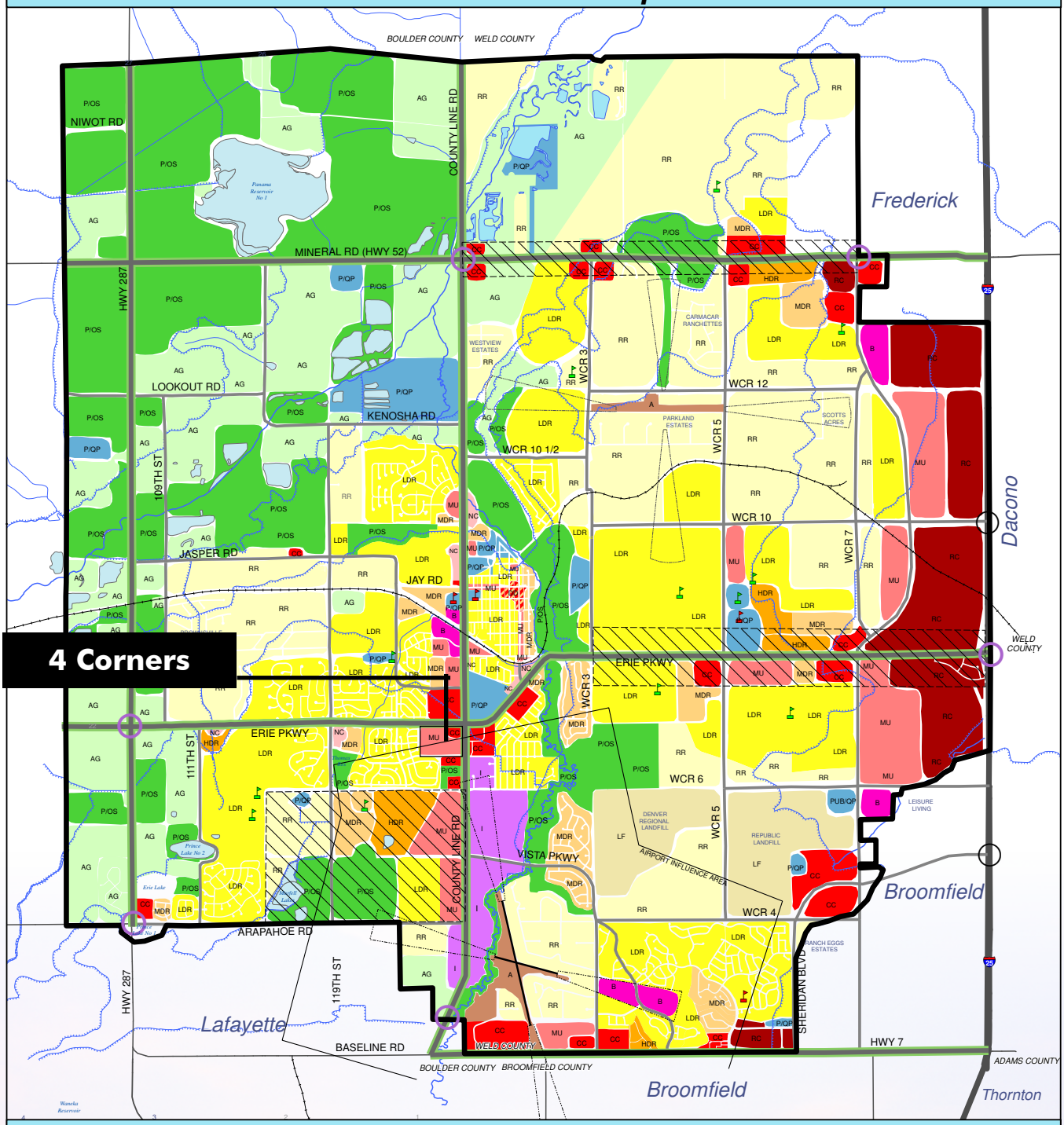
Note: This map is intended to serve as a guide for future land use patterns within the Town of Erie's Planning Area Boundary and is advisory in nature. Land Use patterns depicted on the map are generalized, recognizing that development proposals may contain a mixture of land uses and density levels which achieve the intent of the Town of Erie Comprehensive Plan. Adopted Date: Dec. 21, 2005.

The Comprehensive Plan contains guidelines for the refinement of the generalized areas depicted on the map. These guidelines should be referred to by applicants prior to the preparation of a development submittal and by Town staff, elected, and appointed officials as part of the development review process.

Map Revision Date: November 16, 2012

X:\GIS\MXD\Zoning map 11 16 2012.MXD

Town of Erie, Colorado
2005 Comprehensive Plan
Land Use Plan Map



Land Use Plan Legend

AG	Agriculture	MDR	Medium Density Residential (6-12 du/ac)	B	Business
P/OS	Parks/Public Open Space	HDR	High Density Residential (12-20 du/ac)	I	Industrial
P/QP	Public/Quasi Public	DD	Downtown District		Reservoirs
LF	Landfill	NC	Neighborhood Commercial		County Boundary
A	Airport	CC	Community Commercial		Planning Area Boundary
RR	Rural Residential (0-2 du/ac)	RC	Regional Commercial		Areas of Special Consideration
LDR	Low Density Residential (2-6 du/ac)	MU	Mixed Use		

Canal/Ditch
Railroad
Community Gateways
I-25 Interchange (Future)
Elementary School
Middle School
High School

0 0.25 0.5 1 Miles

Sources: Boulder CO GIS, Weld CO GIS, CDOT, Town of Erie

Note: This map is intended to serve as a guide for future land use patterns within the Town of Erie's Planning Area Boundary and is advisory in nature. Land Use patterns depicted on the map are generalized, recognizing that development proposals may contain a mixture of land uses and density levels which achieve the intent of the Town of Erie Comprehensive Plan. Adopted Date: Dec. 21, 2005.

The Comprehensive Plan contains guidelines for the refinement of the generalized areas depicted on the map. These guidelines should be referred to by applicants prior to the preparation of a development submittal and by Town staff, elected, and appointed officials as part of the development review process.

Town Boundary Not Shown - Refer to Zoning Map for Town Boundary

Map Revision Date: JULY 20, 2011

s e c t i o n b :

RELATIONSHIP TO EXISTING LAND USE AND ADJACENT PROPERTIES

Site & Location

Four Corners is approximately 46 acres, located at the South West Corner of Erie Parkway and East County Line Road, (See the Vicinity Map in this section). As mentioned previously, the property was originally part of the Homestake PUD which was then amended to the Canyon Creek PD and approved by the town in 2000. Since this amendment was approved, town services such as schools, administration, police, water and sewer have either been provided or are anticipated for this in fill property.

The Western boundary is bordered by part of Canyon Creek Filing No. 5 and existing single family homes. To the East of the property along County Line Road are Commercial and Light Industrial uses, including an existing Walgreens and Stop & Save gas station. To the South across Austin Avenue are single family residential homes which are a part of Canyon Creek PD Filing No. 6 and St. Luke Orthodox Church. The Town of Erie's Community Center and its associated ball fields and other recreational amenities are located across the intersection at the North East corner of Erie Parkway and East County Line Road (catty-corner to the site). A pedestrian sidewalk/trail corridor running in the East/West direction along Erie Parkway has been preserved along this portion of the property.

The surrounding area has a diversity of uses, ranging from Mixed Use, to Low Density Residential, Medium Density Residential, Community Commercial and Open Space. The proposed site plan aligns with the Town of Erie Comprehensive Plan and provides many opportunities for a positive impact to the adjacent properties and residents including:

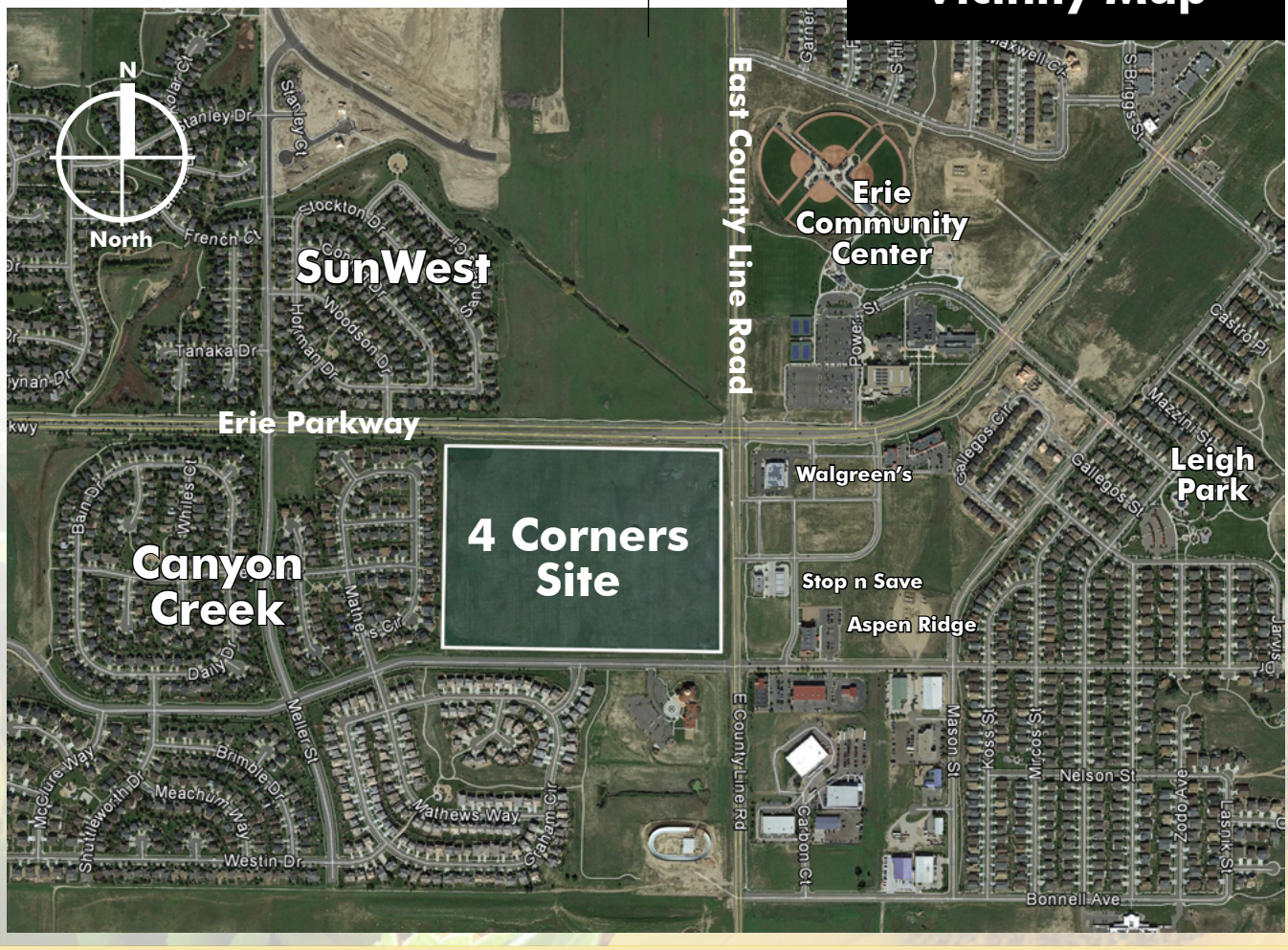
- Concentrating residential density within Four Corners aids in preserving more valuable land within the Town of Erie for other uses.

- As depicted in the PD Amendment No. 9, the proposed layout creates a transition of density and intensity of uses from the East to West and North to South that is compatible with the abutting existing neighbors.

- Internal mews and corridors will be provided to accommodate pedestrian connections that lead to a central green space.

- This proposal promotes a logical extension of Canyon Creek by creating additional neighborhoods containing diverse housing and commercial options to meet the varying needs of Erie's residents.

Vicinity Map



s e c t i o n c :

PROPERTY CONSTRAINTS ANALYSIS

While Four Corners is ideally located for mixed use development, the site has several limitations which helped shaped the site plan.

Existing mine shafts have been located on the property. These subsurface shafts have been inactive for decades, and are part of the Marfel and Pinnacle Mines. They have already been located by the applicant in the field and further physical property testing and depth of overburden has deemed them to be benign. Furthermore the site plan design acknowledges these areas by proposing more passive uses around them, such as green space and parking. The locations are depicted on the site analysis exhibit included in this document.

The existing ROW trail corridor and utility lines which run along East County Line Road have also been taken into account in the community design.

Setbacks are provided to avoid the existing utility

easements and the existing trail corridor running along Erie Parkway. The plan adds additional space for the proposed continuation of the walk along Austin Avenue which connects to the existing trail within Canyon Creek. These physical conditions and constraints of the site have helped shaped the plan. The clustering of the development into different zoning areas helps to maximize the potential use of the property while avoiding the physical constraints of the site.

Site Analysis

s e c t i o n d :

TOWN'S COMPREHENSIVE PLAN AND REZONING APPROVAL CRITERIA.

The Four Corners site plan identifies a mix of residential, commercial, and recreational uses. The location provides an opportunity to act as a great transitional property, proposing a logical change in uses and density from East to West.

"Erie is a community which recognizes the importance of conserving and enhancing its historic small town character, the roots from which it grew, preserving the natural environment in which it resides; a caring community which offers its residents an environment in which to seek a high quality of life; a balanced community with a diverse range of housing, employment, educational, shopping and recreational opportunities; and a vital community which provides financial and social support for quality of life programs." (vision statement from the 2005 Comprehensive Plan)

Four Corners used The Town of Erie's Comprehensive Plan as a guide. The Comprehensive Plan provides

a strong vision for the future of Erie, and has a set of principles that help to ensure that the Town's vision is carried forward as development progresses. The Canyon Creek PD Amendment No. 9 proposal is in compliance with the principles for the Town of Erie Comprehensive Plan. An analysis of the Canyon Creek PD Amendment No. 9 compliance with the comp plan is provided below:

1. A Coordinated and Efficient Pattern of Growth

The Town will have a compact pattern that encourages urban growth to locate within the Planning Area Boundary, fosters the efficient provision of infrastructure and services, and balances development and conservation of the natural environment.

Four Corners is already incorporated into the Town and is an excellent example of utilizing existing infrastructure.

This plan does not result in undue impacts or unnecessary burdens to the city's existing infrastructure and provides important linkages to other planned developments in the area. Detention has been designed in a compact and efficient way that allows for more commercial square footage, and in turn tax base that can be offered to the town.

An 8" Sanitary Sewer line runs within the ROW at the intersection of East County Line Road and Erie Parkway and is in place to service the Four Corners development. The level of development that is anticipated will not change this infrastructure in place nor will it change our existing road designations, as confirmed by our Traffic study. As mentioned previously, Town services are within close proximity to the property . Other services such as schools, administration, police, water and sewer have either been provided or anticipated since the previous zoning was approved, and this proposal will not negatively impact town services already anticipated for the area. The proposed application makes the property more compliant with the Comprehensive Plan's vision of Mixed Use while using existing services.

The proposed Sketch Plan anticipates a design which integrates an array of residential and commercial uses in a compact manner promoting pedestrian connectivity. With over 2,000 existing and proposed households within a mile radius of the property, the proposed application brings a maximum of 117,000 sf of commercial, business, and retail uses to the site. The mixed use application provides a variety of single and multi family housing choices within a pedestrian oriented site plan. The plan proposes logical transitions of uses to the adjacent neighbors while providing pedestrian connections to neighborhood amenities.

2. Quality Design and Development

Erie will promote a high standard of design for all new development, renovation, and rehabilitation to reinforce and enhance its unique nature for residential neighborhoods, public places, and commercial businesses.

This site plan promotes a high quality of urban design,

by providing logical and consistent landscaping, fencing, berming, and buffering throughout the site

3. Overall Economic Vitality

The Town will promote a healthy, thriving economy that provides opportunities for quality employment with livable wages for its residents.

The site plan proposes a mix of commercial and residential uses, promoting additional employment, more tax revenue, and new residents to Erie. This infill parcel is designed with compact, responsible growth, promoting a walkable neighborhood within minutes of existing and proposed recreation, retail and commercial amenities. A quality pedestrian oriented community like Four Corners provides the opportunity for future and existing residents to enjoy all the amenities of living in the Town of Erie.

4. Downtown Vitality

The Town considers the maintenance and enhancement and expansion as appropriate of Old Town's vitality to be important to the health and well-being of the community as a whole. The plan promotes development and continued enhancement of this core community area as the "center" of the community.

Four Corners is a mixed use development within the Canyon Creek PD and compliments the uses of the surrounding community. With the Erie recreation center across the street, and Old Town Erie less than one mile away (just North on County Line Road), the proposed site plan is a logical extension of the town and the amenities it offers. Residents from Four Corners are within walking distance to the existing downtown, and will inevitably support and use Old Town's existing services, furthering the vitality of downtown living in the Town of Erie.

5. A Comprehensive, Integrated Transportation System

Erie has a safe, efficient, and innovative transportation system that reduces neighborhood isolation and promotes a sense of community by connecting all areas of town, accommodates various modes of public and private transit, and facilitates travel to regional centers.

Four Corners is already located on a prominent intersection,

catty-corner from the Town's Community Center. The site is less than a quarter mile away from the RTD's Jump line, which extends service to the Erie Community Center, Erie Community Park and the Erie Community Library. The JUMP links Erie to Lafayette and downtown Boulder via Arapahoe Road, with opportunities to access additional bus service connecting throughout the region. The extension makes it easy for existing and future residents along the route to commute to work or take the bus to shopping and restaurants within Four Corners, and more.

Existing roads (Erie Parkway and County Line Road) are already constructed which supports the existing transportation system that the Town of Erie has in place. The proposal has made significant efforts to verify the

development will not adversely impact the existing transportation network.

6. Stewardship of the Natural Environment

The Town will identify and conserve its natural, scenic, and environmentally sensitive areas including important wildlife habitat, waterways, and visually sensitive areas. Erie will strive to be a clean, sustainable, environmentally-friendly town.

This application has no adverse impacts to significant scenic and historic features as identified in plans adopted by the Town; no significant features of historical importance have been identified on the site. The property has not been identified on as part of a Natural Area or has any commitments from PROST (Parks, Recreation Open Space and Tails Master Plan.) Furthermore, their are no significant views from the property as existing development exists on the west, south and east sides of the property.

7. Trails, Parks and Recreation Opportunities

The Town will provide a diverse range of recreational opportunities to include facilities and programming for all ages and varying interests, both passive and active. Trails, parks, and recreation opportunities will be connected with and integrate open space into and between neighborhoods and other areas of the community.

Four corners has proposed a linear green space within the property for residents to enjoy. Trail/ sidewalk connections have been proposed along Erie Parkway and County line road. Internal neighborhood pedestrian corridors are also anticipated which lead to the large central park, and to the commercial area within the property.

8. Open space will serve a variety of functions, including:

- Buffering Erie from other towns and cities and shaping growth;
- Creating view corridors to enable residents to see mountains, plains, and agricultural areas rather than uninterrupted housing and commercial development;
- Preserving agricultural lands, keeping them in agricultural production;
- Restoring riparian areas and other areas of natural habitat;
- Protecting significant archeological and cultural resources;
- Preserving native plant and animal habitat and travel corridors for wildlife;
- Providing areas for passive recreation that emphasizes enjoyment of nature;
- and Distinguishing and linking neighborhoods and other activity areas within Erie through a system of continuous, connected open lands and trails.

Four Corners furthers several of these guiding principles as the project proposes green space areas which will be a combination of passive and

active spaces. These areas will be linked with an existing trail system, and will enable trail users to connect to other open space areas, existing neighborhoods and amenities both within Erie and regionally.

9. Balanced Land Use Mix

The Town will work to diversify and balance the mix of land uses as the Town grows. Particular emphasis will be placed on enhancing the local economic base to provide employment opportunities for residents, seeking to achieve a better balance as a place to work as well as live. In so doing, the community will seek a balance between the enhancement of Old Town's vitality and other existing areas of the community and the identification of opportunities for commercial and employment in outlying areas.

As mentioned previously, Four Corners is a mixed use property as defined by the Town's Comprehensive Plan. The future residents will utilize the services within Old Town, as Four Corners is approximately one mile away, boosting the existing vitality of Old Town, Erie. The commercial area will bring employment and a future tax base to the Town, along with the potential for a variety of services that are not currently offered within the area such as a small grocer and office space.

10. Stable, Cohesive Neighborhoods Offering a Variety of Housing Types The Town will promote new neighborhoods that contain a mix of land uses and diversified housing options that meet the varying needs of its residents, including single family, attached homes (duplexes, townhomes), multifamily dwellings, and housing included as part of mixed-use developments. The Town will work to maintain the quality and character of established neighborhoods and ensure that infill and redevelopment is designed in a manner that minimizes impacts on existing neighborhoods, including rural neighborhoods in the Planning Area. New housing and neighborhoods should be appropriate in size, scale, design and use. New housing areas should be located where residents will have access to the full range of infrastructure, facilities and services that are needed for healthy, livable neighborhoods.

Four Corners is a mixed use property that proposes both single family detached, and attached homes as well as multi family living for different socioeconomic demographics within Erie.

11. Provide Infrastructure and Public Services Efficiently and Equitably.

Erie will coordinate future development and/or provision of capital facility projects and infrastructure, including water, wastewater, fire protection, emergency management services, police protection, schools, parks, and other

utilities that affect the quality of life and economic stability of the community.

All of the services required for this project are already in place at this time. The proposed community utilizes surrounding existing infrastructure, including streets, utilities, water and sewer without undue impacts on the need to upgrade the existing infrastructure. The existing gas lines along the south side of Erie Parkway and East County Line Road are high pressure gas lines ranging from 3-10-inches in diameter. The existing water lines in Erie Parkway are transmission lines that are 30 and 20-inches in diameter. The water line in the East County Line Road is 12-inches and is nearby the north east corner of the site.

The detention pond proposed located near Erie Parkway has the capacity for approximately 5 Ac-ft of storage, which is adequate for the site conditions. The pond will outfall into the existing 42-inch storm line in Erie Parkway.

Planned Devlopment (PD) Zoning

Approval Criteria

The Planning Commission and Board of Trustees shall review the PD zone district application and will base their recommendation or decision based on thier findings related to the following criteria:

a. The PD District zoning is generally consistent with the purpose of the PD zone district set forth in UDC Section 2.5 and 7.6.

The Four Corners proposal PD Amendment is consistent with Section 2.5 and 7.6 of the Unified Development Code. An underlying land use of MR (Medium Density Residential), HR (High Density Residential), and CC (Community Commercial) is requested for the property. The plan utilizes the proposed PD to accommodate the required setbacks dictated within the application, and to allow for a more creative approach to the clustering and planning transitional residential uses for the overall development of the property. In addition the PD will limit the number of units allowed within the property to a maximum of 500 units and 117,000 Square feet of commercial space to ensure compatibility with the surrounding neighbors the PD also establishing setbacks areas, and transitional land uses.

b. The modification to the UDC regulations is based on creative and innovative design and amenities incorporated in the PD zone district that could not otherwise be achieved through other standard zoning districts or through another modification processes such as Alternative Equivalent Compliance in UDC Subsections 6.1.C or the PUD Overlay District in UDC Subsection 2.7.D

The site plan proposes Community Commercial, Medium and High Density Residential principal land uses with a PD Development Plan to accommodate diversified housing products, and to allow for a more creative approach to the clustering and the planning of parcels within the overall development of the property. In order to ensure compatibility with our surrounding neighbors, the PD will establish development areas, and transitional densities. The modifications to the UDC will also be necessary to allow for dimensional standards that support the housing variations proposed to facilitate current market conditions as well as the Town of Erie Housing Diversity requirements.

c. The PD zoning district will promote the public health, safety and general welfare.

The PD identifies better transitional uses from the adjacent residential neighborhoods, and further defines and amends the Commercial Business Retail land use that is currently approved in the Canyon Creek PD. It will help to concentrate development in order to preserve rural more scenic development. The property is in close proximity to existing amenities such as the proposed commercial services on the property, Erie's Community Center and Old Town (less than one mile away), promoting Four Corners as a pedestrianized, walkable community, meeting the PD rezoning criteria, promoting public health, safety, and general welfare.

d. The PD zoning district is generally consistent with the Town of Erie Comprehensive Master Plan; Transportation Master Plan; Parks, Recreation, Open Space, and Trails Master Plan, and other pertinent Town plan and policy documents.

This narrative includes a full section outlining the compliance with the Comprehensive Plan and Unified Development Code. In general the proposed Development Plan amends

the CBR Zone District and defines a mix of residential and commercial uses with a maximum of 500 units, and 117,000 Square feet of commercial space. This aligns with the 2005 Comprehensive Plan designation of MU (Mixed Use), and is consistent with both the Comprehensive Plan and Municipal Code.

e. Adequate and sufficient public safety, utility facilities and services, recreation facilities, parks, open space, and schools are available to serve the property, while maintaining sufficient levels of service to existing development.

As mentioned previously, Town services are within close proximity to the property. Services such as schools, administration, police, parks and recreation facilities have been provided or anticipated since the previous zoning was approved.

f. The PD zone district provides adequate vehicular circulation and parking facilities in terms of traffic volumes, convenience, safety, access, screening and noise.

The property was annexed in 1975 with the expectation of being developed as a commercial site, with existing infrastructure already available to accommodate the proposed development. As mentioned previously, all of the services required for this project are already in place at this time. As a part of the application materials, a significant amount of information shows how facilities and services will be provided for this proposal.

g. A pedestrian and bicycle circulation system the provides connections to adjacent properties, existing and future trails, parks, open space, recreation facilities, schools and other places of public gathering.

Trail/Sidewalk connections are proposed along Erie Parkway and County Line Road. Internal to Four Corners, pedestrian corridors will connect the residential areas and commercial area within the property.

h. The PD zone district is not likely to result in significant adverse impacts to the natural environment, and significant scenic and historic features.

Four Corners is an in-fill property at the corner of Erie Parkway and East County Line Road, and is not a significant wildlife habitat. A Cultural and Historical study was not required for the subject property, and no features were identified with any significance.

i. The PD zone district will not result in significant adverse impacts on properties in the vicinity of the PD zone district, or such impacts will be substantially mitigated.

The proposal is an infill parcel which functions as a buffer for adjacent residential neighborhoods. The Four Corners site promotes a range of commercial and residential uses and uses existing roads and infrastructure, and creates additional tax revenue for the Town. The residential and commercial uses are compatible in nature to their adjacent counterparts and will not result in adverse impacts upon other properties in within the vicinity of Four Corners.

j. Proposed uses will be compatible in scale with uses on properties in the vicinity of the PD zone district.

The mix of uses is in keeping with that of our adjacent neighbors. Proposed commercial uses face existing

commercial uses. The proposed residential areas will be consistent and compatible with other homes in the area. The size and price of homes in Four Corners will be comparable to the surrounding residential areas.

k. The residential areas of a PD zone district allocate a variety of housing types and densities appropriate to the size of the residential development area.

Four Corners proposes both single family detached and attached homes as well as multi family living for different socioeconomic demographics.

l. Visual relief is provided through building placement, shortened or interrupted street vistas, visual access to open space, parks, and other design methods.

A great deal of attention has been paid to maintaining a human scale in everything from street widths and a pedestrian friendly environment, to the commercial and retail uses along East County Line Road. The plan identifies a large landscape area to serve both as an outdoor recreational amenity, and as a transition from the commercial retail and shopping district to the high and medium density residential uses within the development. By mixing both residential and commercial uses with recreational opportunities, the intent of this PD Amendment is to create a social and economic balance not commonly found in typical new residential developments. This plan proposes to bring all of these ingredients together to create a scale and style of living which encourages residents to greet their neighbors from their front porches, and walk their children to the nearby shops and parks that serve the surrounding residents.

m. The modifications permitted in the PD zone district have been made in exchange for greater public benefits that would not have otherwise be achieved through development under another zone district.

The development of Four Corners yields public benefits generated by the planning, layout and innovation within its design. These benefits include, but are not limited, to the following:

1. The mixed use project will promote a healthy, thriving economy that provides opportunities for quality employment with livable wages for its residents.

2. Four Corners will promote a high standard of design for all new development, while creating a walkable community with unique amenities for residents along with, public places, and commercial businesses.

3. The project is an infill development that encourages mixed use growth and fosters the efficient provision of infrastructure and services, while balancing development and the conservation of Erie's natural environment.

4. The project will provide a diverse range of recreational opportunities to include both passive and active trails, parks, and green ways intended to be

connected with existing community paths and open areas.

5. Four Corners will promote a new housing mix that contains a diversity of choices of land uses and housing options meeting the varying needs of its residents, which may include single family, attached homes, multifamily dwellings, along with horizontal mix of uses.

6. Four Corners will promote, encourage and stimulate private development and investment that realizes public benefits through high quality commercial services that provide various retail opportunities included but not limited to upscale eating, drinking, clothing and office establishments.

7. Four Corners may promote a positive environment for empty nesters whose children have grown and are downsizing their home and moving to more centrally located, maintenance free living.

8. Four Corners provides appropriately located areas for residential development that are substantially consistent with the town's comprehensive master plan and with standards for public health, safety, morals, and general welfare.

9. The project ensures that the scale and character of existing residential neighborhoods and community character is protected through the allowed uses and bulk and dimension standards within this development plan

10. The development plan protects existing residential development from neighboring uses that are incompatible with a residential environment.

11. The development plan ensures that the appearance and effects of commercial and retail buildings and uses are of an appropriate high quality and are substantially consistent with the character of the area while providing areas for residential, public, and semi-public uses needed to complement commercial and retail development.

12. Mixed use design principals have been implemented within this development plan with appropriate compatibility of uses. In addition, buildings are typically oriented to maximize visibility to the landscape areas. The landscaping and architecture feature of the community are planned to enhance the project and create a sense of place within the town of erie.

13. The transportation system network has been laid out to provide residential areas with direct access to the adjacent non-residential portions of project.

14. The project generates a compact and pedestrian - oriented environment that encourages transit use and pedestrian access

15. The concentration of commercial and retail services proposed within this development plan are located to serve the surrounding community.

Canyon Creek PD Amendment No.9

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

553.43 ACRES

PDA - 000204-2015

General Provisions

Authority

This Development Plan is authorized by chapter 5 - Planned Development District of the Town of Erie Zoning Ordinance adopted pursuant to the Colorado Planned Unit Development Act of 1972.

Applicability

The provisions of this Development Plan shall run with the land. The landowners, their successors, heirs, or assigns shall be bound by this Development Plan, as amended and approved by the Director or Town Board of Trustees.

Adoption

The adoption of this Development Plan shall evidence the findings and decision of the Town of Erie Town Board of Trustees that this Development Plan for Canyon Creek is in general conformity with the Town of Erie Comprehensive Plan; is authorized by the provision of Chapter 5 of the Town of Erie Zoning Ordinance; and that such Chapter 5 and this Development Plan comply with the Colorado Planned Unit Development Act of 1972, as amended.

Relationship to Town Regulations

The provisions of this Development Plan shall prevail and govern the development of Canyon Creek provided, however, that where the provisions of this Development Plan do not address a particular subject, the relevant provisions of the Town of Erie Municipal Code, Title 10, as amended, or any other applicable ordinance or regulations of the Town of Erie, shall be applicable

Enforcement

To further the mutual interest of the residents, occupants, and owners of the Planned Development and of the public in the preservation of the integrity of the Plan, the provisions of this Plan relating to the use of lands and the location of common open space shall run in favor of the Town of Erie and shall be enforceable at law or in equity by the Town without limitation on any power or regulation.

Conflict

Where there is more than one provision within the Development Plan that covers the same subject matter, the provision which is most restrictive or composes higher standards or requirements shall govern unless determined otherwise by the Director.

Maximum Level of Development

The total number of dwellings or the total commercial, business, or industrial intensity approved for development within the Planning Areas is the maximum development requested for platting or construction (plus approved density transfers, if any). The actual number of dwellings or level of development for commercial, business, or industrial properties may be less due to subdivision or site improvement plan requirement plan requirements or other requirements of the Town Board of Trustees.

Project Tracking

At the time of subdivision final plat, the applicant shall provide a summary of the development, to date, along with the final plat submittal to ensure maximum development limits are not exceeded.

Planner
PCS Group, Inc.
1001 16th Street, 3B-180
Denver, CO 80265
303.531.4905

Applicant:
RMCS
21 South Sunset Street
Longmont, CO 80503

REVISION DATE:
AMENDMENT DATE:
ISSUE DATE:

Statement of Committments

1. Dedication

Filing	Tract	Area (AC)	Usage
Filing No. 1			
	A, B, K	1.13 AC	Landscape Tract
	C	18.15 AC	Open Space; Park; Drainage
	D, E	2.88 AC	Open Space; Park
	F, G, H	2.54 AC	Open Space; Drainage
	I	2.84 AC	Open Space; Detention
	J	0.08 AC	Pedestrian Access
	L	0.31AC	Park; Open Space
	M	0.02 AC	Landscape Entry Feature
Filing No. 2			
	A, E	1.37 AC	Open Space; Utilities; Landscape Buffer
	B	0.06 AC	Pedestrian Access
	C	2.10	Open Space; Drainage; Park
	D	11.26	Drainage; Utilities; Landscape Buffer; Park
	H, I	14.36 AC	School Site; Park
Filing No. 3			
	A	5.14 AC	Open Space; Drainage; Utilities; Landscape Buffer; Trail
	B	0.98	Open Space; Utilities; Landscape Buffer
	C	1.13 AC	Open Space; Park
	D	0.05 AC	Landscape Buffer
	G	1.66 AC	School Site
	H	0.08	EVA Access; Open Space; Drainage; Utilities; Trail
Filing No. 4			
	C	0.37 AC	Park
	A, B, D, E, F	2.56 AC	Open Space; Utilities; Drainage; Landscape Buffer
Filing No. 5			
	A, C, D, E	1.96 AC	Open Space; Utilities; Landscape Buffer
	B	1.84 AC	Medium Density Residential / Day Care
	F	0.50 AC	Park
Filing No. 6			
	A, B	2.37 AC	Open Space; Utilities; Landscape Buffer
	C	3.99 AC	Open Space; Drainage; Tot Lot
	E	12.19 AC	Open Space; Regional Detention; Landscape Buffer
	G	4.06 AC	Open Space; Pedestrian Access
Filing No. 7	NA	NA	NA
Filing No. 8	NA	NA	NA
Filing No. 9			
	C	5.53 AC	Drainage; Open Space
	D, G	19.23 AC	Park; Open Space
	E	11.60 AC	Reservoir
	F	0.10 AC	Landscape Buffer; Utilities

2. On-site or Off-site Improvements

Fees, development responsibilities and construction of all required on and off-site improvements shall be identified and enforced through the Development Agreement.

3. Wildlife Preservation Plan

Studies have determined that the areas to be developed do not impact the wildlife, and that a wildlife preservation plan is not necessary.

4. Wetlands / Riparian Preservation Plan

No wetland conditions exist in the Canyon Creek PD as stated by Western Ecological Resource, Inc.

5. Fire Protection

This site is located within the boundaries of the Mountain View Fire Protection District.

6. Payment of Taxes on Land to be Dedicated for Public

Tax pro-rations to be determined at a later date.

7. Other Commitments Imposed by the Board of Trustees

To be determined at a later date and documented in the Development Agreement.

8. PD Amendment No. 2

The amendment makes the following changes:

1. Removal of the Maximum Lot Coverage requirements for the Filing 6 and Filing 7 Single Family Detached Land Use Category on Sheet 2 Table VII.
2. All single-family home building permits for Canyon Creek Filing 6, applied for after approval of Resolution 07-10, will meet UDC Section 6.7 E. *Additional Standards for Single-Family Detached Dwellings*. As Canyon Creek Filing 6 is platted and has existing homes built within the Filing, UDC Section 6.7 E. *Additional Standards for Single-Family Detached Dwellings* shall not apply to existing homes and homes with building permits issued before the approval of Resolution 07-10.
3. Richmond Homes Plans 781, 783, 784, 1101, 1102, 1103 and 1104 that have been reviewed by the Town and found in substantial compliance with UDC Section 6.7 E. *Additional Standards for Single-Family Detached Dwellings* shall be allowed to be constructed in Canyon Creek Filing6.
4. Canyon Creek 7 single-family home designs will meet UDC Section 6.7 E. *Additional Standards for Single-Family Detached Dwellings*.

9. PD Amendment No. 3

Filing No. 6: Add a note to Table V that eaves, and fireplace cantilevers are permitted to encroach into the sideyard setback of SFD homes a maximum of two (2) feet. Window wells may encroach into the sideyard setback of SFD homes a maximum of three (3) feet.

10. PD Amendment No. 4

Filing No. 6:
- Add Religious Assembly as a Permitted Land Use to Tract D
- Add CBR district as a Permitted Land Use to Tract F.
- Modifications to Table II on Sheet 2
- Request maximum building height of 45 feet with 55 feet allowed for the domed portion of a Church only.
- A cross may be placed on top of the domed portion, however the dome may not exceed 55 feet and the total height of the dome and cross may not exceed 60 feet.
- A bell tower is permitted but shall not be considered an appurtenance and shall not exceed 45 feet in height.

11. Amendment #5

Filing No. 8:
-Change Land Use Designation: From Townhome to Medium Density Residential (MDR) with the following permitted housing types:
- A. Duplex;
- B. Townhouse;
- C. Stacked Tri-plex / Quad-plex;
- D. Manor Home

-Remove maximum lot coverage for MDR.

Filing No. 9:
-Realignment of planning areas in Filing 9 due to relocation of Brennan Street in Minor Amendment Plat.

12. Amendment #6

Filing No. 5 - TRACT B:
-Add Medium Density Residential (MDR) as a permitted land use, for a maximum of 13 dwelling units, with the following permitted housing types:
- A. Duplex;
- B. Town Home;
- C. Stacked Tri-plex / Quad-plex;
- D. Manor Home

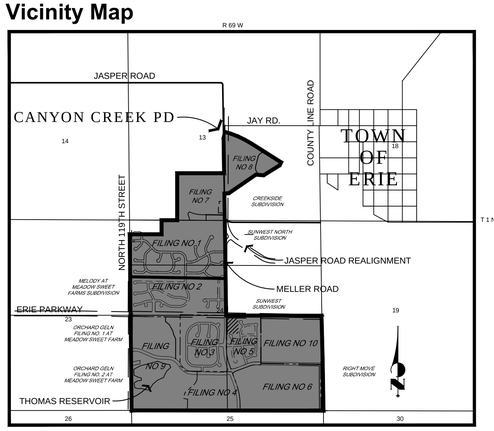
13. Amendment #7

Filing No. 5 - Tract B
Establish Setbacks

14. Amendment #8

Filing No. 9
- Changed land use categories and realigned planning area boundaries
- Added Single Family Detached - Patio Homes (SFD-P) as a Principal Land Use
- Added pocket parks as a use in the SFD-P and TH Categories
- Added minimum lot sizes
- Added setbacks
- Added permitted encroachments into building setbacks
- Added that Accessory Buildings are not permitted in the TH and SFD-P Land Use Categories
-Removed maximum lot coverage
-Added Sheet 3 of 7 addressing Architectural Standards

Vicinity Map



Scale: 1" - 2000'

Planning Commission Certificate

Approved by the Erie Planning Commission

on this ____ day of _____ A.D., 201___.

_____
Chairman

_____
Planning Commission Secretary

Board of Trustees Certificate

This PD Amendment was hereby approved by the Town of Erie Board of Trustees

on this ____ day of _____ A.D., 201___.

_____
Mayor

_____
Town Clerk

Clerk & Recorder's Certificate

State of Colorado)
) ss.
County of Boulder)

I hereby certify that this PD Amendment Plan was filed in my office on

this __ day of _____, 201___ A.D. and was recorded at Reception Number _____.

_____
Boulder County
Clerk & Recorder

15. Amendment #9

Filing No. 10
- Changed zoning and associated land use categories and realigned planning area boundaries
- Added MR (Medium Density Residential), HR (High Density Residential) and CC (Community Commercial) as Principal Land Use
- Added minimum lot sizes
- Added setbacks
- Added Sheet 4 of 8 addressing Architectural Standards

Canyon Creek PD Amendment No.9

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

553.43 ACRES

PDA - 000204-2015

I. PLANNING AREAS & PRINCIPAL LAND USE CATEGORIES

PLANNING AREAS (Filing No's)	PRINCIPAL LAND USES	LAND USE SYMBOL
Filing No.	1) Single Family Detached	**SFD**
	2) Open Space, Parks & Recreation	**OS**
Filing No.	1) Single Family Detached	**SFD**
	2) Open Space, Parks & Recreation	**OS**
	3) School Elementary	**ELE**
Filing No.	1) Single Family Detached	**SFD**
	2) Open Space, Parks & Recreation	**OS**
Filing No.	1) Single Family Detached	**SFD**
	2) Open Space, Parks & Recreation	**OS**
Filing No.	1) Single Family Detached	**SFD**
	2) Open Space, Parks & Recreation	**OS**
	3) Day Care Facility	**DC**
	4) Medium Density Residential	**MDR**
Filing No. 6	1) Single Family Detached	**SFD**
	2) Open Space, Parks & Recreation	**OS**
	3) Commercial / Business / Retail	**CBR**
	4) Religious Assembly	**RA**
Filing No. 7	1) Single Family Detached	**SFD**
Filing No. 8	1) Medium Density Residential	**MDR**
	2) Open Space, Parks & Recreation	**OS**
Filing No. 9	1) Single Family Detached	**SFD**
	2) Town Homes	**TH**
	3) Open Space, Parks & Recreation	**OS**
	4) Single Family Detached - Patio Homes	**SFD-P**
Filing No. 10	1) Medium Density Residential	**MR**
	2) High Density Residential	**HR**
	3) Community Commercial	**CC**

II. PRINCIPAL LAND USE CATEGORIES – Proposed With PD

LAND USE CATEGORY	WRITTEN SYMBOL	SYMBOL SHOWN ON PD	PERMITED USES* Use By Right (Y) Special Review (SR) Not Permitted (N)
RESIDENTIAL ZONES / USES	--	--	--
Single Family Detached	**SFD**	**SFD**	**Y**
Elementary School	ELE	ELE	Y
Neighborhood Park	N-PK	N-PK	Y
Tot Lot	T/L	T/L	Y
Detention/Drainage Facility	DET	DET	Y
Publicly Owned Facility - Town of Erie	ERIE	ERIE	Y
Single Family Detached - Patio	**SFD-P**	**SFD-P**	**Y**
Tot Lot	T/L	T/L	Y
Detention/Drainage Facility	DET	DET	Y
Medium Density Residential	**MDR**	**MDR**	**Y**
Duplex			Y
Townhouse			Y
Stacked Tri-plex / Quad-plex			Y
Manor Home			Y
Detention/Drainage Facility	DET	DET	Y
Publicly Owned Facility - Town of Erie	ERIE	ERIE	Y
Tot Lot	T/L	T/L	Y
Neighborhood Park	N-PK	N-PK	Y
Town Homes	**TH**	**TH**	**Y**
Detention/Drainage Facility	DET	DET	Y
Publicly Owned Facility - Town of Erie	ERIE	ERIE	Y
Tot Lot	T/L	T/L	Y
Neighborhood Park	N-PK	N-PK	Y
Medium-Density Residential+,++	**MR**	**MR**	**Y**
Single Family Detached-Patio			Y
Detention/Drainage Facility			Y
High-Density Residential+	**HR**	**HR**	**Y**
Single Family Detached-Patio			Y
Duplex			Y
Detention/Drainage Facility			Y
NON-RESIDENTIAL ZONES / USES	--	--	--
Open Space, Park, Recreational Facilities	**OS**	**OS**	**Y**
Detention/Drainage Facility	DET	DET	Y
Regional Park	R-PK	R-PK	Y
Neighborhood Park	N-PK	N-PK	Y
Tot Lot	T/L	T/L	Y
Mining and Mineral Extraction	MINE	MINE	SR
Publicly Owned Facility - Town of Erie	ERIE	ERIE	Y
Community Commercial+	**CC**	**CC**	**Y**
Parking Structure			Y
Farm Market			Y
Detention/Drainage Facility			Y
Day Care Center	**DC**	**DC**	**Y**
Religious Assembly	**RA**	**RA**	**Y**

NOTE:
+ Permitted Uses shall be those permitted in the Town of Erie Municipal Code Table 3-1: Table of Permitted Uses for the comparable zone district. Those uses listed above that differ from the Municipal Code shall apply to this PD.
++ Land Uses Categories, within 200 feet of the western boundary of the property, shall be limited to Duplex and Single Family Detached - Patio / Alley Loaded.

III. MINIMUM LOT SIZES (per Planning Area)

PLANNING AREA (Filing No.)	PRINCIPAL LAND USE	MIN. RES. LOT AREA (sq. feet)	MIN. INTERIOR RES. LOT WIDTH (feet)	MIN. CORNER RES. LOT WIDTH (feet)
Filing No.1		5,000	50′	60′
Filing No.2		5,000	50′	60′
Filing No.3		5,000	50′	60′
Filing No.4		5,000	50′	60′
Filing No.5		5,000	50′	60′
Filing No.6		5,000	50′	60′
Filing No.7		5,000	50′	60′
Filing No.8		N/A	N/A	N/A
Filing No.9 SFD		9,500	80′	90′
Filing No.9 SFD-P		5,500	35′	40′
Filing No.9 TH		1,450	20′	35′
Filing No.10 MR & HR	SFD - Alley Loaded	3,150	30′	35′
Filing No.10 MR & HR	SFD - Patio Alley Loaded	3,800	30′	35′
Filing No.10 MR & HR	Duplex	2,250 per DU	25′	30′
Filing No.10 MR & HR	Town Home - Alley Loaded	1,450 per DU	NA	NA
Filing No.10 MR & HR	Multifamily	1,250 per DU	NA	NA

IV. MINIMUM SET BACK TO *PRINCIPAL* BUILDINGS

All setbacks measured from the Property Line (PL) to the structure as noted.

Multiple principal buildings on a single lot shall be separated a distance equal to the distance that would be required if they were separated by a lot line.

PLANNING AREA (Filing No.)	FRONT YARD (feet)		SIDE YARD (feet)		REAR YARD (feet)
	To garage	To bldg.	Interior lot	Along street	
Filing No.1 - **SFD**	20′	20′	5′	15′	15′
Filing No.2 - **SFD**	20′	20′	5′	15′	15′
Filing No.3 - **SFD**	20′	20′	5′	15′	15′
Filing No.4 - **SFD**	20′	20′	5′	15′	15′
Filing No.5 - **SFD**	20′	20′	5′	15′	15′
- **DC**	20′	20′	10′	20′	20′
- **MDR**	20′	10′	5/0′*/***	5′	5′
Filing No.6 - **SFD**	20′	20′	5′**	15′*	15′
- **RA**	20′	20′	10′	20′	20′
- **CBR**	N/A	20′	5/0′*	20′	20′
Filing No.7 - **SFD**	20′	20′	5′	15′	15′
Filing No.8 - **MDR**	20′	15′	5/0′*	10′	15′
Filing No.9 - **SFD**	25′	25′	10′	20′	20′
- **TH******		5′	5/0′/*	5′	5′
- **SFD-P******	20′	15′*****	5′	10′	10′
Filing No. 10 -**MR** * / ****	20′/ 15′ *****	10′	5′/0′	10′	20′ / 5′ Alley Loaded Garage
- **HR** * / ****	20′/ 15′ *****	10′	10′/0′	10′	20′ / 5′ Alley Loaded Garage
-**CC** * / ******	NA	20′	10′/0′	20′	20′

*Side Yard setbacks are 0-feet for attached buildings only.
**Eaves and fireplace cantilevers are permitted to encroach into the side yard setback of SFD homes a maximum of two (2) feet. Window wells may encroach into the side yard setback of SFD homes a maximum of three (3) feet.
*** Eaves are permitted to encroach into the side yard setback a maximum of two (2) feet. Window wells may encroach into the side yard setback a maximum of three (3) feet.
****Incidental Architectural Features such as Cornices, eaves, canopies, chimneys, bay windows, ornamental features and other similar architectural features may project not more than two (2) feet into any required setback provided these projections are at least three (3) feet from any lot line on the Townhomes and side lot lines on the SFD Patio Homes; and five (5) feet from the front and rear lot line on the SFD Patio Homes.
*****Side load garage.
****** Awnings, blade signs, incidental architectural features such as cornices, eaves, canopies, chimneys, bay windows, ornamental features and other similar architectural features may project not more than five (5) feet into any required setback.

V. MINIMUM SET BACK TO *ACCESSORY* BUILDINGS

All set backs measured from the Property Line (PL) to the structure as noted.

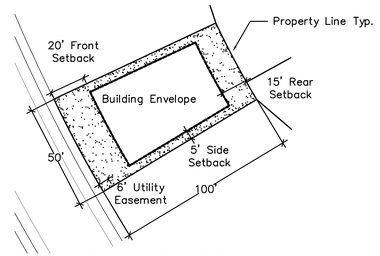
PLANNING AREA (Filing No.)	FRONT YARD (feet)	SIDE YARD (feet)		REAR YARD (feet)
		Interior lot	Along street	
Filing No.1 - **SFD**	**30′**	**5′**	**20′**	**5′**
Filing No.2 - **SFD**	**30′**	**5′**	**20′**	**5′**
Filing No.3 - **SFD**	**30′**	**5′**	**20′**	**5′**
Filing No.4 - **SFD**	**30′**	**5′**	**20′**	**5′**
Filing No.5 - **SFD**	**30′**	**5′**	**20′**	**5′**
- DC	**30′**	**5′**	**20′**	**5′**
- MDR	**30′**	**5′**	**20′**	**5′**
Filing No.6 - **SFD**	**30′**	**5′**	**20′**	**5′**
- RA	**30′**	**5′**	**20′**	**5′**
- CBR	**30′**	**5′**	**20′**	**5′**
Filing No.7 - **SFD**	**30′**	**5′**	**20′**	**5′**
Filing No.8 - **MDR**	**30′**	**5′**	**20′**	**5′**
Filing No.9 - **SFD-P**	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED
- TH	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED
- SFD	**30′**	**5′**	**20′**	**5′**
Filing No.10 - **MR**	**30′**	**5′**	**10′**	**5′**
- HR	**30′**	**5′**	**10′**	**5′**
- CC	**30′**	**5′**	**20′**	**5′**

VI. ADDITIONAL STANDARDS

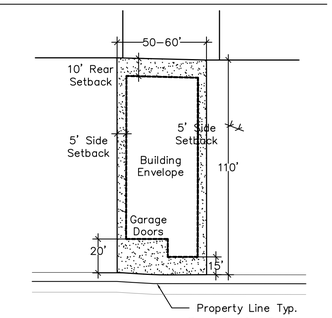
PLANNING AREA (Filing No.)	MIN. SETBACK BETWEEN BUILDINGS (feet)	MAX. LOT COVERAGE (percent %)		MAX BLDG. HEIGHT (feet)	
		Principal	Accessory *	Principal	Accessory
Filing No. 1 - **SFD**	10′	30%	30%	35′	25′
Filing No. 2 - **SFD**	10′	30%	30%	35′	25′
Filing No. 3 - **SFD**	10′	30%	30%	35′	25′
Filing No. 4 - **SFD**	10′	30%	30%	35′	25′
Filing No. 5 - **SFD**	10′	30%	30%	35′	25′
- **DC**	10′	30%	30%	35′	25′
- **MDR**	10′	***NA***	***NA***	25′	25′
Filing No. 6 - **SFD**	10′	***NA***	***NA***	35′	25′
- **RA**	10′	30%	30%	45′**	25′
- **CBR**	10′	30%	30%	35′	25′
Filing No. 7 - **SFD**	10′	***NA***	***NA***	35′	25′
Filing No. 8 - **MDR**	10′	***NA***	***NA***	35′	25′
Filing No. 9 - **SFD**	10′	30%	30%	35′	25′
-TH	0′	***NA***	***NA***	35′	NOT PERMITTED
-SFD-P	0′	***NA***	***NA***	35′	NOT PERMITTED
Filing No. 10 - **MR**	NA	***NA***	***NA***	35′	25′
-HR***	NA	***NA***	***NA***	45′	25′
-CC	NA	***NA***	***NA***	45′	25′

* **Maximum coverage of required yard**
** **- 55′ permitted for the domed portion of the church structure only.**
- A cross may be placed on top of the domed portion, however the dome may not exceed 55 feet and the total height of the dome and cross may not exceed 60
- A bell tower is permitted but shall not be considered an appurtenance and shall not exceed 45 feet in height.
***** A three story maximum mezzanine or entresol space is permitted only if it has an interior entrance connection to the third floor unit, does not have a separate exterior entrance, and the building height remains at or under 45 feet.**

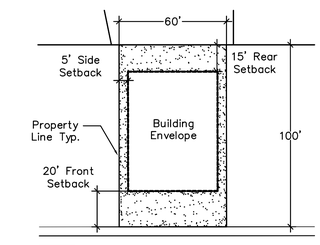
Lot Typicals



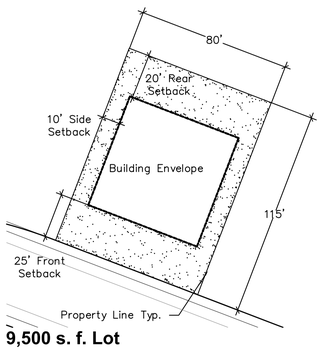
5,000 s. f. Lot - 50' X 100' min.



SDP-P 5,500 s. f. Lot - 50' X 110' min.



6,000 s. f. Lot - 60' x 100' min.



9,500 s. f. Lot

DEVELOPMENT PLAN
SHEET 2 OF 8
CANYON CREEK PD

Planner
PCS Group, Inc.
1001 16th Street, 3B-180
Denver, CO 80265
303.531.4905

Applicant:
RMCS
21 South Sunset Street
Longmont, CO 80503

REVISION DATE:
AMENDMENT DATE:
ISSUE DATE:

Canyon Creek PD Amendment No.9

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

553.43 ACRES

PDA - 000204-2015

CANYON CREEK FILING 9

ARCHITECTURAL STANDARDS FOR SINGLE FAMILY DETACHED - PATIO DWELLING UNITS

(Standards to modify portions of MC10.6.7.E)

1. Architectural Variety and Character

A. Architectural Variety

Design Standards

a. No identical model plan elevation shall be repeated directly across any street from the same model plan and elevation.
b. No identical model plan elevation shall be repeated more than once within every four (4) lots on the same side of any street.
c. A minimum of three (3) alternate elevations for each model plan shall be submitted to the Town for review.

B. Architectural Character

Each single family detached model plan and elevation shall demonstrate the following design attributes:

Design Standards

a. Each elevation shall include a minimum of two (2) windows (or one (1) window and one (1) door) per floor.
b. Each front elevation and rear elevation shall include more than one (1) wall plane. Articulation shall add shadow and visual interest.
c. A variety of roof forms should be used. Single unbroken roof pitches should be avoided except where a single roof treatment is an essential element of the Architectural Style (e.g. Mansard).
d. The main roof should extend beyond the primary facade by a minimum of one (1) foot.
e. An elevation of the home that faces a street, park, trail corridor or open space area shall provide an "Enhanced Elevation". An "Enhanced Elevation" shall provide three (3) or more of the following design enhancements listed in (1) through (5) below. Application of the design enhancement shall be applied in a manner that is consistent with the style of the home. Side and rear elevation's design enhancements shall be consistent with the design elements of the front of the elevation.
    (1) The addition of one (1) window unit.
    (2) A change in wall plane by providing one (1) or more of the following options:
        - An additional wall plane change of a minimum of 6' wide with a minimum of one (1) foot projection.
        - A projecting or cantilevered living space.
        - A bay or boxed windows.
    (3) A covered porch or deck.
    (4) Architectural detail elements such as: shutters, eave brackets, exposed rafter tails, corbels, lintels, trellises, columns or pilasters.
    (5) The use of a minimum of two (2) exterior cladding materials that can include materials such as masonry, (cultured stone, stone, brick, stucco or tile), lap siding, shingles, board and batten, or other decorative siding treatment.
f. Columns and posts extending more than 36 inches above the ground which support structural elements such as porches, decks or roofs should appear to be of adequate mass to support the structure above. (No exposed 4 inch by 4 inch posts shall be allowed more than 36 inches above ground.) Columns supporting upper story decks should be 8 inches by 8 inches minimum finished.

C. Materials

a. All exterior materials shall be of high quality, used in applications and treated appropriately to provide an attractive and long lasting appearance.
b. When masonry cladding is used it should be used in locations where its mass is logical and appropriate. In instances where masonry wraps the exterior corner of the home the masonry should continue to a natural transition point such as an inside corner of a projecting wall, a column, a door or window, or other logical point. In cases where no such feature exists near the corner, the masonry wrap shall extend at least six (6) feet from the outside corner.

2. Orientation of Dwellings to the Street

Each residence shall have at least one (1) primary pedestrian doorway for access to the dwelling unit generally facing and visible from the front lot line of the property, and within 12 feet of the most forward plane of the ground level living space. On corner lots, the pedestrian doorway may face any adjacent street.

3. Garages

These regulations for garages shall apply to non-living space or storage areas within garages whether used for storage of automobiles or other items.

A. Diversity of Garage Orientation

a. All single family homes shall provide garages that meet one (1) of the requirements below, and, a variety in garage orientation by providing a minimum of two (2) of the following orientations on any single block:
    (1) Recessed garages: Where the primary garage door generally faces the front lot line and the garage is recessed a minimum of two (2) feet behind the most forward plane of main floor living space or a front porch.
    (2) Projecting garages: Where the primary garage door generally faces the front lot line and the garage projects no more than fifteen (15) feet from the front door.
    (3) Side-loaded garages.

B. Width/Façade Ratio

The width of a front loaded garage shall not exceed 65% of the width of the front elevation.

C. Three (3) or More Garage Orientation

The third or more bay of any three (3) or more car garage shall either:
(1) Have a different orientation from the first two (2); or
(2) Shall be recessed behind the first two (2) by at least two (2) feet when having the same orientation; or
(3) Shall be tandem to the first two (2).

4. Front Stoop

For model plans with a front stoop, the front stoop shall include the platform and stairs that are generally in front of a door that can be covered or uncovered. The maximum width of a covered front stoop shall be three (3) feet in width from the side of the front door. Covered platforms that exceed three (3) feet in width from the side of the front door shall be considered a front porch.

5. Front Porches

Home model plans with a front porch shall have a front porch that is a minimum size of 50 square feet, excluding the stoop, with a minimum depth of five (5) feet.

STANDARDS FOR PEDESTRIAN FACILITIES IN SFD-P SINGLE FAMILY

(Standards to modify portions of MC.10.6.5F)

1. Sidewalks

(MC.10.6.5F.1.b.)

Attached sidewalk shall be installed where SFD-P dwelling units front the street. Detached sidewalks shall be installed on all other street frontages with SFD-P.

STANDARDS FOR LOT LAYOUT & DESIGN IN SFD-P SINGLE FAMILY DETACHED - PATIO

(Standards to modify portions of MC.10.5.5 E.12.)

Double frontage residential through lots are permitted with a landscape buffer outside of the double frontage lot in a separate tract of not less than twenty-five (25) feet between the rear of a lot and the Austin Avenue street right-of-way.

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1001 16th Street, 3B-180
Denver, CO 80265
303.531.4905

Applicant:
RMCS
21 South Sunset Street
Longmont, CO 80503

REVISION DATE:
AMENDMENT DATE:
ISSUE DATE:

Canyon Creek PD Amendment No.9

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter
of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North,
Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

553.43 ACRES

PDA - 000204-2015

CANYON CREEK FILING 10

ARCHITECTURAL STANDARDS FOR SINGLE FAMILY DETACHED - PATIO DWELLING UNITS

(Standards to modify portions of MC10.6.7.E)

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A. Architectural Variety

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c. A variety of roof forms should be used. Single unbroken roof pitches should be avoided except where a single roof treatment is an essential element of the Architectural Style (e.g. Mansard).
d. The main roof should extend beyond the primary facade by a minimum of one (1) foot.
e. An elevation of the home that faces a street, park, trail corridor or open space area shall provide an "Enhanced Elevation". An "Enhanced Elevation" shall provide three (3) or more of the following design enhancements listed in (1) through (5) below. Application of the design enhancement shall be applied in a manner that is consistent with the style of the home. Side and rear elevation's design enhancements shall be consistent with the design elements of the front of the elevation.
    (1) The addition of one (1) window unit.
    (2) A change in wall plane by providing one (1) or more of the following options:
        - An additional wall plane change of a minimum of 6' wide with a minimum of one (1) foot projection.
        - A projecting or cantilevered living space.
        - A bay or boxed windows.
    (3) A covered porch or deck.
    (4) Architectural detail elements such as: shutters, eave brackets, exposed rafter tails, corbels, lintels, trellises, columns or pilasters.
    (5) The use of a minimum of two (2) exterior cladding materials that can include materials such as masonry, (cultured stone, stone, brick, stucco or tile), lap siding, shingles, board and batten, or other decorative siding treatment.
f. Columns and posts extending more than 36 inches above the ground which support structural elements such as porches, decks or roofs should appear to be of adequate mass to support the structure above. (No exposed 4 inch by 4 inch posts shall be allowed more than 36 inches above ground.) Columns supporting upper story decks should be 8 inches by 8 inches minimum finished.

C. Materials

a. All exterior materials shall be of high quality, used in applications and treated appropriately to provide an attractive and long lasting appearance.
b. When masonry cladding is used it should be used in locations where its mass is logical and appropriate. In instances where masonry wraps the exterior corner of the home the masonry should continue to a natural transition point such as an inside corner of a projecting wall, a column, a door or window, or other logical point. In cases where no such feature exists near the corner, the masonry wrap shall extend at least six (6) feet from the outside corner.

2. Orientation of Dwellings to the Street

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3. Garages

These regulations for garages shall apply to non-living space or storage areas within garages whether used for storage of automobiles or other items.

A. Diversity of Garage Orientation

a. All single family homes shall provide garages that meet one (1) of the requirements below, and, a variety in garage orientation by providing a minimum of two (2) of the following orientations on any single block:
    (1) Recessed garages: Where the primary garage door generally faces the front lot line and the garage is recessed a minimum of two (2) feet behind the most forward plane of main floor living space or a front porch.
    (2) Projecting garages: Where the primary garage door generally faces the front lot line and the garage projects no more than fifteen (15) feet from the front door.
    (3) Side-loaded garages.
    (4) Alley-loaded garages.

B. Width/Façade Ratio

The width of a front loaded garage shall not exceed 65% of the width of the front elevation.

C. Three (3) or More Garage Orientation

The third or more bay of any three (3) or more car garage shall either:
(1) Have a different orientation from the first two (2); or
(2) Shall be recessed behind the first two (2) by at least two (2) feet when having the same orientation; or
(3) Shall be tandem to the first two (2).

4. Front Stoop

For model plans with a front stoop, the front stoop shall include the platform and stairs that are generally in front of a door that can be covered or uncovered. The maximum width of a covered front stoop shall be three (3) feet in width from the side of the front door. Covered platforms that exceed three (3) feet in width from the side of the front door shall be considered a front porch.

5. Front Porches

Home model plans with a front porch shall have a front porch that is a minimum size of 50 square feet, excluding the stoop, with a minimum depth of five (5) feet.

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303-531-4905

Applicant:
RMCS
21 South Sunset Street
Longmont, CO 80503

REVISION DATE:
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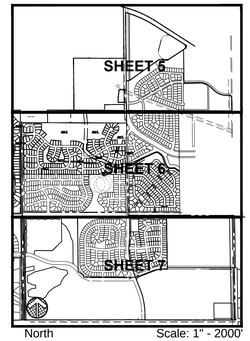
Canyon Creek PD Amendment No.9

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter
of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North,
Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

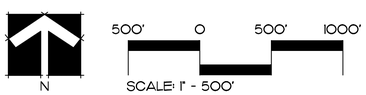
553.43 ACRES

PDA - 000204-2015

Key Map



North Scale: 1" - 2000'



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Planner
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Denver, CO 80265
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REVISION DATE:
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DEVELOPMENT PLAN
SHEET 5 OF 8
CANYON CREEK PD

Canyon Creek PD Amendment No.9

A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

553.43 ACRES

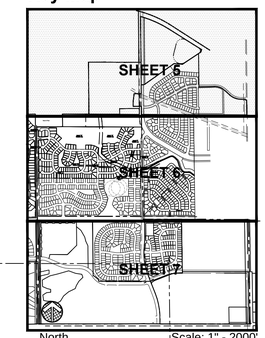
PDA - 000204-2015

Land Use Summary - Filing No's 1-10

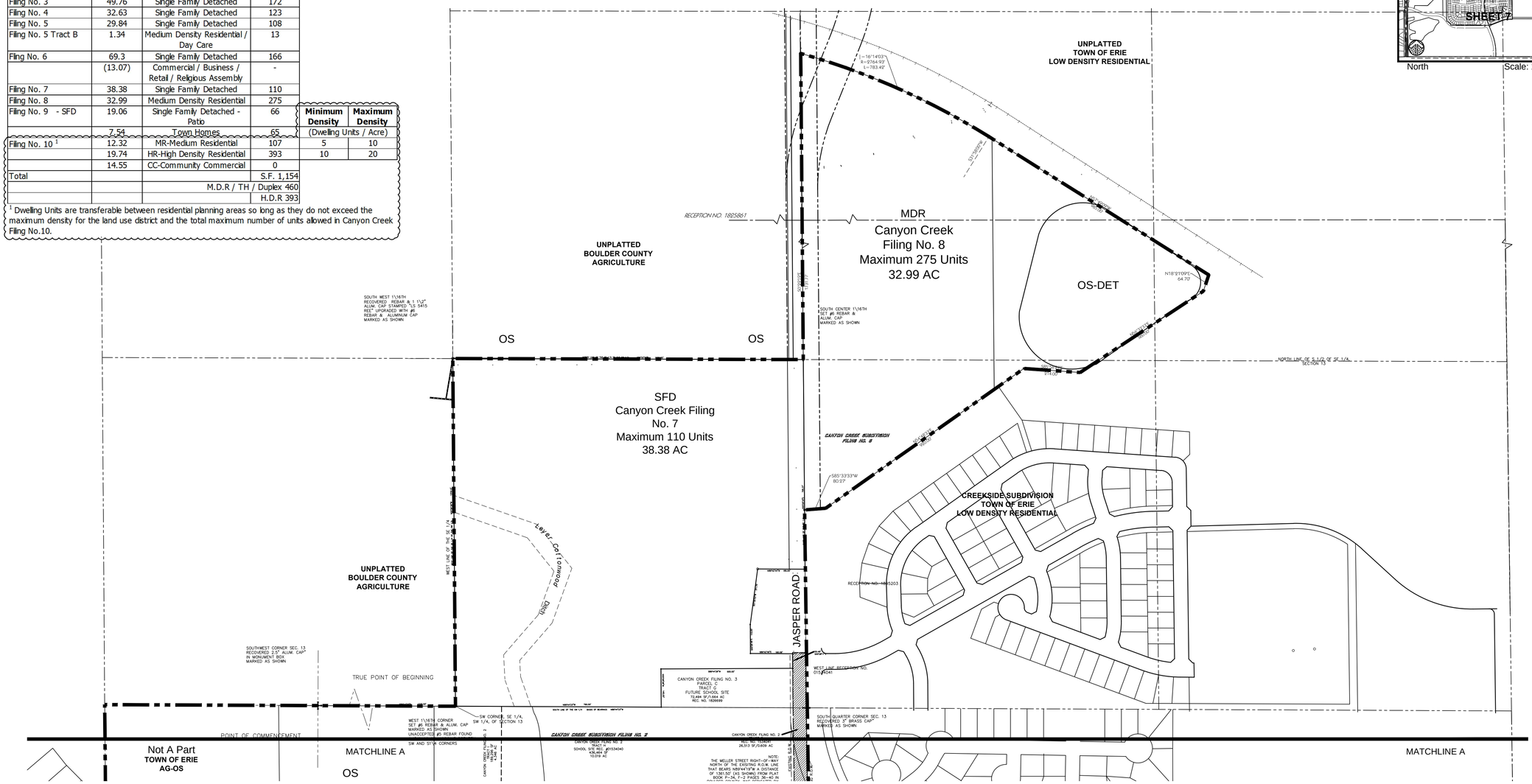
Filing	Total Gross Acres	Use	Max. Number of Dwelling Units	Minimum Density	Maximum Density
Filing No. 1	79.95	Single Family Detached	208		
Filing No. 2	80.02	Single Family Detached	201		
Filing No. 3	49.76	Single Family Detached	172		
Filing No. 4	32.63	Single Family Detached	123		
Filing No. 5	29.84	Single Family Detached	108		
Filing No. 5 Tract B	1.34	Medium Density Residential / Day Care	13		
Fling No. 6	69.3	Single Family Detached	166		
	(13.07)	Commercial / Business / Retail / Religious Assembly	-		
Filing No. 7	38.38	Single Family Detached	110		
Filing No. 8	32.99	Medium Density Residential	275		
Filing No. 9 - SFD	19.06	Single Family Detached - Patio	66	(Dwelling Units / Acre)	
	7.54	Town Homes	65		
Filing No. 10 [1]	12.32	MR-Medium Residential	107	5	10
	19.74	HR-High Density Residential	393	10	20
	14.55	CC-Community Commercial	0		
Total			S.F. 1,154		
			M.D.R / TH / Duplex 460		
			H.D.R 393		

[1] Dwelling Units are transferable between residential planning areas so long as they do not exceed the maximum density for the land use district and the total maximum number of units allowed in Canyon Creek Filing No.10.

Key Map



North Scale: 1" - 2000'



Planner
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1001 16th Street, 3B-180
Denver, CO 80265
303.531.4905

Applicant:
RMCS
21 South Sunset Street
Longmont, CO 80503

REVISION DATE:
AMENDMENT DATE:
ISSUE DATE:

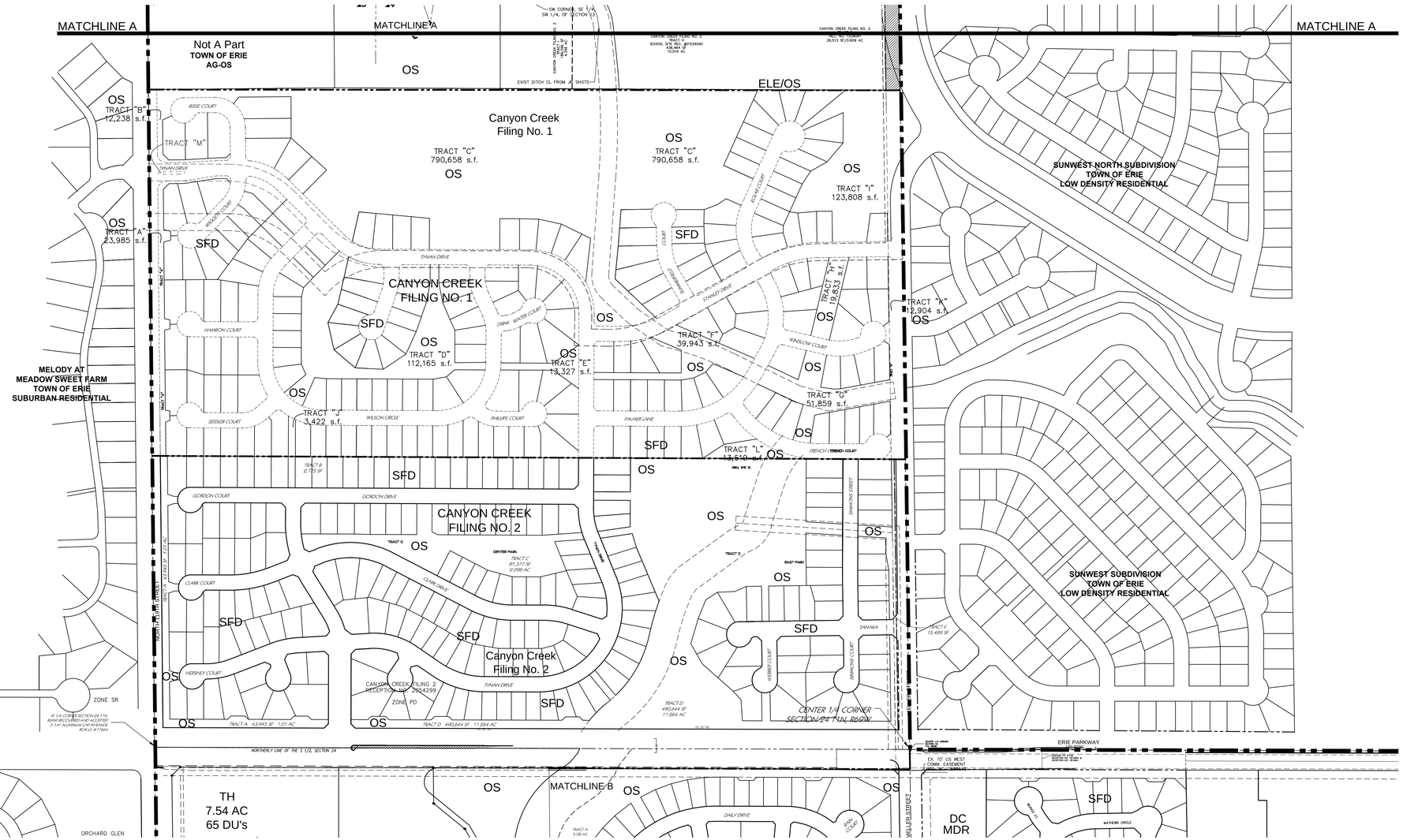
DEVELOPMENT PLAN
SHEET 6 OF 8
CANYON CREEK PD

Canyon Creek PD Amendment No.9

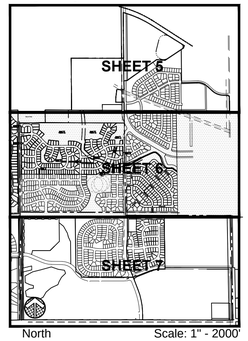
A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter
of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North,
Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

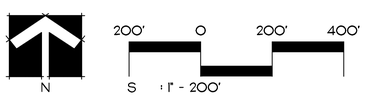
553.43 ACRES

PDA - 000204-2015



Key Map





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Denver, CO 80265
303.531.4905

Applicant:
RMCS
21 South Sunset Street
Longmont, CO 80503

REVISION DATE:
AMENDMENT DATE:
ISSUE DATE:

DEVELOPMENT PLAN
SHEET 7 OF 8
CANYON CREEK PD

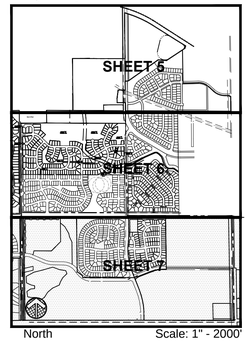
Canyon Creek PD Amendment No.9

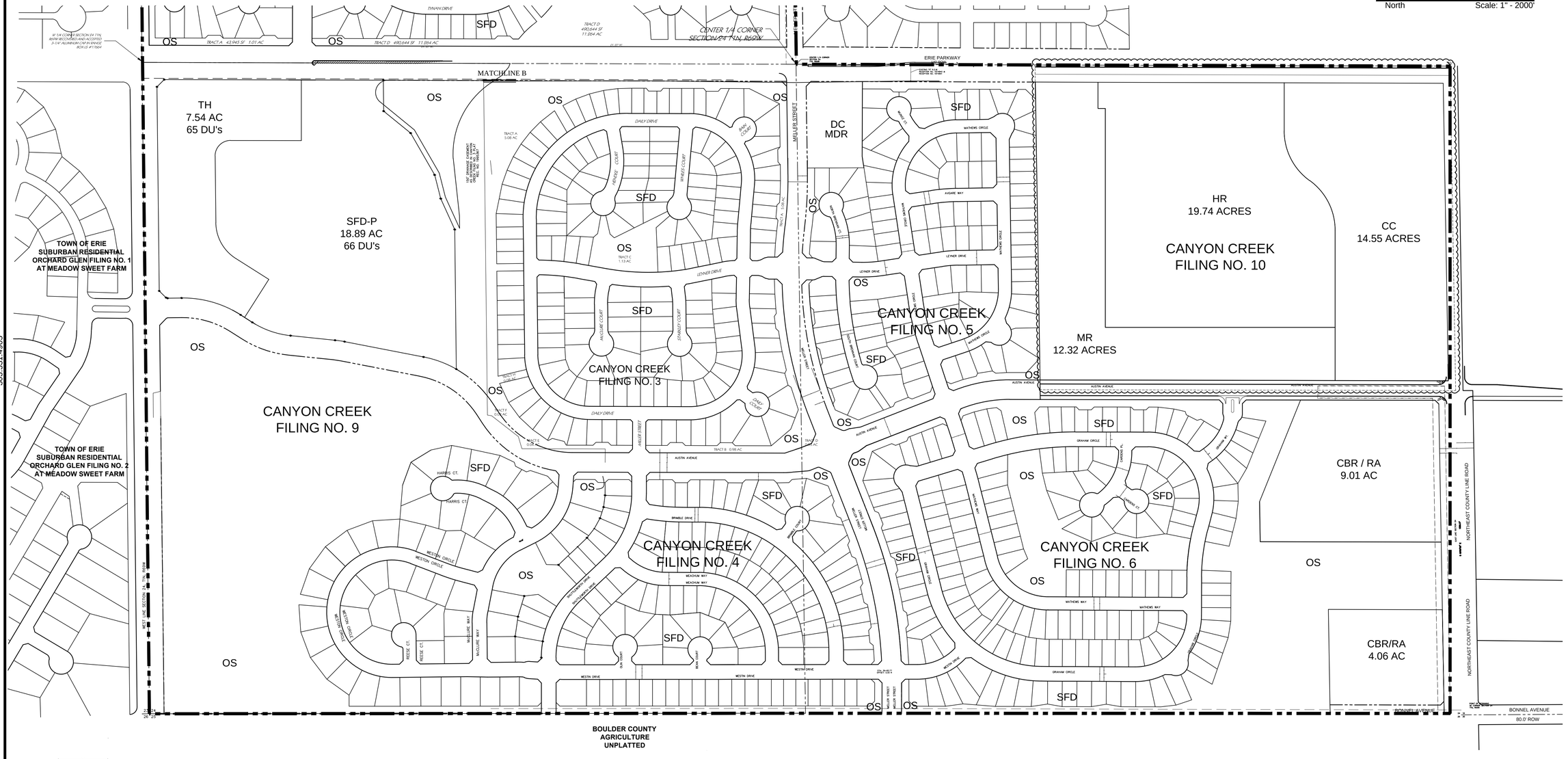
A Portion of the Southeast One-Quarter of Section 13, and A Portion of the Southeast One-Quarter of the Southwest One-Quarter of Section 13, and A Portion of the South One-Half of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado

553.43 ACRES

PDA - 000204-2015

Key Map





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REVISION DATE:
AMENDMENT DATE:
ISSUE DATE:

DEVELOPMENT PLAN
SHEET 8 OF 8
CANYON CREEK PD

COMPARATIVE CHART

DISTRICT	STANDARD	UDC SECTION	EXISTING UDC REGULATION	REQUEST	JUSTIFICATION
MR & HR	PRINCIPAL STRUCTURE FRONT/STREET SETBACK	TABLE 4-1	20'	10' PRINCIPAL STRUCTURE 20' FRONT LOADED GARAGE 15' SIDE LOADED GARAGE	TO CREATE A DISTINCT PRESENCE IN FRAMING THE STREETSCAPE WITH ARCHITECTURE THAT ADDRESSES THE STREETSCAPE FOR PEDESTRIANS AND VEHICLES
MR & HR	PRINCIPAL STRUCTURE REAR SETBACK	TABLE 4-1	20'	P:20' 5' ALLEY LOADED GARAGES	TO ALLOW FOR ALLEY LOADED HOMES
MR & HR	MIN. LOT SIZE	TABLE 4-1	SF: 5000 SF MF:2500 SF	SFD-ALLEY LOADED 3,150 SF SFD-PATIO ALLEY LOADED 3,800 SF DUPLEX 2,250 PER DU TOWN HOME-ALLEY LOADED 1,450 PER DU MULTIFAMILY 1,250 PER DU	TO ALLOW FOR AN ALLEY LOADED PRODUCT (SFD, SFD-PATIO, DUPLEX AND TOWN HOME) THAT IS CONSISTENT WITH THE REMAINDER OF THE PROPOSED SITE PLAN WHILE EMBRACING NEW URBANISM DESIGN PRACTICES
MR & HR	ACCESSORY STRUCTURE SIDE SETBACK TO STREET	TABLE 4-1	20'	10'	FOR CONSISTENCY TO MATCH THE PRINCIPAL BUILDING SETBACK
MR & HR	MIN. WIDTH	TABLE 4-1	50' / 60' CORNER	SFD 30'/35' DUPLEX 25'/30'	TO ALLOW FOR AN ALLEY LOADED PRODUCT THAT IS CONSISTENT WITH THE REMAINDER OF THE PROPOSED SITE PLAN WHILE EMBRACING NEW URBANISM DESIGN PRACTICES
HR	MAXIMUM BUILDING HEIGHT	TABLE 4-1	35'	45'	TO PROPOSE EFFICIENT BUILDING DESIGNS THAT ALLOW FOR MORE GREENSPACE WITHIN THE PROPERTY, WHILE CREATING OPPORTUNITY FOR ARCHITECTURAL DIVERSITY THAT ATTRACTS A WIDE RANGE OF DEMOGRAPHICS WHILE PROVIDING AFFORDABILITY WITH A SUPERIOR PRODUCT TYPE

PHASE 1 DRAINAGE REPORT
FOR
4 Corners

January 16, 2015
May 1, 2015

Prepared for:

RMCS, LLC
21 Sunset Street
Longmont CO 80501
Phone: 720-524-3620
Contact: Justin McClure

Prepared by:

11101 West 120th Avenue, Suite 240
Broomfield, Colorado 80021
Phone: 720.975.0177
Fax: 720.460.4906
Contact: Jason Margraf, P.E.
Alaina Kneebone Marler, P.E.

Job No. 030019

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Phase 1 Drainage Map ..... Back Pocket

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I. INTRODUCTION

The purpose of this report is to provide a guide for the Town of Erie and the developer to use for the planning and the future final design of the proposed drainage facilities for 4 CORNERS. The narrative provides a comprehensive description of the project, the hydrologic and hydraulic design methodologies utilized, and a summary of the preliminary design of drainage facilities.

II. GENERAL LOCATION AND DESCRIPTION

A. Location of Property

4 CORNERS is located in a portion of the southeast one-quarter of Section 13, and a portion of the Southeast One-Quarter of Section 13 and a portion of the south one-half Section 24, Township 1 North, Range 69 West of the 6th Principal Meridian, Town of Erie, Boulder County, Colorado. The property comprises of approximately 46.61 acres and is bounded on the south by Austin Avenue, on the north by Erie Parkway, on the west by existing Canyon Creek Subdivision Filing No.5, and to the east by the East County Line Road. The 4 CORNERS tributary area resides in the Erie Commons Reach 1 per the *Town of Erie, Outfall Systems Plan (West of Coal Creek), January 2014*. 4 CORNERS is tributary to Reach 1, and ultimately Coal Creek. 4 CORNERS will be referred to as the "Site" for the remainder of this report. A Vicinity Map is included within the Appendix for reference.

B. Description of the Proposed Project

The proposed development will provide different uses including a variety of residential and commercial uses with surrounding landscaping and gathering amenities. The Site contains 459 dwelling units, with a maximum of 500 dwelling units per the proposed Canyon Creek PD Amendment No. 9. The dwelling units are anticipated as both attached, detached single family and multifamily units, shown on the Sketch Plan as Medium Density Residential and High Density Residential. The Site will provide commercial retail space within the Community Commercial area. Green space amenities have been spaced throughout the development and the detention pond will be located within the Community Commercial area. A Phase 1 Drainage Area map is included in the Appendix.

The site plan depicted with Phase 1 Drainage is conceptual for this submittal. The full design of site connections, landscaping and final open space areas may be updated with future submittals. A detailed analysis of composite site imperviousness will be provided with the Final Drainage Report. The Site is contained within Basin 462 from the OSP (Reference 6) and has a proposed future imperviousness of 79% which correlates to Type B Soil runoff coefficients of 0.59 and 0.70, for the 5-year and 100-

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year events respectively. The final overall composite C-value for the 100-year event for the entire Site will be no greater than 0.70. Individual basins may be higher due to local basin characteristics. However, the overall composite C-value will be held at 0.70 or less. Based upon the road design and initial stages of the development, it is anticipated that all sub-basins within the Site will be captured and routed to a proposed detention pond located south of Erie Parkway in the Community Commercial area. The pond outfall will connect to the existing 42-inch RCP storm sewer that is the downhill connection at the intersection of Erie Parkway and East County Line Road. From there, flows will be conveyed to Reach 1 of Erie Commons 1 as outlined in the *Town of Erie, Outfall Systems Plan (West of Coal Creek)* (Reference 6).

On-Site soils consist primarily of sandy loams, as shown on the *Soil Conservation Service Soil Survey of Boulder County* maps (Reference 4) located in Appendix A of this report. Soil classifications with the Site include AcA and MdD. All of the Site soils lie within Hydrologic Soil Groups (HSG) B. Type 'B' soils are identified as having medium runoff, moderate infiltration rates and a moderate erosion hazard.

Per Flood Insurance Rate Map for Boulder County, Colorado, Panel 441 of 615 08013C0441J, the site is not within a floodway or floodplain.

There are no irrigation ditches or facilities on this property.

There are no wetlands areas on this property.

C. Adjacent Areas

The proposed development lies east of the Canyon Creek Subdivision Filing No. 5, which consists of existing, medium-density, residential development. To the east of the Site is the existing commercial property. To the south of the Site lies the existing residential development of Canyon Creek Subdivision Filing No. 5. Directly north of the Site are undeveloped empty residental/commercial lots.

III. DRAINAGE BASINS

A. Major Basins

The Site consists of approximately 46.61 acres and is a single property. The existing land is zoned planned development (PD) and is undeveloped. The Site's existing topography slopes from the southwest corner towards the northeast corner at approximately 2.5%.

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IV. DESIGN CRITERIA

A. Regulations

A drainage plan is presented for the 2-year (minor-residential) and 5-year (minor-commercial) and 100-year (major) storm events based on the *Town of Erie Storm Drainage Facilities* (Reference 1). The drainage plan for 4 CORNERS was based on the Town of Erie requirements (Reference 1), Urban Drainage and Flood Control District (UDFCD) UDSCM (Reference 2), and the *Town of Erie Outfall Systems Plan* (West of Coal Creek) (Reference 5).

B. Development Criteria Reference and Constraints

The undeveloped lot has historically drained to the northeast corner. There are no existing drainage or storage facilities on the site. There is an existing 10-Foot Type R inlet at the intersection of Erie Parkway and East County Line Road that is connected to the existing 42-inch RCP storm pipe that outfalls to the east. This outfall connection point has approximately 68-171 cfs of available capacity according to the *Town of Erie Outfall Systems Plan (West of Coal Creek)* by RESPEC (Reference 5). The report recommends limiting the outfall from the Site to approximately 67-68 cfs.

Local site constraints include the existing gas lines along the right-of-ways of Erie Parkway and East County Line Road. Pipes from the site will be required to cross these gas lines to connect to existing infrastructure. Coordination with the gas line owners is ongoing.

C. Hydrologic Criteria

Hydrologic analyses for subsequent reports will be calculated using the Rational Method. Rainfall intensities were taken from the Town's *Manuals (Table 800-2)* (Reference 1) IDF equation and are based upon the 1-hour point rainfall depths as identified in Table 1.

Table 1: 1-hr Point Rainfall Depths

Storm Event	1-hr Rainfall Depth (in)
2-yr	1.01
5-yr	1.43
100-yr	2.70

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The Rational Method procedures and methodology for the time of concentration and for the computation of peak flow rates follow the Town of Erie and Urban Drainage Criteria outlined in References 1 and 2, respectively.

D. Hydraulic Criteria

Street capacities, the sizing of inlets, and the size and layout of the storm sewer system will be analyzed using modeling software in the Final Drainage Report for the site. In this way, the locations and sizes of proposed storm inlets and pipes shall be considered preliminary and conceptual. All storm water capture and conveyance elements will be comprehensively analyzed and sized within the Final Drainage Report(s). Final Drainage Reports may be submitted consistent with Site phasing and shall analyze interim and final phases, if applicable.

V. DRAINAGE PLAN

A. General Concept

The majority of the Site was designed to generally follow historical drainage patterns. Drainage from the Site will generally flow north and east until it is captured by proposed infrastructure that is tied to the existing 42" storm sewer system which outfalls into Reach 1 as identified in the *Town of Erie Outfall Systems Plan* (Reference 5).

B. Specific Details

General

The western and southern portion of the Site, MR (Medium Density Residential), approximately 12.39 acres, will be collected by curb and gutter until it is captured by inlets that discharge into the detention pond located in CC (Community Commercial). The inlets are anticipated to be along the road in local low points that will be in conformance with guidelines established in the Town of Erie criteria (Reference 1).

The central portion of the Site, HR (High Density Residential), approximately 19.67 acres, will be collected by curb and gutter until it is captured by inlets that discharge into the detention pond located in CC. The inlets are anticipated to be within parking lots in local low points that will be in conformance with guidelines established in the Town of Erie criteria.

The eastern portion of the Site, CC (Community Commercial), approximately 14.55 acres, contains commercial buildings and parking areas. The detention pond will be located in Tract 22 on the northern side of the area. Runoff will drain to the north by

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sheet flow and curb and gutter until it is captured by the proposed inlets within the parking areas and outfall to the detention pond. The detention pond will outfall in a storm sewer network and connect to the existing 10-foot Type R inlet located at the southwest corner of intersection of Erie Parkway and East County Line Road in conformance with guidelines established in the Town of Erie criteria (Reference 1).

C. Detention / Water Quality / Regional Improvements

As a part of our drainage design J3 researched the Town's plans for drainage infrastructure in the area by studying the *Town of Erie Outfall System Plan* (OSP) (Reference 5). The OSP Land Use shows mixed-use zoning for the area west of East County Line Road from Austin Avenue to Telleen Avenue. The proposed development of commercial, multifamily, and single family residential, as outlined in the Canyon Creek PD Amendment No. 9., meets the intent of the comprehensive plan.

Upon review, OSP identifies that the basin containing the 4 CORNERS site will contain a change from agricultural to mixed uses in the existing and developed conditions, which has assigned the basin a composite imperviousness of 79% (Figure B-3 from the OSP in the appendix). The Conceptual Design Plan for Erie Commons 1- Reach 1 in the OSP denotes the storage node for the SWMM model as 1047. This node is estimated as having a storage volume of 6 ac-ft. The release rate estimated in the OSP is 67 cfs. Estimated detention volumes for this site plan generally conform to the OSP with volumes ranging from 6.4 ac-ft to 4.9 ac-ft depending the final imperviousness for the site. Water Quality Control Volume (WQCV) will be contained within the Excess Urban Runoff Volume (EURV) per the Town's Criteria. Water quality features will be provided per the Town's criteria.

The controlled release from the detention pond will connect to the existing 10-foot Type R inlet located at the intersection of Erie Parkway and East County Line Road. The downstream pipe size from the inlet is 42-inch RCP, as per the Town's GIS records. Improvements outside the Site's boundaries are not anticipated with this project.

VI. CONCLUSIONS

The drainage plan provided in this report complies with the *Town of Erie Storm Drainage Facilities Standards and Specifications* (Reference 1) and the *Urban Drainage and Flood Control District, Urban Storm Drainage Criteria Manuals* (Reference 2), and the *Town of Erie Outfall Systems Plan* (Reference 5).

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The drainage plan depicts the design for the Development Plan and will conform to the Town's criteria. The drainage plan attempts to provide protection from flooding to the Site for at least the 100-year storm. Emergency drainage overflows will be provided where necessary and will be detailed within the subsequent Final Drainage Report. The planned improvements will minimize adverse effects on the public and associated infrastructure for the proposed development.

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VII. REFERENCES

1. *Town of Erie Standards and Specifications for Design and Construction*, Town of Erie, January 2014.

2. *Urban Storm Drainage Criteria Manuals, Volumes 1-3*, Urban Drainage and Flood Control District; Revised August 2006.

3. *Flood Insurance Rate Map, Boulder County, Colorado and Incorporated Areas, Panel 441 of 6155, Map Number 08013C0551J*, Federal Emergency Management Agency (FEMA), Map Revised December 18, 2012.

4. *Soil Survey of Boulder County Area, Colorado*, Natural Resources Conservation Service (NRCS), 1975.

5. *Town of Erie, Outfall Systems Plan (West of Coal Creek),* RESPEC Consultants & Services, January 2014

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PHASE 1 DRAINAGE REPORT
FOR
4 CORNERS

TOWN OF ERIE CERTIFICATION STATEMENT

"I hereby certify that this Phase 1 Drainage Report (plan) for the design of 4 CORNERS was prepared by me (or under my direct supervision) in accordance with the provisions of *Town of Erie Standards and Specifications for Design and Construction* for the owners thereof. I understand that the Town of Erie does not and will not assume liability for drainage facilities designed by others, including the designs presented in this report."

SIGNATURE:

Alaina Kneebone Marler, P.E.
Registered Professional Engineer
State of Colorado No. 35781

TOWN ACCEPTANCE

"This report has been reviewed and found to be in general compliance with the *Town of Erie Standards and Specifications for Design and Construction* and other Town requirements. THE ACCURACY AND VALIDITY OF THE ENGINEERING DESIGN, DETAILS, DIMENSIONS, QUANTITIES AND CONCEPTS IN THIS REPORT REMAINS THE SOLE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.

Accepted by: _____ _____
Deputy Public Works Director Date

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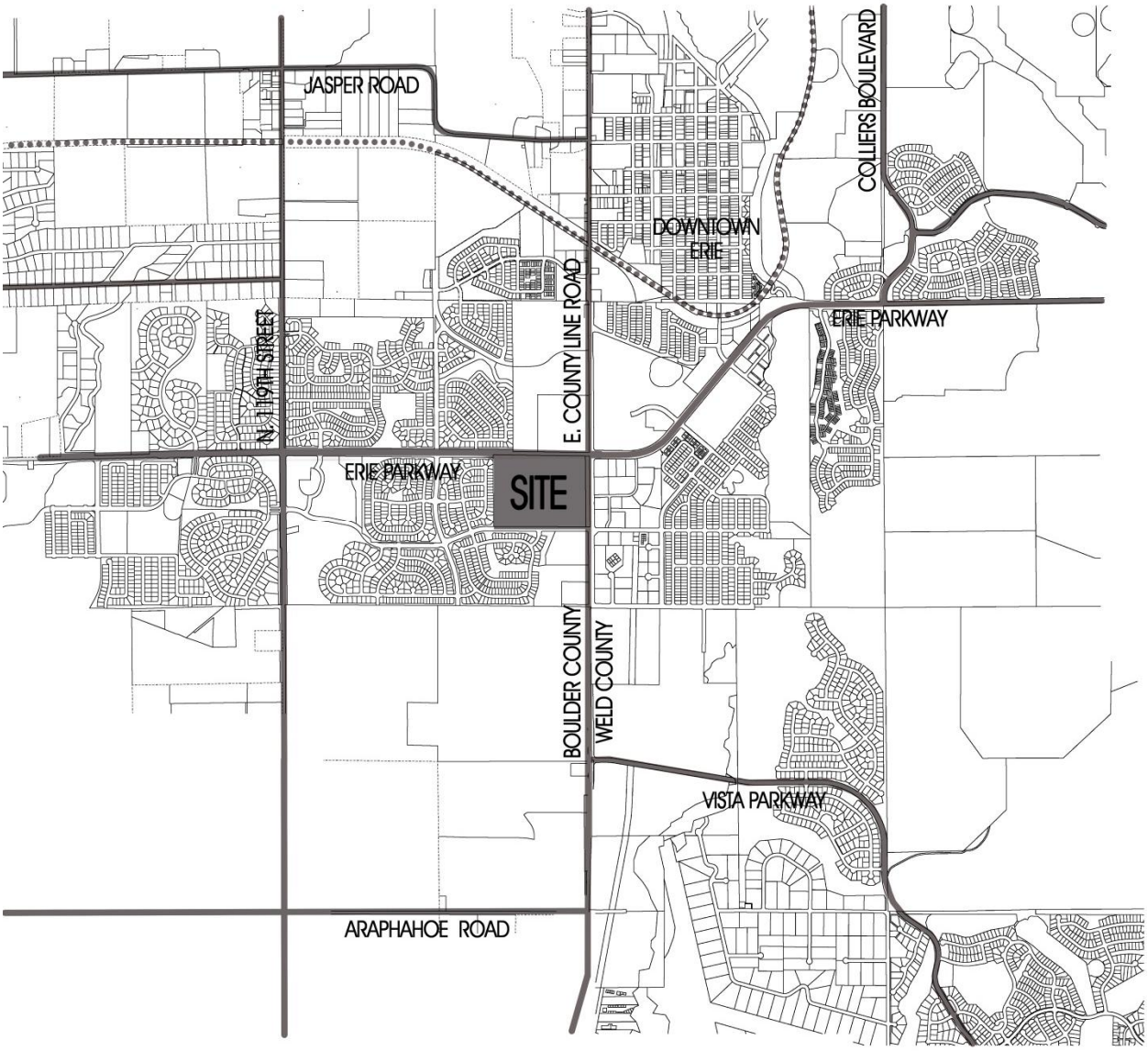
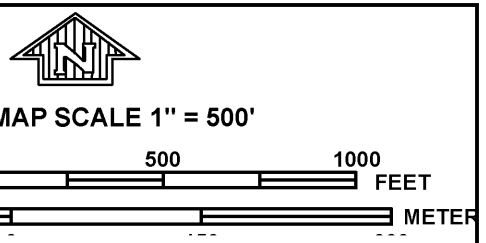
APPENDIX – A

Figures and Supporting Documents

VICNITY MAP


JASPER ROAD
N. 119TH STREET
E. COUNTY LINE ROAD
DOWNTOWN ERIE
COLLIERS BOULEVARD
ERIE PARKWAY
ERIE PARKWAY
SITE
BOULDER COUNTY
WELD COUNTY
VISTA PARKWAY
ARAPHAHOE ROAD



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0441J

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO

AND INCORPORATED AREAS

PANEL 441 OF 615

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOULDER COUNTY	080023	0441	J
ERIE, TOWN OF	080181	0441	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08013C0441J

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boulder County Area, Colorado; and Weld County, Colorado, Southern Part

4 Corners

A3

October 9, 2014

Custom Soil Resource Report
Soil Map

A4

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boulder County Area, Colorado
Survey Area Data: Version 10, Dec 30, 2013

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 12, Jan 3, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 22, 2011—Apr 13, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting

Map Unit Legend

Boulder County Area, Colorado (CO643)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AcA	MLRA 67B - Ascalon sandy loam, 0 to 3 percent slopes	17.8	28.7%
AcC	Ascalon sandy loam, 3 to 5 percent slopes	3.6	5.7%
MdD	Manter sandy loam, 3 to 9 percent slopes	34.6	55.6%
Subtotals for Soil Survey Area		**56.0**	**90.0%**
Totals for Area of Interest		**62.2**	**100.0%**

Weld County, Colorado, Southern Part (CO618)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
5	MLRA 67B - Ascalon sandy loam, 0 to 3 percent slopes	6.2	10.0%
Subtotals for Soil Survey Area		**6.2**	**10.0%**
Totals for Area of Interest		**62.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the

contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Boulder County Area, Colorado

AcA—MLRA 67B - Ascalon sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2swl3
Elevation: 3,870 to 5,960 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 135 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ascalon and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Paleoterraces, plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind-reworked alluvium and/or calcareous sandy eolian deposits

Typical profile

Ap - 0 to 6 inches: sandy loam
Bt1 - 6 to 12 inches: sandy clay loam
Bt2 - 12 to 19 inches: sandy clay loam
Bk - 19 to 35 inches: sandy clay loam
C - 35 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline (0.1 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: Sandy plains (R067BY024CO)

AcC—Ascalon sandy loam, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: jpr3
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ascalon and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Terraces
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed loamy alluvium and/or eolian deposits

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 19 inches: sandy clay loam, sandy loam
H2 - 8 to 19 inches: fine sandy loam, loamy fine sand, sandy loam
H3 - 19 to 60 inches:
H3 - 19 to 60 inches:
H3 - 19 to 60 inches:

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 16.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: Sandy (R067XB026CO)

MdD—Manter sandy loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: jps4
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Manter and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manter

Setting

Landform: Terraces
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy eolian deposits and/or outwash

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 14 inches: fine sandy loam, sandy loam
H2 - 5 to 14 inches: sandy loam, loamy sand, loamy fine sand
H3 - 14 to 60 inches:
H3 - 14 to 60 inches:
H3 - 14 to 60 inches:

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 18.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Sandy (R067XB026CO)

Weld County, Colorado, Southern Part

5—MLRA 67B - Ascalon sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2swl3
Elevation: 3,870 to 5,960 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 135 to 160 days
Farmland classification: Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

Map Unit Composition

Ascalon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Paleoterraces, plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind-reworked alluvium and/or calcareous sandy eolian deposits

Typical profile

Ap - 0 to 6 inches: sandy loam
Bt1 - 6 to 12 inches: sandy clay loam
Bt2 - 12 to 19 inches: sandy clay loam
Bk - 19 to 35 inches: sandy clay loam
C - 35 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline (0.1 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: Sandy plains (R067BY024CO)

Minor Components

Olnest

Percent of map unit: 10 percent
Landform: Plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Sandy plains (R067BY024CO)

Vona

Percent of map unit: 5 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Sandy plains (R067BY024CO)

APPENDIX – B

Hydraulic Computations

Table RO-5— Runoff Coefficients, *C*

Percentage Imperviousness	Type C and D NRCS Hydrologic Soil Groups					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
0%	0.04	0.15	0.25	0.37	0.44	0.50
5%	0.08	0.18	0.28	0.39	0.46	0.52
10%	0.11	0.21	0.30	0.41	0.47	0.53
15%	0.14	0.24	0.32	0.43	0.49	0.54
20%	0.17	0.26	0.34	0.44	0.50	0.55
25%	0.20	0.28	0.36	0.46	0.51	0.56
30%	0.22	0.30	0.38	0.47	0.52	0.57
35%	0.25	0.33	0.40	0.48	0.53	0.57
40%	0.28	0.35	0.42	0.50	0.54	0.58
45%	0.31	0.37	0.44	0.51	0.55	0.59
50%	0.34	0.40	0.46	0.53	0.57	0.60
55%	0.37	0.43	0.48	0.55	0.58	0.62
60%	0.41	0.46	0.51	0.57	0.60	0.63
65%	0.45	0.49	0.54	0.59	0.62	0.65
70%	0.49	0.53	0.57	0.62	0.65	0.68
75%	0.54	0.58	0.62	0.66	0.68	0.71
80%	0.60	0.63	0.66	0.70	0.72	0.74
85%	0.66	0.68	0.71	0.75	0.77	0.79
90%	0.73	0.75	0.77	0.80	0.82	0.83
95%	0.80	0.82	0.84	0.87	0.88	0.89
100%	0.89	0.90	0.92	0.94	0.95	0.96
	TYPE B NRCS HYDROLOGIC SOILS GROUP					
0%	0.02	0.08	0.15	0.25	0.30	0.35
5%	0.04	0.10	0.19	0.28	0.33	0.38
10%	0.06	0.14	0.22	0.31	0.36	0.40
15%	0.08	0.17	0.25	0.33	0.38	0.42
20%	0.12	0.20	0.27	0.35	0.40	0.44
25%	0.15	0.22	0.30	0.37	0.41	0.46
30%	0.18	0.25	0.32	0.39	0.43	0.47
35%	0.20	0.27	0.34	0.41	0.44	0.48
40%	0.23	0.30	0.36	0.42	0.46	0.50
45%	0.26	0.32	0.38	0.44	0.48	0.51
50%	0.29	0.35	0.40	0.46	0.49	0.52
55%	0.33	0.38	0.43	0.48	0.51	0.54
60%	0.37	0.41	0.46	0.51	0.54	0.56
65%	0.41	0.45	0.49	0.54	0.57	0.59
70%	0.45	0.49	0.53	0.58	0.60	0.62
75%	0.51	0.54	0.58	0.62	0.64	0.66
80%	0.57	0.59	0.63	0.66	0.68	0.70
85%	0.63	0.66	0.69	0.72	0.73	0.75
90%	0.71	0.73	0.75	0.78	0.80	0.81
95%	0.79	0.81	0.83	0.85	0.87	0.88
100%	0.89	0.90	0.92	0.94	0.95	0.96

ENGINEERING CONSULTANTS

"Your Project, Our Pride" ™

Composite Imperviousness Calculations — 4 Corners

Developed Conditions — Town of Erie, Colorado

Job No. 030019
Date: 4/29/2015
By: AKM

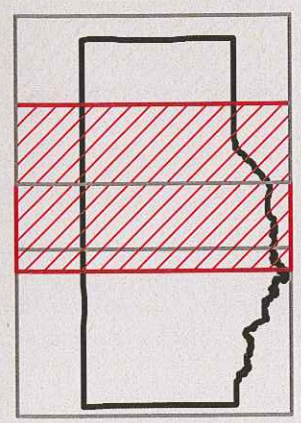
Major Basin	Sub-Basin	Area	Parcel Imperviousness				
			Streets / Ponds	Sidewalk / Concrete	Roofs	Lawns / Sandy Soil	Comp Imperv
		(acres)	100	90	90	2	(%)
Site	All	46.61	13.49	7.16	9.05	16.91	61.0
	Sum	46.61	13.49	7.16	9.05	16.91	61.0
On-Site Total		46.61	13.49	7.16	9.05	16.91	61.0
TOTAL	Sum	46.61	13.49	7.16	9.05	16.91	61.0

LEGEND

- Study Area Boundary
- Town of Erie
- City of Lafayette
- Subbasin Boundary
- Major Watershed Boundary
- Regional Detention Ponds

XXX — Subbain ID
XX | X — % Impervious (Existing Land Use) / % Impervious (Future Land Use)
X — Area (Acres)

KEY MAP

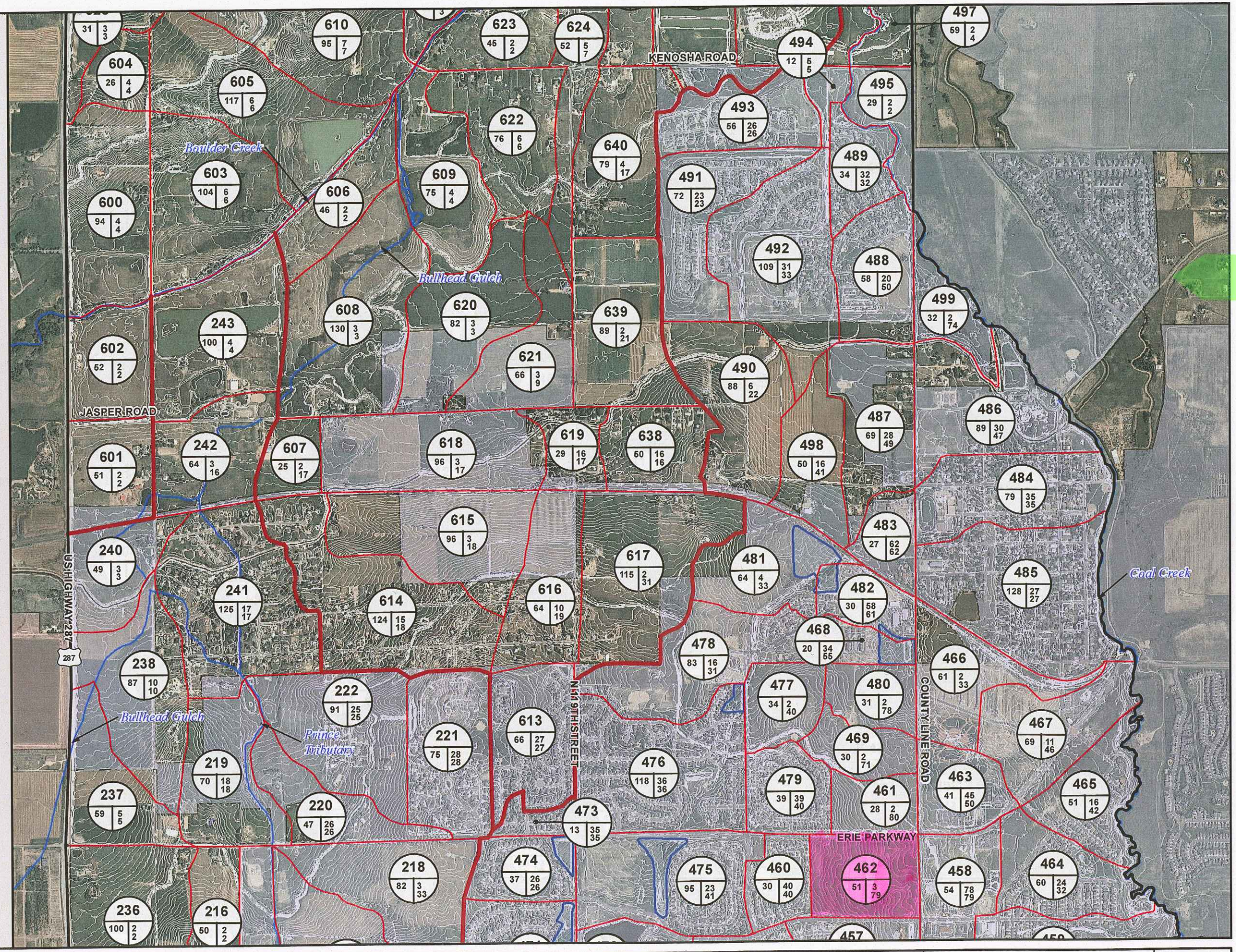


N
W E
S

0 750 1,500 3,000 Feet

1 " = 1,500 FT

M:\2234\GIS\2234.MXD - 12/12/12 - NRT



WRC ENGINEERING, INC. 950 SOUTH CHERRY STREET, SUITE 404 DENVER, COLORADO 80246 PHONE: 303-757-8513 FAX: 303-758-3208	TOWN OF ERIE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT	TOWN OF ERIE OUTFALL SYSTEMS PLAN (WEST OF COAL CREEK)	SUBBASIN MAP	FIGURE B-3

DETENTION VOLUME BY THE FULL SPECTRUM METHOD

Project: CONCEPT LEVEL-ERIE WITH SITE PLAN SEPT 2014

Basin ID: FULL SITE

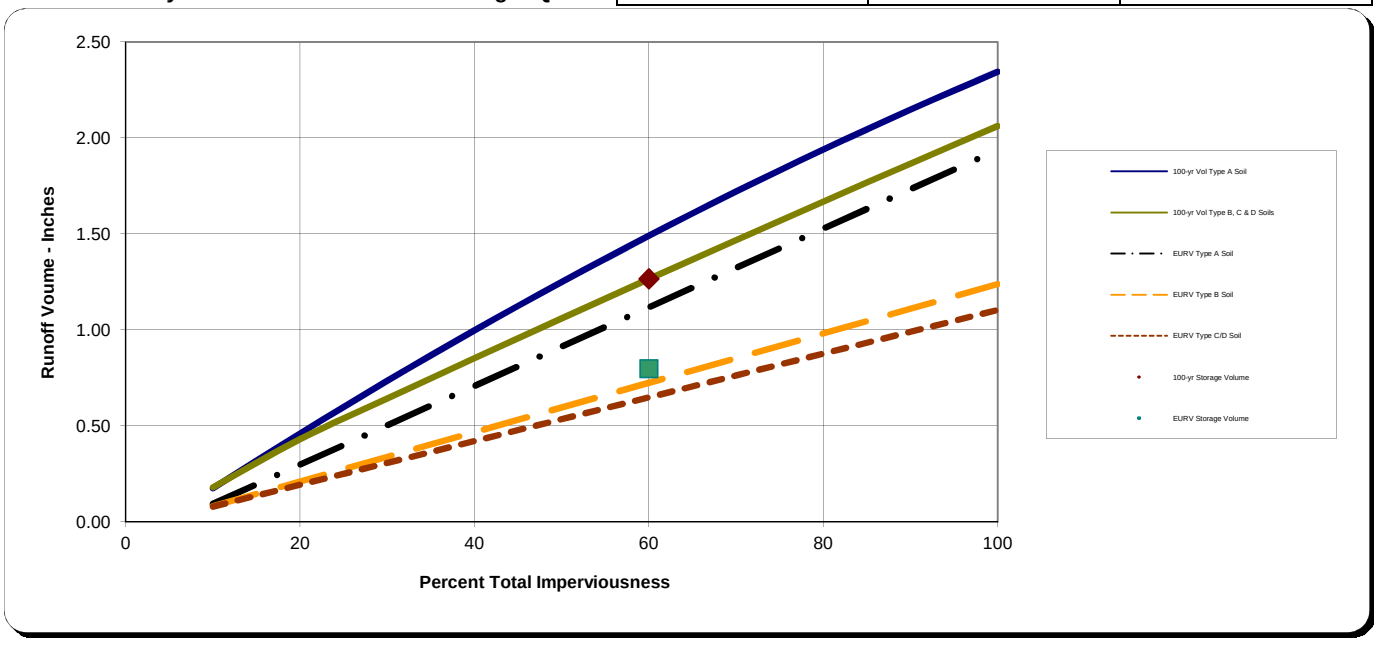
* User input data shown in blue.

Area of Watershed (acres)	46.61	
Subwatershed Imperviousness	60.0%	
Level of Minimizing Directly Connected Impervious Area (MDCIA)	0	0
Effective Imperviousness[1]	60.0%	

Hydrologic Soil Type	**Percentage of Area**	**Area (acres)**
Type A		0.0
Type B	100.0%	46.6
Type C or D		0.0

Recommended Horton's Equation Parameters for CUHP		
Infiltration (inches per hour)		**Decay Coefficient--α**
Initial--f_i	**Final--fo**	
4.5	0.6	0.0018

	Detention Volumes [2,5]		
	(watershed inches)	**(acre-feet)**	**Maximum Allowable Release Rate, cfs[3]**
Excess Urban Runoff Volume[4]	0.80	3.10	Design Oulet to Empty EURV in 72 Hours
100-year Detention Volume Including WQCV [5]	1.27	4.92	39.62



Notes:

1) Effective imperviousness is based on Figure ND-1 of the Urban Storm Drainage Criteria Manual (USDCM).

2) Results shown reflect runoff reduction from Level 1 or 2 MDCIA and are plotted at the watershed's total imperviousness value; the impact of MDCIA is reflected by the results being below the curves.

3) Maximum allowable release rates for 100-year event are based on Table SO-1. Outlet for the Excess Urban Runoff Volume (EURV) to be designed to empty out the EURV in 72 hours. Outlet design is similar to one for the WQCV outlet of an extended detention basin (i.e., perforated plate with a micro-pool) and extends to top of EURV water surface elevation.

4) EURV approximates the difference between developed and pre-developed runoff volume.

5) 100-yr detention volume includes EURV. No need to add more volume for WQCV or EURV

DETENTION VOLUME BY THE FULL SPECTRUM METHOD

Project: CONCEPT LEVEL-ERIE WITH SITE PLAN SEPT 2014

Basin ID: FULL SITE

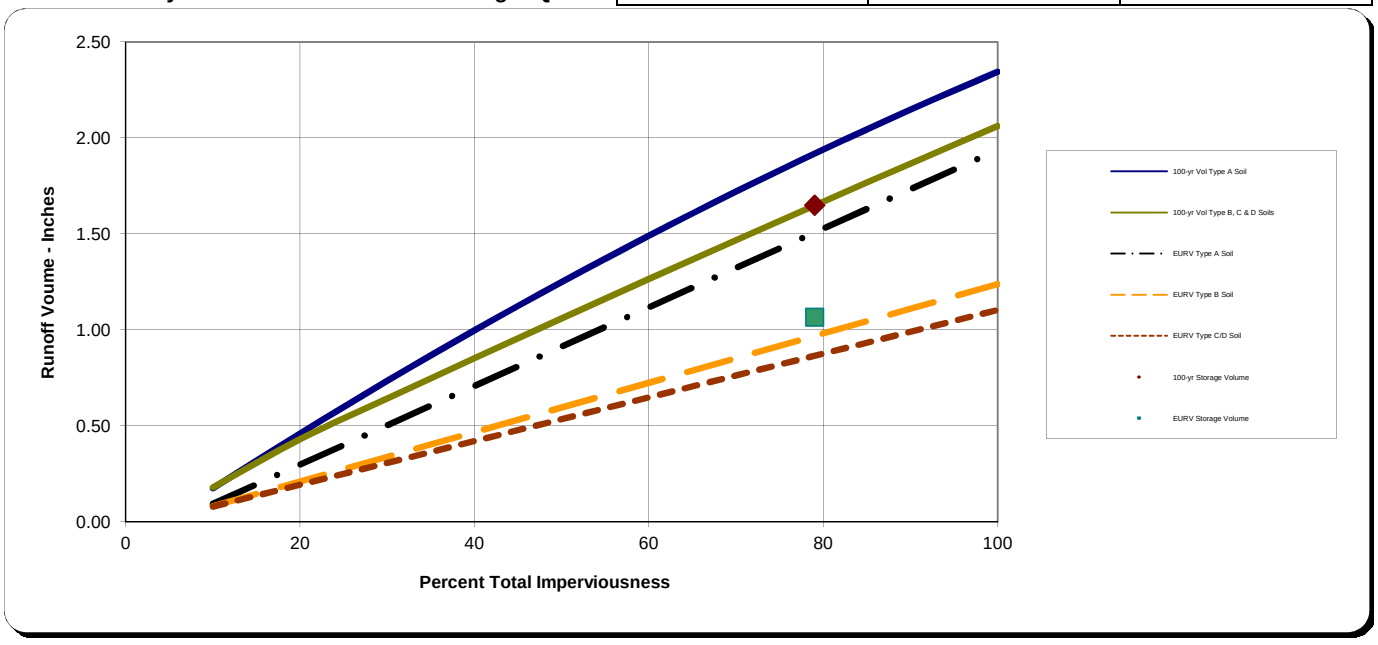
* User input data shown in blue.

Area of Watershed (acres)	46.61	
Subwatershed Imperviousness	79.0%	
Level of Minimizing Directly Connected Impervious Area (MDCIA)	0	0
Effective Imperviousness[1]	79.0%	

Hydrologic Soil Type	**Percentage of Area**	**Area (acres)**
Type A		0.0
Type B	100.0%	46.6
Type C or D		0.0

Recommended Horton's Equation Parameters for CUHP		
Infiltration (inches per hour)		**Decay Coefficient--α**
Initial--f_i	**Final--fo**	
4.5	0.6	0.0018

	Detention Volumes [2,5]		**Maximum Allowable Release Rate, cfs[3]**
	(watershed inches)	**(acre-feet)**	
Excess Urban Runoff Volume[4]	1.07	4.14	Design Oulet to Empty EURV in 72 Hours
100-year Detention Volume Including WQCV [5]	1.65	6.40	39.62



Notes:

1) Effective imperviousness is based on Figure ND-1 of the Urban Storm Drainage Criteria Manual (USDCM).

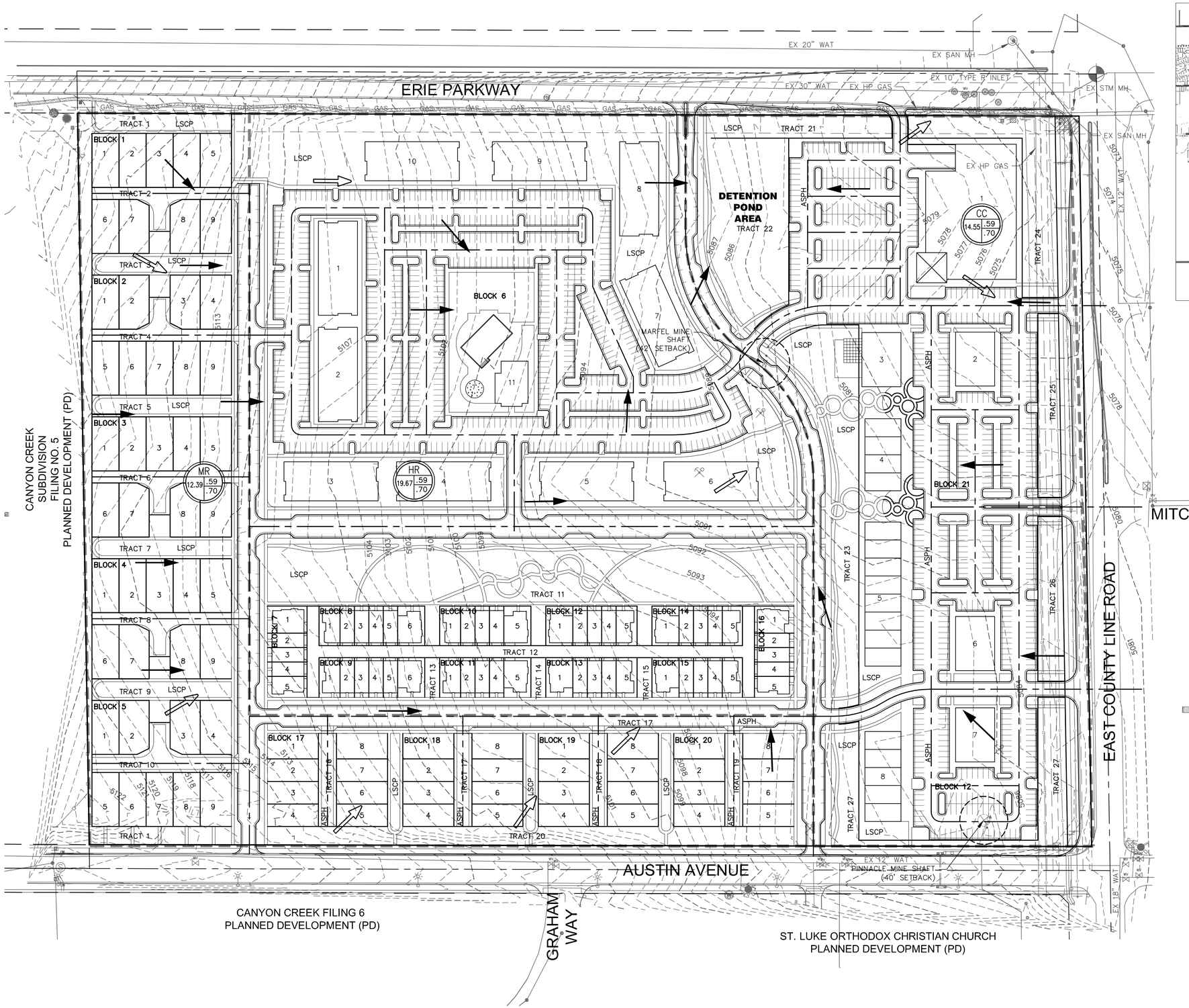
2) Results shown reflect runoff reduction from Level 1 or 2 MDCIA and are plotted at the watershed's total imperviousness value; the impact of MDCIA is reflected by the results being below the curves.

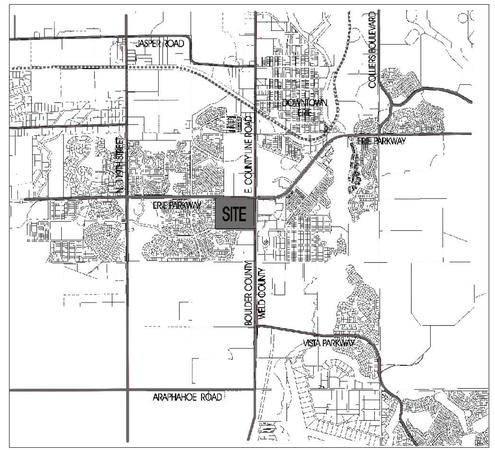
3) Maximum allowable release rates for 100-year event are based on Table SO-1. Outlet for the Excess Urban Runoff Volume (EURV) to be designed to empty out the EURV in 72 hours. Outlet design is similar to one for the WQCV outlet of an extended detention basin (i.e., perforated plate with a micro-pool) and extends to top of EURV water surface elevation.

4) EURV approximates the difference between developed and pre-developed runoff volume.

5) 100-yr detention volume includes EURV. No need to add more volume for WQCV or EURV

4 CORNERS
PHASE 1 DRAINAGE MAP





Vicinity Map
1"=3000' (approx)

(IN FEET)
1 inch = 80 ft.

LEGEND

- DESIGN/JUNCTION POINT — B3
- MINOR BASIN BASIN I.D. — B3
- UTILITY AREA (ACRES) — 3.29
- RUNOFF COEFFICIENTS — MINOR STORM C5 .45 / MAJOR STORM C100 .60
- BOUNDARY LINE
- PROPOSED MAJOR & MINOR CONTOURS — 5180
- EXISTING MAJOR & MINOR CONTOURS — 5180
- SWALE
- EASEMENT LINE
- BASIN BOUNDARY
- LOW POINT (LP) / HIGH POINT (HP) — LP HP
- FLOW ARROW
- EXISTING FLOW ARROW
- STREET DESIGNATION : LOCAL TYPE — L.T.
  EXAMPLE : L.T. II

ENGINEERING CONSULTANTS
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(720) 975-0177 ~ FAX: (303) 380-5603
Email: Jmargraf@JEngineering.net

RMCS, Inc.
21 South Sunset Street
Longmont, CO 80503
Tel: (720) 524-3620
Contact: Justin McClure

No.	Date	Description
2	5/1/2015	SECOND SUBMITTAL
1	1/8/2015	INITIAL SUBMITTAL

DOCUMENT AMENDMENTS

COLORADO LICENSED JASON D. MARGRAF 35781 12/19/2014 PROFESSIONAL ENGINEER

Project Number:	030019
Designed By:	AKM
Drawn By:	AKM
Checked By:	SOS
Sheet Number:	SHEET 1

LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

February 12, 2015

Mr. Justin McClure
RMCS, Inc.
21 S. Sunset Street
Longmont, CO 80503

Re: Four Corners
Traffic Impact Analysis
Erie, CO
(LSC #141100)

Dear Mr. McClure:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Four Corners development. As shown on Figure 1, the site is located south of Erie Parkway, north of Austin Avenue, and west of County Line Road in Erie, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected short-term and long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts.

LAND USE AND ACCESS

The site is proposed to include 45 single-family homes, up to 485 multi-family dwelling units, and up to 170,660 square feet of shopping center. Access is proposed from one right-in/right-out access to Erie Parkway, two right-in/right-out and one three-quarter movement access locations to County Line Road, and two full movement accesses and one alley access to Austin Avenue as shown in the conceptual site plan in Figure 2.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **Erie Parkway** is an east-west, four-lane minor arterial roadway north of the site. The intersection with County Line Road is signalized with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 35 mph. The 2030 Roadway System Plan in the *Town of Erie Master Transportation Plan* shows Erie Parkway as a four-lane principal arterial. The *Buildout Roadway Network* shows a six-lane principal arterial.

- **County Line Road** is a north-south, two-lane minor arterial roadway east of the site. The intersection with Austin Avenue is two-way stop-sign controlled on Austin Avenue. The posted speed limit in the vicinity of the site is 45 mph. The 2030 Roadway Plan in the *Town of Erie Transportation Master Plan* shows County Line Road as a two-lane principal arterial. The *Buildout Roadway Network* shows a six-lane principal arterial.

- **Austin Avenue** is an east-west, two-lane collector roadway south of the site. The intersection with County Line Road is stop-sign controlled. The posted speed limit is 25 mph.

Existing Traffic Conditions

Figure 3 shows the existing lane geometries, traffic controls, posted speed limits, and traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes and daily traffic counts are from the attached traffic counts conducted by Counter Measures in December, 2014.

2020 and 2035 Background Traffic

Figure 4 shows the estimated 2020 background traffic and Figure 5 shows the estimated 2035 background traffic. The projected 2020 and 2035 background traffic volumes are based on an annual growth rate of three percent for the collector and arterial streets.

Existing, 2020, and 2035 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for signalized and unsignalized intersections.

The intersections in Figures 3, 4, and 5 were analyzed as appropriate to determine the existing, 2020, and 2035 background levels of service using Synchro Version 8. The existing and 2020 scenarios assume the existing signal timings at the intersection of Erie Parkway/E. County Line Road. The timings for the 2035 scenario were adjusted to reflect the future traffic volumes. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **Erie Parkway/E. County Line Road:** This signalized intersection currently operates at an overall LOS "C" or better during both morning and afternoon peak-hours. By 2020, the shared southbound through movement is expected to operate at LOS "E" during the morning peak-hour. This will be mitigated once a dedicated southbound right-turn lane is provided. By 2035, it is expected to continue to operate at LOS "C during both morning and afternoon peak-hours.

- **County Line Road/Walgreens/North RIRO Access:** All approaches at this stop-sign controlled intersection currently operate at LOS "B" during both morning and afternoon peak-hours and are expected to do so through 2035.

- **County Line Road/Mitchell Way:** All approaches at this stop-sign controlled intersection currently operate at LOS "C" or better during both morning and afternoon peak-hours and are expected to do so through 2035. This intersection currently exists as a full movement intersection but is recommended to be limited to three-quarter movement in the future - most likely when a traffic signal is installed at the County Line Road/Austin Avenue intersection. This is based on the findings of the May, 2010 *Coal Creek Center TIA* by LSC and confirmed by this analysis.

- **E. County Line Road/Austin Avenue**: The westbound left-turn movement at this stop-sign controlled intersection currently operates at LOS "E" during the morning and afternoon peak-hours and is expected to increase to LOS "F" by 2020. By 2020, this intersection is expected to be signalized and is expected to operate at an overall LOS "C" during the morning peak-hour and LOS "B" during the afternoon peak-hour through 2035.

- **Austin Avenue/Graham Way:** All approaches at this stop-sign controlled intersection currently operate at LOS "A" during both morning and afternoon peak-hours and are expected to do so through 2035.

TRIP GENERATION

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed site based on the rates from *Trip Generation, 9th Edition, 2012* by the Institute of Transportation Engineers (ITE) for the proposed land use. An internal capture reduction of ten percent was assumed for the development. A pass-by trip reduction of 25 percent was assumed for the shopping center land use only.

The proposed land use is projected to generate about 9,535 net external primary vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 145 primary trip vehicles would enter and about 247 primary trip vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 464 primary trip vehicles would enter and about 404 primary trip vehicles would exit.

The proposed land use is projected to generate about 2,403 pass-by vehicle-trips on the average weekday. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 27 pass-by trip vehicles would enter and about 27 pass-by trip vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 107 pass-by trip vehicles would enter and about 107 pass-by trip vehicles would exit.

TRIP DISTRIBUTION

Figure 6 shows the estimated directional distribution of the primary site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with

respect to the regional population, employment, and activity centers; and the site's proposed land use.

TRIP ASSIGNMENT

Figure 7a shows the estimated pass-by site-generated traffic volumes based on the trip generation estimate in Table 2. Figure 7b shows the estimated primary site-generated traffic volumes based on the directional distribution percentages (from Figure 6) and the trip generation estimate (from Table 2).

Figure 7c show the estimated total site-generated traffic volumes which is the sum of pass-by (Figure 7a) and primary (Figure 7b) site-generated trips.

2020 and 2035 TOTAL TRAFFIC

Figure 8 shows the 2020 total traffic which is the sum of the 2020 background traffic volumes (from Figure 4) and the total site-generated traffic volumes (from Figure 7c). Figure 8 also shows the recommended 2020 lane geometry and traffic control.

Figure 9 shows the 2035 total traffic which is the sum of 2035 background traffic volumes (from Figure 5) and the total site-generated traffic volumes (from Figure 7c). Figure 9 also shows the recommended 2035 lane geometry and traffic control.

Figure 10 details the conceptual improvements shown in Figure 8 to accommodate 2020 and 2035 total traffic.

PROJECTED LEVELS OF SERVICE

The intersections in Figures 8 and 9 were analyzed to determine the 2020 and 2035 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **Erie Parkway/E. County Line Road:** In 2020, this signalized intersection is expected to operate at LOS "C" during both morning and afternoon peak-hours. By 2035, the intersection is expected to operate at LOS "D" during the afternoon peak-hour.

- **Erie Parkway/RIRO Site Access:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2035.

- **County Line Road/Walgreens/North RIRO Access:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2035 with the addition of site traffic.

- **County Line Road/Mitchell Way:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2035 with or without the addition of site traffic assuming the intersection is converted from full movement to three-quarter movement when or after the County Line

Road/Austin Avenue intersection is signalized. This is consistent with the findings of the May 2010 *Coal Creek Center TIA* by LSC and verified by this analysis.

- **County Line Road/Austin Avenue**: As a signalized intersection it is expected to operate at an overall LOS "C" during both morning and afternoon peak-hours through 2035 with or without the addition of site traffic. Prior to signalization the side road approaches will have significant delay.

- **Austin Avenue/Graham Way:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours through 2035 with or without the addition of site traffic.

- **County Line Road/South RIRO Access:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "C" or better during both morning and afternoon peak-hours through 2035.

- **Austin Avenue/East Full Movement Access:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2035.

- **Austin Avenue/West Full Movement Access:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2035.

- **Austin Avenue/Alley Access:** All approaches at this stop-sign controlled intersection are expected to operate at LOS "B" or better during both morning and afternoon peak-hours through 2035.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

1. The site is projected to generate about 9,535 net external primary vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 145 primary trip vehicles would enter and about 247 primary trip vehicles would exit the site. During the afternoon peak-hour, about 464 primary trip vehicles would enter and about 404 primary trip vehicles would exit.

2. The site use is projected to generate about 2,403 pass-by vehicle-trips on the average weekday. During the morning peak-hour, about 27 pass-by trip vehicles would enter and about 27 pass-by trip vehicles would exit the site. During the afternoon peak-hour, about 107 pass-by trip vehicles would enter and about 107 pass-by trip vehicles would exit.

Projected Levels of Service

3. All movements at the intersections analyzed are expected to operate at LOS "D" or better during both morning and afternoon peak-hours in 2035 assuming the recommended improvements are implemented.

Conclusions

The impact of the Four Corners development site can be accommodated by the existing and proposed roadway network with the recommended improvements below.

2020 Recommended Improvements

4. The conceptual lane geometry and traffic control improvements for the County Line Road site frontage is shown in Figure 10. These improvements will accommodate the projected traffic volumes through 2035. Beyond 2035 it is likely County Line Road will be widened to four and possibly six lanes per the *Erie Transportation Master Plan.*

5. An eastbound right-turn lane should be provided on Erie Parkway approaching the proposed right-in/right-out access. Based on the 35 mph posted speed this lane would be 190 feet plus a 120-foot transition taper.

6. A two-way left-turn lane is recommended on Austin Avenue along the site frontage consistent with Austin Avenue east of County Line Road. This can likely be accomplished by re-striping.

* * * * *

We trust our findings will assist you in gaining approval of the proposed Four Corners development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By_____
Christopher S. McGranahan, PE, PTOE
Principal

COLORADO LICENSED
CHRISTOPHER S. MCGRANAHAN
39018
PROFESSIONAL ENGINEER
2-12-15

CSM/wc

Enclosures: Tables 1 and 2
Figures 1 - 10
Traffic Count Reports
Level of Service Definitions
Level of Service Reports

Z:\LSC\Projects\2014\141100-FourCorners\Report\FourCorners-021215.wpd

Table 1
Intersection Levels of Service Analysis
Four Corners
Erie, CO
(LSC #141100; February, 2015)

Intersection Location	Traffic Control	Existing Traffic Level of Service AM	Existing Traffic Level of Service PM	2020 Background Level of Service AM	2020 Background Level of Service PM	2020 Total Traffic Level of Service AM	2020 Total Traffic Level of Service PM	2035 Background Level of Service AM	2035 Background Level of Service PM	2035 Total Level of Service AM	2035 Total Level of Service PM
Erie Parkway/E. County Line Road	Signalized										
EB Left		B	B	B	B	B	B	C	B	C	C
EB Through		B	B	C	B	C	C	C	C	C	C
EB Right		B	B	C	B	C	C	C	C	D	D
WB Left		B	B	B	B	B	C	B	B	C	D
WB Through		B	B	B	B	C	B	C	B	C	B
WB Right		B	B	B	B	B	B	C	C	C	C
NB Left		C	C	C	C	C	C	D	D	D	D
NB Through		C	C	C	C	C	C	C	C	C	C
NB Right		C	C	C	C	C	C	B	C	B	C
SB Left		C	C	C	C	C	C	D	D	D	D
SB Through/Right		D	C	E	C	E	D	--	--	--	--
SB Through		--	--	--	--	--	--	C	C	C	D
SB Right		--	--	--	--	--	--	C	C	C	C
Entire Intersection Delay (sec /veh)		24.8	19.9	28.8	21.4	32.0	26.6	28.8	28.9	31.0	36.0
Entire Intersection LOS		C	B	C	C	C	C	C	C	C	D
Erie Parkway/RIRO Site Access											
NB Approach		--	--	--	--	B	B	--	--	B	D
Critical Movement Delay		--	--	--	--	10.0	14.1	--	--	10.9	26.4
E. County Line Road/Walgreens/North RIRO	TWSC										
EB Approach		--	--	--	--	B	C	--	--	C	D
WB Approach		B	B	B	B	B	B	B	B	B	B
Critical Movement Delay		10.2	10.2	10.6	10.6	13.5	16.4	13.2	13.3	19.8	27.3
E. County Line Road/Mitchell Way	TWSC										
NB Left		--	--	--	--	A	A	--	--	B	B
EB Approach		--	--	--	--	B	B	--	--	C	C
WB Approach		C	C	B	B	B	B	C	C	C	D
SB Left		A	A	A	A	A	A	B	B	B	B
Critical Movement Delay		17.2	15.5	13.7	12.8	13.3	14.2	22.4	23.2	21.1	26.5
E. County Line Road/Austin Avenue	TWSC										
NB Left		A	A	A	A	--	--	--	--	--	--
EB Approach		D	D	E	D	--	--	--	--	--	--
WB Left		E	E	F	F	--	--	--	--	--	--
WB Through/Right		D	C	F	E	--	--	--	--	--	--
SB Left		A	A	A	A	--	--	--	--	--	--
Critical Movement Delay		49.3	43.1	123.3	103.1	--	--	--	--	--	--
	Signalized										
EB Left		--	--	--	--	C	C	C	C	C	C
EB Through/Right		--	--	--	--	C	C	D	D	D	D
WB Left		--	--	--	--	C	C	C	C	C	C
WB Through/Right		--	--	--	--	C	C	C	D	D	D
NB Left		--	--	--	--	B	B	B	B	B	C
NB Through		--	--	--	--	B	B	C	B	D	C
NB Right		--	--	--	--	A	B	B	A	B	B
SB Left		--	--	--	--	B	B	C	B	C	B
SB Through		--	--	--	--	B	B	B	B	C	C
SB Right		--	--	--	--	A	B	A	A	B	B
Entire Intersection Delay (sec /veh)		--	--	--	--	16.1	16.1	25.7	19.4	30.6	29.4
Entire Intersection LOS		--	--	--	--	B	B	C	B	C	C
Austin Avenue/Graham Way	TWSC										
NB Approach		A	A	A	A	A	A	A	A	A	A
WB Approach		A	A	A	A	A	A	A	A	A	A
Critical Movement Delay		8.8	8.6	8.9	8.7	9.2	9.4	9.3	9.0	9.6	9.8
E. County Line Road/South RIRO Access	TWSC										
EB Approach		--	--	--	--	B	B	--	--	C	C
Critical Movement Delay		--	--	--	--	12.8	13.7	--	--	17.2	18.9
Austin Avenue/East FMA Access	TWSC										
EB Approach		--	--	--	--	A	A	--	--	A	A
SB Approach						A	B			B	B
Critical Movement Delay		--	--	--	--	9.7	11.6	--	--	10.5	12.7
Austin Avenue/West FMA Access	TWSC										
EB Approach		--	--	--	--	A	A	--	--	A	A
SB Approach						A	A			B	B
Critical Movement Delay		--	--	--	--	9.4	9.8	--	--	10.0	10.3
Austin Avenue/Alley Access	TWSC										
EB Approach		--	--	--	--	A	A	--	--	A	A
SB Approach		--	--	--	--	A	B	--	--	B	B
Critical Movement Delay		--	--	--	--	9.5	10.1	--	--	10.2	10.7

Table 2
ESTIMATED TRAFFIC GENERATION
Four Corners
Erie, CO
(LSC #141100; February, 2015)

Land Use Description	Trip Generation Units	Trip Generation Rates [1]					Total Trips Generated				
		Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
Single-Family [2]	45 DU [3]	9.52	0.188	0.563	0.630	0.370	428	8	25	28	17
Multi-Family [4]	485 DU	6.65	0.102	0.408	0.403	0.217	3,225	49	198	195	105
Shopping Center North [5]	85.33 KSF [6]	56.32	0.785	0.481	2.411	2.612	4,806	67	41	206	223
Shopping Center South [5]	85.33 KSF	56.32	0.785	0.481	2.411	2.612	4,806	67	41	206	223
					Subtotal =		**13,265**	**191**	**305**	**635**	**568**
					Internal Capture Reduction (10%)		1,327	19	31	64	57
					Pass-By Trips (25%) [7]		2,403	27	27	107	107
					Net External Trip Total =		**9,535**	**145**	**247**	**464**	**404**

Notes:
(1) Source: *Trip Generation*, Institute of Transportation Engineers, 9th Edition, 2012.
(2) ITE Land Use No. 210 - Single-Family Detached Housing
(3) DU = Dwelling Units
(4) ITE Land Use No. 220 - Apartments
(5) ITE Land Use No. 820 - Shopping Center - formula rates based on the total square footage
(6) KSF = 1,000 Square Feet
(7) Pass-by trips assumed for shopping center land use only

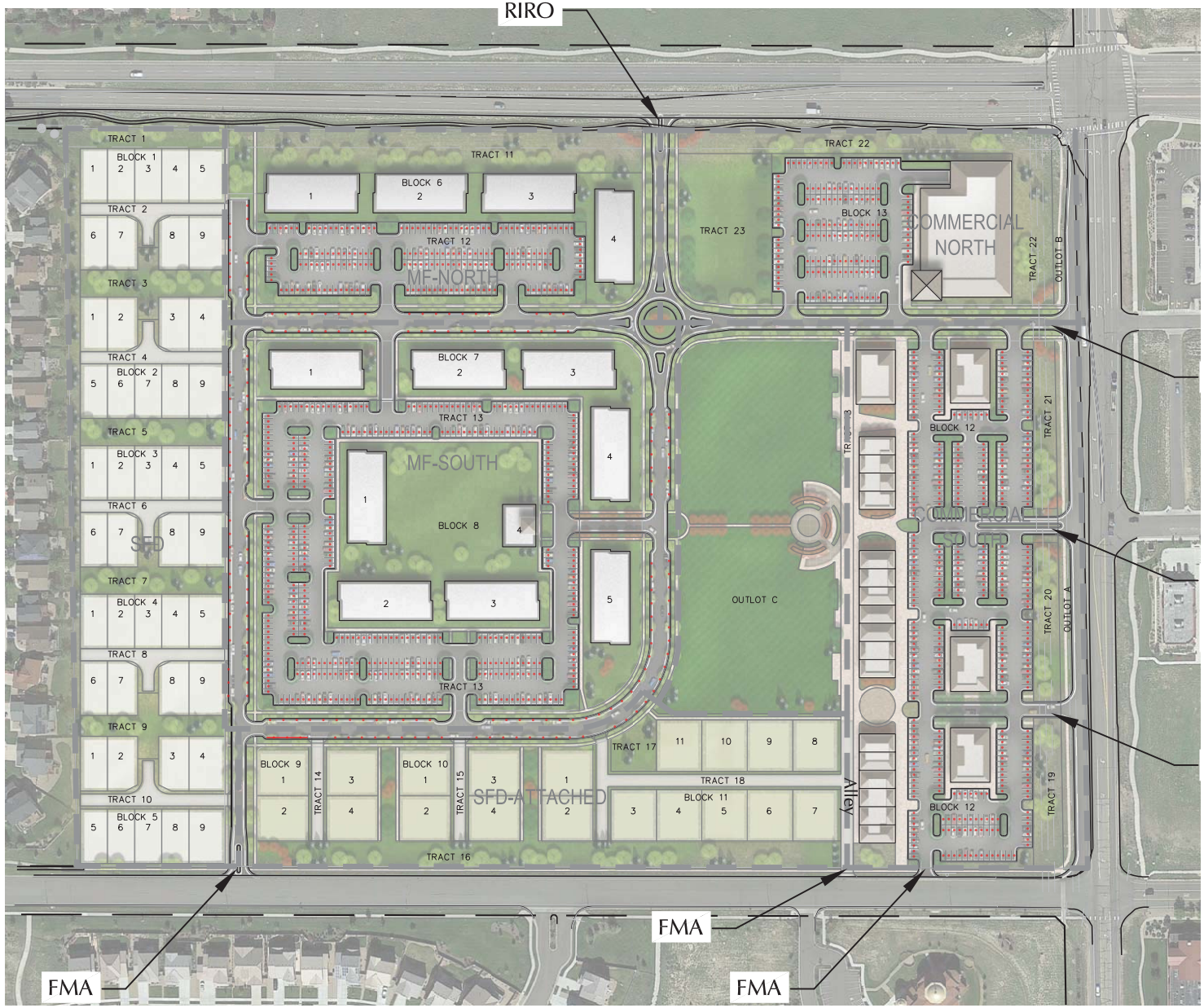
N

Approximate Scale
Scale: 1"=1,200'

Figure 1

Vicinity Map

Four Corners (LSC # 141100)

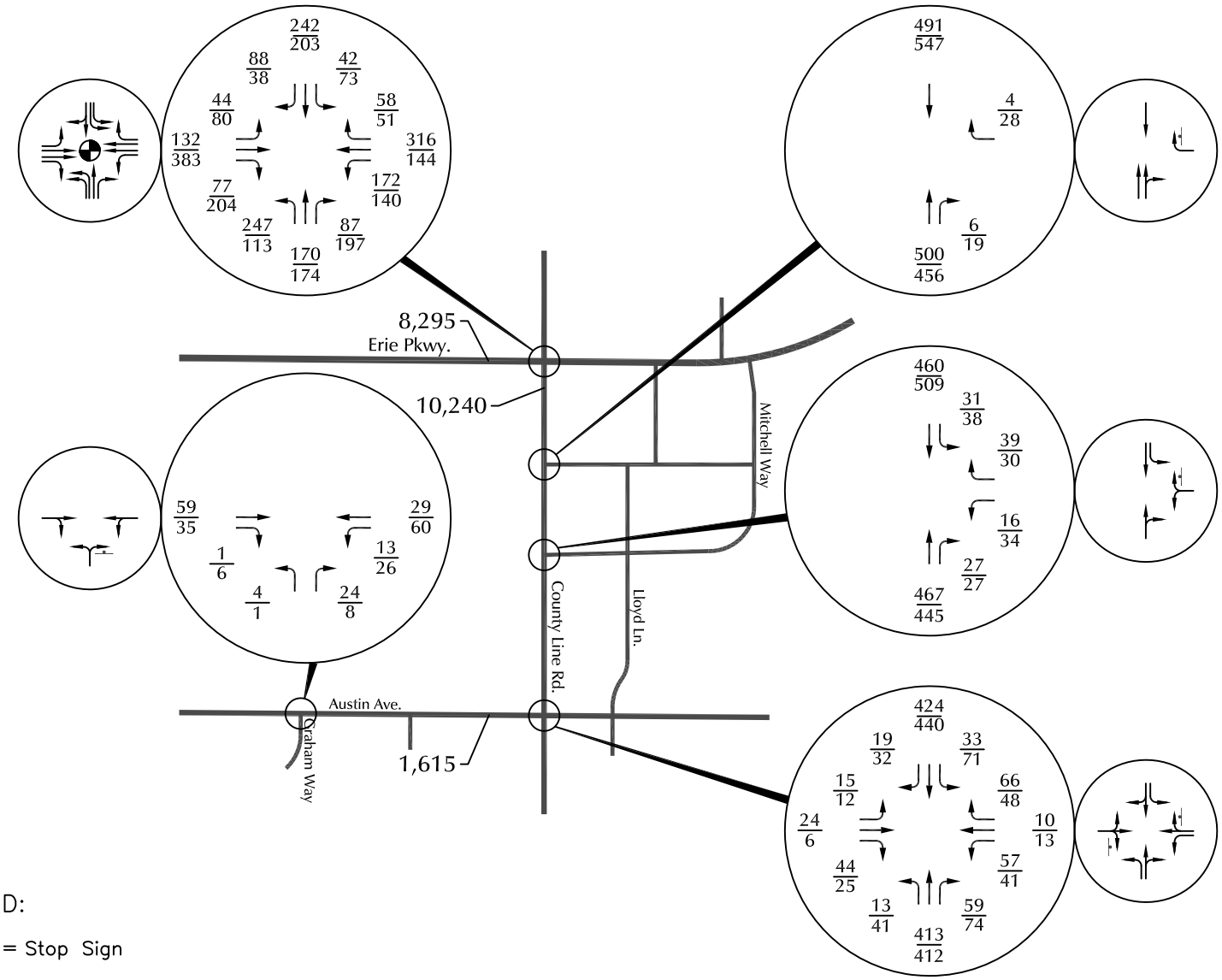


Approximate Scale
Scale: NTS

Figure 2

Site Plan

Four Corners (LSC # 141100)



LEGEND:

= Stop Sign

= Traffic Signal

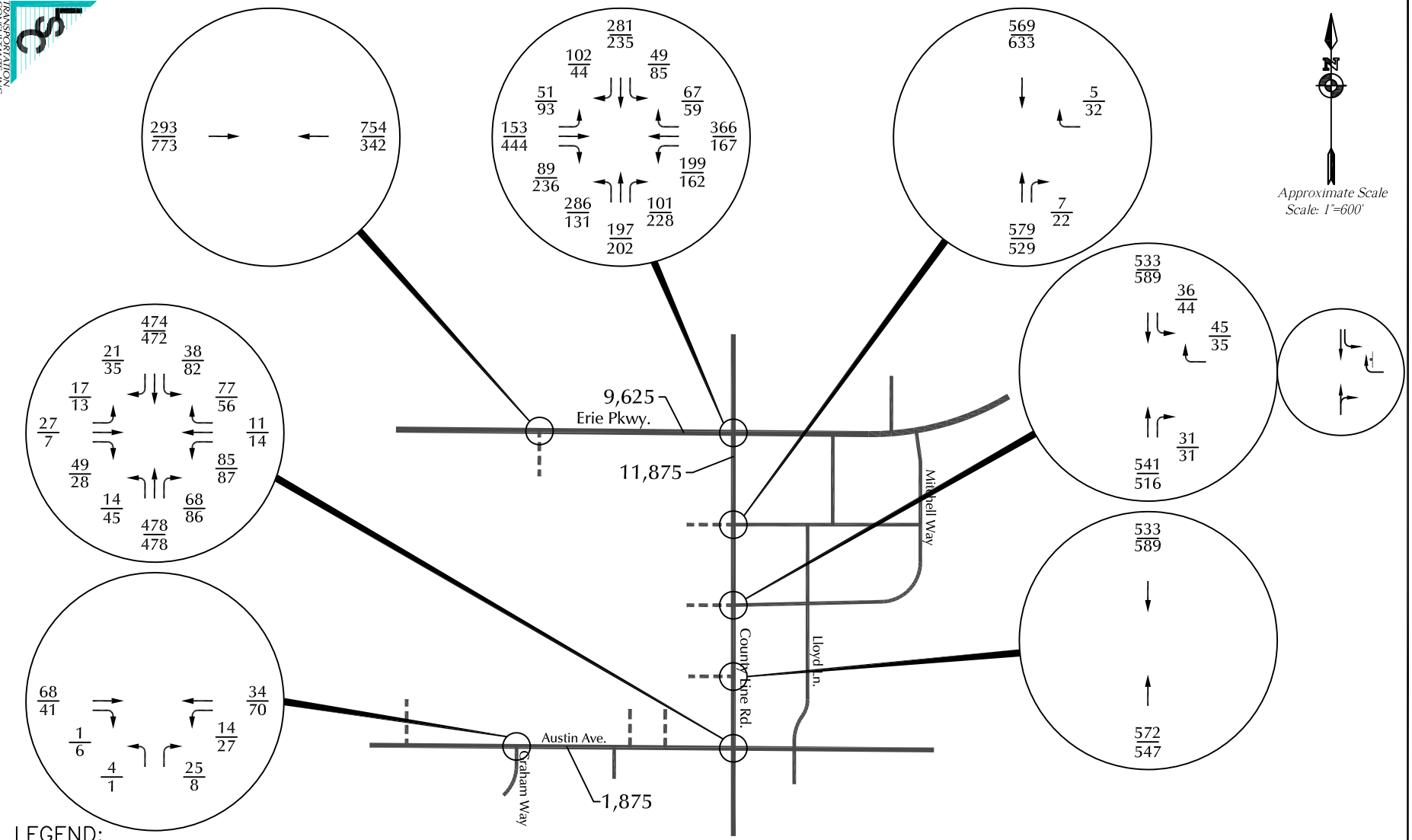
$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

2,500 = Average Daily Traffic

Figure 3

Existing Traffic, Lane Geometry and Traffic Control

Four Corners (LSC # 141100)



LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

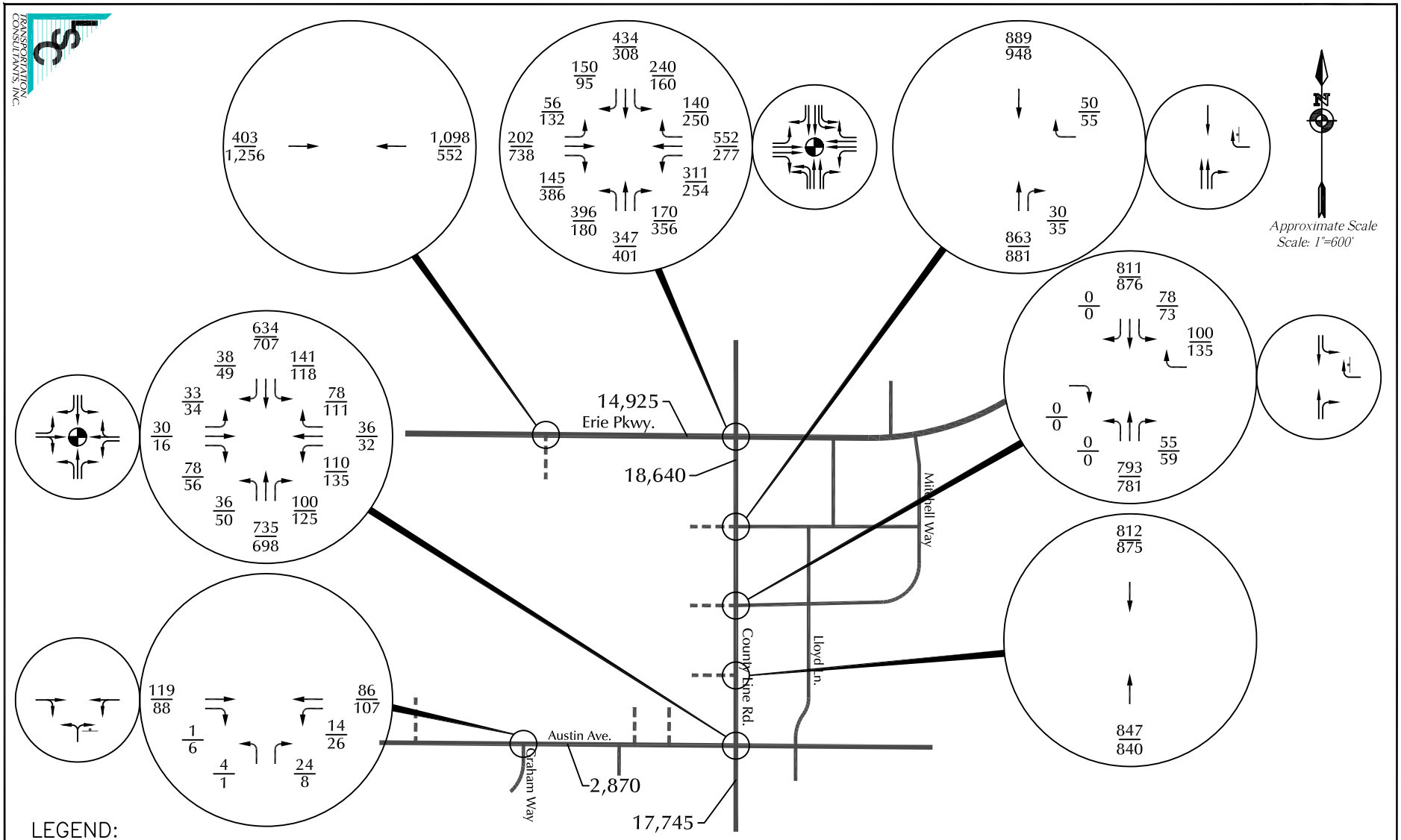
2,500 = Average Daily Traffic

Note:
Lane geometry and traffic control is the same as shown on Figure 3 unless shown different above.

Figure 4

Year 2020 Background Traffic

Four Corners (LSC # 141100)



LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

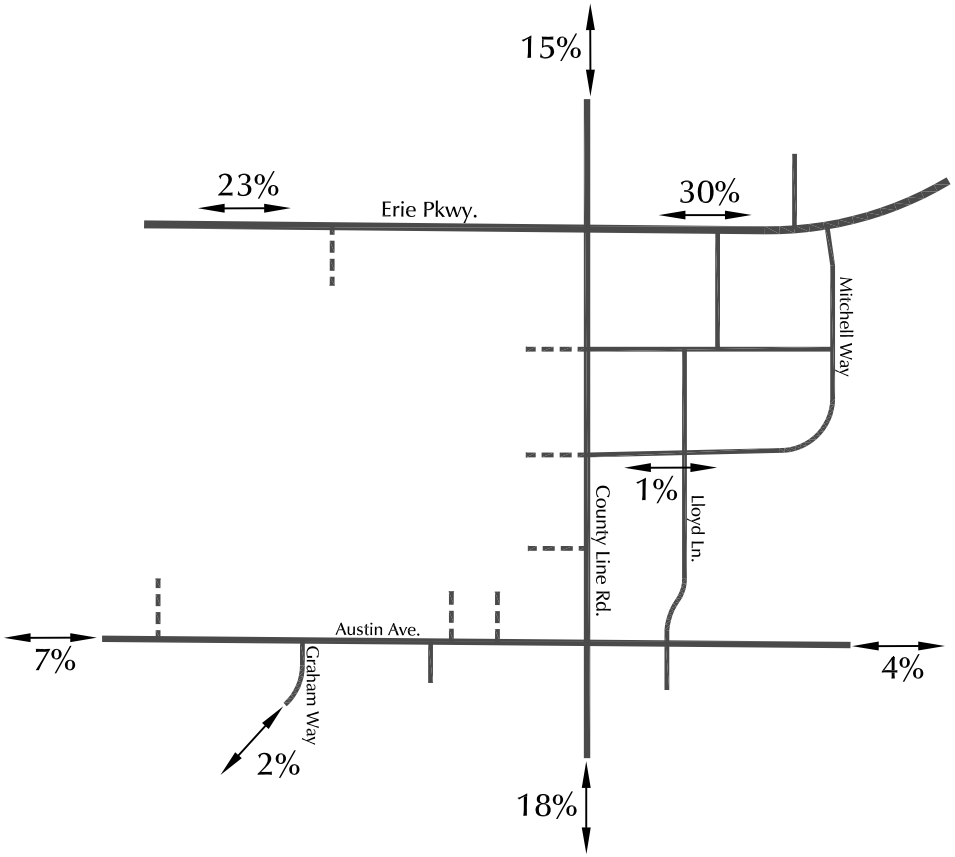
2,500 = Average Daily Traffic

Note:
Lane geometry and traffic control is the same as shown on Figure 3 unless shown different above.

Figure 5

Year 2035 Background Traffic

Four Corners (LSC # 141100)



Approximate Scale
Scale: 1"=600'

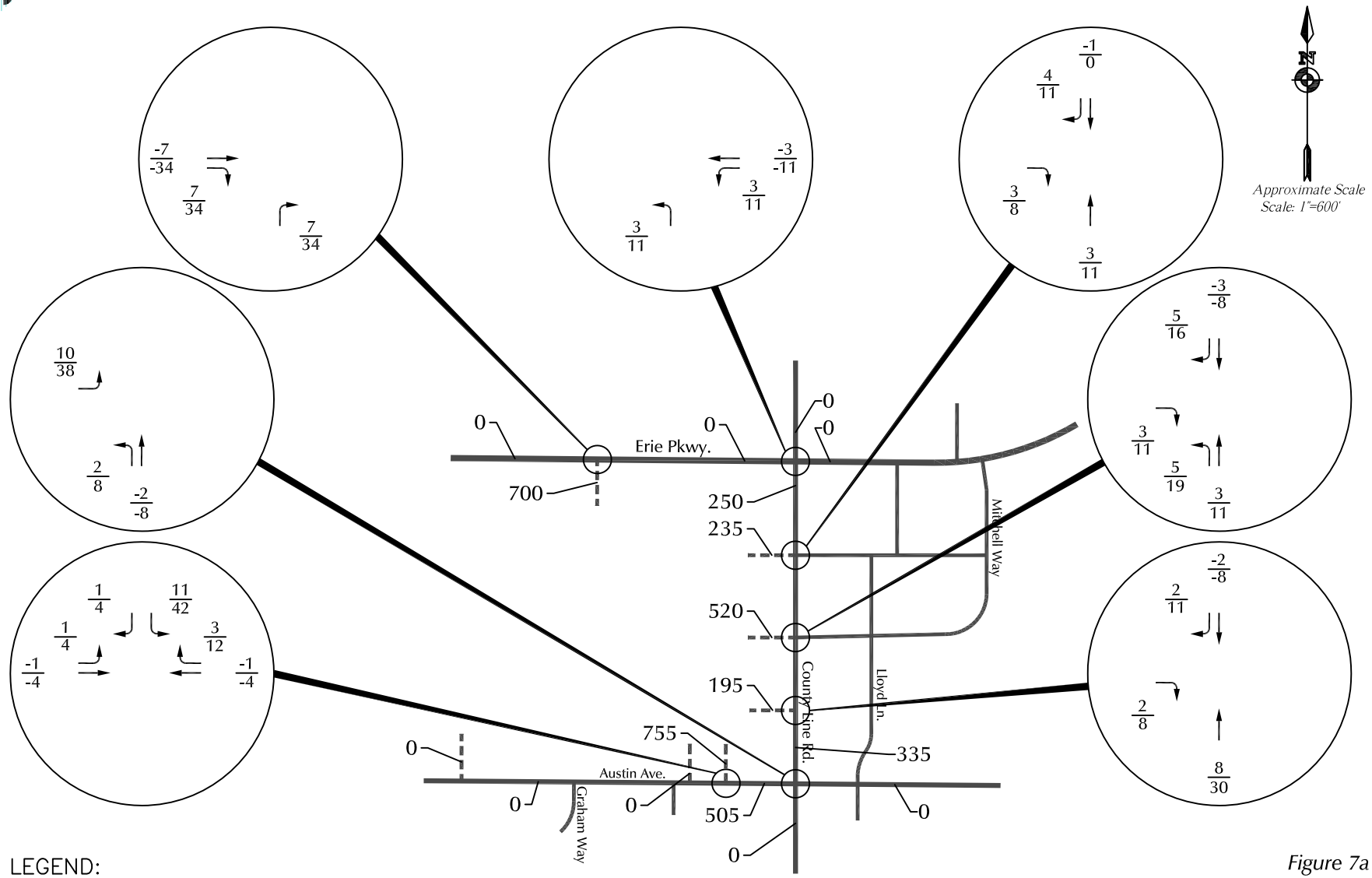
Figure 6

Directional Distribution of Primary Site-Generated Traffic

Four Corners (LSC # 141100)

LEGEND:

65% = Percent Directional Distribution



LEGEND:

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

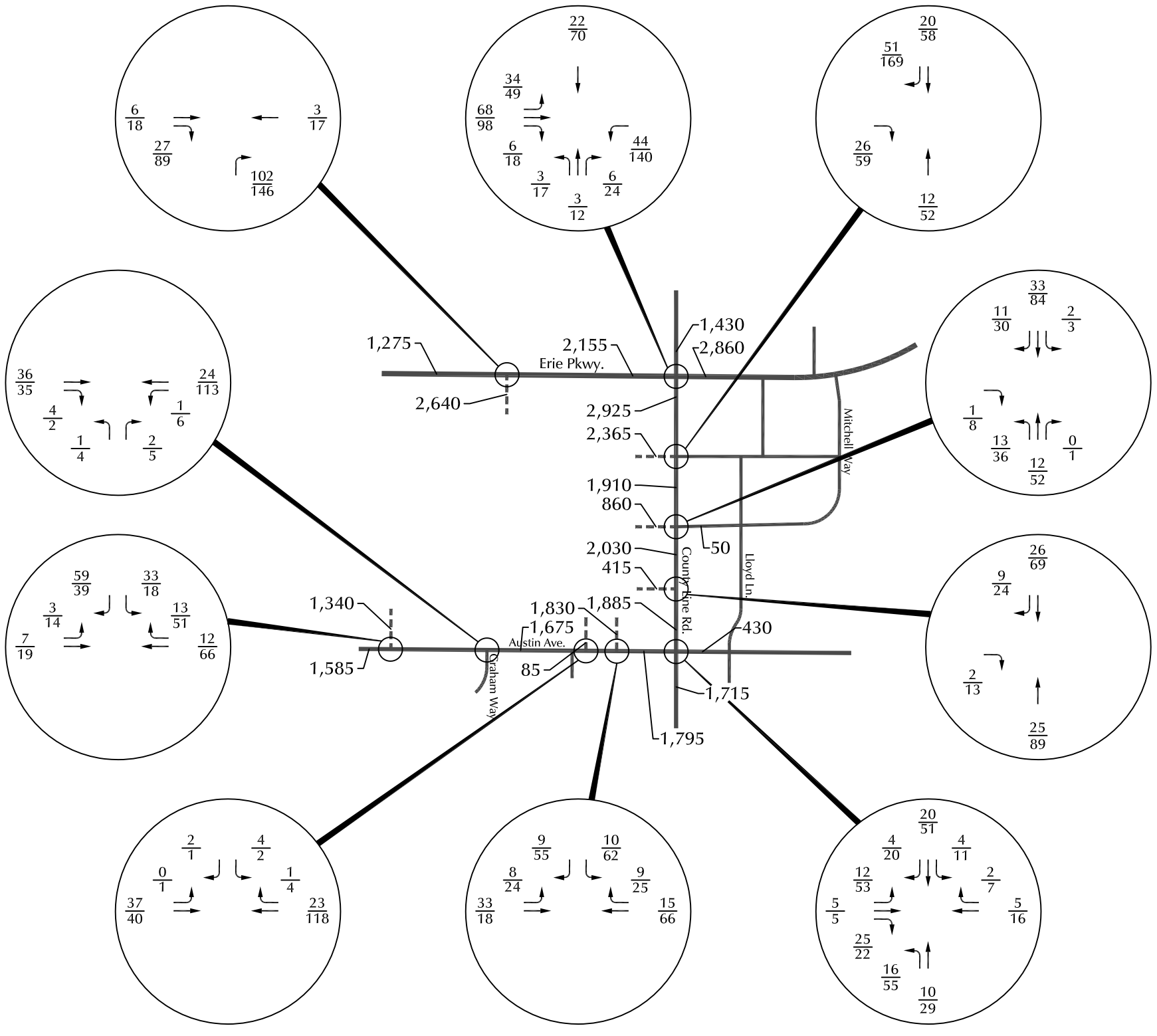
2,500 = Average Daily Traffic

Figure 7a

Assignment of Pass-by Site-Generated Traffic

Four Corners (LSC # 141100)

Approximate Scale
Scale: 1"=600'



LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic

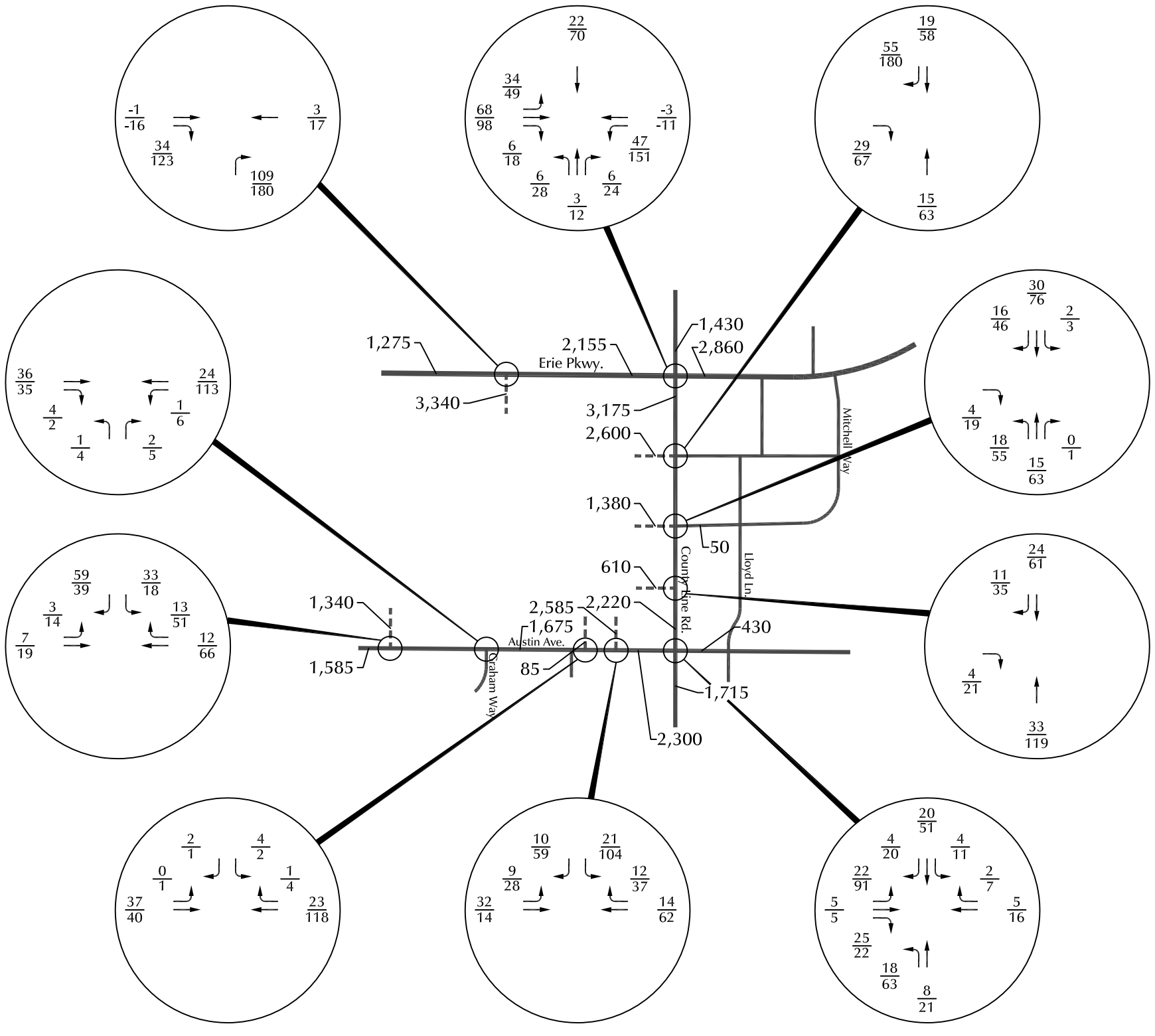
2,500 = Average Daily Traffic

TRANSPORTATION CONSULTANTS, INC.

Figure 7b

Assignment of Primary Site-Generated Traffic

Four Corners (LSC # 141100)



Approximate Scale
Scale: 1"=600'

LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic

2,500 = Average Daily Traffic

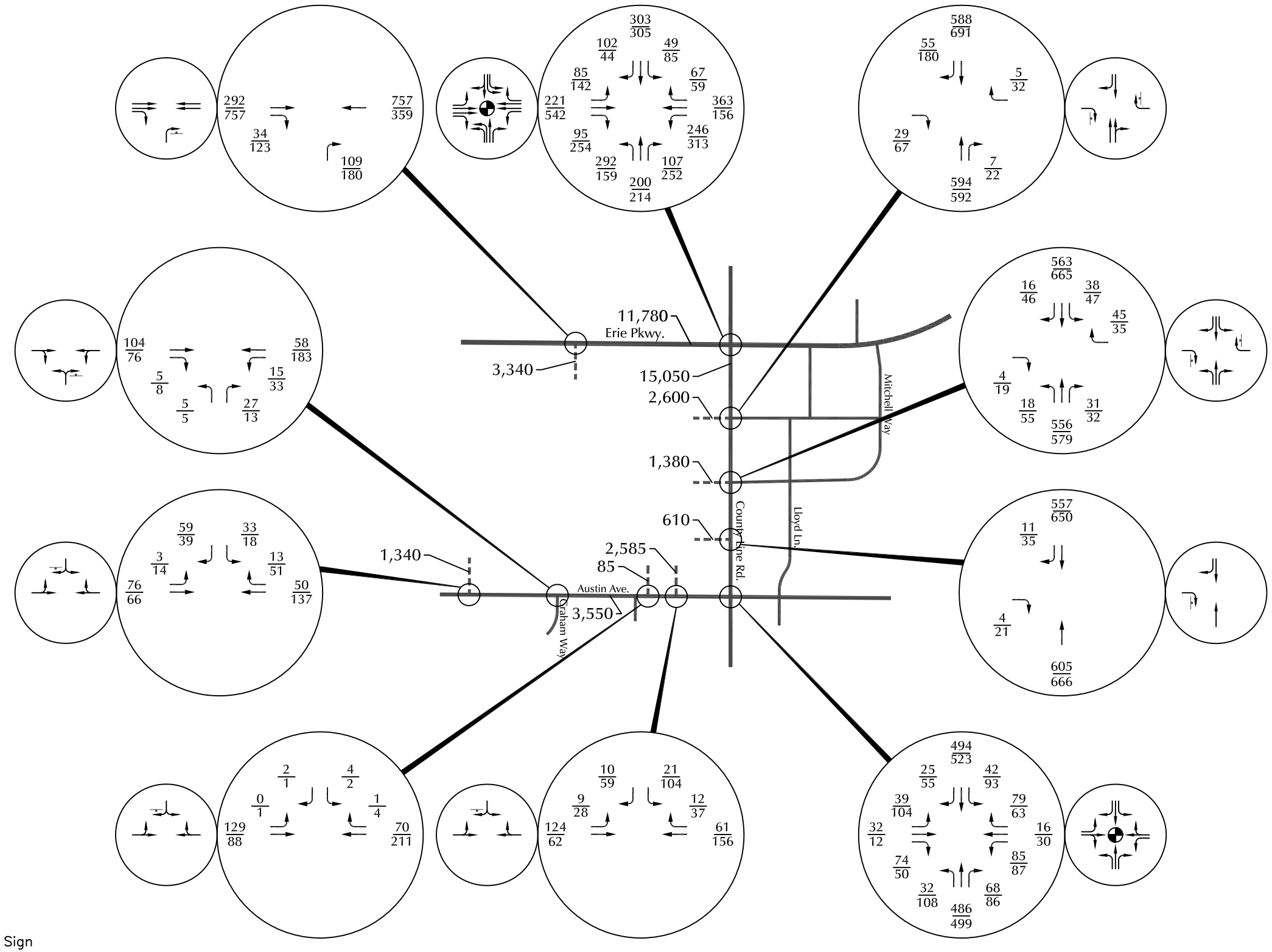
LSC TRANSPORTATION CONSULTANTS, INC.

Figure 7c

Assignment of Total Site-Generated Traffic

Four Corners (LSC # 141100)

Approximate Scale
Scale: 1"=600'



LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

2,500 = Average Daily Traffic

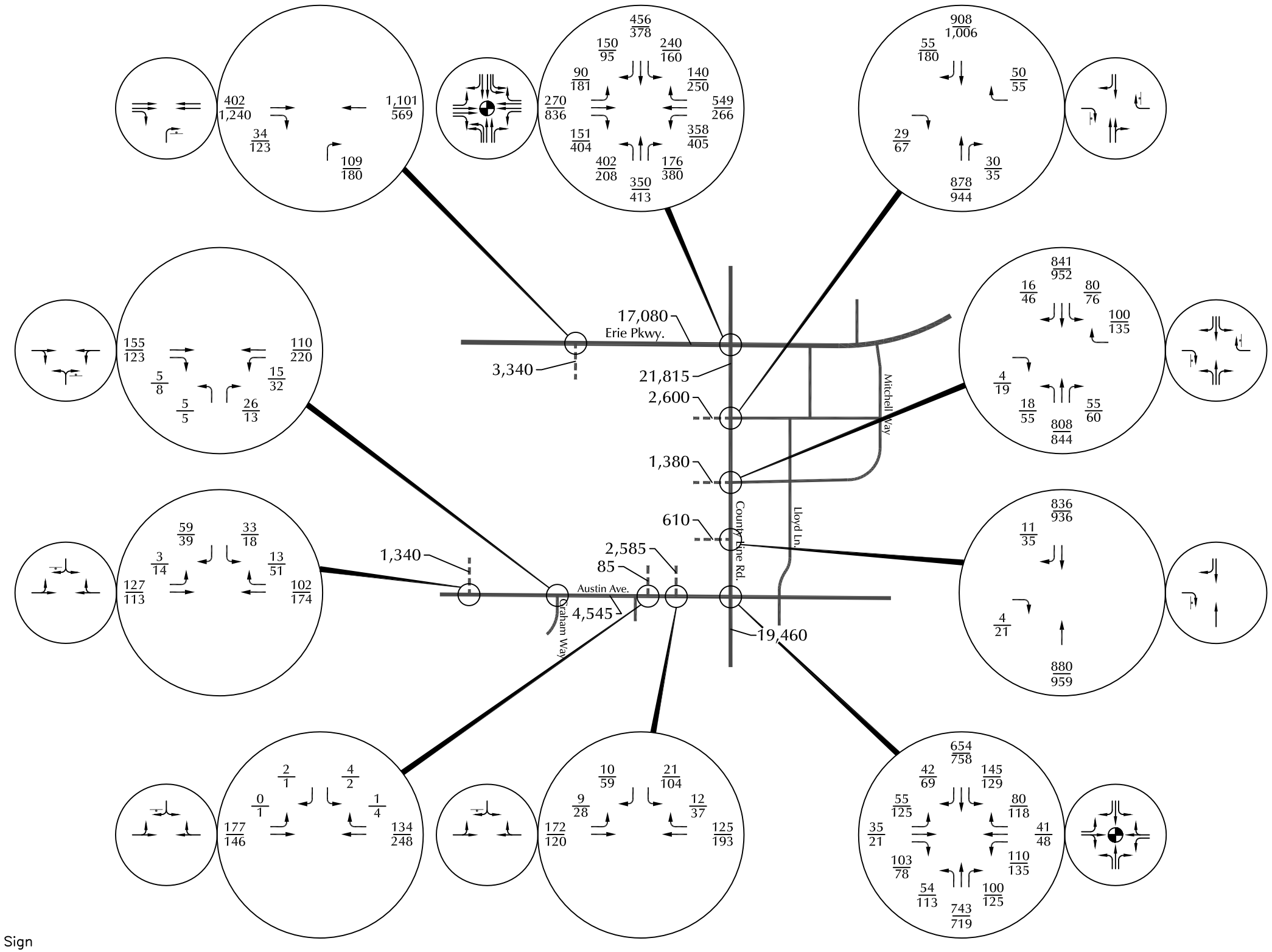
TRANSPORTATION CONSULTANTS, INC.

Figure 8

Year 2020 Total Traffic, Lane Geometry and Traffic Control

Four Corners (LSC # 141100)

Approximate Scale
Scale: 1"=600'



LEGEND:

= Stop Sign

= Traffic Signal

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

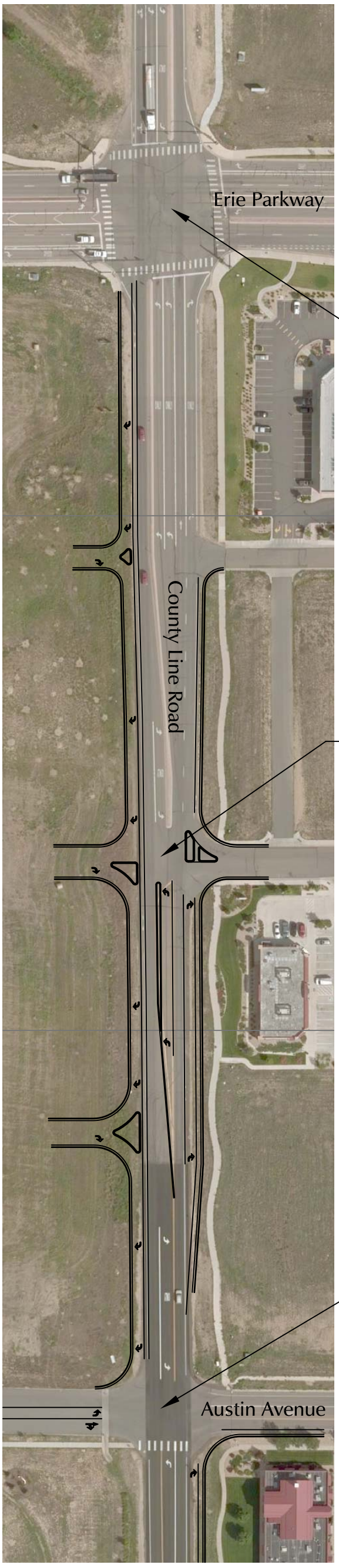
2,500 = Average Daily Traffic

TRANSPORTATION CONSULTANTS, INC.

Figure 9

Year 2035 Total Traffic, Lane Geometry and Traffic Control

Four Corners (LSC # 141100)



Approximate Scale
Scale: 1"=120'

Existing Traffic Signal

Existing Full Movement Access to be constructed to Three-Quarter Only when the County Line Road/Austin Avenue intersection is signalized.

Traffic Signal to be Installed when Warranted

Note:
Auxiliary lanes on the east side of County Line Road are expected to be constructed by future development on the east side of County Line Road.

Figure 10

Recommended Improvements Based on 2020 Total Traffic

Four Corners (LSC # 141100)

LSC TRANSPORTATION CONSULTANTS, INC.

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: ERIE PKWY
CITY: ERIE
COUNTY: WELD

File Name : COUNERIE
Site Code : 02148992
Start Date : 12/4/2014
Page No : 1

Groups Printed- VEHICLES

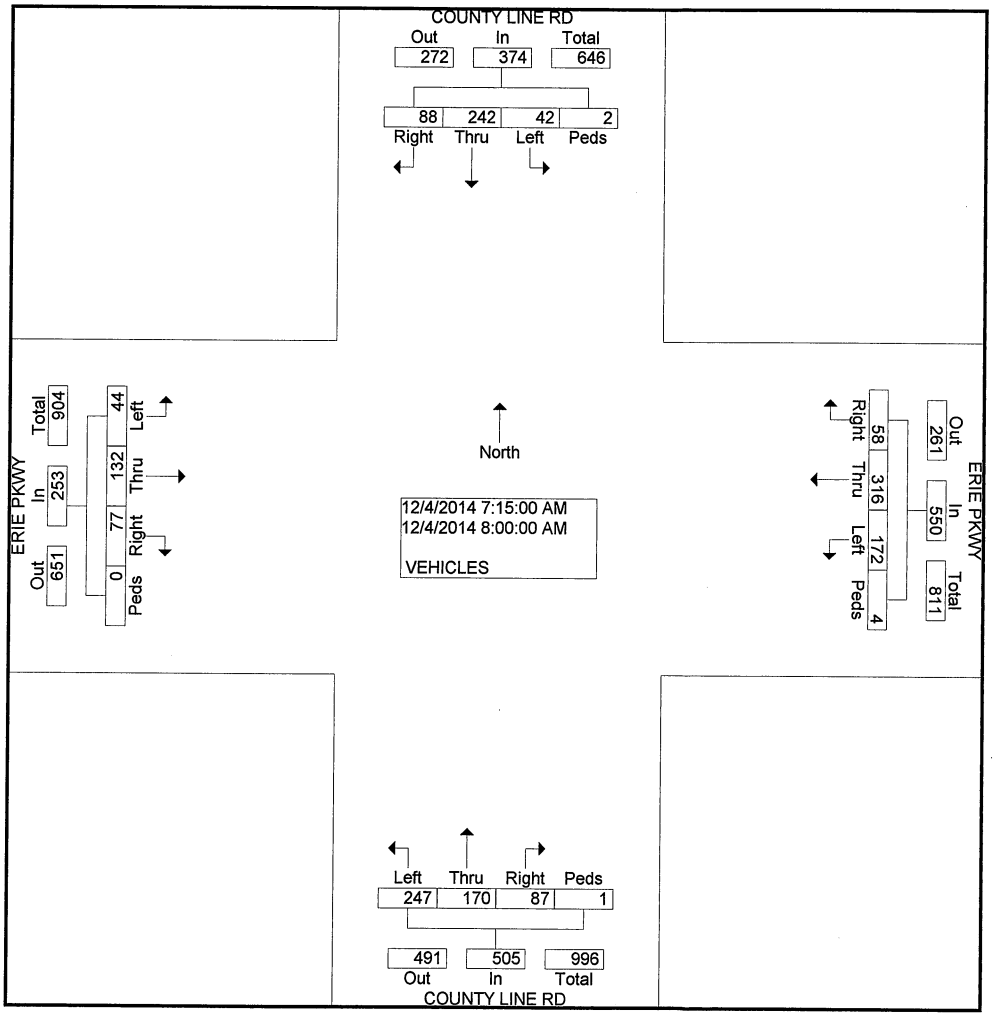
	COUNTY LINE RD Southbound				ERIE PKWY Westbound				COUNTY LINE RD Northbound				ERIE PKWY Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	4	26	7	0	19	51	8	0	17	9	4	0	3	26	7	0	181
06:45 AM	6	44	10	0	30	45	14	0	35	13	17	0	2	19	17	0	252
Total	10	70	17	0	49	96	22	0	52	22	21	0	5	45	24	0	433
07:00 AM	13	45	7	1	24	58	8	0	42	29	27	0	6	39	12	1	312
07:15 AM	7	40	23	0	48	84	11	2	52	30	19	1	6	34	18	0	375
07:30 AM	6	63	15	1	46	81	18	2	60	52	17	0	13	39	12	0	425
07:45 AM	16	89	32	0	37	80	19	0	66	57	25	0	20	31	22	0	494
Total	42	237	77	2	155	303	56	4	220	168	88	1	45	143	64	1	1606
08:00 AM	13	50	18	1	41	71	10	0	69	31	26	0	5	28	25	0	388
08:15 AM	18	40	10	0	37	55	9	0	59	52	23	0	6	35	20	0	364
Total	31	90	28	1	78	126	19	0	128	83	49	0	11	63	45	0	752
04:00 PM	23	52	10	1	35	25	11	0	31	49	38	0	15	59	28	0	377
04:15 PM	17	40	14	1	41	36	13	0	13	34	64	0	22	84	35	0	414
04:30 PM	22	61	14	1	27	34	12	1	32	48	40	0	15	94	50	0	451
04:45 PM	20	51	10	0	40	40	9	0	19	24	50	0	17	95	38	0	413
Total	82	204	48	3	143	135	45	1	95	155	192	0	69	332	151	0	1655
05:00 PM	14	38	12	1	32	34	16	0	34	44	54	0	26	96	51	0	452
05:15 PM	17	53	2	2	41	36	14	0	28	58	53	0	22	98	65	0	489
05:30 PM	18	54	12	0	28	38	19	0	29	15	48	0	27	115	48	0	451
05:45 PM	12	43	3	0	27	29	10	0	18	29	49	0	28	101	42	0	391
Total	61	188	29	3	128	137	59	0	109	146	204	0	103	410	206	0	1783
Grand Total	226	789	199	9	553	797	201	5	604	574	554	1	233	993	490	1	6229
Apprch %	18.5	64.5	16.3	0.7	35.5	51.2	12.9	0.3	34.9	33.1	32.0	0.1	13.6	57.8	28.5	0.1	
Total %	3.6	12.7	3.2	0.1	8.9	12.8	3.2	0.1	9.7	9.2	8.9	0.0	3.7	15.9	7.9	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: ERIE PKWY
CITY: ERIE
COUNTY: WELD

File Name : COUNERIE
Site Code : 02148992
Start Date : 12/4/2014

	COUNTY LINE RD Southbound					ERIE PKWY Westbound					COUNTY LINE RD Northbound					ERIE PKWY Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	42	242	88	2	374	172	316	58	4	550	247	170	87	1	505	44	132	77	0	253	1682
Percent	11.2	64.7	23.5	0.5		31.3	57.5	10.5	0.7		48.9	33.7	17.2	0.2		17.4	52.2	30.4	0.0		
07:45 Volume	16	89	32	0	137	37	80	19	0	136	66	57	25	0	148	20	31	22	0	73	494
Peak Factor																					0.851
High Int.	07:45 AM					07:30 AM					07:45 AM					07:45 AM					
Volume	16	89	32	0	137	46	81	18	2	147	66	57	25	0	148	20	31	22	0	73	
Peak Factor					0.682					0.935					0.853					0.866	

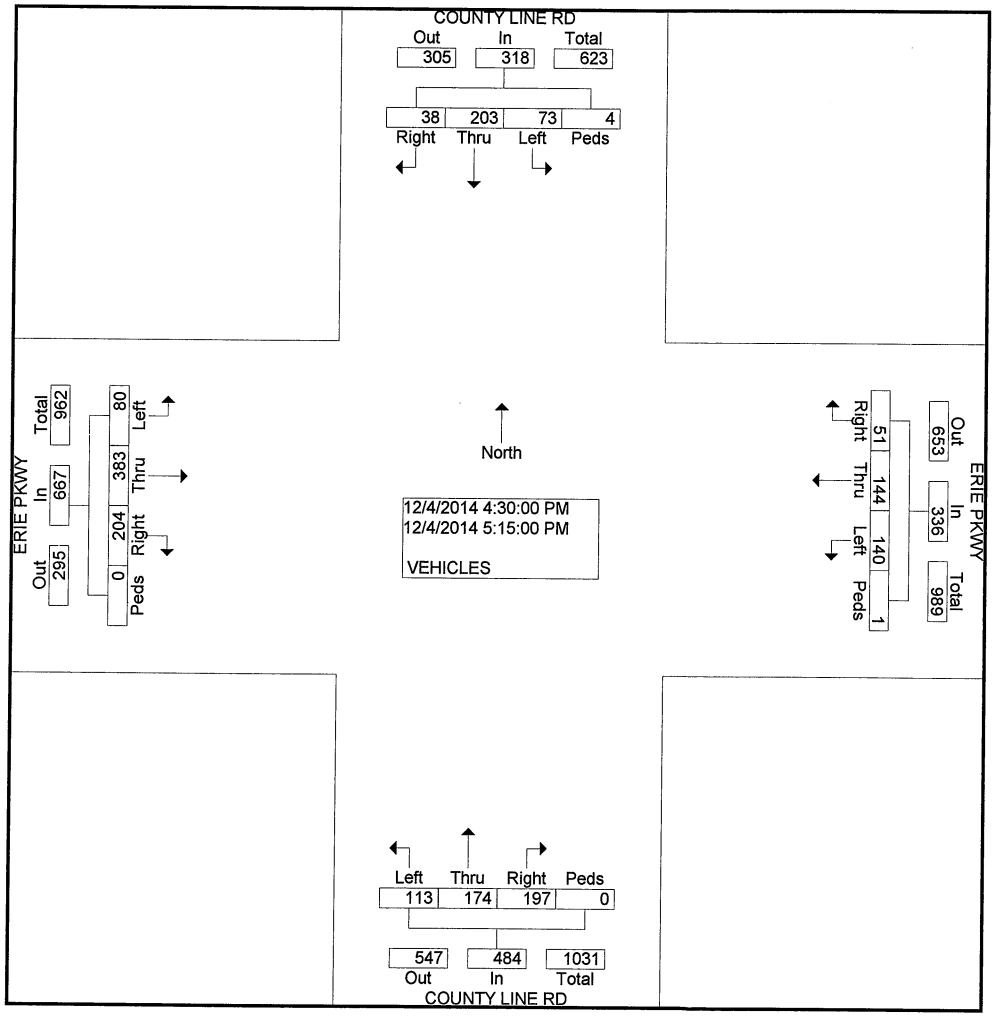


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: ERIE PKWY
CITY: ERIE
COUNTY: WELD

File Name : COUNERIE
Site Code : 02148992
Start Date : 12/4/2014
Page No : 2

	COUNTY LINE RD Southbound					ERIE PKWY Westbound					COUNTY LINE RD Northbound					ERIE PKWY Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	73	203	38	4	318	140	144	51	1	336	113	174	197	0	484	80	383	204	0	667	1805
Percent	23.0	63.8	11.9	1.3		41.7	42.9	15.2	0.3		23.3	36.0	40.7	0.0		12.0	57.4	30.6	0.0		
05:15 Volume	17	53	2	2	74	41	36	14	0	91	28	58	53	0	139	22	98	65	0	185	489
Peak Factor																					0.923
High Int.	04:30 PM					05:15 PM					05:15 PM					05:15 PM					
Volume	22	61	14	1	98	41	36	14	0	91	28	58	53	0	139	22	98	65	0	185	
Peak Factor					0.811					0.923					0.871					0.901	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: WALGREENS ACCESS RD
CITY: ERIE
COUNTY: WELD

File Name : COUNWALG
Site Code : 00000016
Start Date : 12/4/2014
Page No : 1

Groups Printed- VEHICLES

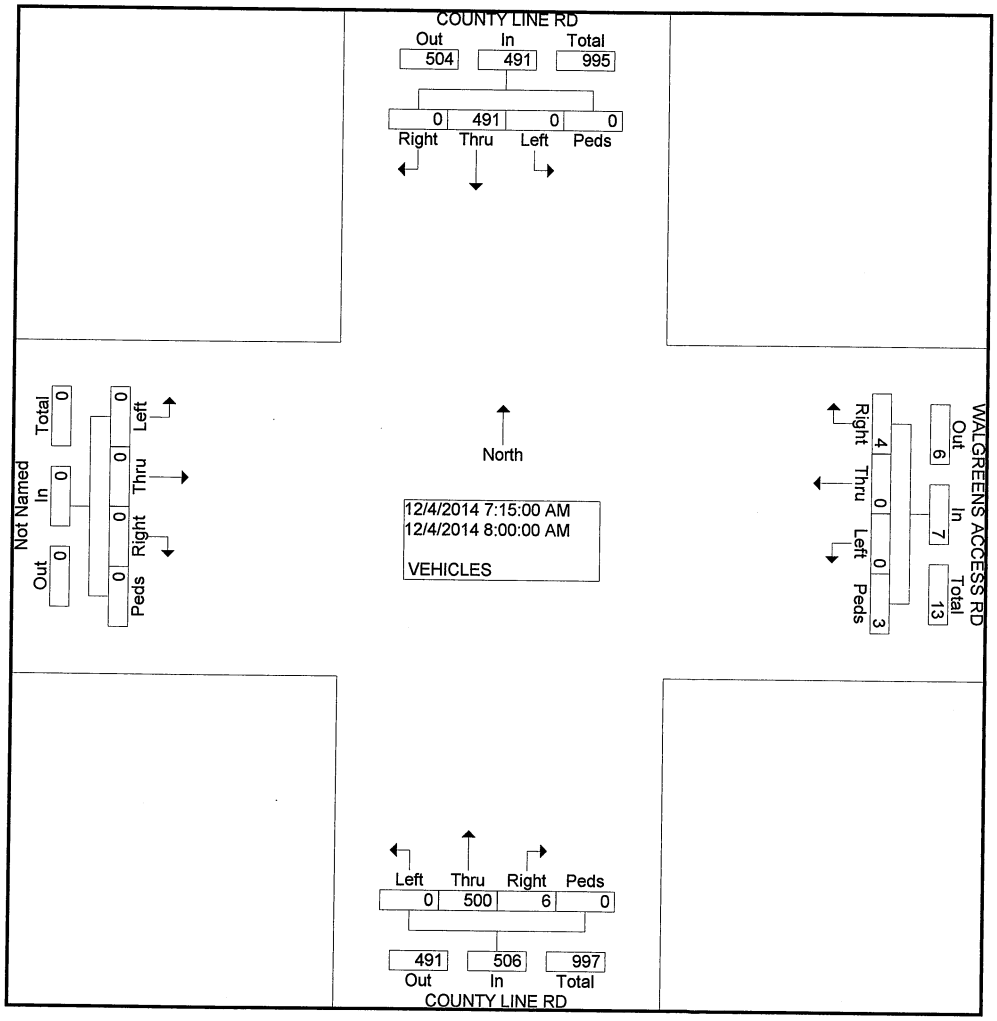
	COUNTY LINE RD Southbound				WALGREENS ACCESS RD Westbound				COUNTY LINE RD Northbound				Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	52	0	0	0	0	0	0	0	30	0	0	0	0	0	0	82
06:45 AM	0	91	0	0	0	0	0	0	0	65	1	0	0	0	0	0	157
Total	0	143	0	0	0	0	0	0	0	95	1	0	0	0	0	0	239
07:00 AM	0	81	0	0	0	0	0	1	0	98	0	0	0	0	0	1	181
07:15 AM	0	106	0	0	0	0	0	1	0	101	1	0	0	0	0	0	209
07:30 AM	0	121	0	0	0	0	0	1	0	129	1	0	0	0	0	0	252
07:45 AM	0	148	0	0	0	0	1	0	0	147	1	0	0	0	0	0	297
Total	0	456	0	0	0	0	1	3	0	475	3	0	0	0	0	1	939
08:00 AM	0	116	0	0	0	0	3	1	0	123	3	0	0	0	0	0	246
08:15 AM	0	97	0	0	0	0	5	0	0	129	3	0	0	0	0	0	234
Total	0	213	0	0	0	0	8	1	0	252	6	0	0	0	0	0	480
04:00 PM	0	115	0	0	0	0	12	0	0	106	9	0	0	0	0	0	242
04:15 PM	0	116	0	0	0	0	5	0	0	106	5	0	0	0	0	0	232
04:30 PM	0	138	0	0	0	0	0	1	0	120	5	0	0	0	0	0	264
04:45 PM	0	129	0	0	0	0	7	0	0	86	6	0	0	0	0	0	228
Total	0	498	0	0	0	0	24	1	0	418	25	0	0	0	0	0	966
05:00 PM	0	121	0	0	0	0	13	1	0	119	5	0	0	0	0	0	259
05:15 PM	0	159	0	0	0	0	8	0	0	131	3	0	0	0	0	0	301
05:30 PM	0	130	0	0	0	0	3	0	0	89	6	0	0	0	0	0	228
05:45 PM	0	112	0	0	0	0	4	0	0	92	4	0	0	0	0	0	212
Total	0	522	0	0	0	0	28	1	0	431	18	0	0	0	0	0	1000
Grand Total	0	1832	0	0	0	0	61	6	0	1671	53	0	0	0	0	1	3624
Apprch %	0.0	100.0	0.0	0.0	0.0	0.0	91.0	9.0	0.0	96.9	3.1	0.0	0.0	0.0	0.0	100.0	
Total %	0.0	50.6	0.0	0.0	0.0	0.0	1.7	0.2	0.0	46.1	1.5	0.0	0.0	0.0	0.0	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: WALGREENS ACCESS RD
CITY: ERIE
COUNTY: WELD

File Name : COUNWALG
Site Code : 00000016
Start Date : 12/4/2014
Page No : 2

	COUNTY LINE RD Southbound					WALGREENS ACCESS RD Westbound					COUNTY LINE RD Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	0	491	0	0	491	0	0	4	3	7	0	500	6	0	506	0	0	0	0	0	1004
Percent	0.0	100.0	0.0	0.0		0.0	0.0	57.1	42.9		0.0	98.8	1.2	0.0		0.0	0.0	0.0	0.0		
07:45 Volume	0	148	0	0	148	0	0	1	0	1	0	147	1	0	148	0	0	0	0	0	297
Peak Factor																					0.845
High Int.	07:45 AM					08:00 AM					07:45 AM										
Volume	0	148	0	0	148	0	0	3	1	4	0	147	1	0	148						
Peak Factor					0.829					0.438					0.855						

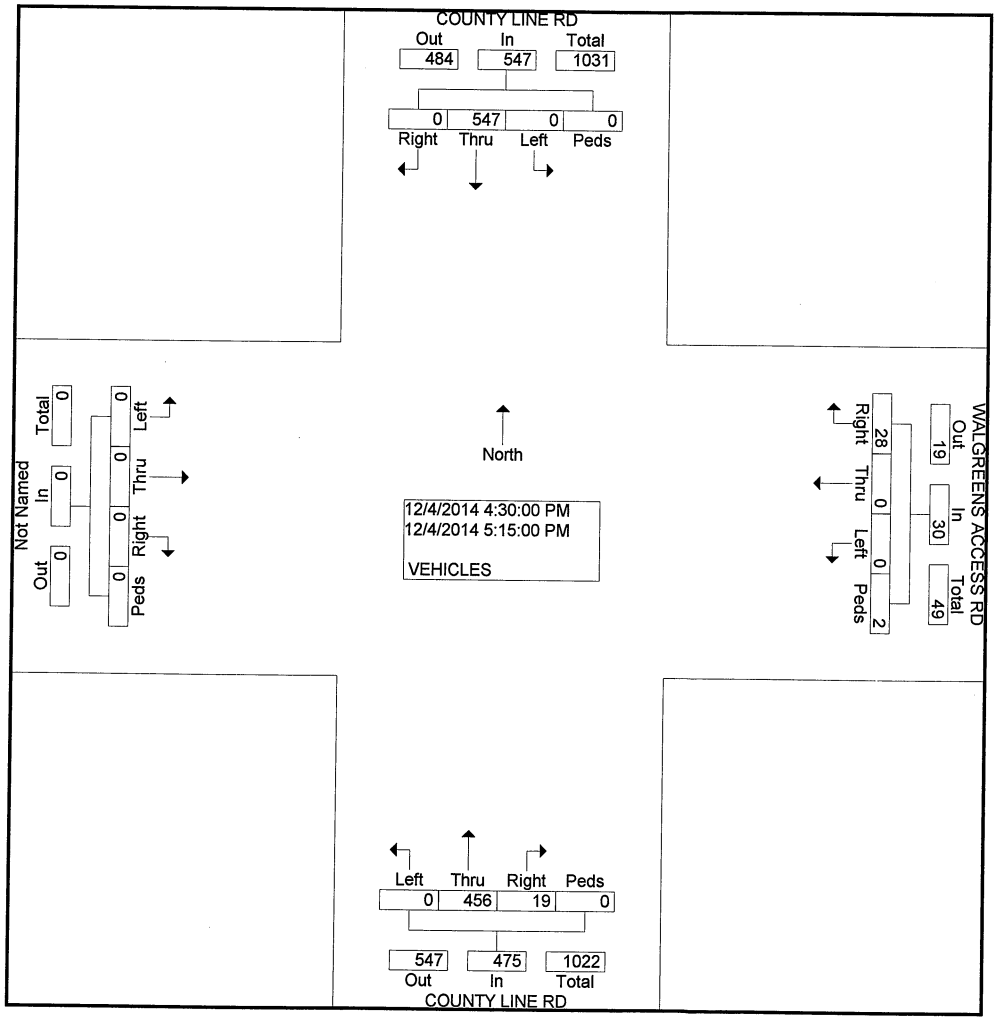


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: WALGREENS ACCESS RD
CITY: ERIE
COUNTY: WELD

File Name : COUNWALG
Site Code : 00000016
Start Date : 12/4/2014

	COUNTY LINE RD Southbound					WALGREENS ACCESS RD Westbound					COUNTY LINE RD Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	0	547	0	0	547	0	0	28	2	30	0	456	19	0	475	0	0	0	0	0	1052
Percent	0.0	100.0	0.0	0.0		0.0	0.0	93.3	6.7		0.0	96.0	4.0	0.0		0.0	0.0	0.0	0.0		
05:15 Volume	0	159	0	0	159	0	0	8	0	8	0	131	3	0	134	0	0	0	0	0	301
Peak Factor																					0.874
High Int.	05:15 PM					05:00 PM					05:15 PM										
Volume	0	159	0	0	159	0	0	13	1	14	0	131	3	0	134						
Peak Factor					0.860					0.536					0.886						



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: MITCHELL WAY
CITY: ERIE
COUNTY: WELD

File Name : COUNMITC
Site Code : 00000013
Start Date : 12/4/2014
Page No : 1

Groups Printed- VEHICLES

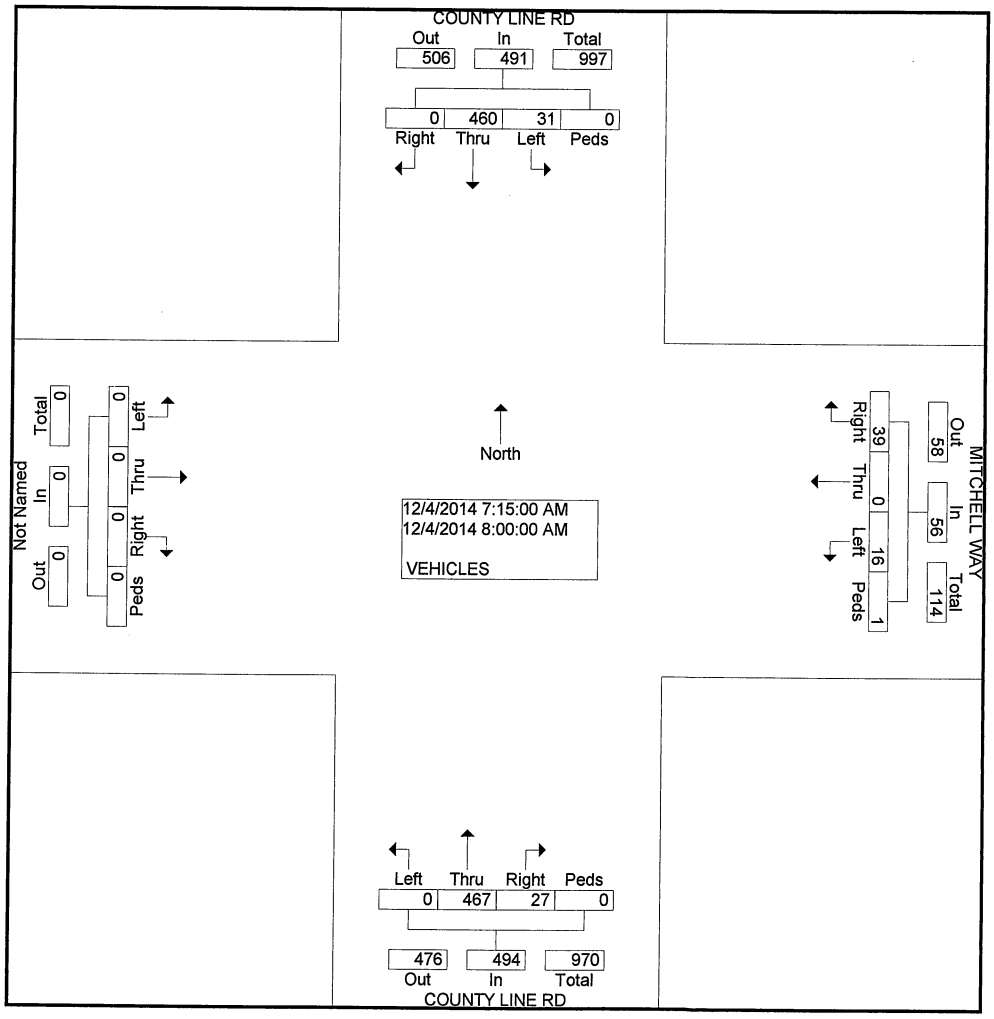
	COUNTY LINE RD Southbound				MITCHELL WAY Westbound				COUNTY LINE RD Northbound				Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	4	48	0	0	6	0	3	0	0	27	4	0	0	0	0	0	92
06:45 AM	10	81	0	0	5	0	6	0	0	60	6	0	0	0	0	0	168
Total	14	129	0	0	11	0	9	0	0	87	10	0	0	0	0	0	260
07:00 AM	5	76	0	0	5	0	9	1	0	89	4	0	0	0	0	1	190
07:15 AM	6	100	0	0	1	0	10	0	0	92	2	0	0	0	0	0	211
07:30 AM	7	114	0	0	5	0	8	0	0	122	7	0	0	0	0	0	263
07:45 AM	10	138	0	0	5	0	9	0	0	139	6	0	0	0	0	0	307
Total	28	428	0	0	16	0	36	1	0	442	19	0	0	0	0	1	971
08:00 AM	8	108	0	0	5	0	12	1	0	114	12	0	0	0	0	0	260
08:15 AM	12	85	0	0	8	0	22	0	0	110	4	0	0	0	0	0	241
Total	20	193	0	0	13	0	34	1	0	224	16	0	0	0	0	0	501
04:00 PM	9	106	0	0	6	0	10	0	0	105	6	0	0	0	0	0	242
04:15 PM	16	100	0	0	10	0	6	0	0	105	2	0	0	0	0	0	239
04:30 PM	11	127	0	0	14	0	8	0	0	117	8	0	0	0	0	0	285
04:45 PM	7	122	0	0	10	0	7	0	0	85	5	0	0	0	0	0	236
Total	43	455	0	0	40	0	31	0	0	412	21	0	0	0	0	0	1002
05:00 PM	8	113	0	0	5	0	5	3	0	119	8	0	0	0	0	0	261
05:15 PM	12	147	0	0	5	0	10	0	0	124	6	0	0	0	0	0	304
05:30 PM	11	119	0	0	8	0	4	1	0	91	4	0	0	0	0	0	238
05:45 PM	6	106	0	0	4	0	6	0	0	90	4	0	0	0	0	0	216
Total	37	485	0	0	22	0	25	4	0	424	22	0	0	0	0	0	1019
Grand Total	142	1690	0	0	102	0	135	6	0	1589	88	0	0	0	0	1	3753
Apprch %	7.8	92.2	0.0	0.0	42.0	0.0	55.6	2.5	0.0	94.8	5.2	0.0	0.0	0.0	0.0	100.0	
Total %	3.8	45.0	0.0	0.0	2.7	0.0	3.6	0.2	0.0	42.3	2.3	0.0	0.0	0.0	0.0	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: MITCHELL WAY
CITY: ERIE
COUNTY: WELD

File Name : COUNMITC
Site Code : 00000013
Start Date : 12/4/2014
Page No : 2

	COUNTY LINE RD Southbound					MITCHELL WAY Westbound					COUNTY LINE RD Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	31	460	0	0	491	16	0	39	1	56	0	467	27	0	494	0	0	0	0	0	1041
Percent	6.3	93.7	0.0	0.0		28.6	0.0	69.6	1.8		0.0	94.5	5.5	0.0		0.0	0.0	0.0	0.0		
07:45 Volume	10	138	0	0	148	5	0	9	0	14	0	139	6	0	145	0	0	0	0	0	307
Peak Factor																					0.848
High Int.	07:45 AM					08:00 AM					07:45 AM										
Volume	10	138	0	0	148	5	0	12	1	18	0	139	6	0	145						
Peak Factor					0.829					0.778					0.852						

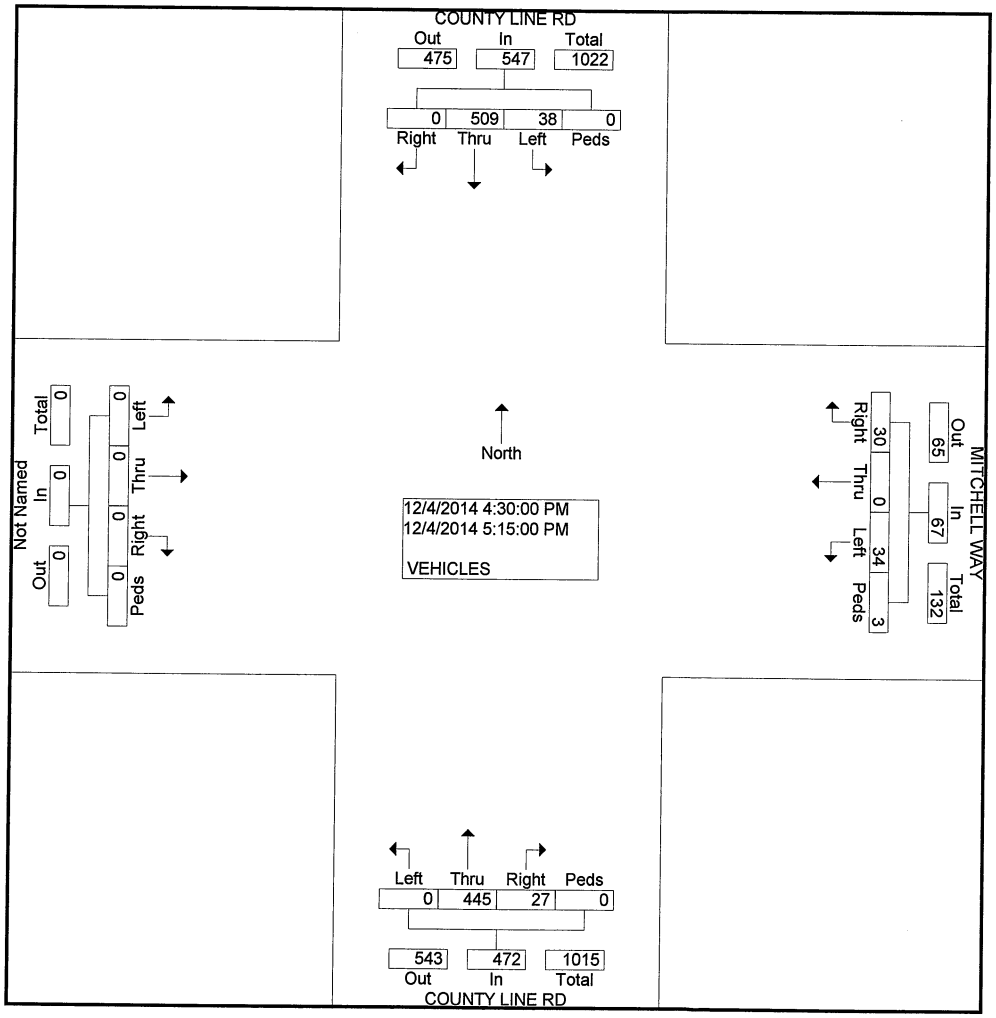


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: MITCHELL WAY
CITY: ERIE
COUNTY: WELD

File Name : COUNMITC
Site Code : 00000013
Start Date : 12/4/2014
Page No : 2

	COUNTY LINE RD Southbound					MITCHELL WAY Westbound					COUNTY LINE RD Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	38	509	0	0	547	34	0	30	3	67	0	445	27	0	472	0	0	0	0	0	1086
Percent	6.9	93.1	0.0	0.0		50.7	0.0	44.8	4.5		0.0	94.3	5.7	0.0		0.0	0.0	0.0	0.0		
05:15 Volume	12	147	0	0	159	5	0	10	0	15	0	124	6	0	130	0	0	0	0	0	304
Peak Factor																					0.893
High Int.	05:15 PM					04:30 PM					05:15 PM										
Volume	12	147	0	0	159	14	0	8	0	22	0	124	6	0	130						
Peak Factor					0.860					0.761					0.908						



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: AUSTIN AVE
CITY: ERIE
COUNTY: WELD

File Name : COUNAUST1
Site Code : 00000018
Start Date : 12/4/2014
Page No : 1

Groups Printed- VEHICLES

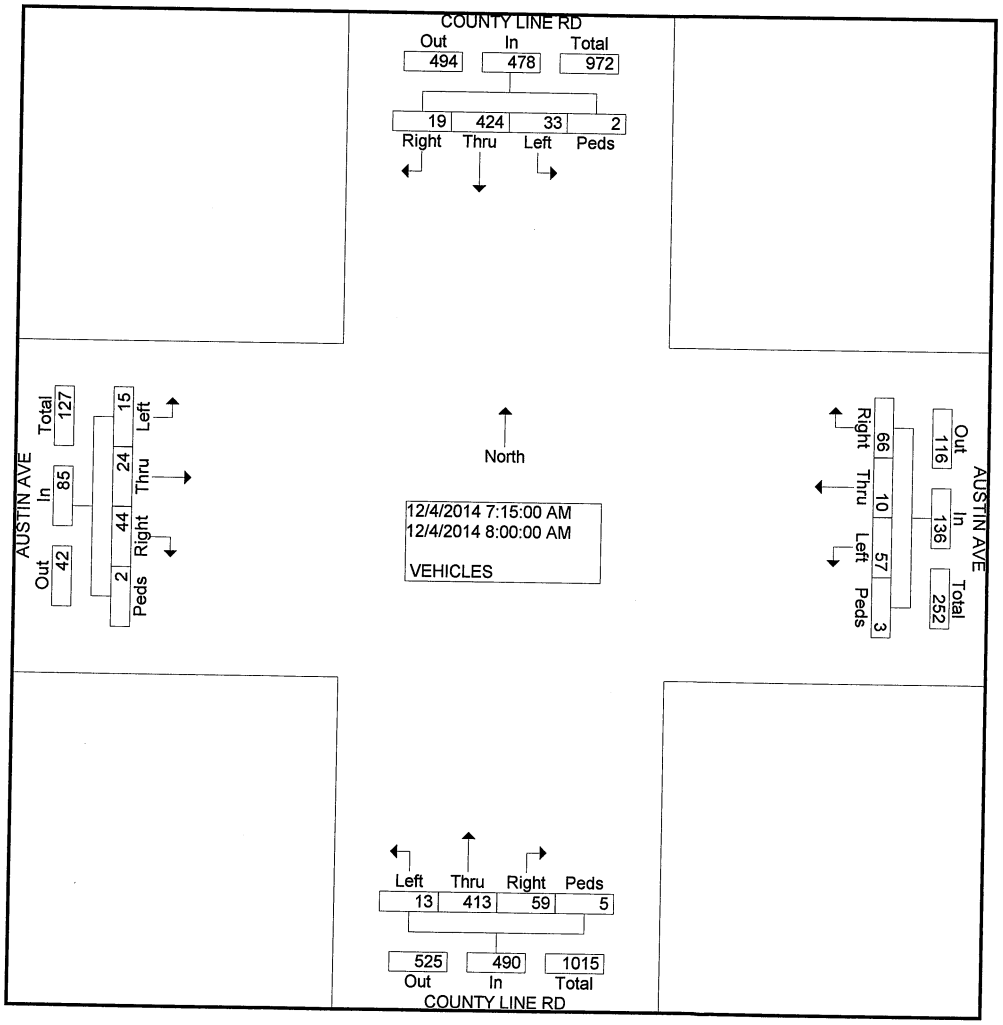
	COUNTY LINE RD Southbound				AUSTIN AVE Westbound				COUNTY LINE RD Northbound				AUSTIN AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	53	1	0	9	3	1	0	2	27	5	0	3	3	4	0	111
06:45 AM	9	72	5	0	8	1	4	0	3	58	5	0	4	4	6	0	179
Total	9	125	6	0	17	4	5	0	5	85	10	0	7	7	10	0	290
07:00 AM	2	79	0	0	15	1	9	1	2	75	5	1	9	1	9	1	210
07:15 AM	7	89	5	1	7	0	12	1	1	78	14	1	4	3	8	1	232
07:30 AM	11	106	2	1	18	3	14	1	4	110	11	1	5	6	13	1	307
07:45 AM	5	132	6	0	19	4	24	0	4	119	22	1	2	5	13	0	356
Total	25	406	13	2	59	8	59	3	11	382	52	4	20	15	43	3	1105
08:00 AM	10	97	6	0	13	3	16	1	4	106	12	2	4	10	10	0	294
08:15 AM	26	64	3	0	24	7	19	0	5	92	15	1	3	12	14	0	285
Total	36	161	9	0	37	10	35	1	9	198	27	3	7	22	24	0	579
04:00 PM	11	94	7	0	12	0	12	0	6	95	12	1	4	0	9	0	263
04:15 PM	16	87	7	0	10	2	6	0	7	94	18	0	7	3	5	0	262
04:30 PM	18	112	11	0	10	4	20	0	10	104	23	1	1	2	4	0	320
04:45 PM	15	109	8	0	9	2	7	0	13	82	20	0	1	1	5	0	272
Total	60	402	33	0	41	8	45	0	36	375	73	2	13	6	23	0	1117
05:00 PM	11	101	6	0	10	3	14	1	9	110	12	5	3	2	9	0	296
05:15 PM	27	118	7	0	12	4	7	2	9	116	19	2	7	1	7	0	338
05:30 PM	16	102	9	0	11	5	12	0	16	80	17	0	3	3	3	0	277
05:45 PM	22	81	7	0	16	8	10	0	15	78	18	0	6	9	4	0	274
Total	76	402	29	0	49	20	43	3	49	384	66	7	19	15	23	0	1185
Grand Total	206	1496	90	2	203	50	187	7	110	1424	228	16	66	65	123	3	4276
Apprch %	11.5	83.4	5.0	0.1	45.4	11.2	41.8	1.6	6.2	80.1	12.8	0.9	25.7	25.3	47.9	1.2	
Total %	4.8	35.0	2.1	0.0	4.7	1.2	4.4	0.2	2.6	33.3	5.3	0.4	1.5	1.5	2.9	0.1	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: AUSTIN AVE
CITY: ERIE
COUNTY: WELD

File Name : COUNAUST1
Site Code : 00000018
Start Date : 12/4/2014
Page No : 2

	COUNTY LINE RD Southbound					AUSTIN AVE Westbound					COUNTY LINE RD Northbound					AUSTIN AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	33	424	19	2	478	57	10	66	3	136	13	413	59	5	490	15	24	44	2	85	1189
Percent	6.9	88.7	4.0	0.4		41.9	7.4	48.5	2.2		2.7	84.3	12.0	1.0		17.6	28.2	51.8	2.4		
07:45 Volume	5	132	6	0	143	19	4	24	0	47	4	119	22	1	146	2	5	13	0	20	356
Peak Factor																					0.835
High Int.	07:45 AM					07:45 AM					07:45 AM					07:30 AM					
Volume	5	132	6	0	143	19	4	24	0	47	4	119	22	1	146	5	6	13	1	25	
Peak Factor					0.836					0.723					0.839					0.850	

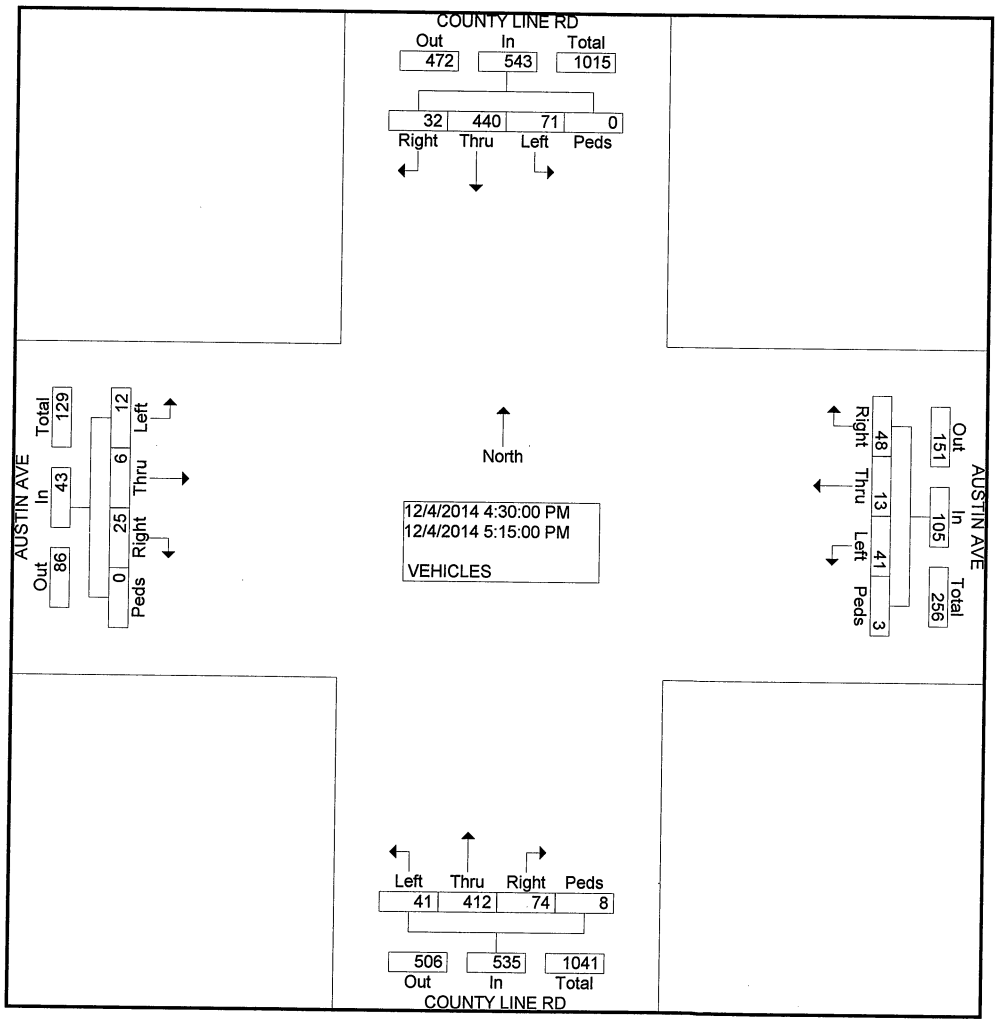


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: AUSTIN AVE
CITY: ERIE
COUNTY: WELD

File Name : COUNAUST1
Site Code : 00000018
Start Date : 12/4/2014

	COUNTY LINE RD Southbound					AUSTIN AVE Westbound					COUNTY LINE RD Northbound					AUSTIN AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	71	440	32	0	543	41	13	48	3	105	41	412	74	8	535	12	6	25	0	43	1226
Percent	13.1	81.0	5.9	0.0		39.0	12.4	45.7	2.9		7.7	77.0	13.8	1.5		27.9	14.0	58.1	0.0		
05:15 Volume	27	118	7	0	152	12	4	7	2	25	9	116	19	2	146	7	1	7	0	15	338
Peak Factor																					0.907
High Int.	05:15 PM					04:30 PM					05:15 PM					05:15 PM					
Volume	27	118	7	0	152	10	4	20	0	34	9	116	19	2	146	7	1	7	0	15	
Peak Factor					0.893					0.772					0.916					0.717	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: GRAHAM WAY
E/W STREET: AUSTIN AVE
CITY: ERIE
COUNTY: WELD

File Name : GRAHAUST
Site Code : 00000021
Start Date : 12/4/2014
Page No : 1

Groups Printed- VEHICLES

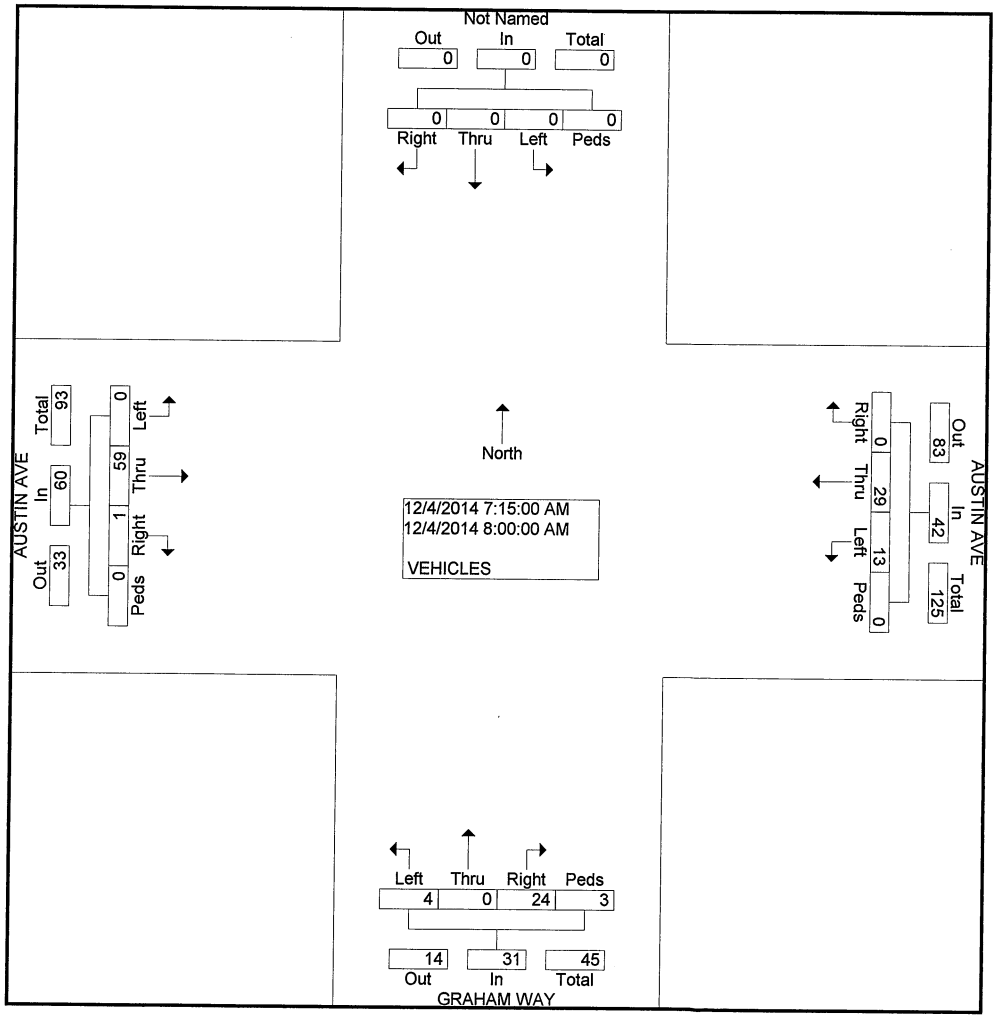
	Southbound				AUSTIN AVE Westbound				GRAHAM WAY Northbound				AUSTIN AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	1	5	0	0	1	0	4	0	0	6	0	0	17
06:45 AM	0	0	0	0	2	7	0	0	1	0	5	0	0	9	0	0	24
Total	0	0	0	0	3	12	0	0	2	0	9	0	0	15	0	0	41
07:00 AM	0	0	0	0	0	3	0	0	4	0	7	1	0	12	0	0	27
07:15 AM	0	0	0	0	3	3	0	0	2	0	4	0	0	11	0	0	23
07:30 AM	0	0	0	0	1	8	0	0	1	0	7	1	0	17	0	0	35
07:45 AM	0	0	0	0	6	8	0	0	1	0	10	1	0	10	0	0	36
Total	0	0	0	0	10	22	0	0	8	0	28	3	0	50	0	0	121
08:00 AM	0	0	0	0	3	10	0	0	0	0	3	1	0	21	1	0	39
08:15 AM	0	0	0	0	3	12	0	0	0	0	8	1	0	21	0	0	45
Total	0	0	0	0	6	22	0	0	0	0	11	2	0	42	1	0	84
04:00 PM	0	0	0	0	2	11	0	0	1	0	6	0	0	7	3	0	30
04:15 PM	0	0	0	0	6	10	0	0	2	0	6	0	0	9	4	1	38
04:30 PM	0	0	0	0	10	15	0	0	0	0	1	1	0	6	1	0	34
04:45 PM	0	0	0	0	5	18	0	0	0	0	0	0	0	7	3	0	33
Total	0	0	0	0	23	54	0	0	3	0	13	1	0	29	11	1	135
05:00 PM	0	0	0	0	6	12	0	0	1	0	4	4	0	10	2	0	39
05:15 PM	0	0	0	1	5	15	0	0	0	0	3	1	0	12	0	0	37
05:30 PM	0	0	0	0	7	23	0	0	2	0	3	0	0	6	2	0	43
05:45 PM	0	0	0	0	7	23	0	0	1	0	5	0	0	14	3	0	53
Total	0	0	0	1	25	73	0	0	4	0	15	5	0	42	7	0	172
Grand Total	0	0	0	1	67	183	0	0	17	0	76	11	0	178	19	1	553
Apprch %	0.0	0.0	0.0	100.0	26.8	73.2	0.0	0.0	16.3	0.0	73.1	10.6	0.0	89.9	9.6	0.5	
Total %	0.0	0.0	0.0	0.2	12.1	33.1	0.0	0.0	3.1	0.0	13.7	2.0	0.0	32.2	3.4	0.2	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: GRAHAM WAY
E/W STREET: AUSTIN AVE
CITY: ERIE
COUNTY: WELD

File Name : GRAHAUST
Site Code : 00000021
Start Date : 12/4/2014
Page No : 2

	Southbound					AUSTIN AVE Westbound					GRAHAM WAY Northbound					AUSTIN AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	0	0	0	0	0	13	29	0	0	42	4	0	24	3	31	0	59	1	0	60	133
Percent	0.0	0.0	0.0	0.0		31.0	69.0	0.0	0.0		12.9	0.0	77.4	9.7		0.0	98.3	1.7	0.0		
08:00 Volume	0	0	0	0	0	3	10	0	0	13	0	0	3	1	4	0	21	1	0	22	39
Peak Factor																					0.853
High Int.						07:45 AM					07:45 AM					08:00 AM					
Volume	0	0	0	0	0	6	8	0	0	14	1	0	10	1	12	0	21	1	0	22	
Peak Factor										0.750					0.646					0.682	

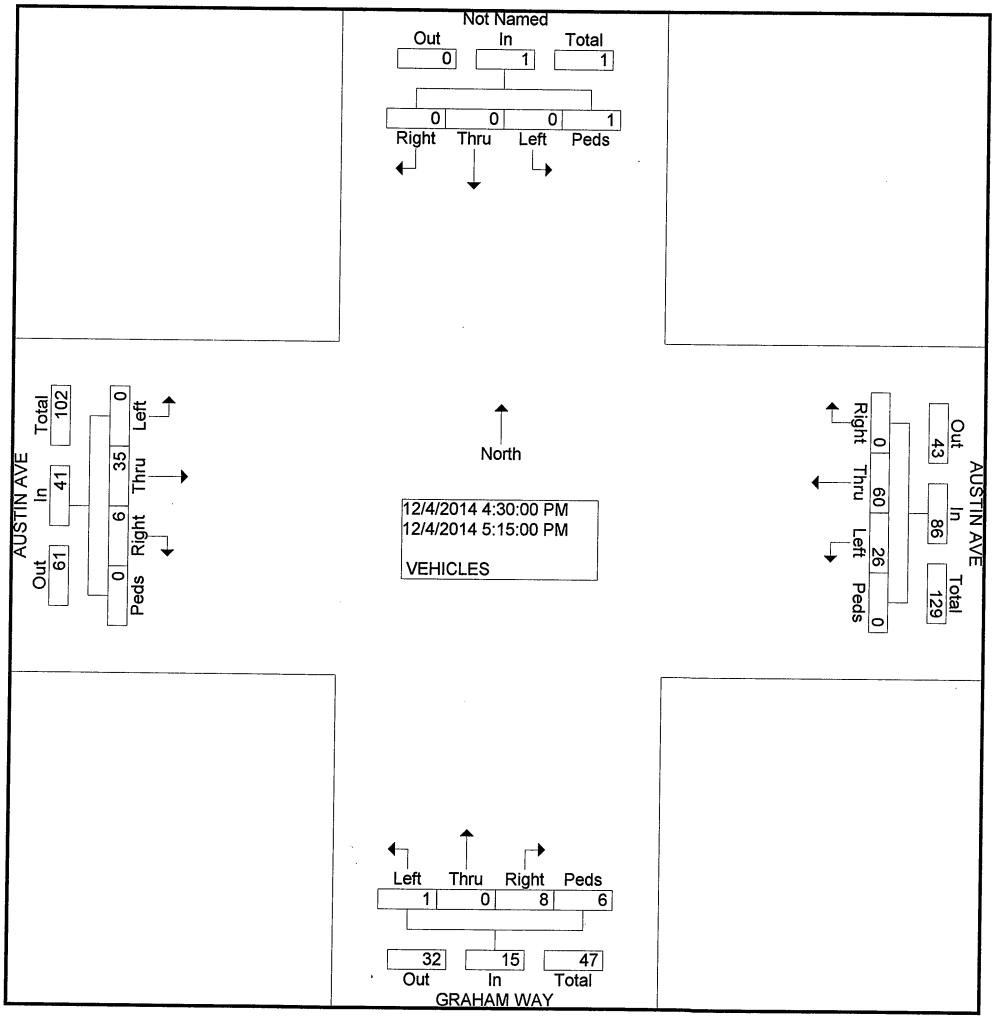


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: GRAHAM WAY
E/W STREET: AUSTIN AVE
CITY: ERIE
COUNTY: WELD

File Name : GRAHAUST
Site Code : 00000021
Start Date : 12/4/2014

	Southbound					AUSTIN AVE Westbound					GRAHAM WAY Northbound					AUSTIN AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersection 04:30 PM																					
Volume	0	0	0	1	1	26	60	0	0	86	1	0	8	6	15	0	35	6	0	41	143
Percent	0.0	0.0	0.0	100.0		30.2	69.8	0.0	0.0		6.7	0.0	53.3	40.0		0.0	85.4	14.6	0.0		
05:00 Volume	0	0	0	0	0	6	12	0	0	18	1	0	4	4	9	0	10	2	0	12	39
Peak Factor																					0.917
High Int. 05:15 PM						04:30 PM					05:00 PM					05:00 PM					
Volume	0	0	0	1	1	10	15	0	0	25	1	0	4	4	9	0	10	2	0	12	
Peak Factor					0.250					0.860					0.417					0.854	



COUNTER MEASURES, INC
1889 YORK STREET
DENVER, CO 80206
303-333-1105

Location: COUNTY LINE RD S/O ERIE PKWY
City: ERIE
County: WELD
Direction: SOUTHBOUND-NORTHBOUND

Site Code: 120108

Start Time	02-Dec-1 Tue	SB	NB	Total
12:00 AM		6	13	19
01:00		2	6	8
02:00		7	8	15
03:00		5	4	9
04:00		25	9	34
05:00		65	49	114
06:00		236	140	376
07:00		**470**	445	**915**
08:00		398	**454**	852
09:00		322	256	578
10:00		298	266	564
11:00		309	288	597
12:00 PM		322	270	592
01:00		281	236	517
02:00		310	313	623
03:00		458	**482**	940
04:00		496	458	954
05:00		**589**	458	**1047**
06:00		312	302	614
07:00		192	185	377
08:00		104	154	258
09:00		63	68	131
10:00		29	44	73
11:00		10	24	34
Total		5309	4932	10241
Percent		51.8%	48.2%	
AM Peak	-	07:00	08:00	07:00
Vol.	-	470	454	915
PM Peak	-	17:00	15:00	17:00
Vol.	-	589	482	1047
Grand Total		5309	4932	10241
Percent		51.8%	48.2%	
ADT		ADT 10,241	AADT 10,241	

COUNTER MEASURES, INC
1889 YORK STREET
DENVER, CO 80206
303-333-1105

Location: ERIE PKWY W/O COUNTY LINE RD
City: ERIE
County: WELD
Direction: EASTBOUND-WESTBOUND

Site Code: 120107

Start Time	02-Dec-1 Tue	EB	WB	Total
12:00 AM		13	9	22
01:00		7	8	15
02:00		3	4	7
03:00		2	2	4
04:00		5	3	8
05:00		9	13	22
06:00		63	40	103
07:00		120	216	336
08:00		**274**	**598**	**872**
09:00		244	508	752
10:00		199	266	465
11:00		187	170	357
12:00 PM		206	206	412
01:00		202	198	400
02:00		216	170	386
03:00		245	183	428
04:00		342	278	620
05:00		521	280	801
06:00		**679**	**324**	**1003**
07:00		396	205	601
08:00		147	143	290
09:00		104	86	190
10:00		73	60	133
11:00		35	33	68
Total		4292	4003	8295
Percent		51.7%	48.3%	
AM Peak	-	08:00	08:00	08:00
Vol.	-	274	598	872
PM Peak	-	18:00	18:00	18:00
Vol.	-	679	324	1003
Grand Total		4292	4003	8295
Percent		51.7%	48.3%	

ADT ADT 8,295 AADT 8,295

COUNTER MEASURES, INC
1889 YORK STREET
DENVER, CO 80206
303-333-1105

Location: AUSTIN AVE W/O COUNTY LINE RD
City: ERIE
County: WELD
Direction: EASTBOUND-WESTBOUND

Site Code: 120105

Start Time	02-Dec-1 Tue	EB	WB							Total
12:00 AM		1	5							6
01:00		1	3							4
02:00		2	1							3
03:00		1	1							2
04:00		2	1							3
05:00		33	2							35
06:00		39	12							51
07:00		**77**	29							106
08:00		64	**66**							**130**
09:00		40	41							81
10:00		55	25							80
11:00		26	35							61
12:00 PM		49	35							84
01:00		35	36							71
02:00		30	54							84
03:00		66	77							143
04:00		**69**	88							**157**
05:00		65	77							142
06:00		54	**99**							153
07:00		26	68							94
08:00		18	40							58
09:00		16	28							44
10:00		4	12							16
11:00		2	4							6
Total		775	839							1614
Percent		48.0%	52.0%							
AM Peak	-	07:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	77	66	-	-	-	-	-	-	130
PM Peak	-	16:00	18:00	-	-	-	-	-	-	16:00
Vol.	-	69	99	-	-	-	-	-	-	157
Grand Total		775	839							1614
Percent		48.0%	52.0%							
ADT		ADT 1,614		AADT 1,614						

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2010

SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

LOS	Average Vehicle Delay sec/vehicle	Operational Characteristics
A	<10 seconds	Describes operations with low control delay, up to 10 sec/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	10 to 20 seconds	Describes operations with control delay greater than 10 seconds and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20 to 35 seconds	Describes operations with control delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	35 to 55 seconds	Describes operations with control delay greater than 35 and up to 55 sec/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55 to 80 seconds	Describes operations with control delay greater than 55 and up to 80 sec/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
F	>80 seconds	Describes operations with control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2010

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. The delay could be up to 20 seconds. Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 30 to 40 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.
D	25 to 35 seconds	This is the point at which a traffic signal may be warranted for this intersection. The delays for the stop-controlled intersection are not considered to be excessive, exceeding 35 seconds on a regular basis. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. There is a high probability that this intersection will meet traffic signal warrants. The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. The only remedy for these long delays in installing a traffic signal or restricting the accesses. The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	132	77	172	316	58	247	170	87	42	242	88
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	1	1	2	1	2	1	1	2	1	0
Cap, veh/h	465	1314	559	604	1512	642	513	547	465	714	319	116
Arrive On Green	0.03	0.35	0.35	0.09	0.41	0.41	0.08	0.29	0.29	0.03	0.24	0.24
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	1863	1583	3442	1303	476
Grp Volume(v), veh/h	52	155	91	202	372	68	291	200	102	49	0	389
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	0	1779
Q Serve(g_s), s	1.6	2.4	3.4	5.4	5.6	2.3	4.8	7.2	4.1	0.9	0.0	18.0
Cycle Q Clear(g_c), s	1.6	2.4	3.4	5.4	5.6	2.3	4.8	7.2	4.1	0.9	0.0	18.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	465	1314	559	604	1512	642	513	547	465	714	0	435
V/C Ratio(X)	0.11	0.12	0.16	0.33	0.25	0.11	0.57	0.37	0.22	0.07	0.00	0.89
Avail Cap(c_a), veh/h	573	1314	559	618	1512	642	556	547	465	927	0	502
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	18.6	18.9	12.0	16.7	15.7	21.1	23.8	22.7	22.6	0.0	31.1
Incr Delay (d2), s/veh	0.1	0.2	0.6	0.3	0.4	0.3	1.2	0.4	0.2	0.0	0.0	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	1.1	1.3	2.1	2.5	0.9	2.3	3.3	1.6	0.4	0.0	9.7
Lane Grp Delay (d), s/veh	16.6	18.8	19.5	12.4	17.1	16.0	22.2	24.2	22.9	22.7	0.0	47.9
Lane Grp LOS	B	B	B	B	B	B	C	C	C	C		D
Approach Vol, veh/h		298			642			593			438	
Approach Delay, s/veh		18.6			15.5			23.0			45.1	
Approach LOS		B			B			C			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.8	35.0		12.3	39.5		11.9	30.0		7.7	25.8	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	30.0		8.0	30.0		8.0	24.0		8.0	24.0	
Max Q Clear Time (g_c+I1), s	3.6	5.4		7.4	7.6		6.8	9.2		2.9	20.0	
Green Ext Time (p_c), s	0.0	3.7		0.0	3.6		0.1	3.2		0.0	0.8	

Intersection Summary			
HCM 2010 Ctrl Delay		24.8	
HCM 2010 LOS		C	

Notes

Intersection	
Intersection Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	4	500	6	0	491
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	588	7	0	578

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1170	298	0	0	595	0
Stage 1	592	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Follow-up Headway	3.519	3.319	-	-	2.22	-
Pot Capacity-1 Maneuver	199	699	-	-	977	-
Stage 1	517	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	199	699	-	-	977	-
Mov Capacity-2 Maneuver	336	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	699	977	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	-	-	10.2	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.02	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	16	39	467	27	31	460
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	46	549	32	36	541

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1179	565	0	0	581	0
Stage 1	565	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	211	524	-	-	993	-
Stage 1	569	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	203	524	-	-	993	-
Mov Capacity-2 Maneuver	203	-	-	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	520	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.2	0	0.6
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	359	993	-
HCM Lane V/C Ratio	-	-	0.18	0.037	-
HCM Control Delay (s)	-	-	17.2	8.764	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.648	0.114	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	24	44	57	10	66	13	413	59	33	424	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	195	-	-	470	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	29	52	68	12	79	15	492	70	39	505	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1198	1188	516	1193	1164	527	527	0	0	562	0	0
Stage 1	595	595	-	558	558	-	-	-	-	-	-	-
Stage 2	603	593	-	635	606	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	162	188	559	164	194	551	1040	-	-	1009	-	-
Stage 1	491	492	-	514	512	-	-	-	-	-	-	-
Stage 2	486	493	-	467	487	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	127	178	559	125	184	551	1040	-	-	1009	-	-
Mov Capacity-2 Maneuver	127	178	-	125	184	-	-	-	-	-	-	-
Stage 1	484	473	-	507	505	-	-	-	-	-	-	-
Stage 2	401	486	-	382	468	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.5	31.9	0.2	0.6
HCM LOS	D	D		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1040	-	-	250	125	291	1009	-	-
HCM Lane V/C Ratio	0.015	-	-	0.395	0.362	0.389	0.039	-	-
HCM Control Delay (s)	8.514	-	-	28.5	49.3	25	8.712	-	-
HCM Lane LOS	A			D	E	D	A		
HCM 95th %tile Q(veh)	0.045	-	-	1.791	1.481	1.767	0.121	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	59	1	13	29	4	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	1	15	34	5	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	135	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	65	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1529	-	859	993
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	958	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1529	-	850	993
Mov Capacity-2 Maneuver	-	-	-	-	850	-
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	8.8
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	970	-	-	1529	-
HCM Lane V/C Ratio	0.034	-	-	0.01	-
HCM Control Delay (s)	8.8	-	-	7.378	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.105	-	-	0.03	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	383	204	140	144	51	113	174	197	73	203	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	1	1	2	1	2	1	1	2	1	0
Cap, veh/h	656	1520	646	487	1613	685	506	382	325	564	301	56
Arrive On Green	0.05	0.41	0.41	0.07	0.43	0.43	0.05	0.21	0.21	0.04	0.20	0.20
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	1863	1583	3442	1529	284
Grp Volume(v), veh/h	87	416	222	152	157	55	123	189	214	79	0	262
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	0	1813
Q Serve(g_s), s	2.1	5.5	7.1	3.4	1.8	1.5	2.0	6.6	9.1	1.3	0.0	10.0
Cycle Q Clear(g_c), s	2.1	5.5	7.1	3.4	1.8	1.5	2.0	6.6	9.1	1.3	0.0	10.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	656	1520	646	487	1613	685	506	382	325	564	0	357
V/C Ratio(X)	0.13	0.27	0.34	0.31	0.10	0.08	0.24	0.49	0.66	0.14	0.00	0.73
Avail Cap(c_a), veh/h	766	1520	646	553	1613	685	703	608	517	789	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.5	14.5	15.0	10.3	12.3	12.3	21.9	25.9	26.9	22.0	0.0	27.7
Incr Delay (d2), s/veh	0.1	0.4	1.5	0.4	0.1	0.2	0.2	1.0	2.3	0.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	2.3	2.7	1.3	0.8	0.5	0.8	3.0	3.5	0.5	0.0	4.6
Lane Grp Delay (d), s/veh	11.6	15.0	16.4	10.7	12.5	12.5	22.1	26.9	29.2	22.1	0.0	30.6
Lane Grp LOS	B	B	B	B	B	B	C	C	C	C		C
Approach Vol, veh/h		725			364			526			341	
Approach Delay, s/veh		15.0			11.7			26.7			28.7	
Approach LOS		B			B			C			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.4	35.0		10.3	36.8		8.8	20.1		8.2	19.5	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	30.0		8.0	30.0		8.0	24.0		8.0	24.0	
Max Q Clear Time (g_c+I1), s	4.1	9.1		5.4	3.8		4.0	11.1		3.3	12.0	
Green Ext Time (p_c), s	0.1	4.3		0.1	4.5		0.1	2.6		0.1	2.5	

Intersection Summary			
HCM 2010 Ctrl Delay		19.9	
HCM 2010 LOS		B	

Notes

Intersection	
Intersection Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	28	456	19	0	547
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	524	22	0	629

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1164	273	0	0	546	0
Stage 1	535	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Follow-up Headway	3.519	3.319	-	-	2.22	-
Pot Capacity-1 Maneuver	201	725	-	-	1019	-
Stage 1	552	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	201	725	-	-	1019	-
Mov Capacity-2 Maneuver	201	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	725	1019	-
HCM Lane V/C Ratio	-	-	0.044	-	-
HCM Control Delay (s)	-	-	10.2	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.139	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	34	30	445	27	38	509
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	34	500	30	43	572

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1172	515	0	0	530	0
Stage 1	515	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	213	560	-	-	1037	-
Stage 1	600	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	204	560	-	-	1037	-
Mov Capacity-2 Maneuver	204	-	-	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.4	0	0.6
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	291	1037	-
HCM Lane V/C Ratio	-	-	0.247	0.041	-
HCM Control Delay (s)	-	-	21.4	8.621	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.952	0.129	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	6	25	41	13	48	41	412	74	71	440	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	195	-	-	470	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	7	27	45	14	53	45	453	81	78	484	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1274	1281	501	1258	1259	493	519	0	0	534	0	0
Stage 1	657	657	-	584	584	-	-	-	-	-	-	-
Stage 2	617	624	-	674	675	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	144	166	570	148	171	576	1047	-	-	1034	-	-
Stage 1	454	462	-	498	498	-	-	-	-	-	-	-
Stage 2	477	478	-	444	453	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	111	147	570	124	151	576	1047	-	-	1034	-	-
Mov Capacity-2 Maneuver	111	147	-	124	151	-	-	-	-	-	-	-
Stage 1	434	427	-	477	477	-	-	-	-	-	-	-
Stage 2	402	457	-	385	419	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.4	29.4	0.7	1.1
HCM LOS	D	D		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1047	-	-	223	124	267	1034	-	-
HCM Lane V/C Ratio	0.043	-	-	0.212	0.242	0.307	0.075	-	-
HCM Control Delay (s)	8.593	-	-	25.4	43.1	24.4	8.766	-	-
HCM Lane LOS	A			D	E	C	A		
HCM 95th %tile Q(veh)	0.135	-	-	0.779	0.891	1.262	0.244	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	35	6	26	60	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	7	28	65	1	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	45	0	163	41
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	122	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1563	-	828	1030
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	903	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1563	-	812	1030
Mov Capacity-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	886	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.6
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1000	-	-	1563	-
HCM Lane V/C Ratio	0.01	-	-	0.018	-
HCM Control Delay (s)	8.6	-	-	7.346	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.03	-	-	0.055	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	153	89	199	366	67	286	197	101	49	281	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	1	1	2	1	2	1	1	2	1	0
Cap, veh/h	416	1247	530	566	1450	616	489	594	505	720	350	127
Arrive On Green	0.03	0.33	0.33	0.09	0.39	0.39	0.09	0.32	0.32	0.03	0.27	0.27
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	1863	1583	3442	1306	473
Grp Volume(v), veh/h	60	180	105	234	431	79	336	232	119	58	0	451
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	0	1779
Q Serve(g_s), s	2.0	3.0	4.2	6.8	7.2	2.9	5.6	8.7	5.0	1.1	0.0	22.3
Cycle Q Clear(g_c), s	2.0	3.0	4.2	6.8	7.2	2.9	5.6	8.7	5.0	1.1	0.0	22.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	416	1247	530	566	1450	616	489	594	505	720	0	476
V/C Ratio(X)	0.14	0.14	0.20	0.41	0.30	0.13	0.69	0.39	0.24	0.08	0.00	0.95
Avail Cap(c_a), veh/h	513	1247	530	566	1450	616	502	594	505	910	0	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	20.9	21.3	13.6	18.9	17.6	21.6	23.7	22.5	22.3	0.0	32.2
Incr Delay (d2), s/veh	0.2	0.2	0.8	0.5	0.5	0.4	3.8	0.4	0.2	0.0	0.0	28.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	1.4	1.7	2.7	3.2	1.1	3.9	3.9	1.9	0.4	0.0	13.3
Lane Grp Delay (d), s/veh	18.6	21.1	22.1	14.1	19.4	18.0	25.4	24.2	22.7	22.4	0.0	60.5
Lane Grp LOS	B	C	C	B	B	B	C	C	C	C		E
Approach Vol, veh/h		345			744			687			509	
Approach Delay, s/veh		21.0			17.6			24.5			56.2	
Approach LOS		C			B			C			E	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.1	35.0		13.0	39.9		12.7	33.6		8.1	29.0	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	30.0		8.0	30.0		8.0	24.0		8.0	24.0	
Max Q Clear Time (g_c+I1), s	4.0	6.2		8.8	9.2		7.6	10.7		3.1	24.3	
Green Ext Time (p_c), s	0.0	4.3		0.0	4.2		0.1	3.6		0.0	0.0	

Intersection Summary			
HCM 2010 Ctrl Delay		28.8	
HCM 2010 LOS		C	

Notes

Intersection	
Intersection Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	5	579	7	0	569
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	681	8	0	669

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1354	345	0	0	689	0
Stage 1	685	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Follow-up Headway	3.519	3.319	-	-	2.22	-
Pot Capacity-1 Maneuver	152	652	-	-	901	-
Stage 1	463	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	152	652	-	-	901	-
Mov Capacity-2 Maneuver	290	-	-	-	-	-
Stage 1	463	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	652	901	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	-	-	10.6	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.027	0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	45	541	31	36	533
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	636	36	42	627

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1367	655	0	0	673	0
Stage 1	655	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	162	466	-	-	918	-
Stage 1	517	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	155	466	-	-	918	-
Mov Capacity-2 Maneuver	155	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	0.6
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	466	918	-
HCM Lane V/C Ratio	-	-	0.114	0.046	-
HCM Control Delay (s)	-	-	13.7	9.111	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.382	0.145	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	12.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	17	27	49	85	11	77	14	478	68	38	474	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	195	-	-	470	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	32	58	101	13	92	17	569	81	45	564	25

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1362	1350	577	1356	1323	610	589	0	0	650	0	0
Stage 1	667	667	-	643	643	-	-	-	-	-	-	-
Stage 2	695	683	-	713	680	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	125	150	516	126	156	494	986	-	-	936	-	-
Stage 1	448	457	-	462	468	-	-	-	-	-	-	-
Stage 2	433	449	-	423	451	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	90	140	516	# 88	146	494	986	-	-	936	-	-
Mov Capacity-2 Maneuver	90	140	-	# 88	146	-	-	-	-	-	-	-
Stage 1	440	435	-	454	460	-	-	-	-	-	-	-
Stage 2	337	441	-	331	429	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.3	74.1	0.2	0.6
HCM LOS	E	F		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	986	-	-	195	88	210	936	-	-
HCM Lane V/C Ratio	0.017	-	-	0.568	0.767	0.659	0.048	-	-
HCM Control Delay (s)	8.714	-	-	45.3	123.3	50.2	9.041	-	-
HCM Lane LOS	A			E	F	F	A		
HCM 95th %tile Q(veh)	0.052	-	-	3.055	3.907	4.011	0.152	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	68	1	14	34	4	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	1	16	40	5	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	81	0	154	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	73	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1517	-	838	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	950	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1517	-	829	979
Mov Capacity-2 Maneuver	-	-	-	-	829	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	955	-	-	1517	-
HCM Lane V/C Ratio	0.036	-	-	0.011	-
HCM Control Delay (s)	8.9	-	-	7.399	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.111	-	-	0.033	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	93	444	236	162	167	59	131	202	228	85	235	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	1	1	2	1	2	1	1	2	1	0
Cap, veh/h	623	1445	614	448	1546	657	503	426	362	563	332	62
Arrive On Green	0.05	0.39	0.39	0.08	0.41	0.41	0.06	0.23	0.23	0.04	0.22	0.22
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	1863	1583	3442	1525	287
Grp Volume(v), veh/h	101	483	257	176	182	64	142	220	248	92	0	303
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	0	1812
Q Serve(g_s), s	2.6	7.1	9.2	4.3	2.3	1.9	2.4	8.0	11.1	1.6	0.0	12.2
Cycle Q Clear(g_c), s	2.6	7.1	9.2	4.3	2.3	1.9	2.4	8.0	11.1	1.6	0.0	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	623	1445	614	448	1546	657	503	426	362	563	0	394
V/C Ratio(X)	0.16	0.33	0.42	0.39	0.12	0.10	0.28	0.52	0.69	0.16	0.00	0.77
Avail Cap(c_a), veh/h	711	1445	614	489	1546	657	668	578	491	766	0	562
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	16.6	17.3	11.6	13.9	13.8	21.9	26.1	27.3	22.0	0.0	28.4
Incr Delay (d2), s/veh	0.1	0.6	2.1	0.6	0.2	0.3	0.3	1.0	2.4	0.1	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	3.1	3.6	1.7	1.0	0.7	1.0	3.6	4.4	0.6	0.0	5.7
Lane Grp Delay (d), s/veh	12.9	17.3	19.4	12.2	14.1	14.1	22.2	27.1	29.7	22.1	0.0	32.5
Lane Grp LOS	B	B	B	B	B	B	C	C	C	C		C
Approach Vol, veh/h		841			422			610			395	
Approach Delay, s/veh		17.4			13.3			27.0			30.1	
Approach LOS		B			B			C			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	9.1	35.0		11.2	37.1		9.3	22.7		8.4	21.8	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	30.0		8.0	30.0		8.0	24.0		8.0	24.0	
Max Q Clear Time (g_c+I1), s	4.6	11.2		6.3	4.3		4.4	13.1		3.6	14.2	
Green Ext Time (p_c), s	0.1	4.9		0.1	5.4		0.1	2.8		0.1	2.7	

Intersection Summary												
HCM 2010 Ctrl Delay			21.4									
HCM 2010 LOS			C									

Notes

Intersection	
Intersection Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	32	529	22	0	633
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	608	25	0	728

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1349	317	0	0	633	0
Stage 1	621	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Follow-up Headway	3.519	3.319	-	-	2.22	-
Pot Capacity-1 Maneuver	154	680	-	-	946	-
Stage 1	499	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	154	680	-	-	946	-
Mov Capacity-2 Maneuver	154	-	-	-	-	-
Stage 1	499	-	-	-	-	-
Stage 2	477	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	680	946	-
HCM Lane V/C Ratio	-	-	0.054	-	-
HCM Control Delay (s)	-	-	10.6	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.171	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	35	516	31	44	589
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	115	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	580	35	49	662

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1358	597	0	0	615	0
Stage 1	597	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	164	503	-	-	965	-
Stage 1	550	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	156	503	-	-	965	-
Mov Capacity-2 Maneuver	156	-	-	-	-	-
Stage 1	550	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.6
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	503	965	-
HCM Lane V/C Ratio	-	-	0.078	0.051	-
HCM Control Delay (s)	-	-	12.8	8.932	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.253	0.162	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	7	28	87	14	56	45	478	86	82	472	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	195	-	-	470	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	8	31	96	15	62	49	525	95	90	519	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1428	1437	538	1408	1408	573	557	0	0	620	0	0
Stage 1	718	718	-	671	671	-	-	-	-	-	-	-
Stage 2	710	719	-	737	737	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	113	133	543	116	139	519	1014	-	-	960	-	-
Stage 1	420	433	-	446	455	-	-	-	-	-	-	-
Stage 2	424	433	-	410	425	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	81	115	543	# 93	120	519	1014	-	-	960	-	-
Mov Capacity-2 Maneuver	81	115	-	# 93	120	-	-	-	-	-	-	-
Stage 1	400	392	-	424	433	-	-	-	-	-	-	-
Stage 2	343	412	-	344	385	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34	69	0.6	1.3
HCM LOS	D	F		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1014	-	-	176	93	185	960	-	-
HCM Lane V/C Ratio	0.049	-	-	0.3	0.685	0.588	0.094	-	-
HCM Control Delay (s)	8.732	-	-	34	103.1	49	9.138	-	-
HCM Lane LOS	A			D	F	E	A		
HCM 95th %tile Q(veh)	0.154	-	-	1.192	3.391	3.205	0.31	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	41	6	27	70	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	7	29	76	1	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	51	0	183	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	135	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1555	-	806	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	891	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1555	-	791	1021
Mov Capacity-2 Maneuver	-	-	-	-	791	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	8.7
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	989	-	-	1555	-
HCM Lane V/C Ratio	0.01	-	-	0.019	-
HCM Control Delay (s)	8.7	-	-	7.36	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.03	-	-	0.058	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	292	34	0	757	0	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	344	40	0	891	0	128

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	344	0	789	172
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	445	-
Follow-up Headway	-	-	2.22	-	3.52	3.32
Pot Capacity-1 Maneuver	-	-	1212	-	328	842
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	613	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1212	-	328	842
Mov Capacity-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	613	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	842	-	-	1212	-
HCM Lane V/C Ratio	0.152	-	-	-	-
HCM Control Delay (s)	10	-	-	0	-
HCM Lane LOS	B			A	
HCM 95th %tile Q(veh)	0.536	-	-	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	221	95	246	363	67	292	200	107	49	303	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	1	1	2	1	2	1	1	2	1	0
Cap, veh/h	432	1245	529	524	1374	584	459	596	506	715	357	120
Arrive On Green	0.05	0.33	0.33	0.09	0.37	0.37	0.09	0.32	0.32	0.03	0.27	0.27
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	1863	1583	3442	1334	450
Grp Volume(v), veh/h	100	260	112	289	427	79	344	235	126	58	0	476
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	0	1783
Q Serve(g_s), s	3.3	4.5	4.5	8.0	7.3	3.0	5.7	8.8	5.3	1.1	0.0	23.9
Cycle Q Clear(g_c), s	3.3	4.5	4.5	8.0	7.3	3.0	5.7	8.8	5.3	1.1	0.0	23.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	432	1245	529	524	1374	584	459	596	506	715	0	477
V/C Ratio(X)	0.23	0.21	0.21	0.55	0.31	0.14	0.75	0.39	0.25	0.08	0.00	1.00
Avail Cap(c_a), veh/h	494	1245	529	524	1374	584	468	596	506	904	0	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.9	21.4	21.4	17.1	20.2	18.8	21.6	23.8	22.6	22.4	0.0	32.9
Incr Delay (d2), s/veh	0.3	0.4	0.9	1.2	0.6	0.5	6.5	0.4	0.3	0.0	0.0	40.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.3	2.0	0.1	3.9	3.3	1.2	4.2	4.0	2.0	0.4	0.0	15.6
Lane Grp Delay (d), s/veh	18.2	21.8	22.3	18.3	20.8	19.3	28.1	24.2	22.8	22.4	0.0	73.6
Lane Grp LOS	B	C	C	B	C	B	C	C	C	C		E
Approach Vol, veh/h		472			795			705			534	
Approach Delay, s/veh		21.1			19.7			25.8			68.0	
Approach LOS		C			B			C			E	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	9.9	35.0		13.0	38.1		12.8	33.7		8.1	29.0	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	30.0		8.0	30.0		8.0	24.0		8.0	24.0	
Max Q Clear Time (g_c+I1), s	5.3	6.5		10.0	9.3		7.7	10.8		3.1	25.9	
Green Ext Time (p_c), s	0.0	4.9		0.0	4.7		0.0	3.7		0.0	0.0	

Intersection Summary			
HCM 2010 Ctrl Delay		32.0	
HCM 2010 LOS		C	

Notes

Intersection	
Intersection Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	29	0	0	5	0	594	7	0	588	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	87	92	87	92	87	87	87	87	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	32	0	0	6	0	683	8	0	676	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1359	1359	676	1359	1359	683	676	0	0	683	0	0
Stage 1	676	676	-	683	683	-	-	-	-	-	-	-
Stage 2	683	683	-	676	676	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	126	149	453	126	149	449	915	-	-	910	-	-
Stage 1	443	453	-	439	449	-	-	-	-	-	-	-
Stage 2	439	449	-	443	453	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	124	149	453	117	149	449	915	-	-	910	-	-
Mov Capacity-2 Maneuver	124	149	-	117	149	-	-	-	-	-	-	-
Stage 1	443	453	-	439	449	-	-	-	-	-	-	-
Stage 2	433	449	-	412	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	13.1	0	0
HCM LOS	B	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	915	-	-	453	449	910	-	-
HCM Lane V/C Ratio	-	-	-	0.07	0.013	-	-	-
HCM Control Delay (s)	0	-	-	13.5	13.1	0	-	-
HCM Lane LOS	A			B	B	A		
HCM 95th %tile Q(veh)	0	-	-	0.223	0.039	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	4	0	0	45	18	556	31	38	563	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	250	-	250	115	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	92	89	92	89	89	89	89	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	4	0	0	51	20	625	35	43	633	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1382	1382	633	1382	1382	625	633	0	0	625	0	0
Stage 1	718	718	-	664	664	-	-	-	-	-	-	-
Stage 2	664	664	-	718	718	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	121	144	480	121	144	485	950	-	-	956	-	-
Stage 1	420	433	-	450	458	-	-	-	-	-	-	-
Stage 2	450	458	-	420	433	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	103	135	480	114	135	485	950	-	-	956	-	-
Mov Capacity-2 Maneuver	103	135	-	114	135	-	-	-	-	-	-	-
Stage 1	411	414	-	441	448	-	-	-	-	-	-	-
Stage 2	395	448	-	397	414	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	13.3	0.3	0.6
HCM LOS	B	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	950	-	-	480	485	956	-	-
HCM Lane V/C Ratio	0.021	-	-	0.009	0.104	0.045	-	-
HCM Control Delay (s)	8.869	-	-	12.6	13.3	8.942	-	-
HCM Lane LOS	A			B	B	A		
HCM 95th %tile Q(veh)	0.063	-	-	0.027	0.347	0.14	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

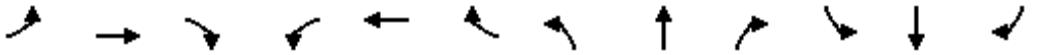
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	4	0	605	557	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	0	712	655	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1367	655	655	0	-	0
Stage 1	655	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	162	466	932	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	162	466	932	-	-	-
Mov Capacity-2 Maneuver	162	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	486	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	932	-	466	-	-
HCM Lane V/C Ratio	-	-	0.01	-	-
HCM Control Delay (s)	0	-	12.8	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0	-	0.031	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	32	74	85	16	79	32	486	68	42	494	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Cap, veh/h	290	57	131	293	39	195	331	818	695	334	830	705
Arrive On Green	0.04	0.11	0.11	0.07	0.14	0.14	0.03	0.44	0.44	0.04	0.45	0.45
Sat Flow, veh/h	1774	500	1158	1774	273	1351	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	46	0	126	101	0	113	38	579	81	50	588	30
Grp Sat Flow(s),veh/h/ln	1774	0	1658	1774	0	1624	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.3	0.0	4.3	2.8	0.0	3.7	0.7	14.8	1.8	0.9	14.9	0.6
Cycle Q Clear(g_c), s	1.3	0.0	4.3	2.8	0.0	3.7	0.7	14.8	1.8	0.9	14.9	0.6
Prop In Lane	1.00		0.70	1.00		0.83	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	0	188	293	0	235	331	818	695	334	830	705
V/C Ratio(X)	0.16	0.00	0.67	0.34	0.00	0.48	0.11	0.71	0.12	0.15	0.71	0.04
Avail Cap(c_a), veh/h	530	0	284	478	0	278	579	1595	1356	570	1595	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	24.8	19.6	0.0	23.0	10.3	13.3	9.7	10.1	13.1	9.2
Incr Delay (d2), s/veh	0.3	0.0	4.1	0.7	0.0	1.5	0.2	1.1	0.1	0.2	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.0	1.8	1.2	0.0	1.5	0.2	5.7	0.6	0.3	6.0	0.2
Lane Grp Delay (d), s/veh	22.0	0.0	28.9	20.3	0.0	24.5	10.4	14.5	9.8	10.3	14.3	9.2
Lane Grp LOS	C		C	C		C	B	B	A	B	B	A
Approach Vol, veh/h		172			214			698			668	
Approach Delay, s/veh		27.1			22.5			13.7			13.7	
Approach LOS		C			C			B			B	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.1	11.6		8.9	13.4		6.8	30.6		7.2	31.0	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	10.0		10.0	10.0		10.0	50.0		10.0	50.0	
Max Q Clear Time (g_c+I1), s	3.3	6.3		4.8	5.7		2.7	16.8		2.9	16.9	
Green Ext Time (p_c), s	0.0	0.4		0.1	0.5		0.0	8.9		0.0	8.8	

Intersection Summary			
HCM 2010 Ctrl Delay		16.1	
HCM 2010 LOS		B	

Notes

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	9	124	61	12	21	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	146	72	14	25	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	86	0	-	0	246	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	167	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1510	-	-	-	742	981
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	863	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1510	-	-	-	736	981
Mov Capacity-2 Maneuver	-	-	-	-	736	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	9.7
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1510	-	-	-	800
HCM Lane V/C Ratio	0.007	-	-	-	0.046
HCM Control Delay (s)	7.401	0	-	-	9.7
HCM Lane LOS	A	A			A
HCM 95th %tile Q(veh)	0.021	-	-	-	0.143

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	129	70	1	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	152	82	1	5	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	84	0	-	0	235	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	152	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1513	-	-	-	753	976
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	876	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1513	-	-	-	753	976
Mov Capacity-2 Maneuver	-	-	-	-	753	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	876	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1513	-	-	-	815
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	9.5
HCM Lane LOS	A				A
HCM 95th %tile Q(veh)	0	-	-	-	0.026

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	104	5	15	58	5	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	6	18	68	6	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	128	0	229	125
Stage 1	-	-	-	-	125	-
Stage 2	-	-	-	-	104	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1458	-	759	926
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	920	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1458	-	749	926
Mov Capacity-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	908	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9.2
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1458	-
HCM Lane V/C Ratio	0.042	-	-	0.012	-
HCM Control Delay (s)	9.2	-	-	7.499	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.132	-	-	0.037	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	76	50	13	33	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	89	59	15	39	69

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	74	0	-	0	162	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	96	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1526	-	-	-	829	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	928	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1526	-	-	-	827	998
Mov Capacity-2 Maneuver	-	-	-	-	827	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.4
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1526	-	-	-	929
HCM Lane V/C Ratio	0.002	-	-	-	0.117
HCM Control Delay (s)	7.365	0	-	-	9.4
HCM Lane LOS	A	A			A
HCM 95th %tile Q(veh)	0.007	-	-	-	0.394

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.8

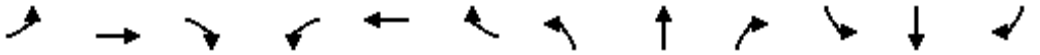
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	757	123	0	359	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	-	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	823	134	0	390	0	196

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	823	0	1018	411
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	195	-
Follow-up Headway	-	-	2.22	-	3.52	3.32
Pot Capacity-1 Maneuver	-	-	803	-	233	590
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	819	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	803	-	233	590
Mov Capacity-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	819	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	590	-	-	803	-
HCM Lane V/C Ratio	0.332	-	-	-	-
HCM Control Delay (s)	14.1	-	-	0	-
HCM Lane LOS	B			A	
HCM 95th %tile Q(veh)	1.446	-	-	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	542	254	313	156	59	159	214	252	85	305	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	1	1	2	1	2	1	1	2	1	0
Cap, veh/h	618	1334	567	407	1407	598	474	494	420	593	394	57
Arrive On Green	0.08	0.36	0.36	0.10	0.38	0.38	0.06	0.27	0.27	0.04	0.25	0.25
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	1863	1583	3442	1592	230
Grp Volume(v), veh/h	154	589	276	340	170	64	173	233	274	92	0	380
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	0	1822
Q Serve(g_s), s	4.5	10.1	11.3	8.0	2.5	2.2	3.0	8.8	12.9	1.6	0.0	16.6
Cycle Q Clear(g_c), s	4.5	10.1	11.3	8.0	2.5	2.2	3.0	8.8	12.9	1.6	0.0	16.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	618	1334	567	407	1407	598	474	494	420	593	0	451
V/C Ratio(X)	0.25	0.44	0.49	0.84	0.12	0.11	0.36	0.47	0.65	0.16	0.00	0.84
Avail Cap(c_a), veh/h	652	1334	567	407	1407	598	596	534	454	777	0	522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	20.5	20.9	19.7	17.0	16.9	22.2	25.8	27.3	22.1	0.0	30.0
Incr Delay (d2), s/veh	0.2	1.1	3.0	14.1	0.2	0.4	0.5	0.7	3.0	0.1	0.0	10.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.8	4.5	4.6	4.3	1.1	0.8	1.2	4.0	5.1	0.7	0.0	8.6
Lane Grp Delay (d), s/veh	14.9	21.6	23.9	33.8	17.2	17.3	22.7	26.5	30.3	22.2	0.0	40.6
Lane Grp LOS	B	C	C	C	B	B	C	C	C	C		D
Approach Vol, veh/h		1019			574			680			472	
Approach Delay, s/veh		21.2			27.0			27.1			37.0	
Approach LOS		C			C			C			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	11.4	35.0		13.0	36.6		10.0	27.2		8.5	25.7	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	30.0		8.0	30.0		8.0	24.0		8.0	24.0	
Max Q Clear Time (g_c+I1), s	6.5	13.3		10.0	4.5		5.0	14.9		3.6	18.6	
Green Ext Time (p_c), s	0.1	5.4		0.0	6.2		0.1	3.0		0.1	2.1	

Intersection Summary												
HCM 2010 Ctrl Delay			26.6									
HCM 2010 LOS			C									

Notes

Intersection	
Intersection Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	67	0	0	32	0	592	22	0	691	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	87	92	87	92	87	87	87	87	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	73	0	0	37	0	680	25	0	794	196

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1474	1474	794	1474	1474	680	794	0	0	680	0	0
Stage 1	794	794	-	680	680	-	-	-	-	-	-	-
Stage 2	680	680	-	794	794	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	105	127	388	105	127	451	827	-	-	912	-	-
Stage 1	381	400	-	441	451	-	-	-	-	-	-	-
Stage 2	441	451	-	381	400	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	96	127	388	85	127	451	827	-	-	912	-	-
Mov Capacity-2 Maneuver	96	127	-	85	127	-	-	-	-	-	-	-
Stage 1	381	400	-	441	451	-	-	-	-	-	-	-
Stage 2	405	451	-	309	400	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	13.7	0	0
HCM LOS	C	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	827	-	-	388	451	912	-	-
HCM Lane V/C Ratio	-	-	-	0.188	0.082	-	-	-
HCM Control Delay (s)	0	-	-	16.4	13.7	0	-	-
HCM Lane LOS	A			C	B	A		
HCM 95th %tile Q(veh)	0	-	-	0.681	0.265	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	19	0	0	35	55	579	32	47	665	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	250	-	250	115	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	92	89	92	89	89	89	89	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	21	0	0	39	60	651	36	53	747	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1623	1623	747	1623	1623	651	747	0	0	651	0	0
Stage 1	853	853	-	770	770	-	-	-	-	-	-	-
Stage 2	770	770	-	853	853	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	82	103	413	82	103	469	861	-	-	935	-	-
Stage 1	354	376	-	393	410	-	-	-	-	-	-	-
Stage 2	393	410	-	354	376	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	68	90	413	71	90	469	861	-	-	935	-	-
Mov Capacity-2 Maneuver	68	90	-	71	90	-	-	-	-	-	-	-
Stage 1	329	355	-	366	381	-	-	-	-	-	-	-
Stage 2	335	381	-	317	355	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.2	13.4	0.8	0.6
HCM LOS	B	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	861	-	-	413	469	935	-	-
HCM Lane V/C Ratio	0.069	-	-	0.05	0.084	0.056	-	-
HCM Control Delay (s)	9.493	-	-	14.2	13.4	9.081	-	-
HCM Lane LOS	A			B	B	A		
HCM 95th %tile Q(veh)	0.223	-	-	0.157	0.273	0.179	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	21	0	666	650	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	724	707	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1431	707	707	0	-	0
Stage 1	707	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	148	435	891	-	-	-
Stage 1	489	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	148	435	891	-	-	-
Mov Capacity-2 Maneuver	148	-	-	-	-	-
Stage 1	489	-	-	-	-	-
Stage 2	480	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	891	-	435	-	-
HCM Lane V/C Ratio	-	-	0.052	-	-
HCM Control Delay (s)	0	-	13.7	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0	-	0.166	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	12	50	87	30	63	108	499	86	93	523	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Cap, veh/h	306	34	142	329	52	109	369	815	693	376	802	682
Arrive On Green	0.08	0.11	0.11	0.07	0.10	0.10	0.06	0.44	0.44	0.05	0.43	0.43
Sat Flow, veh/h	1774	312	1318	1774	538	1126	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	114	0	68	96	0	102	119	548	95	102	575	60
Grp Sat Flow(s),veh/h/ln	1774	0	1630	1774	0	1664	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.4	0.0	2.3	2.9	0.0	3.5	2.2	14.0	2.1	1.9	15.2	1.3
Cycle Q Clear(g_c), s	3.4	0.0	2.3	2.9	0.0	3.5	2.2	14.0	2.1	1.9	15.2	1.3
Prop In Lane	1.00		0.81	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	306	0	176	329	0	161	369	815	693	376	802	682
V/C Ratio(X)	0.37	0.00	0.39	0.29	0.00	0.64	0.32	0.67	0.14	0.27	0.72	0.09
Avail Cap(c_a), veh/h	465	0	272	508	0	278	556	1556	1322	576	1556	1322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	24.9	22.2	0.0	26.0	10.5	13.4	10.1	10.2	14.0	10.1
Incr Delay (d2), s/veh	0.8	0.0	1.4	0.5	0.0	4.1	0.5	1.0	0.1	0.4	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.4	0.0	0.9	1.2	0.0	1.6	0.8	5.5	0.7	0.7	6.2	0.4
Lane Grp Delay (d), s/veh	22.2	0.0	26.3	22.7	0.0	30.2	11.0	14.4	10.2	10.6	15.3	10.1
Lane Grp LOS	C		C	C		C	B	B	B	B	B	B
Approach Vol, veh/h		182			198			762			737	
Approach Delay, s/veh		23.7			26.5			13.3			14.2	
Approach LOS		C			C			B			B	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	9.6	11.5		8.9	10.8		8.7	31.2		8.3	30.8	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	10.0		10.0	10.0		10.0	50.0		10.0	50.0	
Max Q Clear Time (g_c+I1), s	5.4	4.3		4.9	5.5		4.2	16.0		3.9	17.2	
Green Ext Time (p_c), s	0.1	0.4		0.1	0.3		0.1	8.6		0.1	8.6	

Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	62	156	37	104	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	67	170	40	113	64

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	210	0	-	0	318	190
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	128	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1361	-	-	-	675	852
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	898	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1361	-	-	-	659	852
Mov Capacity-2 Maneuver	-	-	-	-	659	-
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	877	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	11.6
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1361	-	-	-	718
HCM Lane V/C Ratio	0.022	-	-	-	0.247
HCM Control Delay (s)	7.706	0	-	-	11.6
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.069	-	-	-	0.969

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	88	211	4	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	96	229	4	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	234	0	-	0	330	232
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	98	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1333	-	-	-	665	807
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	926	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1333	-	-	-	664	807
Mov Capacity-2 Maneuver	-	-	-	-	664	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.1
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1333	-	-	-	706
HCM Lane V/C Ratio	0.001	-	-	-	0.005
HCM Control Delay (s)	7.703	0	-	-	10.1
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.002	-	-	-	0.014

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	76	8	33	183	5	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	9	36	199	5	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	91	0	358	87
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	271	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1504	-	640	971
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	775	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1504	-	623	971
Mov Capacity-2 Maneuver	-	-	-	-	623	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.4
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	841	-	-	1504	-
HCM Lane V/C Ratio	0.023	-	-	0.024	-
HCM Control Delay (s)	9.4	-	-	7.452	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.071	-	-	0.073	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	14	66	137	51	18	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	72	149	55	20	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	204	0	-	0	279	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	102	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1368	-	-	-	711	866
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	922	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1368	-	-	-	703	866
Mov Capacity-2 Maneuver	-	-	-	-	703	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	912	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	9.8
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1368	-	-	-	807
HCM Lane V/C Ratio	0.011	-	-	-	0.077
HCM Control Delay (s)	7.661	0	-	-	9.8
HCM Lane LOS	A	A			A
HCM 95th %tile Q(veh)	0.034	-	-	-	0.249

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	202	145	311	552	140	396	347	170	240	434	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1	2	2	1	2	2	1
Cap, veh/h	291	845	359	527	1267	538	553	1039	686	364	833	354
Arrive On Green	0.04	0.23	0.23	0.15	0.34	0.34	0.16	0.28	0.28	0.11	0.22	0.22
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	66	238	171	366	649	165	466	408	200	282	511	176
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	2.4	4.5	8.0	10.7	11.9	6.5	11.2	7.6	7.0	6.8	10.5	8.3
Cycle Q Clear(g_c), s	2.4	4.5	8.0	10.7	11.9	6.5	11.2	7.6	7.0	6.8	10.5	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	291	845	359	527	1267	538	553	1039	686	364	833	354
V/C Ratio(X)	0.23	0.28	0.48	0.69	0.51	0.31	0.84	0.39	0.29	0.78	0.61	0.50
Avail Cap(c_a), veh/h	323	845	359	607	1267	538	646	1529	894	444	1311	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	27.2	28.6	14.9	22.5	20.7	34.7	24.9	15.7	37.2	29.8	28.9
Incr Delay (d2), s/veh	0.4	0.8	4.5	2.9	1.5	1.5	8.7	0.2	0.2	6.9	0.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	2.1	3.4	4.5	5.5	2.6	5.3	3.4	2.5	3.2	4.8	3.2
Lane Grp Delay (d), s/veh	24.2	28.1	33.1	17.8	24.0	22.2	43.4	25.1	15.9	44.0	30.5	30.0
Lane Grp LOS	C	C	C	B	C	C	D	C	B	D	C	C
Approach Vol, veh/h		475			1180			1074			969	
Approach Delay, s/veh		29.3			21.8			31.4			34.4	
Approach LOS		C			C			C			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.5	24.3		18.2	34.0		18.7	28.8		14.0	24.1	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	5.0	17.0		17.0	29.0		16.0	35.0		11.0	30.0	
Max Q Clear Time (g_c+I1), s	4.4	10.0		12.7	13.9		13.2	9.6		8.8	12.5	
Green Ext Time (p_c), s	0.0	3.6		0.5	5.8		0.5	7.5		0.2	6.5	

Intersection Summary			
HCM 2010 Ctrl Delay		28.8	
HCM 2010 LOS		C	

Notes

Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	50	863	30	0	889
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	59	1015	35	0	1046

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2079	525	0	0	1051	0
Stage 1	1033	-	-	-	-	-
Stage 2	1046	-	-	-	-	-
Follow-up Headway	3.519	3.319	-	-	2.22	-
Pot Capacity-1 Maneuver	52	498	-	-	658	-
Stage 1	305	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	52	498	-	-	658	-
Mov Capacity-2 Maneuver	170	-	-	-	-	-
Stage 1	305	-	-	-	-	-
Stage 2	337	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	498	658	-
HCM Lane V/C Ratio	-	-	0.118	-	-
HCM Control Delay (s)	-	-	13.2	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.399	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	100	793	55	78	811
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	115	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	118	933	65	92	954

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2071	933	0	0	933	0
Stage 1	933	-	-	-	-	-
Stage 2	1138	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	59	323	-	-	734	-
Stage 1	383	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	52	323	-	-	734	-
Mov Capacity-2 Maneuver	52	-	-	-	-	-
Stage 1	383	-	-	-	-	-
Stage 2	268	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.4	0	0.9
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	323	734	-
HCM Lane V/C Ratio	-	-	0.364	0.125	-
HCM Control Delay (s)	-	-	22.4	10.604	-
HCM Lane LOS			C	B	
HCM 95th %tile Q(veh)	-	-	1.617	0.426	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	30	78	110	36	78	36	735	100	141	634	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Cap, veh/h	242	50	129	269	84	182	297	948	806	243	1013	861
Arrive On Green	0.03	0.11	0.11	0.08	0.16	0.16	0.03	0.51	0.51	0.07	0.54	0.54
Sat Flow, veh/h	1774	461	1191	1774	526	1137	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	39	0	129	131	0	136	43	875	119	168	755	45
Grp Sat Flow(s),veh/h/ln	1774	0	1653	1774	0	1662	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.6	0.0	6.4	5.0	0.0	6.3	1.0	36.6	3.4	3.4	26.2	1.1
Cycle Q Clear(g_c), s	1.6	0.0	6.4	5.0	0.0	6.3	1.0	36.6	3.4	3.4	26.2	1.1
Prop In Lane	1.00		0.72	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	0	179	269	0	266	297	948	806	243	1013	861
V/C Ratio(X)	0.16	0.00	0.72	0.49	0.00	0.51	0.14	0.92	0.15	0.69	0.75	0.05
Avail Cap(c_a), veh/h	402	0	294	337	0	296	454	995	846	338	1013	861
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	36.3	26.1	0.0	32.4	12.6	19.2	11.0	18.8	14.7	9.0
Incr Delay (d2), s/veh	0.3	0.0	5.4	1.4	0.0	1.5	0.2	13.3	0.1	3.5	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.7	0.0	2.8	2.2	0.0	2.6	0.4	18.6	1.2	3.7	11.3	0.4
Lane Grp Delay (d), s/veh	32.4	0.0	41.7	27.5	0.0	33.9	12.8	32.5	11.1	22.3	17.8	9.0
Lane Grp LOS	C		D	C		C	B	C	B	C	B	A
Approach Vol, veh/h		168			267			1037			968	
Approach Delay, s/veh		39.5			30.7			29.2			18.1	
Approach LOS		D			C			C			B	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.4	14.1		11.7	18.5		7.5	47.9		10.5	50.8	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	15.0		10.0	15.0		10.0	45.0		10.0	45.0	
Max Q Clear Time (g_c+I1), s	3.6	8.4		7.0	8.3		3.0	38.6		5.4	28.2	
Green Ext Time (p_c), s	0.0	0.8		0.1	0.8		0.0	4.2		0.2	10.4	

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

Notes

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	119	1	14	86	4	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	140	1	16	101	5	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	141	0	275	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	134	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1442	-	715	907
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	892	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1442	-	706	907
Mov Capacity-2 Maneuver	-	-	-	-	706	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	881	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.3
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	872	-	-	1442	-
HCM Lane V/C Ratio	0.038	-	-	0.011	-
HCM Control Delay (s)	9.3	-	-	7.525	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.118	-	-	0.035	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	132	738	386	254	277	250	180	401	356	160	308	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1	2	2	1	2	2	1
Cap, veh/h	517	1472	626	371	1623	690	258	855	530	233	827	351
Arrive On Green	0.06	0.40	0.40	0.11	0.44	0.44	0.08	0.23	0.23	0.07	0.22	0.22
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	139	777	406	267	292	263	189	422	375	168	324	100
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	4.5	15.7	20.6	7.9	4.7	11.1	5.3	9.7	20.4	4.7	7.3	5.2
Cycle Q Clear(g_c), s	4.5	15.7	20.6	7.9	4.7	11.1	5.3	9.7	20.4	4.7	7.3	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	517	1472	626	371	1623	690	258	855	530	233	827	351
V/C Ratio(X)	0.27	0.53	0.65	0.72	0.18	0.38	0.73	0.49	0.71	0.72	0.39	0.28
Avail Cap(c_a), veh/h	528	1472	626	544	1623	690	349	868	535	244	827	351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	22.8	24.3	16.7	17.1	18.9	44.7	33.1	28.6	45.1	32.7	31.9
Incr Delay (d2), s/veh	0.3	1.4	5.1	2.6	0.2	1.6	5.1	0.4	4.2	9.6	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.9	7.2	8.5	3.3	2.1	4.4	2.5	4.5	8.3	2.4	3.4	2.0
Lane Grp Delay (d), s/veh	15.9	24.2	29.4	19.3	17.3	20.5	49.8	33.5	32.9	54.7	33.0	32.3
Lane Grp LOS	B	C	C	B	B	C	D	C	C	D	C	C
Approach Vol, veh/h		1322			822			986			592	
Approach Delay, s/veh		24.9			19.0			36.4			39.1	
Approach LOS		C			B			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	11.4	44.0		15.4	48.0		12.4	27.6		11.7	26.9	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	7.0	30.0		20.0	43.0		10.0	23.0		7.0	20.0	
Max Q Clear Time (g_c+I1), s	6.5	22.6		9.9	13.1		7.3	22.4		6.7	9.3	
Green Ext Time (p_c), s	0.0	4.9		0.5	11.1		0.1	0.3		0.0	4.6	

Intersection Summary			
HCM 2010 Ctrl Delay		28.9	
HCM 2010 LOS		C	

Notes

Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	55	881	35	0	948
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	63	1013	40	0	1090

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2123	526	0	0	1053	0
Stage 1	1033	-	-	-	-	-
Stage 2	1090	-	-	-	-	-
Follow-up Headway	3.519	3.319	-	-	2.22	-
Pot Capacity-1 Maneuver	49	497	-	-	657	-
Stage 1	305	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	49	497	-	-	657	-
Mov Capacity-2 Maneuver	165	-	-	-	-	-
Stage 1	305	-	-	-	-	-
Stage 2	321	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	497	657	-
HCM Lane V/C Ratio	-	-	0.127	-	-
HCM Control Delay (s)	-	-	13.3	0	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.434	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

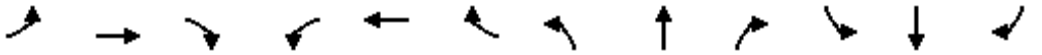
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	135	781	59	73	876
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	115	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	152	878	66	82	984

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2026	878	0	0	878	0
Stage 1	878	-	-	-	-	-
Stage 2	1148	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	63	347	-	-	769	-
Stage 1	406	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	56	347	-	-	769	-
Mov Capacity-2 Maneuver	56	-	-	-	-	-
Stage 1	406	-	-	-	-	-
Stage 2	270	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.2	0	0.8
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	347	769	-
HCM Lane V/C Ratio	-	-	0.437	0.107	-
HCM Control Delay (s)	-	-	23.2	10.24	-
HCM Lane LOS			C	B	
HCM 95th %tile Q(veh)	-	-	2.142	0.357	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	16	56	135	32	111	36	698	125	118	707	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Cap, veh/h	202	28	96	293	50	176	288	962	817	302	1010	858
Arrive On Green	0.03	0.08	0.08	0.09	0.14	0.14	0.03	0.52	0.52	0.06	0.54	0.54
Sat Flow, veh/h	1774	369	1270	1774	365	1273	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	37	0	80	148	0	157	40	767	137	130	777	54
Grp Sat Flow(s),veh/h/ln	1774	0	1639	1774	0	1638	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.5	0.0	3.6	5.2	0.0	7.0	0.8	25.9	3.5	2.4	25.1	1.2
Cycle Q Clear(g_c), s	1.5	0.0	3.6	5.2	0.0	7.0	0.8	25.9	3.5	2.4	25.1	1.2
Prop In Lane	1.00		0.77	1.00		0.78	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	0	124	293	0	226	288	962	817	302	1010	858
V/C Ratio(X)	0.18	0.00	0.65	0.51	0.00	0.69	0.14	0.80	0.17	0.43	0.77	0.06
Avail Cap(c_a), veh/h	383	0	214	363	0	226	467	1216	1034	435	1216	1034
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	0.0	34.4	24.1	0.0	31.4	11.8	15.2	9.8	13.1	13.8	8.3
Incr Delay (d2), s/veh	0.4	0.0	5.6	1.4	0.0	8.8	0.2	3.0	0.1	1.0	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.7	0.0	1.6	2.2	0.0	3.3	0.3	11.2	1.2	0.9	10.6	0.4
Lane Grp Delay (d), s/veh	31.9	0.0	40.0	25.4	0.0	40.2	12.0	18.2	9.9	14.1	16.3	8.3
Lane Grp LOS	C		D	C		D	B	B	A	B	B	A
Approach Vol, veh/h		117			305			944			961	
Approach Delay, s/veh		37.4			33.0			16.8			15.5	
Approach LOS		D			C			B			B	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.2	10.8		12.0	15.6		7.3	44.5		9.3	46.5	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	10.0		10.0	10.0		10.0	50.0		10.0	50.0	
Max Q Clear Time (g_c+I1), s	3.5	5.6		7.2	9.0		2.8	27.9		4.4	27.1	
Green Ext Time (p_c), s	0.0	0.2		0.1	0.1		0.0	11.6		0.1	11.8	

Intersection Summary			
HCM 2010 Ctrl Delay		19.4	
HCM 2010 LOS		B	

Notes

Intersection	
Intersection Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	88	6	26	107	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	96	7	28	116	1	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	102	0	272	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	173	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1490	-	717	957
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	857	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1490	-	703	957
Mov Capacity-2 Maneuver	-	-	-	-	703	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	840	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	920	-	-	1490	-
HCM Lane V/C Ratio	0.011	-	-	0.019	-
HCM Control Delay (s)	9	-	-	7.463	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.032	-	-	0.058	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	402	34	0	1101	0	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	473	40	0	1295	0	128

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	513	0	1141	256
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	648	-
Follow-up Headway	-	-	2.22	-	3.52	3.32
Pot Capacity-1 Maneuver	-	-	1049	-	194	743
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	483	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1049	-	194	743
Mov Capacity-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	483	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	743	-	-	1049	-
HCM Lane V/C Ratio	0.173	-	-	-	-
HCM Control Delay (s)	10.9	-	-	0	-
HCM Lane LOS	B			A	
HCM 95th %tile Q(veh)	0.621	-	-	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	270	151	358	549	140	402	350	176	240	456	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1	2	2	1	2	2	1
Cap, veh/h	308	787	335	514	1224	520	554	1057	724	360	846	360
Arrive On Green	0.06	0.21	0.21	0.17	0.33	0.33	0.16	0.28	0.28	0.10	0.23	0.23
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	106	318	178	421	646	165	473	412	207	282	536	176
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	4.1	6.5	8.8	13.0	12.4	6.9	11.8	7.9	7.2	7.1	11.5	8.5
Cycle Q Clear(g_c), s	4.1	6.5	8.8	13.0	12.4	6.9	11.8	7.9	7.2	7.1	11.5	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	787	335	514	1224	520	554	1057	724	360	846	360
V/C Ratio(X)	0.34	0.40	0.53	0.82	0.53	0.32	0.85	0.39	0.29	0.78	0.63	0.49
Avail Cap(c_a), veh/h	308	787	335	547	1224	520	624	1477	903	429	1266	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	30.0	30.9	16.7	24.1	22.2	36.0	25.5	14.9	38.5	30.8	29.7
Incr Delay (d2), s/veh	0.7	1.5	5.9	9.2	1.6	1.6	10.2	0.2	0.2	7.7	0.8	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.8	3.1	3.9	6.1	5.8	2.8	5.8	3.5	2.6	3.4	5.3	3.3
Lane Grp Delay (d), s/veh	25.8	31.6	36.9	25.9	25.7	23.8	46.2	25.7	15.2	46.3	31.6	30.7
Lane Grp LOS	C	C	D	C	C	C	D	C	B	D	C	C
Approach Vol, veh/h		602			1232			1092			994	
Approach Delay, s/veh		32.1			25.5			32.6			35.6	
Approach LOS		C			C			C			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	23.7		20.3	34.0		19.2	30.0		14.2	25.1	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	5.0	17.0		17.0	29.0		16.0	35.0		11.0	30.0	
Max Q Clear Time (g_c+I1), s	6.1	10.8		15.0	14.4		13.8	9.9		9.1	13.5	
Green Ext Time (p_c), s	0.0	3.5		0.3	6.2		0.4	7.8		0.2	6.6	

Intersection Summary	
HCM 2010 Ctrl Delay	31.0
HCM 2010 LOS	C

Notes

Intersection	
Intersection Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	29	0	0	50	0	878	30	0	908	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	85	87	85	87	87	87	87	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	34	0	0	57	0	1009	34	0	1044	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1549	2088	1044	2070	2070	522	1044	0	0	1044	0	0
Stage 1	1044	1044	-	1026	1026	-	-	-	-	-	-	-
Stage 2	505	1044	-	1044	1044	-	-	-	-	-	-	-
Follow-up Headway	3.519	4.019	3.319	3.519	4.019	3.319	2.218	-	-	2.22	-	-
Pot Capacity-1 Maneuver	85	52	277	35	54	500	666	-	-	662	-	-
Stage 1	276	305	-	252	311	-	-	-	-	-	-	-
Stage 2	519	305	-	276	305	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	75	52	277	31	54	500	666	-	-	662	-	-
Mov Capacity-2 Maneuver	189	163	-	127	165	-	-	-	-	-	-	-
Stage 1	276	305	-	252	311	-	-	-	-	-	-	-
Stage 2	459	305	-	242	305	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.8	13.1	0	0
HCM LOS	C	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	666	-	-	277	500	662	-	-
HCM Lane V/C Ratio	-	-	-	0.123	0.115	-	-	-
HCM Control Delay (s)	0	-	-	19.8	13.1	0	-	-
HCM Lane LOS	A			C	B	A		
HCM 95th %tile Q(veh)	0	-	-	0.416	0.387	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	4	0	0	100	18	808	55	80	841	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	0	115	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	89	85	89	85	89	89	89	89	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	112	21	908	62	90	945	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2075	2075	945	2075	2075	908	945	0	0	908	0	0
Stage 1	1125	1125	-	950	950	-	-	-	-	-	-	-
Stage 2	950	950	-	1125	1125	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	39	54	318	39	54	334	726	-	-	750	-	-
Stage 1	249	280	-	312	339	-	-	-	-	-	-	-
Stage 2	312	339	-	249	280	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	23	46	318	34	46	334	726	-	-	750	-	-
Mov Capacity-2 Maneuver	23	46	-	34	46	-	-	-	-	-	-	-
Stage 1	242	246	-	303	329	-	-	-	-	-	-	-
Stage 2	201	329	-	216	246	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	21.1	0.2	0.9
HCM LOS	C	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	726	-	-	318	334	750	-	-
HCM Lane V/C Ratio	0.029	-	-	0.015	0.336	0.12	-	-
HCM Control Delay (s)	10.108	-	-	16.5	21.1	10.453	-	-
HCM Lane LOS	B			C	C	B		
HCM 95th %tile Q(veh)	0.09	-	-	0.045	1.445	0.407	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	4	0	880	836	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	0	1035	984	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2025	990	996	0	-	0
Stage 1	990	-	-	-	-	-
Stage 2	1035	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	63	299	695	-	-	-
Stage 1	360	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	63	299	695	-	-	-
Mov Capacity-2 Maneuver	63	-	-	-	-	-
Stage 1	360	-	-	-	-	-
Stage 2	342	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	0	0
HCM LOS	C		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	695	-	299	-	-
HCM Lane V/C Ratio	-	-	0.016	-	-
HCM Control Delay (s)	0	-	17.2	-	-
HCM Lane LOS	A		C		
HCM 95th %tile Q(veh)	0	-	0.048	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	35	103	110	41	80	54	743	100	145	654	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Cap, veh/h	266	54	157	262	93	181	270	924	786	224	983	835
Arrive On Green	0.04	0.13	0.13	0.08	0.16	0.16	0.04	0.50	0.50	0.07	0.53	0.53
Sat Flow, veh/h	1774	419	1227	1774	568	1101	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	65	0	165	131	0	144	64	885	119	173	779	50
Grp Sat Flow(s),veh/h/ln	1774	0	1646	1774	0	1668	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.8	0.0	8.5	5.3	0.0	6.9	1.5	40.0	3.6	3.8	29.8	1.3
Cycle Q Clear(g_c), s	2.8	0.0	8.5	5.3	0.0	6.9	1.5	40.0	3.6	3.8	29.8	1.3
Prop In Lane	1.00		0.75	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	211	262	0	275	270	924	786	224	983	835
V/C Ratio(X)	0.24	0.00	0.78	0.50	0.00	0.52	0.24	0.96	0.15	0.77	0.79	0.06
Avail Cap(c_a), veh/h	391	0	282	322	0	286	408	957	813	307	983	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	0.0	37.0	27.7	0.0	33.5	14.6	21.2	12.0	19.9	16.8	10.1
Incr Delay (d2), s/veh	0.5	0.0	9.8	1.5	0.0	1.6	0.4	19.3	0.1	7.9	4.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	0.0	4.0	2.3	0.0	3.0	0.6	21.7	1.2	4.2	13.3	0.5
Lane Grp Delay (d), s/veh	31.8	0.0	46.9	29.2	0.0	35.1	15.0	40.4	12.1	27.9	21.3	10.1
Lane Grp LOS	C		D	C		D	B	D	B	C	C	B
Approach Vol, veh/h		230			275			1068			1002	
Approach Delay, s/veh		42.6			32.3			35.8			21.9	
Approach LOS		D			C			D			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.8	16.2		12.0	19.4		8.2	48.5		10.9	51.2	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	15.0		10.0	15.0		10.0	45.0		10.0	45.0	
Max Q Clear Time (g_c+I1), s	4.8	10.5		7.3	8.9		3.5	42.0		5.8	31.8	
Green Ext Time (p_c), s	0.0	0.7		0.1	0.9		0.0	1.5		0.2	9.0	

Intersection Summary												
HCM 2010 Ctrl Delay			30.6									
HCM 2010 LOS			C									

Notes

Intersection	
Intersection Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	9	172	125	12	21	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	202	147	14	25	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	161	0	-	0	378	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	224	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1418	-	-	-	624	892
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	813	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1418	-	-	-	618	892
Mov Capacity-2 Maneuver	-	-	-	-	618	-
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	806	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10.5
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1418	-	-	-	686
HCM Lane V/C Ratio	0.007	-	-	-	0.053
HCM Control Delay (s)	7.558	0	-	-	10.5
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.023	-	-	-	0.168

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	177	134	1	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	208	158	1	5	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	159	0	-	0	366	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	208	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1420	-	-	-	634	887
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	827	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1420	-	-	-	634	887
Mov Capacity-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	827	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1420	-	-	-	701
HCM Lane V/C Ratio	-	-	-	-	0.01
HCM Control Delay (s)	0	-	-	-	10.2
HCM Lane LOS	A				B
HCM 95th %tile Q(veh)	0	-	-	-	0.031

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	155	5	15	110	5	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	182	6	18	129	6	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	188	0	350	185
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	165	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1386	-	647	857
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	864	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1386	-	638	857
Mov Capacity-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	852	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.6
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	812	-	-	1386	-
HCM Lane V/C Ratio	0.045	-	-	0.013	-
HCM Control Delay (s)	9.6	-	-	7.631	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.141	-	-	0.039	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	127	102	13	33	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	149	120	15	39	69

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	135	0	-	0	284	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	156	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1449	-	-	-	706	922
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	872	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1449	-	-	-	704	922
Mov Capacity-2 Maneuver	-	-	-	-	704	-
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1449	-	-	-	830
HCM Lane V/C Ratio	0.002	-	-	-	0.13
HCM Control Delay (s)	7.491	0	-	-	10
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.007	-	-	-	0.448

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1240	123	0	569	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1348	134	0	618	0	196

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1482	0	1724	741
Stage 1	-	-	-	-	1415	-
Stage 2	-	-	-	-	309	-
Follow-up Headway	-	-	2.22	-	3.52	3.32
Pot Capacity-1 Maneuver	-	-	450	-	80	359
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	718	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	450	-	80	359
Mov Capacity-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	718	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	26.4
HCM LOS			D

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	359	-	-	450	-
HCM Lane V/C Ratio	0.545	-	-	-	-
HCM Control Delay (s)	26.4	-	-	0	-
HCM Lane LOS	D			A	
HCM 95th %tile Q(veh)	3.117	-	-	0	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	836	404	405	266	250	208	413	380	160	378	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	1	2	2	1	2	2	1
Cap, veh/h	468	1170	497	456	1621	689	288	836	659	232	776	330
Arrive On Green	0.07	0.31	0.31	0.19	0.44	0.44	0.08	0.22	0.22	0.07	0.21	0.21
Sat Flow, veh/h	1774	3725	1583	1774	3725	1583	3442	3725	1583	3442	3725	1583
Grp Volume(v), veh/h	191	880	425	426	280	263	219	435	400	168	398	100
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1721	1863	1583	1721	1863	1583
Q Serve(g_s), s	7.0	21.0	24.9	16.8	4.5	11.1	6.2	10.1	19.5	4.7	9.4	5.3
Cycle Q Clear(g_c), s	7.0	21.0	24.9	16.8	4.5	11.1	6.2	10.1	19.5	4.7	9.4	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	468	1170	497	456	1621	689	288	836	659	232	776	330
V/C Ratio(X)	0.41	0.75	0.85	0.93	0.17	0.38	0.76	0.52	0.61	0.72	0.51	0.30
Avail Cap(c_a), veh/h	468	1170	497	475	1621	689	348	867	672	244	776	330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	30.5	31.8	26.8	17.1	18.9	44.3	33.7	22.5	45.2	34.7	33.1
Incr Delay (d2), s/veh	0.6	4.5	16.9	25.4	0.2	1.6	7.8	0.5	1.5	9.6	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.1	10.1	11.8	7.5	2.0	4.4	3.0	4.7	7.5	2.4	4.4	2.1
Lane Grp Delay (d), s/veh	21.5	34.9	48.7	52.2	17.3	20.5	52.1	34.2	24.1	54.8	35.3	33.6
Lane Grp LOS	C	C	D	D	B	C	D	C	C	D	D	C
Approach Vol, veh/h		1496			969			1054			666	
Approach Delay, s/veh		37.1			33.5			34.1			39.9	
Approach LOS		D			C			C			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	12.0	36.0		24.0	48.0		13.3	27.2		11.7	25.6	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	7.0	30.0		20.0	43.0		10.0	23.0		7.0	20.0	
Max Q Clear Time (g_c+I1), s	9.0	26.9		18.8	13.1		8.2	21.5		6.7	11.4	
Green Ext Time (p_c), s	0.0	2.4		0.2	12.2		0.1	0.7		0.0	4.4	

Intersection Summary												
HCM 2010 Ctrl Delay			36.0									
HCM 2010 LOS			D									

Notes

Intersection	
Intersection Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	67	0	0	55	0	944	35	0	1006	180
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	85	87	85	87	87	87	87	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	79	0	0	63	0	1085	40	0	1156	212

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1699	2281	1156	2261	2261	563	1156	0	0	1125	0	0
Stage 1	1156	1156	-	1105	1105	-	-	-	-	-	-	-
Stage 2	543	1125	-	1156	1156	-	-	-	-	-	-	-
Follow-up Headway	3.519	4.019	3.319	3.519	4.019	3.319	2.218	-	-	2.22	-	-
Pot Capacity-1 Maneuver	66	40	239	25	41	470	604	-	-	617	-	-
Stage 1	239	270	-	225	286	-	-	-	-	-	-	-
Stage 2	492	279	-	239	270	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	57	40	239	17	41	470	604	-	-	617	-	-
Mov Capacity-2 Maneuver	163	143	-	93	145	-	-	-	-	-	-	-
Stage 1	239	270	-	225	286	-	-	-	-	-	-	-
Stage 2	426	279	-	160	270	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.3	13.8	0	0
HCM LOS	D	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	604	-	-	239	470	617	-	-
HCM Lane V/C Ratio	-	-	-	0.33	0.135	-	-	-
HCM Control Delay (s)	0	-	-	27.3	13.8	0	-	-
HCM Lane LOS	A			D	B	A		
HCM 95th %tile Q(veh)	0	-	-	1.381	0.462	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	19	0	0	135	55	844	60	76	952	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	0	115	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	89	85	89	85	89	89	89	89	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	22	0	0	152	65	948	67	85	1070	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2318	2318	1070	2318	2318	948	1070	0	0	948	0	0
Stage 1	1240	1240	-	1078	1078	-	-	-	-	-	-	-
Stage 2	1078	1078	-	1240	1240	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	26	38	269	26	38	316	651	-	-	724	-	-
Stage 1	214	247	-	265	295	-	-	-	-	-	-	-
Stage 2	265	295	-	214	247	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	11	30	269	20	30	316	651	-	-	724	-	-
Mov Capacity-2 Maneuver	11	30	-	20	30	-	-	-	-	-	-	-
Stage 1	193	218	-	239	266	-	-	-	-	-	-	-
Stage 2	124	266	-	173	218	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	26.5	0.7	0.8
HCM LOS	C	D		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	651	-	-	269	316	724	-	-
HCM Lane V/C Ratio	0.099	-	-	0.083	0.48	0.118	-	-
HCM Control Delay (s)	11.139	-	-	19.6	26.5	10.636	-	-
HCM Lane LOS	B			C	D	B		
HCM 95th %tile Q(veh)	0.33	-	-	0.27	2.472	0.399	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	21	0	959	936	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	1042	1017	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2078	1036	1055	0	-	0
Stage 1	1036	-	-	-	-	-
Stage 2	1042	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	59	281	660	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	59	281	660	-	-	-
Mov Capacity-2 Maneuver	59	-	-	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	340	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0	0
HCM LOS	C		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	660	-	281	-	-
HCM Lane V/C Ratio	-	-	0.081	-	-
HCM Control Delay (s)	0	-	18.9	-	-
HCM Lane LOS	A		C		
HCM 95th %tile Q(veh)	0	-	0.263	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	125	21	78	135	48	118	113	719	125	129	758	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Cap, veh/h	269	45	169	332	65	160	232	910	773	257	920	782
Arrive On Green	0.09	0.13	0.13	0.09	0.14	0.14	0.06	0.49	0.49	0.06	0.49	0.49
Sat Flow, veh/h	1774	345	1290	1774	479	1176	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	137	0	109	148	0	183	124	790	137	142	833	76
Grp Sat Flow(s),veh/h/ln	1774	0	1635	1774	0	1655	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.7	0.0	5.4	6.2	0.0	9.4	3.0	33.0	4.2	3.4	35.9	2.2
Cycle Q Clear(g_c), s	5.7	0.0	5.4	6.2	0.0	9.4	3.0	33.0	4.2	3.4	35.9	2.2
Prop In Lane	1.00		0.79	1.00		0.71	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	269	0	214	332	0	226	232	910	773	257	920	782
V/C Ratio(X)	0.51	0.00	0.51	0.45	0.00	0.81	0.53	0.87	0.18	0.55	0.91	0.10
Avail Cap(c_a), veh/h	319	0	280	373	0	283	336	957	813	352	957	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.6	0.0	35.4	28.7	0.0	36.7	18.7	19.9	12.6	17.8	20.3	11.8
Incr Delay (d2), s/veh	1.5	0.0	1.9	0.9	0.0	13.1	1.9	8.3	0.1	1.8	11.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.6	0.0	2.3	2.7	0.0	4.6	1.5	15.7	0.0	1.4	18.0	0.8
Lane Grp Delay (d), s/veh	31.1	0.0	37.3	29.7	0.0	49.9	20.6	28.2	12.7	19.7	32.0	11.8
Lane Grp LOS	C		D	C		D	C	C	B	B	C	B
Approach Vol, veh/h		246			331			1051			1051	
Approach Delay, s/veh		33.8			40.8			25.3			28.9	
Approach LOS		C			D			C			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	12.5	16.5		13.0	16.9		9.9	47.8		10.3	48.3	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	15.0		10.0	15.0		10.0	45.0		10.0	45.0	
Max Q Clear Time (g_c+I1), s	7.7	7.4		8.2	11.4		5.0	35.0		5.4	37.9	
Green Ext Time (p_c), s	0.1	1.0		0.1	0.5		0.1	7.1		0.1	5.4	

Intersection Summary												
HCM 2010 Ctrl Delay			29.4									
HCM 2010 LOS			C									

Notes

Intersection	
Intersection Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	120	193	37	104	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	130	210	40	113	64

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	250	0	-	0	421	230
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	191	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1316	-	-	-	589	809
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	841	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1316	-	-	-	574	809
Mov Capacity-2 Maneuver	-	-	-	-	574	-
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	820	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	12.7
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	641
HCM Lane V/C Ratio	0.023	-	-	-	0.276
HCM Control Delay (s)	7.8	0	-	-	12.7
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.071	-	-	-	1.124

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	146	248	4	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	159	270	4	2	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	274	0	-	0	433	272
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	161	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1289	-	-	-	580	767
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	868	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1289	-	-	-	579	767
Mov Capacity-2 Maneuver	-	-	-	-	579	-
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	867	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.7
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1289	-	-	-	631
HCM Lane V/C Ratio	0.001	-	-	-	0.005
HCM Control Delay (s)	7.795	0	-	-	10.7
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.003	-	-	-	0.016

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	123	8	32	220	5	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	9	35	239	5	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	447	138
Stage 1	-	-	-	-	138	-
Stage 2	-	-	-	-	309	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1441	-	569	910
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	745	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1441	-	553	910
Mov Capacity-2 Maneuver	-	-	-	-	553	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	724	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.8
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	772	-	-	1441	-
HCM Lane V/C Ratio	0.025	-	-	0.024	-
HCM Control Delay (s)	9.8	-	-	7.56	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.078	-	-	0.074	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	14	113	174	51	18	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	123	189	55	20	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	245	0	-	0	370	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	153	-
Follow-up Headway	2.218	-	-	-	3.518	3.318
Pot Capacity-1 Maneuver	1321	-	-	-	630	823
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	875	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1321	-	-	-	622	823
Mov Capacity-2 Maneuver	-	-	-	-	622	-
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	865	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.3
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1321	-	-	-	747
HCM Lane V/C Ratio	0.012	-	-	-	0.083
HCM Control Delay (s)	7.757	0	-	-	10.3
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.035	-	-	-	0.27

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

CTL | THOMPSON INCORPORATED

GEOLOGIC AND PRELIMINARY GEOTECHNICAL INVESTIGATION ERIE PARCEL SOUTHWEST OF ERIE PARKWAY AND EAST COUNTY LINE ROAD ERIE, COLORADO

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September 10, 2014

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SCOPE

This report presents the results of our Geologic and Preliminary Geotechnical Investigation for the 47-acre parcel (Erie Parcel) southwest Erie Parkway and East County Line Road in Erie, Colorado (Fig. 1). The purpose of our investigation was to evaluate the subsurface conditions and review previous mine subsidence reports to assist in planning of site development and residential and commercial construction. The report includes a description of the subsurface conditions encountered in our exploratory borings, descriptions of materials encountered in test pits, identification of geologic hazards, a summary of available mine subsidence data, and discussions of site development and construction as influenced by geologic and geotechnical conditions. The scope was described in our Service Agreement (DN 14-0290) dated June 24, 2014.

This report is based on our understanding of the planned development, subsurface conditions found in exploratory borings and test pits, results of field and laboratory tests, engineering analysis of field and laboratory data, review of previous mine subsidence reports, and our experience with similar projects. The discussions and criteria presented in this report are intended for planning purposes only. Additional investigations will be necessary to design foundations and floor systems, pavements, and other improvements. Further investigation of mine subsidence risk will likely be merited. A brief summary of our conclusions and recommendations follows, with more detailed discussion in the report.

SUMMARY

1. There are geologic hazards that will affect the development of this site. The hazards include abandoned coal mines, abandoned mine entries, undocumented fill, and expansive soil and bedrock. We believe these concerns can be mitigated with proper planning, engineering, design and construction.

2. Subsoils encountered in our borings consisted of about 3 to 24.5 feet of interlayered clay and sand and clean to clayey sand underlain by bedrock. Overburden clay is judged as low swelling and the sand is non-expansive.

Bedrock was encountered deeper than 15 feet in 6 of 9 borings and consisted of low to moderately swelling claystone with thin beds of non-expansive sandstone and lignite. Moderate swelling, shallower claystone was encountered at depths of 3 to 13 feet at the northwest corner and southwest portion of the parcel.

3. Groundwater was encountered in all nine borings at depths ranging from 11 to 27.5 feet below existing grade. Groundwater levels will fluctuate seasonally and may rise in response to precipitation, land-use changes, and landscape irrigation. Groundwater is not expected to impact the construction.

4. Review of available records and documents pertaining to the underlying Marfel and Pinnacle mines indicates that two levels of coal mining occurred within 85 to 136 feet of existing grade. Extraction thickness varied 7 to 14 feet. Mine maps are not known to exist. Additional mine subsidence investigation will likely be required.

5. Exploratory test pits revealed the locations of the Marfel mine entry and Pinnacle shaft. We recommend further investigation of the Marfel mine entry to confirm the entry orientation. Site development planning should avoid construction of structures over the mine entry areas.

6. Based on historical aerial photography and site reconnaissance, we have identified probable areas of undocumented fill (Fig. 5). This fill should be removed and replaced if buildings or roadways are planned in these areas.

7. We believe that use of shallow foundations would be prudent considering the presence of underground coal mines. To allow use of shallow foundations, sub-excavation will likely be necessary in the southwest portion of the site and possibly in the northwest corner. Further investigation will be necessary to define these areas after preliminary grading plans are available. A design-level soils and foundation investigation should be done prior to building design and construction.

8. We advocate use of underdrain systems below sanitary sewer mains to help control groundwater and provide a gravity outlet for basement foundation drains (if basements are planned).

9. Preliminary data suggest that the Town of Erie's minimum pavement sections will be appropriate. It is unlikely that expansive subgrade treatment will be necessary. A design-level subgrade investigation should be done prior to paving.

10. Control of surface and subsurface drainage will be critical to the performance of foundations, slabs-on-grade and pavements. Overall surface drainage should be designed to provide rapid run-off of surface water away from structures, pavements and flatwork.

SITE CONDITIONS

The 47-acre Erie Parcel is located southwest of Erie Parkway and East County Line Road in Erie, Colorado (Fig. 1 / Photo 1). The site is bordered by a residential subdivision on the west residential/commercial developments on the south, and commercial property on the east. Topography prepared by Rock Creek Surveying, LLC indicates that the ground surface generally slopes to the east with about 50 feet of vertical relief across the parcel. We visited the site on June 12, 2014 to stake boring locations and observe site conditions. The parcel was being used for agricultural purposes and was predominately covered with wheat.

Photo 1 – Google Earth© Aerial Site Photo, October 6, 2013.

PROPOSED DEVELOPMENT

Grading plans are not available. We understand that the site may be developed for mixed-use including single-family residences, townhomes, apartments, and commercial/retail facilities. Single-family residences and townhomes may be one or two-story, wood-framed structures with or without basements. Apartments will likely be

multi-story, wood-framed structures. Commercial/Retail structures would likely be one to two-stories without basements. Paved roads and parking lots will provide access. Buried utilities would serve the project.

PREVIOUS INVESTIGATIONS

CTL | Thompson has performed several investigations in the immediate vicinity of the parcel including a Due Diligence Investigation and Geotechnical Investigation (DN43,169-125/145) for the Saint Luke's Orthodox Christian Church to the south. We identified geologic hazards including compressible soil, expansive soil and bedrock, and abandoned underground coal mines and shafts of the McGregor Mine on the church property. We estimated that the subsidence risk is low on the church parcel. We recommended use of footings with minimum dead load or mat foundations after about 5 feet of sub-excavation (to reduce risk related to compressible/swelling soil) below finished floor level. Below grade areas were not planned for the church or auxiliary buildings.

INVESTIGATION

Subsurface conditions were investigated by drilling nine exploratory borings at the locations shown on Fig. 1. The boring locations were selected and staked by our engineers and surveyed by Rock Creek Surveying. Prior to drilling, we contacted the Utility Notification Center of Colorado and local sewer and water districts to clear boring locations for conflicts with buried utilities.

The borings were advanced to depths of 25 to 35 feet using 4-inch diameter, continuous-flight auger and a truck-mounted CME-45 drill rig. Samples of the soil and bedrock were obtained at 5-foot intervals using 2.5-inch diameter (O.D.) modified California barrel samplers driven by a 140-pound hammer falling 30 inches. A representative of CTL | Thompson, Inc. was present during drilling to observe drilling operations, log the soil and bedrock, and obtain samples. Upon completion of drilling, the

holes were left open to facilitate delayed groundwater measurements. Groundwater was measured 40 days after drilling. Summary logs of the exploratory borings with results of field penetration resistance tests and a portion of the laboratory data are presented in Appendix A.

Samples were returned to our laboratory where they were examined by our engineers and tests were assigned. Laboratory tests included dry density, moisture content, percent silt and clay-sized particles (passing the No. 200 sieve), Atterberg limits, gradation, swell-consolidation, and water-soluble sulfate concentration. Swell-consolidation tests were performed by wetting the samples under approximate overburden pressures (the weight of the overlying soil). Results of laboratory tests are presented in Appendix B and are summarized in Table B-I.

SUBSURFACE CONDITIONS

Subsoils encountered in our borings consisted of about 3 to 24.5 feet of interlayered sand and clay and clean to clayey sand underlain by bedrock. Bedrock predominately consisted of claystone with thin intermittent beds of sandstone and lignite. Pertinent engineering characteristics of the soil and bedrock are presented in the following paragraphs.

Interlayered Sand and Clay

About 3 to 15 feet of interlayered sand and clay was encountered above bedrock in all borings except TH-7. The interlayered strata predominately consisted of sand with thin seams of clay. Four samples contained 24 to 71 percent clay and silt and exhibited low plasticity. Field penetration tests indicate that the interlayered strata are either medium dense (sand) or medium stiff to stiff (clay). Water-soluble sulfate concentrations of less than 0.01 and 0.05 percent were measured in two samples. Three samples swelled 0.2 to 1.4 percent, one did not swell, and three compressed 0.6 to 0.9 percent when wetted. We judge that the sand is non-expansive and the clay is low swelling.

Sand

About 3 to 12 feet of clean to clayey sand was encountered at variable depths in all 9 borings. Two samples contained 94 and 95 percent sand size particles and exhibited low plasticity. One sample had a water-soluble sulfate concentration of 0.04 percent. One sample did not swell and four compressed 0.1 o 2.4 percent when wetted. The sand is non-expansive.

Bedrock

Bedrock was encountered at depths of 3 to 24.5 feet below existing grade. Estimated surface elevation contours and depths to the bedrock surface are shown on Fig. 2. Bedrock is relatively shallow in the northwest corner and south portion of the parcel and deep in remaining areas. Bedrock predominately consisted of weathered and comparatively unweathered claystone with a few thin beds of sandstone and lignite. Lignite was encountered in TH-3 and 6 at depths of 25 and 28 feet below existing grade. Two samples contained 76 and 85 percent clay and silt size particles and were low to moderately plastic. One sample had a water-soluble sulfate concentration of 0.03 percent. Samples swelled 0.1 to 4.0 percent and did not swell when wetted. We judge that the bedrock is low to moderately swelling.

Groundwater

Groundwater was encountered in TH-4 and TH-9 during drilling at depths of 17 and 18 feet below existing grade. When the holes were checked 40 days after drilling groundwater was measured 11 to 27 feet below existing grade in all nine borings. Figure 3 shows our estimates of the groundwater surface elevations. Groundwater is not anticipated to impact site development or building construction. Groundwater levels will fluctuate seasonally and may rise in response to precipitation, land-use changes, and landscape irrigation.

GEOLOGIC HAZARDS

Geologic hazards were evaluated through review of available mine subsidence reports, historical aerial photography, historical topographic maps, geologic maps, field observations, conditions found in our exploratory borings and test pits, and our experience with similar projects and conditions. The hazards identified are:

- Abandoned Underground Coal Mines,
- Abandoned Mine Entries;
- Undocumented Fill,
- Expansive Soil and Bedrock, and
- Regional Issues of Seismicity and Radioactivity.

The geologic hazards will affect development of this site. We believe the hazards can be mitigated with proper planning, engineering, design and construction.

Abandoned Underground Coal Mines

The presence of abandoned underground coal mines presents risk of ground subsidence. Ground subsidence can induce slight vertical movement, collapse, and/or lateral strain to buildings, pavement, and other improvements.

We reviewed three documents that reference the abandoned underground coal mines on this site that were obtained from the Colorado Geological Survey (CGS) or provided by you including:

- *Preliminary Subsidence and Preliminary Geotechnical Engineering Investigation, ATEC Associates, Project No. 41-74001, April 3, 1987;*
- *Preliminary Mine Subsidence Investigation, Western Environmental and Ecology, Project No. 422-001-01, December 23, 2005; and,*
- *Review Reports and Documents, Abandoned Mine and Subsidence Investigation, Zapata Engineering, Blackhawk, Project No. 5083, October 24, 2007;*

Review of mine subsidence data indicates that the Marfel and Pinnacle mines are located below this property. We understand that very few records were submitted by the mining company after mining was complete. Pertinent information that is not available includes mine surveys (maps) and records of the number of mined levels and depths to the mines. Blackhawk's 2007 document review indicated a discrepancy in the Marfel mine documents. One record pertaining to the Marfel mine reports that the mine is located several miles north in Section 13. The Erie Parcel is located in Section 24. We do not know if this is a numerical error in Section reporting by the mining company or if the record is accurate. As discussed later, mine entries were found on the property during this investigation.

Western Environmental and Ecology (WEE) drilled fifteen deep borings in their 2005 Mine Subsidence Investigation. Their data indicates that two mineable coal seams exist below the property. They reported that the depth to the roof of the upper seam varies from 80 to 116 feet and the depth to the lower seam varies from 101 to 136 feet. The two seams are about 12 feet apart. ATEC's 1987 report indicates that records of the Marfel mine report an average coal thickness of about 14 feet. This record appears to be relatively consistent with the conditions found by WEE who found that each extraction was about 7 feet thick. Data from WEE's 2005 investigation reveal that only the upper level was mined at 3 of 15 boring locations, only the lower level was mined at 4 locations, both levels were mined at 4 locations, and there was no coal extraction at 4 locations. We show the approximate boring locations and summarized data from WEE's studies on Fig. 4.

Using data from WEE's 2005 investigation, bedrock surface elevations estimated during this study, and ground surface elevations provided by Rock Creek Surveying, we have estimated the thickness of bedrock above the original mined level (Fig. 4). Bedrock thickness appears to vary from 71 to 126 feet with the thinnest cover in the northeast portion of the site. WEE comments on the height of collapse above the mine workings in the Boulder-Weld Coal Field and this project which reads as follows: *"..the observed results from the drilling on the site show that collapse is confined to an interval*

of 20 to 40 feet above the workings." Based on this observation, estimated bedrock thicknesses, and our experience, we believe that the risk of ground collapse/sinkhole formation due to mine subsidence is low.

WEE performed a lateral strain analysis in their 2005 study. WEE found that the "*worst case theoretical horizontal strains and surface subsidence would be 0.325% and 0.5 feet, respectively."* WEE stated *"development will allow for construction of buildings with a foundation length of 60 feet or less."* The width of the extraction is critical to a lateral strain analysis. The actual width of the extraction is not known. WEE assumed a width of 100 feet based on the width of the mapped workings of the nearby Mitchell and Garfield Mines. We believe that additional investigation will be merited to estimate the geographical extent and geometry of mining, evaluate the mine conditions, verify risk of potential mine subsidence, and to determine appropriate remedial actions (if any). The additional investigation may incorporate surface geophysical testing techniques to attempt to delineate the areas and depths of mining. A number of deep verification borings may also be recommended. Our experience suggests that the Town of Erie will likely refer subsidence studies to CGS. It may be beneficial to discuss any proposed investigations with CGS prior to initiation.

Abandoned Mine Entries

Two mine entries to the Marfel and Pinnacle mines are reported on the property by CGS and United States Geological Survey (USGS). Blackhawk concluded that the two government agencies report two different locations for each access point; totaling four possible locations. The United States Bureau of Mines (USBM) records indicate that a slope entry occurred for the Marfel mine. The reported locations of the four possible locations are shown on Fig. 4.

The potential mine entries were investigated using test pits excavated by Don Rice Excavating. All locations were surveyed and staked in the field by Rock Creek Surveying, LLC. The reported location by CGS was immediately adjacent to a soil pile (Photo 2/ Fig. 4).

Photo 2 – Photograph of spoil pile, June 13, 2014.

Test pits at the two reported locations of the Marfel mine entry did not reveal evidence of mining. Excavations of the soil pile indicated that the pile likely originated from a mine entry excavation. A suspicious location was observed northeast of the spoil pile that did not contain vegetation. A test pit at this location (Fig. 4) unearthed evidence of a mine entry. Debris and trash from around the time of mining including bottles, shoes, bed framing, a cow carcass, wagon parts, and other garbage and mining tools were found. At a depth of about 30 feet below existing grade, an apparent sloped entry haulway to the Marfel mine was found (Photo 3). The excavation exposed in-place timber lagging on the haulway wall sides and roof that angled downward to the north-north-east toward the Garfield No. 1 Mine (Photo 3). Collapsed lagging was also observed. The haulway had collapsed up-gradient and below the estimated roof as shown in Photo 3. Soil above the roof did not cave. Safety concerns prevented us from entering the excavation to measure the slope of the lagging. We can provide close-up photographs of the declined entry haulway and lagging upon request. After the excavation was finished, Rock Creek surveyed the location and orientation of the sloped haulway as shown on Fig. 4.

Photo 3 – Photograph of Marfel mine declined access, July 18, 2014.

A sloped mine entry poses risk of ground subsidence and/or lateral strain within some horizontal distance above the haulway. Remediation at the mine access surface will be necessary. We recommend plans avoid placing structures (buildings) within a 100 foot easement outside of the estimated haulway orientation (Fig. 4). Other improvements that can sustain potential ground movement can be planned for this easement. The estimate of the haulway orientation is based on one test pit. We recommend additional investigation to verify and increase confidence of the haulway orientation that may include surface geophysical testing techniques and drilling.

Test pits of the two reported locations of the Pinnacle mine entry did not reveal evidence of mining. An excavation at a suspicious location unearthed the Pinnacle mine entry and revealed deep spoils extending downward. The spoils extended horizontally in an almost perfect circle with a diameter of about 10 feet which indicates that this entry was a vertical shaft (Photo 4). These conditions were encountered consistently to the maximum explored depth of 20 feet.

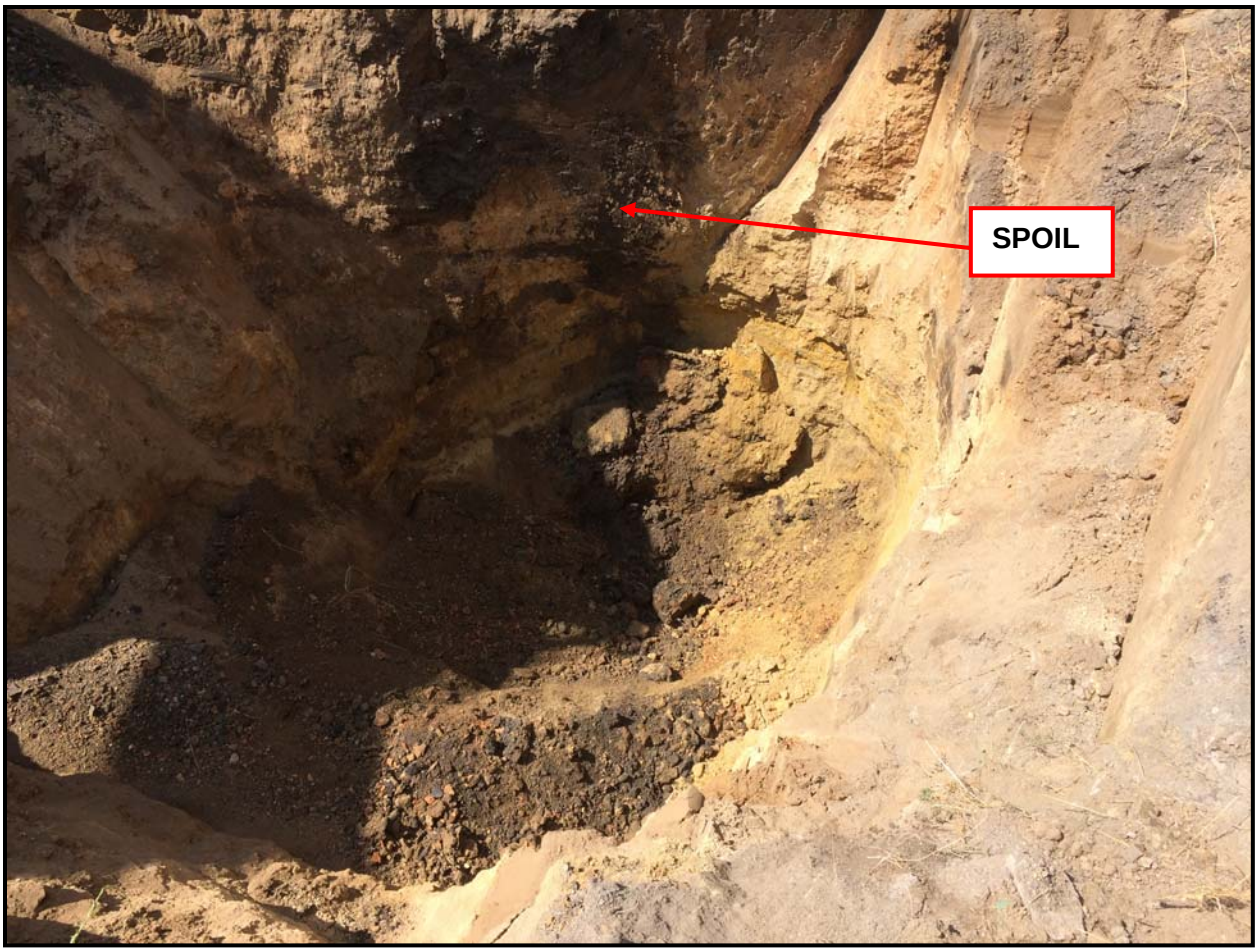


Photo 4 – Photograph of Pinnacle Shaft, July 18, 2014.

The presence of a vertical shaft presents risk of ground subsidence and/or lateral strain. We recommend that the shaft be grouted and capped during site development. We recommend no buildings be planned within 50 feet of the capped shaft. Other improvements that can sustain potential ground movement can be planned for this easement. Table A includes the location data for the shafts/entry points.

TABLE A
MINE SHAFT/ENTRY LOCATION DATA

Shaft/Entry	Northing	Easting
Marfel Slope Entry (depth of 30 feet)	256355.8	124798.8
Pinnacle Shaft	255595.6	125162.8

Due to the lack of records of the Marfel and Pinnacle mines, it is possible that undocumented mine entries or air shafts exist on the property. We did not find any evidence of unmapped mine entries during our site observation. It is possible that after vegetation is stripped, mine spoils will be observed at other locations across the property. We should be present to observe grading and help identify potential mine spoils and potential shaft locations.

Undocumented Fill

Review of historical aerials indicates that the site has been used for agricultural purposes since at least 1993. Very little site activity was apparent prior to the fall/winter of 2002 when Austin Avenue on the south and the residential developments on the west and south were graded (Photo 5). Aerials photos show that access roads were graded on the Erie Parcel during the 2002 site development. We have shown the approximate locations of earthwork visible on aerials on Fig. 5. These locations could contain undocumented fill. We did not find indication of undocumented fill at these locations during our site visits.

Photo 5 – Google Earth© Aerial Site Photo, December 31, 2002.

Aerial photography shows that Erie Parkway was widened during the summer of 2007 (Photo 6). It appears that earthwork was performed on the northern edge of this parcel and an area on the northeast corner was used for construction staging. These

locations could contain undocumented fill. We did not observe indication of undocumented fill during our site walk (Fig. 5).

Photo 6 – Google Earth© Aerial Site Photo, July 30, 2007

We do not recommend building structures, roadways, or other improvements over undocumented fill due to potential settlement issues. If fill is present it should be removed and replaced as densely compacted fill. We recommend additional investigation where improvements are planned over these areas.

Mine spoils and buried trash were observed during our test pit exploration in the vicinity of the Marfel mine entry and Pinnacle shaft. Mine spoils and trash below buildings, roadways, or other improvements should be substantially removed.

Expansive Soil and Bedrock

Review of Geologic Maps[1] shows the site soils consist of windblown alluvium (Qes) underlain by bedrock of the Laramie formation (Kl). Typical geologic hazards associated with these geologic units include expansive soil and bedrock and, sometimes, compressible soil. Our investigation data verifies that expansive soil and bedrock are present. Swelling soil and bedrock could heave and damage foundations, slab-on-grade, exterior flatwork, paved roads, and other improvements. Proper engineering of

[1] "Colton, R.B., and Anderson, L.W., 1977, Preliminary Geologic Map of the Erie Quadrangle, Boulder, Weld, and Adams Counties, Colorado: U.S. Geological Survey, Miscellaneous Field Studies Map MF-882, scale 1:24,000

these structures should be planned to reduce, but not eliminate potential heave and associated distress.

We used the results of swell tests to estimate the post-construction potential heave due to swelling. The estimates are based on 24-foot depth of wetting below existing grade. If extensive cut/fill is planned, we should reevaluate our estimates. Our experience indicates that the heave estimates are conservative and it is unlikely that the full calculated heave will occur. The potential heave estimates are summarized in Table B. These estimates are for heave only and do not include movement due to settlement of undocumented fill and/or mine subsidence.

TABLE B
SUMMARY OF POTENTIAL HEAVE ESTIMATES

Soil Boring	Heave Estimate (inches)	Risk due to Expansive Soil and Bedrock
TH-1	2.2	Low
TH-2	0.6	Low
TH-3	<0.5	Low
TH-4	0.9	Low
TH-5	2.4	Low
TH-6	2.1	Low
TH-7	1.6	Moderate
TH-8	3.3	Moderate
TH-9	1.0	Low

We estimate the risk due to expansive soil and bedrock is predominately low except where moderately swelling shallow claystone was encountered (Fig. 5).We estimated that the risk is moderate where claystone is shallow.

Seismicity

The soil and bedrock are not expected to respond unusually to seismic activity. According to the 2012 International Building Code (IBC, Standard Penetration Resistance method of Section 1613.5.2), and based upon the results of our investigation, we judge the site classifies as Site Class D. The subsurface and groundwater conditions indicate low susceptibility to liquefaction. Only minor damage to relatively new, properly

designed and constructed structures would be expected with a major seismic event. Wind loads typically govern dynamic structural design in this area.

Radon Gas

It is normal in the areas east of the Front Range to measure accumulations of radon gas in poorly ventilated spaces that are in contact with soil or bedrock, such as full-depth basements. Radon gas is one of several radioactive products of the natural decay of uranium into stable lead. There is a potential for radon gas accumulation in poorly ventilated spaces. Typical mitigation methods consist of sealing soil gas entry areas and ventilation of below-grade spaces. Radon rarely accumulates to significant levels in above-grade spaces. The only method to accurately evaluate radon concentrations in a closed area is to perform testing after construction. We believe it is prudent to plan contingencies for radon mitigation during design of structures, such as provision for venting of foundation drain systems.

SITE DEVELOPMENT

Geologic hazards that may influence site development and building performance include the presence of abandoned underground coal mines, abandoned mine entries, undocumented fill, and expansive soil and bedrock. These concerns can be mitigated with proper planning, engineering, design and construction. We believe there are no geologic or geotechnical constraints that preclude development. We believe the risk due to expansive soil and bedrock can be reduced by sub-excavation and risk associated with undocumented fill can be reduced by removing and replacing the fill. Additional investigation of the abandoned underground coal mines and entries is recommended to evaluate risk of subsidence and determine appropriate remedial measures (if any). The following sections provide site development recommendations based on available data.

Excavation

We believe the soil and bedrock penetrated by our exploratory borings can be excavated with typical, heavy-duty equipment. We recommend the owner and the contractor become familiar with applicable local, state and federal safety regulations, including the current Occupational Safety and Health Administration (OSHA) Excavation and Trench Safety Standards. Based on our investigation and OSHA standards, we anticipate the fill and sand will classify as Type C soil and the bedrock as Type A based on OSHA Standards governing excavations published in 29 CFR, Part 1926. Type A soil requires a maximum slope inclination of ¾:1 (horizontal to vertical) and Type C requires 1½:1 for temporary excavations in dry conditions. Saturated soils may require flatter slopes or bracing. Excavation slopes specified by OSHA are dependent upon soil types and groundwater conditions encountered. The contractor's "competent person" should identify the soils encountered in the excavations and refer to OSHA standards to determine appropriate slopes. Stockpiles of soils and equipment should not be placed within a horizontal distance equal to one-half the excavation depth, from the edge of the excavation. A professional engineer should design excavations deeper than 20 feet.

Site Grading

Grading plans are not available. Due to the presence of underground coal mines, the safest site development approach is to limit cuts. The ground surface in areas to be filled should be stripped of vegetation, existing fill and trash, scarified, and moisture conditioned to between optimum and 3 percent above optimum moisture content for clay and within 2 percent of optimum for sand and compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698). We anticipate stripping may require cuts of 3 to 6 inches.

The properties of fill will affect the performance of foundations, slabs-on-grade, utilities, pavements, flatwork and other improvements. If import soil is needed, it should ideally consist of soil having a maximum particle size of 3 inches, less than 50 percent

passing a No. 200 sieve, a liquid limit less than 30 percent and a plasticity index less than 15 percent. Potential fill materials should be submitted to our office for approval prior to importing to the site.

On-site soils free of vegetation, trash, and deleterious material are suitable for reuse as site grading fill. Fill should be placed in thin loose lifts, moisture conditioned to between optimum and 3 percent above optimum moisture content for clay and within 2 percent of optimum for sand, and compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698). The placement and compaction of site grading fill should be observed and density tested by our representative during construction. Guideline grading specifications are presented in Appendix C.

Our experience indicates fill and backfill can settle, even if properly compacted to criteria provide above. Factors that influence the amount of settlement are depth of fill, material type, degree of compaction, amount of wetting and time. The degree of compression of fill under its own weight will likely range from low for granular soils (½ percent or less) to moderate for clay/sand mixtures (1 to 2 percent).

Sub-Excavation

Shallow, moderately swelling bedrock was found in TH-1, TH-7, and TH-8 located in the northwest corner and southwest portions of the parcel. Very long and heavily-reinforced drilled piers and structurally supported basement floors are normally recommended for moderate to high risk sites. Use of shallow foundations is preferable due to potential mine subsidence. In order to allow use of shallow foundations, sub-excavation will likely be necessary in these areas. Additional investigation will be necessary to better define these areas after preliminary grading plans are available. We anticipate sub-excavation to a minimum depth of 10 feet below the lowest foundation excavation level may be merited. The bottom of the sub-excavated area should extend laterally at least 5 feet and preferably 10 feet outside the largest possible foundation footprints to ensure foundations are constructed over moisture-conditioned fill.

The excavation contractor should be chosen carefully to assure they have experience with fill placement at over-optimum moisture and have the necessary compaction equipment. The contractor should provide a construction disc to break down fill materials and anticipate use of push-pull scraper operations and dozer assistance. The operation will be relatively slow. In order for the procedure to be performed properly, close contractor control of fill placement to specifications is required. Sub-excavation fill should be moisture-conditioned between 1 and 4 percent above optimum moisture content with an average test moisture content each day of at least 1.5 percent above optimum. Fill should be compacted as recommended in Site Grading.

Special precautions should be taken for compaction of fill at corners, access ramps, and along the perimeters of the excavations as large compaction equipment cannot easily reach these areas. Our representative should observe placement procedures and test compaction of the fill on a “full-time” basis. The swell of the moisture-conditioned fill should be tested after the fill placement. Guideline sub-excavation grading specifications are presented in Appendix D.

If the fill dries excessively prior to construction, it may be necessary to rework the upper drier materials just prior to constructing foundations. We judge the fill should retain adequate moisture for about two years and can check moisture conditions in each excavation as construction progresses, if requested.

Sub-excavation and replacement with low swell fill will likely allow use of footing foundations and enhance performance of slab-on-grade basement floor construction. Sub-excavation will also enhance performance of concrete flatwork (driveways and sidewalks) and pavements, potentially reducing warranty and maintenance costs.

Existing Fill

Undocumented fill was not apparent in our borings; however, we did observe buried trash and debris in one test pit. Historical aerial photography also indicates that

undocumented fill could be present at several locations. We have shown potential undocumented fill locations on Fig. 5. The fill should be removed and recompacted as specified in Site Grading.

Slopes

We recommend permanent cut and fill slopes be designed with a maximum grade of 3:1 (horizontal:vertical). Use of 4:1 or flatter slope is better to control erosion. If site constraints (property boundaries and streets) do not permit construction with recommended slopes, we should be contacted to evaluate the subsurface soils and steeper slopes. Slopes greater than 20 feet high should be evaluated on a case-by-case basis. Surface drainage should not be allowed to sheet flow across slopes or pond near the crest of slopes. All cut and fill slopes should be re-vegetated as soon as practical after grading to reduce potential for erosion problems. Excavation contractors should evaluate ground conditions and control slopes in accordance with OSHA criteria.

Underdrain Collection System

The use of an underdrain collection system in sanitary sewer main trenches is a common method to provide a gravity outlet for basement foundation drains. The merits of underdrains will depend on proposed grading and the types of structures. If used, the underdrains should consist of 0.75 to 1.5-inch clean, free draining gravel surrounding a perforated PVC pipe (Fig. 7). We believe use of perforated pipe below sanitary sewer mains is the most effective approach to control groundwater. The pipe should have a minimum diameter of 3-inches. The line should consist of smooth, perforated, or slotted rigid PVC pipe placed at a grade of at least 0.5 percent. A positive cutoff (concrete) should be constructed around the sewer pipe and underdrain pipe immediately downstream of the point where the underdrain pipe leaves the sewer trench (Fig. 8). Solid pipe should be used down gradient of this cutoff wall. The underdrains should be designed to discharge to a gravity outfall constructed with a permanent concrete headwall and trash rack. The underdrain should be installed with clean-outs. To reduce the risk of

cross-connecting sewer and underdrain services, we recommend using a 4-inch diameter pipe for sewer services and 3-inch diameter pipe for the underdrain services. Where feasible, the underdrain services should be installed deep enough so that the lowest point or the sump pit of the basement foundation drain (if any) can be connected to the underdrain service as a gravity outlet (Fig. 9). For non-walkout basements (if any), the low point of the basement foundation drain may be about 3 feet deeper than the sewer service. For residences with walkout basements (if any), the low point or sump pit of the basement foundation drain will be below the frost stem wall in the rear portion of the basement. The foundation drain in a walkout basement would require a deeper underdrain service for a gravity discharge and may not be practical. For these conditions, we suggest the front portion of the foundation drain be connected to the underdrain and a sump pit used for the rear portion.

Utilities

Water and sewer lines are usually constructed beneath paved roads. Compaction of trench backfill can have a significant effect on the life and serviceability of pavements. Trench backfill should be placed in thin (8 inches or less) loose lifts and moisture conditioned to between optimum and 3 percent above optimum moisture content for clay and claystone, within 2 percent of optimum moisture content for gravel and sand, and compacted to at least 95 percent of maximum dry density (ASTM D 698). The placement and compaction of trench fill and backfill should be observed and tested by our firm during construction.

Our experience indicates use of a self-propelled compactor results in more reliable performance compared to backfill “compacted” by a sheepsfoot wheel attachment on a backhoe or trackhoe. The upper portion of the trenches should be widened to allow the use of a self-propelled compactor. Special attention should be paid to backfill placed adjacent to manholes as we have seen instances where settlement in excess of 2 percent has occurred. Any improvements placed over backfill should be designed to accommodate movement.

Pavements

Pavement subgrade soils will likely consist of interlayered sand and clay or clean to silty sand. We consider the on-site soil as good pavement subgrade. Potential subgrade samples swelled 0.2 and 1.4 percent, did not swell, and compressed 0.1 to 2.4 percent when wetted. We do not anticipate expansive subgrade mitigation. The data suggests that the Town of Erie's minimum pavement sections will likely be appropriate. We understand that the Town prefers the use of combined a section of hot mix asphalt concrete and aggregate base course. The Town will consider use of full depth hot mix asphalt or Portland cement concrete pavement on a case by case basis. The following minimum pavement sections are specified for combined asphalt and base course and full depth asphalt sections. Erie does not specify minimum Portland cement concrete pavement sections.

TABLE C
SUMMARY OF PRELIMINARY PAVEMENT SECTIONS

Roadway Classification	EDLA	Hot Mix Asphalt Concrete (HMAC) + Aggregate Base Course (ABC)	Full Depth Hot Mix Asphalt Concrete (HMAC)	Portland Cement Concrete Pavement (PCCP)
Local Residential DU > 50	10	4" HMAC + 8" ABC	6.5" HMAC	6" PCCP
Residential Collector	30	4" HMAC + 8" ABC	6.5" HMAC	6" PCCP
Commercial Collector	100	6" HMAC + 9" ABC	8.5" HMAC	6.5" PCCP

A subgrade investigation will be required after roadways are rough cut to grade to design pavements.

BUILDING CONSTRUCTION CONSIDERATIONS

The following discussions are preliminary and are not intended for design or construction. After grading is completed, design-level investigations should be performed on a site specific basis.

Foundations

Our investigation indicated predominately non-expansive sand with seams of low swelling clay and deep bedrock within depths likely to influence the performance of foundations. A few locations of moderately swelling shallow bedrock were also encountered. Abandoned underground coal mines could influence the performance of foundations. A mine subsidence investigation will be necessary to assess this risk. The safest foundation types considering the potential mining are footings, mats, or post-tensioned slab-on-grade. Deep foundation systems anchored in bedrock would more likely to be affected by potential subsidence movement. In order to allow use of shallow foundations, sub-excavation will likely be needed for the southwest portion of the site and possibly the northwest corner. Additional investigation is merited to better identify and delineate areas of sub-excavation.

Below-Grade Areas

Surface water can penetrate relatively permeable loose backfill soils located adjacent to buildings and collect at the bottom of relatively impermeable excavations causing wet or moist conditions. Foundation walls should be designed for lateral earth pressures. Foundation drains should be constructed around the lowest excavation levels. The drains can be connected to a sump pit where water can be removed by pumping if an underdrain is not provided.

Slab-On-Grade Construction

Slab-on-grade basement floors may be considered where low and some moderate swell soils are within the depth of influence and where potential movement is acceptable to the home buyers. Structurally-supported basement floors should be used if the home buyers cannot accept potential movements. Structurally-supported floors should be planned in all non-basement living areas in residences unless post tensioned slab-on-grade floors are used. Use of slab-on-grade floors in commercial/retail buildings

should be viable possibly with some over-excavation. The following precautions will be required to reduce the potential for damage due to movement of slabs-on-grade placed at this site:

1. Isolation of conventional slabs (not post-tensioned) from foundation walls, columns and other slab penetrations;

2. Voiding of interior partition walls to allow for conventional slab movement without transferring the movement to the structures;

3. Flexible water and gas connections to allow for slab movement. A flexible plenum above furnaces will be required; and

4. Proper surface grading and foundation drain installation around excavations to reduce water availability to sub-slab and foundation soils.

Surface Drainage

The performance of improvements will be influenced by surface drainage. When developing an overall drainage scheme, consideration should be given to drainage around each building. The ground surface around the buildings should be sloped to provide positive drainage away from the foundations. We recommend a slope of at least 10 percent for the first 10 feet in landscaped areas surrounding single-family residences with basements, where practical. Where possible, drainage swales should slope at least 2 percent; more slope is desirable. Variation from these criteria is acceptable in some areas. For examples, for lots graded to direct drainage from the rear to the front of the lot, it is difficult to achieve the recommended slope at the high point behind the building. We believe it is acceptable to use a slope of about 6 inches in the first 10 feet at this location. For larger townhomes, apartments, and commercial/retail buildings a minimum slope of 5 percent may be used. Roof downspouts and other water collection systems should discharge well beyond the limits of all backfill around structures.

Proper control of surface runoff is also important to control the erosion of surface soils. Sheet flow should not be directed over unprotected slopes. Water should not be allowed to pond at the crest of slopes. Permanent slopes should be prepared in such a way to reduce erosion.

Attention should be paid to compact the soils behind curb and gutter adjacent to streets and in utility trenches during the development. If surface drainage between preliminary development and construction phases is neglected, performance of the roadways, flatwork and foundations may be poor.

RECOMMENDED FUTURE INVESTIGATIONS

We recommend the following investigations and services:

1. Investigation will likely be merited to evaluate mine subsidence and we recommend investigation of the mine entry conditions to develop remedial recommendations;
2. Supplemental Preliminary Geotechnical Investigation to delineate areas of sub-excavation and investigate potential areas of undocumented fill
3. Construction testing and observation during site development, grading, and pavement construction.
4. Subgrade investigation and pavement design after grading;
5. Design-level soils investigation(s) after grading; and
6. Foundation installation observations.

GEOTECHNICAL RISK

The concept of risk is an important aspect with any geotechnical evaluation, primarily because the methods used to develop geotechnical recommendations do not comprise an exact science. We never have complete knowledge of subsurface conditions. Our analysis must be tempered with engineering judgment and experience.

Therefore, the recommendations presented in any geotechnical evaluation should not be considered risk-free. Our recommendations represent our judgment of those measures that are necessary to increase the chances that the structures and improvements will perform satisfactorily. It is critical that all recommendations in this report are followed during construction. Owners or property managers must assume responsibility for maintaining structures and use appropriate practices regarding drainage and landscaping. Improvements designed after grading will require additional soil investigation and consultation.

LIMITATIONS

Our borings were widely spaced to provide a general picture of subsurface conditions for preliminary planning of development and construction. We believe this investigation was conducted in a manner consistent with that level of care and skill ordinarily used by geotechnical engineers practicing in this area at this time. No warranty, express or implied, is made.

If we can be of further service in discussing the contents of this report or the analysis of the influence of subsurface conditions on the design of the proposed development, please call.

CTL | THOMPSON, INC.

Matthew D. Monteith, E.I.T.
Staff Engineer

Reviewed by:

COLORADO LICENSED RONALD M. McOMBER 20243 PROFESSIONAL ENGINEER

Ronald M. McOmber, P.E., D.GE
Chairman & CEO

MDM:RMM/mdm/nt
(3 copies)

Via email: justinrmcs@gmail.com

LEGEND:

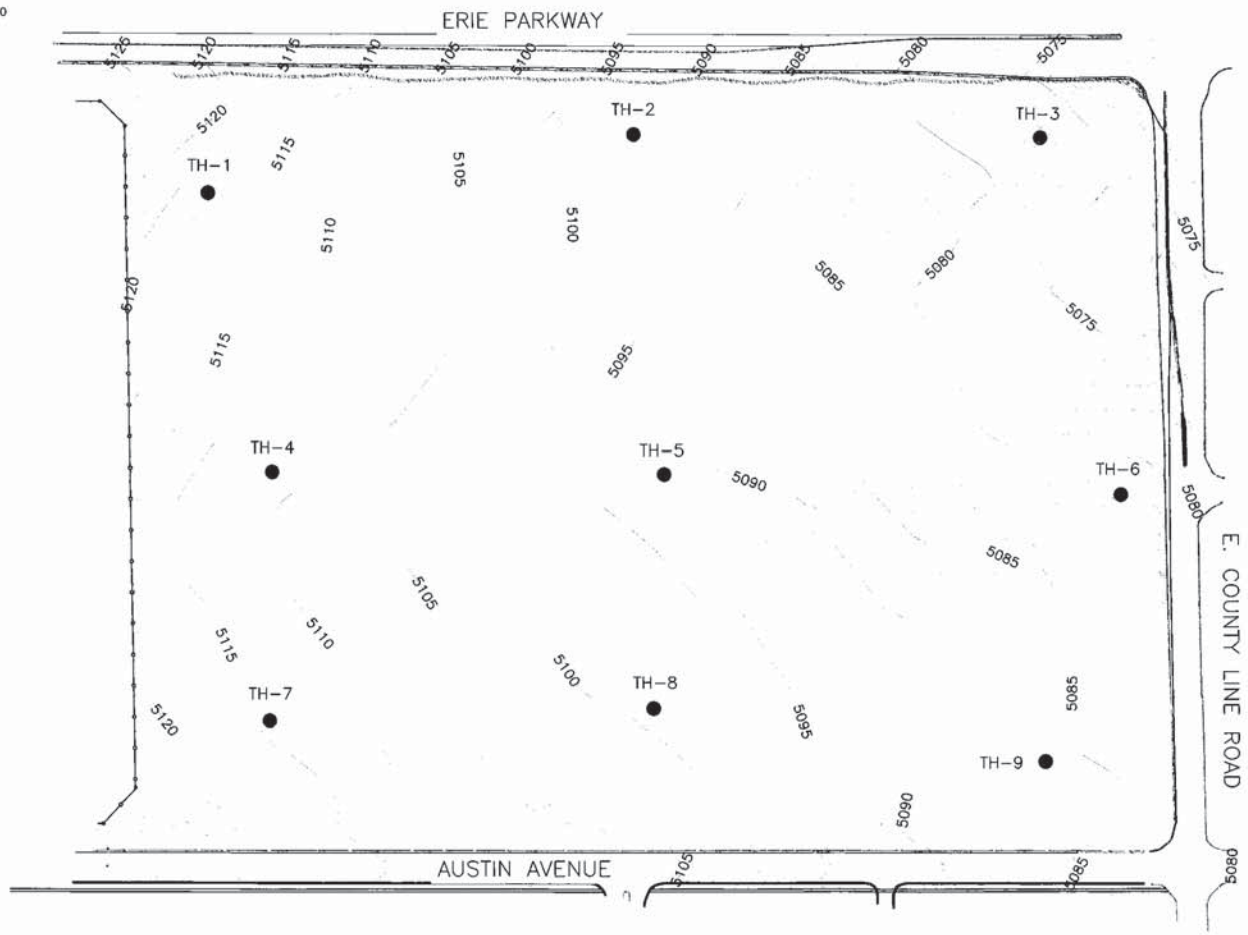
TH-1 ● LOCATION OF EXPLORATORY BORING SURVEYED BY ROCK CREEK SURVEYING.

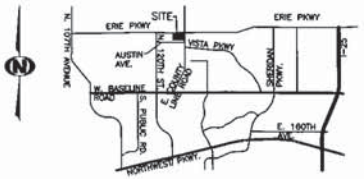
5105 EXISTING GROUND SURFACE ELEVATION (FEET)

NOTE: BORINGS, SHAFTS, AND CONTOUR LOCATIONS PROVIDED BY ROCK CREEK SURVEYING

0 100 200

SCALE: 1" = 200'





VICINITY MAP
NOT TO SCALE

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Locations of Exploratory Borings Fig. 1

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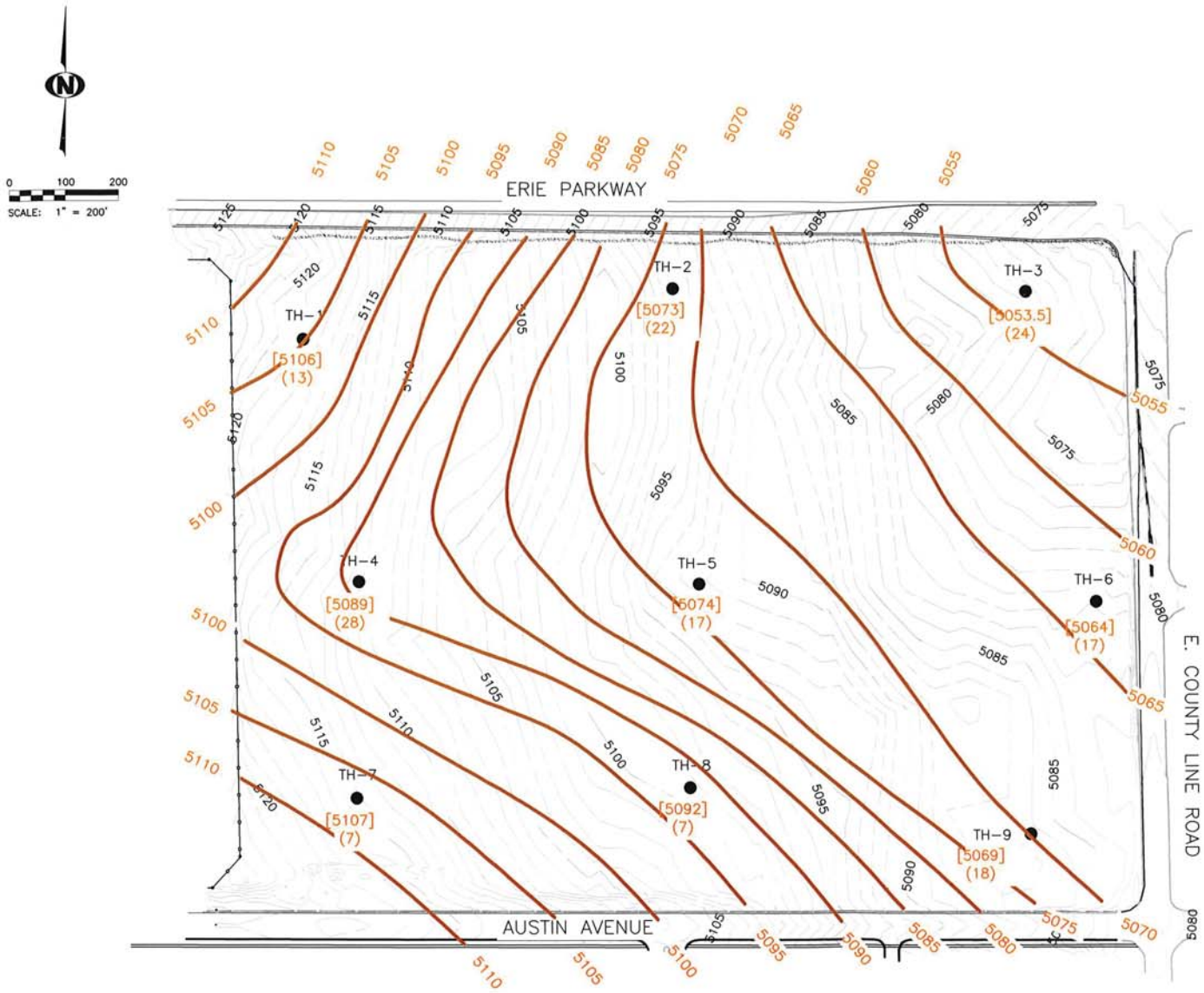

LEGEND:

- TH-1 ● LOCATION OF EXPLORATORY BORING SURVEYED BY ROCK CREEK SURVEYING.
- 5105 EXISTING GROUND SURFACE ELEVATION (FEET)
- NOTE: BORINGS, SHAFTS, AND CONTOUR LOCATIONS PROVIDED BY ROCK CREEK SURVEYING
- (17) DEPTH TO BEDROCK BELOW EXISTING GRADE.
- [5055] ELEVATION OF BEDROCK SURFACE
- 5110 INDICATES ESTIMATED BEDROCK ELEVATION (FEET)
- NOTE: THIS ESTIMATE WAS BASED UPON A SUBJECTIVE ANALYSIS OF DRILL HOLE DATA AND MAY NOT REFLECT LOCAL VARIATIONS.

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Depth and Estimated Elevation of Bedrock Surface Fig. 2

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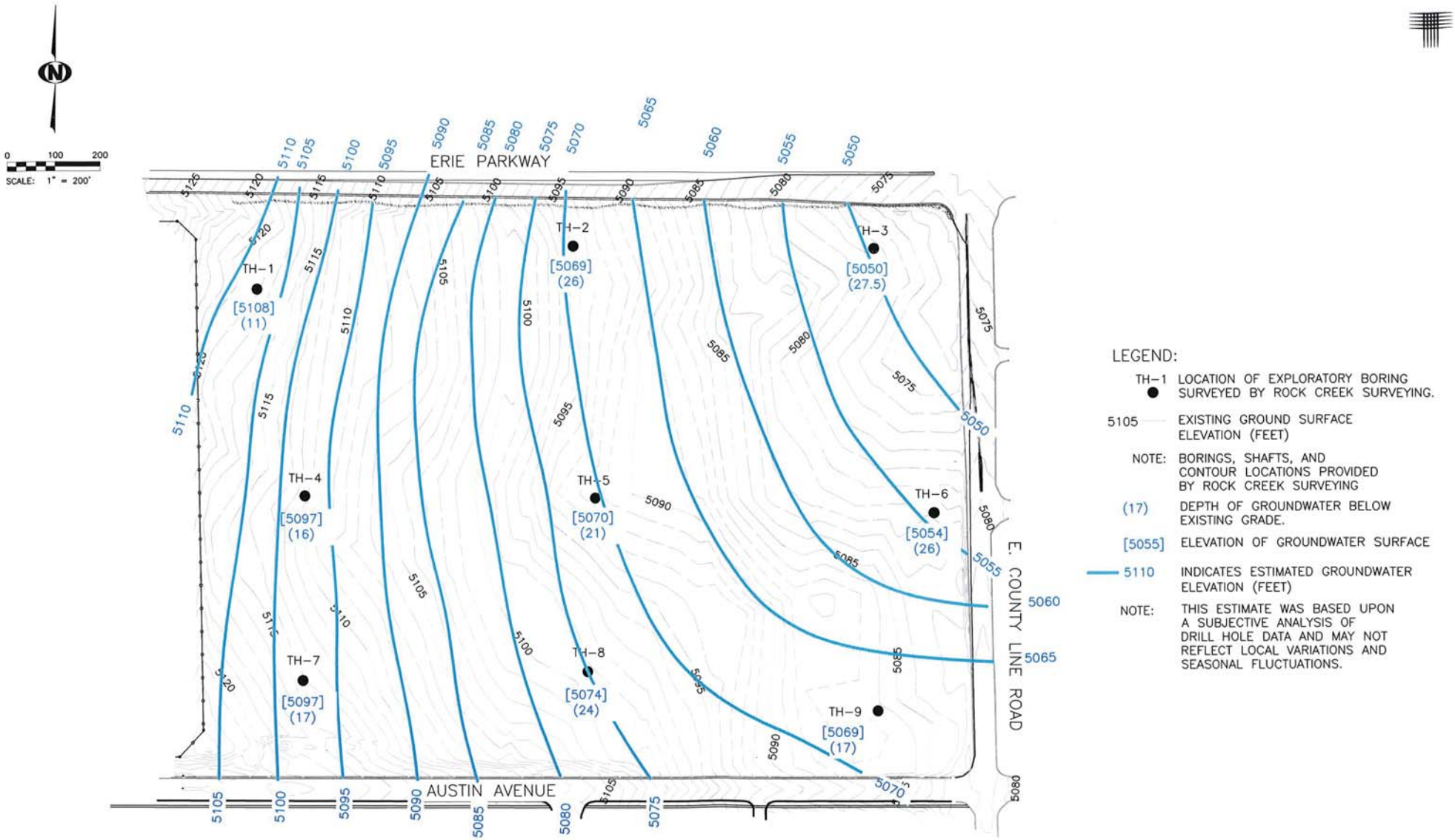

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Depth and Estimated Elevation of Groundwater Fig. 3

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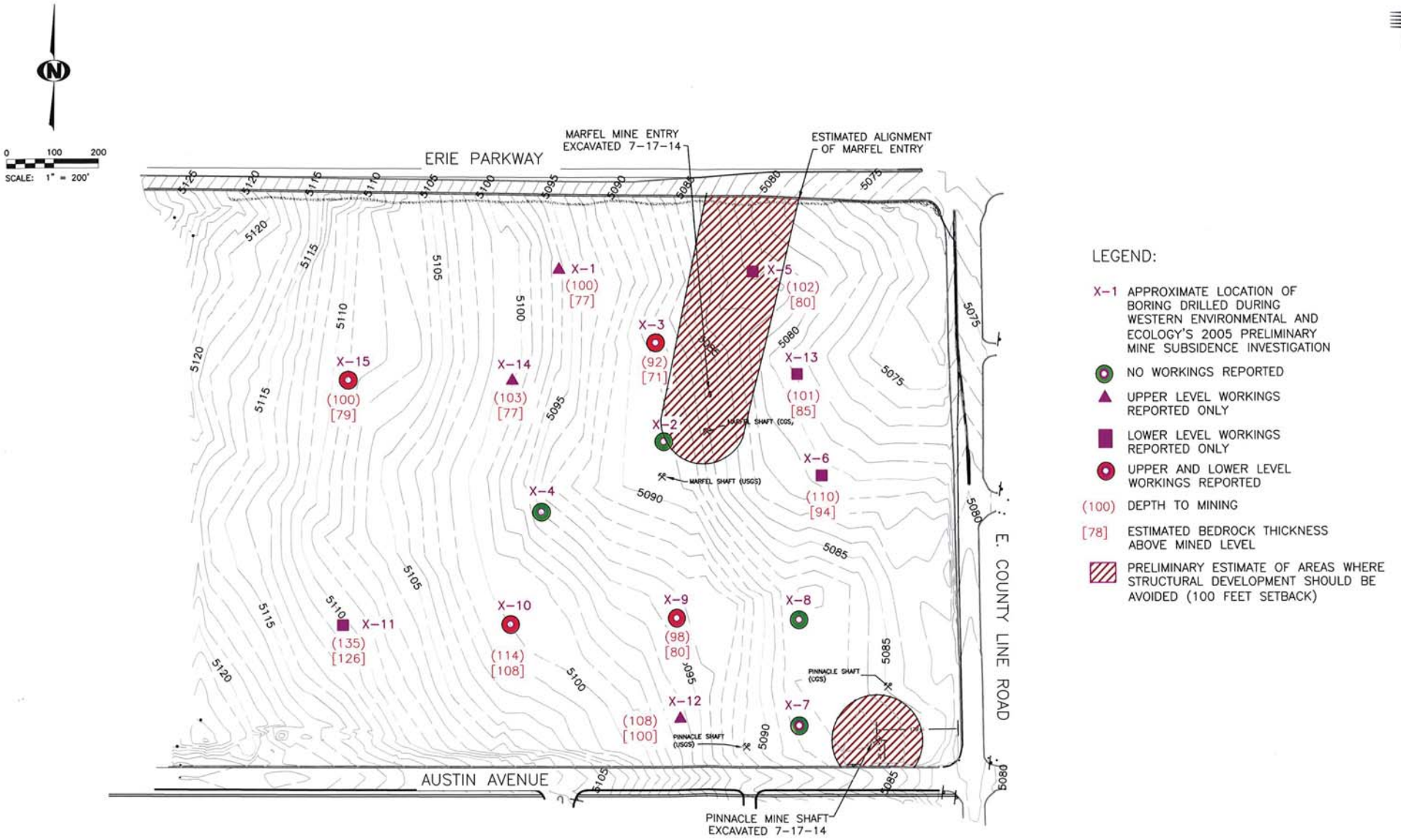

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Summary of Mine Data Fig. 4

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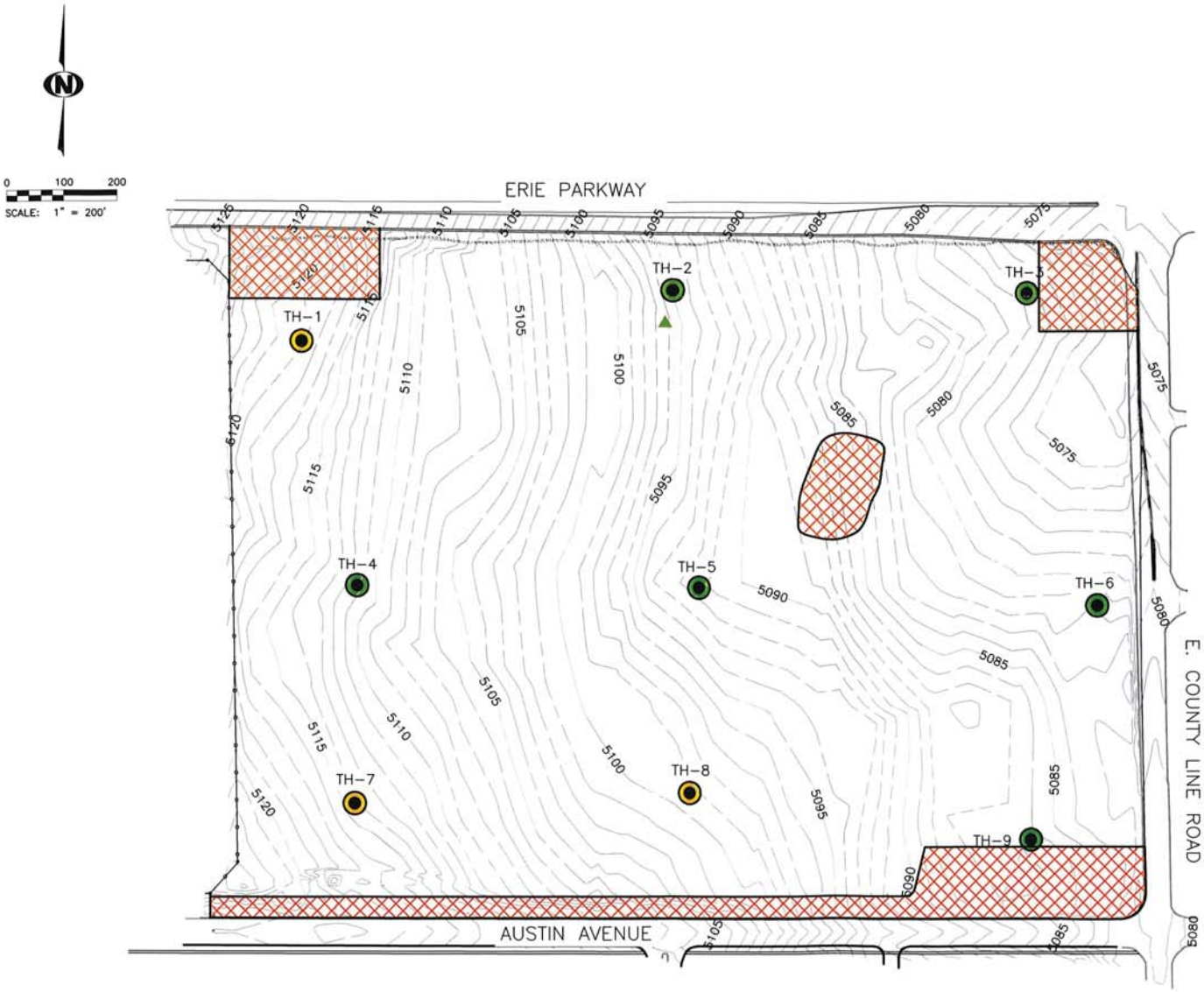

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Preliminary Risk Due to Expansive Soil and Bedrock Fig. 5

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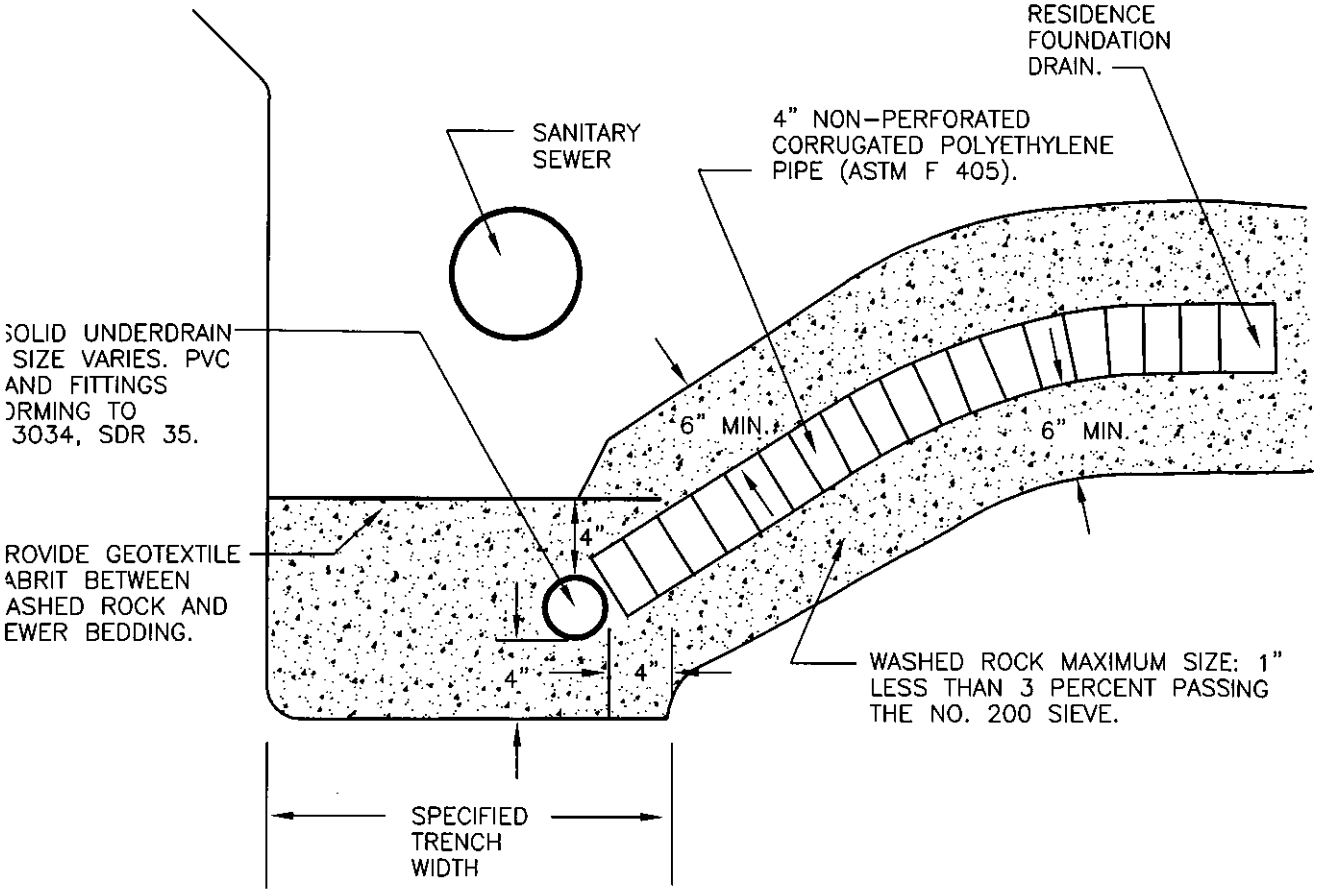
50-UNDERDRAIN_01



NOTE: NOT TO SCALE.

Sewer Underdrain Detail

Fig. 6

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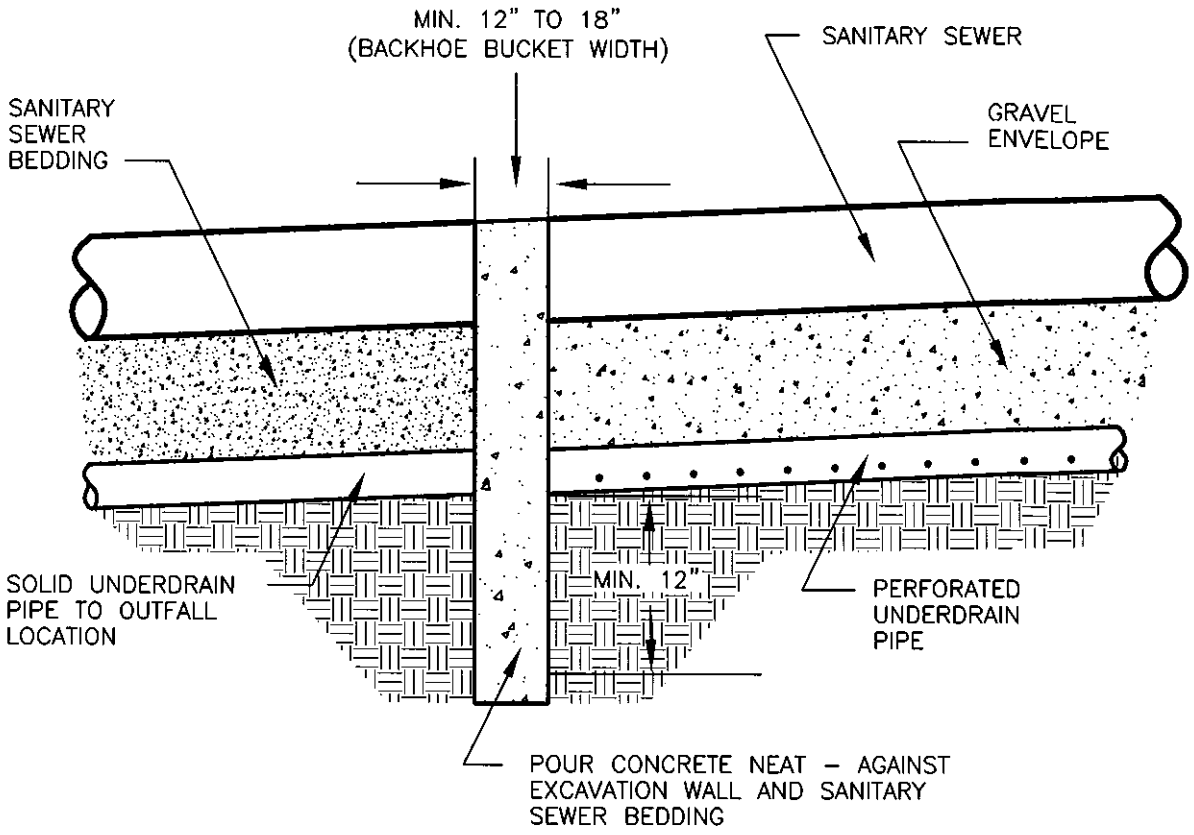
50-UNDERDRAIN_05



NOTE:
THE CONCRETE CUTOFF WALL SHOULD EXTEND INTO THE UNDISTURBED SOILS OUTSIDE THE UNDERDRAIN AND SANITARY SEWER TRENCH A MINIMUM DISTANCE OF 12 INCHES.

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Underdrain Cutoff Wall Detail

Fig. 7

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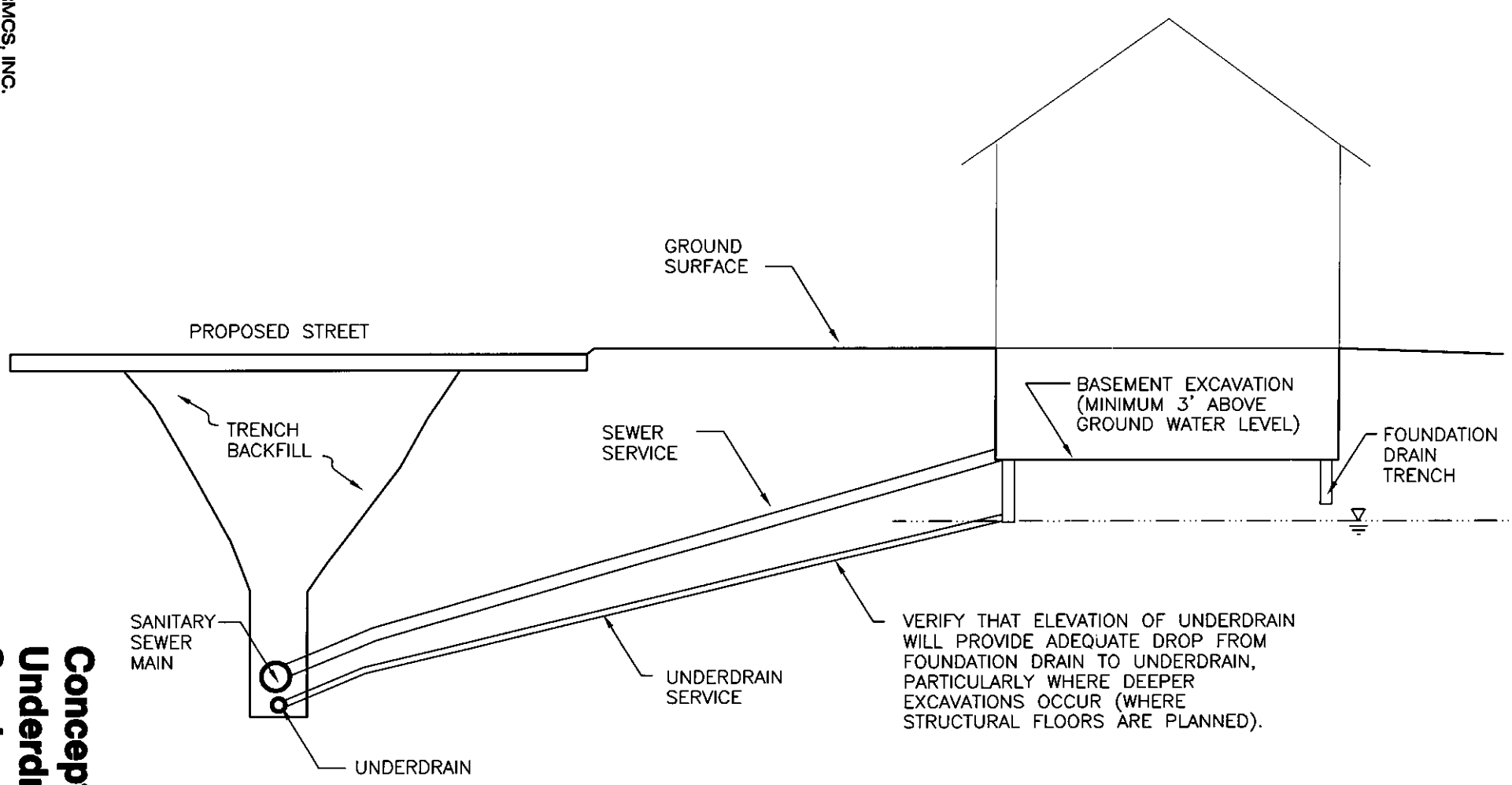

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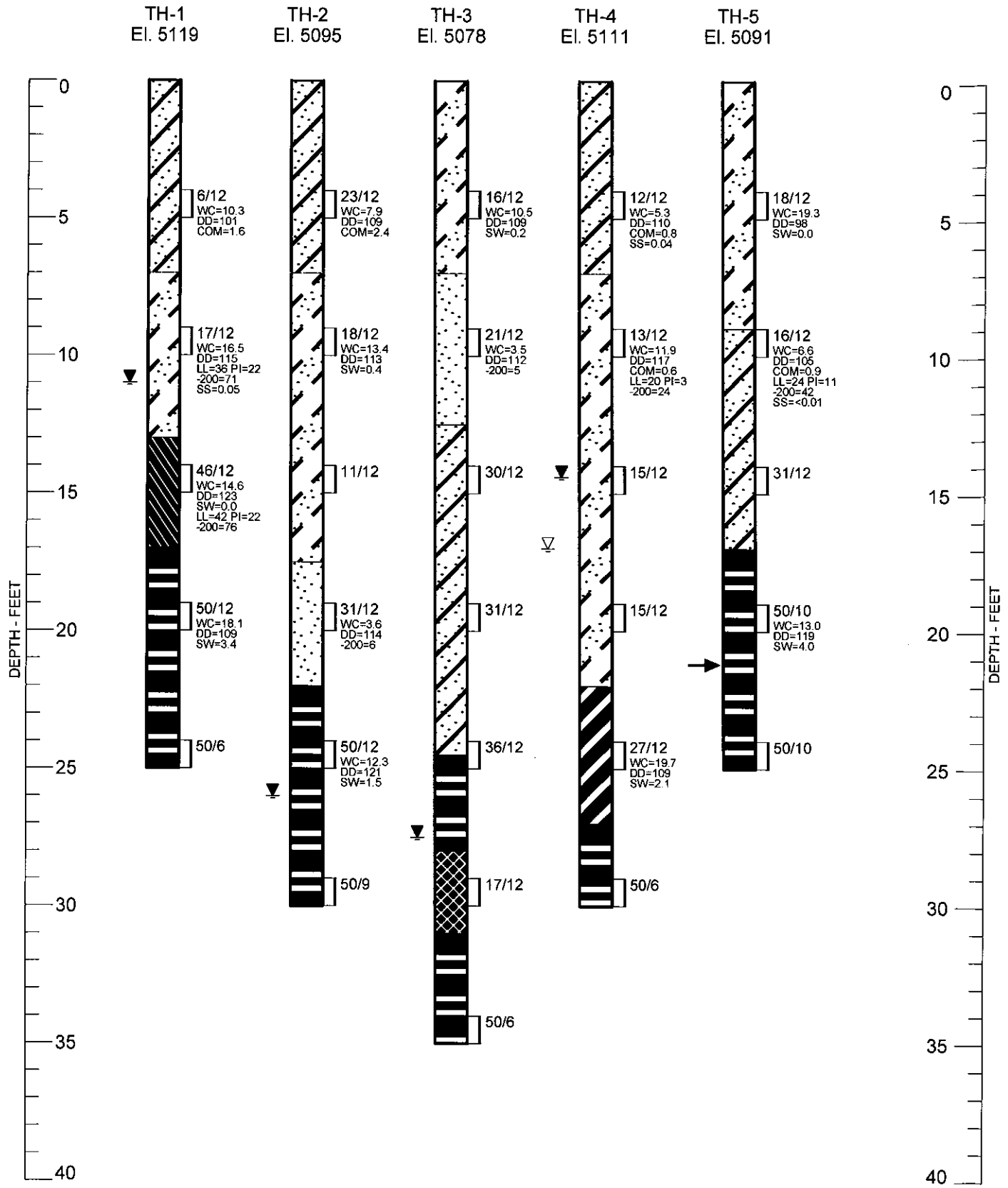
Conceptual Underdrain Service Profile

Fig. 8

APPENDIX A

SUMMARY LOGS OF EXPLORATORY BORINGS



SUMMARY LOGS OF EXPLORATORY BORINGS

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FIG. A- 1

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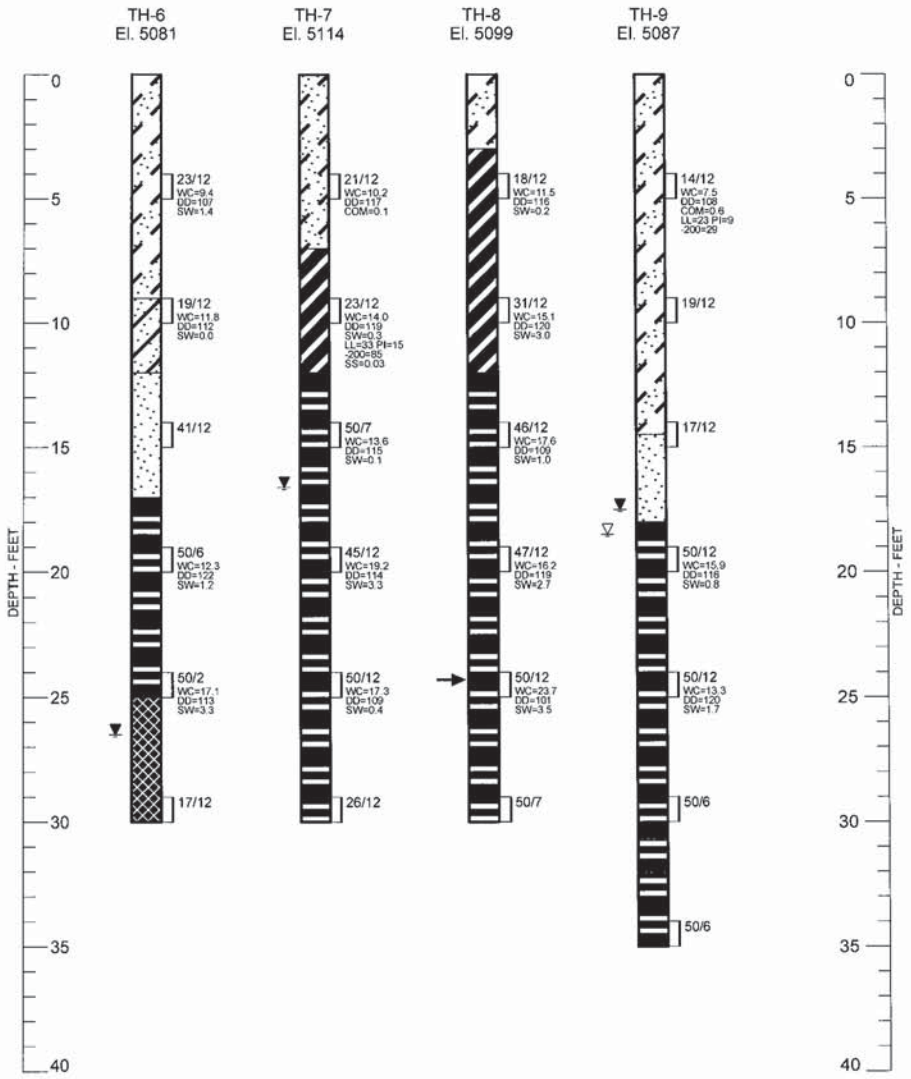

SUMMARY LOGS OF EXPLORATORY BORINGS

RMCS, INC.
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PROJECT NO. DN47,332-115

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LEGEND:

- SAND, SILTY, LOOSE TO MEDIUM DENSE, MOIST, BROWN (SM).
- INTERLAYERED CLAY/SAND, MEDIUM DENSE, SLIGHTLY MOIST, BROWN, GRAY (CL OR SC).
- SAND, SILTY, MEDIUM DENSE, SLIGHTLY MOIST, BROWN, GRAY (SM).
- SAND, CLAYEY, SAND, SLIGHTLY MOIST, BROWN, GRAY (SC).
- SAND, CLEAN TO SLIGHTLY SILTY, MEDIUM DENSE, MOIST, BROWN, GRAY (SP, SP-SM).
- WEATHERED CLAYSTONE, MOIST, BROWN, GRAY.
- BEDROCK, CLAYSTONE, HARD, MOIST, BROWN, GRAY.
- LIGNITE.

DRIVE SAMPLE. THE SYMBOL 6/12 INDICATES 6 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.5-INCH O.D. SAMPLER 12 INCHES.

WATER LEVEL MEASURED AT TIME OF DRILLING.

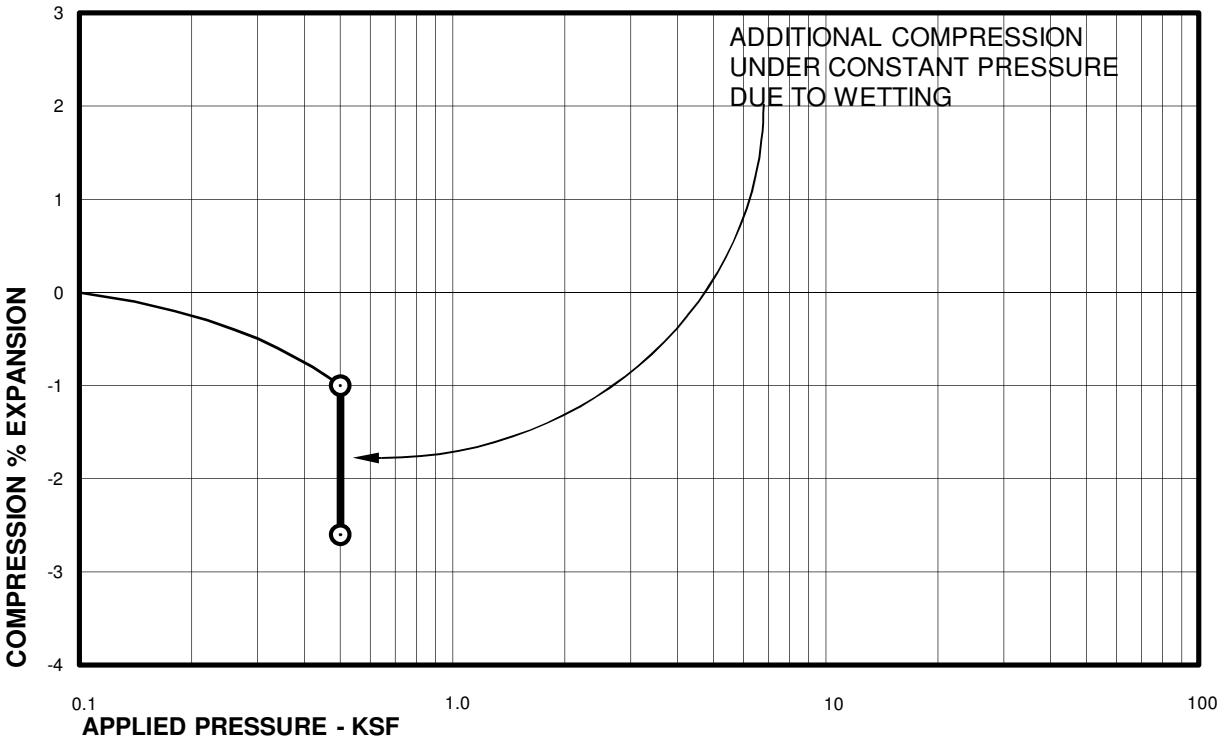
WATER LEVEL MEASURED AFTER DRILLING ON AUGUST 7, 2014.

INDICATES DEPTH WHERE HOLE CAVED.

NOTES:

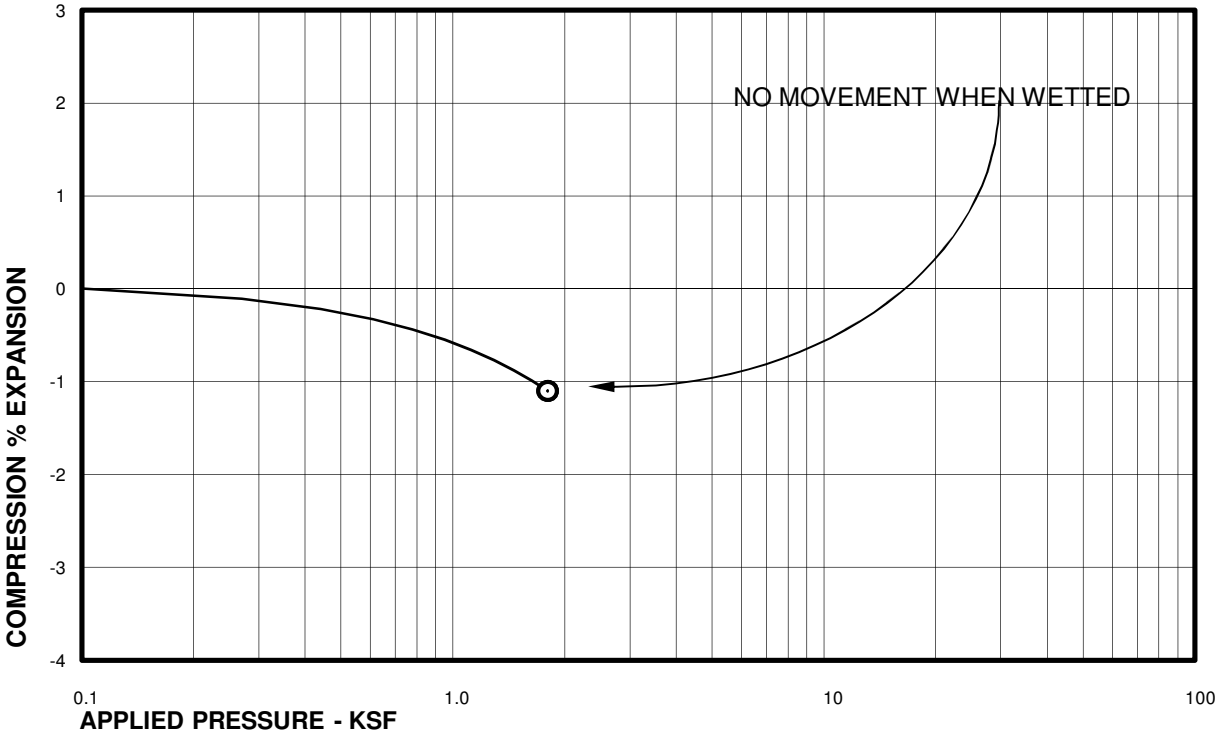
1. THE BORINGS WERE DRILLED ON JUNE 20, 2014 USING 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A TRUCK-MOUNTED DRILL RIG.
2. WC - INDICATES MOISTURE CONTENT (%).
   DD - INDICATES DRY DENSITY (PCF).
   SW - INDICATES SWELL WHEN WETTED UNDER APPLIED PRESSURE (%).
   COM- INDICATES COMPRESSION WHEN WETTED UNDER APPLIED PRESSURE (%).
   LL - INDICATES LIQUID LIMIT.
   PI - INDICATES PLASTICITY INDEX.
   -200 - INDICATES PASSING NO. 200 SIEVE (%).
   SS - INDICATES WATER-SOLUBLE SULFATE CONTENT (%).
3. BORING LOCATIONS AND ELEVATIONS WERE DETERMINED BY A REPRESENTATIVE OF OUR FIRM REFERENCING THE TEMPORARY BENCHMARK SHOWN ON FIG. 1.
4. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS AND CONCLUSIONS CONTAINED IN THIS REPORT.

APPENDIX B
LABORATORY TEST RESULTS



Sample of SAND, SILTY (SM) DRY UNIT WEIGHT= 101 PCF

From TH-1 AT 4 FEET MOISTURE CONTENT= 10.3 %



Sample of INTERBEDDED CLAYSTONE/SANDSTONE DRY UNIT WEIGHT= 123 PCF

From TH-1 AT 14 FEET MOISTURE CONTENT= 14.6 %

Swell Consolidation Test Results

FIG. B-1

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PROJECT NO. DN46,332-115
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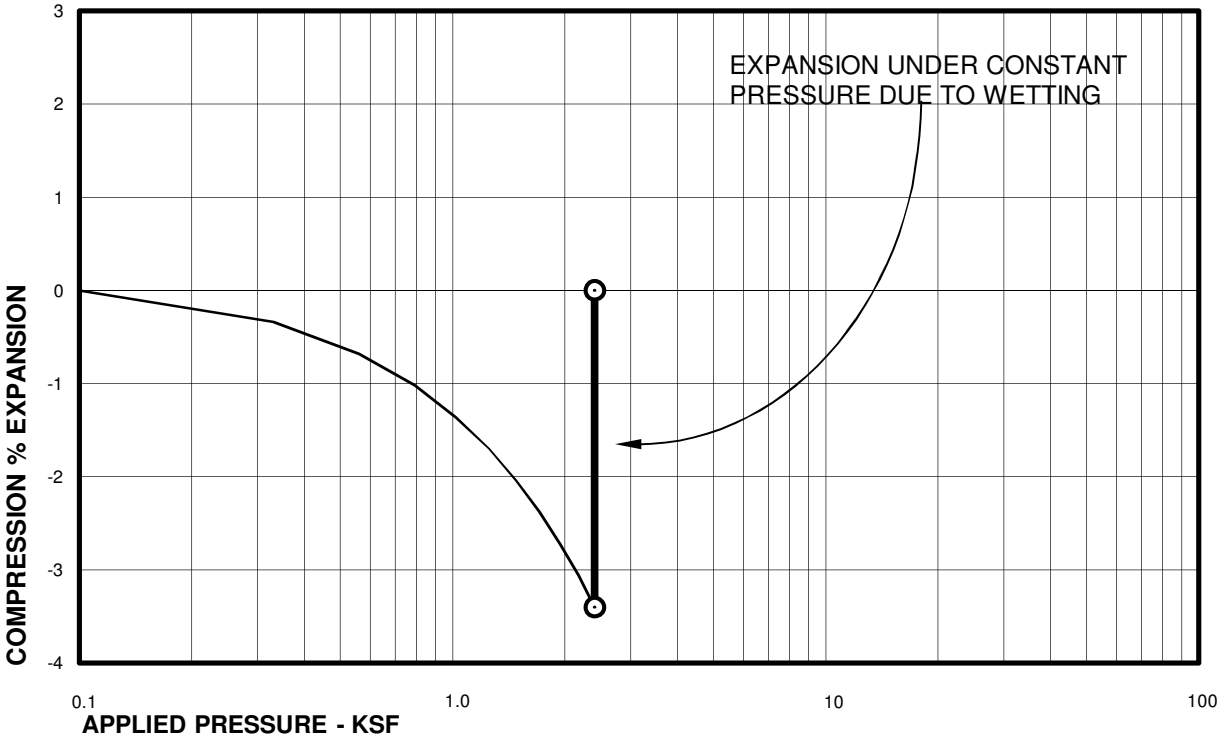
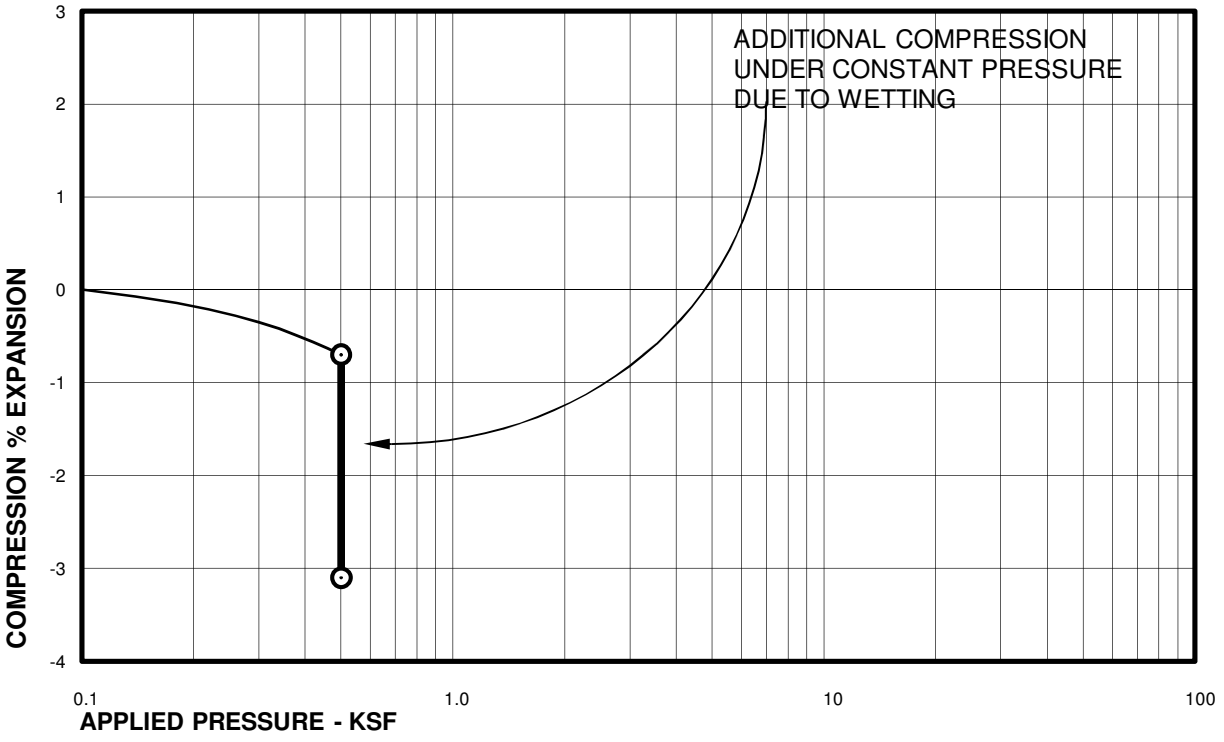


Sample of CLAYSTONE
From TH-1 AT 19 FEET

DRY UNIT WEIGHT= 109 PCF
MOISTURE CONTENT= 18.1 %



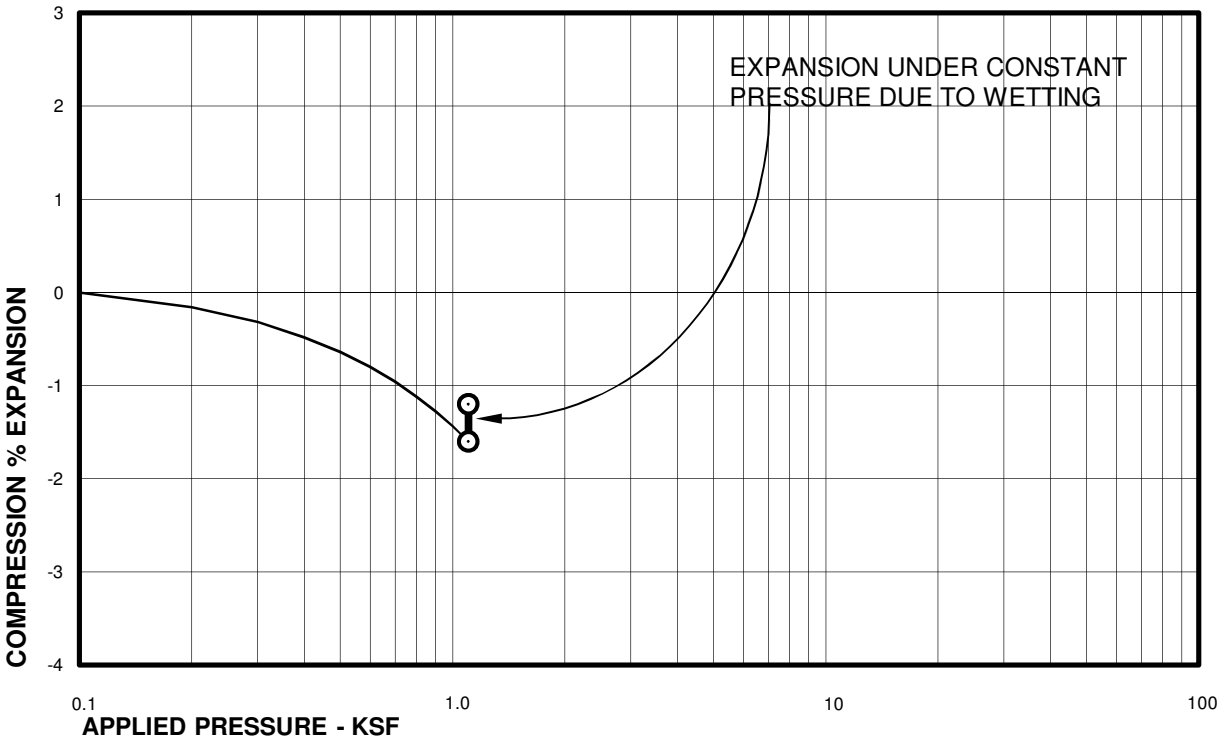
Sample of SAND, SILTY (SM)
From TH-2 AT 4 FEET

DRY UNIT WEIGHT= 109 PCF
MOISTURE CONTENT= 7.9 %

Swell Consolidation Test Results

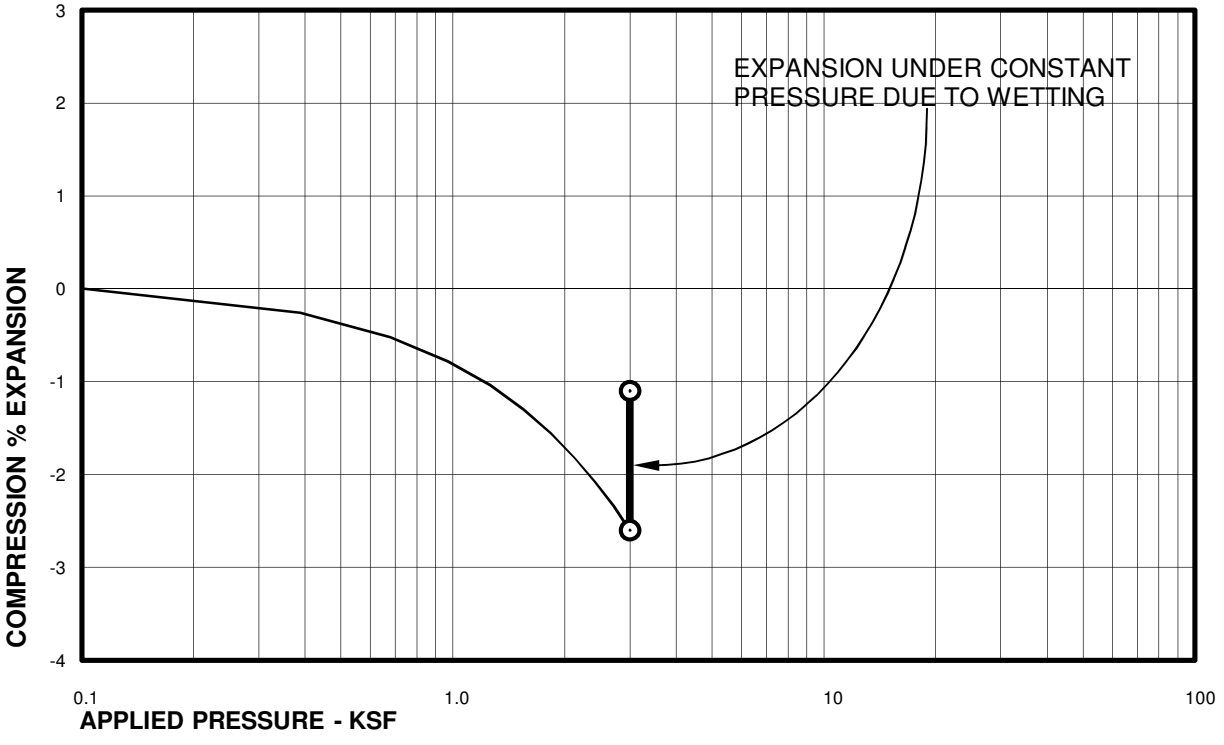
FIG. B-2

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of INTERLAYERED CLAY/SAND
From TH-2 AT 9 FEET

DRY UNIT WEIGHT= 113 PCF
MOISTURE CONTENT= 13.4 %



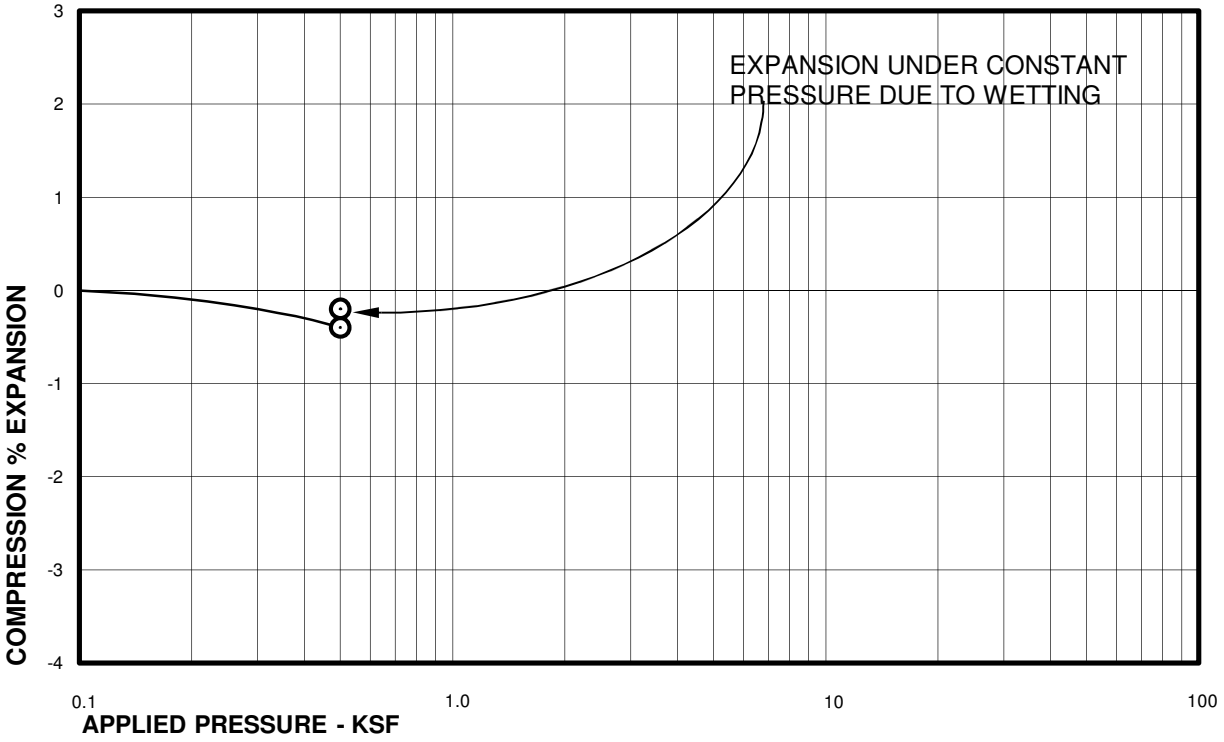
Sample of CLAYSTONE
From TH-2 AT 24 FEET

DRY UNIT WEIGHT= 121 PCF
MOISTURE CONTENT= 12.3 %

Swell Consolidation Test Results

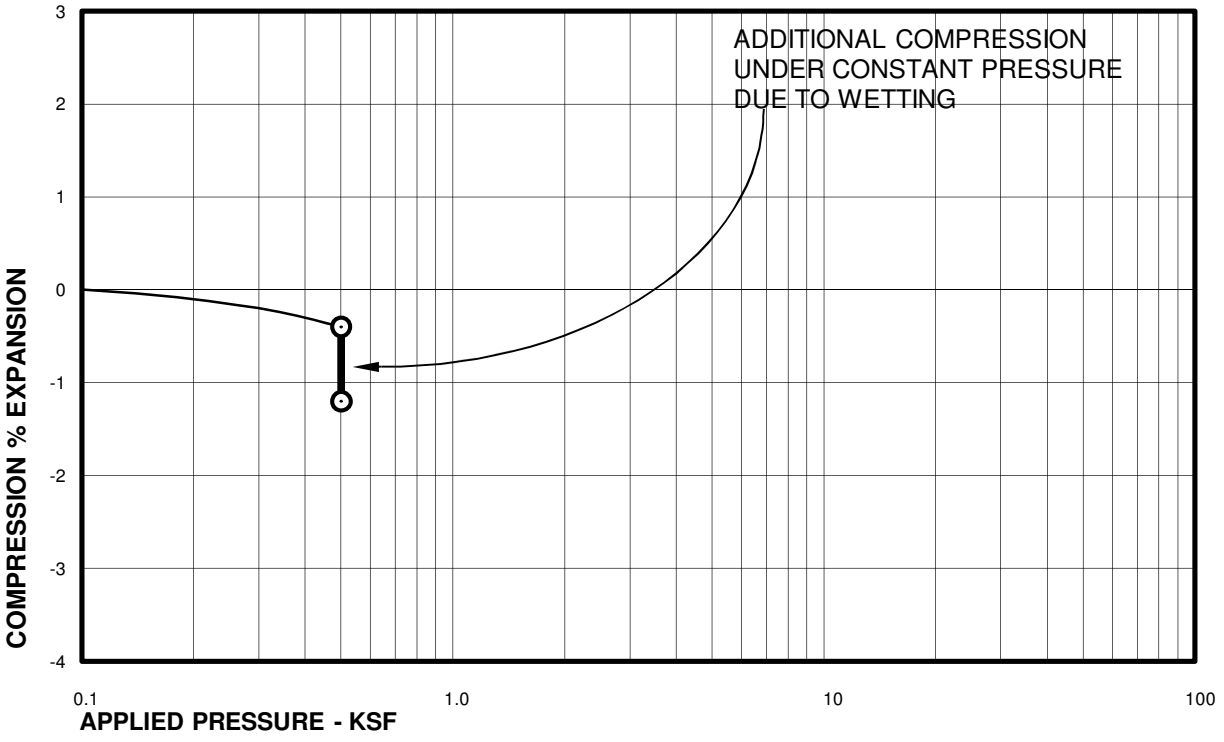
FIG. B-3

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of INTERLAYERED CLAY/SAND
From TH-3 AT 4 FEET

DRY UNIT WEIGHT= 109 PCF
MOISTURE CONTENT= 10.5 %



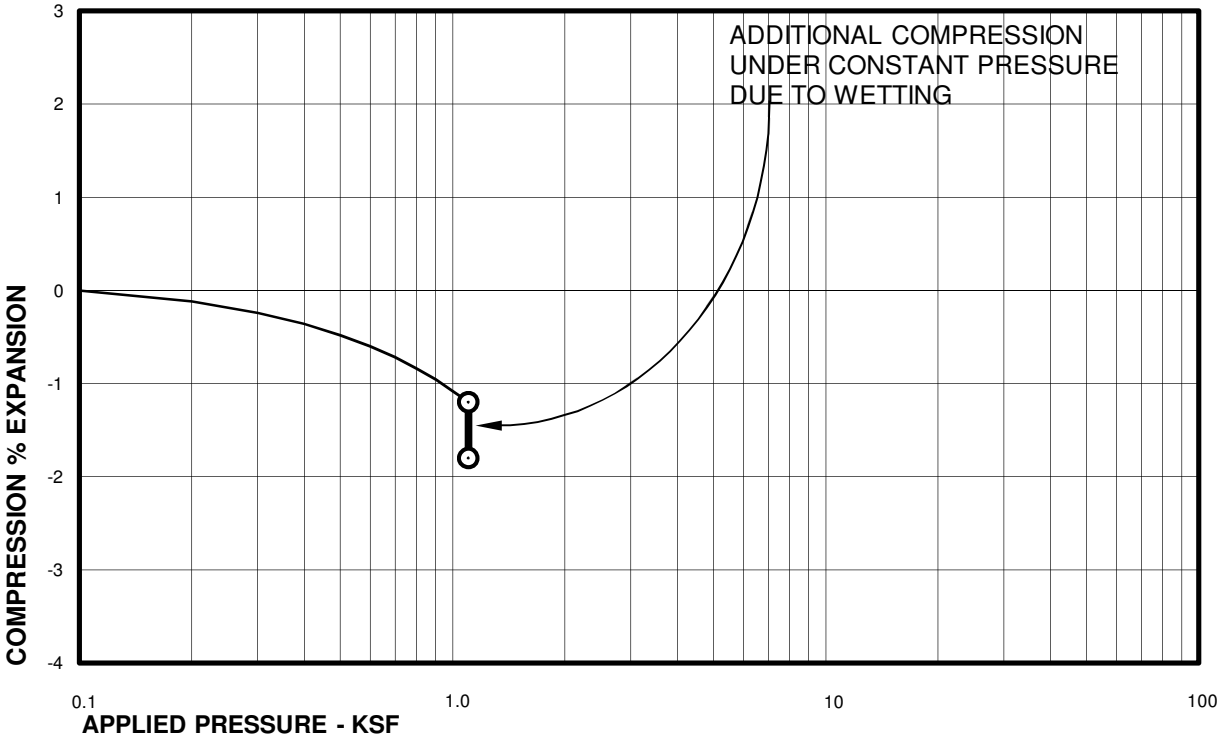
Sample of SAND, SILTY (SM)
From TH-4 AT 4 FEET

DRY UNIT WEIGHT= 110 PCF
MOISTURE CONTENT= 5.3 %

Swell Consolidation Test Results

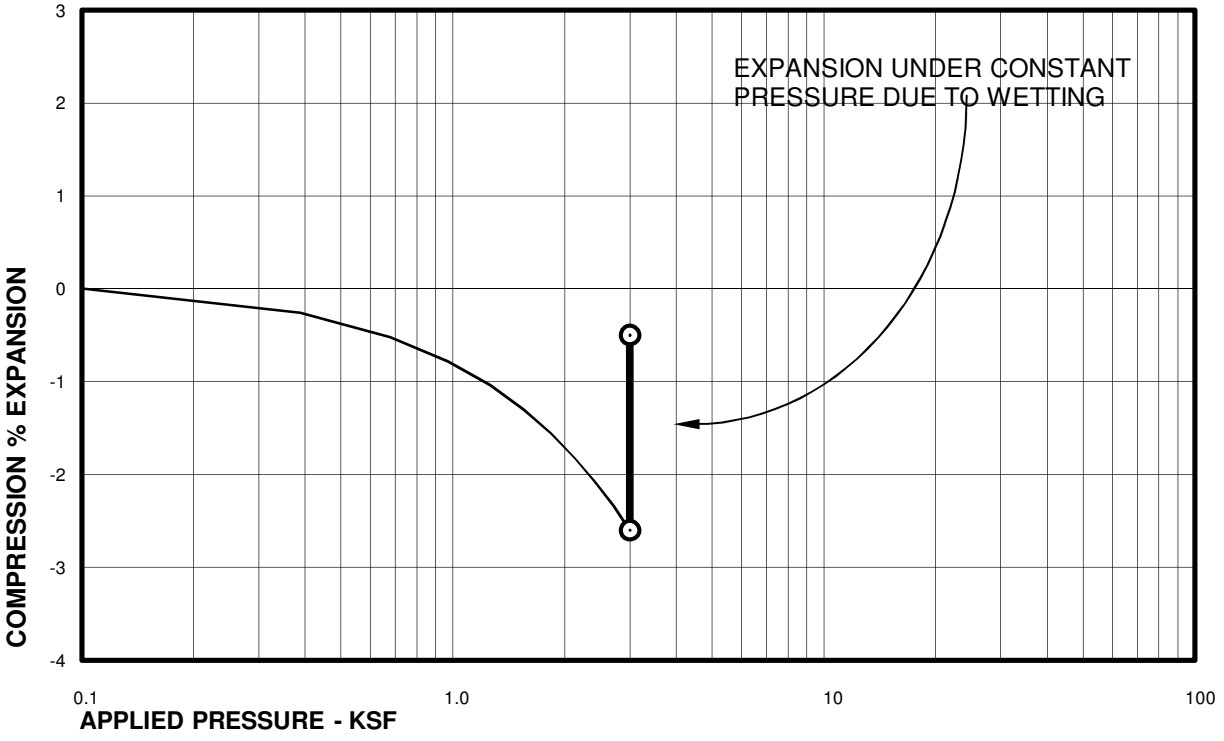
FIG. B-4

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of INTERLAYERED CLAY/SAND
From TH-4 AT 9 FEET

DRY UNIT WEIGHT= 117 PCF
MOISTURE CONTENT= 11.9 %



Sample of WEATHERED CLAYSTONE
From TH-4 AT 24 FEET

DRY UNIT WEIGHT= 109 PCF
MOISTURE CONTENT= 19.7 %

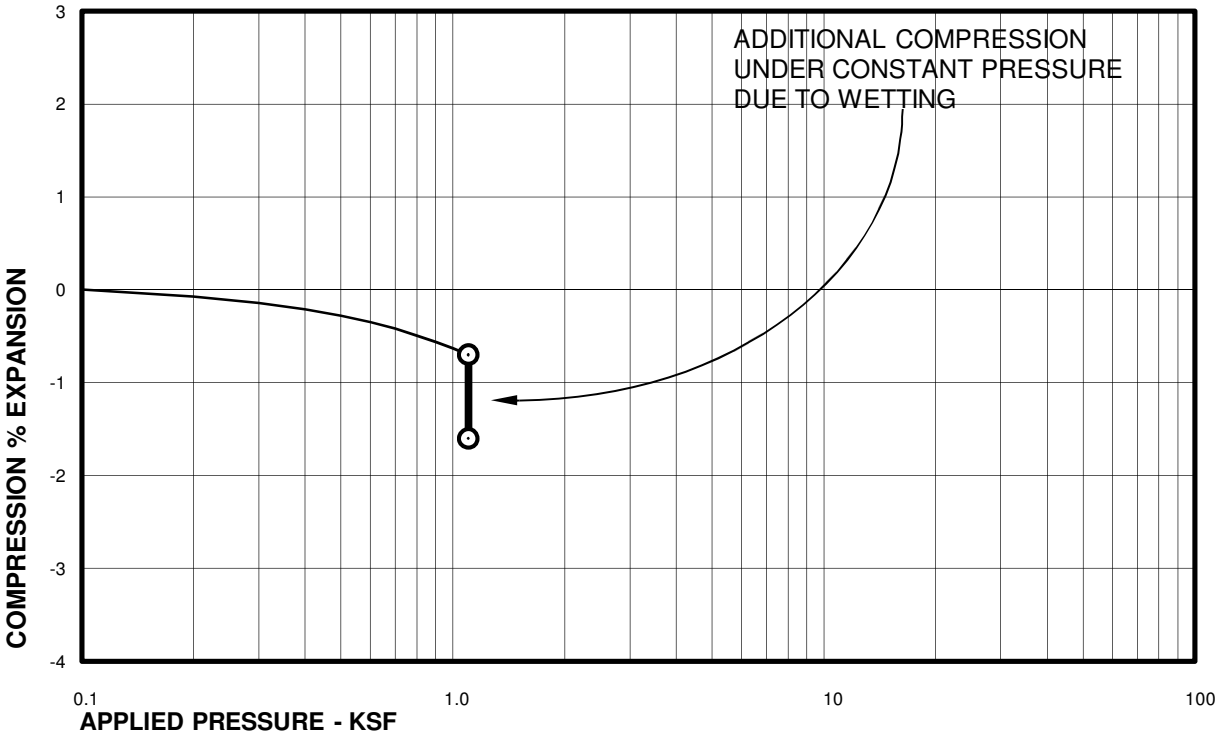
Swell Consolidation Test Results

FIG. B-5

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm

Sample of INTERLAYERED CLAY/SAND
From TH-5 AT 4 FEET

DRY UNIT WEIGHT= 98 PCF
MOISTURE CONTENT= 19.3 %



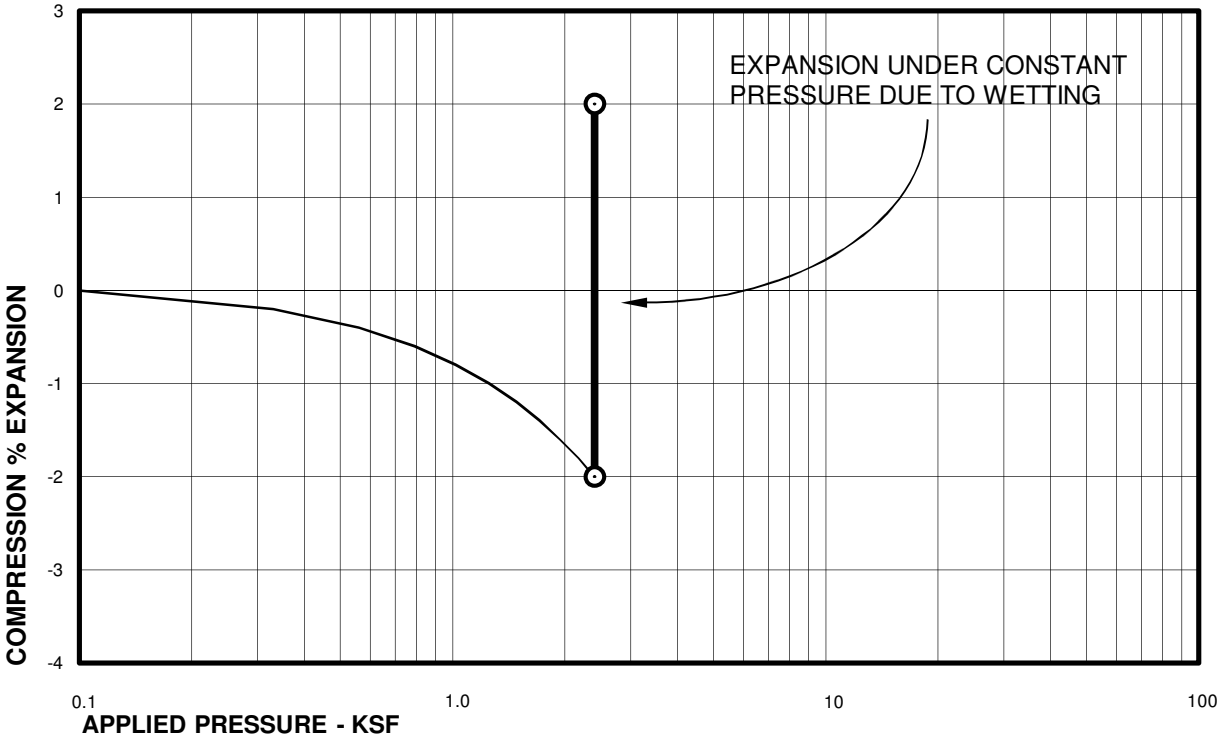
Sample of SAND, SILTY (SM)
From TH-5 AT 9 FEET

DRY UNIT WEIGHT= 105 PCF
MOISTURE CONTENT= 6.6 %

Swell Consolidation Test Results

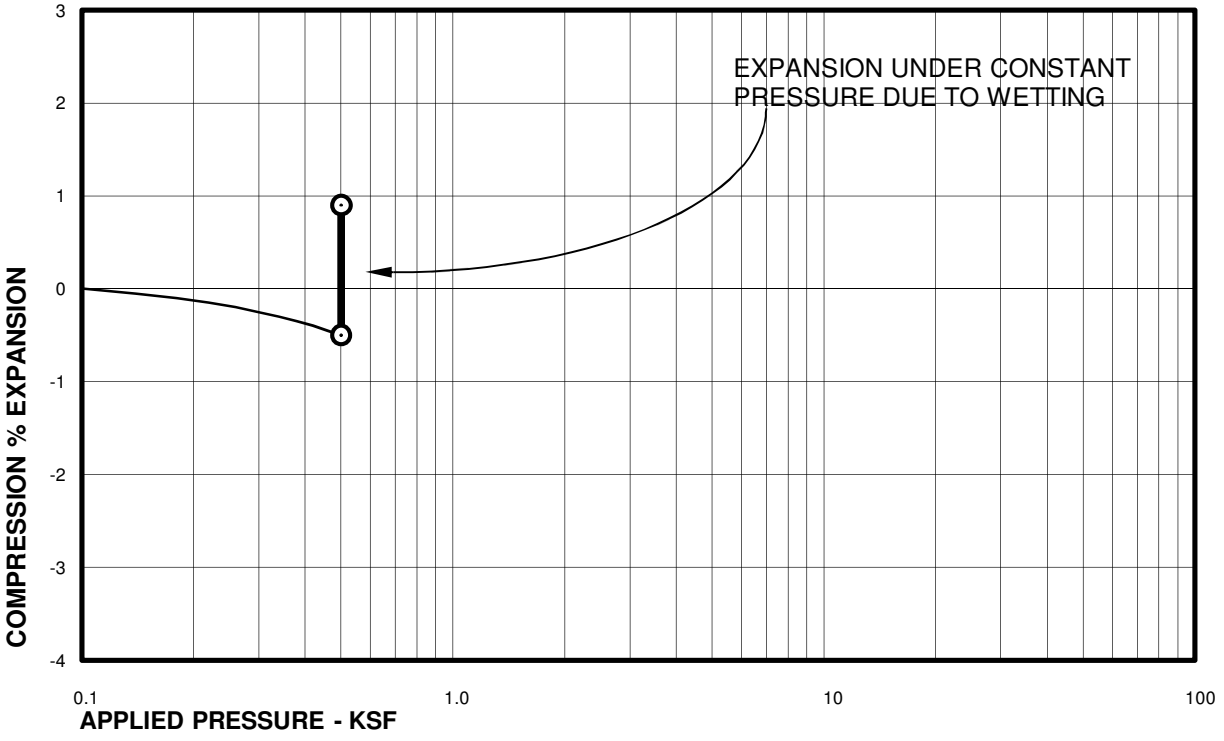
FIG. B-6

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of CLAYSTONE
From TH-5 AT 19 FEET

DRY UNIT WEIGHT= 119 PCF
MOISTURE CONTENT= 13.0 %



Sample of INTERLAYERED CLAY/SAND
From TH-6 AT 4 FEET

DRY UNIT WEIGHT= 107 PCF
MOISTURE CONTENT= 9.4 %

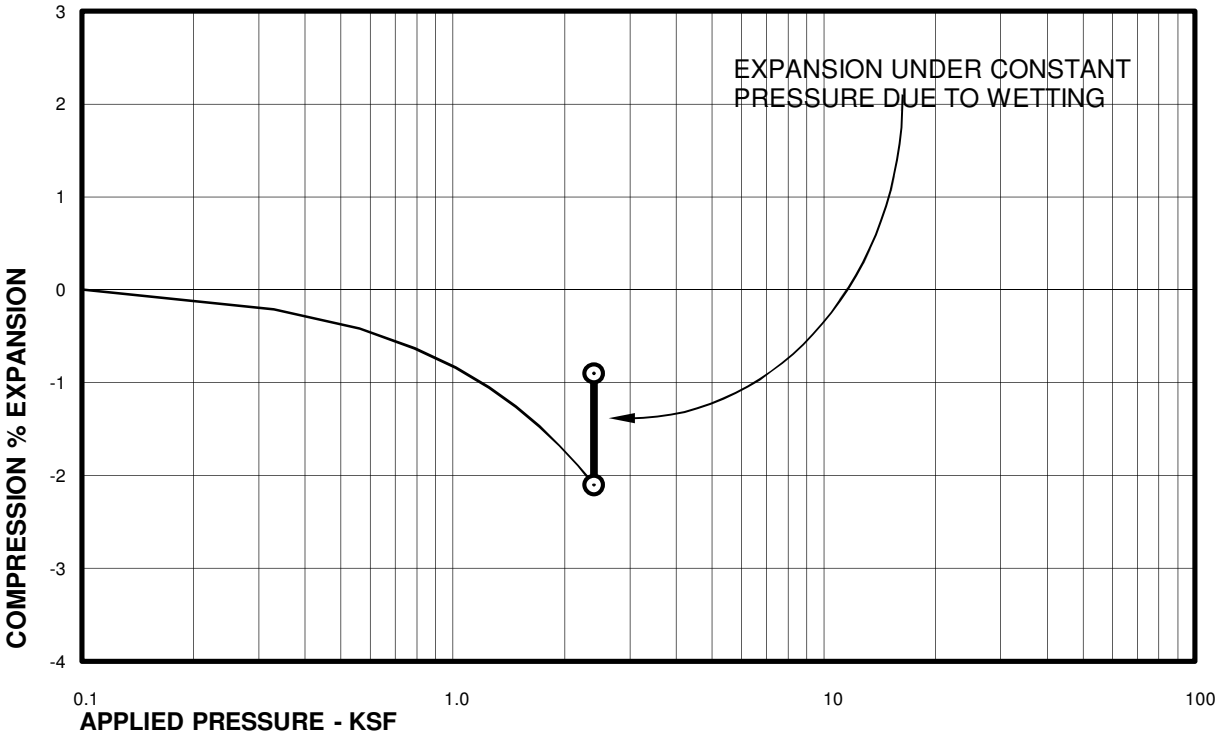
Swell Consolidation Test Results

FIG. B-7

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm

Sample of SAND, SILTY (SM)
From TH-6 AT 9 FEET

DRY UNIT WEIGHT= 112 PCF
MOISTURE CONTENT= 11.8 %



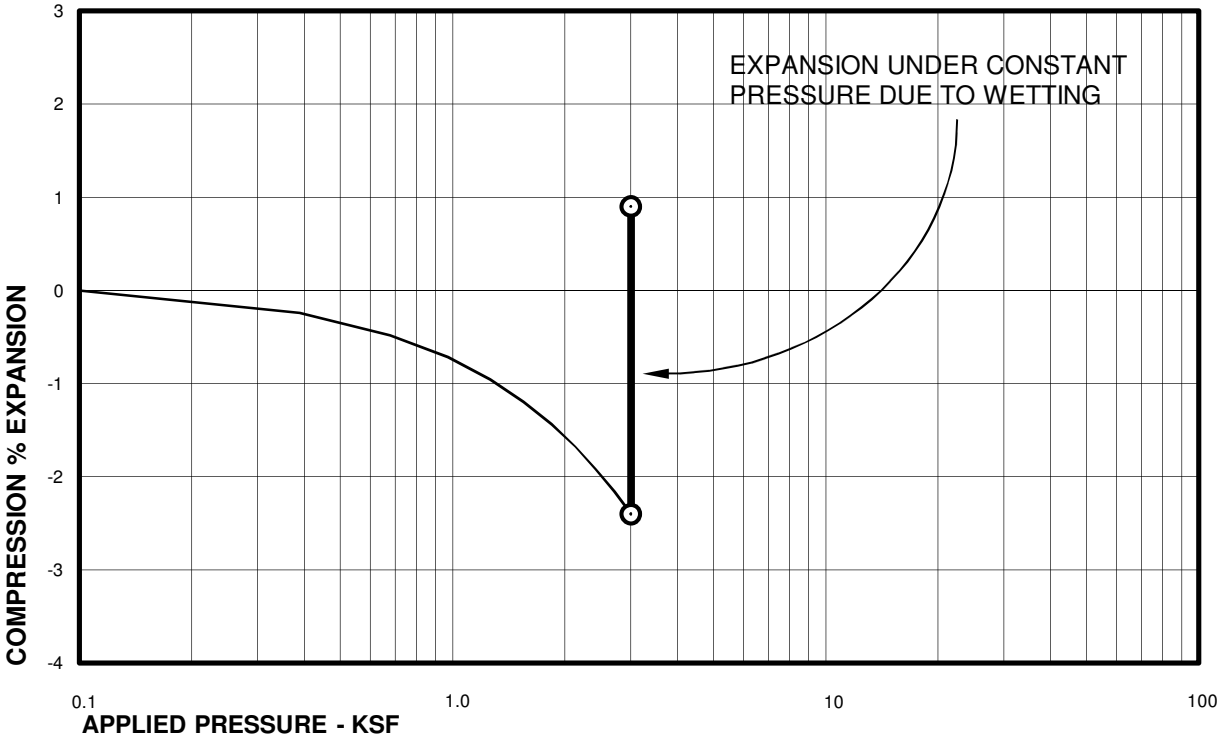
Sample of CLAYSTONE
From TH-6 AT 19 FEET

DRY UNIT WEIGHT= 122 PCF
MOISTURE CONTENT= 12.3 %

Swell Consolidation Test Results

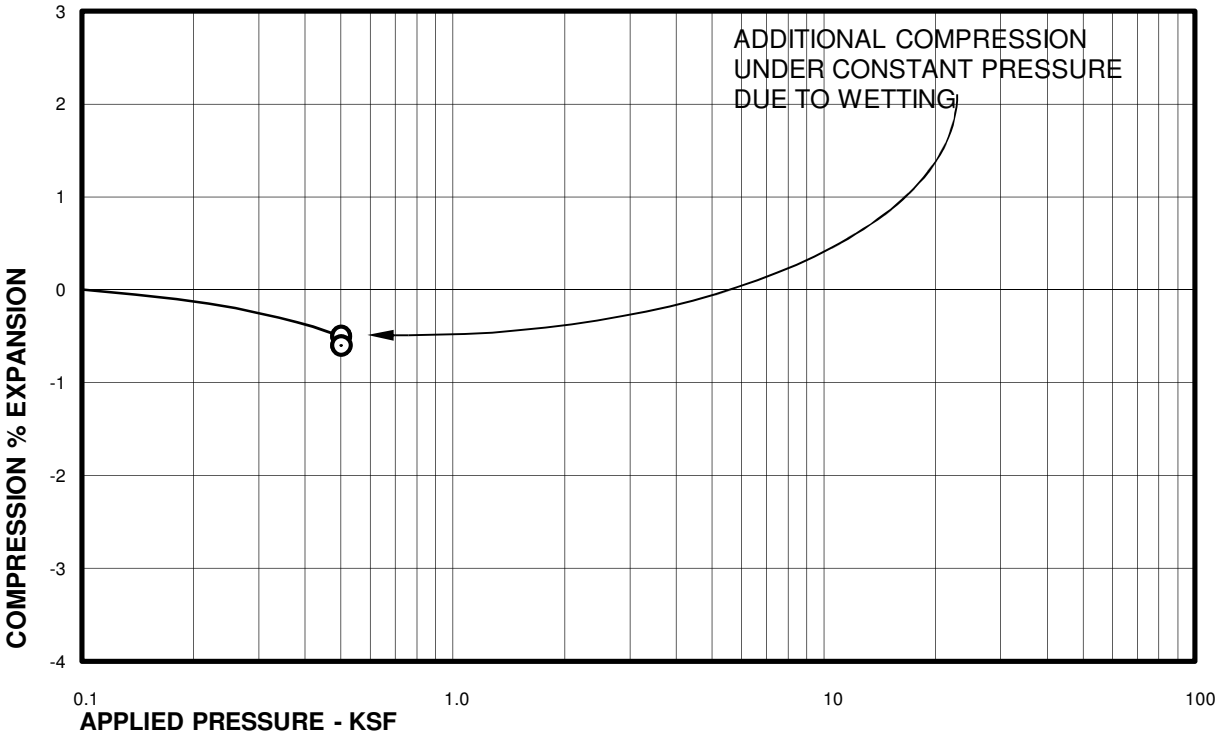
FIG. B-8

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of CLAYSTONE
From TH-6 AT 24 FEET

DRY UNIT WEIGHT= 113 PCF
MOISTURE CONTENT= 17.1 %



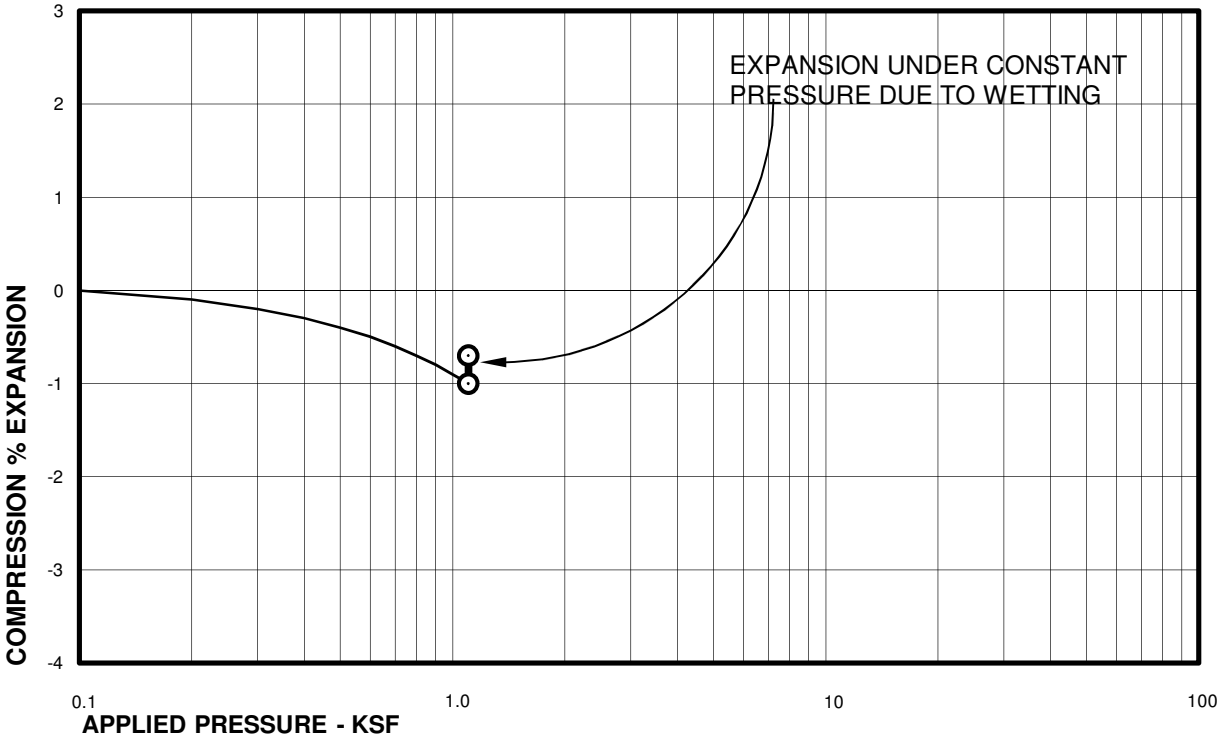
Sample of SAND, CLAYEY (SC)
From TH-7 AT 4 FEET

DRY UNIT WEIGHT= 117 PCF
MOISTURE CONTENT= 10.2 %

Swell Consolidation Test Results

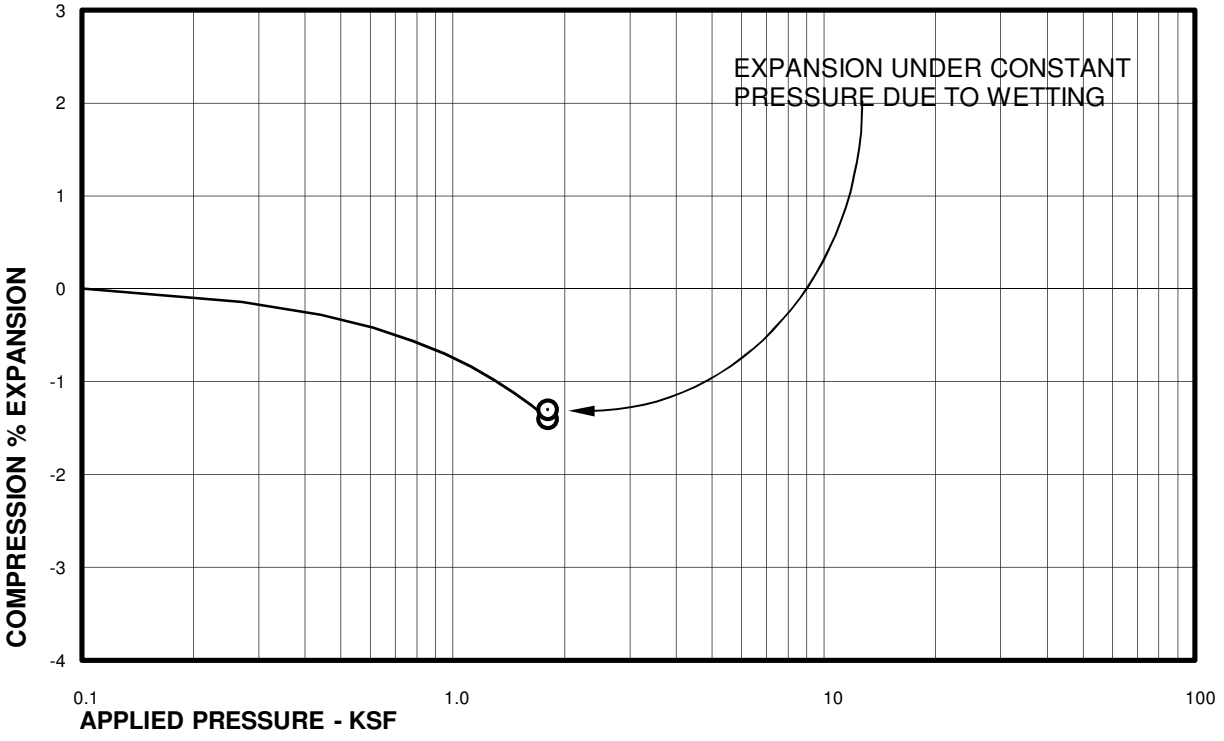
FIG. B-9

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of WEATHERED CLAYSTONE
From TH-7 AT 9 FEET

DRY UNIT WEIGHT= 119 PCF
MOISTURE CONTENT= 14.0 %



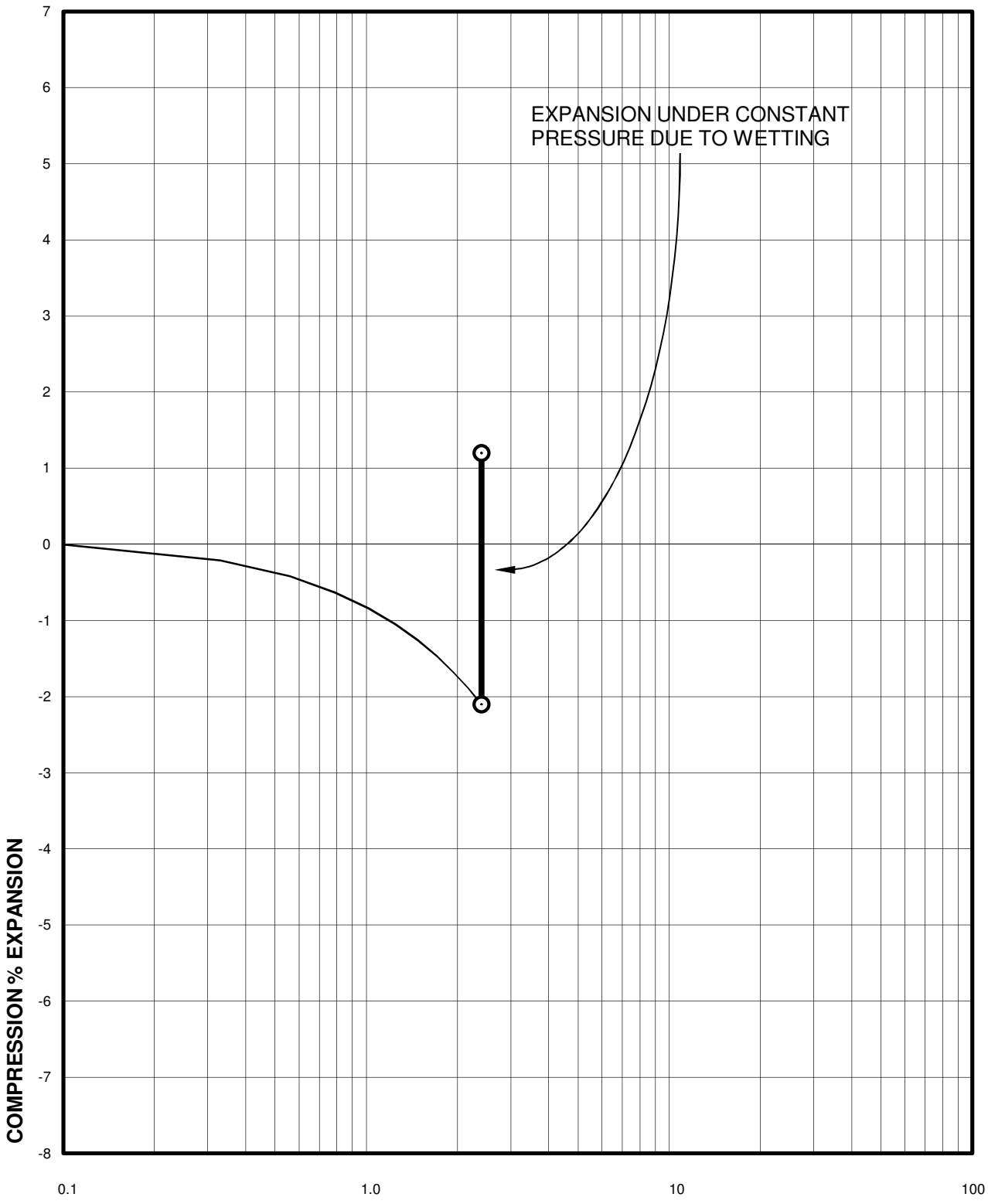
Sample of CLAYSTONE
From TH-7 AT 14 FEET

DRY UNIT WEIGHT= 115 PCF
MOISTURE CONTENT= 13.6 %

Swell Consolidation Test Results

FIG. B-10

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



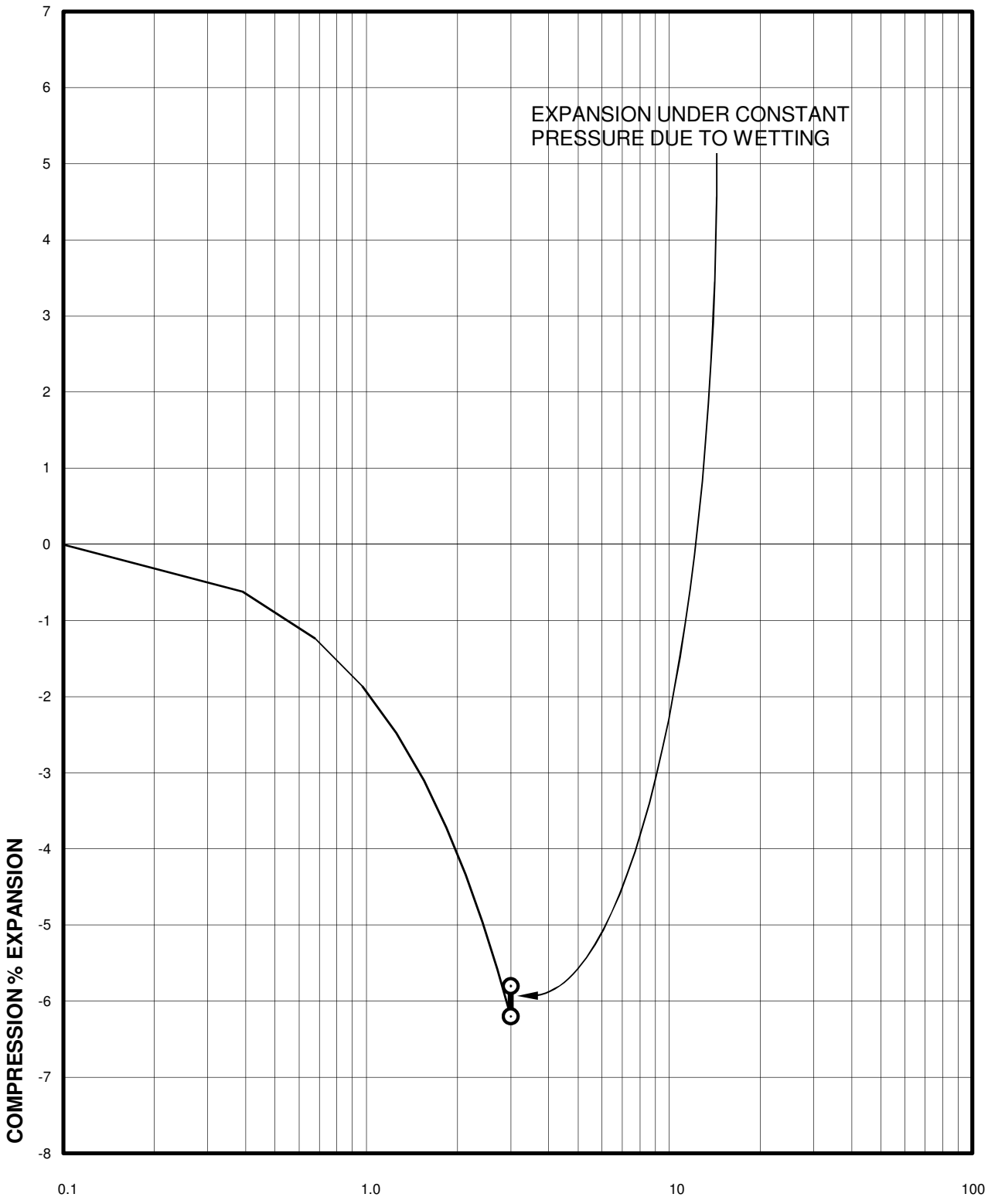
Sample of CLAYSTONE
From TH-7 AT 19 FEET

DRY UNIT WEIGHT= 114 PCF
MOISTURE CONTENT= 19.2 %

Swell Consolidation Test Results

FIG. B-11

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



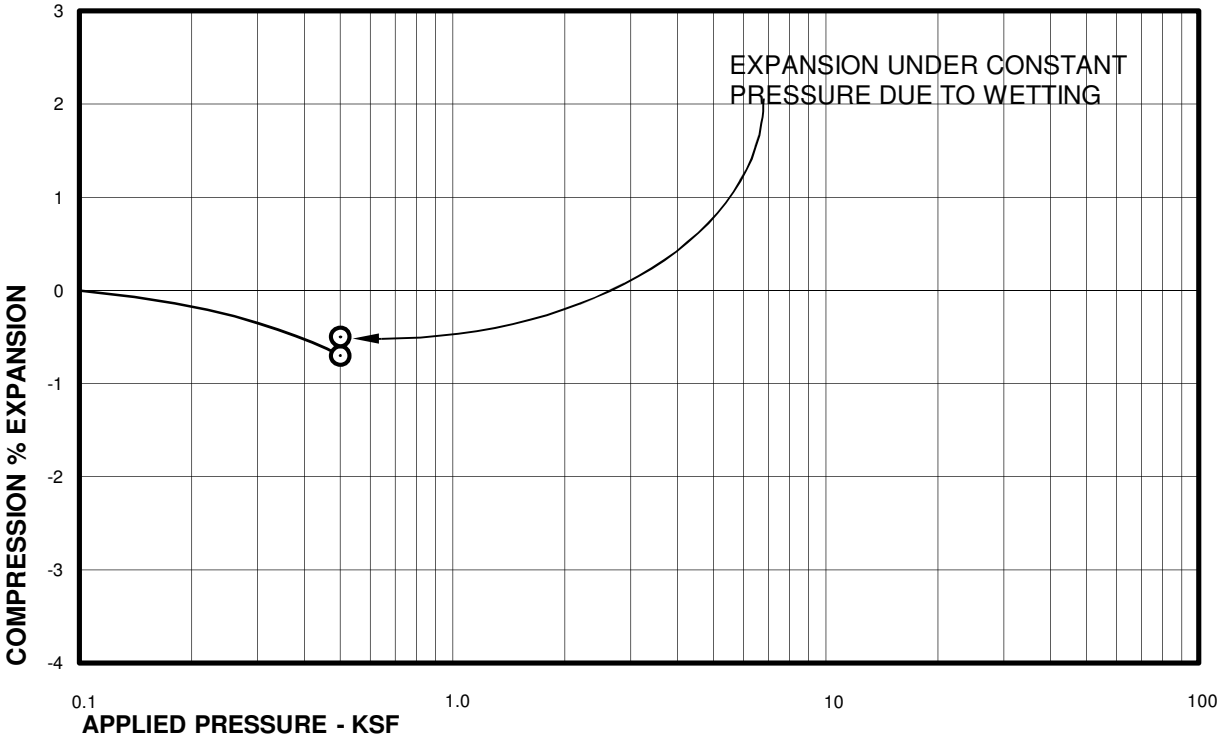
Sample of CLAYSTONE
From TH-7 AT 24 FEET

DRY UNIT WEIGHT= 109 PCF
MOISTURE CONTENT= 17.3 %

Swell Consolidation Test Results

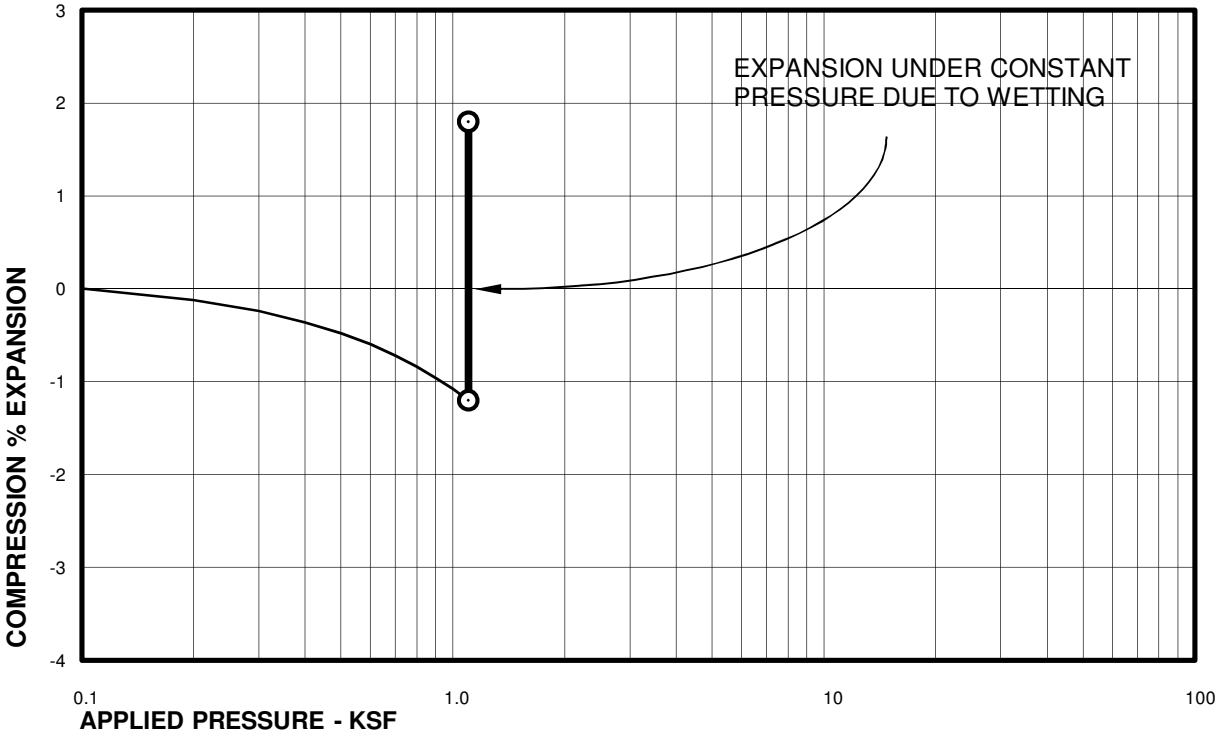
FIG. B-12

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of WEATHERED CLAYSTONE
From TH-8 AT 4 FEET

DRY UNIT WEIGHT= 116 PCF
MOISTURE CONTENT= 11..5 %



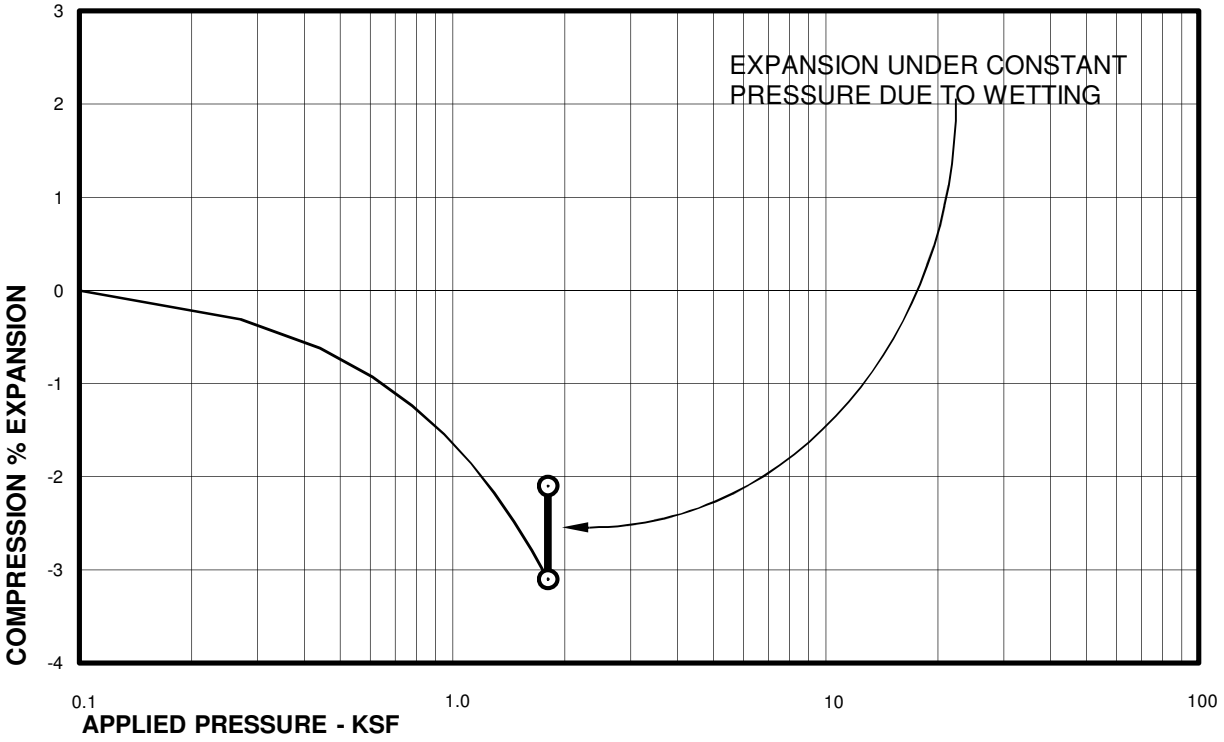
Sample of WEATHERED CLAYSTONE
From TH-8 AT 9 FEET

DRY UNIT WEIGHT= 120 PCF
MOISTURE CONTENT= 15.1 %

Swell Consolidation Test Results

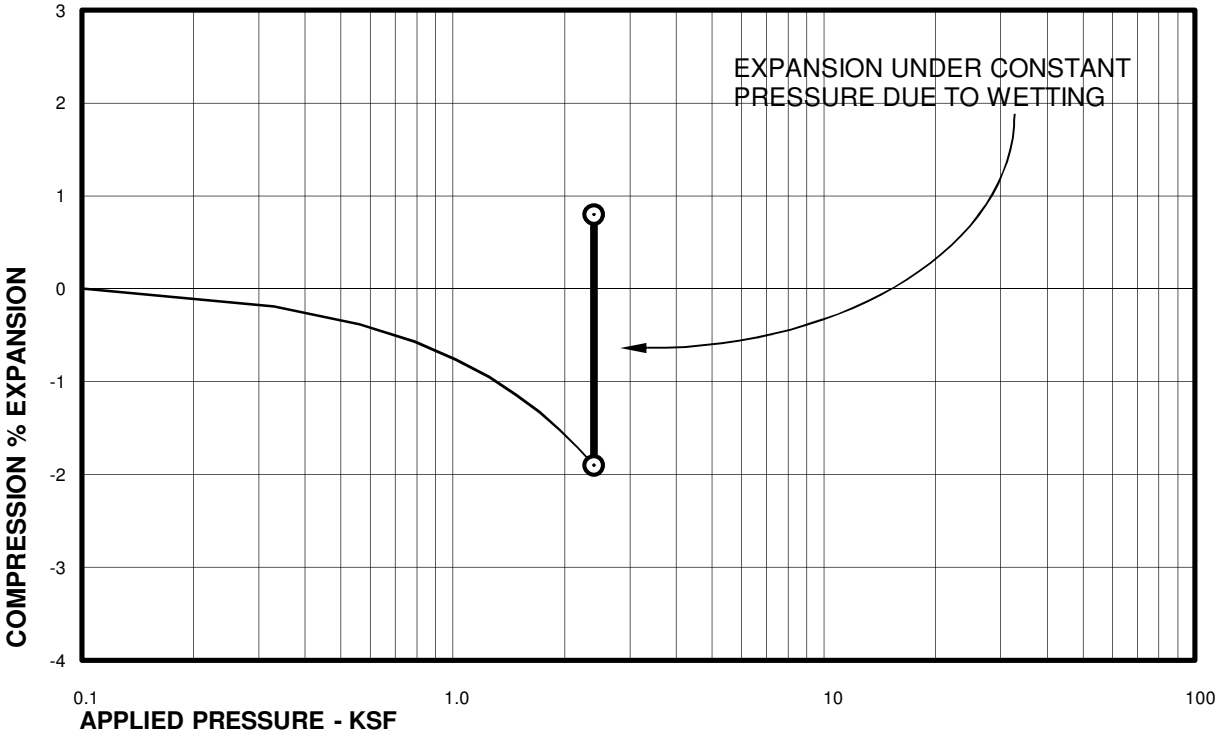
FIG. B-13

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of CLAYSTONE
From TH-8 AT 14 FEET

DRY UNIT WEIGHT= 109 PCF
MOISTURE CONTENT= 17.6 %



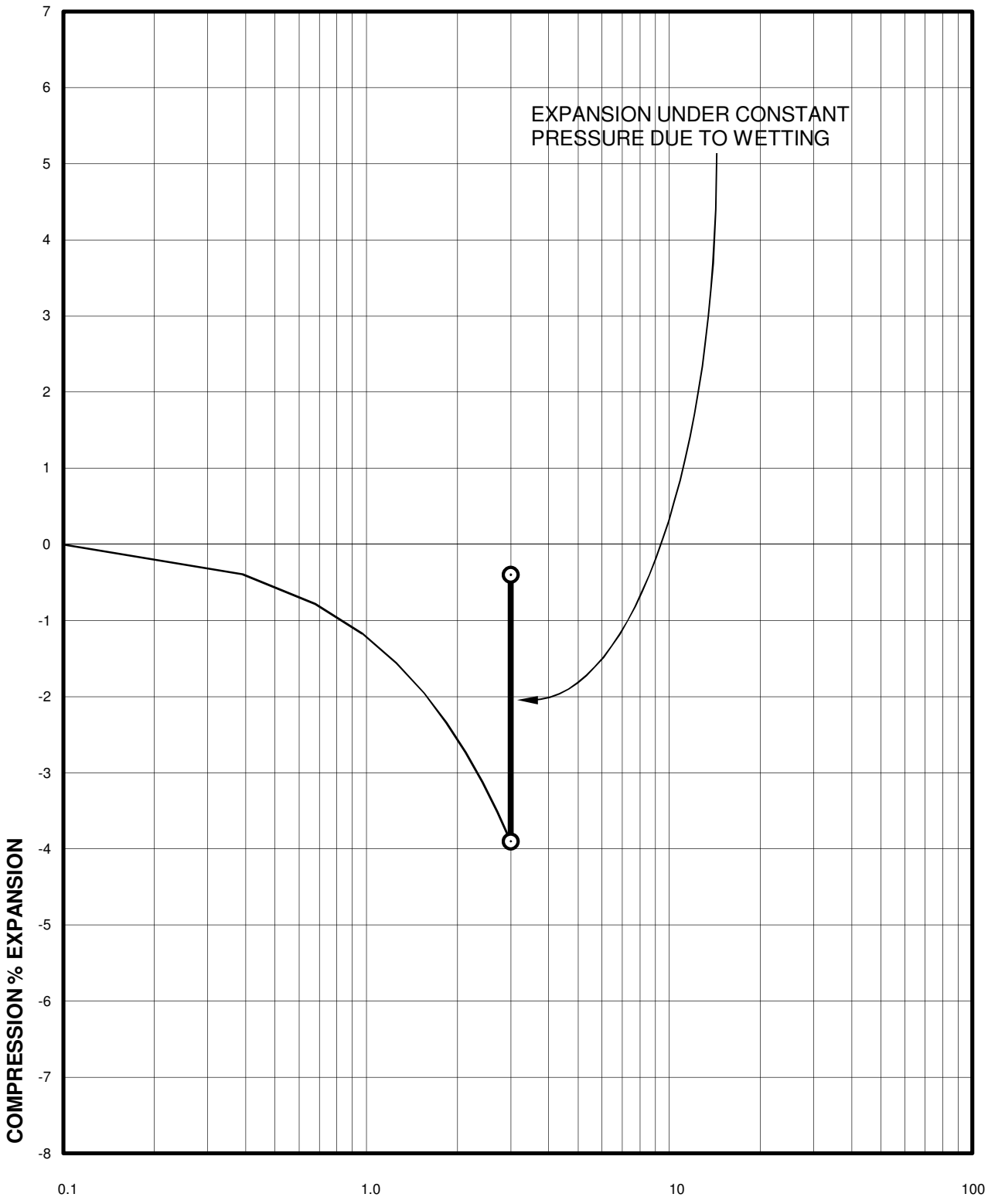
Sample of CLAYSTONE
From TH-8 AT 19 FEET

DRY UNIT WEIGHT= 119 PCF
MOISTURE CONTENT= 16.2 %

Swell Consolidation Test Results

FIG. B-14

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



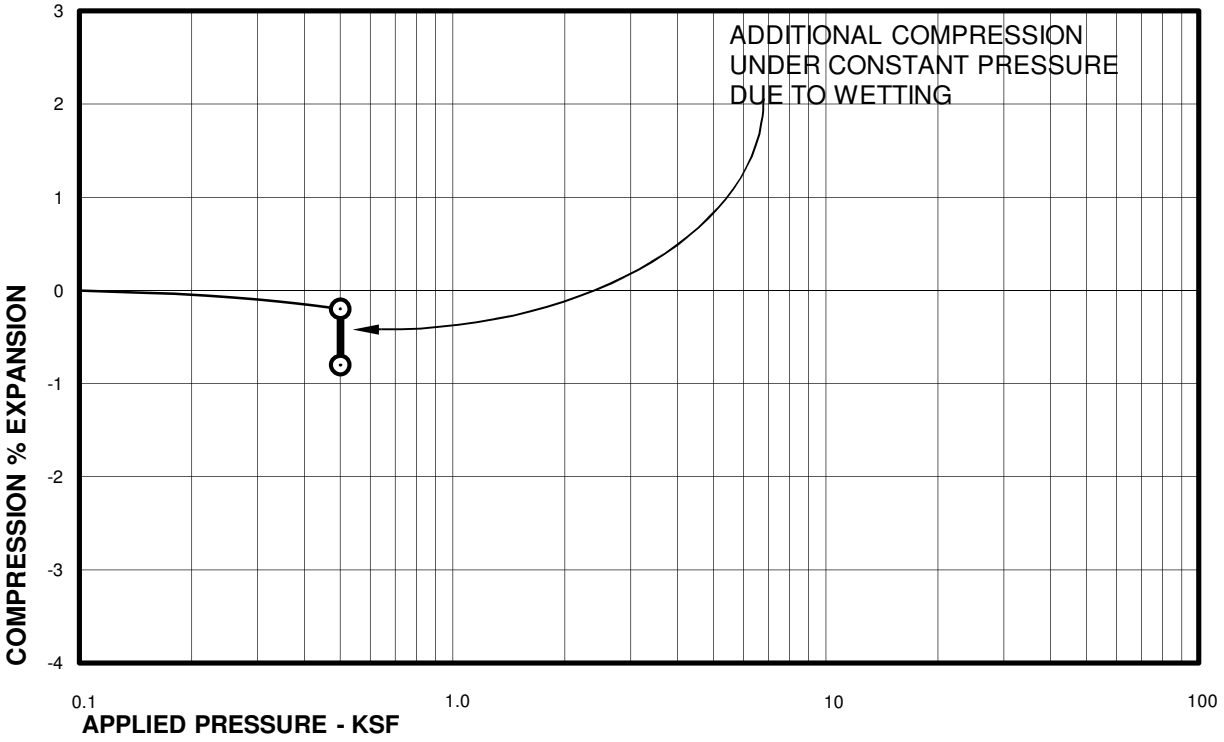
Sample of CLAYSTONE
From TH-8 AT 24 FEET

DRY UNIT WEIGHT= 101 PCF
MOISTURE CONTENT= 23.7 %

Swell Consolidation Test Results

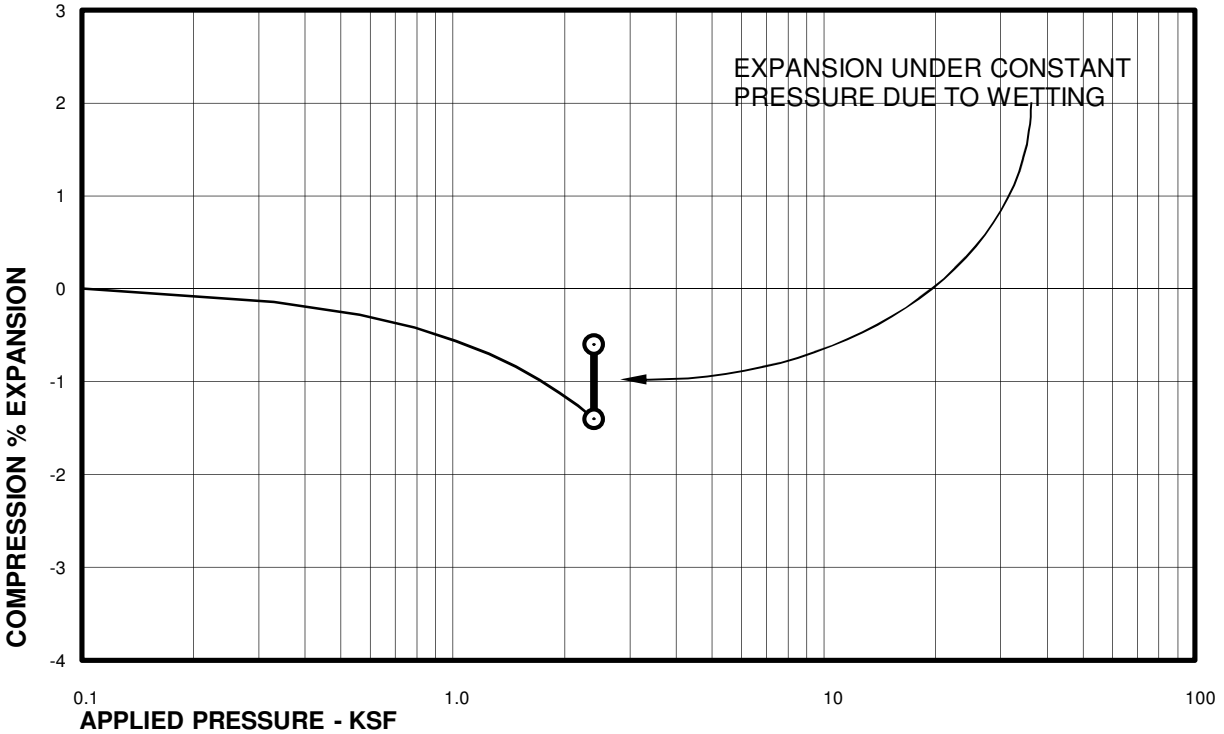
FIG. B-15

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of INTERLAYERED CLAY/SAND
From TH-9 AT 4 FEET

DRY UNIT WEIGHT= 108 PCF
MOISTURE CONTENT= 7.5 %



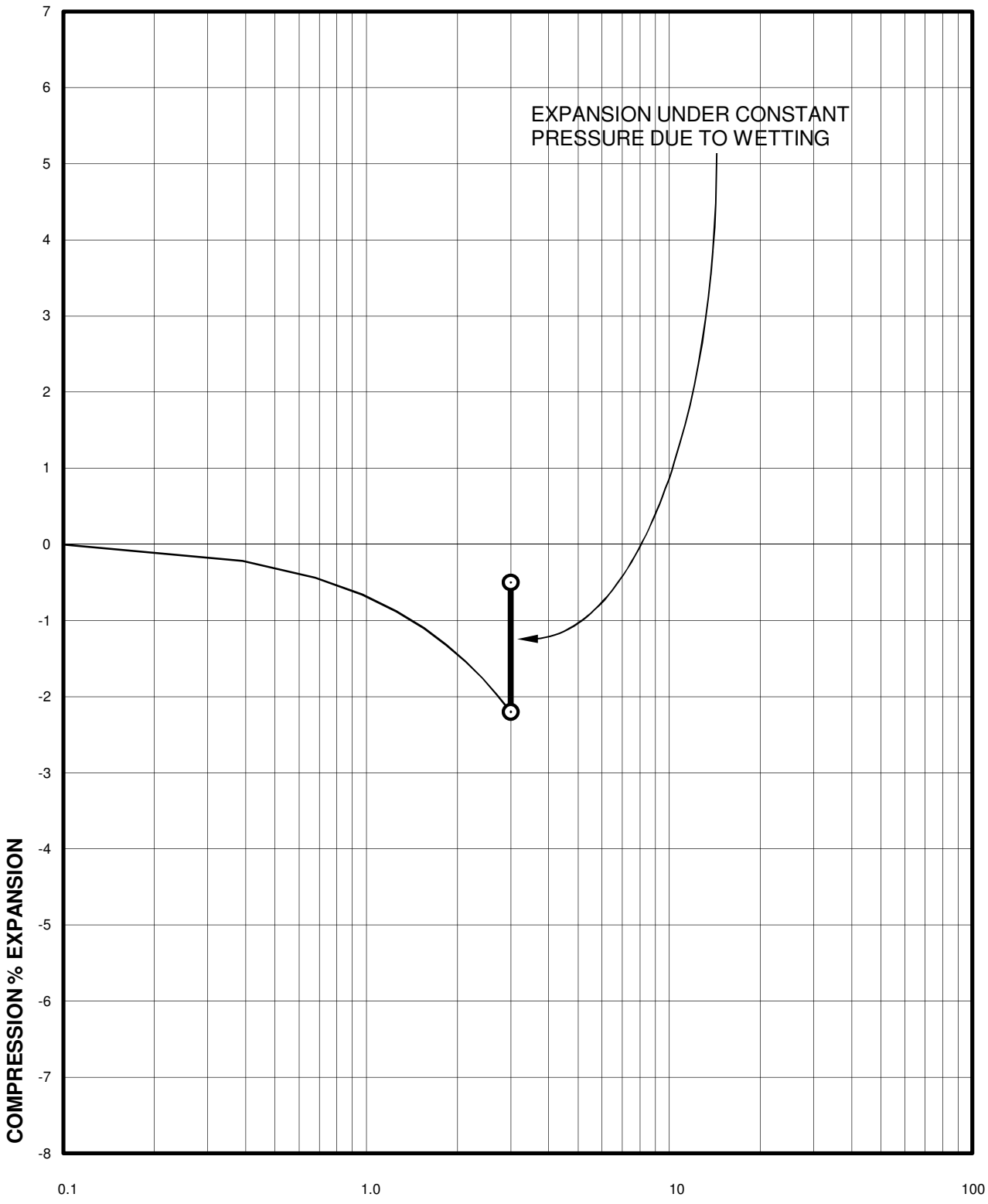
Sample of CLAYSTONE
From TH-9 AT 19 FEET

DRY UNIT WEIGHT= 116 PCF
MOISTURE CONTENT= 15.9 %

Swell Consolidation Test Results

FIG. B-16

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm



Sample of CLAYSTONE
From TH-9 AT 24 FEET

DRY UNIT WEIGHT= 120 PCF
MOISTURE CONTENT= 13.3 %

Swell Consolidation Test Results

FIG. B-17

RMCS, INC.
ERIE PARCEL
PROJECT NO. DN46,332-115
S:\PROJECTS\47300\47332.000\115\2. Reports\R1\dn47332-115-R1-X1(SWELL).xlsm

TABLE B - 1

SUMMARY OF LABORATORY TEST RESULTS

BORING	DEPTH (ft)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL TEST DATA				ATTERBERG LIMITS		SOLUBLE SULFATE CONTENT (%)	PASSING NO. 200 SIEVE (%)	SOIL TYPE
				SWELL (%)	COMPRESSION (%)	APPLIED PRESSURE (psf)	SWELL PRESSURE (psf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)			
TH-1	4	10.3	101		1.6	500						SAND, SILTY (SM)
TH-1	9	16.5	115					36	22	0.05	71	INTERLAYERED CLAY/SAND
TH-1	14	14.6	123	0.0		1,800		42	22		76	CLAYSTONE/SANDSTONE
TH-1	19	18.1	109	3.4		2,400						CLAYSTONE
TH-2	4	7.9	109		2.4	500						SAND, SILTY (SM)
TH-2	9	13.4	113	0.4		1,100						INTERLAYERED CLAY/SAND
TH-2	19	3.6	114								6	SAND, SLIGHTLY SILTY (SP-SM)
TH-2	24	12.3	121	1.5		3,000						CLAYSTONE
TH-3	4	10.5	109	0.2		500						INTERLAYERED CLAY/SAND
TH-3	9	3.5	112								5	SAND, SLIGHTLY SILTY (SP-SM)
TH-4	4	5.3	110		0.8	500				0.04		SAND, SILTY (SM)
TH-4	9	11.9	117		0.6	1,100		20	3		24	INTERLAYERED CLAY/SAND
TH-4	24	19.7	109	2.1		3,000						WEATHERED CLAYSTONE
TH-5	4	19.3	98	0.0		500						INTERLAYERED CLAY/SAND
TH-5	9	6.6	105		0.9	1,100		24	11	<0.01	42	INTERLAYERED CLAY/SAND
TH-5	19	13.0	119	4.0		2,400						CLAYSTONE
TH-6	4	9.4	107	1.4		500						INTERLAYERED CLAY/SAND
TH-6	9	11.8	112	0.0		1,100						INTERLAYERED CLAY/SAND
TH-6	19	12.3	122	1.2		2,400						CLAYSTONE
TH-6	24	17.1	113	3.3		3,000						CLAYSTONE
TH-7	4	10.2	117		0.1	500						SAND, CLAYEY (SC)
TH-7	9	14.0	119	0.3		1,100		33	15	0.03	85	WEATHERED CLAYSTONE
TH-7	14	13.6	115	0.1		1,800						CLAYSTONE
TH-7	19	19.2	114	3.3		2,400						CLAYSTONE
TH-7	24	17.3	109	0.4		3,000						CLAYSTONE
TH-8	4	11.5	116	0.2		500						WEATHERED CLAYSTONE
TH-8	9	15.1	120	3.0		1,100						WEATHERED CLAYSTONE
TH-8	14	17.6	109	1.0		1,800						CLAYSTONE
TH-8	19	16.2	119	2.7		2,400						CLAYSTONE
TH-8	24	23.7	101	3.5		3,000						CLAYSTONE
TH-9	4	7.5	108		0.6	500		23	9		29	INTERLAYERED CLAY/SAND
TH-9	19	15.9	116	0.8		2,400						CLAYSTONE
TH-9	24	13.3	120	1.7		3,000						CLAYSTONE

APPENDIX C

GUIDELINE SITE GRADING SPECIFICATIONS

Erie Parcel
Erie, Colorado

GUIDELINE SITE GRADING SPECIFICATIONS

Erie Parcel, Erie, Colorado

1. DESCRIPTION

This item shall consist of the excavation, transportation, placement and compaction of materials from locations indicated on the plans, or staked by the Engineer, as necessary to achieve preliminary street and overlot elevations. These specifications shall also apply to compaction of excess cut materials that may be placed outside of the subdivision and/or filing boundaries.

2. GENERAL

The Soils Representative shall be the Owner's representative. The Soils Representative shall approve fill materials, method of placement, moisture contents and percent compaction, and shall give written approval of the completed fill.

3. CLEARING JOB SITE

The Contractor shall remove all vegetation, trees, brush and rubbish before excavation or fill placement begins. The Contractor shall dispose of the cleared material to provide the Owner with a clean, neat appearing job site. Cleared material shall not be placed in areas to receive fill or where the material will support structures of any kind.

4. SCARIFYING AREA TO BE FILLED

Topsoil and vegetable matter shall be substantially removed from the ground surface upon which fill is to be placed. The surface shall then be plowed or scarified to a depth of 8 inches, moisture treated to above optimum moisture content, and compacted until the surface is free from ruts, hummocks or other uneven features, which would prevent uniform compaction by the equipment to be used.

5. COMPACTING AREA TO BE FILLED

After the foundation for the fill has been cleared and scarified, it shall be disked or bladed until it is free from large clods to a depth of 8 to 12 inches, brought to the proper moisture content (between optimum and 3 percent above optimum for clay and within 2 percent of optimum for sand) and compacted to not less than 95 percent of maximum density as determined in accordance with ASTM D 698 and 100 percent for the portion of fill deeper than 20 feet below proposed grade (if any). The foundation materials shall be worked, stabilized, or removed and replaced if necessary in accordance with the soils representative’s recommendations in preparation for fill.

6. FILL MATERIALS

Fill soils shall be substantially free from vegetable matter or other deleterious substances, and shall not contain rocks having a diameter greater than six (6) inches and claystone pieces larger than three (3) inches. Fill materials shall be obtained from cut areas shown on the plans or staked in the field by the Engineer.

On-site or imported materials classifying as CL, CH, SC, SM, SW, SP, GP, GC and GM are acceptable. Organic matter and other deleterious materials or debris shall not be used as fill. Concrete can be mixed with the fill provided it is crushed to 6 inches or less in diameter.

7. MOISTURE CONTENT

For fill material classifying as CH, CL or SC, the fill shall be moisture treated to between optimum and 3 percent above optimum moisture content. Soils classifying as SM, SW, SP, GP, GC and GM shall be moisture treated to within 2 percent of optimum moisture content as determined from Proctor compaction tests. Sufficient laboratory compaction tests shall be made to determine the optimum moisture content for the various soils encountered in borrow areas.

The Contractor may be required to add moisture to the excavation materials in the borrow area if, in the opinion of the Soils Representative, it is not possible to obtain uniform moisture content by adding water on the fill surface. The Contractor may be required to rake or disc the fill soils to provide uniform moisture content through the soils.

The application of water to embankment materials shall be made with any type of watering equipment approved by the Soils Representative, which will give the desired results. Water jets from the spreader shall not be directed at the embankment with such force that fill materials are washed out.

Should too much water be added to any part of the fill, such that the material is too wet to permit the desired compaction from being obtained, rolling and all work on that section of the fill shall be delayed until the material has been allowed to dry to the required moisture content. The Contractor will be permitted to rework wet material in an approved manner to hasten its drying.

8. COMPACTION OF FILL AREAS

Selected fill material shall be placed and mixed in evenly spread layers. After each fill layer has been placed, it shall be uniformly compacted to not less than the specified percentage of maximum density. Fill shall be compacted to at least 95 percent of the maximum density as determined in accordance with ASTM D 698 and 100 percent for fill deeper than 20 feet below proposed grade. At the option of the Soils Representative, soils classifying as SW, GP, GC, or GM may be compacted to 95 percent of maximum density as determined in accordance with ASTM D 1557 or 70 percent relative density for cohesionless sand soils. Fill materials shall be placed such that the thickness of loose materials does not exceed 8 inches and the compacted lift thickness does not exceed 6 inches.

Compaction as specified above shall be obtained by the use of sheepsfoot rollers, multiple-wheel pneumatic-tired rollers, or other equipment approved for soils classifying as CL, CH, or SC. Granular fill shall be compacted using vibratory equipment or other approved equipment. Compaction shall be accomplished while the fill material is at the specified moisture content. Compaction of each layer shall be continuous over the entire area. Compaction equipment shall make sufficient passes to ensure that the required density is obtained.

9. COMPACTION OF SLOPES

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compaction operations shall be continued until slopes are stable, but not too dense for planting, and there is not an appreciable amount of loose soils on the slopes. Compaction of slopes may be done progressively in increments of three to five feet (3' to 5') in height or after the fill is brought to its total height. Permanent fill slopes shall not exceed 3:1 (horizontal to vertical).

10. PLACEMENT OF FILL ON NATURAL SLOPES

Where natural slopes are steeper than 20 percent in grade and the placement of fill is required, cut benches shall be provided at the rate of one bench for each 5 feet in height (minimum of two benches). Benches shall be at least 10 feet in width. Larger bench widths may be required by the Engineer. Fill shall be placed on completed benches as outlined within this specification.

11. DENSITY TESTS

Field density tests shall be made by the Soils Representative at locations and depths of his choosing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests shall be taken in compacted material below the disturbed surface. When density tests indicate that the density or moisture content of any layer of fill or portion thereof is below that required, the particular layer or portion shall be reworked until the required density or moisture content has been achieved.

12. SEASONAL LIMITS

No fill material shall be placed, spread or rolled while it is frozen, thawing, or during unfavorable weather conditions. When work is interrupted by heavy precipitation, fill operations shall not be resumed until the Soils Representative indicates that the moisture content and density of previously placed materials are as specified.

13. NOTICE REGARDING START OF GRADING

The Contractor shall submit notification to the Soils Representative and Owner advising them of the start of grading operations at least three (3) days in advance of the starting date. Notification shall also be submitted at least 3 days in advance of any resumption dates when grading operations have been stopped for any reason other than adverse weather conditions.

14. REPORTING OF FIELD DENSITY TESTS

Density tests made by the Soils Representative, as specified under "Density Tests" above, shall be submitted progressively to the Owner. Dry density, moisture content, and percentage compaction shall be reported for each test taken.

15. DECLARATION REGARDING COMPLETED FILL

The Soils Engineer shall provide a written declaration stating that the site was filled with acceptable materials, and was placed in general accordance with the specifications.

APPENDIX D

GUIDELINE SITE GRADING SPECIFICATIONS
(SUB-EXCAVATION)

Erie Parcel, Erie, Colorado

Note: This guideline is intended for use with sub-excavation. If sub-excavation is not selected, the guidelines in Appendix C should be followed.

GUIDELINE SITE GRADING SPECIFICATIONS
(SUB-EXCAVATION)

Erie Parcel, Erie, Colorado

1. DESCRIPTION

This item shall consist of the excavation, transportation, placement and compaction of materials from locations indicated on the plans, or staked by the Engineer, as necessary to achieve preliminary street and overlot elevations. These specifications shall also apply to compaction of materials that may be placed outside of the development boundaries.

2. GENERAL

The Soils Engineer shall be the Owner's representative. The Soils Engineer shall observe fill materials, method of placement, moisture content and percent compaction, and shall provide written opinions of the completed fill.

3. CLEARING JOB SITE

The Contractor shall remove all vegetation and debris before excavation or fill placement is begun. The Contractor shall dispose of the cleared material to provide the Owner with a clean, neat appearing job site. Cleared material shall not be placed in areas to receive fill where the material will support structures of any kind.

4. SCARIFYING AREA TO BE FILLED

All topsoil and vegetable matter shall be removed from the ground surface where fill is to be placed. The surface shall then be plowed or scarified until the surface is free from ruts, hummocks or other uneven features that would prevent uniform compaction.

5. COMPACTING AREA TO BE FILLED

After the foundation for the fill has been cleared and scarified, it shall be disked or bladed until it is free from large clods, brought to the proper moisture content, (1 to 4 percent above optimum) and compacted to not less than 95 percent of maximum density as determined in accordance with ASTM D 698.

6. FILL MATERIALS

Fill soils shall be free from vegetable matter or other deleterious substances, and shall not contain clay and claystone having a diameter greater than three (3) inches. Fill materials shall be obtained from cut areas shown on the plans or staked in the field by the Engineer.

On-site materials classifying as CL, CH, SC, SM, SP, GP, GC and GM are acceptable. Concrete, asphalt, and other deleterious materials or debris shall not be used as fill.

7. MOISTURE CONTENT

Fill materials shall be moisture-conditioned to within limits of optimum moisture content specified in “Moisture Content and Density Criteria”. Sufficient laboratory compaction tests shall be made to determine the optimum moisture content for the various soils encountered in borrow areas or imported to the site.

The Contractor may be required to add moisture to the excavation materials in the borrow area if, in the opinion of the Soils Engineer, it is not possible to obtain uniform moisture content by adding water on the fill surface. The Contractor will be required to rake or disc the fill to provide uniform moisture content throughout the fill.

The application of water to embankment materials shall be made with any type of watering equipment that will give the desire results. Water jets from the spreader shall not be directed at the embankment with such force that fill materials are washed out.

Should too much water be added to any part of the fill, such that the material is too wet to permit the desired compaction from being obtained, rolling and all work on that section of the fill shall be delayed until the material has been allowed to dry to the required moisture content. The Contractor will be permitted to rework wet material in an approved manner to hasten its drying.

8. COMPACTION OF FILL MATERIALS

Selected fill material shall be placed and mixed in evenly spread layers. After each fill layer has been placed, it shall be uniformly compacted to not less than the specified percentage of maximum density given in “Moisture Content and Density Criteria”. Fill materials shall be placed such that the thickness of loose material does not exceed 8 inches and the compacted lift thickness does not exceed 6 inches.

Compaction, as specified above, shall be obtained by the use of suitable equipment. Compaction shall be accomplished while the fill material is at the specified moisture content. Compaction of each layer shall be continuous over the entire area. Compaction equipment shall make sufficient trips to ensure that the required density is obtained.

9. MOISTURE CONTENT AND DENSITY CRITERIA

Fill material shall be substantially compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698, AASHTO T 99) dry density at 1 to 4 percent above optimum moisture content. Additional criteria for acceptance are presented in DENSITY TESTS.

10. DENSITY TESTS

Field density tests shall be made by the Soils Engineer at locations and depths of his choosing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests shall be taken in compacted material below the disturbed surface. When density tests indicate the density or moisture content of any layer of fill

or portion thereof not within specifications, the particular layer or portion shall be reworked until the required density or moisture content has been achieved.

Allowable ranges of moisture content and density given in MOISTURE CONTENT AND DENSITY CRITERIA are based on design considerations. The moisture shall be controlled by the Contractor so that moisture content of the compacted earth fill, as determined by tests performed by the Soils Engineer, shall be within the limits given. The Soils Engineer will inform the Contractor when the placement moisture is less than or exceeds the limits specified and the Contractor shall immediately make adjustments in procedures as necessary to maintain placement moisture content within the specified limits, to satisfy the following requirements.

A. Moisture

1. The average moisture content of material tested each day shall not be less than 1.5 percent over optimum moisture content.

2. Material represented by samples tested having moisture lower than 1 percent over optimum will be rejected. Such rejected materials shall be reworked until moisture equal to or greater than 1 percent above optimum is achieved.

B. Density

1. The average dry density of material tested each day shall not be less than 95 percent of standard Proctor maximum dry density (ASTM D 698).

2. No more than 10 percent of the material represented by the samples tested shall be at dry densities less than 95 percent of standard Proctor maximum dry density (ASTM D 698).

3. Material represented by samples tested having dry density less than 93 percent of standard Proctor maximum dry density (ASTM D 698) will be rejected. Such rejected materials shall be reworked until a dry density equal to or greater than 95 percent of standard Proctor maximum dry density (ASTM D 698) is obtained.

11. OBSERVATION AND TESTING OF FILL

Observation by the Soils Engineer shall be sufficient during the placement of fill and compaction operations so that they can declare the fill was placed in general conformance with specifications. All observations necessary to test the placement of fill and observe compaction operations will be at the expense of the Owner.

12. SEASONAL LIMITS

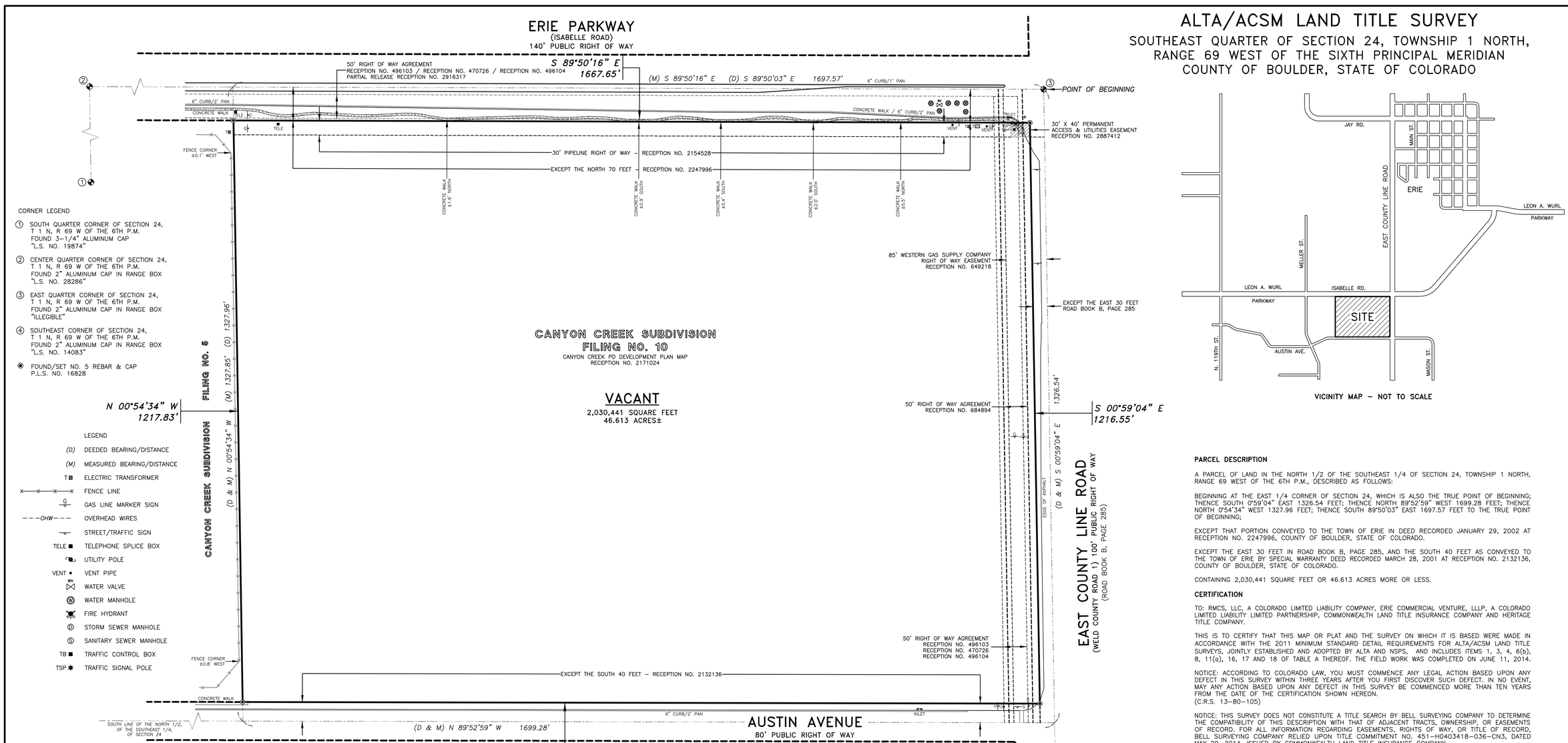
No fill material shall be placed, spread or rolled while it is frozen, thawing, or during unfavorable weather conditions. When work is interrupted by heavy precipitation, fill operations shall not be resumed until the Soils Engineer indicates the moisture content and density of previously placed materials are as specified.

13. REPORTING OF FIELD DENSITY TESTS

Density tests made by the Soils Engineer, as specified under “Density Tests” above, shall be submitted progressively to the Owner. Dry density, moisture content and percentage compaction shall be reported for each test taken.

ALTA/ACSM LAND TITLE SURVEY

SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN COUNTY OF BOULDER, STATE OF COLORADO



VICINITY MAP – NOT TO SCALE

CORNER LEGEND

1. SOUTH QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 3–1/4" ALUMINUM CAP "L.S. NO. 19874"
2. CENTER QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "L.S. NO. 28286"
3. EAST QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "ILLEGIBLE"
4. SOUTHEAST CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "L.S. NO. 14083"

◉ FOUND/SET NO. 5 REBAR & CAP P.L.S. NO. 16828

LEGEND

(D)	DEEDED BEARING/DISTANCE
(M)	MEASURED BEARING/DISTANCE
T■	ELECTRIC TRANSFORMER
–x–x–x–x–	FENCE LINE
G	GAS LINE MARKER SIGN
–OHW–	OVERHEAD WIRES
	STREET/TRAFFIC SIGN
TELE ■	TELEPHONE SPLICE BOX
	UTILITY POLE
VENT •	VENT PIPE
WV	WATER VALVE
Ⓦ	WATER MANHOLE
	FIRE HYDRANT
Ⓓ	STORM SEWER MANHOLE
Ⓢ	SANITARY SEWER MANHOLE
TB ■	TRAFFIC CONTROL BOX
TSP ✱	TRAFFIC SIGNAL POLE

THE SUBJECT PROPERTY LIES WITHIN OR PARTIALLY WITHIN THE LEGAL DESCRIPTION OR EXHIBITS FOUND IN THE FOLLOWING RECORDED INSTRUMENTS AND IN ACCORDANCE WITH THE TITLE COMMITMENT MAY THEREFORE BE SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED THEREIN.
(COMMONWEALTH LAND TITLE INSURANCE COMPANY COMMITMENT NO. 451–H0403418–036–CN3)

10. AN UNDIVIDED INTEREST IN ALL OIL, GAS AND OTHER MINERALS AS CONVEYED TO WALLACE H. GRANT BY MINERAL DEED, RECORDED AUGUST 24, 1981 AT RECEPTION NO. 460729, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)
11. AN UNDIVIDED INTEREST IN ALL OIL, GAS AND OTHER MINERALS CONVEYED TO DOUGLAS GRANT BY MINERAL DEED, RECORDED AUGUST 24, 1981 AT RECEPTION NO. 460730, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)
12. AN UNDIVIDED 1/4 INTEREST IN ALL OIL, GAS AND OTHER MINERALS CONVEYED TO SUSAN J. TROUDT, MARIAN J. BOTINELLI AND CARLA JOHNSON HOBBS DBA JOHNSON FARMS BY MINERAL DEED, RECORDED SEPTEMBER 23, 1981 AT RECEPTION NO. 465242, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)
13. A RIGHT OF WAY FOR PIPELINES AND APPURTENANCES GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY BY THE INSTRUMENT RECORDED MAY 26, 1982 AT RECEPTION NO. 496103, AND RECORDED SEPTEMBER 21, 1981 AT RECEPTION NO. 470726, PARTIAL RELEASE OF RIGHT OF WAY RECORDED MARCH 13, 2008 AT RECEPTION NO. 2916317, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
14. A RIGHT OF WAY FOR PIPELINES AND APPURTENANCES GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY BY THE INSTRUMENT RECORDED MAY 26, 1982 AT RECEPTION NO. 496104, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
15. A RIGHT OF WAY FOR PIPELINES GRANTED TO WESTERN GAS SUPPLY COMPANY BY THE INSTRUMENT RECORDED SEPTEMBER 28, 1984 AT RECEPTION NO. 649218, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
16. ANY ASSESSMENT OR LIEN OF THE ERIE WATER AND SANITATION DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED JANUARY 17, 1985 AT RECEPTION NO. 667325. (NOT PLOTTABLE – REFER TO DOCUMENT)
17. ANY ASSESSMENT OR LIEN OF THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED SEPTEMBER 24, 1997 AT RECEPTION NO. 1733175. (NOT PLOTTABLE – REFER TO DOCUMENT)
18. A RIGHT OF WAY FOR PIPELINES GRANTED TO VESSELS OIL AND GAS COMPANY BY THE INSTRUMENT RECORDED APRIL 25, 1985 AT RECEPTION NO. 684894, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
19. A RIGHT OF WAY FOR PIPELINES GRANTED TO HS GATHERING, L.L.C., BY THE INSTRUMENT RECORDED MAY 30, 2001 AT RECEPTION NO. 2154528, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
20. THE EFFECT OF CANYON CREEK PD DEVELOPMENT PLAN MAP RECORDED JULY 9, 2001 AT RECEPTION NO. 2171024. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
21. TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS SPECIFIED UNDER THE GRANT OF PERMANENT ACCESS AND UTILITIES EASEMENT BY AND BETWEEN ERIE COMMERCIAL VENTURES, LLLP, A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, AND TOWN OF ERIE, A COLORADO MUNICIPAL CORPORATION, RECORDED OCTOBER 3, 2007 AT RECEPTION NO. 2887412. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
22. ASSIGNMENTS AND CONVEYANCES OF MINERAL INTERESTS TO JOHNSON DEVELOPMENT COMPANY IN INSTRUMENTS RECORDED JULY 13, 2001 AT RECEPTION NO. 2173368 AND INSTRUMENTS RECORDED APRIL 3, 2001 AT RECEPTION NOS. 2134267 THROUGH 2134284 INCLUSIVE, INCLUSIVE, AND MINERAL DEED RECORDED MAY 1, 2008 AT RECEPTION NO. 2927263. (NOT PLOTTABLE – REFER TO DOCUMENT)
23. QUIT CLAIM, ASSIGNMENT, BILL OF SALE AND CONVEYANCE OF INTERESTS AS RECORDED OCTOBER 17, 2002 AT RECEPTION NO. 2344511, AND ANY AND ALL ASSIGNMENTS OR LEASES THERETO. (NOT PLOTTABLE – REFER TO DOCUMENT)
24. MINERAL RIGHTS AS CONVEYED TO ECV MINERALS, LLC IN MINERAL DEED RECORDED MAY 1, 2008 AT RECEPTION NO. 2927263. (NOT PLOTTABLE – REFER TO DOCUMENT)
25. TERMS CONDITIONS PROVISIONS AS SET FORTH IN THE WELL ABANDONMENT AGREEMENT AS RECORDED MAY 1, 2008 AT RECEPTION NO. 2927262. (NOT PLOTTABLE – REFER TO DOCUMENT)
26. TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE RESTRICTIVE COVENANT AND NON–DISTURBANCE AGREEMENT RECORDED MAY 29, 2008 AT RECEPTION NO. 2932960. (NOT PLOTTABLE – REFER TO DOCUMENT)
27. OIL AND GAS LEASE FROM ECV MINERALS, LLC TO ENCANA OIL & GAS USA INC. AS RECORDED JULY 2, 2008 AT RECEPTION NO. 2941006. (NOT PLOTTABLE – REFER TO DOCUMENT)
28. ALL OF THE FOLLOWING DOCUMENTS AS THEY RELATE TO MINERAL INTERESTS, WELLBORE SPECIFIC DECLARATION OF POOLING AS RECORDED SEPTEMBER 22, 2009 AT RECEPTION NO. 3031124, OPERATING AGREEMENT AND FINANCING STATEMENT AS RECORDED JUNE 16, 2010 AT RECEPTION NO. 03080637, QUITCLAIM DEED AS TO OIL GAS AND MINERAL INTERESTS AS RECORDED FEBRUARY 11, 2011 AT RECEPTION NO. 3132655, ASSIGNMENT, BILL OF SALE AND CONVEYANCE FROM ENCANA OIL & GAS TO KERR –MCGEE GATHERING LLC AS RECORDED APRIL 14, 2011 AT RECEPTION NO. 3143701. (NOT PLOTTABLE – REFER TO DOCUMENT)

GENERAL NOTES:

1. VISIBLE SURFACE UTILITY APPURTENANCES HAVE BEEN LOCATED USING THE STANDARD OF CARE PREVAILING AMONG PROFESSIONAL LAND SURVEYORS PRACTICING IN THE METROPOLITAN AREA. NO OTHER REPRESENTATIONS OF UTILITY LOCATIONS ARE MADE OR IMPLIED. BEFORE COMMENCING ANY EXCAVATION THE UTILITIES SHOULD BE FIELD LOCATED BY CALLING UTILITY LOCATES AT 811.
2. THE SUBJECT PROPERTY LIES WITHIN THE FLOOD HAZARD AREA DESIGNATED AS "ZONE X" IN ACCORDANCE WITH F.E.M.A. PANEL 441 OF 615, MAP NUMBER 08013C0441J, DATED DECEMBER 18, 2012.

   ZONE X – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
3. BEARINGS BASED ON THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN AS BEARING S 00°59'04" E (MONUMENTS DESCRIBED ON PLAT).
4. NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.
5. NO OBSERVABLE EVIDENCE OR KNOWLEDGE OF ANY CHANGES IN STREET RIGHT OF WAY LINES EITHER COMPLETED OR PROPOSED, AND AVAILABLE FROM THE CONTROLLING JURISDICTION. NO OBSERVABLE EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.
6. NO OBSERVABLE EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
7. CANYON CREEK PD DEVELOPMENT PLAN – FILING NO. 10

   PRINCIPAL LAND USES:
   COMMERCIAL / BUSINESS / RETAIL (CBR)
   OPEN SPACE, PARKS & RECREATION FACILITIES (OS)

   MINIMUM SET BACK TO PRINCIPAL BUILDINGS:
   FRONT – 20 FEET
   SIDE (INTERIOR LOT) – 10 FEET
   SIDE (ALONG STREET) – 20 FEET
   REAR – 20 FEET
   BUILDING HEIGHT – 35 FEET

   MINIMUM SET BACK TO ACCESSORY BUILDINGS:
   FRONT – 30 FEET
   SIDE (INTERIOR LOT) – 5 FEET
   SIDE (ALONG STREET) – 20 FEET
   REAR – 5 FEET
   BUILDING HEIGHT – 25 FEET

   ZONING COMPLIANCE AND REQUIREMENTS NOT PROVIDED TO SURVEYOR.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

PARCEL DESCRIPTION

A PARCEL OF LAND IN THE NORTH 1/2 OF THE SOUTHEAST 1/4 OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH P.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE EAST 1/4 CORNER OF SECTION 24, WHICH IS ALSO THE TRUE POINT OF BEGINNING; THENCE SOUTH 0°59'04" EAST 1326.54 FEET; THENCE NORTH 89°52'59" WEST 1699.28 FEET; THENCE NORTH 0°54'34" WEST 1327.96 FEET; THENCE SOUTH 89°50'03" EAST 1697.57 FEET TO THE TRUE POINT OF BEGINNING;

EXCEPT THAT PORTION CONVEYED TO THE TOWN OF ERIE IN DEED RECORDED JANUARY 29, 2002 AT RECEPTION NO. 2247996, COUNTY OF BOULDER, STATE OF COLORADO.

EXCEPT THE EAST 30 FEET IN ROAD BOOK B, PAGE 285, AND THE SOUTH 40 FEET AS CONVEYED TO THE TOWN OF ERIE BY SPECIAL WARRANTY DEED RECORDED MARCH 28, 2001 AT RECEPTION NO. 2132136, COUNTY OF BOULDER, STATE OF COLORADO.

CONTAINING 2,030,441 SQUARE FEET OR 46.613 ACRES MORE OR LESS.

CERTIFICATION

TO: RMCS, LLC, A COLORADO LIMITED LIABILITY COMPANY, ERIE COMMERCIAL VENTURE, LLLP, A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, COMMONWEALTH LAND TITLE INSURANCE COMPANY AND HERITAGE TITLE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 3, 4, 6(b), 8, 11(a), 16, 17 AND 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JUNE 11, 2014.

NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON. (C.R.S. 13–80–105)

NOTICE: THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY BELL SURVEYING COMPANY TO DETERMINE THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF ADJACENT TRACTS, OWNERSHIP, OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY, OR TITLE OF RECORD, BELL SURVEYING COMPANY RELIED UPON TITLE COMMITMENT NO. 451–H0403418–036–CN3, DATED MAY 29, 2014, ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY.

CERTIFICATION DEFINED

THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A REGISTERED PROFESSIONAL SURVEYOR IN THE PRACTICE OF LAND SURVEYING, CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OF FINDINGS WHICH ARE THE SUBJECT OF THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

COPIES OF THIS DOCUMENT MAY BE MADE AND DISTRIBUTED TO OTHER PARTIES FOR REFERENCE PURPOSES AND REVIEW, HOWEVER, ONLY PRINTS OF THIS SURVEY BEARING ORIGINAL SIGNATURE AND WET SEAL BY THE SURVEYOR NAMED HEREON SHALL BE CONSIDERED VALID CERTIFIED DOCUMENTS.

DEAN O. DANIELSON, P.L.S. NO. 16828

DATE OF SURVEY: 6/11/2014

DEAN O. DANIELSON — REGISTERED — 16828 — LAND SURVEYOR — STATE OF COLORADO

COUNTY SURVEYORS CERTIFICATE

DEPOSITED THIS____DAY OF_____20___
AT____.M., IN BOOK_____ OF THE COUNTY SURVEYOR'S LAND SURVEY/RIGHT OF WAY SURVEYS AT PAGE_____, RECEPTION NUMBER _____

COUNTY SURVEYOR BY DEPUTY COUNTY SURVEYOR

ALTA/ACSM LAND TITLE SURVEY

ORDERED BY: OVERTON & ASSOCIATES, LLC
6950 EAST BELLEVIEW AVENUE #202
GREENWOOD VILLAGE, COLORADO 80111

REVISION: PREV: 0710–113 | DRAWN: WB

BELL SURVEYING COMPANY
500 KALAMATH STREET
DENVER, COLORADO 80204
303–629–0165 FAX 303–629–0168
www.BELLSURVEYING.com

SCALE: 1"=100'

DATE: 6/11/2014

DRAWING NO.: 1406–102

ATTACHMENT C

4Corners Neighborhood Meeting

The 4Corners Neighborhood meeting was held on June 26, 2015 at 6:00 pm at the Erie Community Center. Justin McClure from RMCS, Inc. led a discussion about the proposed development. A total of 12 Erie residents attended the meeting.

The meeting started with a power point presentation of other developments that RMCS has built or is in the process of building, including Steel Ranch and DeLo in Louisville. Images were shown of the different housing products, streetscapes, and parks that are part of these developments.

Next images of the proposed 4Corners development were shown. These included images of where single family detached, townhomes, duplexes and apartments would be located, with particular attention to transitioning from the existing neighborhoods. Also presented were images of the layout of the commercial area. Justin told the group he would like to see an organic grocer as the anchor for the commercial area. It will be a challenge to get a grocer at this location because the current traffic counts and residential density are still too low, but a concerted effort by the developer, the Town, and the residents could help make this happen.

Below is a summary of some of the comments and responses from the meeting:

-Some of the attendees were familiar with the Steel Ranch Development and commented that the ranch style homes there are of very high quality. Justin added that it is likely we will have the same homebuilder participate at 4Corners.

-It was asked if the multi-family will be apartments or condos. Justin responded that it will either be high quality apartments or condos. There was a question about whether multifamily built at 4Corners could affect the home values of adjacent existing neighborhoods. Justin used Steel Ranch as an example of how the homes adjacent to the apartment complex have sold quickly and at premium prices. It all comes down to the quality of the overall development.

-Attendees were pleased to hear that the single family detached homes will be located on the west side of 4Corners. This will make a good transition to the existing single family homes in the adjacent neighborhood.

-It was brought up that it would be good to have the HOA be included in any future mailing or notifications even if the HOA address is farther than the 300' mailing area.

-There was overall support for the proposed traffic lights, particularly on County Line Road. This will make a much safer crossing for bikes and pedestrians, and better traffic movement.

-There was support for the location of the commercial area on the eastern part of the development. There had been concern from the neighbors to the west that a big box could be located right behind their homes under the current zoning, the attendees much preferred the proposed 4Corners layout.

-It was asked if the green areas at 4Corners will be open to the outside public. Justin reviewed the proposed greenways and said they will be open for everyone to enjoy.

Justin informed the group that the development will be reviewed by Planning Commission in July and that everyone is welcome to attend that meeting or to send comments to the Commission by mail or email. The meeting ended at 7:15 after all the attendees' questions had been answered.

TOWN OF ERIE
PLANNING COMMISSION MEETING
July 15, 2015

SUBJECT:	Canyon Creek Filing 10 - Sketch Plan - A Sketch Plan represents a generalized land use plan and layout for the area proposed to be included within a subdivision. Sketch Plan is required to allow early, informal evaluation of a proposed subdivision before detailed planning and engineering work has occurred.
PURPOSE:	Planning Commission review of a proposed Sketch Plan.
PROJECT NO.:	SK-000206-201
CODE:	Municipal Code Title 10
DEPARTMENT:	Community Development Department
PRESENTER:	Deborah Bachelder AICP, Senior Planner

STAFF RECOMMENDATION

Not applicable; review and comment session for the Planning Commission.

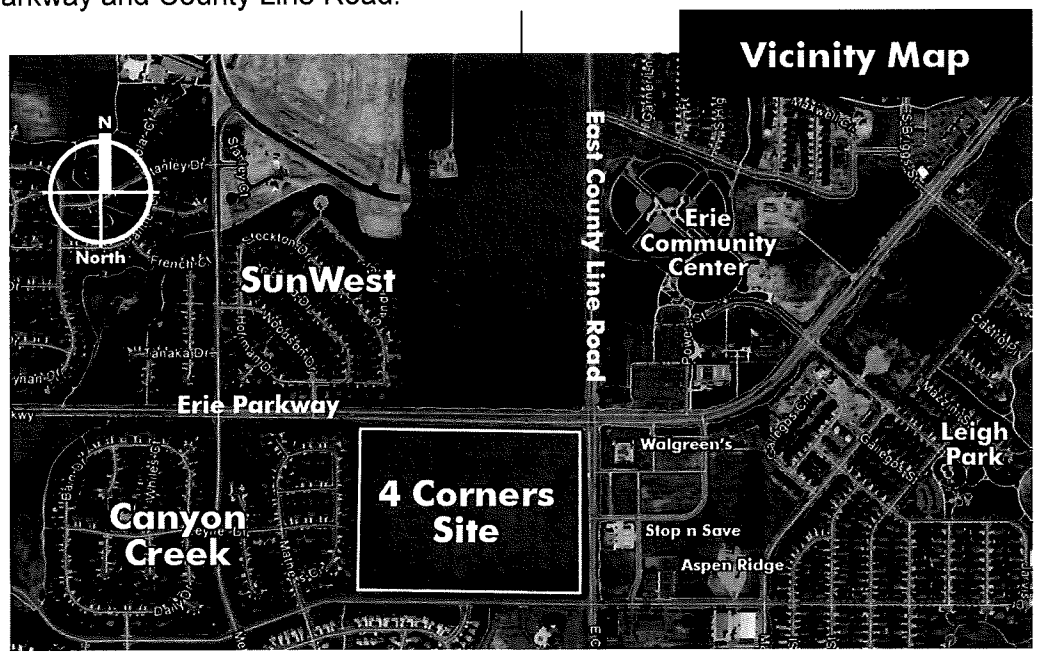
SUMMARY AND BACKGROUND OF SUBJECT MATTER

Applicant: RMCS, LLC
21 South Sunset Street
Longmont, Colorado, 80501

Owners: Erie Commercial Venture, LLC
7720 East Belleview Avenue, Suite 350

Location:

Canyon Creek Subdivision Filing No. 10 (4 Corners) is located on the southwest corner of Erie Parkway and County Line Road.



Existing Conditions:

Zoning: Canyon Creek PD – Planned Development

Project Size: 46.6 Acres

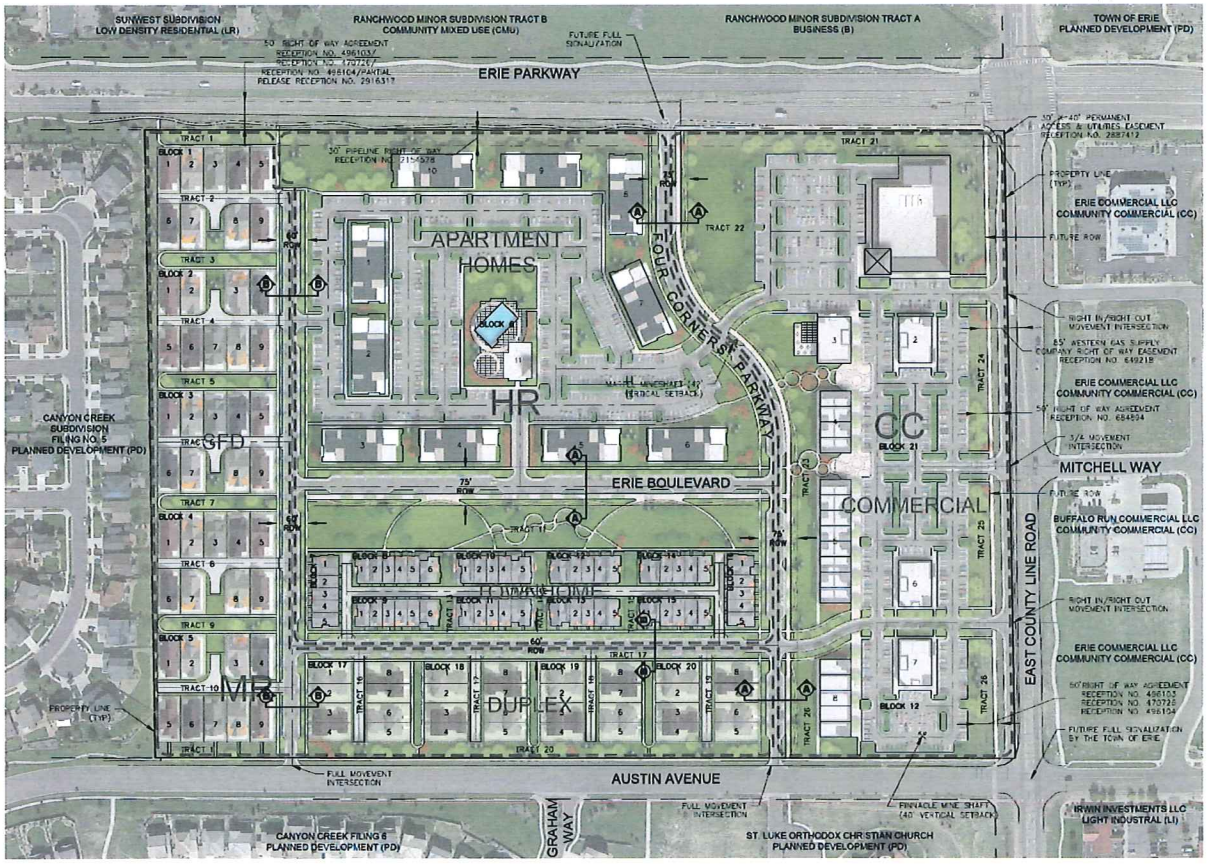
Existing Use: Vacant Lot

Adjacent Land-Use/Zoning:

	ZONING	LAND USE
NORTH	CC – Community Commercial CMU – Community Mixed Use LR – Low Density Residential	Rex Ranch – Vacant Commercial Rex Ranch – Vacant Mixed Use Sunwest – Single Family Residential
SOUTH	PD – Planned Development	Canyon Creek Filing 6: Church Canyon Creek Filing 6 – Single Family Residential
EAST	CC – Community Commercial	Commercial Uses / Charter School
WEST	PD – Planned Development	Canyon Creek Filing 5 – Single Family Residential

SITE SPECIFIC DEVELOPMENT INFORMATION:

The applicant has named Creek Subdivision Filing No. 10 as "4 Corners" in the Sketch Plan application. The Sketch Plan illustration represents a mix of housing types and commercial development that could develop on the property based on the Canyon Creek PD Amendment No. 9 application that is being reviewed concurrently with this Sketch Plan application.



Sketch Plan Development Data:

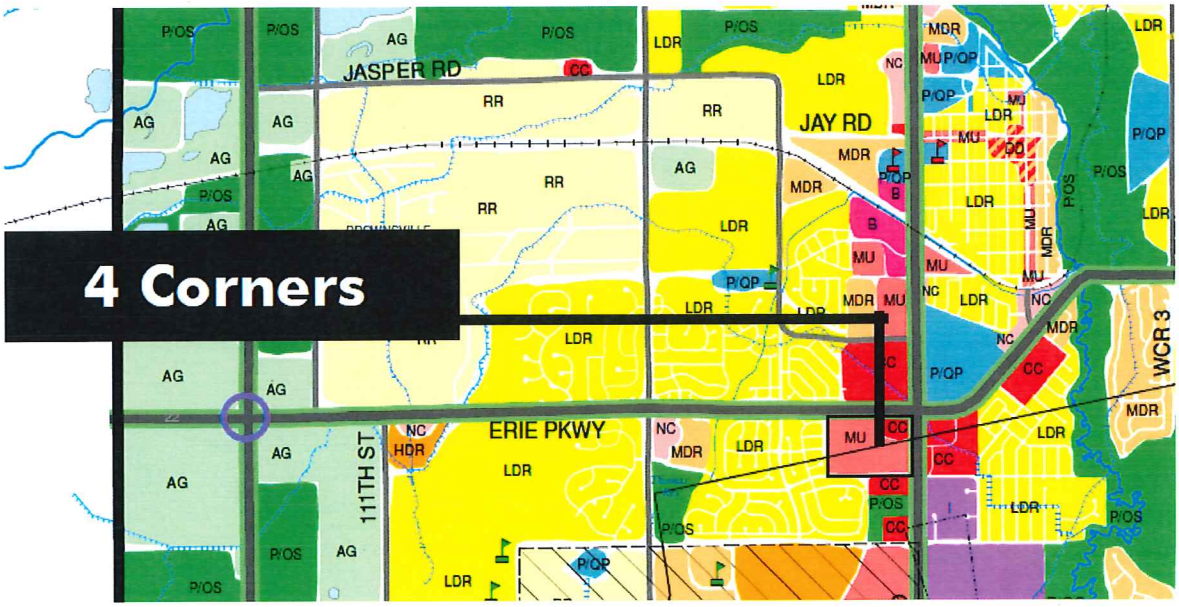
- Preliminary Plat Size: 46.6 acres
- Residential Development:
  - Single Family Detached 45 dwelling units
  - Duplex 32 dwelling units
  - Townhomes: 52 dwelling units
  - Apartments: 330 dwelling units
  - Total Dwelling Units 459 dwelling units
- Commercial Development: 8.82 acres
- Landscape Tracts: 8.01 acres
  - 1 Pocket Park Tract 11 (Greenway) 1.93 acres

Access into the site is proposed in 1 location along Erie Parkway, 3 locations along County Line Road and in 2 locations on Austin Avenue. Internal streets within the subdivision are proposed to be somewhat modified from the Town standards, as illustrated in the Sketch Plan document. Alley loaded single family, duplex and townhome units are proposed in the Sketch Plan; while the apartments are served by internal parking lots around a common pool facility. The commercial development is mainly oriented toward the intersection of Erie Parkway and County Line Road and south along County Line Road to Austin Avenue.

Parks and Open Space:
The applicant proposes to fulfill the pocket park requirement in the linear, greenway (Tract 11). A portion of the neighborhood park, community park and open space dedications were dedicated with previous final plats within the Canyon Creek development. Determination of any credits that may be available for this development will be reviewed and reported on with a future preliminary plat application.

Compliance with Town of Erie Comprehensive Plan:

The application is in general Compliance with the Land Use designations on the Comprehensive Plan, Land Use Plan Map. This property allows for MU – Mixed Use and CC – Community Commercial land uses.



Compliance with Municipal Code Title 10 (UDC)

Town staff has reviewed the proposed Sketch Plan for compliance with the UDC and has provided the applicant with comments. The applicant has modified the plan accordingly.

Natural Areas Inventory and Endangered Species:

The Town of Erie Natural Areas Inventory does not identify a natural area within the proposed project area.

Open Space and Trails Advisory Board:

The Open Space and Trails Advisory Board have provided the applicant with comments.

SKETCH PLAN PROCESS

Below is the process outlined in Title 10 (UDC) of the Municipal Code for Sketch Plan review.

2. **Step 2A (Development Application Submittal – Sketch Plan)**
   Two types of application submittals are required – first, a Sketch Plan, followed by a Preliminary Plat. The Sketch Plan requirements are listed in this Subsection. The Preliminary Plat requirements are listed below as "Step 2B." Applications for Subdivision shall only be accepted for property annexed into the municipality. A Subdivision application cannot be reviewed concurrently with an annexation application.

   a. ***Purpose***
   A Sketch Plan represents a generalized land use plan and layout for the area proposed to be included within a subdivision. Sketch Plan is required to allow early, informal evaluation of a proposed subdivision before detailed planning and engineering work has been undertaken and before substantial expenses have been incurred by the applicant.

   b. ***Sketch Plan Submittal Requirements***
   A Sketch Plan shall be prepared and submitted to the Community Development Director pursuant to the User's Guide. An Alta Survey shall be prepared and submitted to illustrate the existing conditions on the property and, at a minimum, the Sketch Plan shall contain the following:

      i. Uses proposed;

      ii. Intensity or density of uses proposed;

      iii. Location of public and private open space;

      iv. Drainage Facilities;

      v. Road, street, and pedestrian networks proposed; and

      vi. Existing or proposed utilities and public services for the development.

   c. ***Staff Review***
   The Community Development Department shall review the Sketch Plan, focusing on standards and criteria of this UDC that are applicable to the proposed development. The Community Development Department shall summarize the results of the review in writing and provide a copy to the applicant. The summary shall include any special information regarding the proposed project, plus an evaluation of the proposal with respect to the current policies of the Town, identifying areas of potential compatibility or conflict with these policies. All comments made by the Community Development Department shall not be binding on the Town's consideration of any subsequent application, and are intended only to provide an informal evaluation of the proposed project.

   d. ***Meeting to Discuss Sketch Plan***
   At the request of the Community Development Director or applicant, the parties shall meet to discuss the results of the review. The applicant shall be informed of the

necessary provisions of this UDC relating to subdivision application, including submittal requirements, required public improvements, design standards, and Development Agreements. The Community Development Director shall inform the applicant whether or not a Planning Commission Review shall be required.

e. ***Planning Commission Review***
In addition to the staff review the Community Development Director may require that the Sketch Plan be reviewed by the Planning Commission or the applicant may request this review. The staff review summary shall be submitted to the Planning Commission for consideration. All comments made by the Planning Commission shall not be binding on the Town's consideration of any subsequent application, and are intended only to provide an informal evaluation of the proposed project.

f. ***Effect of Review***
The Sketch Plan is not part of a formal application for approval of a subdivision and any comments made by the Town in reaction to a Sketch Plan shall not be binding on the Town's consideration of any subsequent Preliminary or Final Plat application, nor result in a vested property right under this UDC or State Statute. Since the Sketch Plan is conceptual only, there are no lapse provisions applicable.

Approved by:

R. Martin Ostholthoff
Community Development Director

Attachments:

A. Application Materials
B. Staff Review Memos
C. OSTAB Referral Comments

ATTACHMENT A

FOUR CORNERS
SKETCH PLAN

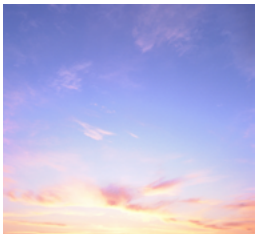
PCS Group, Inc.
1001 16th Street
Denver, CO 80265

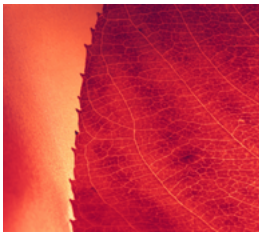
OZ Architecture
3003 Larimer Street
Denver, CO 80205

J3 Engineering
6505 S. Paris St., Suite B
Centennial, CO 80111

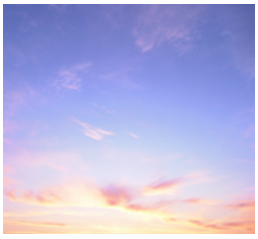
contents

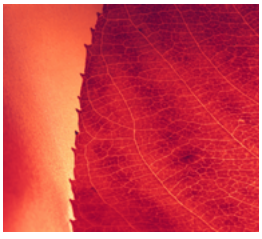
1. Cover Letter and Project Team
2. Application Fee
3. Narrative
4. Proof of Ownership
5. Letter of Authorization
6. Special Agreements
7. ALTA
8. Sketch Plan and Supplemental Graphics
9. Development Reports and Plans





cover letter
and
project team





February 20, 2015

Town of Erie
Martin Ostholthoff
Community Development Director
645 Holbrook Street
Erie, Colorado 80516

Re: Four Corners Sketch Plan

Dear Mr. Ostholthoff,

RMCS is pleased to submit the attached Sketch Plan. Moreover, it is our understanding, that we will work together in good faith with the Town of Erie, to generate a Service Plan (funding district only) for Four Corners in addition to exploring the possibility of incorporating Four Corners into an Urban Renewal Authority District. These proposed funding mechanisms will allow RMCS to compete within the marketplace while providing a significantly higher level of both public and private infrastructure as envisioned in the submittal documents.

RMCS is a local privately owned company that has worked hard, throughout the front range of Colorado, to earn a reputation for fostering and developing high quality, distinct master planned neighborhoods. Through strong partnerships with municipalities, we strive to create finance mechanisms that allow for an expedited build out of innovative public infrastructure. Uniquely designed public and private improvements will set a standard of quality for Four Corners that the residents and visitors of Erie will enjoy for generations to come.

The Four Corners proposes a strong mix of uses, including but not limited to, anchored commercial space complimented by a new restaurant and shopping district, single family detached patio homes, paired ranch homes, ranch style town homes, multi-family homes, and generous public spaces and amenities. In conclusion, we feel that our proposal furthers the goals established in the Town of Erie's Comprehensive Plan and will generate one of Erie's most innovative neighborhoods.

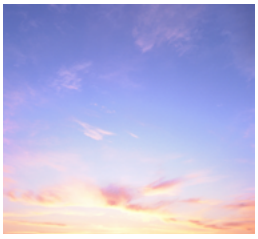
Respectfully,

Justin McClure
RMCS, Inc.

project team

applicant:
RMCS, Inc.
21 South Sunset Street, Longmont CO 80503
tel. 303.475.2106 - contact: Justin McClure

planning consultant:
PCS Group, Inc.
#3 Independence Plaza B180,
1001 16th Street, Denver, Colorado 80265
tel. 720.259.8248 - contact: Paul Shoukas



engineering consultant:
J3 Engineering
6505 S. Paris St., Ste B Centennial, CO 80111
tel. 303.368.5601 - contact: Jason Margraf

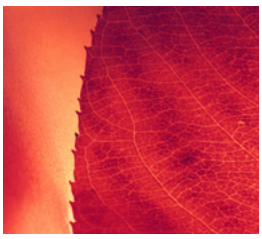
transportation consultant:
LSC Transportation Consultants
1889 York Street, Denver, CO 80206
tel. 303.333.1105 - contact: Chris McGranahan

survey consultant:
Bell Surveying Company
500 Kalamath Street, Denver, CO 80204
tel. 303.629.0165 - contact: William Barnes

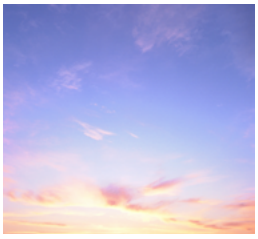
geologic & geotechnical consultant:
CTL Thompson, Inc.
1971 W. 12th Avenue, Denver, CO 80204
tel. 303.626.7645 - contact: Matt Monteith

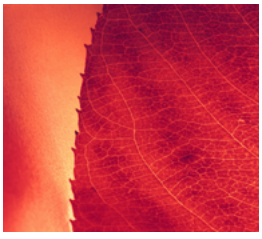
mining engineer:
Mining-Geotechnical Consulting
11225 W. Coal Mine, Littleton, CO 80127
tel. 720.035.5842 - contact: Kanaan Hanna

architect:
OZ Architecture, Inc.
3003 Larimer Street, Denver, CO 80205
tel. 303.861.5704 - contact: Rob Rydel



application fee





Print Form

TOWN OF ERIE
Community Development Department – Planning Division
645 Holbrook Street – PO Box 750 – Erie, CO 80516
Tel: 303.926.2770 – Fax: 303.926.2706 – Web: www.erieco.gov

LAND USE APPLICATION

Please fill in this form completely. Incomplete applications will not be processed.

STAFF USE ONLY

FILE NAME:

FILE NO: DATE SUBMITTED: FEES PAID:

PROJECT/BUSINESS NAME: Four Corners

PROJECT ADDRESS: Vacant Land (southwest corner of Erie Parkway and County Line Road)

PROJECT DESCRIPTION: The Four Corners Sketch Plan is a proposal for a 47 acre mixed use community consisting of tenant anchored commercial space flanked by a local retail shopping district (including restaurants), single family (alley loaded) patio homes, paired ranch homes, multi-family homes, and generous public spaces and amenities.

LEGAL DESCRIPTION *(attach legal description if Metes & Bounds)*

Subdivision Name:

Filing #: Lot #: Block #: Section: 24 Township: 1 North Range: 69 West

OWNER *(attach separate sheets if multiple)*

Name/Company: Erie Commercial Venture , LLLP

Contact Person: A. L. (Sid) Overton

Address: 6950 East Belleview Ave. Suite 202

City/State/Zip: Greenwood Village, CO 80111

Phone: 303.779.5900 Fax: 303.779.6006

E-mail: sidoverton@oalaw.net

AUTHORIZED REPRESENTATIVE

Company/Firm: RMCS, Inc.

Contact Person: Justin McClure

Address: 21 South Sunset Street

City/State/Zip: Longmont, CO 80501

Phone: 720.524.3620 Fax:

E-mail: justinrmcs@gmail.com

MINERAL RIGHTS OWNER *(attach separate sheets if multiple)*

Name/Company: ECV Minerals, LLC

Address: 7720 East Belleview Ave. Suite 350

City/State/Zip: Greenwood Village, CO 80111

MINERAL LEASE HOLDER *(attach separate sheets if multiple)*

Name/Company: N/A

Address:

City/State/Zip:

LAND-USE & SUMMARY INFORMATION

Present Zoning: CBR

Proposed Zoning: CC, HR, MR

Gross Acreage: 46.613

Gross Site Density (du/ac): 11.4

Lots/Units Proposed: 530

Gross Floor Area: 170,688

SERVICE PROVIDERS

Electric: Xcel Energy

Metro District: Pending

Water *(if other than Town)*:

Gas: Xcel Energy

Fire District: Mountain View Fire Protection District

Sewer *(if other than Town)*:

PAGE TWO MUST BE SIGNED AND NOTARIZED

DEVELOPMENT REVIEW FEES			
ANNEXATION		**SUBDIVISION**	
☐ Major (10+ acres)	$ 4000.00	☐ Sketch Plan	$ 1000.00 + 10.00 per lot
☐ Minor (less than 10 acres)	$ 2000.00	☐ Preliminary Plat	$ 2000.00 + 40.00 per lot
☐ Deannexation	$ 1000.00	☐ Final Plat	$ 2000.00 + 20.00 per lot
COMPREHENSIVE PLAN AMENDMENT		☐ Minor Subdivision Plat	$ 2000.00
☐ Major	$ 3000.00	☐ Minor Amendment Plat	$ 1000.00 + 10.00 per lot
☐ Minor	$ 1200.00	☐ Road Vacation (constructed)	$ 1000.00
ZONING/REZONING		☐ Road Vacation (paper)	$ 100.00
☐ Rezoning	$ 1700.00 + 10.00 per acre	**SITE PLAN**	
☐ PUD Rezoning	$ 1700.00 + 10.00 per acre	☐ Residential	$ 1400.00 + 10.00 per unit
☐ PUD Amendment	$ 1700.00 + 10.00 per acre	☐ Non-Resi. (>10,000 sq. ft.)	$ 2200.00
☑ Major PD Amendment	$ 3700.00 + 10.00 per acre	☐ Non-Resi. (>2,000 sq. ft.)	$ 1000.00
☐ Minor PD Amendment	$ 500.00	☐ Non-Resi. (<2,000 sq. ft.)	$ 200.00
SPECIAL REVIEW USE		☐ Amendment (major)	$ 1100.00
☐ Major	$ 1000.00	☐ Amendment (minor)	$ 350.00
☐ Minor	$ 400.00	**VARIANCE**	$ 600.00
☐ Oil & Gas	$ 1200.00	**SERVICE PLAN**	$ 10,000.00

*All fees **include** both Town of Erie Planning & Engineering review. These fees **do not include** referral agency review fees, outside consultant review fees, or review fees incurred by consultants acting on behalf of staff. See Town of Erie Municipal Code, Title 2-10-5 for all COMMUNITY DEVELOPMENT FEES.*

The undersigned is fully aware of the request/proposal being made and the actions being initiated on the referenced property. The undersigned understand that the application must be found to be complete by the Town of Erie before the request can officially be accepted and the development review process initiated. The undersigned is aware that the applicant is fully responsible for all reasonable costs associated with the review of the application/request being made to the Town of Erie. Pursuant to Chapter 7 (Section 7.2.B.5) of the Unified Development Code (UDC) of the Town of Erie, applicants shall pay all costs billed by the Town for legal, engineering and planning costs incurred by staff, including consultants acting on behalf of staff, necessary for project review. By this acknowledgement, the undersigned hereby certify that the above information is true and correct.

Owner: ERIE COMMERCIAL VENTURE, LLLP Date: 2/10/2015
By: A. L. (Sid) Overton, General Partner

Owner: _____ Date: _____

Applicant: RMCS, Inc. Date: 2/10/2015
By: Justin McClure, Vice President

STATE OF COLORADO)
) ss.
County of Arapahoe)

The foregoing instrument was acknowledged before me this 10th day of February, 2015 by A. L. (Sid) Overton, General Partner of Erie Commercial Venture, LLLP

My commission expires: 8/7/2017.
Witness my hand and official seal.

SARAH J. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094025068
MY COMMISSION EXPIRES AUGUST 7, 2017

Notary Public

TOWN OF ERIE
Land Use Application Form
RMCS, Inc., Applicant

ACKNOWLEDGMENT

STATE OF COLORADO)
)
COUNTY OF ARAPAHOE)

The foregoing instrument was acknowledged before my on this 10th day of February, 2015 by Justin McClure, Vice President of RMCS, Inc.

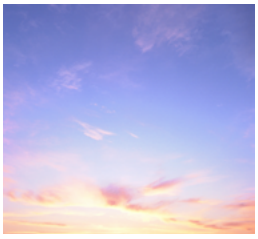
Witness my hand and official seal.

Sarah J. Morris
Notary Public

My commission expires: August 7, 2017

SARAH J. MORRIS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20094025068
MY COMMISSION EXPIRES AUGUST 7, 2017

narrative



section a:

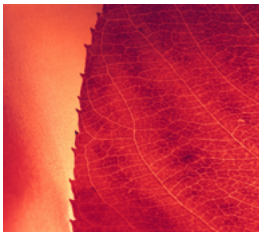
General project concept and purpose of the request.

section b:

Relationship to existing land use and adjacent properties.

section c:

Submittal Criteria



s e c t i o n a :

GENERAL PROJECT CONCEPT AND PURPOSE OF THE REQUEST.

Project Concept

RMCS Inc., is pleased to present this introduction for Four Corners Sketch Plan. The Four Corners application covers a portion of land located in the North One-Half of the Southeast One-Quarter of Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.

Four Corners is envisioned as a vibrant mixed use community with a very strong emphasis on public and private amenities, diverse housing options, and most importantly, uniquely designed commercial space supported by a restaurant and shopping district. Four Corners will cater to a balanced range of uses and activities where people live, shop, reside and build their families. The proposed project plans to provide its residents with a sense of community, while also giving the Four Corners intersection a sense of identity.

A great deal of attention has been paid to maintaining a human scale in everything from street widths and a pedestrian friendly environment, to the commercial and retail uses along East County Line Road. By mixing both residential and commercial uses with recreational opportunities, the intent is to create a social and economic balance not commonly found in typical new residential developments. This plan proposes to bring all of these ingredients together to create a scale and style of living

which encourages residents to greet their neighbors from their front porches, and walk their children to the nearby shops and parks that serve the surrounding residents. This plan hopes to foster in the community an unparalleled sense of pride in their neighborhood and the Town in which they live.

Purpose of the Request

The principal land uses and associated permitted uses are referred to as Business Commercial (BC) and Commercial/ Business/Retail (CBR), which are not consistent with current zoning districts in the Town of Erie. This proposal re-defines the CBR portion of property to be more consistent with the Town's 2005 Comprehensive Plan, and the Town's Unified Development Code (UDC).

The property has been identified as Mixed Use & Community Commercial within the Town of Erie's 2005 Comprehensive Plan and is designated as Planned Development on the Town's zoning map. The principal land uses for the proposed Four Corners is a combination of principal land uses as defined in the Unified Development Code which include Community Commercial (CC), Medium Density Residential (MR) and High Density Residential (HR).

The proposed plan encourages a flexible approach to development that will promote a more balanced mix of residential and commercial uses for the community. An update to the Town's Unified Development Code was prepared concurrent with the last Comprehensive Plan, revising many of the key ideas and policies that have been codified within this site plan giving this project a solid foundation for implementation. The proposed site plan is aligned with the Town's Comprehensive Plan's goals and policies, and provides focused guidance as the community continues to grow.

The proposed development encourages smart, compact growth, and proposes a maximum number of 500 dwelling units on the property, for an overall density of approximately 10.7 dwelling units per acre. The clustered design approach, the transition between different densities and uses, and diverse housing is consistent with the spirit and intent of the residential & commercial policies set forth in the Town's Comprehensive Plan.

Proposed Variations from the Principal Land Uses

The site plan proposes Community Commercial, Medium and High Density Residential principal land uses with a PD Development Plan to accommodate diversified housing products, and to allow for a more creative approach to the clustering and the planning of parcels within the overall development of the property. The PD Overlay will limit the number of units allowed within the property to 500 Units. In order to ensure compatibility with our surrounding neighbors, the PD will establish development areas, and transitional densities. The PD Overlay will also be necessary to allow for dimensional standards that support the housing variations proposed to facilitate the Town of Erie Housing Diversity requirements.

Public Benefits

The site plan identifies a landscape area to serve both as an outdoor recreational amenity, and as a transition from the commercial retail and shopping district to the high and medium density residential uses within the development. As requested by the Town of Erie, the plan proposes to enhance areas with the associated trails along County Line Road and Erie Parkway. These trails serve as a major pedestrian corridor and connection to the Town of Erie's Community Center. The remainder of the property will be preserved as either dedicated or non-dedicated green space areas with an internal trail network.

Proposed Development Time Line

The proposed development timeline and phasing is dependent on project approvals and market conditions. A proposed date of final zoning approval is requested by July 2015.

Utilities and Public Services

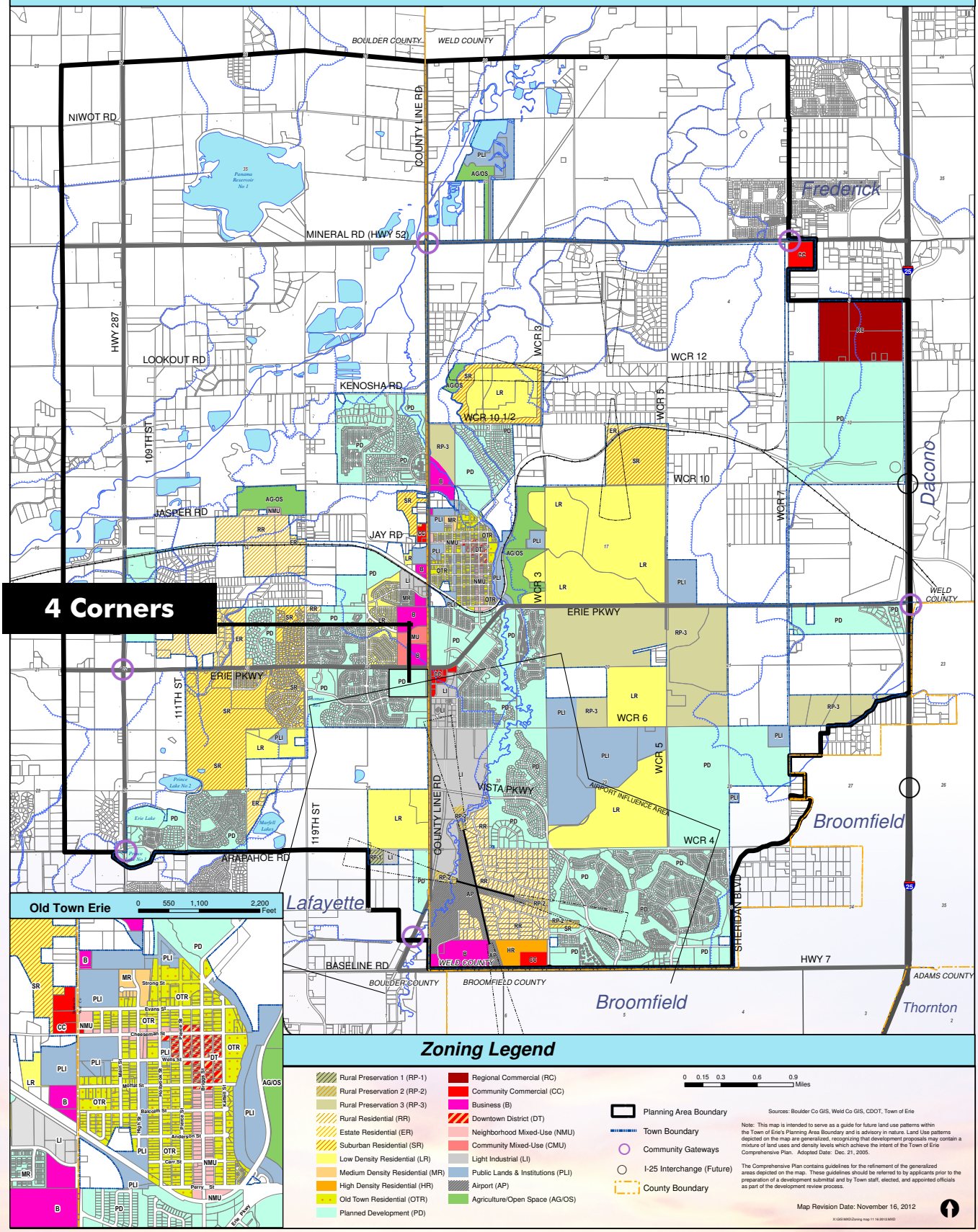
The property was originally part of the Homestake PUD, which was amended and approved by the Town in 2001 to the current Canyon Creek PD. Town services were anticipated for a commercial and retail zoned property. The public infrastructure that was anticipated for Four Corners area by the Canyon Creek PD includes schools within the St. Vrain Valley School District, Mountain View Fire Protection District, Police protection, water and sewer services provided by the Town of Erie and utilities provided by Excel.

As the existing zoning is being amended, the proposed land uses would anticipate public services as well as utilities to the site.

Status of Mineral Rights

A portion of the Four Corners property was part of the Marfel and Pinnacle Mine, which encompassed much of the surrounding area to the North beyond the site. The property was undermined for minerals mainly consisting of coal. For further information please reference the Geotechnical report conducted by CTL Thompson.

Town of Erie, Colorado
Zoning Map



Zoning Legend

- Rural Preservation 1 (RP-1)
- Rural Preservation 2 (RP-2)
- Rural Preservation 3 (RP-3)
- Rural Residential (RR)
- Estate Residential (ER)
- Suburban Residential (SR)
- Low Density Residential (LR)
- Medium Density Residential (MR)
- High Density Residential (HR)
- Old Town Residential (OTR)
- Planned Development (PD)
- Regional Commercial (RC)
- Community Commercial (CC)
- Business (B)
- Downtown District (DT)
- Neighborhood Mixed-Use (NMU)
- Community Mixed-Use (CMU)
- Light Industrial (LI)
- Public Lands & Institutions (PLI)
- Airport (AP)
- Agriculture/Open Space (AG/OS)

0 0.15 0.3 0.6 0.9 Miles

- Planning Area Boundary
- Town Boundary
- Community Gateways
- I-25 Interchange (Future)
- County Boundary

Sources: Boulder Co GIS, Weld Co GIS, CDOT, Town of Erie

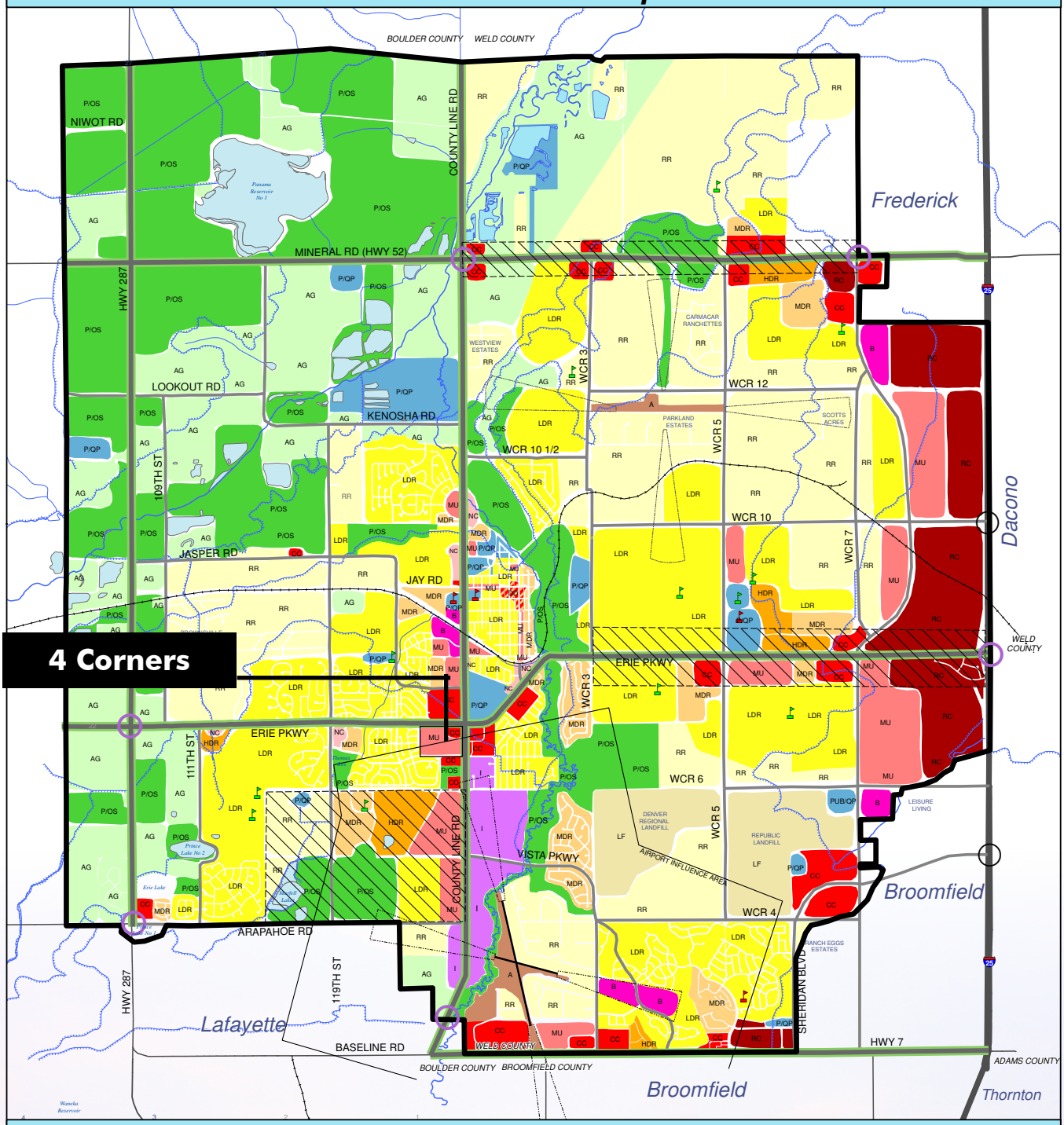
Note: This map is intended to serve as a guide for future land use patterns within the Town of Erie's Planning Area Boundary and is advisory in nature. Land Use patterns depicted on the map are generalized, recognizing that development proposals may contain a mixture of land uses and density levels which achieve the intent of the Town of Erie Comprehensive Plan. Adopted Date: Dec. 21, 2005.

The Comprehensive Plan contains guidelines for the refinement of the generalized areas depicted on the map. These guidelines should be referred to by applicants prior to the preparation of a development submittal and by Town staff, elected, and appointed officials as part of the development review process.

Map Revision Date: November 16, 2012

X:\GIS\MXD\Zoning map 11 16 2012.MXD

Town of Erie, Colorado
2005 Comprehensive Plan
Land Use Plan Map



Land Use Plan Legend

AG	Agriculture	MDR	Medium Density Residential (6-12 du/ac)	B	Business
P/OS	Parks/Public Open Space	HDR	High Density Residential (12-20 du/ac)	I	Industrial
P/QP	Public/Quasi Public	DD	Downtown District		Reservoirs
LF	Landfill	NC	Neighborhood Commercial		County Boundary
A	Airport	CC	Community Commercial		Planning Area Boundary
RR	Rural Residential (0-2 du/ac)	RC	Regional Commercial		Areas of Special Consideration
LDR	Low Density Residential (2-6 du/ac)	MU	Mixed Use		

Canal/Ditch
Railroad
Community Gateways
I-25 Interchange (Future)
Elementary School
Middle School
High School

0 0.25 0.5 1 Miles

Sources: Boulder CO GIS, Weld CO GIS, CDOT, Town of Erie

Note: This map is intended to serve as a guide for future land use patterns within the Town of Erie's Planning Area Boundary and is advisory in nature. Land Use patterns depicted on the map are generalized, recognizing that development proposals may contain a mixture of land uses and density levels which achieve the intent of the Town of Erie Comprehensive Plan. Adopted Date: Dec. 21, 2005.

The Comprehensive Plan contains guidelines for the refinement of the generalized areas depicted on the map. These guidelines should be referred to by applicants prior to the preparation of a development submittal and by Town staff, elected, and appointed officials as part of the development review process.

Town Boundary Not Shown - Refer to Zoning Map for Town Boundary

Map Revision Date: JULY 20, 2011

s e c t i o n b :

RELATIONSHIP TO EXISTING LAND USE AND ADJACENT PROPERTIES

Site & Location

Four Corners is approximately 46 acres, located at the South West Corner of Erie Parkway and East County Line Road, (See the Vicinity Map in this section). As mentioned previously, the property was originally part of the Homestake PUD which was then amended to the Canyon Creek PD and approved by the town in 2000. Since this amendment was approved, town services such as schools, administration, police, water and sewer have either been provided or are anticipated for this in fill property.

The Western boundary is bordered by part of Canyon Creek Filing No. 5 and existing single family homes. To the East of the property along County Line Road are Commercial and Light Industrial uses, including an existing Walgreens and Stop & Save gas station. To the South across Austin Avenue are single family residential homes which are a part of Canyon Creek PD Filing No. 6. The Town of Erie's Community Center and its associated ball fields and other recreational amenities are located across the intersection at the North East corner of Erie Parkway and East County Line Road (catty-corner to the site). A pedestrian sidewalk/trail corridor running in the East/ West direction along Erie Parkway has been preserved along this portion of the property.

The surrounding area has a diversity of uses, ranging from Mixed Use, to Low Density Residential, Medium Density Residential, Community Commercial and Open Space. The proposed site plan aligns with the Town of Erie Comprehensive Plan and provides many opportunities for a positive impact to the adjacent properties and residents including:

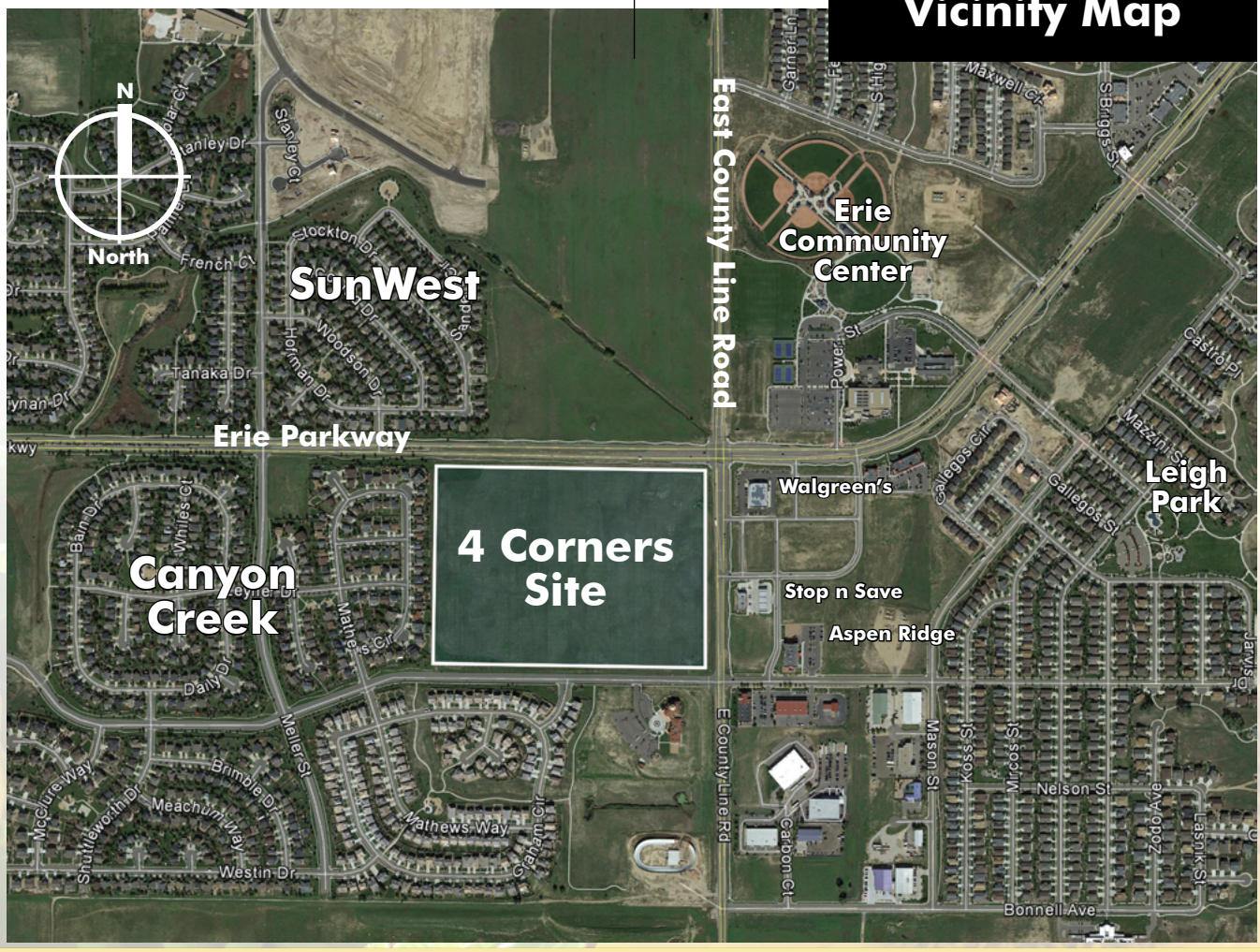
- Concentrating residential density within Four Corners aids in preserving more valuable land within the Town of Erie for other uses.

- As depicted in the Sketch Plan, the proposed layout creates a transition of density and intensity of uses from the East to West and North to South that is compatible with the abutting existing neighbors.

- Internal mews and corridors will be provided to accommodate pedestrian connections that lead to a central green space.

- This proposal promotes a logical extension of Canyon Creek by creating additional neighborhoods containing diverse housing and commercial options to meet the varying needs of Erie's residents.

Vicinity Map



section c:

SUBMITTAL CRITERIA

a: General project concept and purpose of the request.

The Four Corners sketch plan covers a portion of land located in the North One-Half of the Southeast One-Quarter of Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.

Four Corners is envisioned as a vibrant mixed use community with a very strong emphasis on public and private amenities, diverse housing options, and most importantly, uniquely designed commercial space supported by restaurants and a shopping district. Four Corners will cater to a balanced range of uses and activities where people live, shop, reside and build their families. The proposed project plans to provide its residents with a sense of community, while also giving the Four Corners intersection a sense of identity.

A great deal of attention has been paid to maintaining a human scale in everything from street widths and a pedestrian friendly environment, to the commercial and retail uses along East County Line Road. By mixing both residential and commercial uses with recreational opportunities, the intent of this site plan is to create a social and economic balance not commonly found in typical new residential developments. This plan proposes to bring all of these ingredients together to create a scale and style of living which encourages residents to greet their neighbors from their front porches, and walk their children to the nearby shops and parks that serve the surrounding residents. This plan hopes to foster in the community an unparalleled sense of pride in their neighborhood and the Town in which they live.

b: The total land area to be subdivided.

The total land area of Four Corners is 46.61 acres. The residential portion is approximately 32.06 acres. The commercial portion is approximately 14.55 acres.

c: The total number of lots, and if residential the proposed density.

There is a total of 129 lots and two super blocks within the Four Corners. Of the the two super blocks, one is the apartments and the other is the commercial. The overall density for the residential portion of the site is 14.3 du/ac

d. If non-residential, the total square footage of floor area proposed.

The total square footage of floor area proposed is 86,650.

e. The total land area to be preserved as open space.

At this time, no land is designate as open space.

f. A brief description regarding the phasing of the proposed subdivision.

Site specific phasing will be determined during the platting process.

g. A brief description regarding the availability and adequacy of existing infrastructure and other necessary services including school, fire protection, water/sewer service, and utility providers.

The site is anticipated to be served by a 12-inch water supply line located in County Line Road. The sanitary sewer from this filing will connect into an 8-inch line located at the intersection of County Line Road and Erie Parkway. The site lies within the boundaries of St. Vrain Valley Schools District. Fire protection will be provided by Mountain Veiw Fire Rescue. Dry utility services are anticipated to be provided by Xcel Energy, Comcast and Century Link.

h. A brief description regarding the location, function and ownership / maintenance of public and private open space, parks, trails, common areas, common buildings.

The current site plan has designated tract areas as landscaping to serve both as an outdoor recreational amenity, and as a transition from the commercial retail and shopping district to the high and medium density residential uses within the development. As requested by the Town of Erie, the plan proposes to enhance areas with the associated trails along County Line Road and Erie Parkway. These trails serve as a major pedestrian corridor and connection to the Town of Erie's Community Center. The remainder of the property will be preserved as green space areas with an internal trail network. Maintenance for the all private parcels, including landscape, hardscape and structures will be provided by a separate association.

i. A brief description regarding the substance of any existing or proposed covenants, special conditions, grants of easements,or other restrictions applying to the proposed subdivision.

A portion of the Four Corners property was part of the Marfel and Pinnacle Mine, which encompassed much of the surrounding area to the North beyond the site. The property was undermined for minerals mainly consisting of coal. For further information please reference the Geotechnical report conducted by CTL Thompson.

These subsurface shafts have been inactive for decades. They have already been located by the applicant in the field and further physical property testing and depth of overburden has deemed them to be benign. The locations are depicted on the site analysis exhibit included in this document.

The existing ROW trail corridor and utility lines which run along East County Line Road have also been taken into account in the community design.

Setbacks are provided to avoid the existing utility easements and the existing trail corridor running along Erie Parkway. The plan adds additional space for the proposed continuation of the walk along Austin Avenue which connects to the existing trail within Canyon Creek. These physical conditions and constraints of the site have helped shaped the plan. The clustering of the development into different zoning areas helps to maximize the potential use of the property while avoiding the physical constraints of the site.

4 CORNERS SKETCH PLAN

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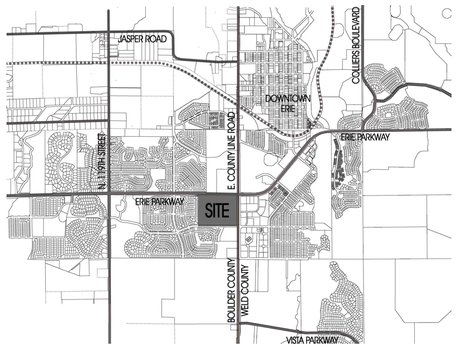
46.613 ACRES - 68 LOTS - 13 TRACTS
SK000206-2015



Vicinity Map
1"=3000' (approx)

North

LAND USE SUMMARY CHART		
TYPE	AREA (AC)	% OF TOTAL AREA
RESIDENTIAL (HR)	13.65	29%
RESIDENTIAL (MR)	6.83	15%
COMMERCIAL (CC)	8.82	19%
TRACTS / LANDSCAPING / GREENWAY	8.01	17%
TRACTS / ALLEYS	1.71	4%
PUBLIC ROW	7.59	16%
TOTAL	46.61	100%

UNIT AND SF SUMMARY CHART		
AREA	# OF UNITS	Sq.Ft. (approx)
SFD	45	NA
SFA	32	NA
TH	52	NA
MULTIFAMILY	330	NA
COMMERCIAL	NA	86,650
TOTAL*	**459**	**86,650**

*REFER TO THE CANYON CREEK PD AMENDMENT #9 FOR THE MAXIMUM APPROVED DENSITY WITHIN 4 CORNERS

TRACT SUMMARY CHART				
TRACT #	AREA (AC)	USE	OWNERSHIP	MAINTENANCE
1	0.74	LANDSCAPING	HOA	HOA
2	0.15	ALLEY	HOA	HOA
3	0.25	LANDSCAPING	HOA	HOA
4	0.15	ALLEY	HOA	HOA
5	0.19	LANDSCAPING	HOA	HOA
6	0.15	ALLEY	HOA	HOA
7	0.22	LANDSCAPING	HOA	HOA
8	0.15	ALLEY	HOA	HOA
9	0.25	LANDSCAPING	HOA	HOA
10	0.21	ALLEY	HOA	HOA
11	1.93	LANDSCAPING / GREENWAY	HOA	HOA
12	0.46	ALLEY	HOA	HOA
13	0.04	LANDSCAPING	HOA	HOA
14	0.04	LANDSCAPING	HOA	HOA
15	0.04	LANDSCAPING	HOA	HOA
16	0.11	ALLEY	HOA	HOA
17	0.11	ALLEY	HOA	HOA
18	0.11	ALLEY	HOA	HOA
19	0.11	ALLEY	HOA	HOA
20	0.90	LANDSCAPING	HOA	HOA
21	0.85	LANDSCAPING	HOA	HOA
22	0.83	LANDSCAPING	HOA	HOA
23	0.71	LANDSCAPING	HOA	HOA
24	0.26	LANDSCAPING	HOA	HOA
25	0.27	LANDSCAPING	HOA	HOA
26	0.49	LANDSCAPING	HOA	HOA

PARKS AND OPEN SPACE DEDICATION	
AREA	ACRES REQUIRED*
POCKET PARK**	0.64
NEIGHBORHOOD PARK	3.84
COMMUNITY PARK	6.40
OPEN SPACE (PUBLIC)	21.77

* FINAL ACRES TO BE DETERMINED WITH A SITE SPECIFIC DEVELOPMENT PLAN ACCOMPANYING, OR SUBSEQUENT PRIOR TO THE PLAT

**THE GREENWAY WITHIN TRACT 11 AND ERIE PARKWAY FULFILLS ALL POCKET PARK REQUIREMENTS PER MC 10.6.3 IF THE QUALITY OF DESIGN MEETS OR EXCEEDS THE INTENT OF "PROST'S LIST OF COMPONENTS" AT THE SOLE DISCRETION OF THE TOWN OF ERIE

SHEET INDEX

1 COVER SHEET
2 EXISTING CONDITIONS
3 SKETCH PLAN
4 PROJECT SIGNAGE
5 STREET SECTIONS
6 SITE DETAILS
7 CHARACTER SKETCHES

4 CORNERS
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COVER SHEET

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RMCS, INC
21 South Sunset Street
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OWNER
4 CORNERS, LLC
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Phone (720) 524-3620

SUBMITTAL

no	date	description
1	02.20.2015	1st Submittal
2	05.01.2015	2nd Submittal
3	06.25.2015	3rd Submittal

designed by: sa
checked by: pms
drawn by: klm
project #: 94762

SHEET 1
1 of 7

Jun 25, 2015 - 9:45am - USER Kurt
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4 CORNERS SKETCH PLAN

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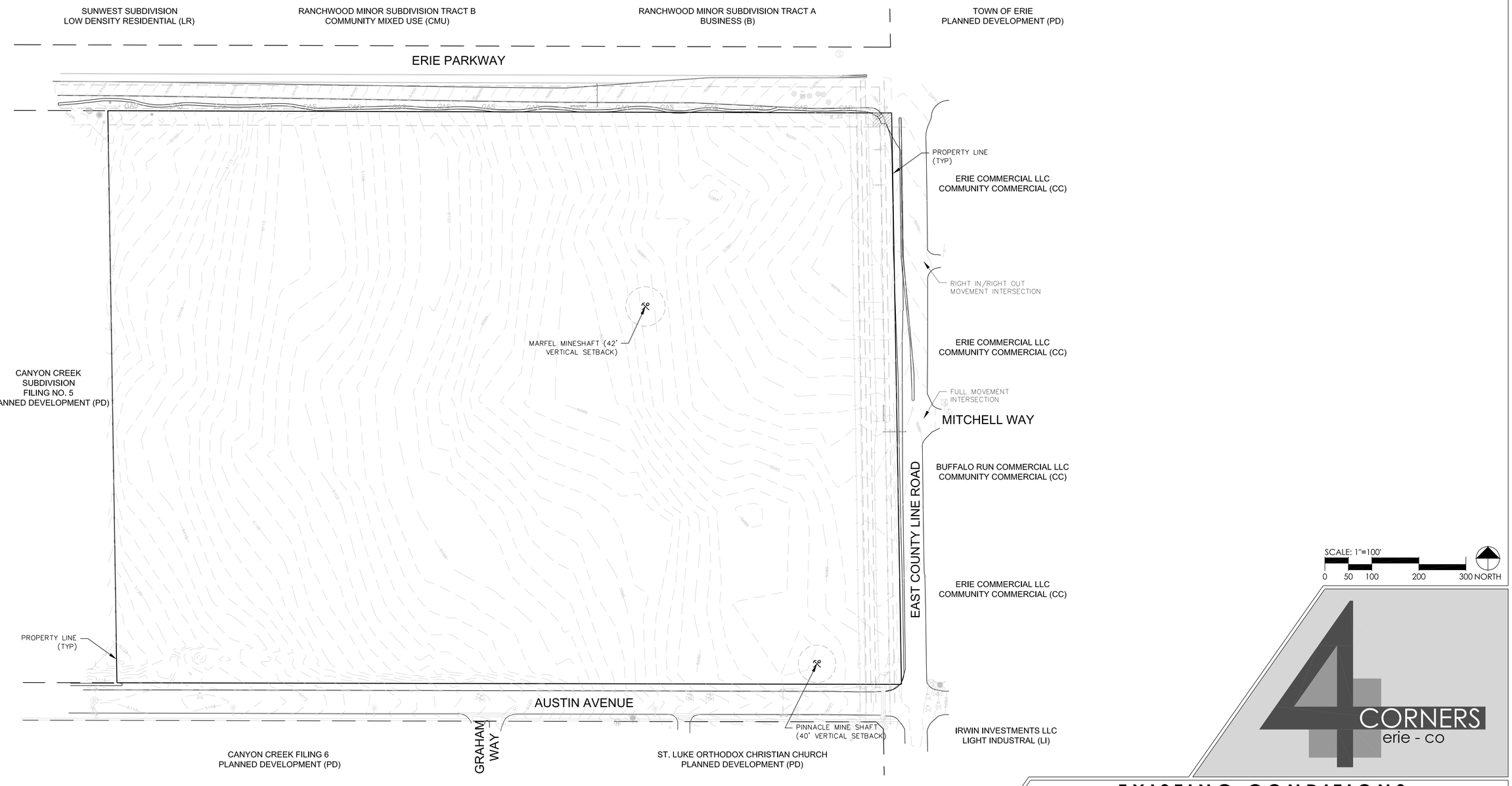

4 CORNERS
erie - co

EXISTING CONDITIONS

no	date	description
1	02.20.2015	1st Submittal
2	05.01.2015	2nd Submittal
3	06.25.2015	3rd Submittal

designed by: sa
checked by: pms
drawn by: klm
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SHEET 2
2 of 7

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SUBMITTAL

Jun 25, 2015 - 9:14am - USER Kurt
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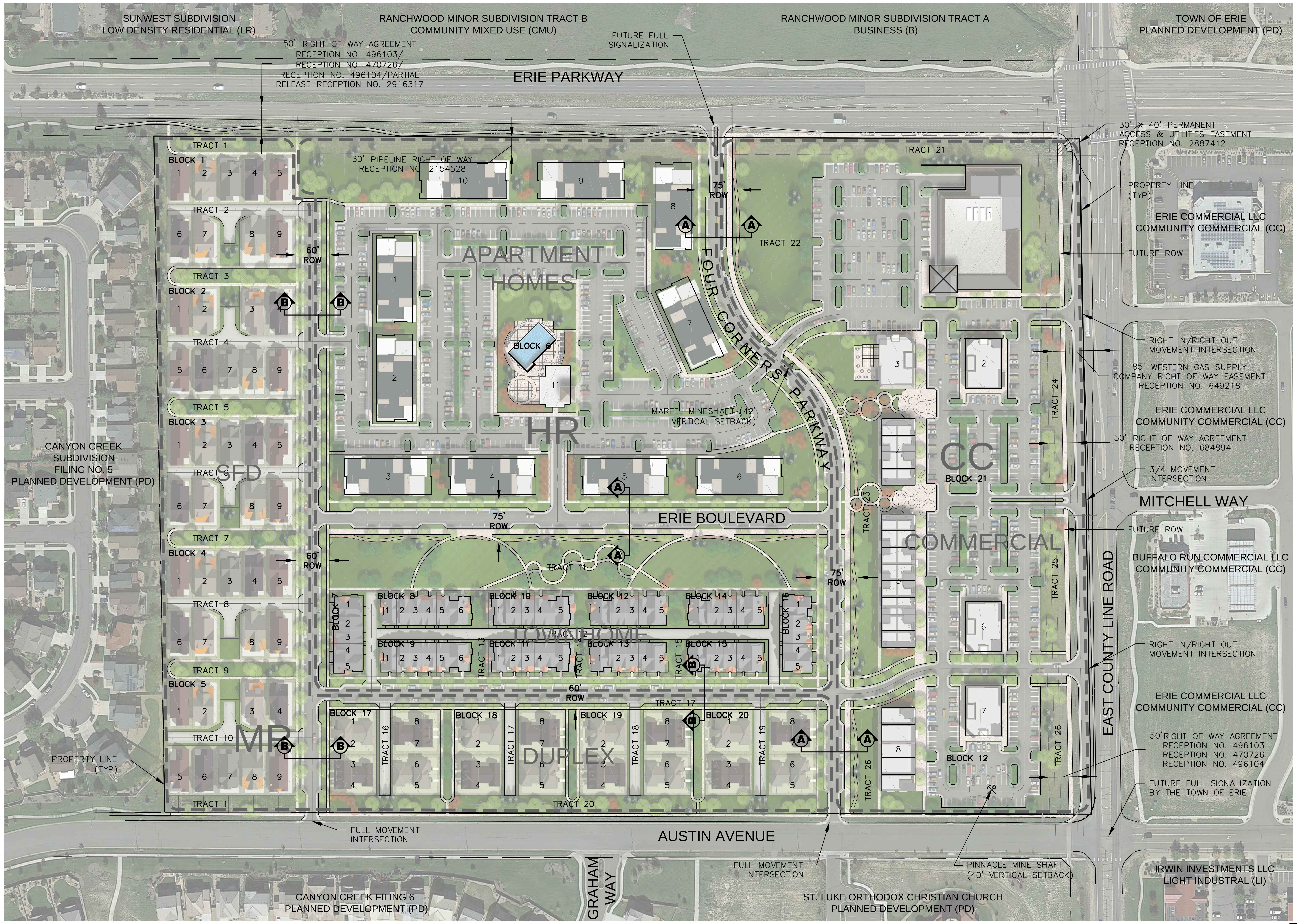

GENERAL NOTES

1. THE APARTMENTS AND CONDOMINIUMS WILL BE ORGANIZED AROUND TWO PRIMARY POINTS OF ACCESS. THE LAYOUT WILL ENHANCE ADJACENT GREEN SPACES, ACT AS A BUFFER AND WILL HAVE MULTI MODAL TRANSPORTATION OPPORTUNITIES.
2. BUILDINGS MAY BE CONSTRUCTED AT, ONE, TWO, OR THREE STORY HEIGHTS WITH AN ADDITIONAL MEZZANINE OR COMBINATIONS THEREOF AND MAY INCLUDE OUTDOOR LIVING AREAS AND AMENITY SPACES.
3. ALL IMAGERY, LANDSCAPING, SITE DESIGNS, AND COVERED PARKING AREAS ARE CONCEPTUAL IN NATURE AND MAY BE REMOVED, RELOCATED OR MODIFIED.
4. THE USE OF SHARED DRIVES ARE PERMITTED
5. SHARED USE EASEMENTS MAY APPLY TO THE SINGLE FAMILY RESIDENTIAL AREAS WITHIN THIS PD AMENDMENT NO. 9.
6. THE LOCATION OF THE FUTURE, FULL MOVEMENT, SIGNALIZATION AT THE INTERSECTION OF ERIE PARKWAY AND FOUR CORNERS PARKWAY IS CONTINGENT UPON A PENDING AGREEMENT FROM THE NORTHERN PROPERTY OWNERS WITHIN RANCHWOOD.
7. PUBLIC IMPROVEMENTS OUTSIDE OF THE PROJECT BOUNDARY ARE SHOWN FOR REFERENCE PURPOSES ONLY. FUNDING FOR ANY SUCH PUBLIC IMPROVEMENTS HAS NOT BEEN DETERMINED.

PUBLIC BENEFIT NOTES

THE DEVELOPMENT OF FOUR CORNERS YIELDS PUBLIC BENEFITS GENERATED BY THE PLANNING, LAYOUT AND INNOVATION WITHIN ITS DESIGN. THESE BENEFITS INCLUDE, BUT ARE NOT LIMITED, TO THE FOLLOWING:

1. THIS MIXED USE PROJECT WILL PROMOTE A HEALTHY, THRIVING ECONOMY THAT PROVIDES OPPORTUNITIES FOR QUALITY EMPLOYMENT WITH LIVABLE WAGES FOR ITS RESIDENTS.
2. FOUR CORNERS WILL PROMOTE A HIGH STANDARD OF DESIGN, WHILE CREATING A WALKABLE COMMUNITY WITH UNIQUE AMENITIES FOR RESIDENTS ALONG WITH, PUBLIC PLACES, AND COMMERCIAL BUSINESSES TO BE ENJOYED BY THE PUBLIC AT LARGE.
3. THE PROJECT IS AN INFILL DEVELOPMENT THAT ENCOURAGES MIXED USE GROWTH AND FOSTERS THE EFFICIENT PROVISION OF INFRASTRUCTURE AND SERVICES, WHILE BALANCING DEVELOPMENT AND THE CONSERVATION OF ERIE'S NATURAL ENVIRONMENT.
4. THE PROJECT WILL PROVIDE A DIVERSE RANGE OF RECREATIONAL OPPORTUNITIES TO INCLUDE BOTH MULTI-MODAL TRANSPORTATION OPPORTUNITIES, A LINEAR PARK, AND MEWS' INTENDED TO BE CONNECTED WITH TRANSITIONAL GREEN WAYS, EXISTING COMMUNITY PATHS AND OPEN TRAILS.
5. FOUR CORNERS WILL PROMOTE A DIVERSITY OF CHOICES OF LAND USES AND HOUSING OPTIONS MEETING THE VARYING NEEDS OF ITS RESIDENTS, WHICH MAY INCLUDE, BUT IS NOT LIMITED TO SINGLE FAMILY, ATTACHED HOMES, MULTIFAMILY DWELLINGS, ALONG WITH HORIZONTAL MIX OF USES.
6. FOUR CORNERS WILL PROMOTE, ENCOURAGE AND STIMULATE PRIVATE DEVELOPMENT AND INVESTMENT THAT REALIZES PUBLIC BENEFITS THROUGH HIGH QUALITY COMMERCIAL SERVICES THAT PROVIDE VARIOUS RETAIL OPPORTUNITIES, BUT NOT LIMITED TO UPSCALE EATING, DRINKING, CLOTHING AND OFFICE ESTABLISHMENTS.
7. FOUR CORNERS MAY PROMOTE A POSITIVE ENVIRONMENT FOR EMPTY NESTERS WHOSE CHILDREN HAVE GROWN AND ARE DOWNSIZING THEIR HOME AND MOVING TO MORE CENTRALLY LOCATED, MAINTENANCE FREE LIVING.
8. FOUR CORNERS PROVIDES APPROPRIATELY LOCATED AREAS FOR RESIDENTIAL DEVELOPMENT THAT ARE SUBSTANTIALLY CONSISTENT WITH THE TOWN'S COMPREHENSIVE MASTER PLAN AND WITH STANDARDS FOR PUBLIC HEALTH, SAFETY, MORALS, AND GENERAL WELFARE.
9. THE PROJECT ENSURES THAT THE SCALE AND CHARACTER OF EXISTING RESIDENTIAL NEIGHBORHOODS AND COMMUNITY CHARACTER IS PROTECTED THROUGH THE ALLOWED USES AND BULK AND DIMENSION STANDARDS WITHIN PD AMENDMENT NO. 9
10. THE PD AMENDMENT NO. 9 PROTECTS EXISTING RESIDENTIAL DEVELOPMENT FROM USES THAT ARE INCOMPATIBLE WITH A RESIDENTIAL ENVIRONMENT, TO THE EXTENT PRACTICAL.
11. THE PD AMENDMENT NO. 9 ENSURES THAT THE APPEARANCE AND EFFECTS OF COMMERCIAL AND RETAIL BUILDINGS AND USES ARE OF AN APPROPRIATELY HIGH QUALITY AND ARE SUBSTANTIALLY CONSISTENT WITH THE CHARACTER OF THE AREA WHILE PROVIDING AREAS FOR RESIDENTIAL, PUBLIC, AND SEMI-PUBLIC USES NEEDED TO COMPLEMENT COMMERCIAL AND RETAIL DEVELOPMENT.
12. THE TRANSPORTATION SYSTEM NETWORK HAS BEEN LAID OUT TO PROVIDE RESIDENTIAL AREAS WITH DIRECT ACCESS TO THE ADJACENT NON-RESIDENTIAL PORTIONS OF PROJECT.
13. THE PROJECT GENERATES A COMPACT AND PEDESTRIAN - ORIENTED ENVIRONMENT THAT ENCOURAGES TRANSIT, MULTI MODAL AND PEDESTRIAN ACCESS.
14. THE CONCENTRATION OF COMMERCIAL AND RETAIL SERVICES PROPOSED WITHIN THIS DEVELOPMENT PLAN ARE LOCATED TO SERVE THE SURROUNDING COMMUNITY.

SCALE: 1"=100'

0 50 100 200 300 NORTH

4 CORNERS erie - co

SKETCH PLAN

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designed by: sa
checked by: pms
drawn by: klm
project #: 94762

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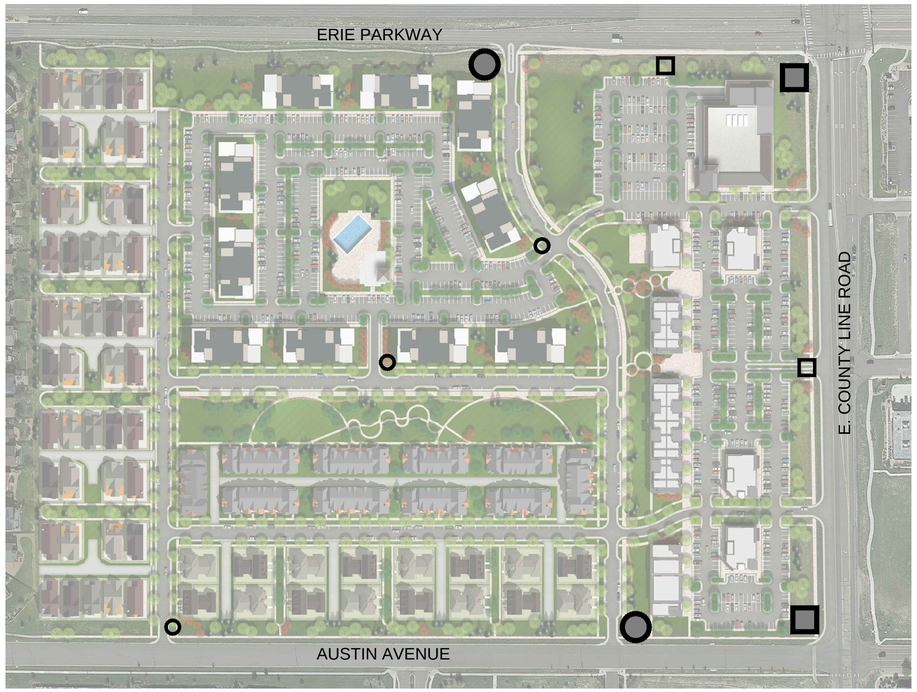


LEGEND

- PRINCIPLE COMMERCIAL MONUMENT OR WALL SIGN
- JOINT TENANT AND PROJECT IDENTIFICATION SIGN
- PRINCIPLE RESIDENTIAL IDENTIFICATION SIGN
- SECONDARY RESIDENTIAL IDENTIFICATION SIGN

PROPOSED SIGNAGE PLAN

SCALE: 1"=100'
0 50 100 200 300 NORTH

SIGNAGE NOTES

GENERAL
ALL SIGNAGE SHOULD SERVE TO INFORM, IDENTIFY, AND DIRECT. EACH STRUCTURE WITHIN THE DEVELOPMENT SHALL BE CLEARLY IDENTIFIABLE, AND THE OVERALL DEVELOPMENT SHALL DEMONSTRATE A UNIFORM AND COMPREHENSIVE SIGN DESIGN PACKAGE. ALL SIGNAGE, FROM DEVELOPMENT SIGNS THROUGH INDIVIDUAL IDENTIFICATION SIGNAGE, SHOULD CONTRIBUTE TO THE AESTHETIC APPEAL OF THE DEVELOPMENT, YET REMAIN SECONDARY TO ARCHITECTURAL AND LANDSCAPE DESIGN ELEMENTS.

COORDINATION OF DESIGN
ALL SIGNAGE SHALL BE COORDINATED THROUGHOUT ALL PHASES OF THE DEVELOPMENT, SO AS TO GIVE THE APPEARANCE OF A UNIFIED, COHESIVE DEVELOPMENT AS WELL AS TO CONTRIBUTE TO THE OVERALL DESIGN THEME OF THE DEVELOPMENT.

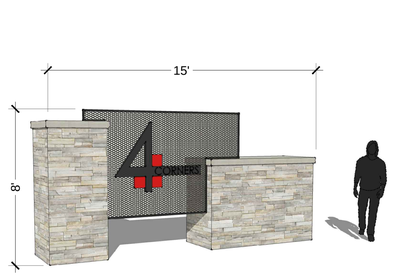
1. MONUMENT SIGNS SHALL NOT BE PLACED WITHIN THE SIGHT TRIANGLE OF ANY INTERSECTION OR ACCESS DRIVE .
2. MONUMENT SIGNS SHOULD BE LOCATED IN A PLANTER SETTING WITHIN A LANDSCAPED AREA.
3. TENANT SIGNAGE ON THE BACK/REAR ELEVATIONS OF STRUCTURES ADJACENT TO RESIDENTIALLY-ZONED PROPERTIES SHALL BE PROHIBITED. EXCEPT NON-ILLUMINATED DELIVERY OR DOOR IDENTIFICATION SIGNAGE NOT EXCEEDING TWO SQUARE FEET IN SIZE.
4. ALL SIGNAGE SHOULD BE SUFFICIENTLY VISIBLE FROM PUBLIC RIGHTS-OF-WAY SO AS TO PROVIDE MAXIMUM VISIBILITY AND NOTICE OF SITE ACCESS POINTS FOR BOTH PEDESTRIANS AND PERSONS TRAVELING IN MOTOR VEHICLES.
5. ALL ELEVATED SIGNS, WHETHER FREESTANDING OR BUILDING-MOUNTED, SHALL BE MOUNTED AT LEAST SEVEN FEET FROM GRADE, OR OTHERWISE PROVIDE ADEQUATE OVERHEAD CLEARANCE SO AS TO NOT ENDANGER PEDESTRIAN, BICYCLE OR VEHICULAR TRAFFIC.

JOINT TENANT AND PROJECT IDENTIFICATION SIGNS
ONSITE SIGNAGE IDENTIFYING OR ADVERTISING TWO OR MORE TENANTS IN THE SAME DEVELOPMENT OR SIGNS IDENTIFYING DEVELOPMENTS OR PROJECTS, INCLUDING BUILDING OR DEVELOPMENT NAMES ARE ALLOWED. PROJECT IDENTIFICATION SIGNS ARE A SIGN GIVING THE NATURE, LOGO, TRADEMARK, OR OTHER IDENTIFYING SYMBOL; ADDRESS; OR ANY COMBINATION OF THE NAME, SYMBOL AND ADDRESS OF A BUILDING, BUSINESS, DEVELOPMENT, OR ESTABLISHMENT ON THE PREMISES WHERE IT IS LOCATED ARE ALLOWED. IN ADDITION FOR MULTI - TENANT DEVELOPMENTS, ONE (1) JOINT TENANT OR PROJECT IDENTIFICATION WALL OR MONUMENT SIGN FOR EACH PUBLIC STREET OR HIGHWAY ABUTTING THE PROJECT IS PERMITTED.

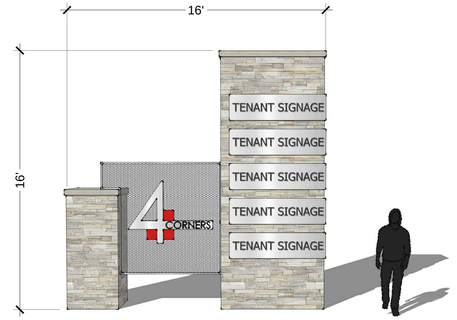
SIZE
PRINCIPLE AND SECONDARY COMMERCIAL MONUMENT SIGNS
THE MAXIMUM SIZE OF PRINCIPLE SIGN WALLS AND MONUMENTS SHALL BE LIMITED TO 150 SQUARE FEET PER SIGN FACE WITH A MAXIMUM HEIGHT OF SIXTEEN FEET. SECONDARY SIGN WALLS AND MONUMENTS SIGNS SHALL BE LIMITED TO 32 SQUARE FEET PER SIGN FACE WITH A MAXIMUM HEIGHT OF TEN FEET.

PRINCIPLE AND SECONDARY RESIDENTIAL IDENTIFICATION SIGNS
THE MAXIMUM HEIGHT FOR RESIDENTIAL SIGN WALLS AND MONUMENTS SHALL BE A MAXIMUM HEIGHT OF TEN FEET AND A GROSS SURFACE SIGNAGE AREA OF 100 SQUARE FEET. SECONDARY IDENTIFICATION SIGNS TO THE DEVELOPMENT ARE PERMITTED WITH A MAXIMUM HEIGHT OF EIGHT FEET AND A MAX GROSS SURFACE AREA OF 32 SQUARE FEET.

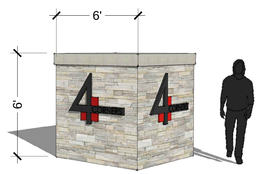
LOCATION
SETBACKS: 4' FROM BACK OF SIDEWALK OR 21' FROM FLOW LINE AND CANNOT BE PLACED WITHIN ANY SIGHT TRIANGLES UNLESS THE STRUCTURE IS UNDER 36" IN HEIGHT.



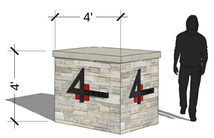
PRINCIPLE COMMERCIAL
MONUMENT OR WALL SIGN



JOINT TENANT AND
PROJECT IDENTIFICATION SIGN



PRINCIPLE RESIDENTIAL IDENTIFICATION SIGN



SECONDARY RESIDENTIAL IDENTIFICATION SIGN

NOTE: ALL DEPICTED SIGNAGE IS FOR PURPOSES OF INTENT AND MAY BE FURTHER REFINED IN SUBSEQUENT SUBMITTALS.

4 CORNERS erie - co

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checked by: pms
drawn by: klm
project #: 94762

SHEET 4 of 7

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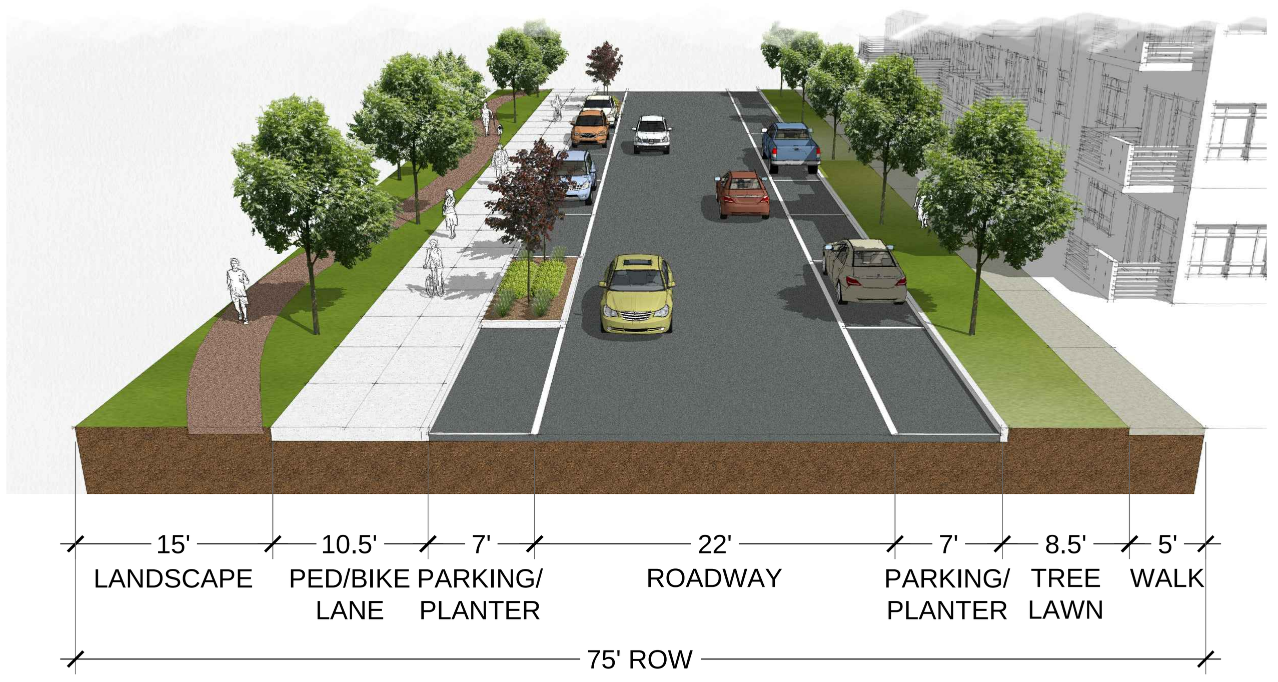
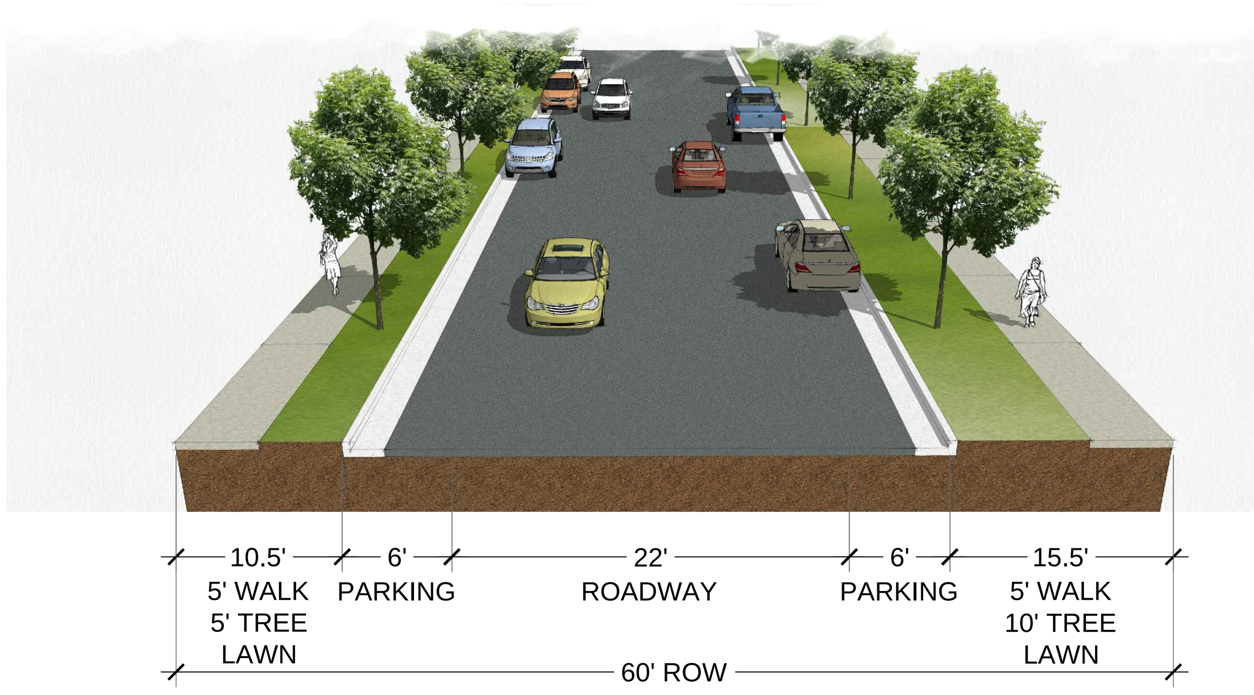
4 CORNERS SKETCH PLAN

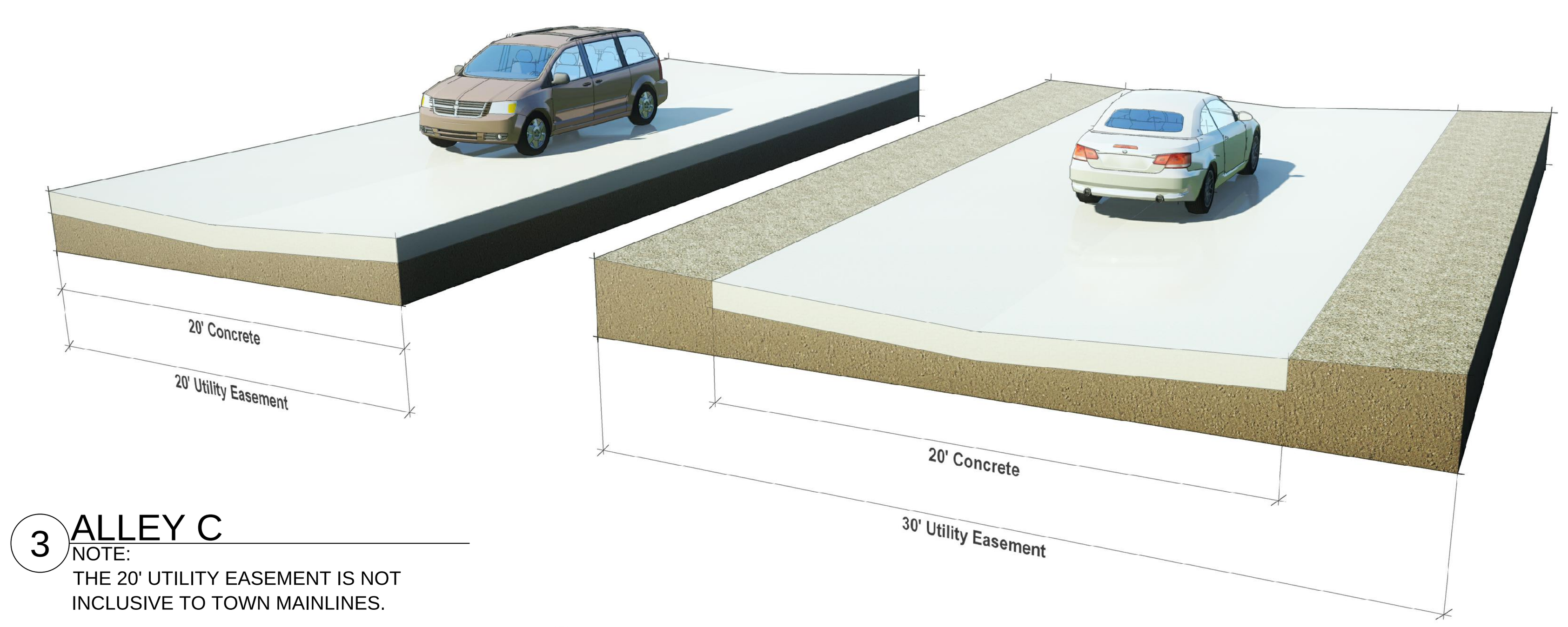
A Portion of the Southeast One-Quarter of Section 13, and A portion of the South One-Half Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.
46.613 ACRES - 68 LOTS - 13 TRACTS
SK000206-2015



1 STREET SECTION A (FOUR CORNERS PARKWAY & ERIE BOULEVARD)



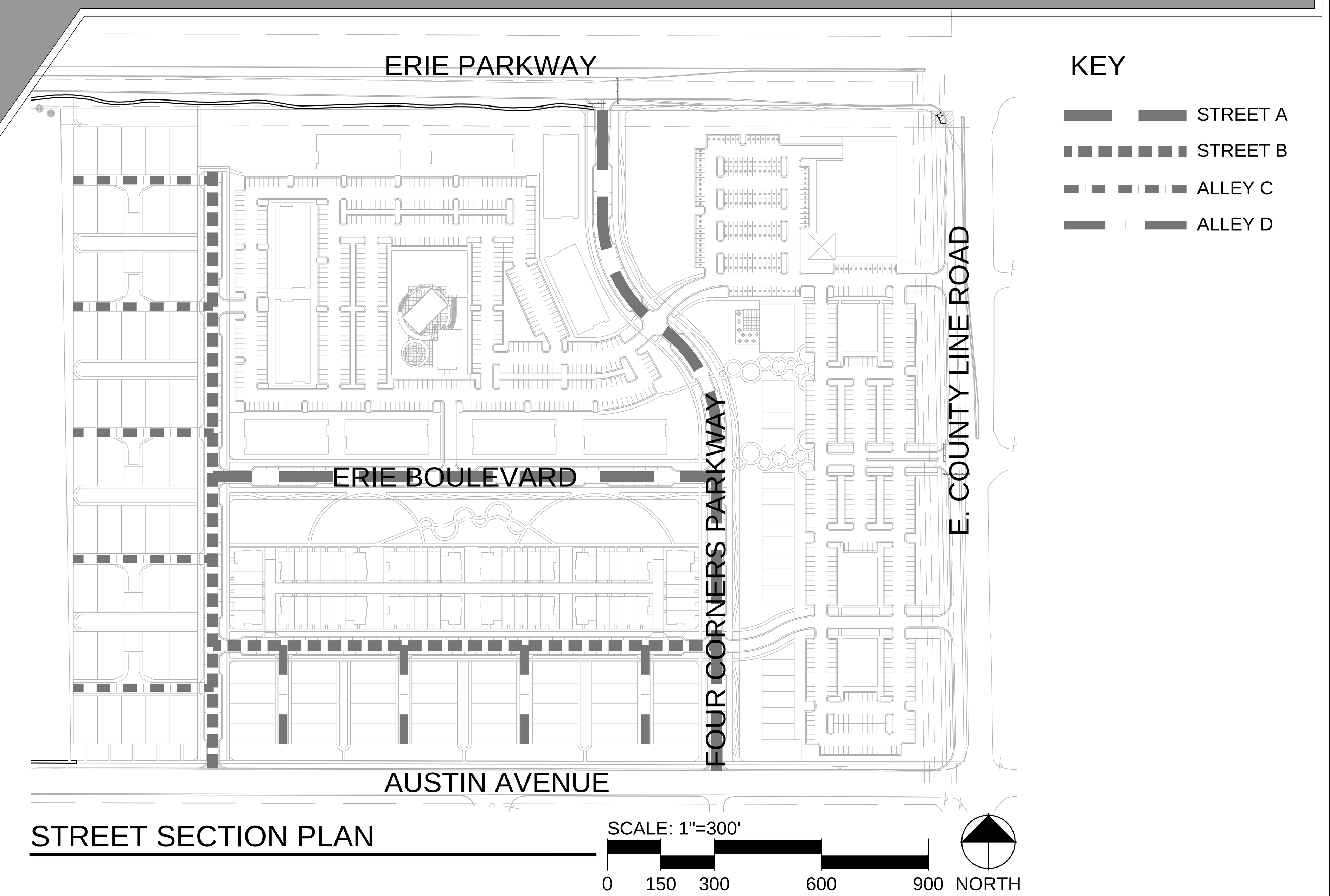
2 STREET SECTION B



3 ALLEY C

NOTE:
THE 20' UTILITY EASEMENT IS NOT INCLUSIVE TO TOWN MAINLINES.

4 ALLEY D



STREET SECTION PLAN

STREET SECTION NOTES:

1. ALL STREET TREES DEPICTED ON THE TYPICAL SECTIONS ARE ILLUSTRATIVE ONLY. LANDSCAPE PLANTINGS WILL BE DEFINED IN SUBSEQUENT SUBMITTALS.
2. ACCESS SHALL BE GRANTED OVER AND ACROSS ALL PAVED AREAS FOR EMERGENCY, PUBLIC AND PRIVATE VEHICULAR ACCESS.

4 CORNERS
erie - co

STREET SECTIONS

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checked by: pms
drawn by: klm
project #: 94762

4 CORNERS SKETCH PLAN

A Portion of the Southeast One-Quarter of Section 13, and A portion of the South One-Half Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.
46.613 ACRES - 68 LOTS - 13 TRACTS
SK000206-2015

LIGHTING

LIGHTING IS COMPRISED OF THE FOLLOWING CATEGORIES: PARKING LOT LIGHTING, STREET LIGHTING, BUILDING LIGHTING, PEDESTRIAN LIGHTING AND LANDSCAPE LIGHTING. LIGHTING SHALL CONSIST OF QUALITY FIXTURES THAT ARE BOTH APPEALING AND PROVIDE SAFETY FOR BOTH PEDESTRIANS AND AUTOMOBILES. LIGHTING SHALL COMPLIMENT THE BUILDING ARCHITECTURE, SIGNAGE, PARKING, LANDSCAPING AND PLAZA DESIGNS. FIXTURES ARE TO BE USED THAT REDUCE GLARE AND MINIMIZE IMPACT TO SURROUNDING PROPERTIES.

DESIGN NOTES & STANDARDS

- PARKING LOT LIGHTING IS TO BE OF A ZERO CUTOFF TYPE AND BE NO TALLER THAN 25 FEET IN HEIGHT. THE FIXTURES ARE TO BE IN THE STYLE, TYPE AND COLOR THAT COMPLIMENT THE ARCHITECTURE AND CHARACTER OF THE PROJECT.
- STREET LIGHTING IS TO BE ZERO OR PARTIAL CUTOFF TYPE AND BE NO TALLER THAN 15 FEET IN HEIGHT.
- BUILDING MOUNTED LIGHTING IS ENCOURAGED TO ENHANCE THE ADJACENT PEDESTRIAN AREAS AS WELL AS THE ARCHITECTURE ITSELF. LIGHTING MAY BE USED TO ENHANCE IMPORTANT ARCHITECTURAL FEATURES OF THE BUILDING IT SERVES.
- LANDSCAPE LIGHTING IS TO ENHANCE THE LANDSCAPE FEATURE IT SERVES, AS WELL AS TO FURTHER ENHANCE THE SAFETY OF THE PEDESTRIAN AREA.

NOTE: SITE DETAILS DEPICTED ARE FOR PURPOSES OF INTENT AND ARE SUBJECT TO CHANGE WITH SUBSEQUENT SUBMITTALS.

BENCH

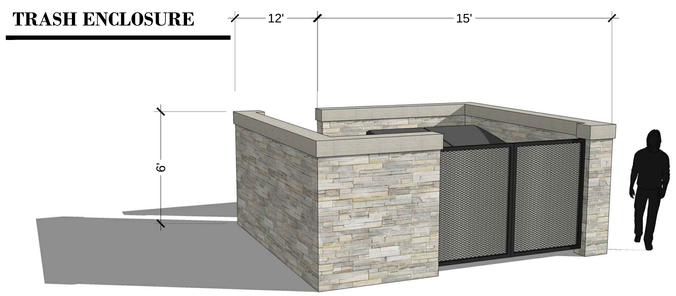
BICYCLE RACK

TRASH RECEPTACLE

SITE FURNITURE

THE DEVELOPMENT OF THIS PROMINENT SITE WILL SERVE TO STRENGTHEN AND UNIFY THE SURROUNDING AREA. SITE FURNISHINGS WILL ENHANCE AND UNIFY THE OVERALL PROJECT, CONTRIBUTING TO THE SENSE OF PLACE AND OVERALL CHARACTER. THE INTENT IS TO BENEFIT ALL USERS WITH A THEMATIC, SAFE AND PLEASANT ENVIRONMENT. A KIT-OF-PARTS HAS BEEN DEVELOPED AS A STARTING POINT FOR THE DESIGN OF THE SITE FURNISHINGS AND WILL HELP TO GUIDE THE SITE PLANNING PROCESS WHICH FOLLOWS THIS DOCUMENT. THE FURNISHINGS BEING SHOWN ARE INTENDED TO PORTRAY THE CHARACTER AND QUALITY OF FOUR CORNERS.

TRASH ENCLOSURE



CHARACTER

STYLE

SITE ELEMENTS

4 CORNERS
erie - co

SITE DETAILS

no	date	description
1	02.20.2015	1st Submittal
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3	06.25.2015	3rd Submittal

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project #: 94762

SHEET 6
6 of 7

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4 CORNERS SKETCH PLAN

A Portion of the Southeast One-Quarter of Section 13, and A portion of the South One-Half Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.

46.613 ACRES - 68 LOTS - 13 TRACTS

SK000206-2015

MULTI FAMILY VIEW

SINGLE FAMILY DETACHED VIEW

FOUR CORNERS PARKWAY

RETAIL PLAZA VIEW

PLACE MAKING

PEDESTRIAN ORIENTED

LINEAR PARK VIEW

COMMERCIAL PLAZA VIEW

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CONCEPTUAL CHARACTER SKETCHES

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4 CORNERS

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SHEET 7

7 of 7

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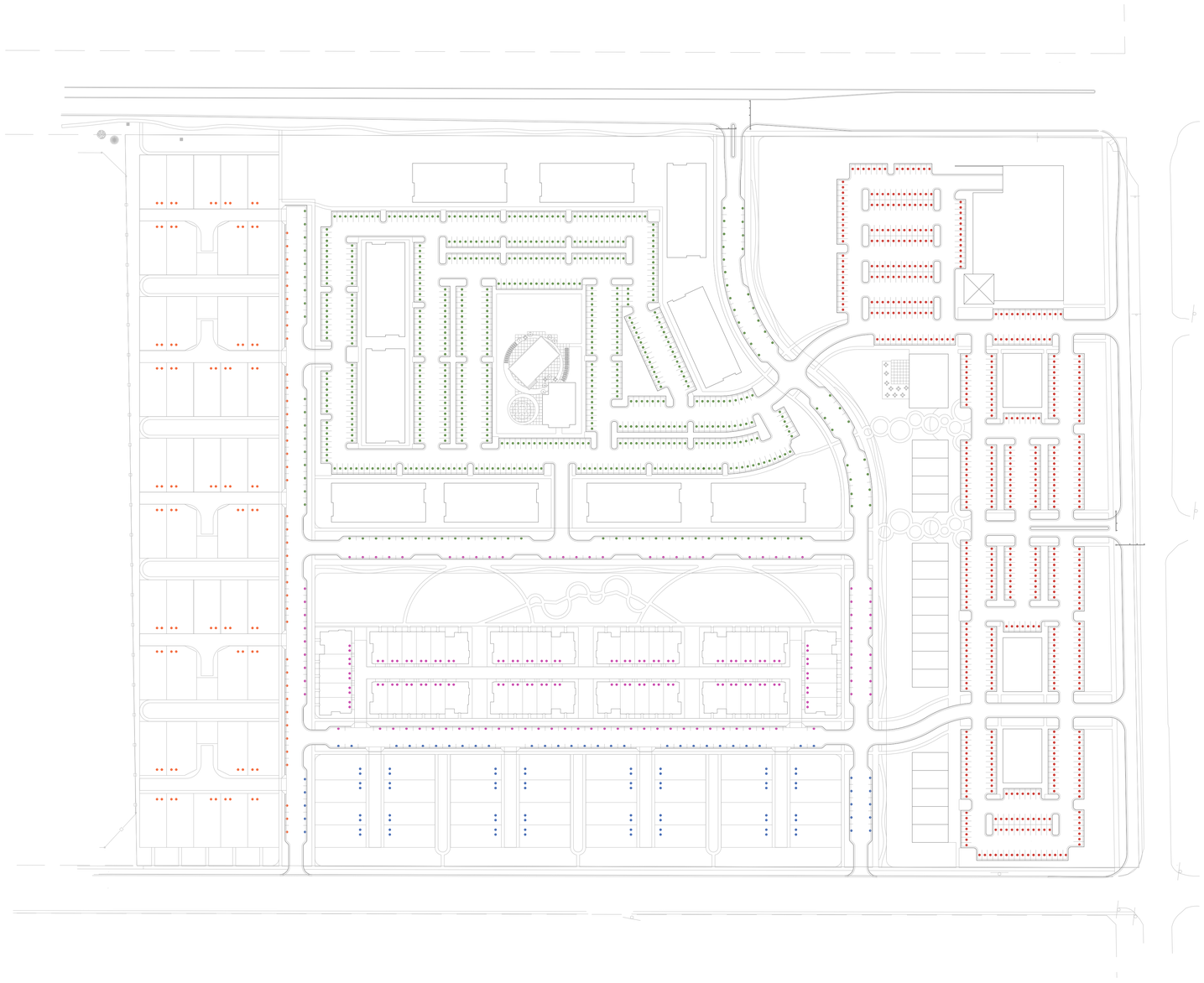
4 CORNERS SKETCH PLAN

SUPPLEMENTAL GRAPHIC

A Portion of the Southeast One-Quarter of Section 13, and A portion of the South One-Half Section 24, Township 1 North Range 69 West of the Sixth Principal Meridian, Town of Erie, County of Boulder, State of Colorado.

46.613 ACRES - 68 LOTS - 13 TRACTS

SK000206-2015



PARKING REQUIREMENT

33 PLEX

# OF BLDGS	UNIT TYPE	PARKING REQUIREMENT	
9	STUDIO	1.5 /DU	13.5
18	1-BEDROOM UNITS	1.5 /DU	27
3	2-BEDROOM UNITS	2 /DU	6
3	3-BEDROOM UNITS	2 /DU	6
	GUEST PARKING	1 /3DU	11
33	TOTAL REQ. PER BLDG		63.5

MF

# OF BLDGS	# OF UNITS	PARCEL	REQUIREMENT		PROVIDED OFF STREET	PROVIDED ON STREET
10	330		63.5 /BUILDING	635	582	84
10	330	TOTAL		635	666	

TOWNHOME

# OF UNITS	UNIT TYPE	REQUIREMENT		PROVIDED OFF STREET	PROVIDED ON STREET
52	TOWNHOME	2 /DU	104	104	0
	GUEST PARKING	1 /3DU	17	0	84
52	TOTAL		121	188	

SFA

UNITS	UNIT TYPE			OFF STREET	ON STREET
32	DUPLEX	2 /DU	64	64	0
	GUEST PARKING	1 /3DU	11	0	43
32	TOTAL		75	107	

SFD

# OF UNITS	UNIT TYPE	REQUIREMENT		PROVIDED OFF STREET	PROVIDED ON STREET
45	SFD	2 /DU	90	90	39
45	TOTAL		90	129	

COMMERCIAL

SF	PARCEL	REQUIREMENT		PROVIDED OFF STREET	PROVIDED ON STREET
32,650	NORTH	1 /200SF	163	174	0
54,000	SOUTH	1 /200SF	270	372	0
86,650	TOTAL		433	546	

	REQUIRED	PROVIDED
GRAND TOTAL	**1354**	**1636**

SCALE: 1"=100'

0 50 100 200 300 NORTH

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PARKING EXHIBIT

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1	02.20.2015	1st Submittal
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drawn by: klm
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CTL | THOMPSON INCORPORATED

PHASE I ENVIRONMENTAL SITE ASSESSMENT
ERIE PARCEL
SOUTHWEST OF ERIE PARKWAY AND EAST COUNTY LINE ROAD
ERIE, COLORADO

Prepared for:

RMCS, Inc.
950 Spruce Street, Suite 2A
Louisville, Colorado 80211

Attention: Justin McLure

Project No. DN47,332-200

September 22, 2014

1971 West 12th Avenue | Denver, Colorado 80204 | Phone: 303-825-0777 | Fax: 303-825-4252

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EXECUTIVE SUMMARY

This report presents the results of the Phase I Environmental Site Assessment (ESA) that was performed by CTL | Thompson, Inc. for RMCS, Inc. The Site consists of vacant land, situated immediately southwest of Erie Parkway and East County Line Road, in Erie, Colorado.

The Phase I ESA was conducted in general conformance with the methods and procedures described in the American Society for Testing and Materials (ASTM) E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

The Site and much of the surrounding area appears to have remained in agricultural use since at least 1937. The only prior known use of the Site was for the Marfel and Pinnacle coal mine shafts. The dates of use for the Marfel Mine shaft are 1897-1904 with no dates listed for the Pinnacle Mine shaft. The areas of at least two mine shafts are visible in the 1937 aerial photograph. The historic presence of mine shafts at the Site, presents the potential for the presence of methane in the subsurface soils above the mine shaft areas. We believe this is a REC for the site which can be assessed through soil gas testing.

This executive summary does not contain all the information that is found in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.

1.0 INTRODUCTION

This report was prepared by CTL | Thompson, Inc. (CTL) for RMCS, Inc and presents the results of the Phase I Environmental Site Assessment (ESA) for the Erie Parcel. The Phase I ESA was conducted in general accordance with CTL's Proposal No. DN 14-0290 and subsequent authorization by Mr. Justin McLure on August 21, 2014.

1.1 Purpose

The purpose of the Phase I ESA was to identify Recognized Environmental Conditions (REC), to the extent feasible, pursuant to the methods and procedures described in the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessments, E 1527-13.

A REC is defined as the presence or likely presence of hazardous substances or petroleum products on a site under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into structures on the site or into the ground, groundwater, or surface water of the Site. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

ASTM Standard E1527-13 also has separate definitions for past conditions that would otherwise be considered a REC but have been addressed to the satisfaction of the applicable regulatory agencies and would either allow for generally unrestricted use of the Site (referred to as a Historic Recognized Environmental Condition, or

HREC) or for use of the Site with various restrictions (referred to as a Controlled Recognized Environmental Condition, or CREC).

1.2 Scope of Services

The scope of services for this assessment consisted of a records review, a site reconnaissance, historical research, interviews, and documentation of findings in a report.

1.3 Limitations

This Phase I ESA was prepared in general accordance with ASTM Standard E 1527-13. There may be additional environmental issues present at the site that are outside the scope of this practice that include, but are not limited to, the following:

- Asbestos-containing materials;
- Radon;
- Lead-based paint;
- Lead in drinking water;
- Cultural and historic resources;
- Mold and fungi;
- Industrial hygiene;
- Indoor air quality;
- Health & safety;
- Ecological resources;
- Endangered species;
- Biological or infectious agents and pathogens;
- Wetlands;
- Jurisdictional waters of the U.S;
- Regulatory compliance;
- High voltage power lines; and,
- Mine subsidence.

CTL provided an opinion based upon the condition of the Site on the day it was observed and a review of existing and reasonably ascertainable regulatory records and historical information. Our scope did not include chemical testing of soil, groundwater, air, or building materials. The opinion, conclusions, and recommendations of this report are not intended to be used or relied upon by a third party to this Agreement. With the written consent of our client, CTL may be available to contract with other parties to provide an opinion or conduct additional environmental assessment services. Due to latent conditions and other contingencies which may become evident in the future, the current assessment does not result in any guarantee the subject site is free and clear of hazardous materials. Should additional surface, subsurface or chemical data become available, the conclusions and recommendations contained in this report shall not be considered valid unless the data is reviewed and the conclusions of this report are modified or approved in writing by our firm.

We believe that this investigation was conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the locality of the project. No other warranty, express or implied, is made.

2.0 SITE DESCRIPTION AND LOCATION

2.1 Location and Legal Description

The “Site” consists of 45.83 acres, located southwest of the intersection of Erie Parkway and East County Line Road, in Erie, Colorado. The Site is legally described as 47.48 ACS NEI/4 SEI/4 24-1N-69 LESS OIL GAS & HYDROCARBONS LESS POR TO CITY and is generally located in Section 24, Township 1 North, Range 69 West of the 6th Principal Meridian, in Boulder County, Colorado. The Site location and plan are shown on Figure 1 (Area Map) and Figure 2 (Site Plan).

2.2 General Description of Site and Improvements

The Site consists of vacant land. A photographic record of our site reconnaissance is presented in Appendix A.

2.3 General Uses of Adjoining Properties

The Site is located in a vacant area of Erie, Colorado. The surrounding properties consist of residential properties, vacant land and commercial businesses including a gasoline service station. Additional details regarding our observations of adjacent properties are presented in Section 7.4 of this report.

3.0 USER AND OWNER PROVIDED INFORMATION

Mr. David Waldner, President of RMCS, completed the user questionnaire. The Site is currently unoccupied.

3.1 Environmental Liens/Title Records

An environmental lien is a charge, security, or encumbrance upon title to a property to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of hazardous material or petroleum products upon a property. Mr. Waldner is not aware of any existing environmental liens associated with the Site.

RMCS provided CTL with title records available from Commonwealth Land Title Insurance Company, Commitment No. 451-H0403418-036-CN3 dated May 29, 2014. Based on a cursory review of the title exceptions, there were no obvious indications of environmental liens or AULs associated with environmental contamination. It should be noted that CTL's practitioners are not title professionals or attorneys, and our review of

title documents does not necessarily eliminate the user's ASTM requirement to perform a search for environmental liens and AULs.

3.2 Activity and Use Limitations

Environmental AULs are legal or physical restrictions or limitations on the use of, or access to, a Site or facility to: 1) reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater on the property, or 2) prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions may include engineering controls, institutional controls, or land use restrictions. Mr. Waldner was not aware of recorded environmental AULs related to the Site.

3.3 Specialized Knowledge

Mr. Waldner was not aware of specialized knowledge or experience related to previous environmental activities on the Site, with the exception of coal mining operations occurring around 1900.

3.4 Valuation Reduction for Environmental Issues

Mr. Waldner was not aware of valuation reduction of the Site because of environmental issues.

3.5 Commonly Known or Reasonably Ascertainable Information

Mr. Waldner was not aware of commonly known or reasonably ascertainable information regarding environmental issues related to the site vicinity.

3.6 Reason for Performing a Phase I ESA

RMCS requested a Phase I ESA as part of due diligence prior to acquisition of the Site.

3.7 Previous Environmental Site Assessments

A previous Phase I Environmental Site Assessment completed by Western Environment and Ecology, Inc. and dated March 27, 2006 (Project Number 422-001-02) was provided to CTL. The report mentions the Marfel and Pinnacle mines; however, no RECs are identified with the Site. The report is included as Appendix E.

4.0 RECORDS REVIEW

CTL reviewed existing sources listed in the **REFERENCES** section to assess the soils, geologic and hydrogeologic conditions of the general vicinity of the Site.

4.1 Physiography

The Site is located on relatively flat land with a gentle slope to the east, as presented on the topographic map (Figure 1). The elevation of the Site ranges from approximately 5,110 to 5,070 feet. The predominant surface water feature in the vicinity of the Site is the Thomas Reservoir located approximately 1/2 mile to the west.

4.2 Geology and Soils

CTL conducted a Geotechnical Investigation for the Site (Project No. DN47,332-115, report dated September 10, 2014). The soils encountered at the property generally consist of sand and clay soils to depths of 3 to 24.5 feet below ground surface (bgs). Bedrock consisting of weathered claystone, with some thin beds of sandstone and

lignite, was encountered beneath these soils to depths up to 28 feet bgs. The geotechnical report should be read for further details on soils.

4.3 Groundwater

Groundwater was encountered at depths ranging from 11 to 27 feet bgs. During the geotechnical investigation a total of nine temporary monitoring wells were installed to measure groundwater elevation and determine flow direction. The general flow direction was determined to be to the east across the Site which conforms with the topographic slope as well.

4.4 Water Wells

Water wells were identified through the Colorado Division of Water Resources online water well permit database. The database did not indicate the presence of wells located on the Site. No well structures were observed during our Site visit.

4.5 Oil/Gas Wells

Records regarding oil/gas wells were obtained from the Colorado Oil and Gas Conservation Commission (COGCC) online database. The database did not indicate the presence of oil or gas wells at the Site; however there was historically one located 300 feet to the south in an area that now consists of residential development.

4.6 Physical Setting Analysis of Migration of Hazardous/Petroleum Substances

A hypothetic spill of a hazardous or petroleum substance on the Site would be expected to migrate along the ground surface to the east eventually arriving at East County Line Road. Off-Site surface spills on the adjoining parcels to the west appear to have the highest potential to migrate on-Site. Based on local topography, we estimate

groundwater generally flows to the east. Sources of contamination to groundwater beneath the Site, if present, would most likely be located to the west.

5.0 HISTORICAL USE INFORMATION

5.1 Historical Aerial Photographs and Topographic Maps

Historical aerial photographs of the Site and surrounding area were reviewed for 1937, 1967, 1974, 1985, 1993, 2002 and 2013; a copy of the 2013 photograph is presented in Appendix B. USGS topographic maps were reviewed for 1965 revised 1994. An interpretation of the aerial photographs and maps is presented, as follows:

- 1937: The Site is partially developed with cultivated farmland on the western portion and at least two potential mine shaft areas present on the eastern portion. Erie Parkway is visible to the north and East County Line Road is visible to the east. The surrounding area is either vacant or farmland.
- 1967-74: The entire Site appears to be developed as cultivated farmland.
- 1985: The Site remains generally unchanged; however, oil/gas wells are visible to the north and south of the Site. The building for Atomic Forge & Welding is now visible to the southwest of the Site.
- 1993: The oil/gas wells are no longer present.
- 2002: Residential development is present to the northwest and west of the Site. The area south of the Site appears to be graded in preparation for development.
- 2013: Additional residential development is present to the west and south and the St. Luke Orthodox Church is also located to the south. Walgreens and Stop N Save are the now located to the east. The Site generally appears as it did at the time of the Site visit.

5.2 Sanborn Fire Insurance Maps

Sanborn fire insurance maps were a tool used by the fire insurance industry to evaluate property risk. The maps often show details of historic dwellings, commercial buildings, and factories, indicate property uses and addresses, and show locations of items such as wells, cisterns, and fuel storage tanks. Sanborn Fire Insurance Map coverage was not available for the Site and surrounding area.

5.3 Assessor Records

We reviewed Boulder County Assessor online files for the Site. The Site is owned by Erie Commercial Venture, LLP. There are no records of buildings. The listed area of the site is 45.83 acres.

6.0 REGULATORY AGENCY RECORDS

Regulatory agency records were provided by GeoSearch. The report, dated August 26, 2014, is presented in Appendix C.

6.1 Summary of Findings

This section discusses those findings which are located on the Site, topographically up-gradient of the Site, or which otherwise may present an environmental concern to the Site. These findings are summarized in Table I. All other listings not in Table I are not believed to be a REC for the Site based on regulatory status, distance, and/or location from the Site. In addition to the findings listed in Table I, there were three unlocatable findings identified in the database: one for an underground storage tank facility (UST) and two for historic leaking underground storage tank trust fund facilities (LUSTTRUST). No evidence of an historic UST was discovered during our assessment. The Site has only been used for agricultural and coal mining purposes, therefore, we do not believe these listings present a REC to the Site.

TABLE I

Summary of Selected Nearby Regulatory Agency Findings

Findings	Distance and Estimated Topographic Location	Search Radius											
		1 Mile		½ Mile					¼ Mile				
		National Priority List (NPL)	RCRA CORRACTS	RCRA Treatment, Storage, Disposal (TSD)	CERCLIS/NFRAP	Colorado Voluntary Cleanup List (VCL)	Solid Waste	Leaking Storage Tank (LST)	Registered Tanks (UST/AST)	Institutional Controls/Engineering Controls (AUL)	Spills (ERNS)	RCRA Generator	Other HW
Stop N Save 681 Mitchell Way	~300 feet east Down-gradient								X				

6.1.1 Underground Storage Tank Facilities (UST)

The Oil and Public Safety Division of the Colorado Department of Labor and Employment maintains this list of underground storage tank facilities. There is one listing for the three underground storage tanks that are located at the Stop N Save service station approximately 300 feet to the east. Due to the topographic location of these tanks we do not believe that it presents a REC to the Site; however it is mentioned here due to proximity.

6.2 Local Government Records

We sent a request to the Boulder County Department of Health and Environment for information pertaining to hazardous material spills and releases on the Site. Ms. Susan Martino responded via email on September 11, 2014. There was one record of 10 gallons of crude oil being spilled at 2601 East County Line Road in October 1993.

The impacted soil was removed and we do not believe this presents a REC to the Site. Additionally Boulder County Records show eight mine listings for the area, of which the Marfel is known to be on the site. The majority of these listings are north of the Site according to USGS maps.

We contacted Mountain View Fire Protection District for information of hazardous material incidents on the Site. We received a response via telephone on September 5, 2014 from Ms. LuAnn Penfold stating that they have no records associated with the Site.

7.0 SITE RECONNAISSANCE

The following section discusses observations made during our Site reconnaissance.

7.1 Methodology and Limiting Conditions

Mr. Trevor M. Branch conducted a Site visit on August 29, 2014. The Site was accessed by walking. A photographic record of the Site reconnaissance is presented in Appendix A.

7.2 Description of Site Structures and Roads

No roads or structures are present on the Site.

7.3 Site Observations

During our reconnaissance, we specifically looked for obvious evidence of the Site features listed in Table II. Table II lists features typically observed outside of Site structures. An “X” located within each table indicates that the feature was readily

observable. Those features which were observed on the Site are discussed in further detail within the following subsection(s).

TABLE II
EXTERIOR SITE FEATURES

	Aboveground Storage Tanks		Stained Soil and/or Pavement
	Air Emissions Sources	X	Stockpiles of Soil or Debris
	Cultivated Land/Crops		Stressed Vegetation
	Drains, Sumps, Pits		Surface Water, Streams, Ponds, Lagoons
	Hazardous Material Storage		Transformers (Potential PCB)
	High Power Transmission Lines		Underground Storage Tanks
	Natural Gas Pipelines		Unidentified Piping
	Odors		Unidentified Substance Containers
	Petroleum Pipelines		Vehicle Maintenance Areas
	Physical Irregularities		Waste Water Discharge
	Placed Fill or Imported Soils		Waste Treatment Processes
	Railroad Lines		Wells (Agricultural, Water Supply)
	Septic Systems or Leach Fields		Wells (Monitoring)
	Solid Waste or Disposal Areas		Wells (Oil or Natural Gas)

7.3.1 Stockpiles of Soil or Debris

We observed some of the spoil materials that had been uncovered during test pits excavated as part of the geotechnical investigation. From the surface, dark stained soil, brick and fragments of coal (likely bituminous or lignite) were visible in the two excavated areas.

7.4 Review of Adjacent Properties

General observations of properties adjacent to the Site were performed in conjunction with on-site observations made on August 29, 2014. Properties adjacent to the Site are described below, based on outdoor observations from the Site or nearby public streets. The surrounding properties generally consist of residential subdivisions.

- North: The Site is bounded by Erie Parkway with vacant land beyond.
- East: The Site is bounded by East County Line Road with commercial business including the Stop N Save service station located beyond.
- South: The Site is bounded by Austin Avenue, with residential subdivisions and the St. Luke Orthodox Church beyond.
- West: The Site is bounded by residential development.

Observation of adjacent properties did not reveal obvious visual indications of environmental concern. We did not observe evidence of landfills, lagoons, pits, or other waste treatment or disposal operations; underground storage tanks, spills, releases, or discharge of hazardous material; with the exception of the underground storage tanks located at the Stop N Save which is discussed in Section 6.1.

8.0 INTERVIEWS

8.1 Owner, Site Manager and/or Occupants

The owner and manager of the Site is Erie Commercial Venture, LLLP. The owner's representative is Mr. Sid Overton. CTL spoke with Mr. Overton by phone on September 12, 2014. Mr. Overton has been associated with the Site since 1970 and the only known use of the property during that time has been agricultural production of wheat and hay. He was aware of the historic presence of coal mine shafts on the property as they have had previous preliminary mine subsidence and geotechnical investigations completed at the Site. Mr. Overton was not aware of any onsite or nearby environmental concerns.

9.0 DEVIATIONS

9.1 Exceptions and Deletions

ASTM Standard E 1527-13 for Phase I Environmental Site Assessments, Section 8.3.2, states that "all obvious uses of the Site shall be identified from the present, back to the Site's obvious first developed use, or back to 1940, whichever is earlier." The term "developed use" includes agricultural uses (i.e., cultivated land / agricultural crops) and placement of fill. In our opinion, livestock rangeland is not a developed use.

The historical documentation for this assessment went back to 1937 on the basis of an historical aerial photograph; which showed the Site developed with cultivated farmland and coal mine shafts. Thus, the historical documentation was not fully satisfied for the ASTM standard.

It is the opinion of CTL that obtaining earlier historical information would not be sufficiently useful, reasonably ascertainable, or change the likelihood for the presence of a REC on the Site.

9.2 Data Gaps

Based on the information presented in this report, we do not believe that there are significant data gaps which would affect our ability to identify recognized environmental conditions associated with the Site.

10.0 FINDINGS AND OPINION

10.1 Summary of Site Historical Use

The Site is currently being used for agricultural purposes and is primarily covered in wheat. The Site was historically located above the Marfel and Pinnacle coal mine

shafts that were in use before 1937 and abandoned prior to 1967. After the closure of mining activities, the Site was used primarily for agricultural purposes. Due to historic location of the onsite coal mine shafts, there is the potential for methane to migrate to subsurface soils in the areas immediately in and around the mine shafts. We believe this presents a current REC to the Site.

10.2 Nearby Environmental Concerns

There is a service station with gasoline and diesel underground storage tanks that is located approximately 300 feet to the east of the Site. Due to its downgradient location we do not believe this presents a REC to the Site.

10.3 Storm Water Discharges Associated with Construction Activity

Under current Federal/state regulations, construction Sites that disturb one acre, or are part of a larger development in which total disturbed area is equal to or greater than one acre, are required to apply for a General Permit for Storm Water Discharges Associated With Construction Activity (General Permit) from the Colorado Department of Public Health and Environment (CDPHE). Some Municipal Separate Storm Sewer Systems (MS4s) also require additional permitting for construction Sites within their jurisdiction.

The General Permit application must be submitted to the CDPHE at least ten days prior to the start of construction activities. The General Permit requires a Storm Water Management Plan (SWMP) to be developed, implemented, and modified as needed from before commencement of construction activities until final stabilization is complete and a Notice of Termination has been submitted to the CDPHE. Furthermore, the General Permit requires that Site inspections be performed at least every 14 calendar days and within 24 hours following a storm event that causes significant movement of sediment on-Site. The local MS4 may require more frequent inspections. Complete

and current storm water management plans should be kept on-Site. CTL can assist with your storm water management and compliance needs, if desired.

11.0 CONCLUSIONS

We have performed a Phase I Environmental Site Assessment (ESA) in general conformance with the scope and limitations of ASTM Practice E 1527-13 of the Erie Parcel, the Site. Any exceptions to, or deletions from, this practice are described in Section 9.1 of this report. We did not find any evidence of recognized environmental conditions with the exception of the following:

- The historic presence of two mine shaft locations encountered during the CTL geotechnical investigation (Project No. DN47332-115) presents the potential presence for methane migration from coal mine shafts. This presents a REC to the areas in and immediately around the mine shafts.

We understand that additional investigation into mine shaft locations is being recommended and that no residences are recommended to be placed over historic mine shaft locations. Additional characterization of subsurface soils and methane testing should be considered prior to any development in the vicinity of the mine shafts.

12.0 QUALIFICATIONS

This Phase I ESA was supervised by, and the report reviewed by, Mr. Matthew Wardlow, a licensed Professional Engineer (P.E.) registered in the State of Colorado. Mr. Wardlow has performed or reviewed over 1,000 Phase I ESAs in the State of Colorado, and has been practicing within the local environmental consulting profession for at least 15 years. The resumes of the individuals conducting this Phase I ESA are included in Appendix F.

I, Mr. Wardlow, declare that, to the best of my professional knowledge and belief, I meet the definition of an Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject Site. I have developed and performed all appropriate inquiries in general conformance with the standards and practices set forth in 40 CFR Part 312.

We believe that this ESA was conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the locality of the project. No warranty, express or implied, is made.

If we can be of further service in discussing the contents of this report, please call.

CTL | THOMPSON, INC.

Trevor M. Branch, E.I.T.
Environmental Staff Engineer

Reviewed by:

Matthew L. Wardlow, P.E.
Environmental Department Manager

TMB:MLW/tmb/ot
(3 copies)

Via e-mail: justinrmcs@gmail.com

REFERENCES

Colorado Aerial Photo Service, Aerial Photographs, Stereo Pairs, from 1937, 1967, 1974, and 1985.

Colorado Oil and Gas Conservation Commission, online Oil/Gas Well Permit Database, http://www.oil-gas.state.co.us

CTL | Thompson, Inc., Geotechnical Investigation for Erie Parcel, Project No. DN47,332-115, report dated September 10, 2014.

GeoSearch Report. (Job #87962, dated August 26, 2014).

http://maps.bouldercounty.org/boco/propertyviewer/

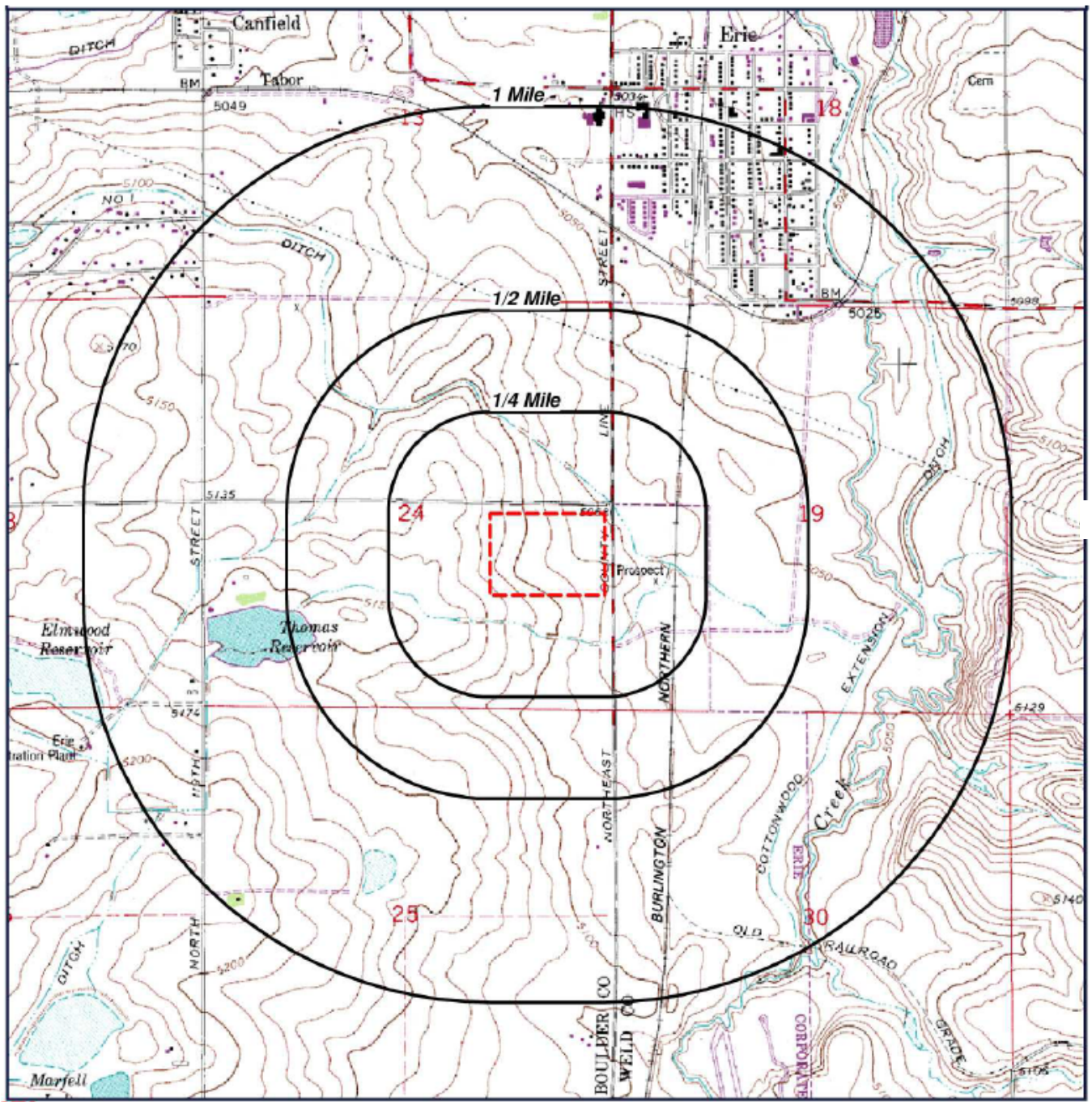
http://water.state.co.us/pubs/aquamap.asp

Environmental Questionnaire, Mr. David Waldner, RMCS, completed September 11, 2014

U.S. Geological Survey Topographic Map, Erie Quadrangle, Colorado (1965 revised 1994).

Google Earth©, Aerial Photography 1993, 2002 and 2013

Interview by phone with Mr. Sid Overton of Erie Capital Venture, LLLP on September 12, 2014



Source:
U.S.G.S. Topographic Map
Erie Quadrangle, Colorado
1994

Scale:
1" ~ 2,000'

RMCS,INC
ERIE PARCEL
CTL | PROJECT NO. DN47,332-200

Topographic Area Map
Fig. 1

Approximate locations of former coal mine entrances

APPENDIX A
SITE PHOTOGRAPHS

Description: View east of Site
Direction: East

Description: View north of Site
Direction: North

Description: View south of Site
Direction: South

Description: View of piece of lignite on surface
Direction: South

CTL | THOMPSON

SITE PHOTOGRAPHS

Erie Parcel
August 29, 2014
CTL Project No. DN47332-200

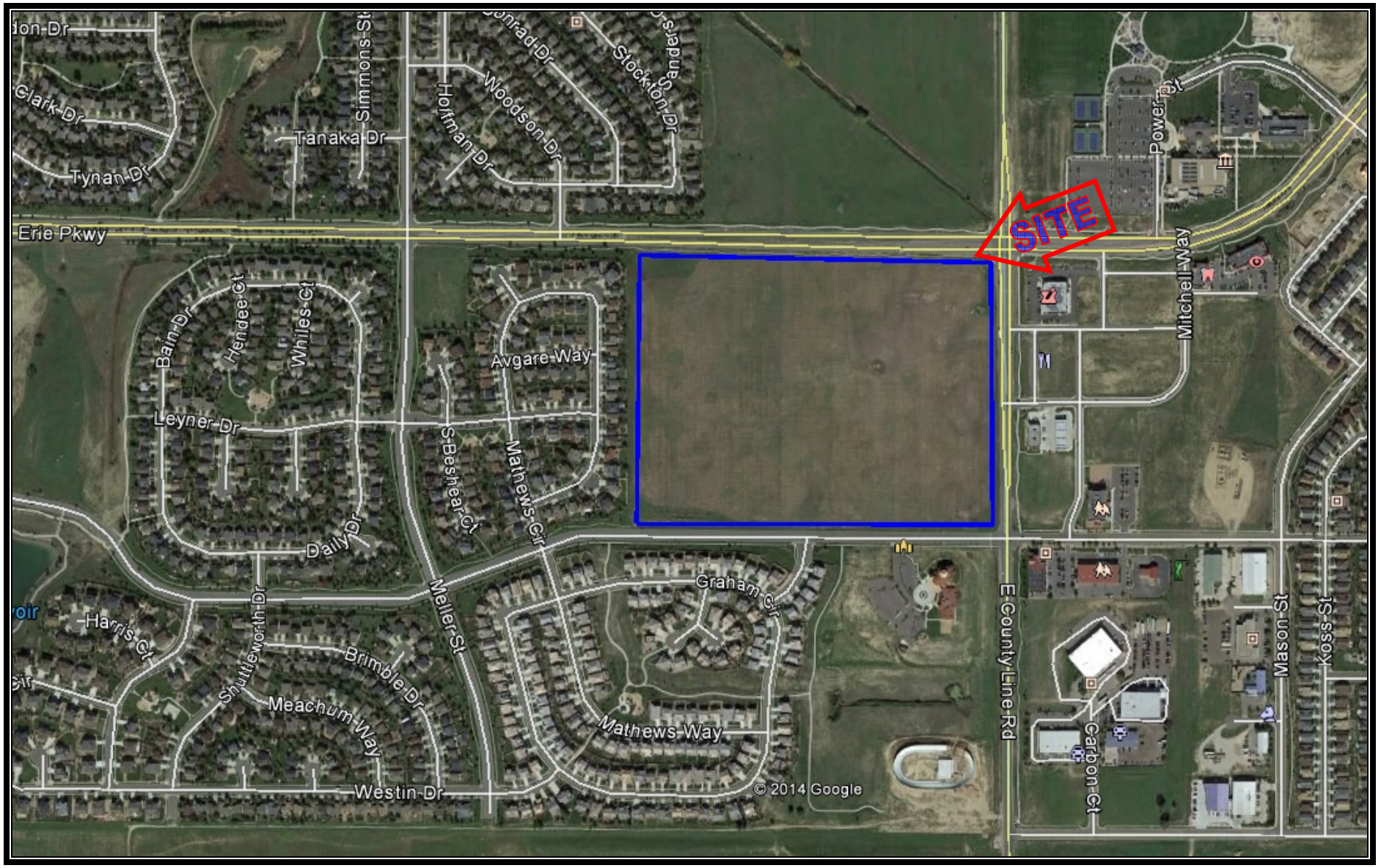
Description: View west of Site
Direction: West

Description: View across Site
Direction: West

Description: Small pile of fill/concrete debris
Direction: N/A

Description: Looking south of Site
Direction: South

APPENDIX B
AERIAL PHOTOGRAPH



CTL | T PROJECT NO. DN-47,332-200

2013 AERIAL PHOTOGRAPH
Approximate Site Location

APPENDIX C
GEOSEARCH REPORT

GeoSearch
On time. On target. In touch.™

Radius Report

Satellite view

Target Property:

Erie Parcel

ERIE, Boulder County, Colorado 80516

Prepared For:

CTL Thompson- Denver

Order #: 39912

Job #: 87962

Project #: DN47332.000-200

Date: 08/26/2014

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Disclaimer

This report was designed by GeoSearch to meet or exceed the records search requirements of the All Appropriate Inquires Rule (40 CFR §312.26) and the current version of the ASTM International E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process or, if applicable, the custom requirements requested by the entity that ordered this report. The records and databases of records used to compile this report were collected from various federal,state and local governmental entities. It is the goal of GeoSearch to meet or exceed the 40 CFR §312.26 and E1527 requirements for updating records by using the best available technology. GeoSearch contacts the appropriate governmental entities on a recurring basis. Depending on the frequency with which a record source or database of records is updated by the governmental entity, the data used to prepare this report may be updated monthly, quarterly, semi-annually, or annually.

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Target Property Summary

Erie Parcel
ERIE, Boulder County, Colorado 80516

USGS Quadrangle: ***Erie, CO***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-105.06113, 40.036304), (-105.06113, 40.036304), (-105.06113, 40.033436), (-105.05581, 40.033436), (-105.05581, 40.036331), (-105.06113, 40.036331), (-105.06113, 40.036304)

County/Parish Covered:
Boulder (CO) , Weld (CO)

Zipcode(s) Covered:
Lafayette CO: 80026
Erie CO: 80516

State(s) Covered:
CO

****Target property is located in Radon Zone 1.***
Zone 1 areas have a predicted average indoor radon screening level greater than 4 pCi/L (picocuries per liter).

Database Findings Summary

FEDERAL LISTING

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	0.2500
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	0.2500
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSCO	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR08	0	0	0.2500
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	0.2500
NO LONGER REGULATED RCRA GENERATOR FACILITIES	NLRRCRAG	0	0	0.2500
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR FACILITIES	RCRAGR08	2	0	0.2500
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR FACILITIES	RCRANGR08	1	0	0.2500
RCRA SITES WITH CONTROLS	RCRASC	0	0	0.2500
TOXICS RELEASE INVENTORY	TRI	0	0	0.2500
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION & LIABILITY INFORMATION SYSTEM	CERCLIS	0	0	0.5000
NO FURTHER REMEDIAL ACTION PLANNED SITES	NFRAP	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
OPEN DUMP INVENTORY	ODI	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000

SUB-TOTAL		3	0	

Database Findings Summary

STATE (CO) LISTING

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
ABOVEGROUND STORAGE TANK FACILITIES	AST	0	0	0.2500
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	0.2500
ENVIRONMENTAL REAL COVENANTS LIST	COVENANTS	0	0	0.2500
HAZARDOUS WASTE SITES- GENERATOR	HWSG	0	0	0.2500
SPILLS LISTING	SPILLS	0	0	0.2500
UNDERGROUND STORAGE TANK FACILITIES	UST	1	1	0.2500
HISTORICAL SOLID WASTE LANDFILLS	HISTSWLF	0	0	0.5000
HAZARDOUS WASTE SITES- TREATMENT, STORAGE & DISPOSAL	HWSTSD	0	0	0.5000
LEAKING STORAGE TANK FACILITIES	LST	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS TRUST FUND SITES	LUSTTRUST	0	2	0.5000
METHANE GAS STUDY SITES	METHANESITES	0	0	0.5000
SOLID WASTE FACILITIES	SWF	0	0	0.5000
VOLUNTARY CLEANUP AND REDEVELOPMENT PROGRAM SITES	VCRA	0	0	0.5000
HAZARDOUS WASTE SITES- CORRECTIVE ACTION	HWSCA	0	0	1.0000
SUPERFUND SITES	SF	0	0	1.0000
SUB-TOTAL		1	3	

Database Findings Summary

LOCAL LISTING

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
WELD COUNTY SOLID WASTE FACILITIES	WCSWF	0	0	0.5000
SUB-TOTAL		0	0	

Database Findings Summary

TRIBAL LISTING

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR08	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR08	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	
TOTAL		4	3	

Locatable Database Findings

FEDERAL LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
CDL	0.2500		0	0	NS	NS	NS	0
EC	0.2500		0	0	NS	NS	NS	0
ERNSCO	0.2500		0	0	NS	NS	NS	0
HISTPST	0.2500		0	0	NS	NS	NS	0
HMIRSR08	0.2500		0	0	NS	NS	NS	0
LUCIS	0.2500		0	0	NS	NS	NS	0
NLRRCRAG	0.2500		0	0	NS	NS	NS	0
RCRAGR08	0.2500		0	2	NS	NS	NS	2
RCRANGR08	0.2500		0	1	NS	NS	NS	1
RCRASC	0.2500		0	0	NS	NS	NS	0
TRI	0.2500		0	0	NS	NS	NS	0
BF	0.5000		0	0	0	NS	NS	0
CERCLIS	0.5000		0	0	0	NS	NS	0
NFRAP	0.5000		0	0	0	NS	NS	0
NLRRCRAT	0.5000		0	0	0	NS	NS	0
ODI	0.5000		0	0	0	NS	NS	0
RCRAT	0.5000		0	0	0	NS	NS	0
DNPL	1.0000		0	0	0	0	NS	0
NLRRCRAC	1.0000		0	0	0	0	NS	0
NPL	1.0000		0	0	0	0	NS	0
PNPL	1.0000		0	0	0	0	NS	0
RCRAC	1.0000		0	0	0	0	NS	0
RODS	1.0000		0	0	0	0	NS	0
SUB-TOTAL			0	3	0	0	0	3

Locatable Database Findings

STATE (CO) LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AST	0.2500		0	0	NS	NS	NS	0
CDL	0.2500		0	0	NS	NS	NS	0
COVENANTS	0.2500		0	0	NS	NS	NS	0
HWSG	0.2500		0	0	NS	NS	NS	0
SPILLS	0.2500		0	0	NS	NS	NS	0
UST	0.2500		1	0	NS	NS	NS	1
HISTSWLF	0.5000		0	0	0	NS	NS	0
HWSTSD	0.5000		0	0	0	NS	NS	0
LST	0.5000		0	0	0	NS	NS	0
LUSTTRUST	0.5000		0	0	0	NS	NS	0
METHANESITES	0.5000		0	0	0	NS	NS	0
SWF	0.5000		0	0	0	NS	NS	0
VCRA	0.5000		0	0	0	NS	NS	0
HWSCA	1.0000		0	0	0	0	NS	0
SF	1.0000		0	0	0	0	NS	0
SUB-TOTAL			1	0	0	0	0	1

Locatable Database Findings

LOCAL LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
WCSWF	0.5000		0	0	0	NS	NS	0
SUB-TOTAL			0	0	0	0	0	0

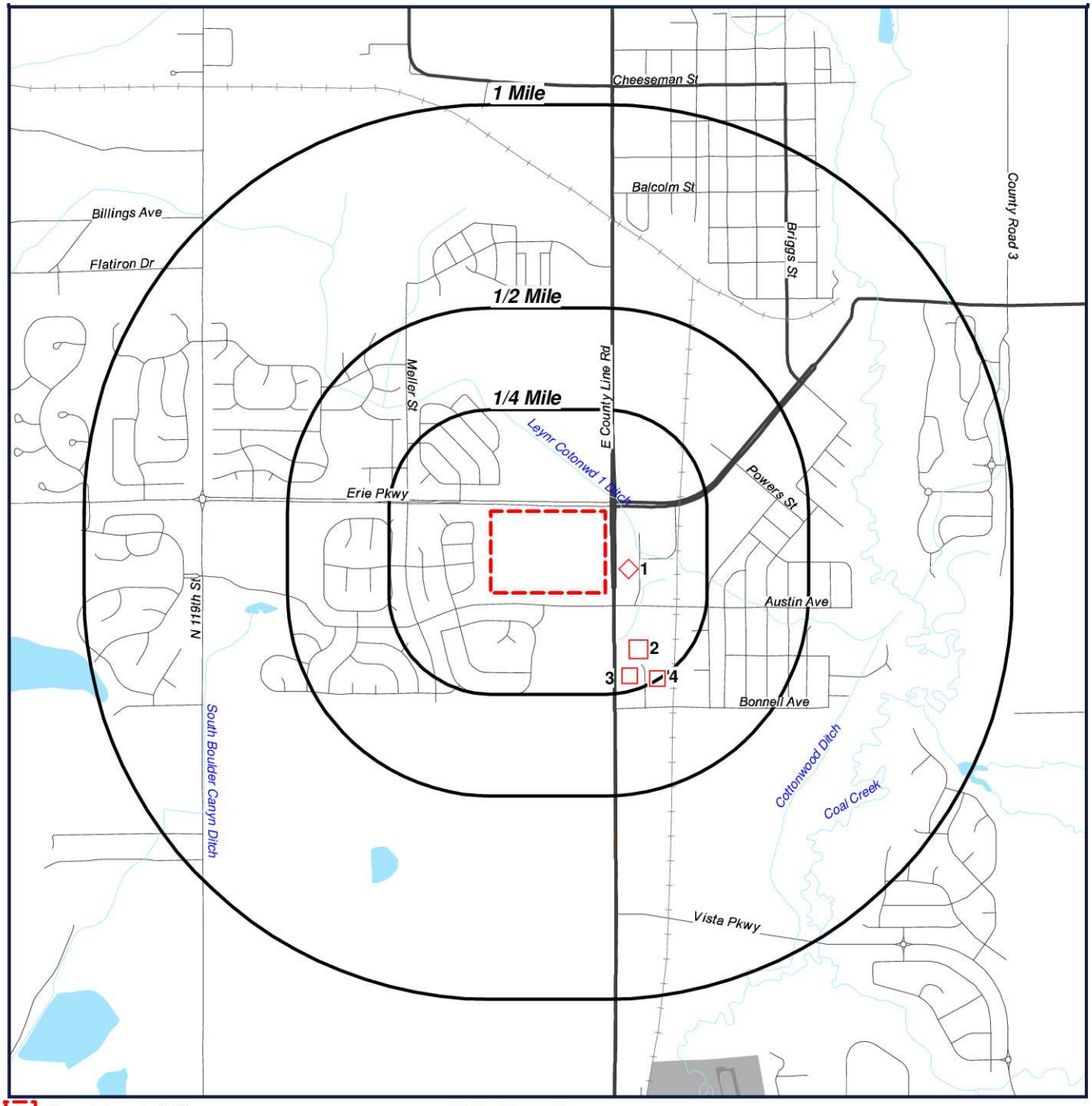
Locatable Database Findings

TRIBAL LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR08	0.2500		0	0	NS	NS	NS	0
LUSTR08	0.5000		0	0	0	NS	NS	0
ODINDIAN	0.5000		0	0	0	NS	NS	0
INDIANRES	1.0000		0	0	0	0	NS	0
SUB-TOTAL			0	0	0	0	0	0
TOTAL			1	3	0	0	0	4

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1



Target Property (TP)
UST
RCRANGR08
RCRAGR08

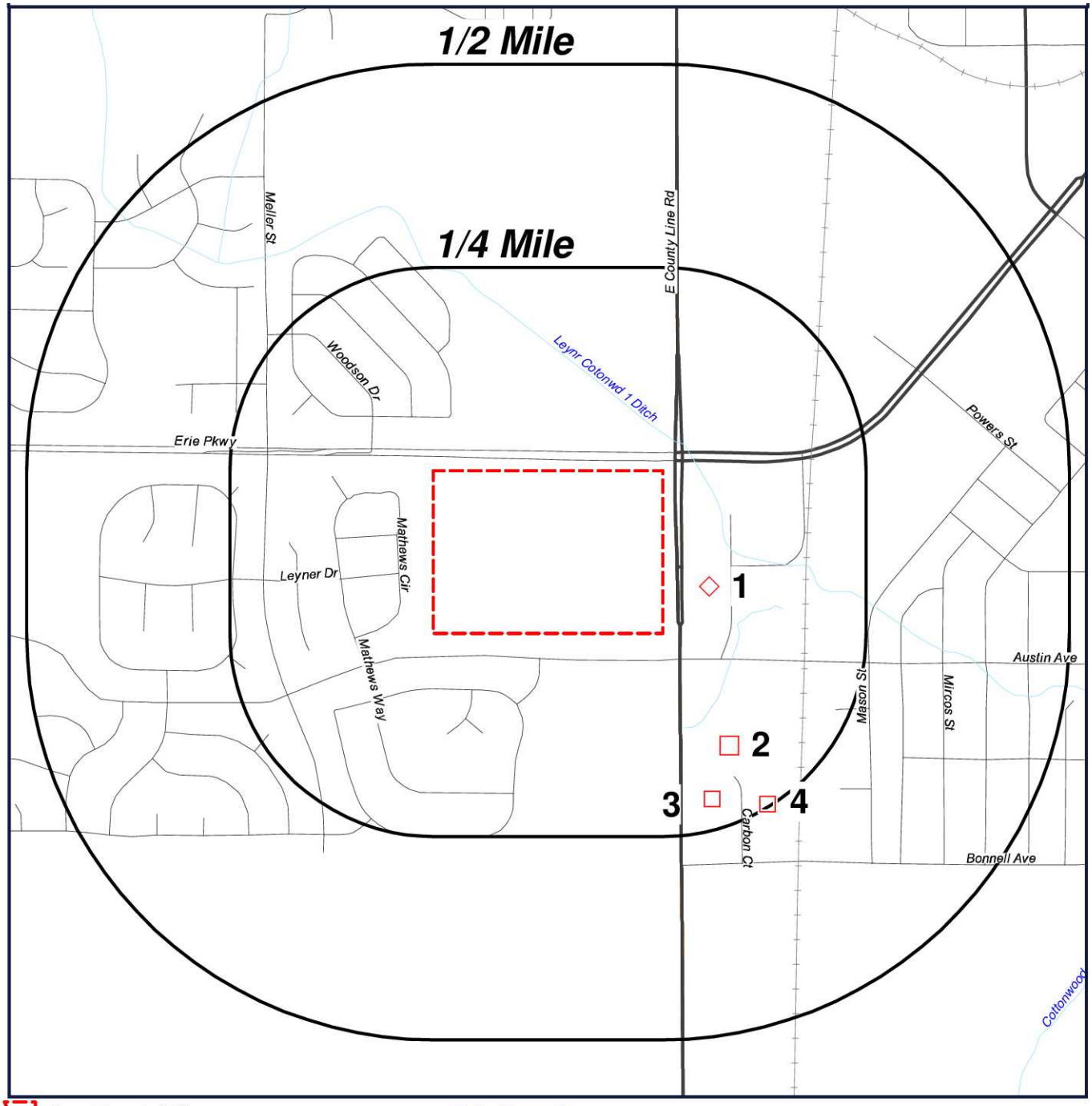
Erie Parcel
ERIE, Colorado
80516

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Click here to access Satelite view

Radius Map 2



Target Property (TP)
UST
RCRANGR08
RCRAGR08

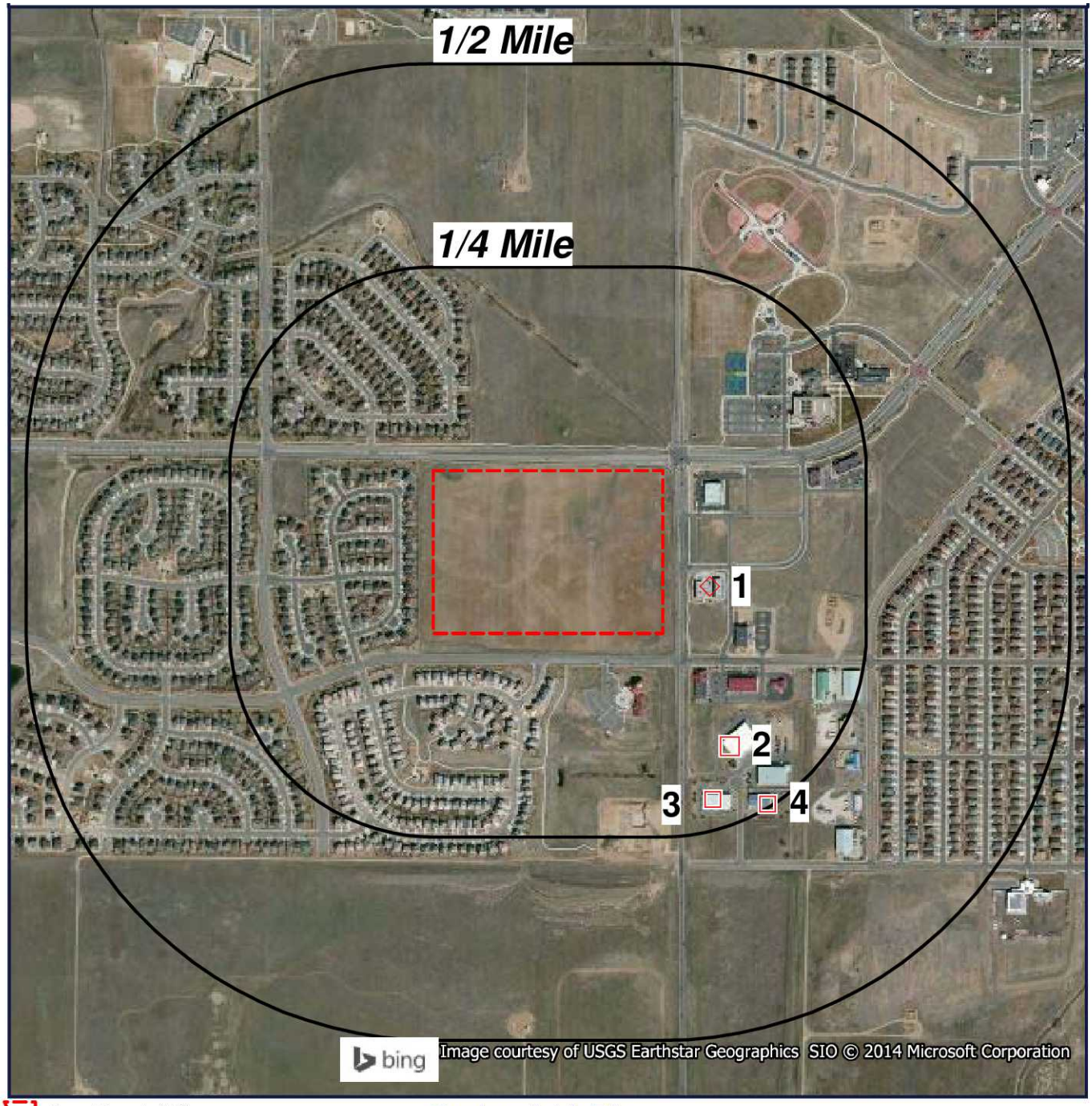
Erie Parcel
ERIE, Colorado
80516

N
W E
S

0' 500' 1000' 1500'
SCALE: 1" = 1000'

Click here to access Satelite view

Ortho Map



Target Property (TP)
UST
RCRANGR08
RCRAGR08

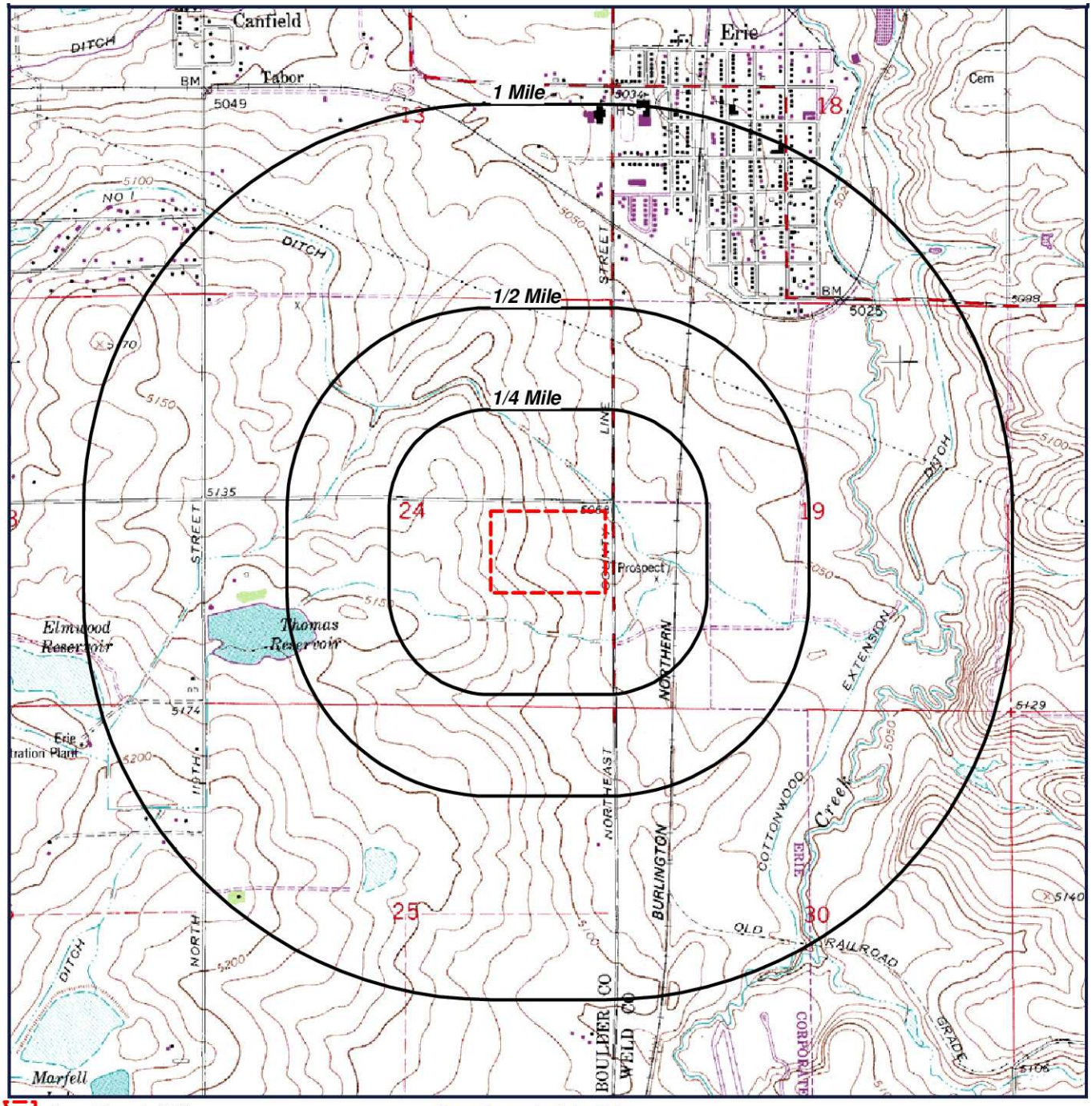
Quadrangle(s): Erie
Erie Parcel
ERIE, Colorado
80516

N
W E
S

0' 500' 1000' 1500'
SCALE: 1" = 1000'

Click here to access Satelite view

Topographic Map



Target Property (TP)

Quadrangle(s): Erie
Source: USGS, 1979
Erie Parcel
ERIE, Colorado
80516

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Click here to access Satelite view

Report Summary of Locatable Sites

Map ID#	Database Name	Site ID#	Distance From Site	Site Name	Address	City, Zip Code	PAGE #
1	UST	18961	0.06 SE	STOP N SAVE #24	681 MITCHELL WAY	ERIE, 80516	15
2	RCRANGR08	COR000230441	0.17 SE	ATOMIC FORGE INC	1010 CARBON CT UNIT H	ERIE, 80516	16
3	RCRAGR08	COR000227785	0.22 SE	WELLS FARGO BANK @ UNIQUE MANAGEMENT SOL	1020 CARBON CT	ERIE, 80516	18
4	RCRAGR08	COR000222844	0.25 SE	COUNTY LINE AUTO BODY INC	1021 CARBON CT	ERIE, 80516	20

Underground Storage Tank Facilities (UST)

MAP ID# 1 **Distance from Property: 0.06 mi. SE**

FACILITY INFORMATION

FACILITY ID: **18961**

NAME: **STOP N SAVE #24**

ADDRESS: **681 MITCHELL WAY**
ERIE, CO 80516

TOTAL TANK: **3**

COSTIS LINK: http://costis.cdle.state.co.us/facility.asp?h_id=18961

OWNER INFORMATION

NAME: **FEATHER PETROLEUM CO**

ADDRESS: **2492 INDUSTRIAL BLVD**
GRAND JUNCTION, CO 81505

TANK INFORMATION

TANK ID:	TANK TYPE:	TANK PRODUCT:	TANK CAPACITY:	TANK STATUS:	INSTALLATION DATE:
18961-1	**UST**	**1 - UNLEADED REGULAR (RUL)**	**20000**	**OPEN**	**NOT REPORTED**
18961-2	**UST**	**9 - GAS/GAS (MULTI-COMP)**	**20000**	**OPEN**	**NOT REPORTED**
18961-3	**UST**	**4 - DIESEL**	**12000**	**OPEN**	**NOT REPORTED**

Back to Report Summary

Resource Conservation & Recovery Act - Non-Generator Facilities (RCRANGR08)

MAP ID# 2 **Distance from Property: 0.17 mi. SE**

FACILITY INFORMATION

EPA ID#: **COR000230441**
NAME: **ATOMIC FORGE INC**
ADDRESS: **1010 CARBON CT UNIT H**
ERIE, CO 80516
CONTACT NAME: **NOT REPORTED**
CONTACT ADDRESS: **NOT REPORTED**

CONTACT PHONE: **NOT REPORTED**
NON-NOTIFIER: **X**
DATE RECEIVED BY AGENCY: **06/26/2013**
CERTIFICATION **- NO CERTIFICATION REPORTED -**
INDUSTRY CLASSIFICATION (NAICS) **- NO NAICS INFORMATION REPORTED -**
SITE HISTORY (INCLUDES GENERATORS AND NON-GENERATORS)
DATE RECEIVED BY AGENCY: **06/26/2013**
NAME: **ATOMIC FORGE INC**
GENERATOR CLASSIFICATION: **NOT A GENERATOR**

OWNER TYPE: **NOT REPORTED**
OWNER NAME: **NOT REPORTED**
OPERATOR TYPE: **NOT REPORTED**
OPERATOR NAME: **NOT REPORTED**

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **NOT A GENERATOR** LAST UPDATED DATE: **06/28/2013**
SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**
TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**
TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**
NON TSDFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**
CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**
MIXED WASTE GENERATOR: **NO**
RECYCLER: **NO**
TRANSPORTER: **NO**
ONSITE BURNER EXEMPTION: **NO**
FURNACE EXEMPTION: **NO**
USED OIL REFINER: **NO**
USED OIL TRANSFER FACILITY: **NO**

UNDERGROUND INJECTION: **NO**
UNIVERSAL WASTE DESTINATION FACILITY: **NO**
TRANSFER FACILITY: **NO**
USED OIL FUEL BURNER: **NO**
USED OIL PROCESSOR: **NO**
USED OIL FUEL MARKETER TO BURNER: **NO**
SPECIFICATION USED OIL MARKETER: **NO**
USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS

03/26/2013	**CEI**	**COMPLIANCE EVALUATION INSPECTION ON-SITE**
06/26/2013	**CEI**	**COMPLIANCE EVALUATION INSPECTION ON-SITE**
07/24/2013	**FCI**	**FOCUSED COMPLIANCE INSPECTION**

VIOLATIONS

06/26/2013	**261.A**	**LISTING - GENERAL**
06/26/2013	**262.A**	**GENERATORS - GENERAL**

ENFORCEMENTS

06/26/2013 **175 COMPLIANCE ADVISORY**

HAZARDOUS WASTE

- NO HAZARDOUS WASTE INFORMATION REPORTED -

UNIVERSAL WASTE **- NO UNIVERSAL WASTE REPORTED -**

CORRECTIVE ACTION AREA **- NO CORECTIVE ACTION AREA INFORMATION REPORTED -**

CORRECTIVE ACTION EVENT **- NO CORECTIVE ACTION EVENT REPORTED -**

Back to Report Summary

Resource Conservation & Recovery Act - Generator Facilities (RCRAGR08)

MAP ID# 3 **Distance from Property: 0.22 mi. SE**

FACILITY INFORMATION

EPA ID#: **COR000227785**
NAME: **WELLS FARGO BANK @ UNIQUE MANAGEMENT SOLUTIONS**
ADDRESS: **1020 CARBON CT**
ERIE, CO 80516
CONTACT NAME: **KEVIN HAGER**
CONTACT ADDRESS: **1873 S BELLAIR ST #800**
DENVER CO 80222
CONTACT PHONE: **303-219-5888**
NON-NOTIFIER: **NOT A NON-NOTIFIER**
DATE RECEIVED BY AGENCY: **07/10/2012**

OWNER TYPE: **PRIVATE**
OWNER NAME: **WELLS FARGO BANK**
OPERATOR TYPE: **PRIVATE**
OPERATOR NAME: **WELLS FARGO BANK**

CERTIFICATION

CERTIFICATION NAME:	CERTIFICATION TITLE:	CERTIFICATION SIGNED DATE:
KEVIN HAGER	**PROPERTY MGR**	**07/09/2012**

INDUSTRY CLASSIFICATION (NAICS)
52211 - COMMERCIAL BANKING

SITE HISTORY (INCLUDES GENERATORS AND NON-GENERATORS)
DATE RECEIVED BY AGENCY: **07/10/2012**
NAME: **WELLS FARGO BANK @ UNIQUE MANAGEMENT SOLUTIONS**
GENERATOR CLASSIFICATION: **LARGE QUANTITY GENERATOR**

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR** LAST UPDATED DATE: **07/13/2012**
SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**
TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**
TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**
NON TSDFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**
CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**
MIXED WASTE GENERATOR: **NO**
RECYCLER: **NO**
TRANSPORTER: **NO**
ONSITE BURNER EXEMPTION: **NO**
FURNACE EXEMPTION: **NO**
USED OIL REFINER: **NO**
USED OIL TRANSFER FACILITY: **NO**
UNDERGROUND INJECTION: **NO**
UNIVERSAL WASTE DESTINATION FACILITY: **NO**
TRANSFER FACILITY: **NO**
USED OIL FUEL BURNER: **NO**
USED OIL PROCESSOR: **NO**
USED OIL FUEL MARKETER TO BURNER: **NO**
SPECIFICATION USED OIL MARKETER: **NO**
USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS **- NO EVALUATIONS REPORTED -**
VIOLATIONS **- NO VIOLATIONS REPORTED -**
ENFORCEMENTS **- NO ENFORCEMENTS REPORTED -**

HAZARDOUS WASTE

D001 **IGNITABLE WASTE**

UNIVERSAL WASTE **- NO UNIVERSAL WASTE REPORTED -**

CORRECTIVE ACTION AREA **- NO CORECTIVE ACTION AREA INFORMATION REPORTED -**

CORRECTIVE ACTION EVENT **- NO CORECTIVE ACTION EVENT REPORTED -**

Back to Report Summary

Resource Conservation & Recovery Act - Generator Facilities (RCRAGR08)

MAP ID# 4 **Distance from Property: 0.25 mi. SE**

FACILITY INFORMATION

EPA ID#: **COR000222844**
NAME: **COUNTY LINE AUTO BODY INC**
ADDRESS: **1021 CARBON CT**
ERIE, CO 80516
CONTACT NAME: **TRACY S CHAVEZ**
CONTACT ADDRESS: **1021 CARBON CT**
ERIE CO 80516
CONTACT PHONE: **303-828-2699**
NON-NOTIFIER: **NOT A NON-NOTIFIER**
DATE RECEIVED BY AGENCY: **03/03/2010**

OWNER TYPE: **PRIVATE**
OWNER NAME: **COUNTY LINE AUTO BODY INC**
OPERATOR TYPE: **PRIVATE**
OPERATOR NAME: **COUNTY LINE AUTO BODY INC**

CERTIFICATION

CERTIFICATION NAME:	CERTIFICATION TITLE:	CERTIFICATION SIGNED DATE:
TRACY S CHAVEZ	**OWNER**	**02/25/2010**

INDUSTRY CLASSIFICATION (NAICS)

811121 - AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND M

SITE HISTORY (INCLUDES GENERATORS AND NON-GENERATORS)

DATE RECEIVED BY AGENCY: **03/03/2010**
NAME: **COUNTY LINE AUTO BODY INC**
GENERATOR CLASSIFICATION: **LARGE QUANTITY GENERATOR**

CURRENT ACTIVITY INFORMATION

GENERATOR STATUS: **CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR** LAST UPDATED DATE: **03/03/2010**
SUBJECT TO CORRECTIVE ACTION UNIVERSE: **NO**
TDSFs POTENTIALLY SUBJECT TO CORRECTIVE ACTION UNDER 3004 (u)/(v) UNIVERSE: **NO**
TDSFs ONLY SUBJECT TO CORRECTIVE ACTION UNDER DISCRETIONARY AUTHORITIES UNIVERSE: **NO**
NON TSDFs WHERE RCRA CORRECTIVE ACTION HAS BEEN IMPOSED UNIVERSE: **NO**
CORRECTIVE ACTION WORKLOAD UNIVERSE: **NO**

IMPORTER: **NO**
MIXED WASTE GENERATOR: **NO**
RECYCLER: **NO**
TRANSPORTER: **NO**
ONSITE BURNER EXEMPTION: **NO**
FURNACE EXEMPTION: **NO**
USED OIL REFINER: **NO**
USED OIL TRANSFER FACILITY: **NO**

UNDERGROUND INJECTION: **NO**
UNIVERSAL WASTE DESTINATION FACILITY: **NO**
TRANSFER FACILITY: **NO**
USED OIL FUEL BURNER: **NO**
USED OIL PROCESSOR: **NO**
USED OIL FUEL MARKETER TO BURNER: **NO**
SPECIFICATION USED OIL MARKETER: **NO**
USED OIL TRANSPORTER: **NO**

COMPLIANCE, MONITORING AND ENFORCEMENT INFORMATION

EVALUATIONS **- NO EVALUATIONS REPORTED -**
VIOLATIONS **- NO VIOLATIONS REPORTED -**
ENFORCEMENTS **- NO ENFORCEMENTS REPORTED -**

HAZARDOUS WASTE

D001 **IGNITABLE WASTE**

F001 THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE,TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE ANDCHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

F002 THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE,TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE,CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001,F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

F003 THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

F004 THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: CRESOLS, CRESYLIC ACID, AND NITROBENZENE; AND THE STILL BOTTOMS FROM THE RECOVERY OF THESE SOLVENTS; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001,F002, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

F005 THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE,CARBON DISULFIDE, ISOBUTANOL, PYRIDINE,BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001,F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

UNIVERSAL WASTE **- NO UNIVERSAL WASTE REPORTED -**

CORRECTIVE ACTION AREA **- NO CORECTIVE ACTION AREA INFORMATION REPORTED -**

CORRECTIVE ACTION EVENT **- NO CORECTIVE ACTION EVENT REPORTED -**

Back to Report Summary

Report Summary of Unlocatable Sites

Database Name	Site ID#	Site Name	Address	City	Zip Code	Page #
UST	8191	UNKNOWN	NE CORNER SEC24 TS 1N R69W	ERIE	80516	23
LUSTTRUST	00023-0000048	ERIE	ERIE	ERIE	80000	24
LUSTTRUST	00023-0000265	ERIE #1	ERIE #1	ERIE	80000	25

FACILITY INFORMATION

FACILITY ID: **8191**
NAME: **UNKNOWN**
ADDRESS: **NE CORNER SEC24 TS 1N R69W**
ERIE, CO 80516
TOTAL TANK: **1**
COSTIS LINK: http://costis.cdle.state.co.us/facility.asp?h_id=8191

OWNER INFORMATION

NAME: **UNKNOWN**
ADDRESS: **UNKNOWN**
ZIPCODE UNKNOWN, XX 99999

TANK INFORMATION

TANK ID:	TANK TYPE:	TANK PRODUCT:	TANK CAPACITY:	TANK STATUS:	INSTALLATION DATE:
8191-1	**UST**	**Z UNKNOWN**	**500**	**CLOSED**	**NOT REPORTED**

Back to Report Summary of Unlocatable Sites

FACILITY INFORMATION

UNIQUE ID: **00023-0000048**
AGENCY ID: **NOT REPORTED**
NAME: **ERIE**
ADDRESS: **ERIE**
ERIE, CO 80000
COUNTY: **BOULDER**
COMMENTS: **FROM AN OLD CDPHE LIST OF LOCATIONS WHERE TANK LEAKS WERE SUSPECTED AND LUST TRUST FUNDS WERE USED IN AN EFFORT TO IDENTIFY THE SOURCE. OFTEN, THE SOURCE WAS FOUND NEARBY AND WAS ENTERED IN THE LUST DATABASE (NOW COSTIS).**
THIS LISTING NOT ENTERED INTO COSTIS BACK WHEN CDPHE TRANSFERRED RESPONSIBILITY FOR TANK LEAKS TO OPS. FEW PEOPLE AT OPS KNOW OF THIS OLD CDPHE LIST, AND ANY ASSOCIATED FILES ARE THOUGHT TO HAVE BEEN DISPOSED OF OR MISPLACED.
COSTIS LINK: **NOT REPORTED**

Back to Report Summary of Unlocatable Sites

FACILITY INFORMATION

UNIQUE ID: **00023-0000265**

AGENCY ID: **NOT REPORTED**

NAME: **ERIE #1**

ADDRESS: **ERIE #1**
ERIE, CO 80000

COUNTY: **WELD**

COMMENTS: **FROM AN OLD CDPHE LIST OF LOCATIONS WHERE TANK LEAKS WERE SUSPECTED AND LUST TRUST FUNDS WERE USED IN AN EFFORT TO IDENTIFY THE SOURCE. OFTEN, THE SOURCE WAS FOUND NEARBY AND WAS ENTERED IN THE LUST DATABASE (NOW COSTIS).**
THIS LISTING NOT ENTERED INTO COSTIS BACK WHEN CDPHE TRANSFERRED RESPONSIBILITY FOR TANK LEAKS TO OPS. FEW PEOPLE AT OPS KNOW OF THIS OLD CDPHE LIST, AND ANY ASSOCIATED FILES ARE THOUGHT TO HAVE BEEN DISPOSED OF OR MISPLACED.

COSTIS LINK: **NOT REPORTED**

Back to Report Summary of Unlocatable Sites

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 09/06/13

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 01/14/14

This database includes site locations where Engineering and/or Institutional Controls have been identified as part of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ERNSCO Emergency Response Notification System

VERSION DATE: 07/27/14

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

HISTPST Historical Gas Stations

VERSION DATE: 07/01/30

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

HMIRSR08 Hazardous Materials Incident Reporting System

VERSION DATE: 01/10/14

The HMIRS database contains unintentional hazardous materials release information reported to the U.S.

Department of Transportation located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

NLRRCRAG No Longer Regulated RCRA Generator Facilities

VERSION DATE: 04/10/14

This database includes RCRA Generator facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly generated hazardous waste.
Large Quantity Generators: Generate 1,000 kg or more of hazardous waste during any calendar month; or Generate more than 1 kg of acutely hazardous waste during any calendar month; or Generate more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month; or Generate 1 kg or less of acutely hazardous waste during any calendar month, and accumulate more than 1kg of acutely hazardous waste at any time; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulated more than 100 kg of that material at any time.
Small Quantity Generators: Generate more than 100 and less than 1000 kilograms of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time; or Generate 100 kg or less of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any time.
Conditionally Exempt Small Quantity Generators: Generate 100 kilograms or less of hazardous waste per calendar month, and accumulate 1000 kg or less of hazardous waste at any time; or Generate one kilogram or less of acutely hazardous waste per calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste.

RCRAGR08 Resource Conservation & Recovery Act - Generator Facilities

VERSION DATE: 04/10/14

This database includes sites listed as generators of hazardous waste (large, small, and exempt) in the RCRAInfo system. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act

(RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). This database includes sites located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.
Large Quantity Generators: Generate 1,000 kg or more of hazardous waste during any calendar month; or Generate more than 1 kg of acutely hazardous waste during any calendar month; or Generate more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month; or Generate 1 kg or less of acutely hazardous waste during any calendar month, and accumulate more than 1kg of acutely hazardous waste at any time; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulated more than 100 kg of that material at any time.
Small Quantity Generators: Generate more than 100 and less than 1000 kilograms of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time; or Generate 100 kg or less of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any time.
Conditionally Exempt Small Quantity Generators: Generate 100 kilograms or less of hazardous waste per calendar month, and accumulate 1000 kg or less of hazardous waste at any time; or Generate one kilogram or less of acutely hazardous waste per calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste.

RCRANGR08 Resource Conservation & Recovery Act - Non-Generator Facilities

VERSION DATE: 04/10/14

This database identifies RCRAInfo system sites that only handle hazardous waste, such as transporters, without generating any amount hazardous waste. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). This database includes sites located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

RCRASC RCRA Sites with Controls

VERSION DATE: 01/14/14

This list of Resource Conservation and Recovery Act sites with institutional controls in place is provided by the U.S. Environmental Protection Agency.

TRI Toxics Release Inventory

VERSION DATE: 12/31/12

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

BF Brownfields Management System

VERSION DATE: 04/15/14

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment.

CERCLIS Comprehensive Environmental Response, Compensation & Liability Information System

VERSION DATE: 10/25/13

CERCLIS is the repository for site and non-site specific Superfund information in support of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This United States Environmental Protection Agency database contains an extract of sites that have been investigated or are in the process of being investigated for potential environmental risk.

NFRAP No Further Remedial Action Planned Sites

VERSION DATE: 10/25/13

This database includes sites which have been determined by the United States Environmental Protection Agency, following preliminary assessment, to no longer pose a significant risk or require further activity under CERCLA. After initial investigation, no contamination was found, contamination was quickly removed or contamination was not serious enough to require Federal Superfund action or NPL consideration.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 04/10/14

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An “open dump” is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

RCRAT Resource Conservation & Recovery Act - Treatment, Storage & Disposal Facilities

VERSION DATE: 04/10/14

This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste in the RCRAInfo system. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

DNPL Delisted National Priorities List

VERSION DATE: 10/25/13

This database includes sites from the United States Environmental Protection Agency’s Final National Priorties List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 04/10/14

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NPL National Priorities List

VERSION DATE: 10/25/13

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 10/25/13

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 04/10/14

This database includes hazardous waste sites listed with corrective action activity in the RCRAInfo system. The Corrective Action Program requires owners or operators of RCRA facilities (or treatment, storage, and disposal facilities) to investigate and cleanup contamination in order to protect human health and the environment. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

RODS Record of Decision System

VERSION DATE: 07/01/13

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

AST Aboveground Storage Tank Facilities

VERSION DATE: 04/28/14

The Oil and Public Safety Division of the Colorado Department of Labor and Employment maintains this list of aboveground storage tank (AST) facilities. This AST database also includes other types of storage tank facilities such as liquefied petroleum gas (LPG), vehicle tank meters (VTM), and compressed natural gas facilities.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 04/28/14

This list of Methamphetamine lab seizures is provided by multiple sources: the North Metro Task Force, FACTS (Forensic Applications Consulting Technologies, Inc) and the Colorado Springs Police Department. The North Metro Task Force list of Methamphetamine labs were seized between 2001 and 2010. The North Metro area includes the following Cities and Counties of Colorado: Adams County, Broomfield, Brighton, Commerce City, Federal Heights, Northglenn, Thornton, and Westminster. According to Section 2 of Colorado Revised Statutes: "25-18.5-103. Discovery of an illegal drug laboratory - property owner - clean-up - liability. (1) (a) Upon notification from a peace officer that chemicals, equipment, or supplies indicative of an illegal drug laboratory are located on a property, or when an illegal drug laboratory used to manufacture methamphetamine is otherwise discovered and the property owner has received notice, the owner of any contaminated property shall meet the cleanup standards for property established by the board in section 25-18.5-102". The FACTS and Colorado Springs Police Department Methamphetamine labs were seized between 2001 and 2014.

COVENANTS Environmental Real Covenants List

VERSION DATE: 12/23/13

Senate Bill 01-145 gave authority to the Colorado Department of Public Health and Environment to approve requests to restrict the future use of a property using an enforceable agreement called an environmental covenant. These covenants, which are recorded with the deed and run with the land, provide a mechanism to ensure that institutional controls that are part of environmental remediation projects are properly implemented and that engineered structures are protected and maintained, so that implemented remedies continue to be protective of human health and the environment for as long as any residual contamination remains a risk.

HWSG Hazardous Waste Sites- Generator

VERSION DATE: 06/30/03

The Resource Conservation and Recovery Act (RCRA) was enacted by congress in 1976, followed by the promulgation of implementing regulations in 1980. In 1984, the State was authorized by EPA to implement the RCRA program in Colorado on their behalf. This facility listing includes RCRA sites listed as generators of hazardous waste (Small Quantity Generators and Large Quantity Generators) and was provided by the Colorado Department of Public Health and Environment.
Small Quantity Generators (SQG) generate, in any calendar month, more than 100 kg (220 lbs.) but less than 1,000 kg (2,200 lbs.) of RCRA hazardous waste; and generate, in any calendar month, or accumulate at any time, no more than 1 kg (2.2 lbs.) of acute hazardous waste and no more than 100 kg (220 lbs.) of material from

the cleanup of a spill of acute hazardous waste; and accumulate on-site no more than 6000 kg (13,200 lbs) of hazardous waste at any one time; or, the site is a Small Quantity Generator if the site met all other criteria for a Conditionally Exempt Small Quantity Generator, but accumulated, at any time, more than 1,000 kg (2,200 lbs.) of RCRA hazardous waste.
Large Quantity Generators (LQG) generate, in any calendar month, 1,000 kg (2,200 lbs.) or more of RCRA hazardous waste; or generate, in any calendar month, or accumulated at any time, more than 1 kg (2.2 lbs.) of RCRA acute hazardous waste; or generate, in any calendar month, or accumulated at any time, more than 100 kg (220 lbs.) of spill cleanup material contaminated with RCRA acute hazardous waste.

SPILLS Spills Listing

VERSION DATE: 03/13/14

The Colorado Department of Public Health and Environment's Division of Emergency Preparedness and Response maintains this listing of chemical spills and/or releases.

UST Underground Storage Tank Facilities

VERSION DATE: 04/28/14

The Oil and Public Safety Division of the Colorado Department of Labor and Employment maintains this list of underground storage tank facilities.

HISTSWLF Historical Solid Waste Landfills

VERSION DATE: NR

This historical solid waste landfills database contains data from the Hazardous Materials Waste Management Division (HMWMD) of the Colorado Department of Public Health and other various state and local agencies. In the early 1980s, the HMWMD conducted a survey of staff members and local agencies to compile this listing of sites that were known or thought to have waste issues. This Solid Waste Historical Data is not considered complete or verifiable and has not been maintained since the late 1980s. The HMWMD is not responsible and shall not be liable to the used for damages of any kind arising out of the use of this data or information.

HWSTSD Hazardous Waste Sites- Treatment, Storage & Disposal

VERSION DATE: 06/30/03

The Resource Conservation and Recovery Act (RCRA) was enacted by congress in 1976, followed by the promulgation of implementing regulations in 1980. In 1984, the State was authorized by EPA to implement the RCRA program in Colorado on their behalf. TSD facilities treat, store, dispose, or recycle hazardous waste on site in units and therefore are subject to RCRA permitting requirements. Historic TSDs are facilities that have completed closure and/or post-closure of the RCRA Subtitle C Regulated Unit(s) or the Treatment/Storage/Disposal Unit is no longer regulated. This database was provided by the Colorado Department of Public Health and Environment.

LST Leaking Storage Tank Facilities

VERSION DATE: 04/28/14

The Oil and Public Safety Division of the Colorado Department of Labor and Employment maintains this list of leaking aboveground and underground storage tank facilities.

LUSTTRUST Leaking Underground Storage Tanks Trust Fund Sites

VERSION DATE: 01/01/00

Suspected tank leaks have been discovered at the sites included in this database, but the facility responsible for the leak has not been identified. The state's investigtion and search for responsible parties is paid for out of the state's Leaking Underground Storage Tank (LUST) Trust Fund. This database was provided by the Colorado Department of Labor & Employment, Division of Oil and Public Safety, State Fund Section and is no longer updated.

METHANESITES Methane Gas Study Sites

VERSION DATE: 01/01/81

This Investigation of Methane Gas Hazards report was prepared by the Denver Office of Emergency Preparedness in 1981. The purpose of this study was to assess the actual and potential generation, migration, explosive and related problems associated with specified landfills, and to identify existing and potential problems, suggested strategies to prevent, abate, and control such problems and recommend investigative and monitoring functions as may be deemed necessary. The Colorado Department of Health selected eight landfills as priorities due to population density and potential hazards to population and property.

SWF Solid Waste Facilities

VERSION DATE: 01/14/14

The Colorado Department of Public Health and Environment maintains this database of active solid waste disposal facilities, transfer stations, recyclers, waste tire registrants, and waste grease registrants.

VCRA Voluntary Cleanup and Redevelopment Program Sites

VERSION DATE: 04/07/14

This site listing is provided by the Colorado Department of Public Health and Environment (CDPHE) and includes both voluntary cleanup and brownfield properties. The Voluntary Cleanup and Redevelopment program was created in 1994. The objective of the program is to facilitate the redevelopment and transfer of contaminated properties. Properties that sit untouched because of their real or perceived contamination can be rehabilitated using the CDPHE's Brownfields Program in conjunction with the Voluntary Cleanup Program. Cleanup decisions are based on existing standards and the proposed use of the property. The actual cleanup and verification is the owner's responsibility.

HWSCA Hazardous Waste Sites- Corrective Action

VERSION DATE: 06/30/03

The Resource Conservation and Recovery Act (RCRA) was enacted by congress in 1976, followed by the promulgation of implementing regulations in 1980. In 1984, the Hazardous and Solid Waste Amendments (HSWA) were added to RCRA providing for corrective action at facilities subject to RCRA. That same year, the State was authorized by EPA to implement the RCRA program in Colorado on their behalf. Corrective action may be implemented as part of a RCRA Hazardous Waste Permit, an Order, or a Corrective Action Plan pursuant to the Colorado Hazardous Waste Regulations. Corrective action is the process by which regulated facilities investigate and remediate, as necessary, all contamination (soil, ground water, surface water, air) associated with their releases into the environment. Historic Corrective Action Sites are facilities that have completed the RCRA Subtitle C corrective Action process. This database was provided by the Colorado Department of Public Health and Environment.

SF Superfund Sites

VERSION DATE: 06/01/03

This listing contains active, deleted and proposed "Superfund" hazardous waste sites, as well as those sites identified through the Natural Resource Damages section of Superfund legislation and one Private Non-Superfund Cleanup site. A site qualifies for the National Priorities List (NPL or Superfund list) when the U.S. Environmental Protection Agency (EPA) determines there is a release or threatened release of hazardous substances that may endanger public health, welfare or the environment. In Colorado, the lead agency for Superfund remediation may be either the EPA or the Colorado Department of Public Health and Environment.

WCSWF Weld County Solid Waste Facilities

VERSION DATE: 08/03/09

This listing of solid waste facilities is provided by the Weld County Public Health Department.

Environmental Records Definitions - TRIBAL

USTR08 Underground Storage Tanks On Tribal Lands

VERSION DATE: 11/25/13

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

LUSTR08 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 11/25/13

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

INDIANRES Indian Reservations

VERSION DATE: 01/01/00

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

APPENDIX D

LOCAL HEALTH DEPARTMENT RESPONSE

Boulder County

Public Health
Environmental Health Division

September 11, 2014

Environmental Site Assessment Inquiry

Requestor: Trevor Branch, CTL Thompson, Inc.

RE: (Property Location) SW corner of Erie Parkway and County Line Road

Thank you for your request. I have researched the site and the surrounding area in our database within 1 mile of the site you requested.

Be advised that the database includes only those incidents which were reported and included in our database. There may be incidents which were either not reported or not entered in our database.

For information on underground storage tanks and wells, the State of Colorado maintains those records. Information on septic systems in Boulder County can be obtained at www.septicsmart.org

If I can be of any further assistance, please feel free to contact me at (303) 441-1176.

Sincerely,

Susan Martino, MLA
Environmental Health Specialist II
Boulder County Environmental Health
3450 Broadway, Boulder, CO 80304
303-441-1176
smartino@bouldercounty.org

Erie Parkway & County Line Rd / Historic Hazmat

DATE	ADDRESS	MATERIAL	CONDITION	HAZARD	AMOUNT
10281993	2601 E County Line Rd	Crude Oil	Soil removed	soil/water contamination	10 gallons

Erie Parkway & County Line Rd / Coal Mines

FID	MINE
1	Northrup Mine
2	Chase Mine
38	Stewart Mine
39	Unknown
40	McGregor Mine, Cleveland Mine
41	Marfel Mine
42	Garfield No. 1

APPENDIX E
PREVIOUS PHASE I ESA

Phase I Environmental Site Assessment

Erie Commercial Venture Property
46.613 Acres in Section 24,
Township 1 North, Range 69 West,
Erie, Colorado

Prepared For:
Erie Commercial Venture, LLLP
7720 East Bellview Avenue, Suite 350
Greenwood Village, Colorado 80111

WESTERN ENVIRONMENT AND ECOLOGY, INC.
2217 West Powers Avenue
Littleton, Colorado 80120
(303) 730-3452 (phone)
(303) 730-3461 (fax)
westernenvironment.com

Phase I Environmental Site Assessment

Erie Commercial Venture Property
46.613 Acres in Section 24,
Township 1 North, Range 69 West,
Erie, Colorado

Project Number: 422-001-02

March 27, 2006

Prepared For:

Erie Commercial Venture, LLLP
7720 East Bellview Avenue, Suite 350
Greenwood Village, Colorado 80111

PREPARED BY:

Brian R. Partington
Project Manager

REVIEWED BY:

Greg D. Sherman P.G.
President

WESTERN ENVIRONMENT AND ECOLOGY, INC.
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APPENDIX B	Air Photo Documentation
APPENDIX C	Western Environment and Ecology, Inc. - Statement of Qualifications

1.0 INTRODUCTION

The following document was prepared at the request of Erie Commercial Venture, LLLP (ECV). The purpose of this Phase I Environmental Site Assessment is to identify, to the extent feasible, recognized environmental conditions in connection with the subject property. A Phase I Environmental Site Assessment has four components - records review, site reconnaissance, interviews and a report. These specific activities are further defined by the American Society for Testing and Materials (ASTM E 1527-00, Standard Practice for Environmental Site Assessments; Phase I Environmental Site Assessments, July 2000).

Mr. Overton indicated that ECV is interested in developing the property. According to the Boulder County Assessor, the current owner of the site is Erie Commercial Venture, LLLP. Mr. Overton stated that he was unaware of any environmental issues associated with the site.

Undeveloped agricultural land on site

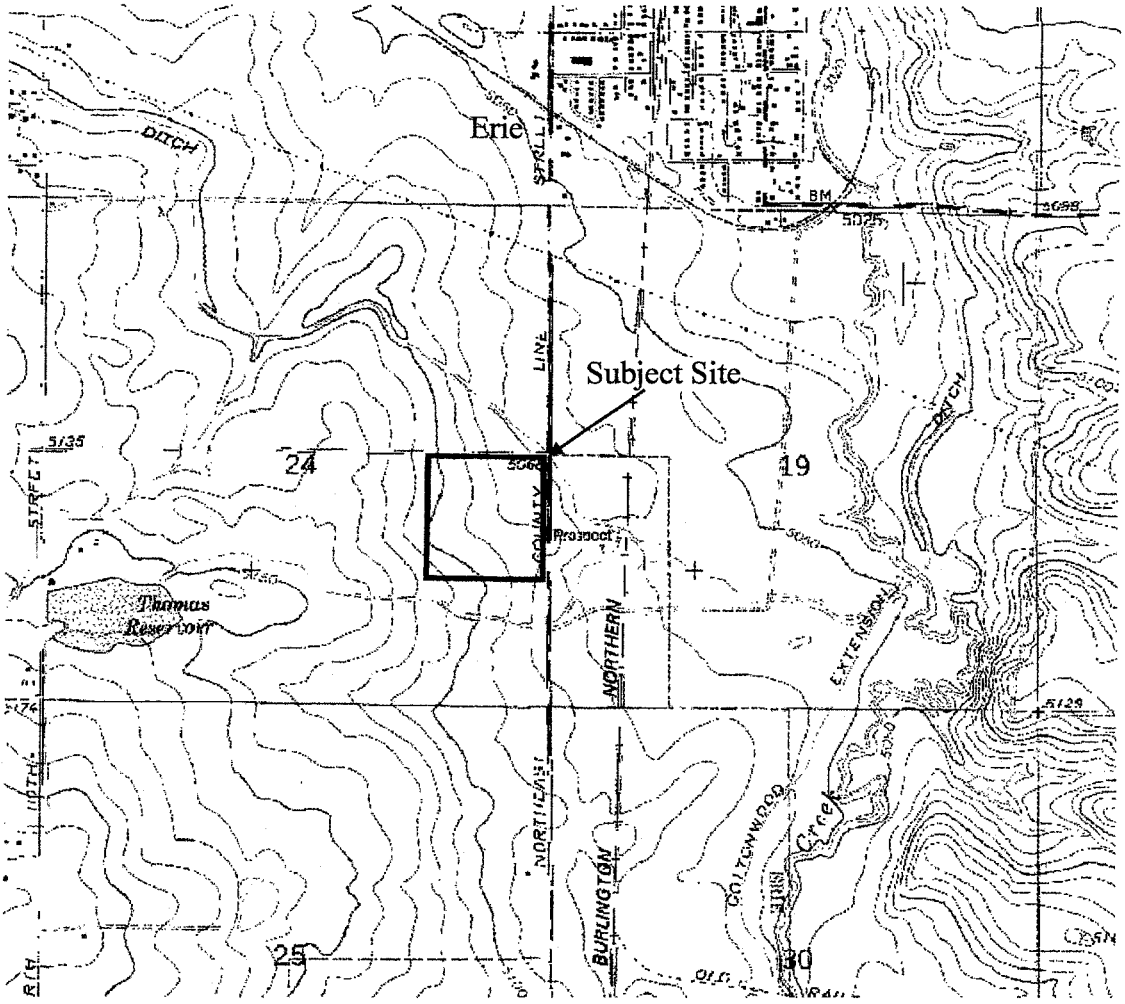
2.0 SITE DESCRIPTION

This Phase I Environmental Site Assessment was conducted for 46.613acres in Section 24, Township 1 North, Range 69 West, in Erie, Colorado (Figure 1). According to the Boulder County Assessors Office, the property is currently zoned for agricultural use. No buildings exist on the site.

The site is located south of Leon A. Wurl Parkway and west of County Line Road (Weld County Road 1), as shown on Figure 2. Developed residential property occurs to the west, with undeveloped property to the north, east and south. At the time of this investigation the site was vacant, most recently being used for dry land wheat farming. At the time of this assessment, the property was covered in unharvested wheat.

The site occurs at an elevation of 5,070 to 5,110 feet, and gradually slopes to the east/northeast toward Coal Creek (USGS Erie 7.5 Minute Quadrangle, 1979). During a mine subsidence investigation performed on the site, Western Environment identified eolian sands and clays overlying the Cretaceous Age Laramie Formation (Project Number 422-001-01, dated December 23, 2005).

Residential development to the west



N

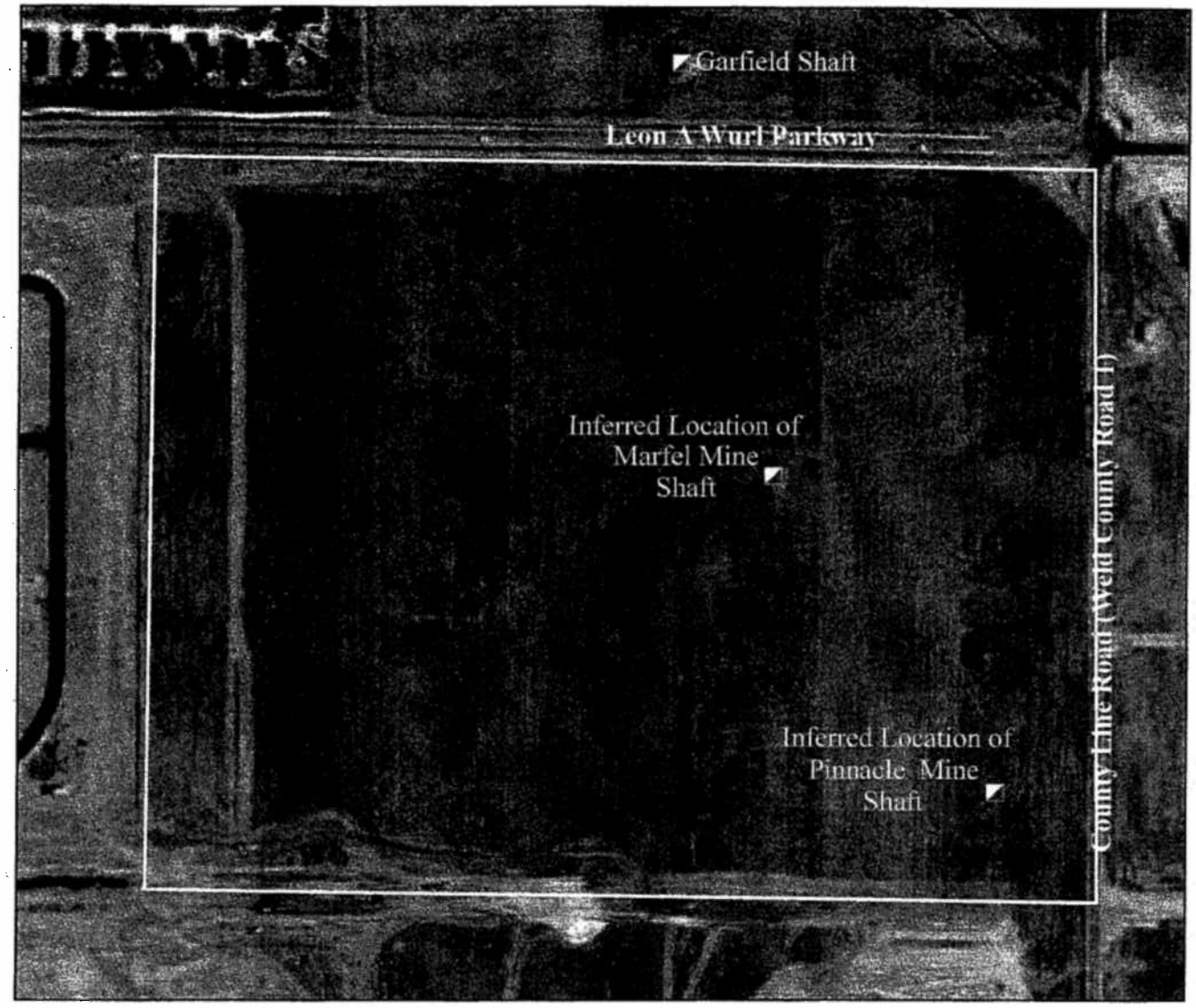
Scale 1 Inch = 2,000 feet

1,000 0 1,000 2,000

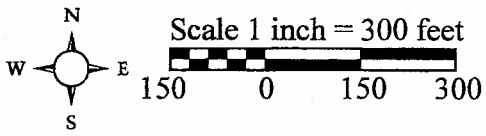
WESTERN ENVIRONMENT AND ECOLOGY, INC.

2217 West Powers Avenue
Littleton, Colorado 80120

Figure 1 - Project Location Map
Erie Commercial Venture Property
NE ¼ of the SE ¼ of Section 24
Township 1 North, Range 69 West,
Erie, Colorado



Airphoto obtained from Google Earth



WESTERN ENVIRONMENT AND ECOLOGY, INC.
2217 West Powers Avenue
Littleton, Colorado 80120

Figure 2 - Site Map
Erie Commercial Venture Property
NE ¼ of the SE ¼ of Section 24
Township 1 North, Range 69 West,
Erie, Colorado

3.0 RECORDS REVIEW

The purpose of the records review is to obtain and review information that will help identify potential environmental conditions in connection with the property. Availability of records varies from information source to information source, including governmental jurisdictions. Western Environment did not identify, obtain or review every possible record that might exist with respect to the property. Instead, record information from reasonably ascertainable standard sources was reviewed. The approximate minimum search distance utilized in the review, the resources utilized, and the number of sites found are listed below:

Lists Reviewed	ASTM Standard Minimum Search Distance	Number of Sites Within Search Distance
Federal and State NPL Site List	1.0 mile	0
Federal and State CERCLIS List	0.5 mile	1
Federal RCRA TSD Facilities List	1.0 mile	0
Federal RCRA Generators List	Property and adjoining property	0
State Landfill and/or Solid Waste Disposal Site List	0.5 mile	5
State Leaking UST List	0.5 mile	0
State Registered UST List	Property and adjoining properties	0
Colorado Voluntary Cleanup List	1.0 mile	0

3.1 RESULTS

One CERCLIS site is located just beyond the one mile minimum search distance. This is identified as the Columbine Landfill located at the Denver Regional Landfill South on the site of the abandoned Columbine Mine, just over 1 mile to the east. Discovery of a violation was reported on October 1, 1984. A site inspection on December 1, 1984 determined no further remedial action was required, and the site was archived on June 19, 1992.

Five landfills were identified just over the one mile search radius. The Denver Regional Landfill South, Denver Regional Landfill North, Front Range Landfill, Old Erie Landfill and the Columbine Landfill are located to the east.

The Old Erie Landfill (Pratt Property) is a closed landfill. According to the Colorado Department of Public Health and Environment, the landfill began operation around 1964. The original use was the disposal of municipal refuse. Records indicate liquid waste and other compounds were accepted, including torpedo propellant which was destroyed (burned) on the site. Waste disposal ended in 1969. The Erie Landfill is monitored as a condition of the permit for the Denver Regional Landfill South. The Old Erie Landfill has 4 monitoring wells, which were last sampled in March of 2002. At that time two of the wells were dry, and the remaining two (GW1 and S210) had minor detections of the Volatile Organic Compounds (VOC's) Trichloroethylene (TCA) and Trichorofluoromethane. Documented VOC contaminated groundwater and methane above the Lower Explosive Limits (LEL) have occurred on the Erie Landfill property. No offsite investigations have been performed. In 1998 post closure care and maintenance of the Old Erie Landfill was fulfilled. Ground water monitoring will continue through the active life of the Denver Regional Landfill South.

The Front Range Landfill is located to the southwest of the subject property. As of November 29, 2005, the Front Range Landfill was in compliance with EPA procedural requirements. The Front Range Landfill is listed as a RCRA small quantity generator, with actual or potential emissions grater than the applicable major threshold. Recent monitoring reports of groundwater indicate no contamination resulting from the landfill. However, no offsite investigations have been performed. Western Environment has performed investigations on adjacent properties, where no shallow perched groundwater was present.

The Denver Regional Landfill South is listed as a RCRA small quantity generator. As of December 7, 2005 the site is in violation with actual or potential emissions above the applicable major source threshold. Second quarter 2005 monitoring reports show measurable levels of methane at test points along the north boundary of the landfill adjacent to Weld County Road 6. Recent groundwater monitoring results on this site are inconclusive due to a majority of the wells being dry. Additionally, no offsite sampling points are included in the sampling program.

The Denver Regional Landfill North is listed as a RCRA small quantity generator currently in compliance with procedural requirements. Presently, this landfill is closed and undergoing post-closure monitoring. Only one monitoring well has been sampled due to the remaining wells being dry.

Based on investigations performed by Western Environment and the hydro geologic relationship of the landfills to the subject project, it is the opinion of Western Environment that shallow groundwater migration from the landfills to the Erie Commercial Ventures project is unlikely.

Files were reviewed with the Colorado Oil and Gas Conservation Commission pertaining to petroleum production facilities located in the area. These records indicate no petroleum facilities have been drilled on the property. The nearest active wells currently occur more than 1,000 feet to the east on Secton 19. These facilities have no recorded releases.

View to the south

3.2 AERIAL PHOTOGRAPHY REVIEW

Western Environment personnel reviewed aerial photography to help identify past uses of the property. The earliest photograph available was dated October 13, 1973. At that time, the subject property was in agricultural use, as well was the adjacent properties. Leon Wurl Parkway was not constructed, and limited development was seen in the area. The most recent photograph from 2002, showed the site much as it currently appears. No structures or improvements are located on the property. Residential development to the west was underway, and commercial development was to the southeast. A list of the photos reviewed is presented in Appendix B.

Aerial photograph obtained from GoogleEarth, 2002

4.0 SITE INSPECTION / INTERVIEWS

The purpose of a site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the property. During a site visit on March 16, 2006, Western Environment personnel visually and physically observed the property to the extent not obstructed by bodies of water, adjacent buildings, or other obstacles and debris. The property was inspected to identify unusual debris, chemical staining, evidence of contamination, and hazardous materials.

At the time of the site inspection, the property was undeveloped and contained no structures or improvements. The site was vegetated with an unharvested wheat crop. In the northeast portion of the site there was surface evidence of the Marfel Shaft. However, the exact location of the shaft could not be verified. Mr. Overton was interviewed on March 27, 2006. He indicated that ECV has owned the site for more than 30 years. During that time, it has been leased for dry land farming. He was unaware of any petroleum facilities ever occurring on the site. Additionally, biosolid application has not been performed.

View to the east, note Erie Landfills in background

4.1 Undermining

On December 23, 2005, Western Environment completed a Mine Subsidence Investigation on the subject property (Project Number 422-001-01). This investigation confirmed the workings of the Marfel Mine which are known to occur on the ECV property, however, no maps exist confirming the location and extent of the workings. Records on file with the Colorado Division of Mines and the Colorado Geological Survey show it began operations in 1897 and continued through 1904. Total production was placed at 14,302 tons. The records indicate that extraction of coal was from a slope entry, located on the subject property (see Figure 2). However, the exact location of this entry could not be confirmed. The Pinnacle Mine is referenced on maps from adjacent mines, and is recorded with the Colorado Division of Mines. However, no production records or mine maps are available.

The adjacent Mitchell Mine and Garfield #1 Mine produced coal during the same period as the Marfel and Pinnacle Mines. The technology and methods used were likely similar to the Marfel and Pinnacle Mines. These operations were classified as a modified room and pillar (room and board) mines. Haulage ways were ten feet wide and were separated by 30 foot wide "chain pillars." Rooms had approximate widths of twenty feet and lengths of 100 feet. Based upon previous investigations, calculated extraction rates of approximately 50% could be anticipated.

Props and Caps roof support, from Denver Public Library Western History Collection

5.0 CONCLUSIONS

Western Environment performed a Phase I Environmental Site Assessment for 46.613 acres in Section 24, Township 1 North, Range 69 West, in Erie, Colorado, in general conformance with the scope and limitations of ASTM Practice E 1527. This assessment has revealed **no further evidence of recognized environmental conditions with the subject property.**

5.1 DEVIATIONS

Site reconnaissance did not extend to 1940, however, it is the professional opinion of Western Environment that no environmental encumbrances were likely to have occurred between 1940 and the first available air photo from 1973.

6.0 LITERATURE CITED

ASTM. 2000. American Society for Testing and Materials, Special Technical Publication E 1527-00. 1916 Race Street, Philadelphia, Pennsylvania.

Colorado Geologic Survey. Colorado Front Range Inactive Coal Mine Data and Subsidence Information, Weld County, 1983.

Documents Referenced for Records Review (Appendix B)

APPENDICES

APPENDIX A

REFERENCE LISTS

Documents Referenced for Records Review

1) National Superfund Priorities List Sites: Colorado Region VIII March, 2006
2) U.S. EPA Superfund Program CERCLIS, Colorado Region VIII. March, 2006
3) RCRIS Master Facility List, TSD Sites, Colorado. March, 2006
4) Colorado Active Landfills. March, 2006
5) Historic Landfill Database. March, 2006
6) Colorado Department of Labor and Employment-Underground Storage Tank List Database. March, 2006
7) Colorado Transfer Stations. March, 2006
8) Colorado Voluntary Cleanup List. March, 2006
9) Colorado List of Historic Places March, 2006
10) Colorado Front Range Inactive Coal Mine Data and Subsidence Information, Weld County, Colorado Geological Survey, 1983

APPENDIX B

AIR PHOTO DOCUMENTATION

Aerial Photography Review

Date	Frames
2002	GoogleEarth
10/13/1973	Colorado Aerial Service

APPENDIX C

Western Environment and Ecology Inc.

Statement of Qualifications

REAL ESTATE TRANSFER ENVIRONMENTAL AUDITS
(RETA)

In response to provisions contained within the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA), lending institutions, firms and individuals involved with property transfers have become painfully aware of the costs associated with environmental liabilities. In an attempt to make informed decisions and potentially avail themselves of the "innocent purchaser defense" as defined in CERCLA, lending institutions are requiring the completion of an environmental audit. Previously, the completeness and the thoroughness of these audits varied as greatly as the cost. However, in late 1992, the American Society of Testing and Materials (ASTM) adopted specific standards for completion of Phase I audits. The ASTM standards (E-1527 and E-1528) are quite specific as to the level of investigation necessary to complete the audit. **WESTERN ENVIRONMENT AND ECOLOGY, INC.** has performed Real Estate Transfer Environmental Audits to ASTM standards long before the standards were adopted. Additionally, **WESTERN ENVIRONMENT AND ECOLOGY, INC.** personnel have provided training to FDIC regional offices on environmental compliance and financial institution liabilities. This familiarity with lending institutions and more than fifteen years of experience in performing RETA's allows **WESTERN ENVIRONMENT AND ECOLOGY, INC.** to provide efficient and complete reports meeting short time frame requirements.

SERVICES

- Historical Photo Records Search
- Environmental Records Search
- Interviews
- On-site Inspection
- Lead-Based Paint Survey
- Asbestos Survey
- Radon Survey
- PCB Survey

SELECTED CLIENT LIST

Community Development Group Denver, Colorado
City of Aurora, Aurora, Colorado
City of Wheat Ridge, Colorado
Shively, Strommen & Holst, Longmont, Colorado
Town of Lyons, Colorado
Grant & Grant, Longmont, Colorado

GREG D. SHERMAN, P.G.

President

PROFESSIONAL CAPABILITIES:

Mr. Sherman has more than 20 years of professional experience. He is currently President of **WESTERN ENVIRONMENT AND ECOLOGY, INC.** Prior to his current position, he was the Principal Geologist with SEACOR in its Lakewood, Colorado office.

Duties performed in these capacities involved responsibility for CERCLA RI/FS studies and RCRA investigations. His professional assignments include project management and technical direction of the design and installation of a 2,000-foot long interception trench at the Rocky Flats Nuclear Weapons Plant in Jefferson County, Colorado. Mr. Sherman has recently completed the oversight and management of the installation of more than 70 groundwater extraction wells and vapor extraction and sparging points. This work was completed on the Stanford Research Park Superfund site in Palo Alto, California. Recently, he has concentrated on hydrocarbon remediation system design and installation utilizing on-site reinjection of treated groundwater and enhanced oxygenation systems.

Mr. Sherman is past Chairman of the Rocky Mountain Section of the Association of Engineering Geologists. He has served as Chairman of Executive Enterprises Seminars on Sampling and Data Analysis. He has extensive experience in geotechnical and geological investigations, groundwater studies, UST testing and evaluation construction materials testing and mineral resource evaluation.

Mr. Sherman is recognized in the region as one of the leading experts in underground storage tank management and mine subsidence. He has placed special emphasis on the application of geophysical techniques to environmental and geotechnical investigations. Clients for these projects range from Federal, state and local governments to private industry and commercial developments. The project types included petroleum distribution facilities, nuclear power plants, highways and streets, dams and reservoirs, transmission lines, sewage treatment plants and sewage systems, hazardous and industrial waste disposal areas, and mining facilities, as well as residential and commercial developments. Mr. Sherman has performed geotechnical

and geological investigations in Alaska, Arizona, California, Colorado, Idaho, Illinois, Montana, New Mexico, New York, Nevada, North Dakota, South Dakota, Texas, Utah and Wyoming. Additionally, he has international evaluation experience in the Middle East and Mexico.

REGISTRATION/CERTIFICATION

Wyoming Professional Geologist #2296

Indiana Certified Geologist #786

Certified Professional Geologist, CPG #6586

Petro Tite Training Course, 1986

40-Hour OSHA Training Course, 1987

8-Hour OSHA Supervisor Course, 1987

Nuclear Density Gauge Operation and Safety Training Course, 1984

NRC Quality Assurance Training, 1978

Asbestos Inspector, 1996

EXPERIENCE

Western Environment and Ecology, Inc., Littleton, Colorado; President, 1994.
SEACOR, Inc., Lakewood, Colorado; Principal Scientist, 1992-1993.
Roy F. Weston, Inc., Lakewood, Colorado; Principal Geologist, 1990-1992.
ATEC Associates, Inc., Denver, Colorado; Environmental Division Manager, 1985-1990.
Tierra Consultants, Inc., Denver, Colorado; President, 1982-1985.
Apache Energy and Minerals, Denver, Colorado; Senior Project Geologist, 1979-1982.
Dames and Moore, Denver, Colorado; Project Geologist, 1977-1979.
Resource Associates of Alaska, Fairbanks, Alaska; Staff Geologist, 1976.
Uranerez U.S.A., Inc., Casper, Wyoming; Staff Geologist, 1975-1976.
Amoco Production Company, Denver, Colorado; Lab Technician, 1974.
Cities Service Company, Durango, Colorado; Field Technician, 1973.

EDUCATION

B.S., Geology, University of Northern Colorado, 1975
Graduate Studies, New Mexico Institute of Mining and Technology, 1977

AWARDS

Rocky Mountain Associate of Geologists, Outstanding Senior, 1975
Who's Who in the West, 1988

PROFESSIONAL ASSOCIATIONS

Association of Engineering Geologist
Society of Mining Engineers, American Institute of Mining Engineers
American Institute of Professional Geologists
Senior Scientist Colca Canyon Scientific Expedition, 1990
Colorado School of Mines, Non-facility Senior Design Team Advisor

PUBLICATIONS/PRESENTATIONS

Sherman, Greg D., "Sampling and Data Analysis"; Executive Enterprises Seminar, Chairman, May 1992.

Sherman, Greg D., "Statistical Design of Sampling Plans"; Executive Enterprises Seminar, June 1990.

Sherman, Greg D., "Impact of the EPA UST Regulations"; Tri-State Petroleum Marketer, December 1988.

Sherman, Greg D., "Variables Effecting Volumetric Leak Detection Methods for Underground Storage Tanks"; Paper given to the Colorado Section, American Society of Civil Engineers, 1988.

Sherman, Greg D., "The Impact of Underground Storage Tank Regulations on Industry"; Extended Abstracts, American Institute of Chemical Engineers, National Meeting, 1988.

Sherman, Greg D., "Assessment of Subsidence Damage to Existing Structures in Louisville, Lafayette, Colorado"; Proceedings of the Colorado Governor's Conference on Subsidence, 1985.

Sherman, Greg D., "Geology and Mining History of the Boulder/Weld Coal Field"; Paper given at Denver Coal Club Meeting, 1985.

Sherman, Greg D., "The New Mexico Gold Belt Regional Structural Implications"; Proceedings of the Western Mining Association, 1982 Convention.

Sherman, Greg D., "Colorado Front Range Uranium Deposits, A Possible Origin": in review.

Sherman, Greg D., "Origin of Monoclinal Folding Near Livermore, Colorado"; Mountain Geologist, April 1976.

BRIAN R. PARTINGTON
Project Manager

PROFESSIONAL CAPABILITIES

Mr. Partington is currently the Senior Project Manager at **WESTERN ENVIRONMENT AND ECOLOGY, INC.** Prior to his present position, he was an Engineering Technician for Soils and Materials Consultants, Inc. in Arvada, Colorado. Soils and Materials is a Geotechnical Engineering firm which performs engineering services in the Colorado front range. Duties included, but were not limited to, field observations and testing, drilled sample logging for subsurface investigations, providing foundation recommendations, and engineering report preparation.

Mr. Partington's activities at **WESTERN ENVIRONMENT AND ECOLOGY, INC.** include the oversight of drilling operations, monitoring well completion, water and soil sampling, conduct mine subsidence investigations, generate Phase I and II Environmental Site Assessments, Underground Storage Tank Removal, Corrective Action Plan generation, prepare Site Characterization Plans, perform Threatened and Endangered Species Surveys, Geologic Hazard Assessments, wetland delineations, mentor junior level staff, and provide proposals for new projects.

REGISTRATIONS/QUALIFICATIONS

40 Hour OSHA Hazardous Waste Site Operations Certification

EXPERIENCE

Western Environment and Ecology, Inc., Littleton, Colorado
Project Manager, 2004

Soils and Materials Consultants, Inc. Arvada, Colorado
Field Technician, 1999 - 2004

EDUCATION

B.S., Environmental Science, Metropolitan State College of Denver, May 2002.
U.S. Army Corps of Engineers Wetland Delineation Course

APPENDIX F
RESUMES

Resume

TREVOR BRANCH
Staff Engineer

EDUCATION

B.S. Environmental Engineering
University of New Hampshire
Durham, NH 2010

TRAINING & CERTIFICATIONS

40 Hour OSHA Training

Engineer-in Training,
State of New Hampshire Serial No. 5359

PROFESSIONAL AFFILIATIONS

National Groundwater Association (NGWA)

PROFESSIONAL SUMMARY

Mr. Branch recently joined CTL | Thompson with over two years of previous experience providing environmental consulting throughout New York, New Jersey and Connecticut.

Currently, as a Staff Engineer/Geologist for CTL's Denver-based environmental consulting division, his responsibilities are primarily providing Phase I environmental site assessments and Phase II due diligence reports.

Mr. Branch's experience includes Phase I and II environmental site assessments, underground storage tank removals and site characterization and remediation.

PROJECT EXPERIENCE

5th and Walnut Parking Garage, Auraria Higher Education Center, Denver, Colorado
Served as site geologist during subsurface investigation activities to determine the extent of PAH contamination previously encountered in test borings and pits. Oversight of drilling, logging and field screening of soils, lab analysis and groundwater flow determination were all conducted during the Phase II investigation. The findings of this investigation indicated that the site was not a source of contamination and was likely downgradient from an unidentified source.

Baptist Community Center, Mount Vernon, New York
Performed Phase I ESA for a Baptist church and community center in Mount Vernon. A Phase I was required prior to bank approval of a refinanced loan due to environmental concerns due to site being located in a historically industrial area. Site assessment proved there were no RECs in the immediate area except for the heating oil UST located onsite that advised to be removed. Following recommendations from our Phase I ESA the loan was approved.

Rochester Avenue apartments, Brooklyn, New York
Served as project manager of a vacant previously developed lot in Brooklyn proposed for residential redevelopment. Site characterization, organization of contractors, oversight of soil removal, air quality monitoring, end-point soil and soil vapor sampling, vapor system design and summary report were all part of my duties during this project.

Resume

MATTHEW L. WARDLOW, P.E.
Environmental Division Manager

EDUCATION

B.S. Engineering and Policy
Washington University, St. Louis, MO, 1993

TRAINING & CERTIFICATIONS

40 Hour OSHA Training

Confined Space Training

Mold Remediation Technician Training

Principals of Forced Air Remediation

Asbestos Inspector #775 Management Planner

Air Monitoring Specialist

PROFESSIONAL REGISTRATION

Registered Professional Engineer, Colorado No. 36223

PROFESSIONAL SOCIETIES

American Society of Civil Engineers

American Society of Foundation Engineers

Colorado Hazardous Waste Management Society

PROFESSIONAL SUMMARY

Mr. Wardlow joined CTL|Thompson, Inc. in 2004, having ten years of previous experience providing environmental consulting throughout Colorado. He currently serves as the Division Manager for CTL|Thompson's Denver-based Environmental Consulting Division, which includes staff supervision, project management, and business marketing. Mr. Wardlow has a variety of technical expertise in Phase I and II Environmental Site Assessments, underground storage tank removals, site characterizations, CDPHE Voluntary Cleanup applications, mold and moisture evaluations, and asbestos consulting services. Mr. Wardlow reviews and stamps Phase I and II studies that CTL|Thompson publishes, making sure that the latest regulations and standards are followed. He has developed a reputation as a consistent and reliable consultant for his clients, which include builders, lenders, attorneys, and government representatives. He encompasses a variety of project experience including transportation facilities, municipal buildings, residential developments, historical sites, medical facilities, and wastewater treatment plants.

PROJECT EXPERIENCE

Rose Medical Center, Aurora, Colorado -

Served as Project Manager for removal of this backup generator tank. Mr. Wardlow was able to negotiate closure of the site even though residual diesel and PAH contamination remained. This was accomplished by demonstrating the lack of impact to ground water, the inapplicability and uncertainty of certain soil standards, the lack of impact on proposed use, and by submitting a materials management and health and safety plan for proposed construction.

Aurora Academy Charter School, Aurora, Colorado -

Served as Project Manager for this voluntary study arising out of a concern of a TCE plume from the nearby Lowry site. Ground water sampling and characterization followed by soil vapor sampling indicated that the impact to a proposed gymnasium addition from solvent vapors was negligible. Served as head liaison to CDPHE personnel, detailing the site activities in a face-to-face meeting. CDPHE personnel issued a No Further Action letter to the school within one week of the meeting.

Roaring Fork Transportation Authority, Aspen, Colorado -

Served as Project Engineer for Roaring Fork Transportation Authority during the Environmental Consultation phase of the project. This project involved designing a treatment process for wash down waters and other waste streams. This will enable the client to abandon the septic field properly and switch its service over to Aspen Wastewater.

Troxel Residential Property, Gardner, Colorado -

As Project Manager, Mr. Wardlow was able to coordinate a contractor and obtain an UST Closure permit on an expedited basis. Extensive soil removal was needed at this UST installation in Carbondale, Colorado. Diesel-contaminated soils were segregated and characterized properly. The client was able to obtain tank closure on a rapid turnaround basis.

3960 High Street, Denver, Colorado -

Currently serving as Project Manager for a Phase I ESA, Phase II ESA and an UST removal. Phase II ESA was performed out of concern of prolonged industrial use on site and surrounding area. CTL discovered Carbon Tetrachloride and Chloroform above ground water standards, but in keeping up with the latest regulatory revision of March 2005 and by staying in contact with regulators, CTL was able to demonstrate that the more stringent standard of Carbon Tet is inapplicable, and that Chloroform is ubiquitous in lab results. Client successfully sold this industrial property.

Governor's Mansion, Denver, Colorado -

Project Manager for removal of a 1,000-gallon gasoline tank, and a second, 500-gallon waste oil tank that was discovered. Closure was obtained.

3500 South Clarkson, Denver, Colorado -

Project Manager for a soil and ground water study. This involved concerns by Swedish Hospital of a historical gas station at the specific site. Temporary monitoring wells were installed around the site of the project and the ground water was tested. The ground water was discovered to be un-impacted and the client purchased the site successfully.

Highlands Ranch and Grant Ranch Subdivisions, Denver Area, Colorado -

Project Manager and reviewer for over 200 mold and moisture intrusion evaluations for various builders. Projects have included an initial evaluation with air sampling, a perimeter drain observation, a post-mitigation observation, and followup sampling and placement of a temperature and humidity datalogger in the crawl space. Other evaluations throughout a given house have included roof leaks, elevated humidity in the attic, foul odors from sump pits and other locations, window flashing, and drainage issues.

Hotel Building, Aspen, Colorado -

Project Engineer for mold and moisture consultation. This consultation was performed in association with contractor remodeling of the building. CTL|T assisted in evaluating moisture intrusion pathways such as roof flashing. CTL|T gathered engineering information and air sampling data into a report detailing the recommended remediation protocols. CTL|T performed a follow-up evaluation and sampling after remediation, documenting that remediation was performed to industry standards. The contractor was able to proceed with the remodel, putting previously abandoned hotel space into profitable use.

Beacon Point, Aurora, Colorado -

Project Engineer and Reviewer for storm water consultation for a residential developer. Reviewed the Storm Water Management Plan (SWMP) after development and before initial application to the state. Reviews the SWMP to reflect changing site conditions. Also provides general consultation to the client during construction, offering erosion and sediment control alternatives.

Denver Federal Center, Colorado –

Project Engineer for development of the SWMP for the general contractor. Project involves reconstruction of roads, parking lots, and utilities. This federal project is administered directly by the EPA. Mr. Wardlow provided senior review and oversight for development of the SWMP

CTL | THOMPSON INCORPORATED

MINE SUBSIDENCE INVESTIGATION
ERIE PARCEL
A.K.A 4-CORNERS
SOUTHWEST OF ERIE PARKWAY
AND EAST COUNTY LINE ROAD
ERIE, COLORADO

Prepared For:

RMCS, Inc.
21 South Sunset Street
Longmont, Colorado 80503

Attention: Justin McClure

Project No. DN47,332-110

February 10, 2015

1971 West 12th Avenue | Denver, Colorado 80204 | Phone: 303-825-0777 | Fax: 303-825-4252

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APPENDIX C – GEOPHYSICAL TEST LOGS

SCOPE AND SUMMARY

This report presents the results of our Mine Subsidence Investigation for the 47-acre Erie Parcel, also known as 4-Corners, southwest of Erie Parkway and East County Line Road in Erie, Colorado (Fig. 1). It is reported that the Marfel and Pinnacle mines underlie this property and entry points to both mines are on the property. The purpose of this investigation is to evaluate the subsurface conditions, estimate the depths where coal mining occurred, confirm the mapped mine access locations, evaluate the risk of subsidence, and provide mitigation concept (if merited) to reduce the likelihood of potential subsidence impacts on site development and construction. This investigation was a team effort performed by CTL | Thompson, Inc. and Kanaan Hanna, who served as a consultant to RMCS. The report includes a descriptions of the site conditions, our understanding of the proposed development, a summary of previous investigations and available mine data, subsurface conditions encountered in our exploratory borings and test pits, and discussions of site development and construction as influenced by the coal mine(s). The scope was described in our Contract Modification No. 2 (DN 14-0290-CM2) dated October 9, 2014 and revised on October 15, 2014.

The field investigation was performed between October 22 and November 5, 2014. A total of ten (10) deep exploratory borings (B-1 to B-10) were drilled, of which three where cored and seven drilled with air rotary. Boring depths varied from 120 to 155 feet. Borehole geophysical logging and void imaging were conducted in support of the exploratory plan.

This report is based on available historical coal mine records, review of previous investigation performed by others, exploratory data collected during this investigation, our subsidence experience in the Boulder-Weld Coal Field, and our understanding of the planned development. The results and findings have led to the following conclusions and recommendations, with more detailed discussion in the report.

Conclusions

1. Historical records indicate that the Marfel and Pinnacle mines and shafts are on this property. Maps of the Marfel and Pinnacle extractions are not available. Mining records show that there are three mines adjacent to the parcel including Garfield No. 1 mine to the north, Mitchell mine to the east, and McGregor mine to the south. A map of the McGregor mine documents a subsidence feature on the south boundary of this site and indicates that mining in the Pinnacle occurred prior to 1894.

2. The Marfel and Pinnacle shafts were found through test pits and borings. The Marfel shaft is 7-feet wide, 12-feet long, and at least 225 feet deep and is backfilled with mine spoil and trash. The Pinnacle shaft is circular with a measured diameter of 10 feet. The depth of the Pinnacle shaft is not known. The Pinnacle shaft backfill consisted of mine spoil. A sloped entry was not found in this investigation.

3. Subsoils encountered in our borings consisted of about 8 to 21 feet of interlayered sand and clay underlain by bedrock of the Laramie formation to the maximum explored depth of 155. The Fox Hills formation was not encountered. Thin rider coal seams were found within the upper 55 feet of most borings. Two mineable coal seams were found. The upper mineable seam depth varied between 80 and 125 feet and was 2.5 to 7 feet thick. The depth to the lower mineable seam varied between 90 and 142 feet and it was 3 to 8 feet thick.

4. Exploratory program: The geotechnical underground exploration, borehole geophysical logging, and void mapping confirmed the presence of two coal seams, referred to as the upper and lower seam, and indicated the following:

    - The upper seam was not mined.
    - The lower seam was mined using a room and pillar mining method.
    - The mine is flooded and contains fine coal/rubble without open void space, as confirmed by the downhole video camera and sonar imaging in boring B-3 and drill observation. The density of the coal/rubble is assumed to be less than 70 pcf. This indicates that the residual subsidence is complete.

5. Bedrock physical characteristics:

- Rock strength – The average rockmass strength of the bedrock claystone/sandstone, based on measured laboratory physical properties, is 2,200 psi. This strength is considerably greater than the overburden pressure, estimated as 100-120 psi.

- Rock Quality Designation (RQD) – RQD values for core in B-1 to B-3 ranged from 50 to 100 percent, which indicates the bedrock quality is good.

- Overburden pressure – Stress calculations indicate that the overburden pressure (vertical and horizontal stress) imposed on the mine workings of the lower seam is static. We conclude that the stresses acting on the mine roof are low and will not adversely affect the bedrock integrity.

- Mine time period effect – Since mining operation ceased more than 100 years ago, residual subsidence has not produced any surface disturbance. The subsidence feature reported on the McGregor mine map was dated 1894.

- Interburden stability – The interburden thickness between the two seams is approximately 12 feet. This is likely too thin to allow for mining in both seams, as reported by ATEC/WEE. We believe that an unstable mine roof/floor would have resulted if multi level mining 12 feet apart occurred. This would have led to major ground control hazards.

- Given the present conditions of the mine workings and the bedrock integrity, we believe the likelihood of any further surface subsidence or ground movement is very low.

6. Mine subsidence risk evaluation:

- Evaluation of subsidence using mine geometry and bulking factor methods indicates that the subsidence risk is very low.

- Probability of sinkhole development – The sinkhole risk evaluation performed for the lower seam using B-1 to B-3 core data indicates that the probability of ground deformation or sinkhole development is less than 5 percent. This is also attributed to the physical characteristics of the bedrock claystone/sandstone materials. Therefore the risk for future subsidence and or sudden sinkhole formation is very lot.

7. Based on analysis of the soil and bedrock conditions, depth of mining, extraction thicknesses, and our geotechnical-mining experience, we judge that the overall risk of future mine subsidence is very low. The subsidence hazard will not preclude the development of this site. Post-tensioned slab-on-grade, spread footings and/or mat foundations are ideal. Basements can be used. Deep foundations should be avoided. Sub-excavation as means to mitigate expansive soil and bedrock and to allow for shallow foundation use will not substantially increase the risk. Wells or other groundwater altering devices should not be used.

   Risk of potential ground subsidence is considered high within the vicinity of the two shafts if they are not mitigated. We recommend that the shafts be mitigated; after which, passive uses should be planned within 42 feet of the Marfel and 40 feet of the Pinnacle shaft centers.

SITE CONDITIONS

The 47-acre Erie Parcel is located south of Erie Parkway and west of East County Line Road in Erie, Colorado (Fig. 1 / Photo 1). The site is bordered by a residential subdivision on the west, residential/commercial developments on the south, and commercial property on the east. The site was formerly used for agricultural purposes and was predominately covered with wheat. Topography prepared by Rock Creek Surveying, LLC indicates that the ground surface generally slopes to the east with about 50 feet of vertical relief across the parcel. We visited the site several times over the course of this investigation and did not observe any surficial evidence of ground surface settlement due to underground coal mining except a spoil pile near the reported location of the Marfel shaft. Surficial subsidence features were not apparent.

Photo 1 – Google Earth© Aerial Site Photo, October 6, 2013.

PROPOSED DEVELOPMENT

We understand that the proposed development is planned as mixed-use including single-family residences, townhomes, apartments, and commercial/retail facilities. Single-family residences and townhomes may be one or two-story, wood-framed structures with or without basements. Apartments will likely be multi-story, wood or metal stud-framed structures. Commercial/Retail structures would likely be one to two-stories without basements. Paved roads and parking lots will provide access. Buried utilities would serve the project.

ABANDONED COAL MINING RECORDS

We reviewed mining records and maps provided by the Colorado Geologic Survey (CGS) and the Division of Reclamation and Mining Safety (DRMS). Review of these records indicates that the property is underlain by abandoned coal mines associated with Marfel and Pinnacle operations (Photo 2). As shown in Photo 2, three mines are reported adjacent to the property: Garfield No. 1 mine to the north, Mitchell mine to the east, and the McGregor mine to the south.

Photo 2 – Google Earth© Aerial Site Photo, October 6, 2014.

Very few records about the Marfel and Pinnacle mines were submitted by the mining companies. Pertinent information that is not available includes mine surveys (maps), records of the number of mined levels, and depths to the extraction. Data pertaining to Marfel and Pinnacle mines and adjacent mines are listed below in Table 1.

TABLE 1
SUMMARY OF MINE RECORDS

Mine	Production Years	Production (tons)	Number of Mined Seams
Mitchell	1883-1891	204,171	1
Pinnacle	Before 1894	--	--
McGregor	1885-1895	85,159	1
Garfield #1	1893-1897	122,711	1
Marfel	1897-1904	14,302	--

Mining Methods

Coal in the Boulder-Weld Coalfield was typically mined during the early 20th century using a room and pillar mining method. To access the coal, slope entries and/or shafts were excavated to the depth of the mineable coal seam and sometimes deeper. Mine shafts were also used to explore the subsurface materials. Air shafts were placed near entry or production shafts and at other locations depending upon the ventilation layout of the mine. Once the slope entry or production shaft reached the mineable coal

layer, haulageways (main and submain entries) were excavated (cut) parallel and perpendicular to the strike of the seam. After these entities were constructed, rooms – typically 15 to 20 feet wide and 100 to 300 feet long – were mined with pillars approximately 15 to 40 feet wide between rooms for support. Upon completion of the room and pillar operation, pillars were partially or fully removed using retreat mining techniques. Typically, 15 to 25-foot wide sections of support pillars were removed leaving stump pillars. Maps of the Garfield No. 1, Mitchell, and McGregor mines show that a room and pillar method was used.

Garfield No. 1 Mine

Photo 4 shows a portion of the map of Garfield No. 1 Mine. The southern border of the map correlates to present day Erie Parkway. The pillars for Garfield No. 1 upper seam are mapped as mined out to southern boundary.

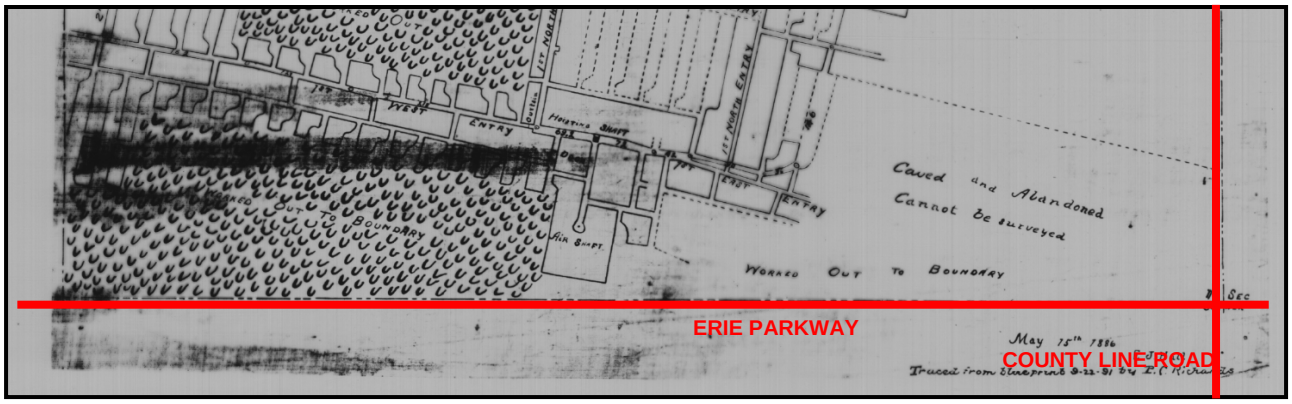

Photo 4 – Map of Garfield No. 1 – Upper Seam

Mitchell Mine

Photo 5 shows an 1886 map of the Mitchell Mine. We have no records indicating the depths to the mine. The mine was worked out up to the edge of East County Line Road. A haulageway can be seen extending up to the east edge of County Line Road.

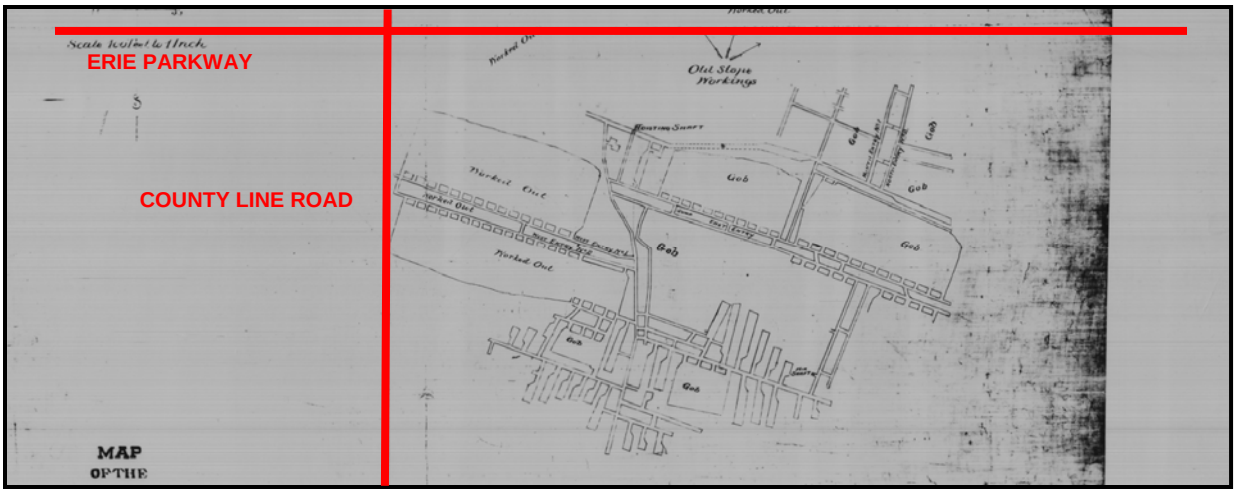

Photo 5 – Map of Mitchell Mine

McGregor Mine

Photo 6 shows an 1894 map of the McGregor Mine. The mine was relatively far south of the project site. Two important features on this map are the reported crevice (subsidence) feature caused by the mine workings associated with Pinnacle operations and boney coal encountered on the north side of the McGregor Mine. Boney coal is a term used for coal that has no mineral value. We assume that the Pinnacle was mined prior to 1885 and the subsidence feature occurred approximately 10 years later.

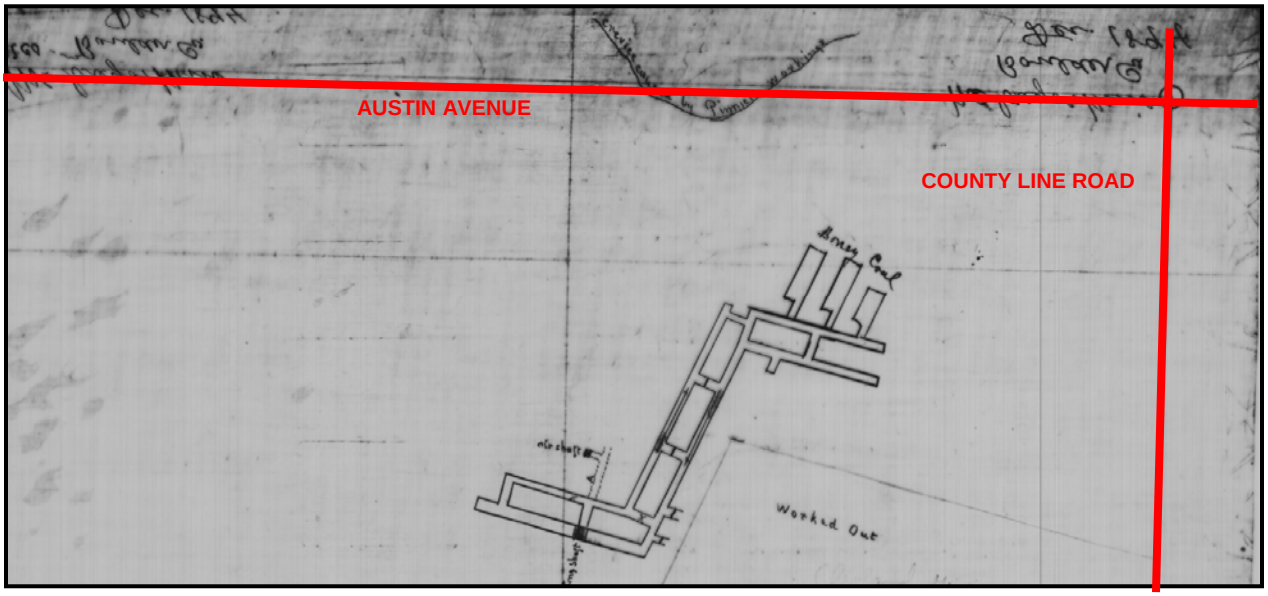

Photo 6 – Map of McGregor Mine

PREVIOUS INVESTIGATIONS

Several previous investigations were performed for this site. We reviewed four documents that were obtained from the CGS or provided by RMCS:

- *Preliminary Subsidence and Preliminary Geotechnical Engineering Investigation, ATEC Associates, Project No. 41-74001, April 3, 1987;*
- *Preliminary Mine Subsidence Investigation, Western Environmental and Ecology, Project No. 422-001-01, December 23, 2005;*
- *Review Reports and Documents, Abandoned Mine and Subsidence Investigation, Zapata Engineering, Blackhawk, Project No. 5083, October 24, 2007; and,*
- *Preliminary Geotechnical Investigation, CTL | Thompson, Project No. DN47,332.000-115, September 10, 2014.*

ATEC and WEE Investigations (1987 and 2005)

ATEC and Western Environmental and Ecology (WEE) advanced a total of 15 deep borings in their 1987 and 2005 investigations. It was reported that two mineable coal seams exist below the property. They reported that the depth to the top of the upper seam varies from 80 to 116 feet and the depth to the lower seam varies from 101 to 136 feet. The two seams are reportedly 12 feet apart (interburden). ATEC's 1987 report indicates that the Marfel mine has an average combined coal thickness of about 14 feet. WEE reported that mining occurred in the upper, lower, and both seams at individual drill locations. An 18-inch thick void was reported at X-13. WEE commented on the height of collapse above the mine workings in the Boulder-Weld Coal Field and this project as follows: *"the observed results from the drilling on the site show that collapse is confined to an interval of 20 to 40 feet above the workings".* The reports include vertical profiles of electrical resistivity, spontaneous potential, caliper, and natural gamma. The profiles and boring descriptions were considered in the development of this report. The approximate locations of the borings from previous investigation have been included in this report (Fig. 1). We have the geophysical data in our files.

Blackhawk Document Review (2007)

Blackhawk's 2007 document review indicated a discrepancy in the Marfel mine documents. One record pertaining to the Marfel mine reports that the mine is located several miles north in Section 13. The Erie Parcel is located in Section 24. We do not know if this is a numerical error in Section reporting by the mining company or if the record is accurate.

CTL | Thompson Preliminary Geotechnical Investigation (2014)

Exploratory test pits were excavated in an effort to locate mapped mine shafts or slope entries. Two mine shafts to the Marfel and Pinnacle mines are reported on the property by CGS and United States Geological Survey (USGS). Blackhawk concluded that the two government agencies report two different locations for each access point; totaling four possible shaft locations. The United States Bureau of Mines (USBM) records indicate that a sloped entry occurred for the Marfel mine. The reported locations of the four possible locations are shown on Fig. 1. All locations were surveyed and staked in the field by Rock Creek Surveying, LLC. The reported Marfel shaft location by CGS was immediately adjacent to a spoil pile (Photo 7).

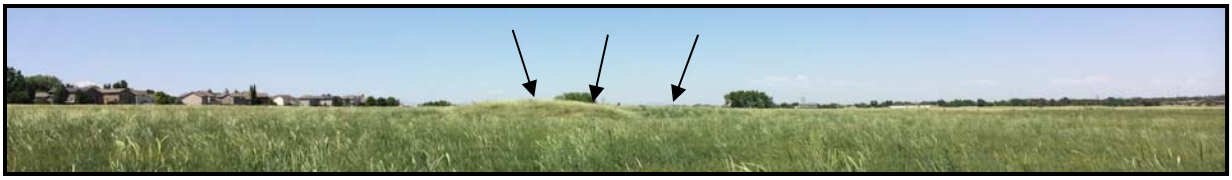

Photo 7 – Photograph of spoil pile, June 13, 2014.

Test pits at the two reported locations of the Marfel mine entry did not reveal evidence of mining. Excavation of the soil pile indicated that the pile likely originated from a mine entry excavation. A suspicious location was observed northeast of the spoil pile that did not contain vegetation. A test pit at this location unearthed evidence of mining. Debris and trash including bottles, shoes, bed framing, a cow carcass, wagon parts, and other garbage and mining tools were found. The excavation exposed in-place

timber lagging. We initially suspected that the reported sloped entry to the mine was exposed. A horizontal alignment was approximated in the field and surveyed by Rock Creek. Verification testing (drilling or geophysics) was recommended to evaluate the entry and overlying bedrock properties.

Test pits of the two reported locations of the Pinnacle mine entry did not reveal evidence of mining. An excavation at a suspicious location unearthed the Pinnacle mine entry and revealed spoils extending downward. The spoils extended horizontally in a circle with a diameter of about 10 feet which indicates that this entry was a vertical shaft. These conditions were encountered consistently to the maximum explored depth of 20 feet. Rock Creek surveyed the location.

MINE SUBSIDENCE INVESTIGATION

Based on review of previous mine subsidence investigations, the exposed conditions in our June 2014 test pits, and meetings with CGS, an investigative approach to evaluate the suspected slope entry to the Marfel mine and reported underlying coal extractions was developed by Kanaan Hanna, (as a consultant to RMCS) and Ron McOmber and Matt Monteith of CTL | Thompson. The field investigation began in October, 2014 and consisted of drilling 10 deep exploratory borings (B-1 to B-10). Three borings, B-1 to B-3, were sampled using 3-inch diameter HQ cores and seven borings were advanced using air-rotary drilling. Additionally, we drilled several shallow and deep borings using solid-stem auger to evaluate the location of the suspect sloped entry. We also tested and logged the deep holes for resistivity, gamma, density, and caliper. Downhole video camera and sonar scanning tools were used to attempt to image the conditions of mine workings encountered during drilling. IDS-Colog Group performed the geophysical logging and Zapata provided the imaging tools. Each boring location was surveyed by Rock Creek Surveying, LLC prior to drilling. Precision Sampling of Colorado Springs drilled the borings using a CME750X all-terrain drill rig and a Boart Longyear track-mounted rig. Our representatives observed the drilling and coring operations, logged the subsurface conditions, and obtained core samples. Logs of

Exploratory Borings are presented in Appendix A, Core Logs and Photographs in Appendix B, and Geophysical Test Logs in Appendix C.

The samples were transported to our laboratory where they were examined, classified by our engineers, and test intervals were selected. Advanced Terra Testing Group of Lakewood, Colorado performed 19 unconfined compression tests with Poisson's ratio measurements utilizing ASTM D 7012 Method D. We performed general classification testing and splitting tensile tests utilizing ASTM C 496.

Marfel Mine Entry Investigation

As discussed previously, the USBM reported that the access to the mine was through a sloped entry (haulageway). Our June 2014 test pit investigation led us to believe that this was the case. B-1 was cored at station 1+00 of the suspected slope alignment to: a) verify the presences of the haulageway; b) collect samples for testing; and c) evaluate the subsidence potential above the entry (Fig. 2). B-1 did not indicate the presence of a sloped entry. Several shallow borings were then advanced to further investigate the location of the sloped entry. One boring was drilled at station 0+40 but did not encounter the entry. Two more borings were then offset from 0+40, 5 feet left and 10 feet right of the suspected alignment. Neither indicated the presence of a sloped entry (Figs. 2 and A-1). We then reassessed our opinion of a sloped entry and postulated that the entry could be a vertical shaft.

To investigate the possibility of a shaft, we returned to our 2014 test pit location and drilled seven shallow borings and one deep boring. A vertical shaft was found at station -0+05. The shaft appeared to be rectangular with dimensions of approximately 7-feet, 12-feet and at least 225 feet deep. The boring drilled at station -0+05 was terminated in shaft backfill at a depth of 225 feet. Observation of drill performance leads us to believe that the shaft backfill is very soft to soft. Our 2014 test pits revealed trash within the fill. These holes were not logged with geophysical test equipment. Logs of Exploratory Shaft Borings are shown in Appendix A.

Description of Deep Exploratory Borings (Mine Extraction Borings)

The following descriptions summarize the results of our 10 borings (B-1 to B-10) and do not incorporate descriptions from previous investigations. Subsoils consisted of about 8 to 21 feet of interlayered sand and clay underlain by bedrock of the Laramie formation to the maximum explored depth of 155 feet. The Fox Hills formation was not encountered. Thin, rider coal seams, up to 1.5 feet were found within the upper 55 feet of most borings. Two mineable, upper and lower, coal seams were found. The depth to the upper seam varied between 80 and 125 feet and it was 2.5 to 7 feet thick. The depth to the lower mineable seam varied between 90 and 142 feet and was 3 to 8 feet thick. Table 2 presents the data (B-1 to B-10) from this investigation and information on the coal seam geometry including elevation data and thickness, drilling circulation, and interburden thickness. For the purpose of comparison, the table also includes the boring data from the previous ATEC and WEE studies (X-1 to X-15). The table also includes our opinions of were mining occurred. Pertinent engineering characteristics of the soil and bedrock are described in the following paragraphs.

TABLE 2
SUMMARY OF COAL AND MINE GEOMETERY

BORING	GROUND SURFACE ELEVATION (FEET)	UPPER SEAM				LOWER SEAM				CIRCULATION LOST (YES/NO)	INTERBURDEN THICKNESS (FEET)
		TOP OF COAL DEPTH (FEET)	TOP OF COAL ELEVATION (FEET)	COAL THICKNESS (FEET)	MINED (YES/NO)	TOP OF COAL DEPTH (FEET)	TOP OF COAL ELEVATION (FEET)	COAL THICKNESS (FEET)	MINED (YES/NO)		
WEE 2005 STUDY											
X-1	5096	100	4996	5	NO	--	--	--	YES	YES	--
X-2	5089	99	4990	4	NO	116	4973	5	NO	NO	13
X-3	5088	92	4996	4	NO	106	4982	5	NO	NO	10
X-4	5095	116	4979	5	NO	136	4959	4	NO	NO	15
X-5	5082	80	5002	6	NO	102	4980	4	YES	YES	16
X-6	5080	95	4985	3	NO	110	4970	4	YES	YES	12
X-7	5088	97.5	4990.5	5	NO	115.5	4972.5	4.5	NO	NO	13
X-8	5088	100.5	4987.5	5	NO	118	4970	4	NO	NO	12.5
X-9	5094	98.5	4995.5	4	NO	115	4979	5	NO	YES	12.5
X-10	5100	114	4986	5	NO	130	4970	--	NO	YES	11
X-11	5110	121	4989	5	NO	135	4975	4	NO	NO	9
X-12	5096	108.5	4987.5	5	NO	128.5	4967.5	7	NO	YES	15
X-13	5079	85	4994	4.5	NO	101	4978	5	YES	YES	11.5
X-14	5100	103	4997	4	NO	--	--	--	YES	YES	--
X-15	5109	100	5009	2.5	NO	116	4993	4	YES	YES	13.5
CURRENT INVESTIGATION											
B-1	5087	92	4995	4.5	NO	102	4975	4.5	YES	--	15.5
B-2	5081	96	4985	6	NO	123	4958	3	NO	--	21
B-3	5078	85.5	4992.5	4.5	NO	97	4981	8	YES	--	7
B-4	5078	84	4994	3	NO	90	4988	4	NO	NO	3
B-5	5076	87	4989	4.5	NO	103	4973	4	NO	NO	11.5
B-6	5085	93	4992	5	NO	109	4976	3	YES	NO	11
B-7	5100	125	4975	7	NO	142	4958	7	NO	NO	10
B-8	5116	87	5029	6	NO	--	--	--	NO	NO	--
B-9	5118	80	5038	7	NO	114	5004	3	NO	NO	21
B-10	5086	100	4986	7	NO	119	4967	8	YES	NO	12

Core Boring B-1

Sandy clay was encountered from 0 to 10 feet underlain by silty sand to 21 feet. Bedrock sandstone and claystone with intermittent thin rider coal seams was encountered to a depth of 92 feet. The upper seam was penetrated from 92 to 96 feet. Core recovery of 73 percent and rock quality designation (RQD) of 40 percent was measured in the upper seam. Maximum caliper deflection of 4 inches was measured in the upper seam at 94 feet. The lower seam was penetrated from 102 feet to 106 feet. The core recovery and RQD was zero in the lower seam. *The lower seam was mined*. Total core depth was 115 feet. The geophysical tools could not be lowered past 107 feet.

Core Boring B-2

Interlayered sand and clay was encountered from 0 to 20 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 96 feet. The upper seam was penetrated from 96 to 102 feet. Core recovery of 77 percent and RQD of 47 percent was measured in the upper coal seam. The lower seam was penetrated from 123 to 126 feet. The core recovery was 100 percent and RQD was 40 percent in the lower coal seam. The geophysical tools could not be lowered past 70 feet. *No mining occurred at this location*. Total core depth was 131 feet.

Core Boring B-3

Interlayered sand and clay was encountered from 0 to 19 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 85.5 feet. The upper seam was penetrated from 85.5 to 90 feet. Core recovery of 100 percent and RQD of 58 percent was measured in the upper coal seam. The caliper tool did not deflect in the upper coal seam. The lower seam was penetrated from 97 to 105 feet. The core recovery was 63 percent and RQD was 50 percent in the lower coal seam. A possible void was encountered from 99.5 to 101.5 feet; however, less than 1-inch of caliper deflection was measured in the lower seam. The geophysical tools could not be lowered past 103 feet. Also, the downhole video camera and sonar tools could not be lowered past 99 feet. This indicates that the mine workings are filled with rubble/coal with no evidence of an open void. *The lower seam was mined at this location*. Total core depth was 107 feet.

Air-Rotary Boring B-4

Interlayered sand and clay was encountered from 0 to 22 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 84 feet. The upper seam was penetrated from 84 to 87 feet. The caliper tool did not deflect in the upper coal seam. The lower seam was penetrated from 90 to 94 feet. The caliper tool did not deflect in the lower coal seam. Drilling circulation was not lost. *No mining occurred at this location*. Total drilled depth was 115 feet.

Air-Rotary Boring B-5

Interlayered sand and clay was encountered from 0 to 19 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 87 feet. The upper seam was penetrated from 87 to 91.5 feet. The lower seam was penetrated from 103 to 107 feet. The geophysical tools could not be lowered deeper than 85 feet. Drilling circulation was not lost. Evidence of mining was not apparent during drilling. Total drilled depth was 115 feet.

Air-Rotary Boring B-6

Sandy clay was encountered from 0 to 18 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 93 feet. The upper seam was penetrated from 93 to 98 feet. The lower seam was penetrated from 109 to 112 feet. Drilling circulation was not lost. The geophysical tools could not be lowered deeper than 89 feet due to borehole caving during the PVC casing installation. Drill performance indicates that *mining occurred in the lower coal seam*. Total drilled depth was 125 feet.

Air-Rotary Boring B-7

Interlayered sand and clay was encountered from 0 to 14 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 125 feet. The upper seam was penetrated from 125 to 132 feet. The lower seam was penetrated from 142 to 149 feet. Drilling circulation was not lost. Geophysical tools lowered to a depth of 155 feet. Caliper deflection measurements show *no indication of mining*. Total drilled depth was 155 feet.

Air-Rotary Boring B-8

Interlayered sand and clay was encountered from 0 to 8 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 87 feet. The upper seam was penetrated from 87 to 93 feet. The lower seam was not apparent. Drilling circulation was not lost. Geophysical tools lowered to a depth of 146 feet. Caliper deflection of 2-inches was measured at 134 feet. We believe that this magnitude of deflection was likely created by drilling. *No mining occurred at this location*. Total drilled depth was 155 feet.

Air-Rotary Boring B-9

Sandy clay was encountered from 0 to 13 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 80 feet. The upper seam was penetrated from 80 to 87 feet. The lower seam was penetrated from 114 to 117 feet. Drilling circulation was not lost. Geophysical tools lowered to a depth of 112 feet. *No evidence of mining was observed at this location*. Total drilled depth was 125 feet.

Air-Rotary Boring B-10

Interlayered sand and clay was encountered from 0 to 18 feet underlain by bedrock sandstone and claystone with intermittent thin coal seams to a depth of 100 feet. The upper seam was penetrated from 100 to 107 feet. The lower seam was penetrated from 119 to 127 feet. Drilling circulation was not lost. Geophysical tools lowered to a depth of 110 feet. *Mining was observed in the lower seam.* Total drilled depth was 155 feet.

Material Physical and Strength Properties

Laboratory tests consisted of moisture content, density, gradation, Atterberg limits, unconfined compression, Young's Modulus, Poission's Ratio, and splitting tensile strength (Table 3). The following summarizes the results of the tests.

TABLE 3
SUMMARY OF LABORATORY TEST RESULTS

CORE	DEPTH	MOISTURE CONTENT (%)	MOIST DENSITY (pcf)	PASSING NO. 200 SIEVE (%)	ATTERBERG LIMITS		UNCONFINED COMPRESSION TESTS			SPLITTING TENSILE STRENGTH (psi)	SOIL TYPE
					LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (psi)	YOUNG'S MODULUS (x 10^6 psi)	POISSON'S RATIO		
B-1	62	10.7	144	99	51	34	1090	0.17	0.429		CLAYSTONE
B-1	76	10.1	137	77	30	12	4680	0.06	0.141		CLAYSTONE
B-1	86	17.7	133	98			400	0.04	0.374		CLAYSTONE
B-1	87.5		131				80	0.00	0.362		CLAYSTONE
B-1	91		122				180	0.02	0.443		COAL
B-1	98		139				300	0.02	0.135	20	CLAYSTONE AND LIGNITE
B-1	109		138				1800	0.09	0.138		CLAYSTONE/SANDSTONE
B-2	79		139				1330	0.11	0.163		CLAYSTONE
B-2	82		136				40	0.00	0.137		LIGNITE/COAL
B-2	97		79				780	0.03	0.032		COAL
B-2	104.5		142				2080	0.44	0.146	215	CLAYSTONE/SANDSTONE
B-2	108.5		145				1690	0.31	0.073	170	CLAYSTONE/SANDSTONE
B-2	122		142				780	0.14	0.254	260	CLAYSTONE/SANDSTONE
B-2	126.5		146				1740	0.22	0.379		CLAYSTONE/SANDSTONE
B-3	79.5		162				8470	4.05	0.339		SANDSTONE
B-3	81		146				1230	0.13	0.372		CLAYSTONE
B-3	88.5		81				1150	0.23	0.144		COAL
B-3	98		135				90	0.01	0.369	15	LIGNITE/COAL
B-3	105		142				940	0.17	0.308		SANDSTONE/CLAYSTONE

Bedrock primarily consisted of claystone with interbedded sandstone and lens of coal (rider seams) and lignite. Three bedrock samples had 77 to 99 percent clay and silt size particles and exhibited low and moderate plasticity. Moist density varied 133 to 162 pcf. The unconfined compressive strength (UCS) for claystone in six samples varied 400 to 4680 psi, and the UCS for claystone/sandstone varied 780 to 2080 psi in six samples. The UCS for sandstone measured in one sample was 8470 psi. In general, the UCS varied 400 to 8470 psi with an average strength of 2200 psi. Poisson's ratio varied from 0.14 to 0.429. Tensile strength varied 170 to 260 psi in three samples. We judge the claystone and sandstone are comparatively strong and competent.

Coal cores were primarily brown to black, highly fractured, and blocky. Lignite was interbedded in a few cores. Coal moist density varied 79 to 139 pcf. Coal UCS varied 40 to 1150 psi with an average strength of 420 psi. Poisson's ratio varied 0.032 to 0.443. Tensile strengths of 15 and 20 psi were measured in two samples. We judge the coal and lignite are weak.

Bedrock Physical Characterization and Ground Stability Evaluation

The methodology used in our evaluation was quantitatively based on: 1) various rock mass classifications methods (such as Bieniawski 1984 & 1989); 2) core data and physical properties and 3) our practical mining-geotechnical experience, and knowledge of underground mining operations (see reference list at the end of the text).

Rock Strength

The rockmass strength of the bedrock claystone/sandstone varied 700 to 8,470 psi, and was 400 psi in one sample. The average strength was 2,200 psi. The rock strength rating is estimated to be medium strong to strong. This range of rock strength is much greater than the overburden pressure, estimated as 100 – 120 psi (using 1.0-1.2 psi per foot of depth, and an average overburden depth of 100 feet).

Rock Quality Designation (RQD)

The RQD value is another criterion used to classify the bedrock quality. An RQD value of less than 25 indicates very poor rock, 50-75 fair, 75–90 good, and 90-100 excellent. Reviewing B-1, B-2, and B-3 core data (Figs. B-1 to B-6) shows the RQD values ranged from 50 to 100 percent. We judge that the bedrock quality is good.

Overburden Pressure

We believe that the overburden pressure (vertical and horizontal stress), imposed on the mine workings of the lower seam, is static. The following equations were used:

S_v = 1.0-1.2 h (psf), or $S_v = \gamma h$ and
$S_h = S_v (\nu/1-\nu)$, where
S_v and S_h = vertical and horizontal stress (psf), respectively
h = overburden (vertical) depth (feet)
γ = the unit weight of the rock (pcf)
ν = Poisson's ratio

The value of the Poisson's ratio (ν) for the claystone/sandstone is between 0.2 and 0.35. For a value of Poission's ratio of 0.2, $S_h = 1/4\ S_v$; and if; $\nu = 0.33$, $S_h = 1/2\ S_v$, and if $\nu = 0.44$ to 0.5, $S_h \leq S_v$, and the stress field is hydrostatic. Since no core discing was observed, we can conclude that $S_h < S_v$. Based on this analysis, we believe that the stresses acting on the mine roof are low and will not adversely affect the bedrock integrity.

Mine Time Period Effects

We used the time of mining as a measure of the rock-mass strength. Mining records show that the production years for the Marfel Mine were from 1897 to 1904 and the Pinnacle was mined prior to 1894. Mining ceased more than 100 years ago, and residual subsidence has not produced any appreciable surface deformation. Given the pre-

sent conditions of the filled mine workings and the bedrock integrity, we do not anticipate any further surface subsidence displacement or ground movement due to subsidence of the mine workings.

Void Imaging

A potential void encountered in core B-3 was investigated using a downhole video camera and sonar scanning tools. The tools were lowered in an attempt to observe the ground conditions and size of the potential void at 99.5 to 101.5 feet. Imaging was very limited and no data could be obtained due to poor groundwater clarity and the fine coal/rubble materials filling the extraction. Based on the unsuccessful void mapping, we conclude that the mine workings are flooded with water, coal, and rubble. No void was apparent.

ANALYSIS AND INTERPRETATION OF MINED AREAS

It is important to understand how and where coal was mined and the depth to the extraction to evaluate the risk of subsidence potential. We reviewed data from historical records, previous investigations, and data from this investigation to evaluate potentially mined areas. We also reviewed top of coal depths and bedrock stratigraphy. We have included Isopach Maps of the upper and lower seams using ground surface elevations and drilled hole data (Figs. 3 and 4). It is our opinion that mining did not occur in both seams; however, if mining did occur in both seams, mining of each seam does not appear to overlap horizontally.

Upper Coal Seam Isopach

A plan showing the elevation of top of coal, coal thickness, and our interpretation of where mining occurred in the upper seam is provided as Fig. 3. We made our own interpretation of the data from previous investigations by ATEC and WEE. Our opinions are sometimes different. For example, we do not believe that mining occurred in the

upper seam. ATEC and WEE reported multi-level mining at a few locations. From a ground control point of view, it would be very difficult to mine both levels at the same horizontal level with an interburden thickness of approximately 12 feet without creating major ground hazards.

A potential reason that the multi-level mining was reported was due to multi-level caliper deflection records. We believe that there are two explanations for this. One potential reason is due to erosion of the borehole walls within coal due to the mud rotary drill method. Observation of the coal cores indicates that the coal is highly fractured. Some of the coal cores fell apart when removed from the core barrel. It is possible that coal eroded when drill fluid motion/pressure occurred which would create a void or bed separation. This mechanism could have led to false interpretation of where mining occurred. One way to evaluate this is to review the gamma and resistivity data where caliper deflection is reported. High resistivity and low gamma lead us to believe that coal is present. Comparatively low resistivity and higher gamma would indicate rubble since the coal extractions were found to be water filled.

Another possible explanation for double coal seam deflections is voids created by bulking or subsidence. This mechanism comes into play where mining occurred in the lower seam. After mining, the interburden and overlying upper seam likely bulked or collapsed into the lower extraction creating voids in the upper coal seam. The collapse limit above mines in the Boulder-Weld Coalfield is commonly 20 to 40 feet above the extraction which would intercept the upper coal seam. Testing indicated that the coal is weak. Bulking and/or collapse of the upper coal seam could have contributed to caliper deflections. This mechanism could have led to false interpretation of where mining occurred.

Lower Coal Seam Isopach

A plan showing the depth and elevation of top of coal, coal thickness, and our interpretation of where mining occurred in the lower seam is provided as Fig. 4. As stated

previously, we made our own interpretation of the data from previous investigations by ATEC and WEE. We believe that mining occurred at 12 of 25 drill hole locations from this and previous studies. We believe that the coal was extracted using a room and pillar technique. The precise horizontal extents of mining and the degree in which the pillars were removed are impossible to determine due to the lack of mine maps.

Data indicates that the Marfel and Pinnacle shafts were utilized to mine the lower seam. The depth of mining in the vicinity of the Marfel appears to vary between 100 and 116 feet below grade. The depth to mining varies between 115 and 128.5 feet in the vicinity of the Pinnacle shaft.

We used the reported coal quantity of 14302 tons, average coal thickness of 5 feet from this investigation, and average moist coal density from this study of 90 pcf to approximate the square footage of mining recorded in the Marfel. We found that the mining footprint is about 63560 square feet or 1.5 acres which is about 3 percent of this site. If the pillars were left in place, the mining area should approximately double in footprint to about 3 acres or 6 percent of the site area. The computed area is small compared to the span between borings where we believe mining occurred. It appears that most of the coal production was unreported. It is also possible that the Garfield No. 1 mine to the north extended onto the property in the area of X-1, X-14, and X-15 and went unreported/undocumented. We do not know the depth to the Garfield No. 1.

SUBSIDENCE MECHANISMS

When coal is mined underground, stress increases in the soil and bedrock overlying the mined seam due to the loss of vertical support. Eventually the overburden begins to subside into the extraction. The occurrence of subsidence and the mechanisms by which the overburden rock is distressed and displaced depend on the physical properties of the overburden, the geometry of the mine and the extraction thickness. Testing indicates that the overlying bedrock is medium strong to strong. Subsidence may be caused as a result of failure of the mine roof, coal pillars, or mine floor.

Several environmental factors can increase subsidence potential including; land-use changes, vibratory loading, seismic events, and fluctuation of groundwater. When buildings are constructed above a mine, the risk of subsidence may increase due to introduction of new surface loads, excavation of soils resisting subsidence, changes in drainage patterns and increased water percolation from landscape irrigation. Vibrations of construction equipment and ground motion due to earthquakes are also known to accelerate ground subsidence. If water-filled workings are drained, risk of collapse tends to increase due to loss in water pressure support. Field data indicates that the workings encountered below this site are filled with water. If subsidence occurs, features may be observed at the ground surface in the form of caving subsidence, trough subsidence, or settlement of entry/air shaft backfill materials.

Caving Subsidence

Caving of materials overlying comparatively shallow mine workings can produce sinkholes or depressions at the ground surface. Caving occurs as the roof over a mine fails and collapses into the space created by coal extraction. This process continues until the space is either filled with debris, or caving propagates to the surface. Caving is common over room and pillar operations.

The depth to mining is important when estimating whether or not a subsidence feature will reach the surface. The thickness of the extracted layer, presence of groundwater, and the bulking and strength characteristics of the overburden bedrock are also important. The size of the sinkholes caused by caving is controlled by the geometry of the mine and properties of the overburden. The areal extent of surface depressions is largely controlled by the size of the mine extraction. Research has found that sinkholes typically are circular or elliptical in shape and usually not larger than the width of the underlying extraction.

Trough Subsidence

Trough subsidence is caused by sagging of the overburden triggered when large extraction ratios and panel sizes are achieved, both in areas of room and pillar mining and longwall mining. This generally occurs as caving of the roof followed by sagging and bed separation of the overlying strata. Trough-type subsidence is the common mechanism over longwall mines in the United States and Europe. Troughs that develop over partial extractions, such as room and pillar mines, differ greatly from those which occur over longwall mining. Oravecz (1977) found the magnitude of surface subsidence above partial extractions is considerably smaller than subsidence that develops over total extraction mines. The presence of internal barriers and the low width to depth ratios help reduce the magnitude of surface displacement.

Trough subsidence over room and pillar mining will be localized as compared to the area-wide troughs developed by longwall mining. As with sinkholes, the depth and areal extent of troughs will depend on the depth to mining, physical properties of the overburden, and extraction ratios. The shape of depressions will be irregular due to the presence of remnant pillars. Like longwall mining, subsidence over retreat mining should develop rapidly due to recompression of rubble or re-orientation of beds which have sagged.

Shaft Hazards

The subsidence hazard associated with entry and shafts is high because of the potential sudden and significant movement. Although small in area, shafts can be dangerous because of the haphazard way in which they were backfilled. The two shafts on this site were filled with debris including timber, mine waste, and trash. Over a period of time, the debris can loosen and settle, leading to subsidence at the surface. We discovered no documented settlement associated with the Marfel and Pinnecle shafts since the crevice reported on 1894 McGreger mine map.

MINE SUBSIDENCE RISK EVALUATION

We evaluated the risk of subsidence-sinkhole potential considering mine geometry, bulking factor, probability methods, and research conducted in the Boulder-Weld Coalfield.

Mine Geometry

One method of evaluating whether caving subsidence will propagate to the surface can be addressed through the mine geometry. The critical dimensions are the thickness of cover or overburden height (H) and extraction thickness (h). Piggot and Eynon (1977) suggest subsidence will not propagate to the ground surface over room and pillar workings where the overburden to extraction thickness ratio (H/h) exceeds 10. We have defined the overburden thickness as the bedrock thickness only. The soil thickness was neglected due to comparatively low strength to resist caving. Using an extraction thickness of 4 and 5 feet, caving is not expected to propagate through more than about 40 and 50 feet of bedrock, respectively. The actual bedrock thickness (the distance between the soil/bedrock interface and top of the original mine roof) ranges from 77 to 110 feet.

Bulking Factor

Caving of the roof above a mine can continue until the extraction and collapse area is filled with broken and bulked rock or the caving reaches the surface. The height to which caving can occur is based on the coal seam thickness and bulking properties of the collapsed rock. The increase in the volume of the collapsed rock is referred as a “Bulking Factor.” The Bulking Factor is defined as the original extraction height minus any remaining void, divided by the height of the rubble zone above the original mine roof. Typical bulking factors for this coal strata range from 30 to 50 percent (Piggott and Eynon). The data indicates an extraction thickness of 4 to 5 feet and marginally thicker

at a few locations. We used a bulking factor of 40 percent and the extraction recorded at each boring in our analysis. The following equation was used in our analysis:

H = 3h/B for conical collapse, where
H = Collapse height above mined coal seam roof.
B = Bulking Factor (0.40)
h = Original extraction thickness (4 to 5 feet)

The calculated average height of potential conical collapse is 28 to 35 feet. We assessed the subsidence risk by computing a factor of safety (FS) by dividing the actual bedrock thickness above the mine by the computed height of potential conical collapse. We typically use a minimum factor of safety of 1.5 to distinguish where risk is low. We consider a factor of safety of less than 1.2 as high. Table 4 summarizes the compacted factor of safety which ranges from 2.0 to 4.0.

TABLE 4
SUMMARY OF POTENTIAL MINE SUBSIDENCE EVALUATION

BORING	DEPTH TO BEDROCK (FEET)	INITIAL BEDROCK THICKNESS ABOVE MINE ROOF (FEET)	EXTRACTION THICKNESS (FEET)	REQUIRED BEDROCK THICKNESS (FEET)	FACTOR OF SAFETY	COMPARATIVE RISK
X-15	15	101	4.0	30.0	3.4	LOW
X-9	20	95	5.0	37.5	2.5	LOW
X-10	20	110	5.0	37.5	2.9	LOW
X-12	25	103.5	7.0	52.5	2.0	LOW
X-5	25	77	4.0	30.0	2.6	LOW
X-6	15	95	4.0	30.0	3.2	LOW
X-13	17	91	4.5	33.8	2.7	LOW
B-1	21	91	4.5	33.8	2.7	LOW
B-3	17	80	5.0	37.5	2.1	LOW
B-6	18	91	3.0	22.5	4.0	LOW

Probability of Sinkhole Development

Figure 7 is a plot derived from case studies showing the probability and expected lateral size of a caved zone reaching a given height, as a function of overburden thickness (Hanna, 2011). This figure assumes a subsidence angle of draw of 19° and a void size of 7 feet high by 10 feet wide which is typical of historic abandoned room-and-pillar mining. Statistically, angle of draw measured for subsidence in the American West

ranges from 12° to 16° (Peng, 1978). The 19° angles of draw used here allows for a margin of safety in sinkhole size estimation.

For comparison purposes, boreholes B-1 to B-3 are plotted along with other boreholes, H1 to H5, obtained from various studies of other sites. For example, the area within borehole H1 at a depth of approximately 30 feet has the highest probability (greater than 100 percent) of forming a sinkhole at the surface (according to this statistical approach, sinkhole formation is a virtual certainty). If and when a sinkhole forms, the edge of the surface settlement could propagate approximately 8 feet (dashed red line) from the edge of the void space. For this site, the mine at B-1 to B-3 occurs at depth of approximately 100 feet which indicated a probability less than 5 percent of forming a sinkhole at the surface. Since the 1904 operation of the Marfel mine and the subsidence occurrence in 1894, no apparent surface settlement or sinkhole formation has been recorded or observed, indicative of stable mine workings at these depths. This is further supported by the physical characteristics of the bedrock claystone/sandstone materials. Therefore, we believe that the risk of future subsidence and/or sudden sinkhole occurrence due to the mine workings is very low or minimal. This does not include areas around the two shafts.

Time Methods

Research in the Boulder-Weld Coalfield indicates that about 95 percent of subsidence occurs within 15 years of mining (Matheson, 1987). This research is consistent with the documented crevice over the Pinnacle mine. Based on the extraction thicknesses of 4 to 5 feet, only 2 to 4-inches of residual subsidence would have occurred after 15 years of the mine closure.

Results of Risk Evaluation

Overall, we judge the potential subsidence risk is very low for this site. Risk is judged high in the vicinity of the shaft locations.

RECOMMENDATIONS

The subsidence hazard will not preclude the development of this site. We found that the risk of potential subsidence is very low over mined areas. Several development aspects should be considered over the mined areas. We judge the risk is high in the vicinity of the shafts. Due to the haphazard way in which shafts were backfilled and the sudden nature in which subsidence develops over shafts, we believe that the two shafts pose a potential safety concern to the public. We recommend that the shafts be mitigated; after which, the immediate shaft areas should be sited for passive uses. We believe that passive uses will be safe after mitigation.

Development Considerations over Mined Areas

Lightly loaded structures that utilize shallow foundations can be planned over mined areas. Shallow foundations ideally consist of post-tensioned slab-on-grade, footings, or mats. Basements and below grade areas can be used. Heavy loaded buildings requiring the use of deep foundations should be avoided. The use of shallow foundations and minimal grading is considered safest to reduce effects of subsidence movement. Our previous preliminary investigation revealed expansive soils and bedrock that may require sub-excavation to allow use of shallow foundations. If necessary, sub-excavation can be utilized without significantly increasing to the subsidence hazard. Groundwater drawdown could trigger subsidence. Wells and/or other mechanical systems that would alter the groundwater level should not be used.

Shaft Mitigation

We judge the subsidence potential is high in the vicinity of the shafts. We recommend that the shafts be mitigated. Several mitigation techniques can be considered, including grouting and construction of reinforced soil or reinforced concrete caps. We can discuss these options with you and design the selected mitigation technique upon request. After mitigation, we believe the shaft areas can be safely used for passive uses

such as parks, parking lots, greenways, and associated structures that can tolerate movement. Buildings, roadways, utility corridors, and structures sensitive to movement should not be planned within a 42 foot radius from the Marfel shaft center and 40 foot radius from the Pinnacle shaft center. The “no build’ radii were estimated using depths to the mine roof at each shaft, measured shaft widths, an angle of draw of 16° (Peng, 1978), and a safety factor of 1.2.

GEOTECHNICAL RISK

The concept of risk is an important aspect with any geotechnical evaluation, primarily because the methods used to develop geotechnical recommendations do not comprise an exact science. We never have complete knowledge of subsurface conditions. Our analysis must be tempered with engineering judgment and experience. Therefore, the recommendations presented in any geotechnical evaluation should not be considered risk-free.

LIMITATIONS

Our investigation was planned to obtain information necessary to perform an analysis and evaluation of the subsidence hazard. Our conclusions regarding the risk of future subsidence were based on our investigation and analysis, previous investigation, review of available mine records, previous studies and our experience. There is no method, to our knowledge, of eliminating all risk of subsidence. If additional data become available concerning unreported mining or subsidence features develop at the site, we should be contacted to evaluate the situation.

We believe this investigation was conducted with the level of skill and care ordinarily used by geotechnical and mining engineers practicing in this area at this time. No warranty, express or implied, is made. We appreciate the opportunity to provide service. If we can further explain our opinions and conclusions, please contact us.

CTL | THOMPSON, INC.

Matthew D. Monteith, P.E.
Project Geotechnical Engineer

Kanaan Hanna
Senior Mining Engineer (Independent)

Reviewed by:

COLORADO LICENSED RONALD M. McOMBER 20243 PROFESSIONAL ENGINEER 2/10/15

Ronald M. McOmber, P.E., D.GE
Chairman & CEO

MDM:KH:RMM/mdm/nn
(3 copies)

Via e-mail: justinrmcs@gmail.com

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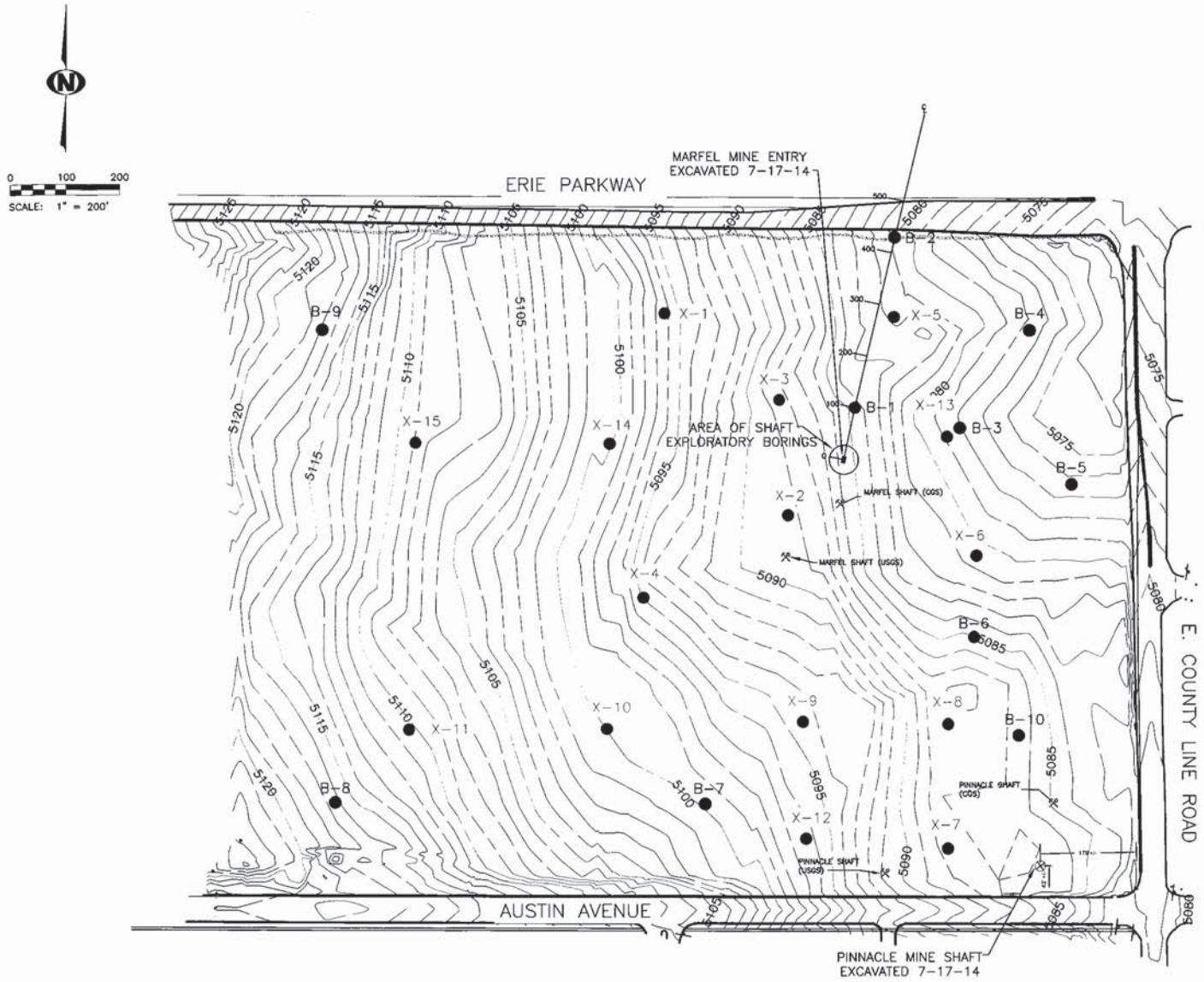

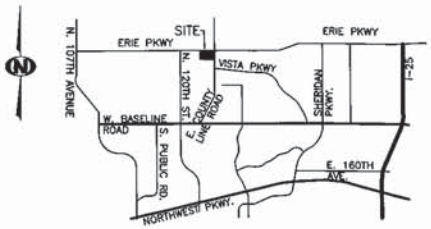

VICINITY MAP
NOT TO SCALE

LEGEND:

B-1 ● APPROXIMATE LOCATION OF DEEP BORING DRILLED DURING THIS INVESTIGATION

X-1 ● APPROXIMATE LOCATION OF BORING DRILLED DURING WESTERN ENVIRONMENTAL AND ECOLOGY'S 2005 PRELIMINARY MINE SUBSIDENCE INVESTIGATION

RMCS, INC.
ERIE PARCEL
Project No. DN47,332-110

Locations of Exploratory Mine Borings Fig. 1

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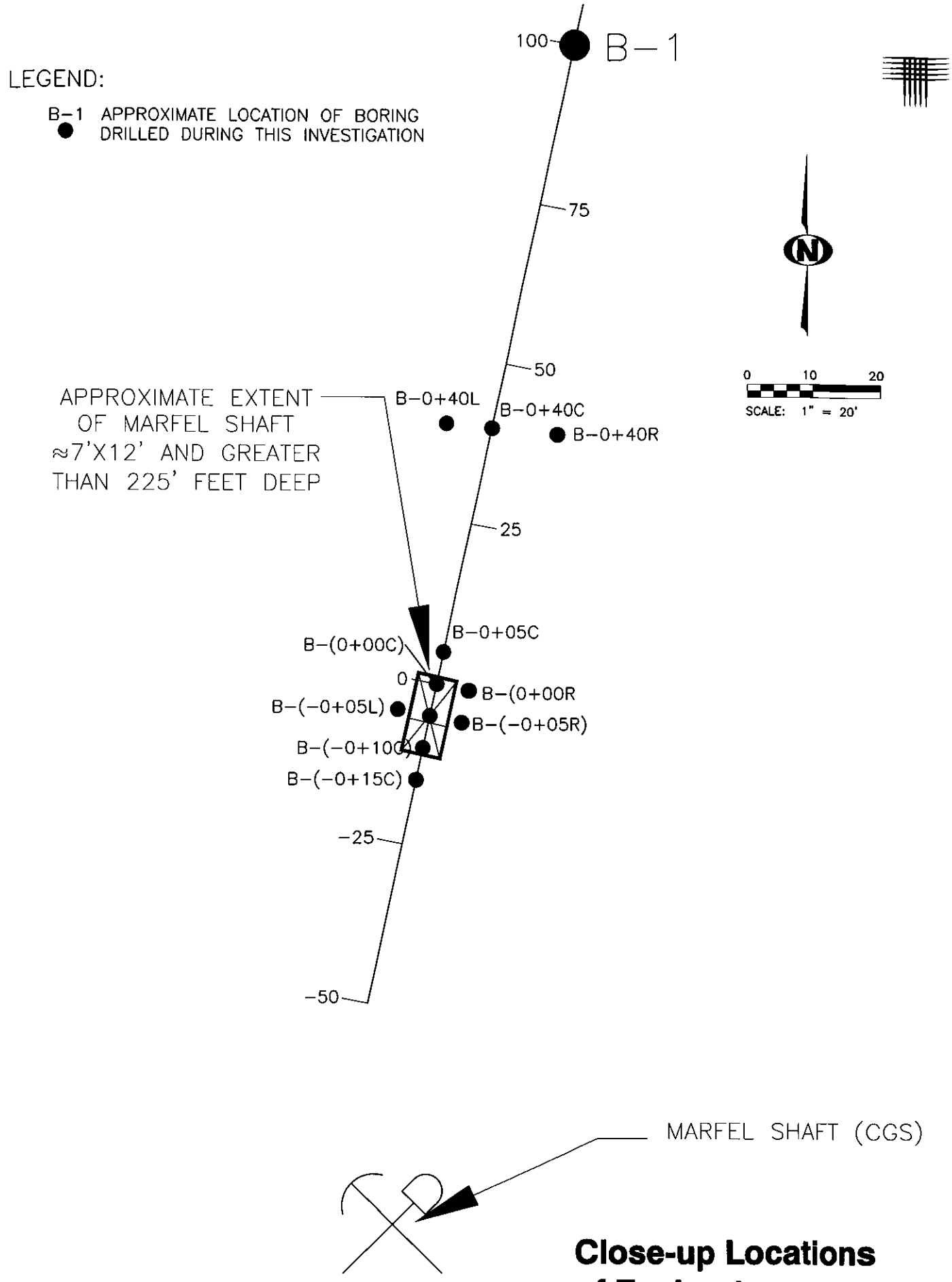

Close-up Locations of Exploratory Shaft Borings Fig. 2

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Project No. DN47,332-110

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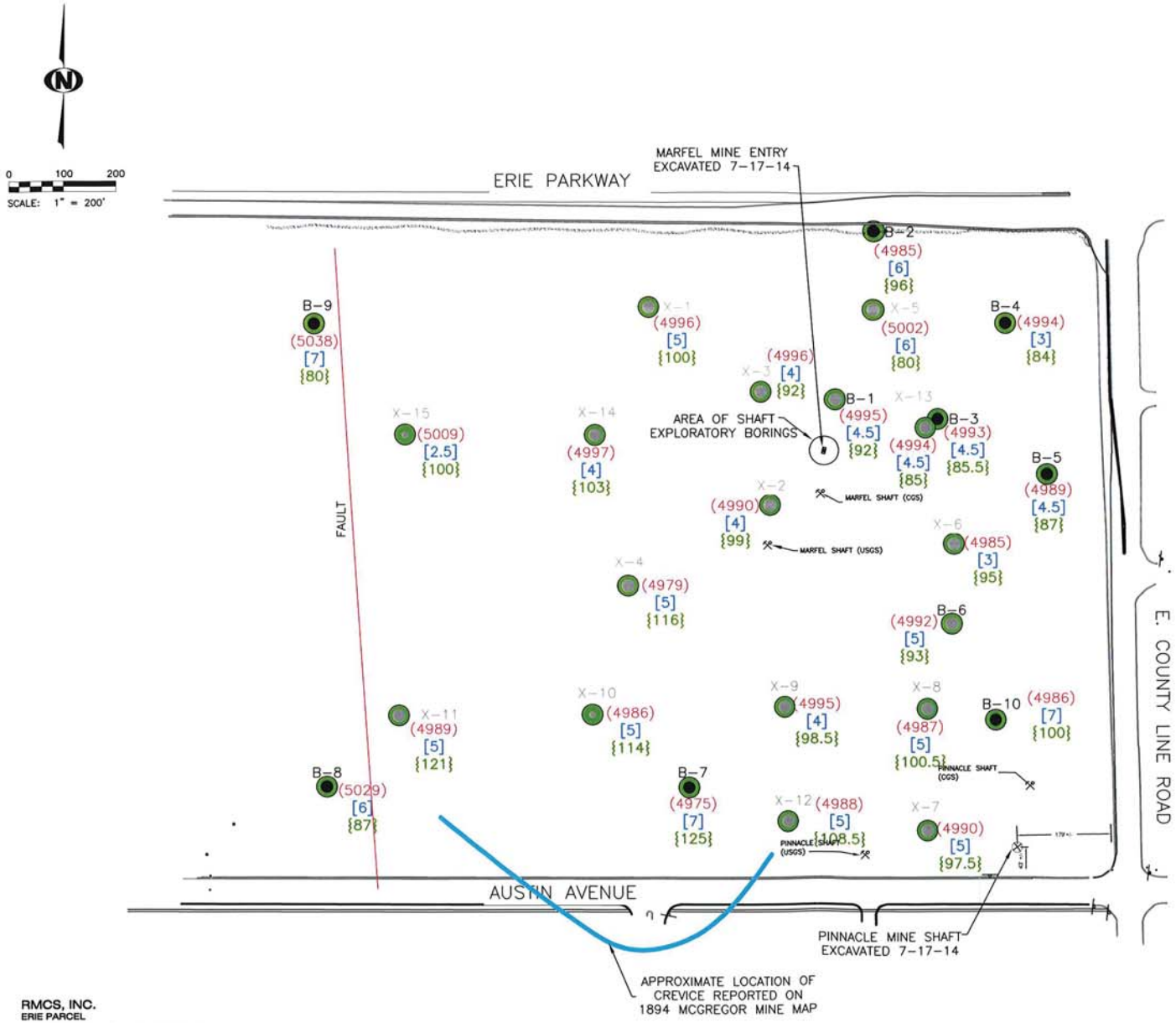

LEGEND:

- B-1 ● APPROXIMATE LOCATION OF DEEP BORING DRILLED DURING THIS INVESTIGATION
- X-1 ● APPROXIMATE LOCATION OF BORING DRILLED DURING WESTERN ENVIRONMENTAL AND ECOLOGY'S 2005 PRELIMINARY MINE SUBSIDENCE INVESTIGATION
- (4996) INDICATES APPROXIMATE ELEVATION OF TOP OF UPPER COAL SEAM
- [4] INDICATES APPROXIMATE UPPER COAL SEAM THICKNESS (FEET)
- DATA INDICATES THAT NO MINING OCCURED IN UPPER SEAM
- DATA INDICATES THAT MINING OCCURED IN UPPER SEAM
- {117} INDICATES APPROXIMATE DEPTH TO TOP OF UPPER COAL SEAM

RMCS, INC.
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Project No. DN47,332-110

Upper Seam Isopach Map

Fig. 3

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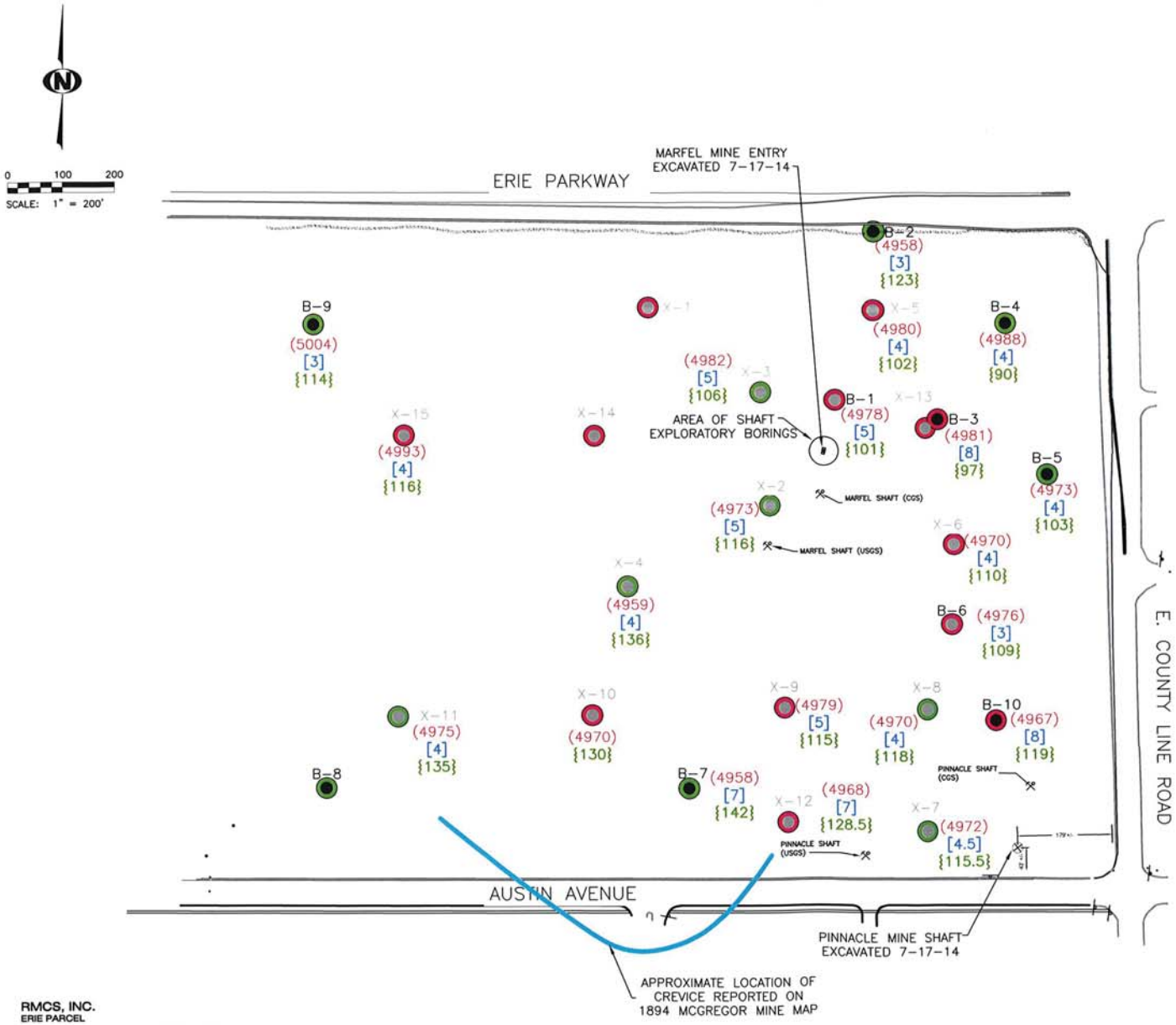

LEGEND:

- B-1 ● APPROXIMATE LOCATION OF DEEP BORING DRILLED DURING THIS INVESTIGATION
- X-1 ● APPROXIMATE LOCATION OF BORING DRILLED DURING WESTERN ENVIRONMENTAL AND ECOLOGY'S 2005 PRELIMINARY MINE SUBSIDENCE INVESTIGATION
- (4996) INDICATES APPROXIMATE ELEVATION OF TOP OF LOWER COAL SEAM
- [4] INDICATES APPROXIMATE LOWER COAL SEAM THICKNESS (FEET)
- ● DATA INDICATES THAT NO MINING OCCURED IN LOWER SEAM
- ● DATA INDICATES THAT MINING OCCURED IN LOWER SEAM
- {117} INDICATES APPROXIMATE DEPTH TO TOP OF UPPER COAL SEAM

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Lower Seam Isopach Map Fig. 4

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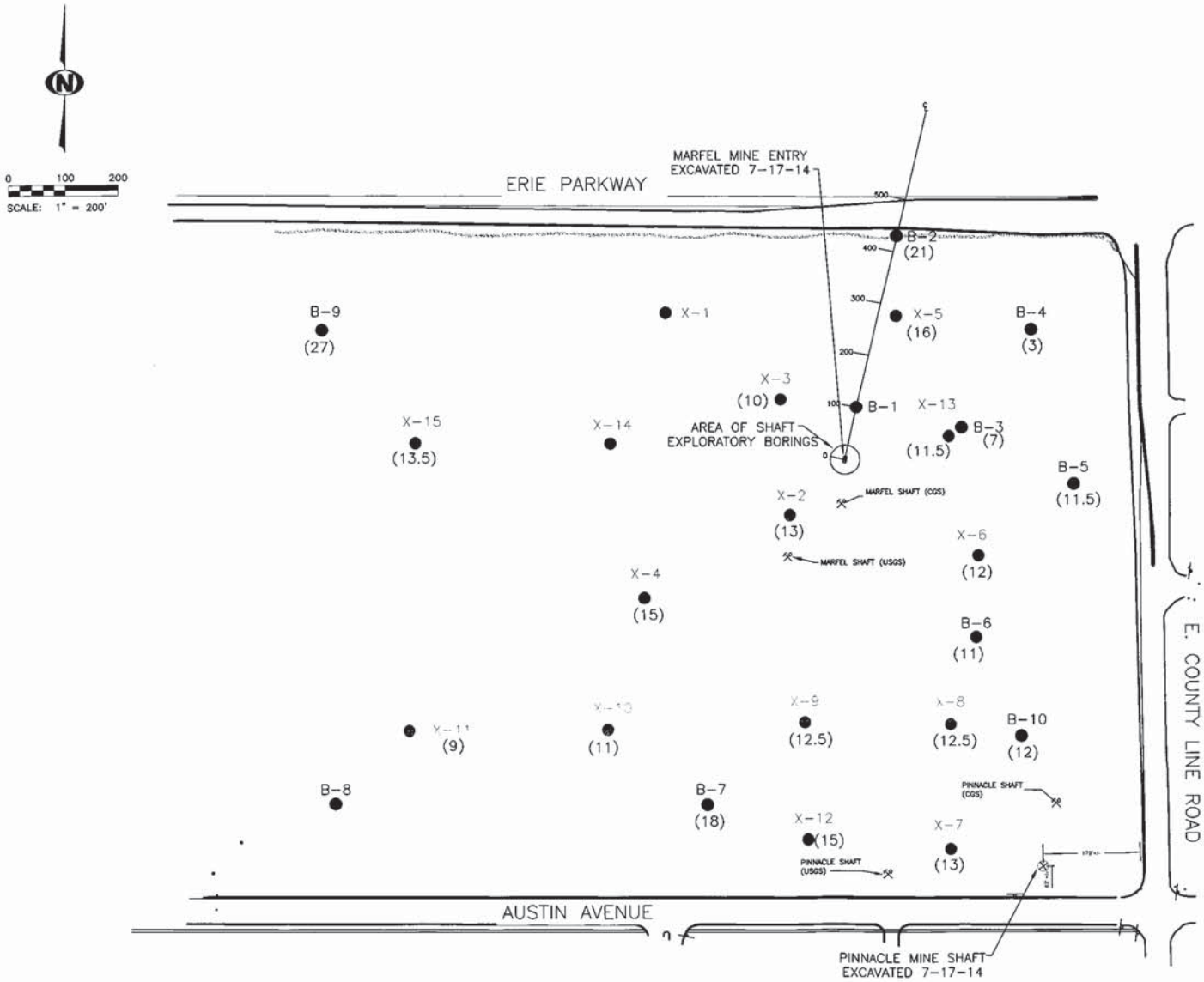

LEGEND:

B-1 ● APPROXIMATE LOCATION OF DEEP BORING DRILLED DURING THIS INVESTIGATION

X-1 ● APPROXIMATE LOCATION OF BORING DRILLED DURING WESTERN ENVIRONMENTAL AND ECOLOGY'S 2005 PRELIMINARY MINE SUBSIDENCE INVESTIGATION

(13) INDICATES APPROXIMATE INTERBURDEN THICKNESS BETWEEN UPPER AND LOWER SEAM (FEET)

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Interburden Thickness Map

Fig. 5

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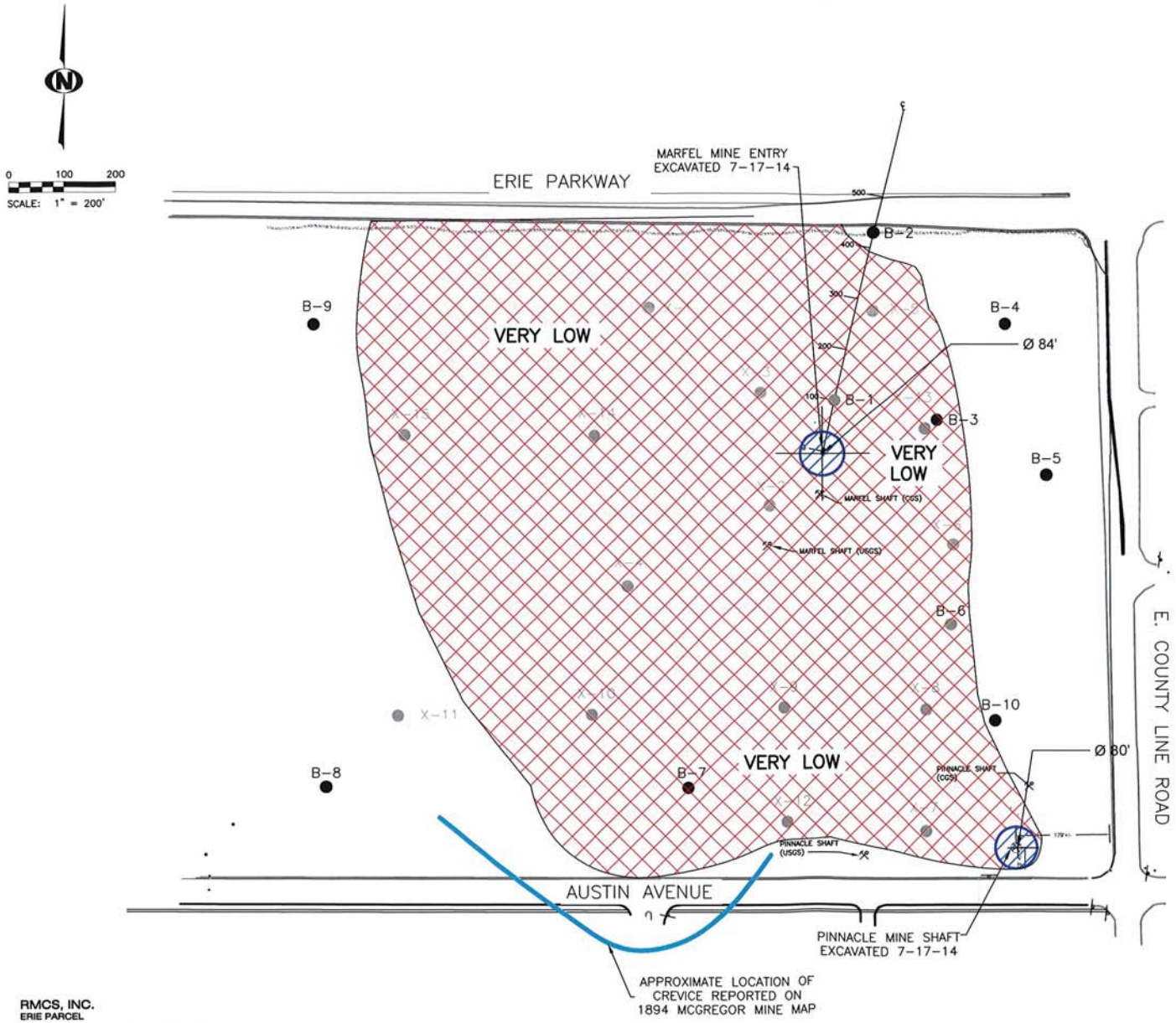

LEGEND:

B-1 APPROXIMATE LOCATION OF DEEP BORING DRILLED DURING THIS INVESTIGATION

X-1 APPROXIMATE LOCATION OF BORING DRILLED DURING WESTERN ENVIRONMENTAL AND ECOLOGY'S 2005 PRELIMINARY MINE SUBSIDENCE INVESTIGATION

INDICATES RECOMMENDED "NO BUILD AREA", AFTER MITIGATION.

VERY LOW AREA WHERE COMPARATIVE SUBSIDENCE POTENTIAL IS ESTIMATED AS VERY LOW.

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Comparative Risk of Subsidence Potential Fig. 6

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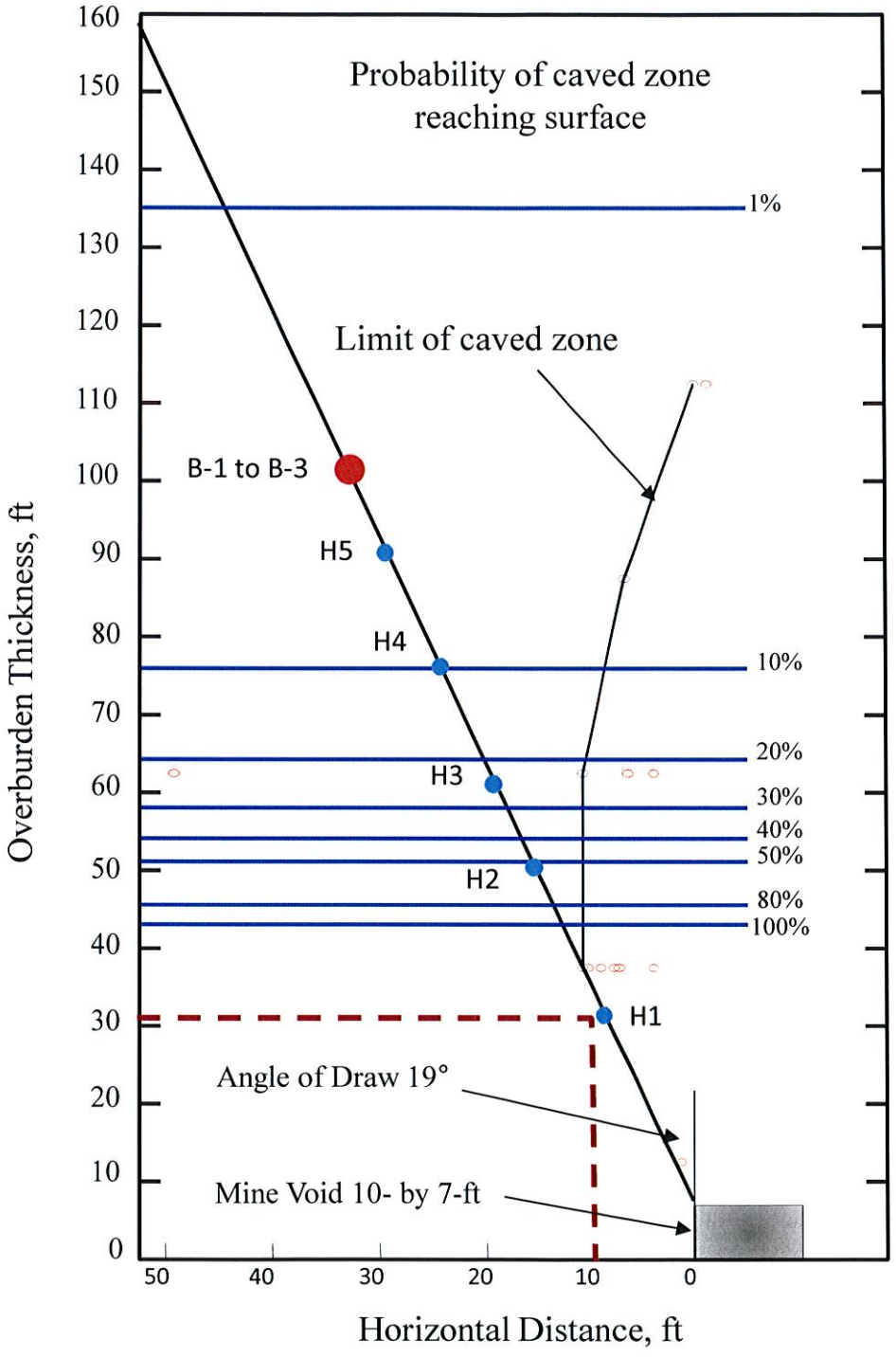
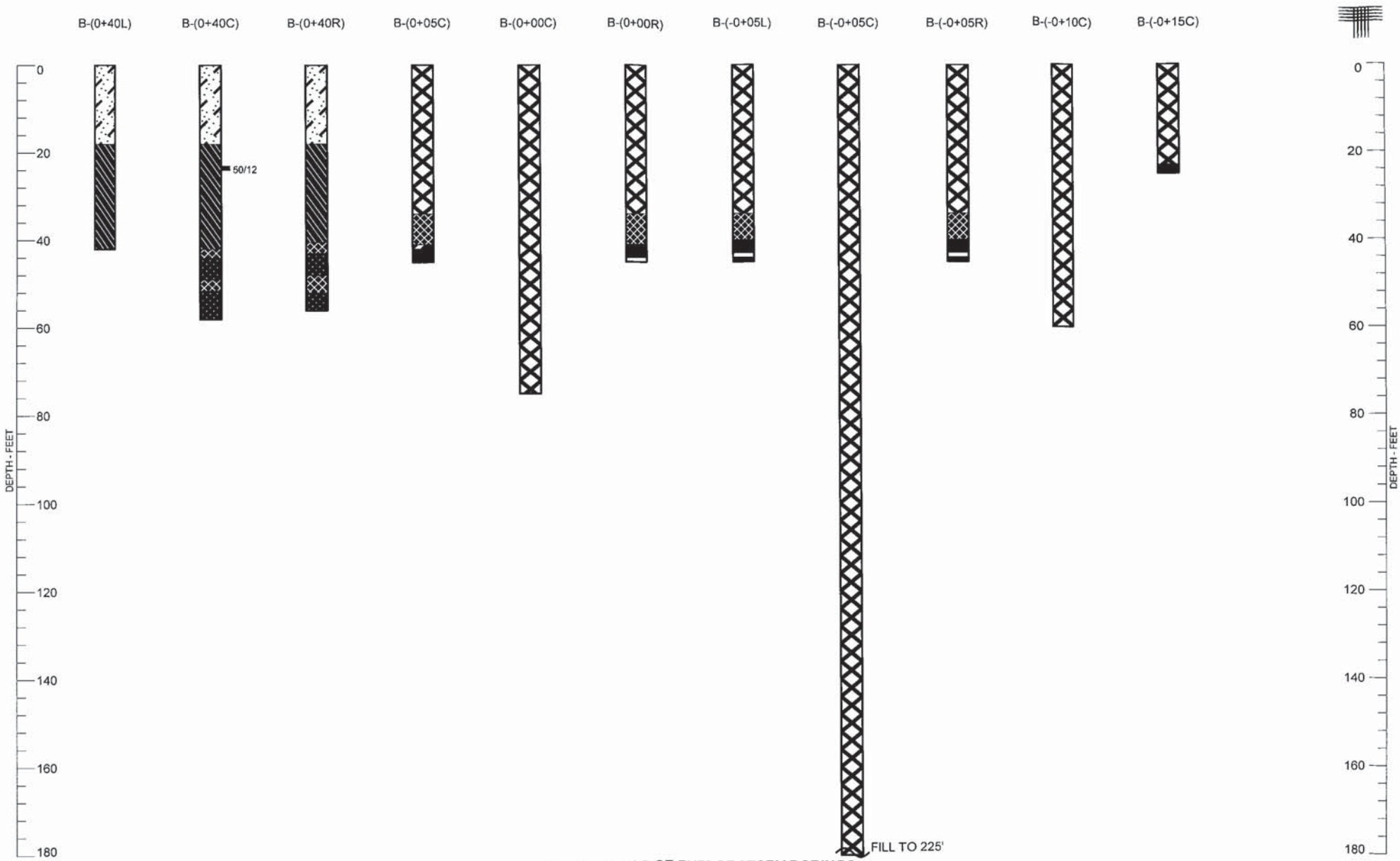


Figure 7: Probability of Sinkhole Development

APPENDIX A
SUMMARY LOGS OF EXPLORATORY BORINGS



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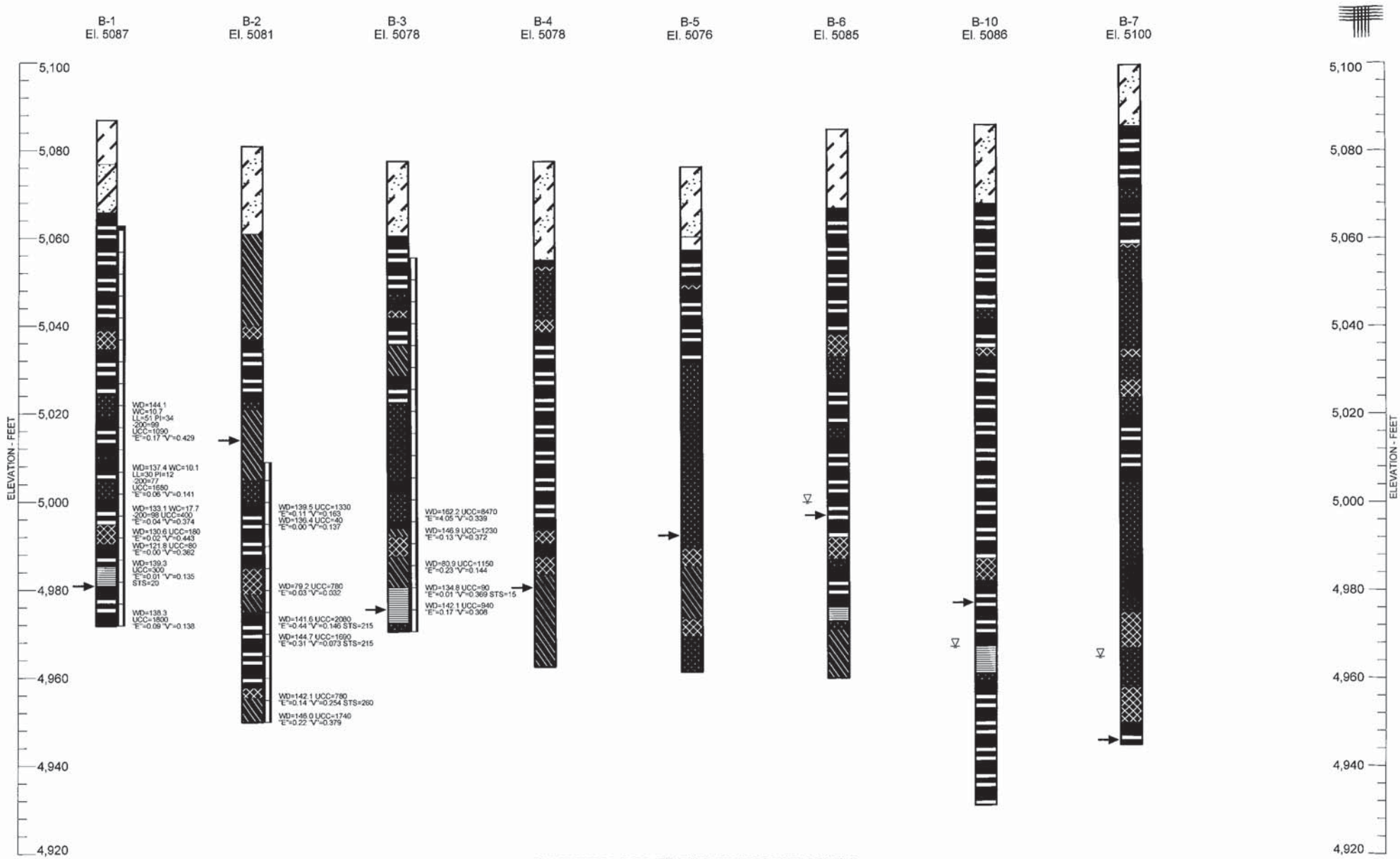
PROJECT NO. DN47,332-110

SUMMARY LOGS OF EXPLORATORY BORINGS

FIG. A- 1



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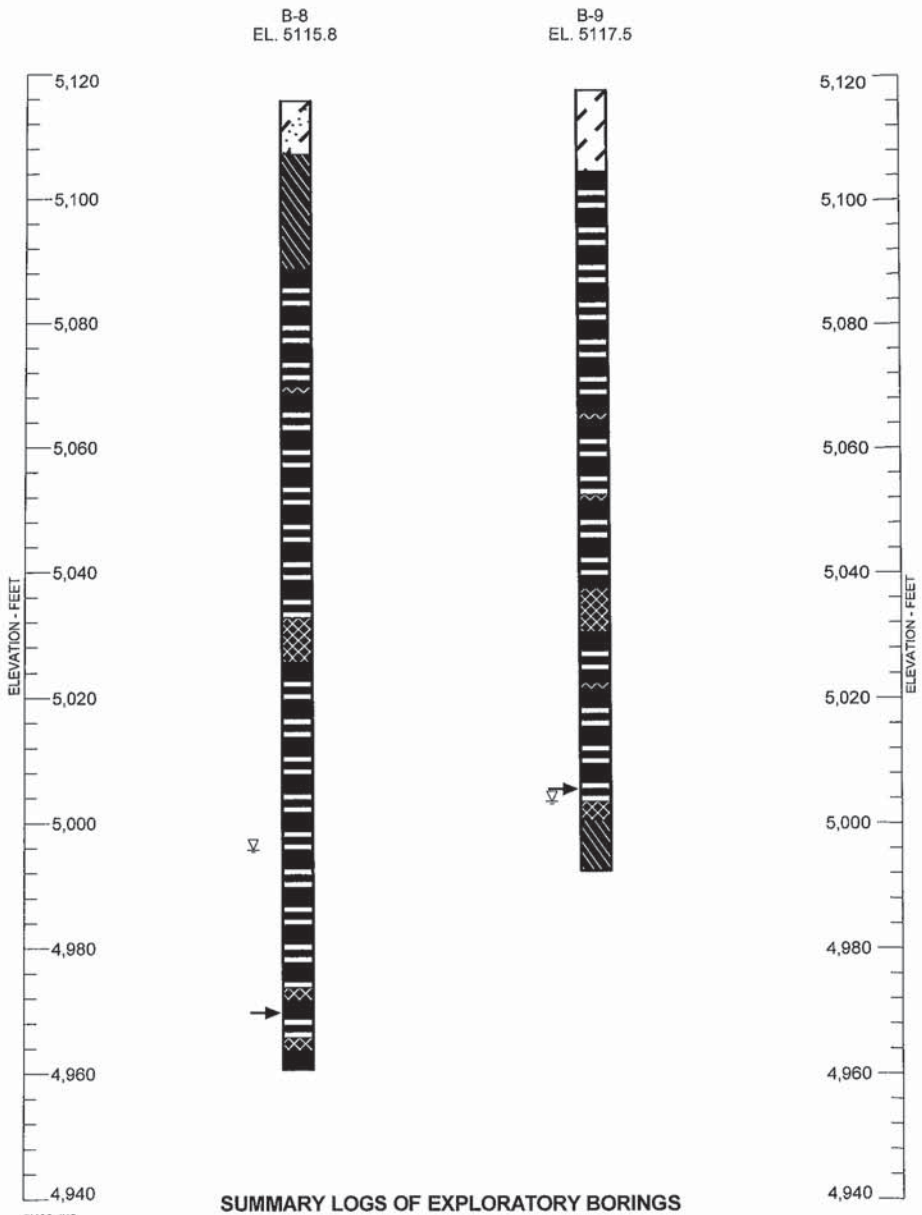
PROJECT NO. DN47,332-110

SUMMARY LOGS OF EXPLORATORY BORINGS

FIG. A- 2



SUMMARY LOGS OF EXPLORATORY BORINGS

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PROJECT NO. DN47,332-110

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LEGEND:

- FILL, CLAY, SANDY, MINE SPOILS, WOOD FRAGMENTS, MINING DEBRIS.
- CLAY, SANDY, MOIST, BROWN (CL).
- SAND, SILTY, MEDIUM DENSE, MOIST, BROWN (SM).
- INTERLAYERED CLAY/SAND, MOIST, BROWN, GRAY (CL OR SC).
- BEDROCK, CLAYSTONE, LIGNITE LENSES, HARD, MOIST, BROWN, GRAY.
- BEDROCK, SANDSTONE, CLAYSTONE LENSES, HARD, MOIST, BROWN, TAN.
- BEDROCK, INTERBEDDED CLAYSTONE/SANDSTONE, LIGNITE LENSES, HARD, MOIST, BROWN, GRAY.
- COAL, SOME LIGNITE, BROWN, MOIST.
- RUBBLE.
- CORE SAMPLE.
- DRIVE SAMPLE. THE SYMBOL INDICATES BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.0-INCH O.D. SAMPLER INCHES.
- INDICATES DEPTH WHERE GROUNDWATER APPEARED IN AIR CIRCULATION.
- INDICATES DEPTH WHERE HOLE CAVED DURING GEOPHYSICAL TESTING.

NOTES:

1. THE BORINGS WERE DRILLED ON OCTOBER 28, 2014 USING 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A TRUCK-MOUNTED DRILL RIG.
2. BORING LOCATIONS AND ELEVATIONS WERE DETERMINED BY A REPRESENTATIVE OF OUR FIRM REFERENCING THE TEMPORARY BENCHMARK SHOWN ON FIG. 1.
3. WC - INDICATES MOISTURE CONTENT (%).
   WD - INDICATES MOIST DENSITY (PCF).
   LL - INDICATES LIQUID LIMIT.
   PI - INDICATES PLASTICITY INDEX.
   -200 - INDICATES PASSING NO. 200 SIEVE (%).
   UC - INDICATES UNCONFINED COMPRESSIVE STRENGTH (PSI).
   E - INDICATES YOUNG'S MODULUS (x10 PSI)
   V - INDICATES POISSON'S RATIO.
   STS - INDICATES SPLITTING TENSILE STRENGTH (PSI).
4. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS AND CONCLUSIONS CONTAINED IN THIS REPORT.

APPENDIX B
CORE LOGS AND PHOTOGRAPHS

PROJECT NODN47,332-110

PROJECT NAME ERIE PARCEL

CTL/THOMPSON, INC.

(303) 825-0777

1971 WEST 12TH AVENUE DENVER, COLORADO 80204

BORING NUMBER	BEGIN DRILLING TIME:	END DRILLING TIME:
B-1	10/22/2014	10/28/2014

TOP OF HOLE ELEVATION	GROUND WATER ELEVATION	DIRECTION OF HOLE
5086.9		VERTICAL

TOTAL DEPTH	OVERBURDEN THICKNESS		SIZE AND TYPE OF BIT
115	21		HQ 3.5"OD

DRILLING COMPANY	DRILLER	DRILL TYPE	ENGINEER
PRECISION	TIM/JUAN/STEVEN	CME75	MDM

DEPTH FROM	DEPTH TO	REMARKS	DRILL TIME (MIN.)	CORE INTERVAL (FEET)	CORE LENGTH (INCHES)	CORE RECOVERY (%)	RQD (%)	LOG	DESCRIPTION
0	10								CLAY, SANDY, SILTY, MOIST, BROWN.
10	21								SAND, SILTY, MOIST TO VERY MOIST, LIGHT BROWN, LIGHT YELLOWISH BROWN.
21	23.5		5	2.5	27	90%	55		CLAYSTONE, SLIGHTLY SANDY, SLIGHLTY SILTY, MOIST, LIGHT GRAYISH BROWN, CONTAINS OCCASIONAL LIGNITE.
23.5	26			5	27	45%	55		
26	31		6	5	36	60%	53		
31	36		7	5	60	100%	86		
36	41		6.5	5	59	98%	98		
41	46		5	5	59	98%	75		COAL, BLACK. CLAYSTONE, SLIGHTLY SANDY, LIGHT TO GRAYISH BROWN.
46	51		4.5	5	60	100%	52		LIGNITE, DARK BROWN, VERY MOIST. COAL, INTENSITY FRACTURED, SLIGHTLY SANDY OR SILTY.
51	56		5	5	60	100%	75		CLAYSTONE, MOIST, SLIGHTLY SANDY OR SILTY.
56	61		6	5	60	100%	100		
61	66		8	5	60	100%	53		SANDSTONE, LIGHT GRAY, BROWN, FINE GRAINED.
66	71		6	5	57	95%	52		CLAYSTONE, FRACTURED, GRAY TO GRAYISH BROWN, MOIST, SLIGHTLY SANDY.
71	76		18	5	41	68%	47		CLAYSTONE, FRACTURED, GRAY TO DARK GRAY.
76	81		10	5	48	80%	56		SANDSTONE, SILTY. CLAYSTONE, DARK BROWN, CONTAINED

FIG. B-1

PROJECT NODN47,332-110

PROJECT NAME ERIE PARCEL

CTL/THOMPSON, INC.

(303) 825-0777

1971 WEST 12TH AVENUE DENVER, COLORADO 80204

BORING NUMBER B-1	BEGIN DRILLING TIME: 10/22/2014	END DRILLING TIME: 10/28/2014	
TOP OF HOLE ELEVATION 5086.9	GROUND WATER ELEVATION	DIRECTION OF HOLE VERTICAL	
TOTAL DEPTH 115	OVERBURDEN THICKNESS 21		SIZE AND TYPE OF BIT HQ 3.5"OD
DRILLING COMPANY PRECISION	DRILLER TIM/JUAN/STEVEN	DRILL TYPE CME750	ENGINEER MDM

DEPTH FROM	DEPTH TO	REMARKS	DRILL TIME (MIN.)	CORE INTERVAL (FEET)	CORE LENGTH (INCHES)	CORE RECOVERY (%)	RQD (%)	LOG	DESCRIPTION
									WOOD.
81	86		4	5	37	62%	25		SANDSTONE, LIGHT GRAY TO GRAY, FINE GRAINED.
86	91		2	5	42	70%	70		CLAYSTONE, FRACTURED, GRAY TO GRAYISH BROWN, CONTAINS GRAVEL.
91	96		2	5	44	73%	40		COAL/LIGNITE, FRACTURED, DARK GRAY TO BROWN.
96	101		4.5	5	54	90%	87		CLAYSTONE, DARK GRAY, BROWN.
101	106		3	5	15	25%	0		RUBBLE, LIGHT GRAY.
106	111		3.5	5	49	82%	62		CLAYSTONE, DARK GRAY, BROWN. SANDSTONE.
111	115		12	4	48	100%	63		CLAYSTONE, SANDY, FRACTURED, GRAY.

FIG. B-2

PROJECT NODN47,332-110 PROJECT NAME ERIE PARCEL	CTL/THOMPSON, INC. (303) 825-0777 1971 WEST 12TH AVENUE DENVER, COLORADO 80204	
BORING NUMBER B-2	BEGIN DRILLING TIME: 10/29/2014	END DRILLING TIME: 11/4/2014
TOP OF HOLE ELEVATION 5081.0	GROUND WATER ELEVATION	DIRECTION OF HOLE VERTICAL
TOTAL DEPTH 131	OVERBURDEN THICKNESS 20	SIZE AND TYPE OF BIT HQ 3.5"OD
DRILLING COMPANY PRECISION	DRILLER TIM/JUAN/STEVEN	DRILL TYPE CME750 / ENGINEER MDM

DEPTH FROM	DEPTH TO	REMARKS	DRILL TIME (MIN.)	CORE INTERVAL (FEET)	CORE LENGTH (INCHES)	CORE RECOVERY (%)	RQD (%)	LOG	DESCRIPTION
0	20		4						INTERLAYERED CLAY/SAND, SILTY, MOIST, LIGHT BROWN.
20	27		4						INTERBEDDED CLAYSTONE/SANDSTONE, SLIGHTLY SANDY, BROWN TO GRAY.
27	32		4						
32	37		4						
37	42		3						
42	47		3						COAL, RIDER SEAM
47	52		2						CLAYSTONE, SANDY TO SLIGHTLY SANDY, BROWN, GRAY.
52	57		2						
57	62		7						SANDSTONE, SILTY, MOIST, GRAYISH BROWN.
62	67		3						INTERBEDDED CLAYSTONE/SANDSTONE, SLIGHTLY SANDY TO SANDY, BROWN TO GRAYISH BROWN.
67	72		4						
72	76		4	4	48	100%	50		
76	81		5	5	44	73%	16		SANDSTONE, BROWN, LIGHT GRAY.

FIG. B-3

PROJECT NODN47,332-110
PROJECT NAME ERIE PARCEL

CTL/THOMPSON, INC.

(303) 825-0777

1971 WEST 12TH AVENUE DENVER, COLORADO 80204

BORING NUMBER B-2	BEGIN DRILLING TIME: 10/29/2014	END DRILLING TIME: 11/4/2014
TOP OF HOLE ELEVATION 5081.0	GROUND WATER ELEVATION	DIRECTION OF HOLE VERTICAL
TOTAL DEPTH 131	OVERBURDEN THICKNESS 20	SIZE AND TYPE OF BIT HQ 3.5"OD
DRILLING COMPANY PRECISION	DRILLER TIM/JUAN/STEVEN	DRILL TYPE CME750 / ENGINEER MDM

DEPTH FROM	DEPTH TO	REMARKS	DRILL TIME (MIN.)	CORE INTERVAL (FEET)	CORE LENGTH (INCHES)	CORE RECOVERY (%)	RQD (%)	LOG	DESCRIPTION
81	86		4	5	42	70%	35		
86	91		7	5	47	78%	58		CLAYSTONE, SILTY,LIGHT GRAY TO GRAYISH BROWN, CONTAINS LIGNITE AND COAL LENSES.
91	96		8	5	47	78%	48		
96	101		7	5	46	77%	47		COAL, FRACTURED, DRILLED SOFTER.
101	106		5	5	57	95%	57		INTERBEDDED CLAYSTONE/SANDSTONE,GRAY TO LIGHT GRAY.
106	111		8	5	60	100%	83		
111	116		7	5	51	85%	51		CLAYSTONE, SLIGHTLY SANDY TO SANDY, LIGHT TO DARK GRAY.
116	121		9	5	60	100%	50		
121	126		7	5	60	100%	40		COAL, DARK BROWN, CHUNKY SOLID.
126	131		5	5	58	97%	70		INTERBEDDED CLAYSTONE/SANDSTONE, LIGHT GRAY.

FIG. B-4

PROJECT NODN47,332-110 PROJECT NAME ERIE PARCEL	CTL/THOMPSON, INC. (303) 825-0777 1971 WEST 12TH AVENUE DENVER, COLORADO 80204

BORING NUMBER B-3	BEGIN DRILLING TIME: 10/28/2014	END DRILLING TIME: 10/29/2014

TOP OF HOLE ELEVATION 5077.6	GROUND WATER ELEVATION	DIRECTION OF HOLE VERTICAL

TOTAL DEPTH 107	OVERBURDEN THICKNESS 17		SIZE AND TYPE OF BIT HQ 3.5"OD
DRILLING COMPANY PRECISION	DRILLER TIM/STEVEN	DRILL TYPE CME750	ENGINEER MDM

DEPTH FROM	DEPTH TO	REMARKS	DRILL TIME (MIN.)	CORE INTERVAL (FEET)	CORE LENGTH (INCHES)	CORE RECOVERY (%)	RQD (%)	LOG	DESCRIPTION
0	19								INTERLAYERED CLAY/SAND, SILTY, SLIGHTLY GRAVELLY, MOIST, DARK BROWN.
19	22		2	3	18	50%	100		CLAYSTONE, DARK GRAYISH BROWN.
22	27	DRILL ISSUES PREVENTED CORE RECOVERY	8	5	N/A	N/A	N/A		
27	29.5		4	2.5	30	100%	47		
29.5	32		4	2.5	28	93%	67		SANDSTONE, BROWN TO GRAYISH BROWN.
32	37		5	5	60	100%	58		CLAYSTONE, DARK GRAYISH BROWN. COAL, RIDER SEAM, DARK BROWN, WET.
37	42		10	5	60	100%	60		CLAYSTONE, DARK GRAYISH BROWN.
42	47		10	5	60	100%	90		INTERBEDDED CLAYSTONE/SANDSTONE, SILTY, LIGHT GRAY.
47	52		10	5	60	100%	87		CLAYSTONE, SILTY, DARK GRAY TO GRAY.
52	57		6	5	60	100%	78		
57	62		5	5	60	100%	78		SANDSTONE, CLAYEY, FRACTURED, FINE GRAIN, LIGHT GRAY.
62	67		4.5	5	60	100%	74		
67	72		4.5	5	60	100%	70		
72	77		5.75	5	59	98%	74		CLAYSTONE, SANDY, GRAY TO DARK GRAY.
77	82		7.5	5	60	100%	69		SANDSTONE, LIGHT GRAY.

FIG. B-5

PROJECT NODN47,332-110

PROJECT NAME ERIE PARCEL

CTL/THOMPSON, INC.

(303) 825-0777

1971 WEST 12TH AVENUE DENVER, COLORADO 80204

BORING NUMBER B-3	BEGIN DRILLING TIME: 10/28/2014	END DRILLING TIME: 10/29/2014
TOP OF HOLE ELEVATION 5077.6	GROUND WATER ELEVATION	DIRECTION OF HOLE VERTICAL
TOTAL DEPTH 107	OVERBURDEN THICKNESS 17	SIZE AND TYPE OF BIT HQ 3.5"OD
DRILLING COMPANY PRECISION	DRILLER TIM/STEVEN	DRILL TYPE CME75 / ENGINEER MDM

DEPTH FROM	DEPTH TO	REMARKS	DRILL TIME (MIN.)	CORE INTERVAL (FEET)	CORE LENGTH (INCHES)	CORE RECOVERY (%)	RQD (%)	LOG	DESCRIPTION
82	87		5	5	60	100%	42		CLAYSTONE, CONTAINS COAL AND LIGNITE.
87	92		5	5	60	100%	58		COAL, DARK BROWN
92	97		10	5	60	100%	53		INTERBEDDED CLAYSTONE/SANDSTONE, SILTY, DARK GRAY, GRAYISH BROWN.
97	102		5	5	88	63%	50		RUBBLE
102	107		3.5	5	60	100%	55		INTERBEDDED CLAYSTONE/SANDSTONE, LIGHT GRAY, DARK GRAY, FINE GRAINED.

FIG. B-6

VIEW OF CORE B-1 AT 23.5-26.0

VIEW OF CORE B-1 AT 26.0-31.0

VIEW OF CORE B-1 AT 31.0-36.0

VIEW OF CORE B-1 AT 36.0-41.0

VIEW OF CORE B-1 AT 36.0-41.0

VIEW OF CORE B-1 AT 41.0-46.0

VIEW OF CORE B-1 AT 41.0-46.0

VIEW OF CORE B-1 AT 46.0-51.0

VIEW OF CORE B-1 AT 46.0-51.0

VIEW OF CORE B-1 AT 46.0-51.0

VIEW OF CORE B-1 AT 51.0-56.0

VIEW OF CORE B-1 AT 51.0-56.0

VIEW OF CORE B-1 AT 56.0-61.0

VIEW OF CORE B-1 AT 56.0-61.0

VIEW OF CORE B-1 AT 56.0-61.0

VIEW OF CORE B-1 AT 61.0-66.0

VIEW OF CORE B-1 AT 61.0-66.0

VIEW OF CORE B-1 AT 61.0-66.0

VIEW OF CORE B-1 AT 71.0-76.0

VIEW OF CORE B-1 AT 71.0-76.0

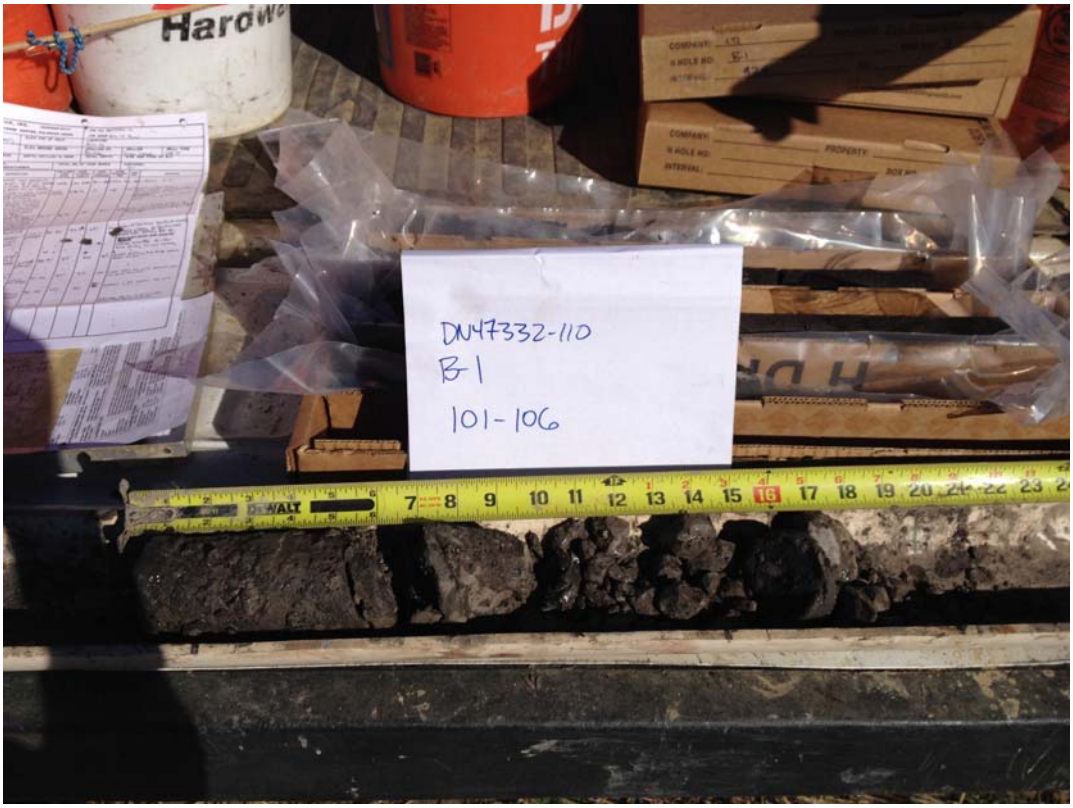
VIEW OF CORE B-1 AT 76.0-81.0

VIEW OF CORE B-1 AT 81.0-86.0

VIEW OF CORE B-1 AT 86.0-91.0

VIEW OF CORE B-1 AT 91.0-96.0

VIEW OF CORE B-1 AT 96.0-101.0



VIEW OF CORE B-1 AT 101.0-106.0

VIEW OF CORE B-1 AT 106.0-111.0

VIEW OF CORE B-1 AT 106.0-111.0

VIEW OF CORE B-2 AT 76.0-81.0

VIEW OF CORE B-2 AT 76.0-81.0

VIEW OF CORE B-2 AT 81.0-86.0

VIEW OF CORE B-2 AT 81.0-86.0

VIEW OF CORE B-2 AT 86.0-91.0

VIEW OF CORE B-2 AT 86.0-91.0

VIEW OF CORE B-2 AT 91.0-96.0

VIEW OF CORE B-2 AT 91.0-96.0

VIEW OF CORE B-2 AT 96.0-101.0

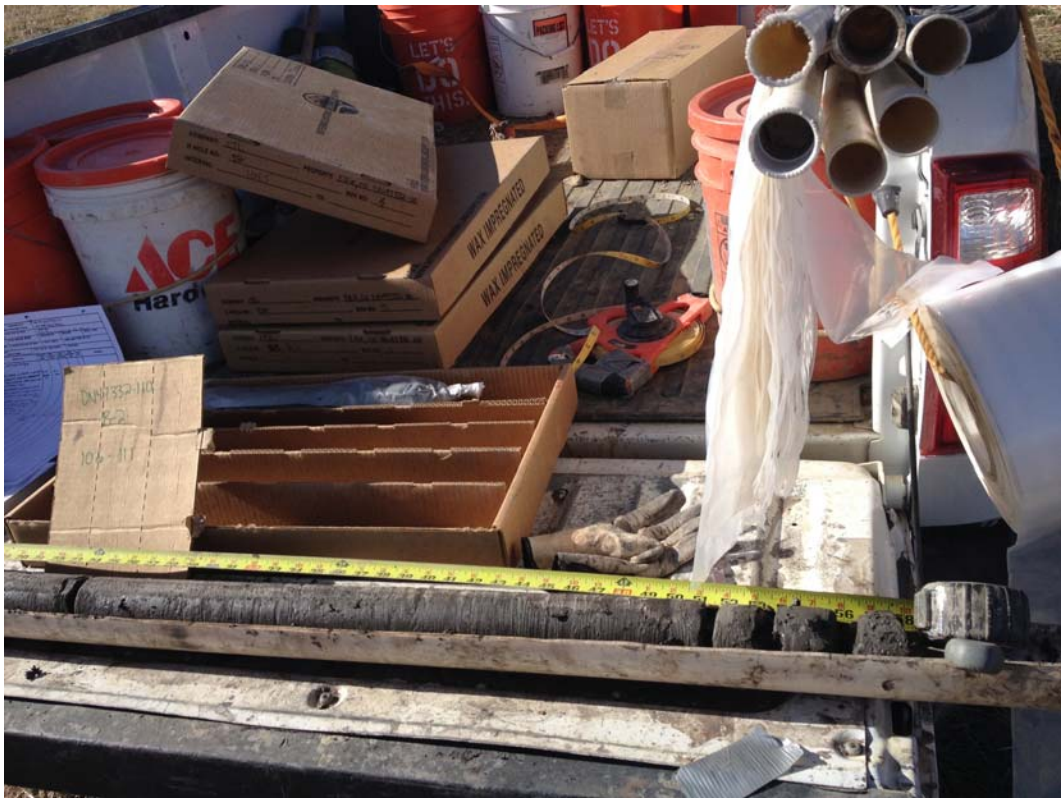
VIEW OF CORE B-2 AT 96.0-101.0

VIEW OF CORE B-2 AT 101.0-106.0

VIEW OF CORE B-2 AT 101.0-106.0

VIEW OF CORE B-2 AT 106.0-111.0

VIEW OF CORE B-2 AT 106.0-111.0



VIEW OF CORE B-2 AT 106.0-111.0

VIEW OF CORE B-2 AT 111.0-116.0

VIEW OF CORE B-2 AT 111.0-116.0

VIEW OF CORE B-2 AT 116.0-121.0

VIEW OF CORE B-2 AT 116.0-121.0

VIEW OF CORE B-2 AT 121.0-126.0

VIEW OF CORE B-2 AT 121.0-126.0

VIEW OF CORE B-2 AT 121.0-126.0

VIEW OF CORE B-3 AT 19.0-22.0

VIEW OF CORE B-3 AT 27.0-29.5

VIEW OF CORE B-3 AT 29.5-32.0

VIEW OF CORE B-3 AT 32.0-37.0

RMCS, INC
ERIE PARCEL
CTL | T PROJECT NO. DN47,332-110

FIG. B-33

VIEW OF CORE B-3 AT 32.0-37.0

VIEW OF CORE B-3 AT 37.0-42.0

VIEW OF CORE B-3 AT 42.0-47.0

VIEW OF CORE B-3 AT 42.0-47.0

VIEW OF CORE B-3 AT 47.0-52.0

VIEW OF CORE B-3 AT 47.0-52.0

VIEW OF CORE B-3 AT 52.0-57.0

VIEW OF CORE B-3 AT 52.0-57.0

RMCS, INC
ERIE PARCEL
CTL | T PROJECT NO. DN47,332-110

FIG. B-37

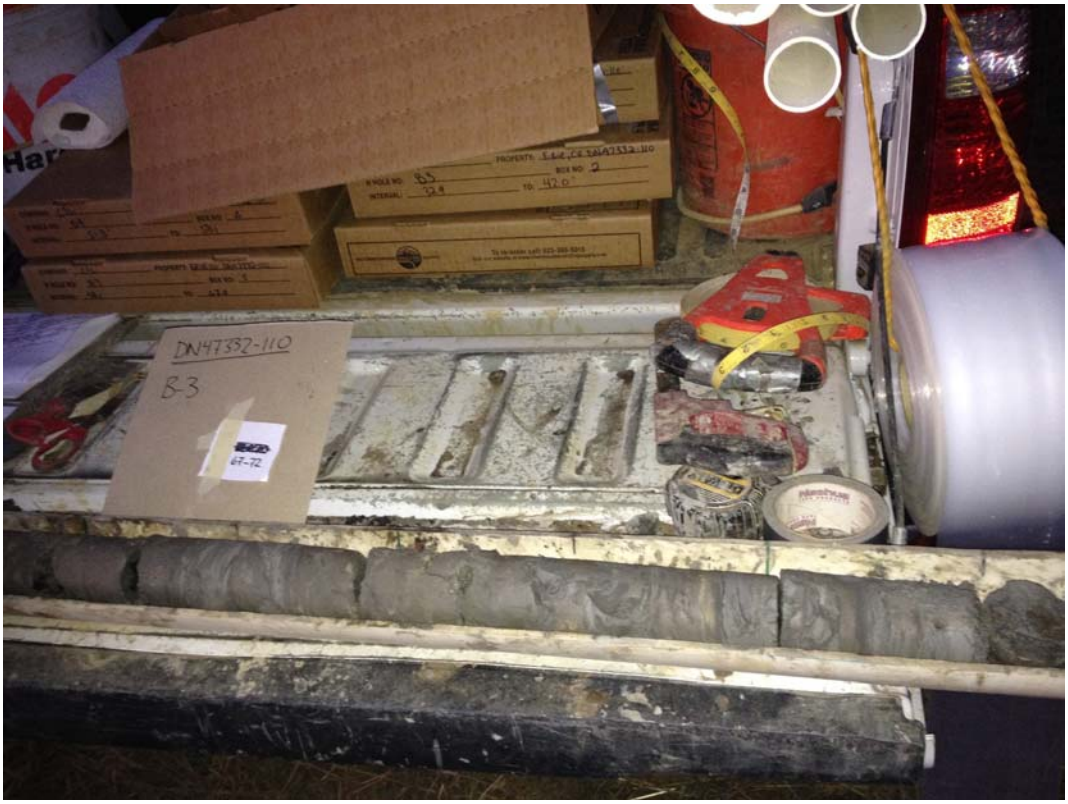
VIEW OF CORE B-3 AT 57.0-62.0

VIEW OF CORE B-3 AT 57.0-62.0

VIEW OF CORE B-3 AT 62.0-67.0

VIEW OF CORE B-3 AT 62.0-67.0

VIEW OF CORE B-3 AT 67.0-72.0



VIEW OF CORE B-3 AT 67.0-72.0

VIEW OF CORE B-3 AT 72.0-77.0

VIEW OF CORE B-3 AT 72.0-77.0

VIEW OF CORE B-3 AT 77.0-82.0

VIEW OF CORE B-3 AT 77.0-82.0

VIEW OF CORE B-3 AT 82.0-87.0

VIEW OF CORE B-3 AT 82.0-87.0

VIEW OF CORE B-3 AT 82.0-87.0

VIEW OF CORE B-3 AT 87.0-92.0

VIEW OF CORE B-3 AT 87.0-92.0

VIEW OF CORE B-3 AT 92.0-97.0

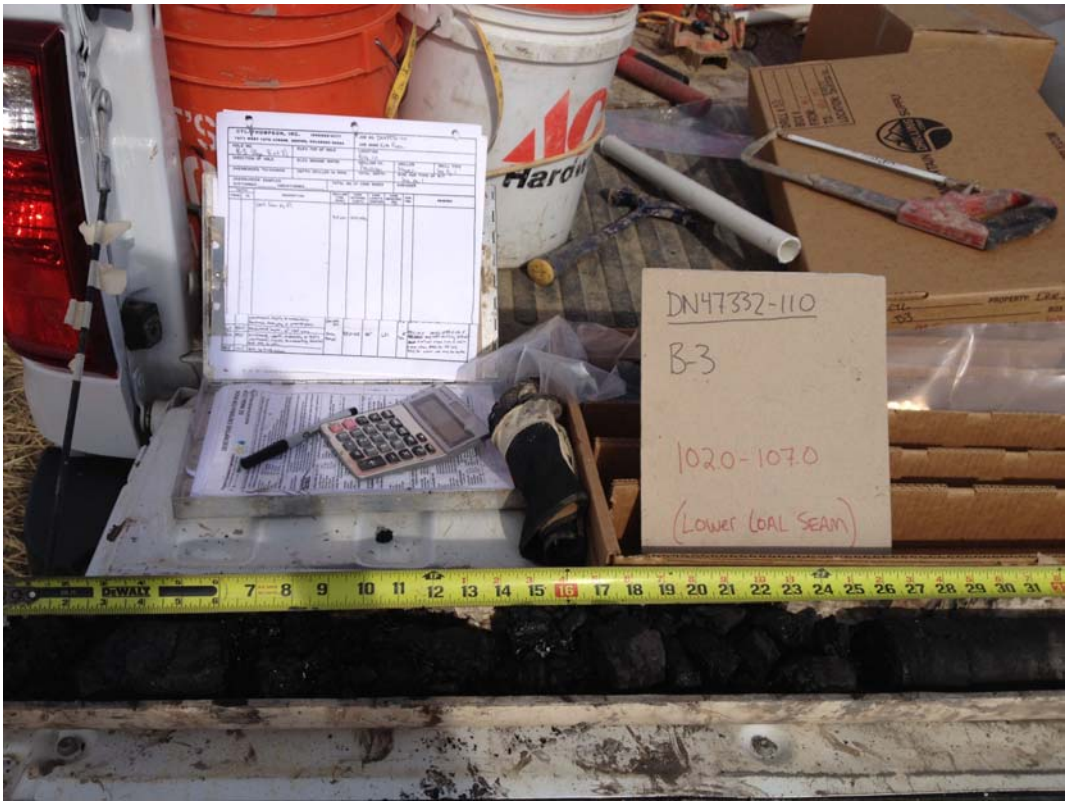
VIEW OF CORE B-3 AT 92.0-97.0

VIEW OF CORE B-3 AT 97.0-102.0

VIEW OF CORE B-3 AT 97.0-102.0

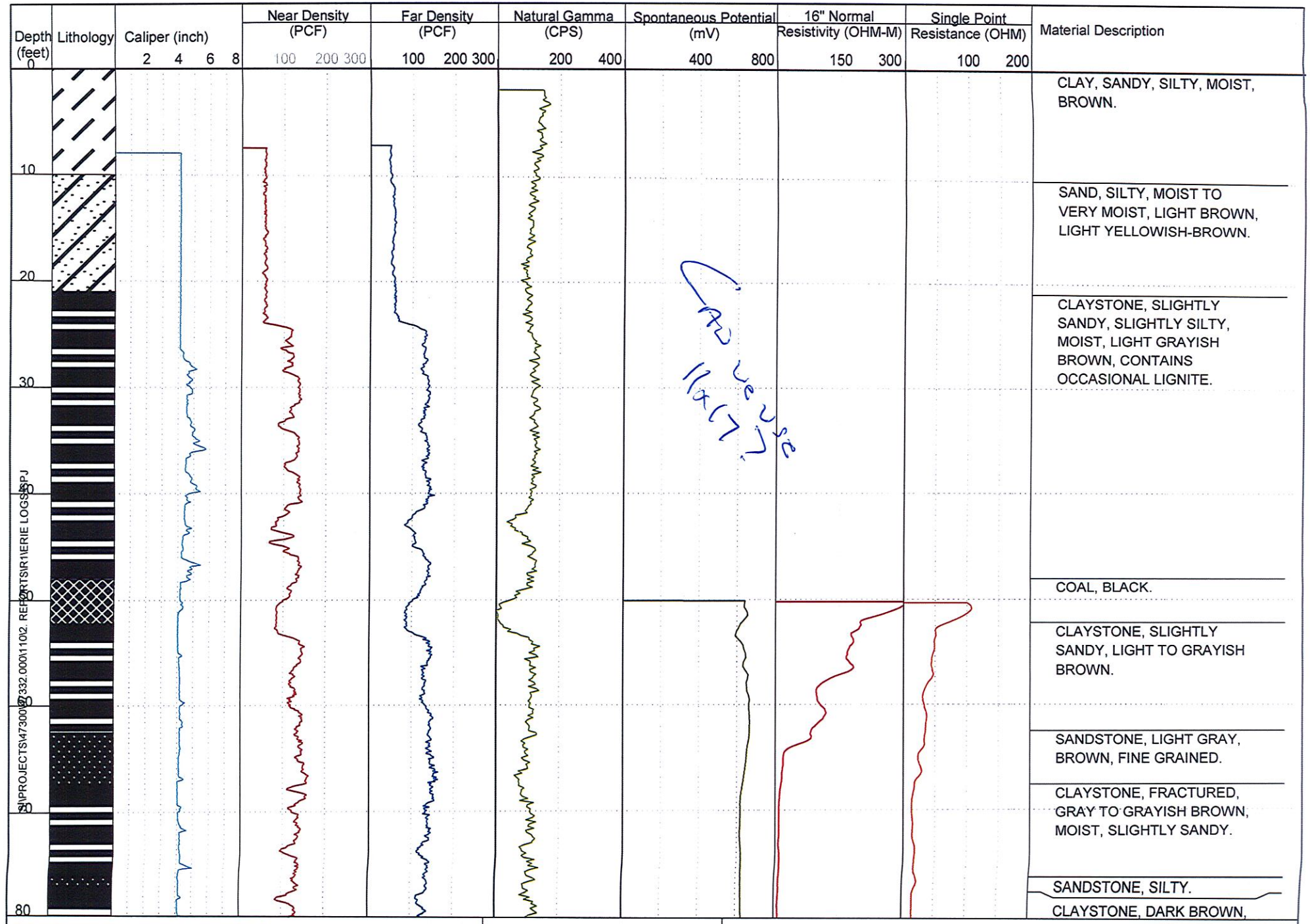
VIEW OF CORE B-3 AT 102.0-107.0

VIEW OF CORE B-3 AT 102.0-107.0



VIEW OF CORE B-3 AT 102.0-107.0

APPENDIX C
GEOPYSICAL TEST LOGS



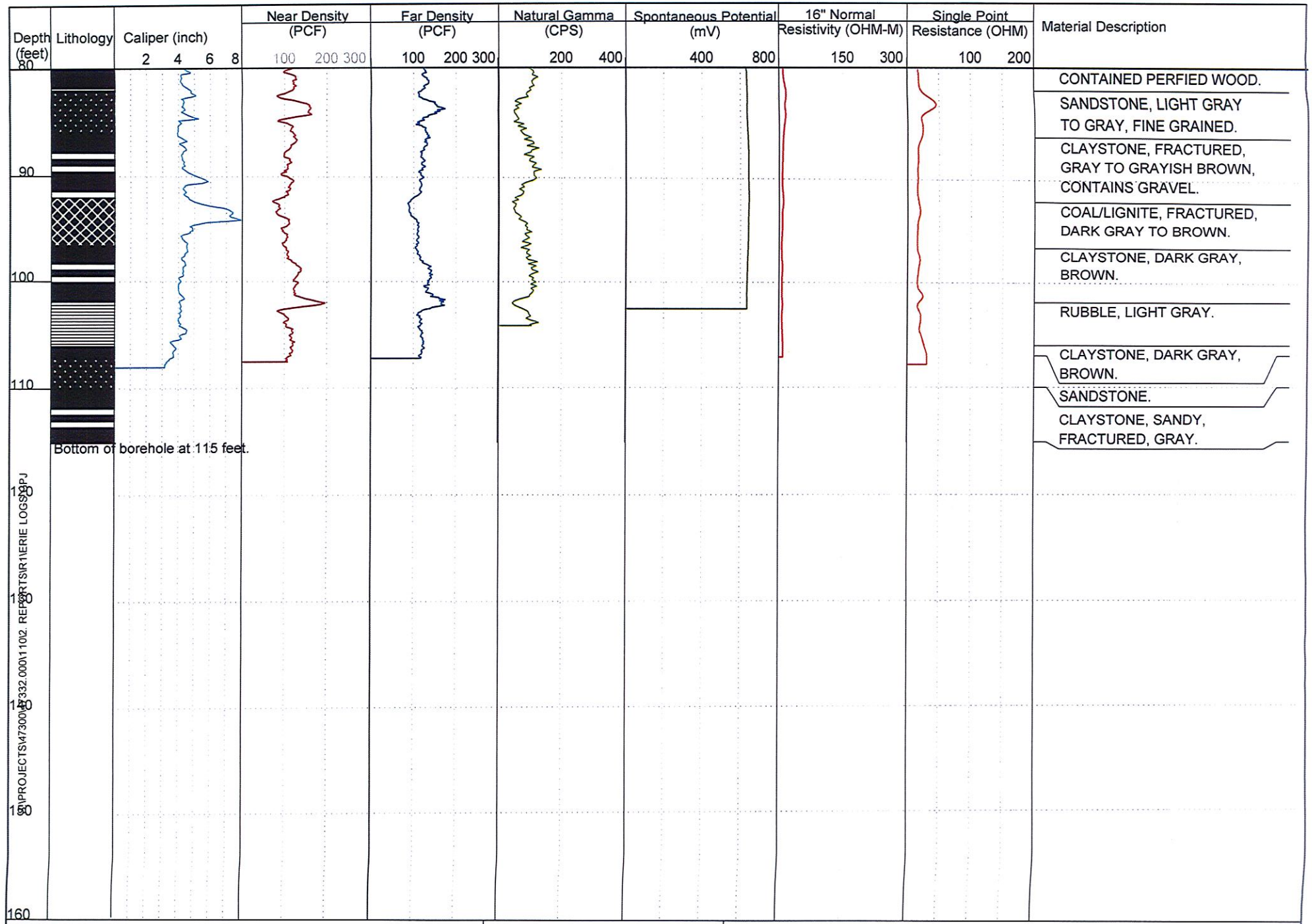
GEOPHYSICAL TEST LOG: B-1

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



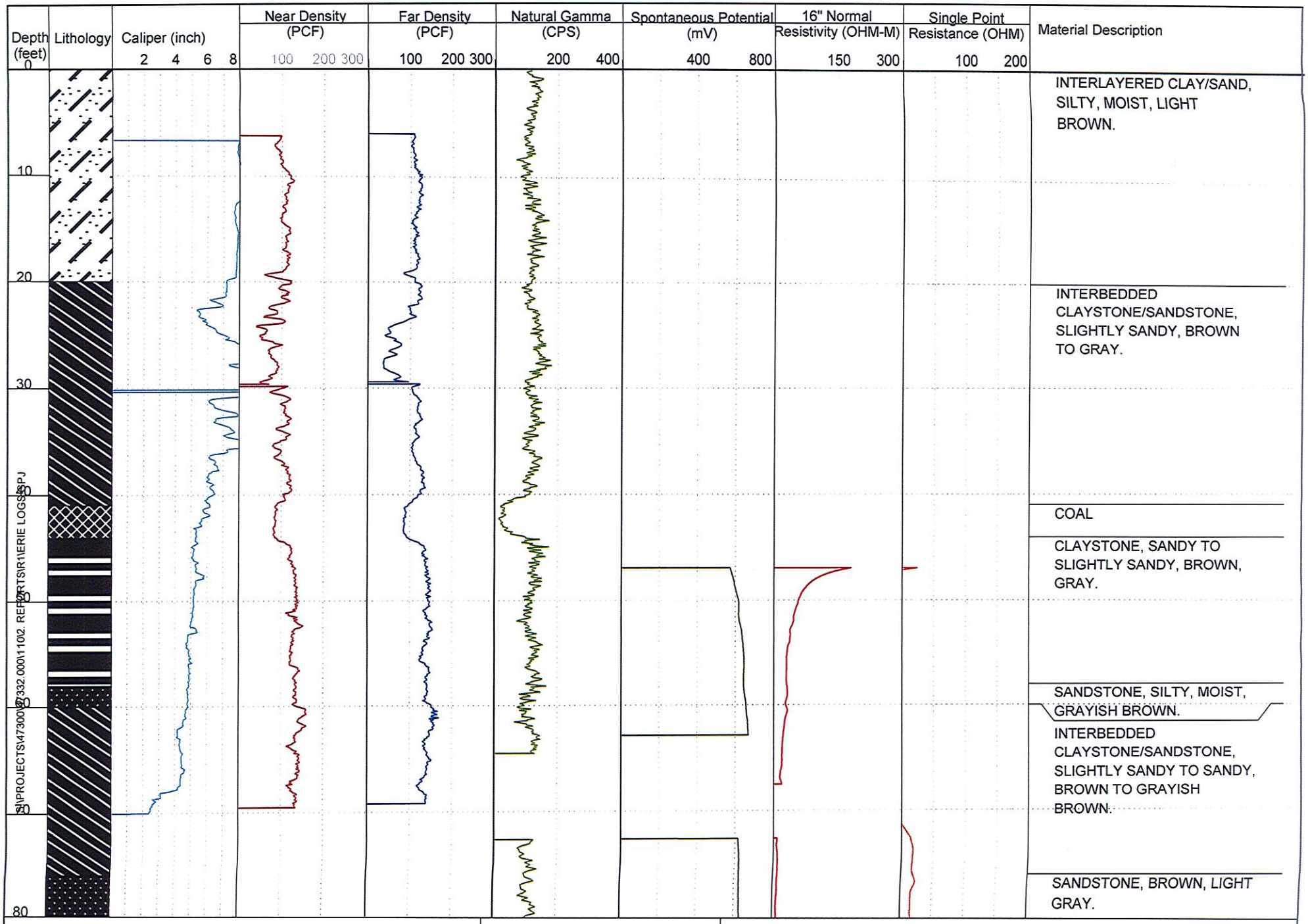
GEOPHYSICAL TEST LOG: B-1

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



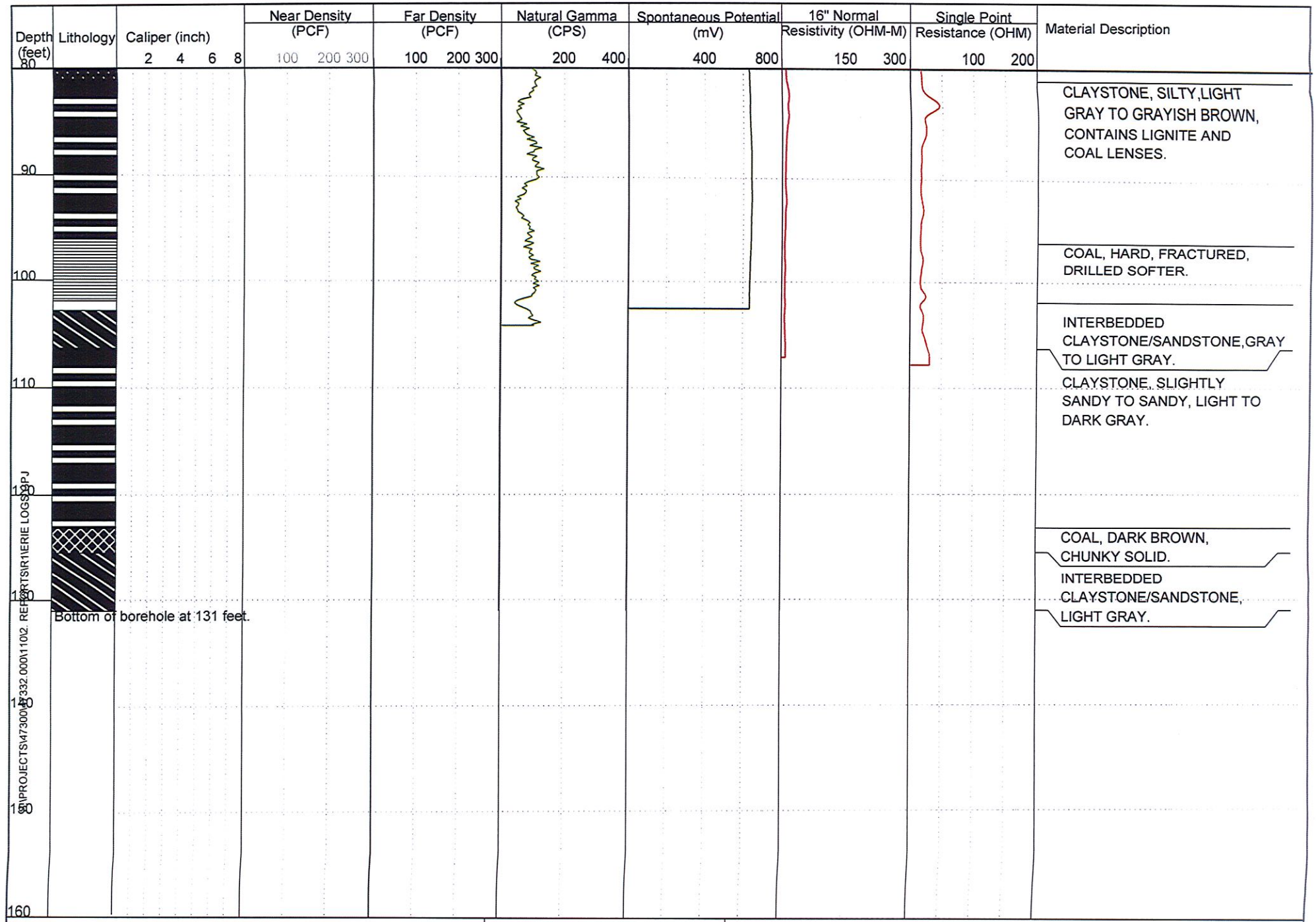
GEOPHYSICAL TEST LOG: B-2

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



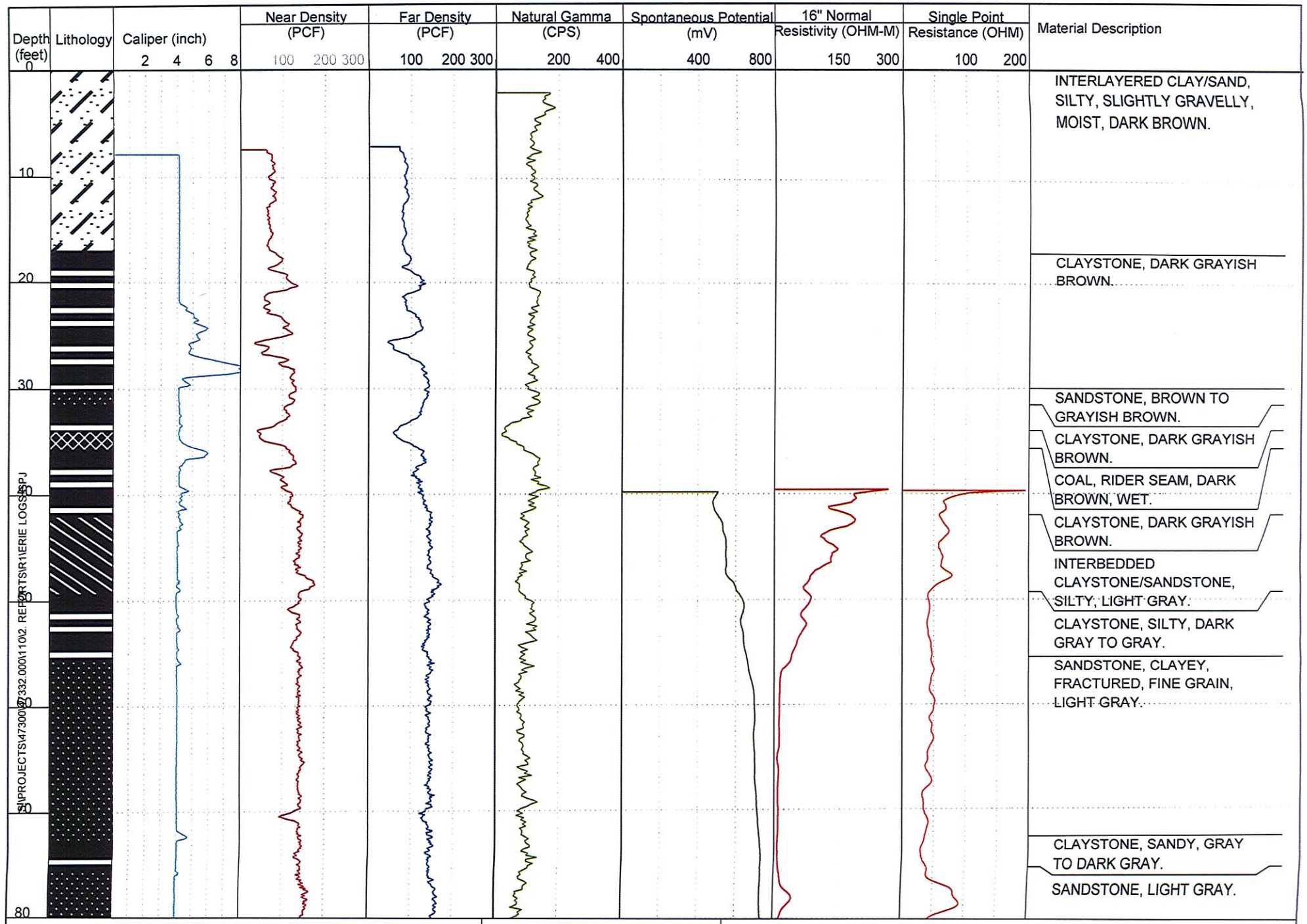
GEOPHYSICAL TEST LOG: B-2

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



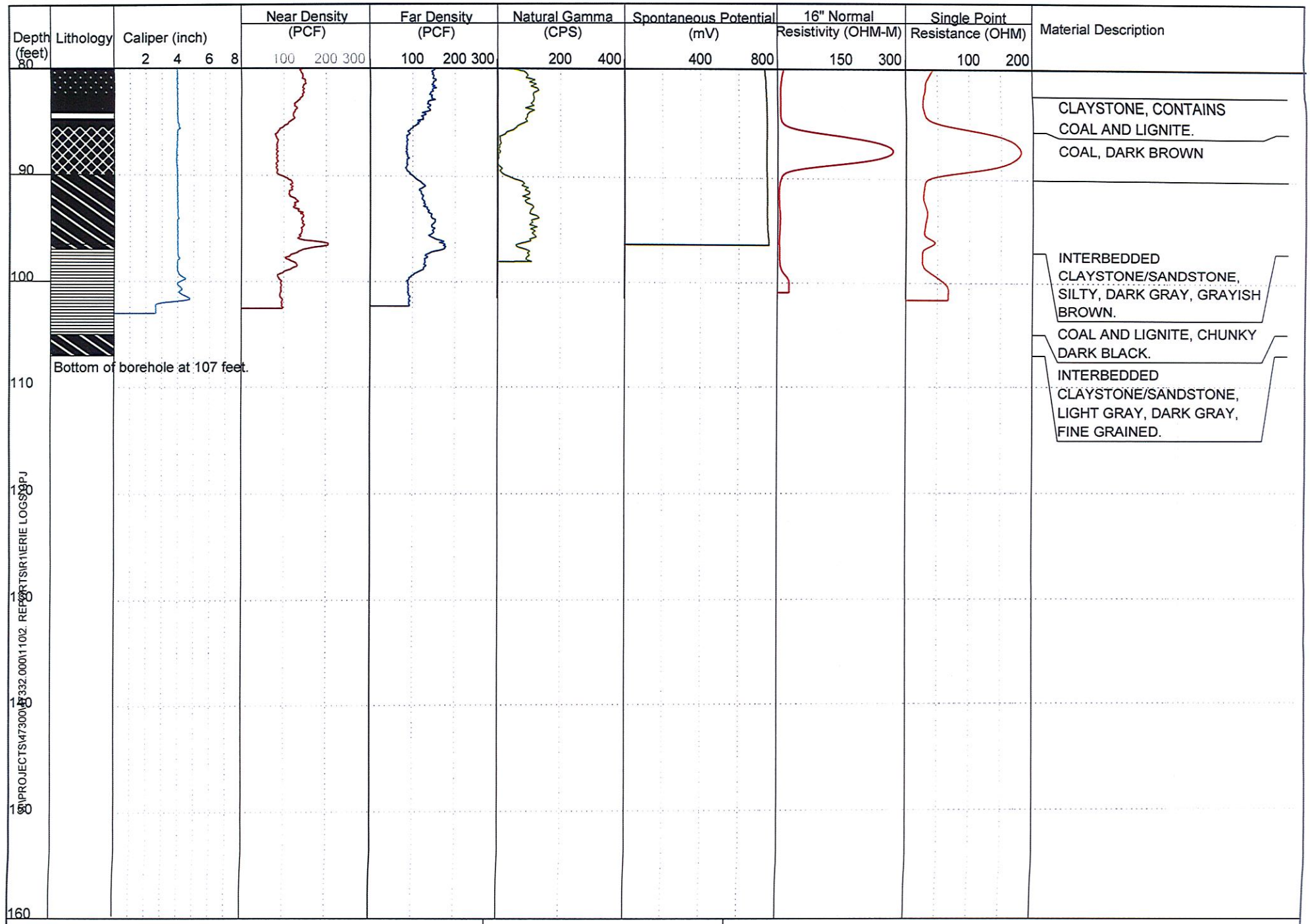
GEOPHYSICAL TEST LOG: B-3

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



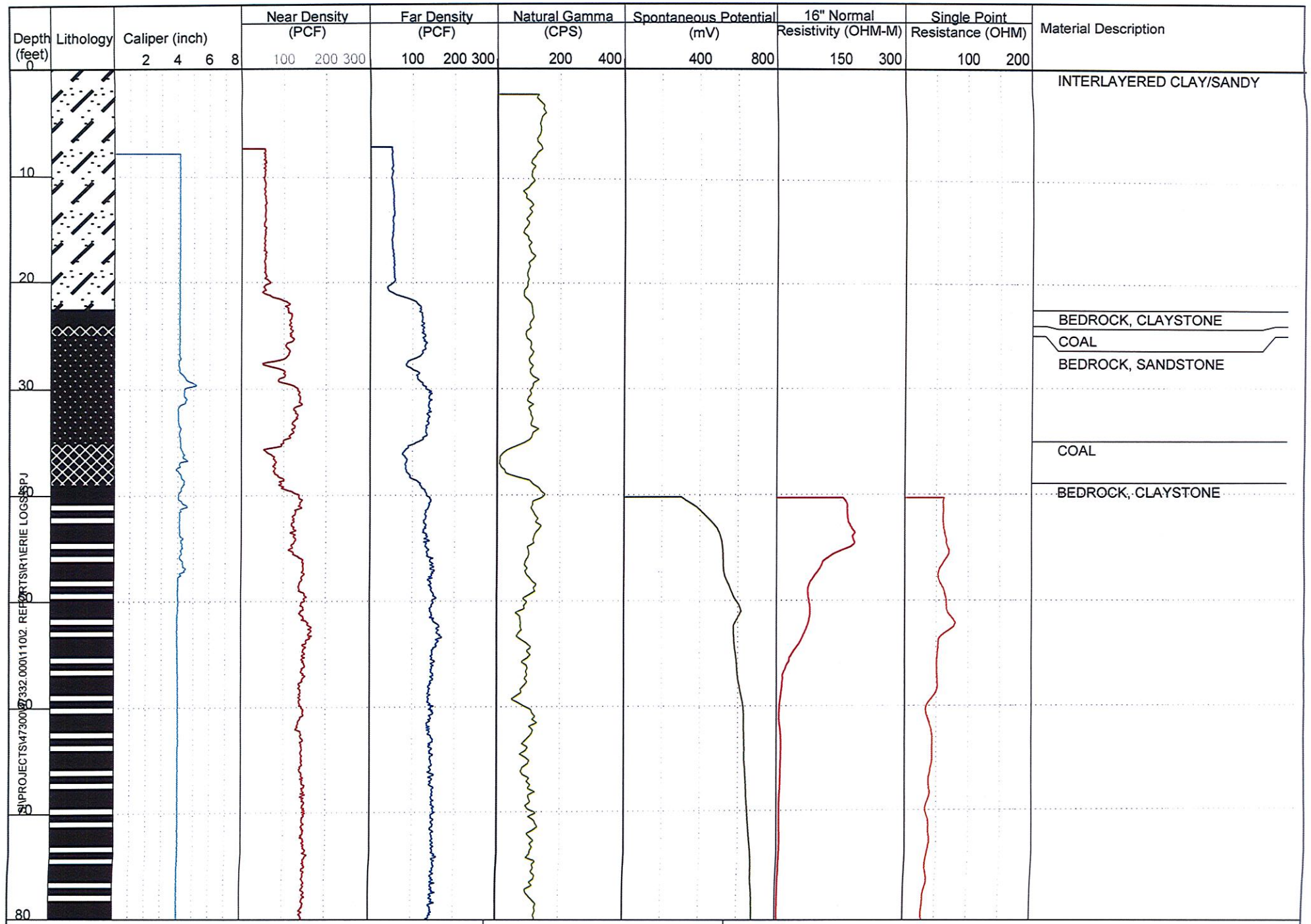
GEOPHYSICAL TEST LOG: B-3

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



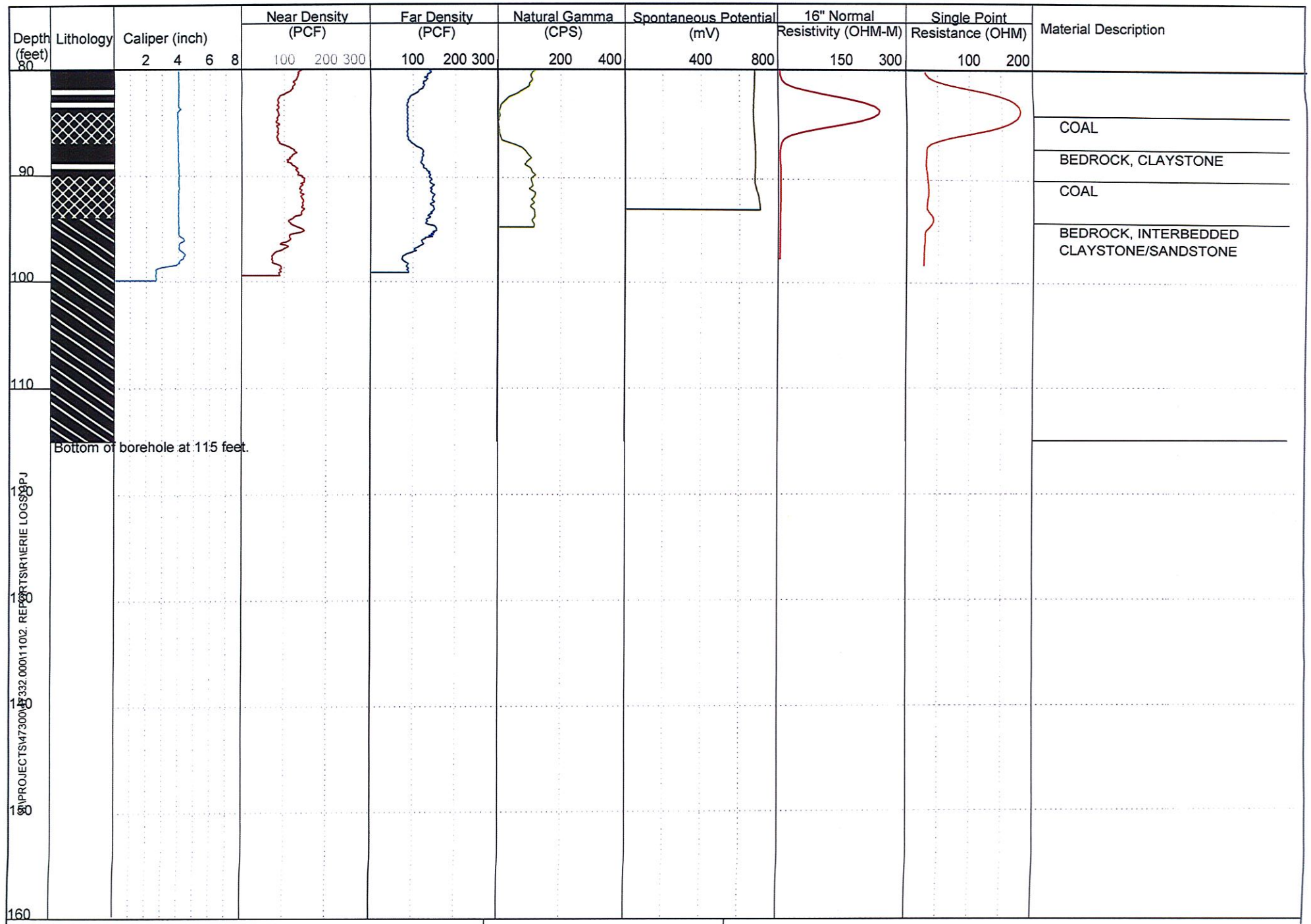
GEOPHYSICAL TEST LOG: B-4

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



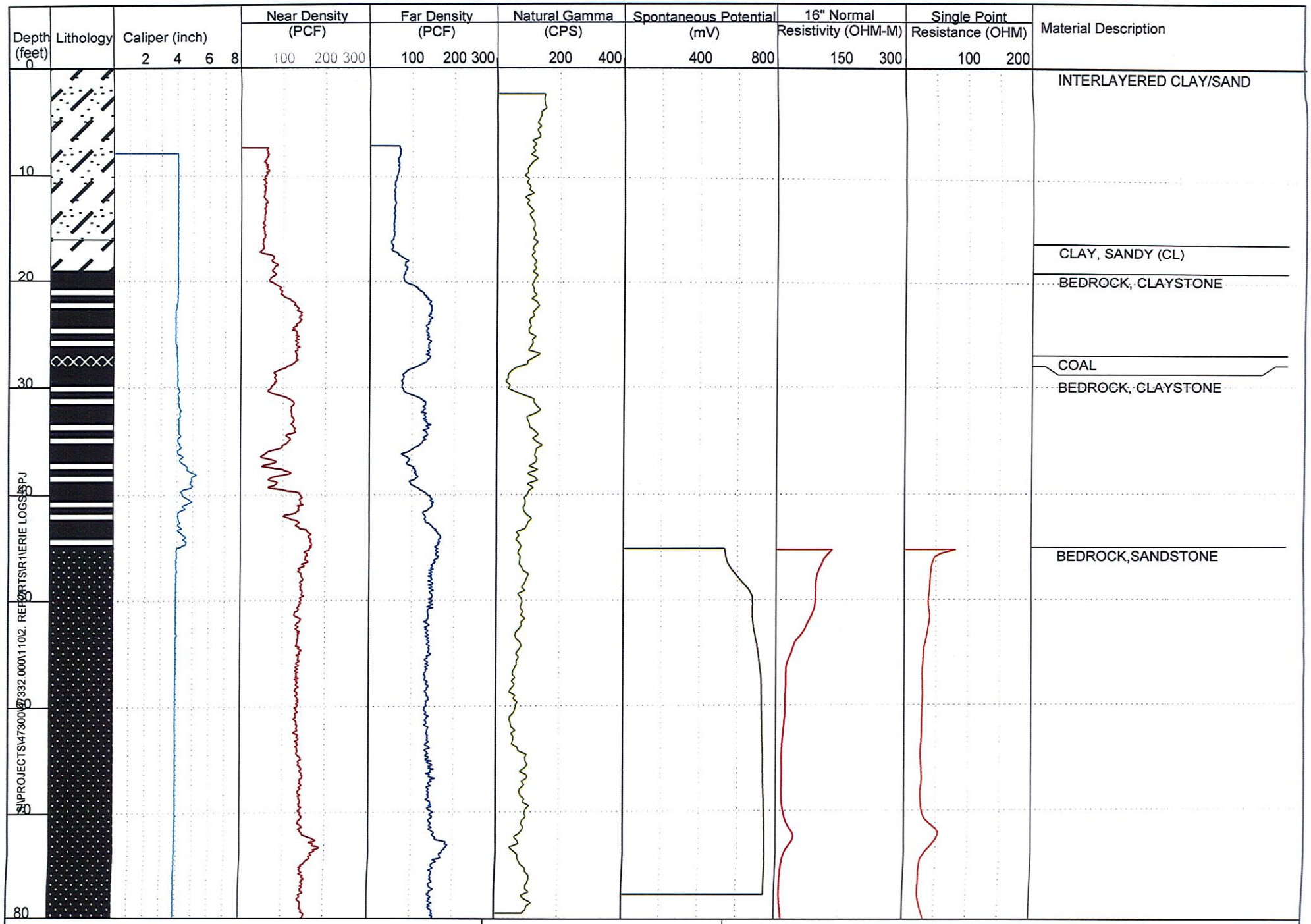
GEOPHYSICAL TEST LOG: B-4

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



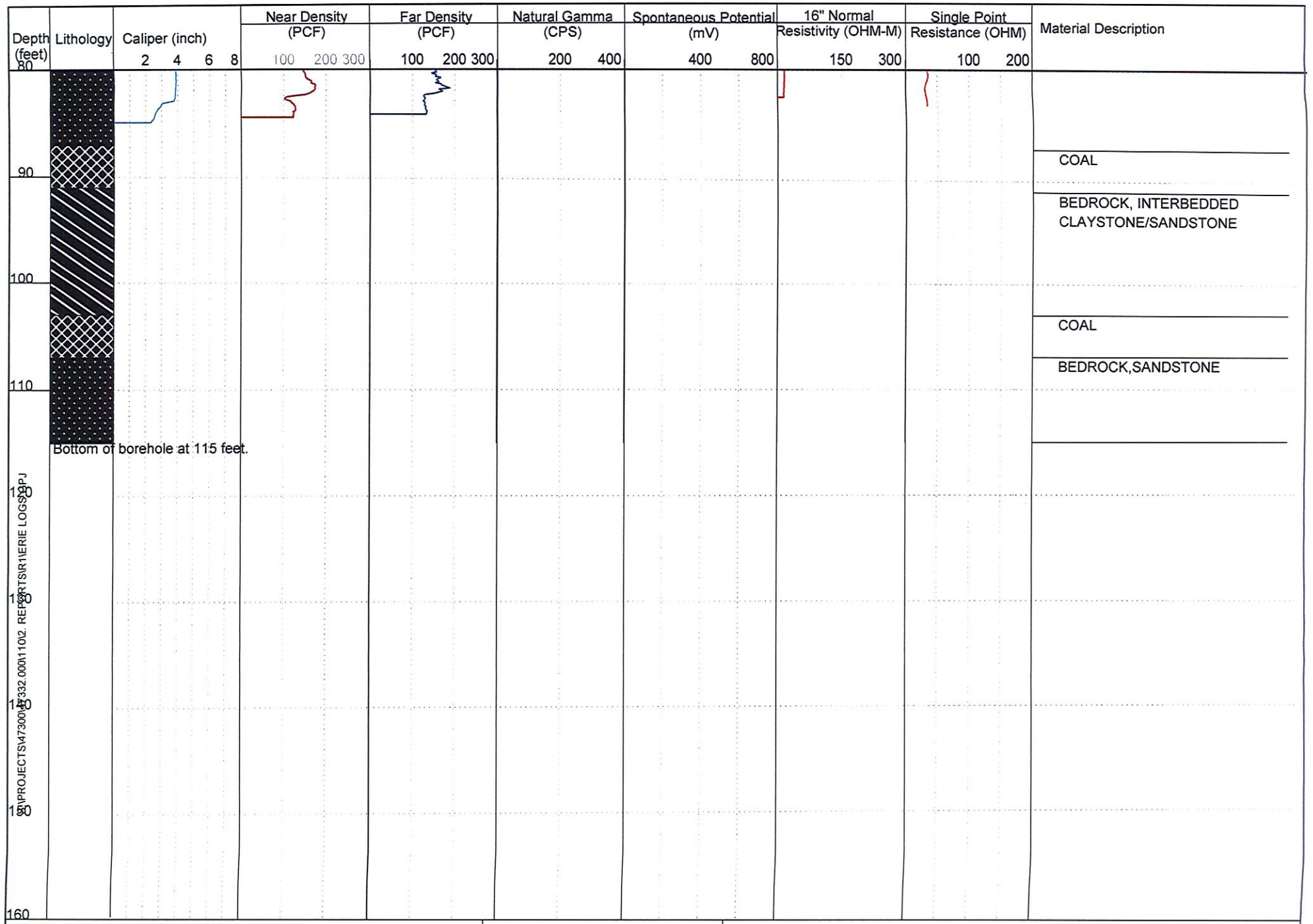
GEOPHYSICAL TEST LOG: B-5

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



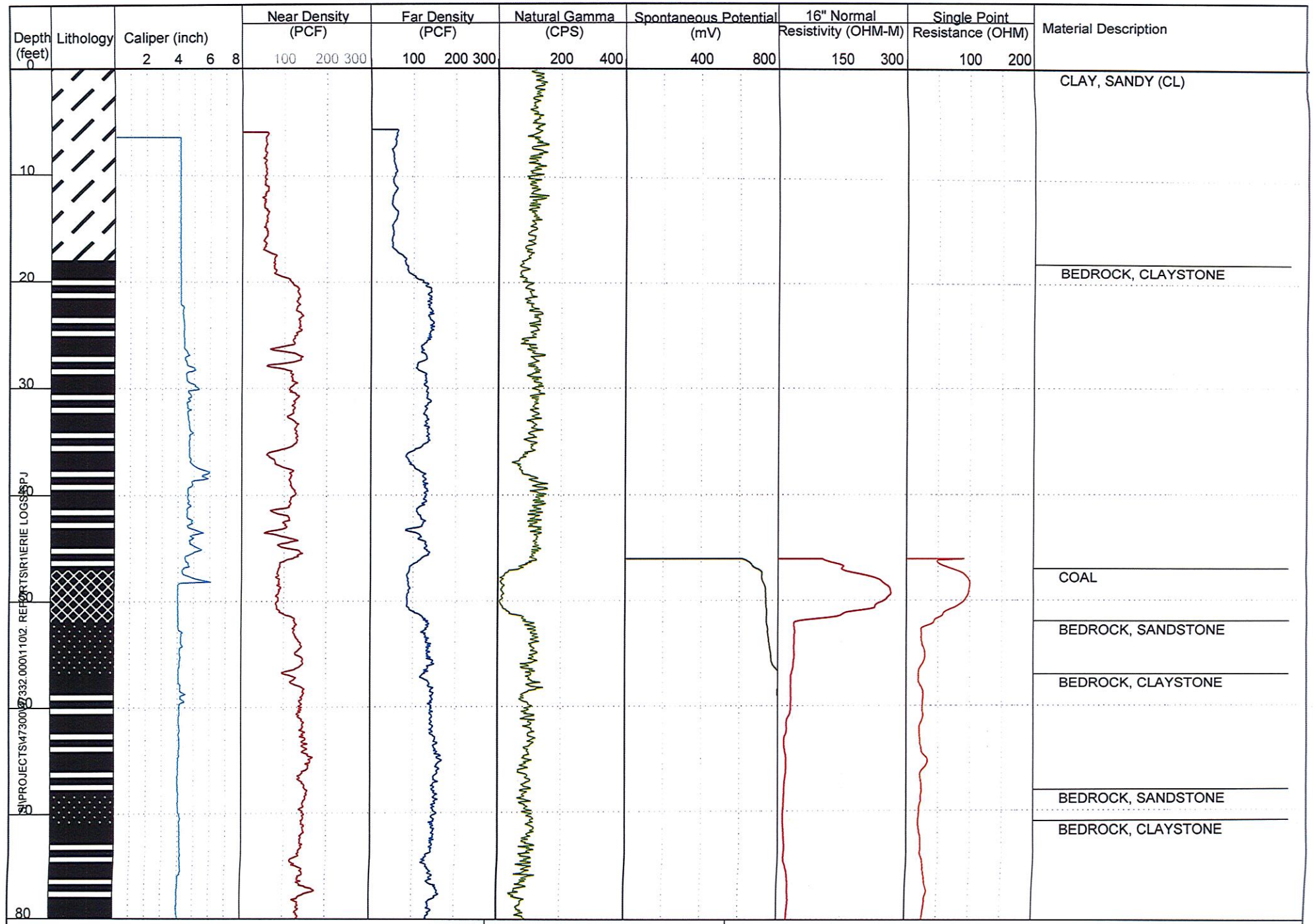
GEOPHYSICAL TEST LOG: B-5

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



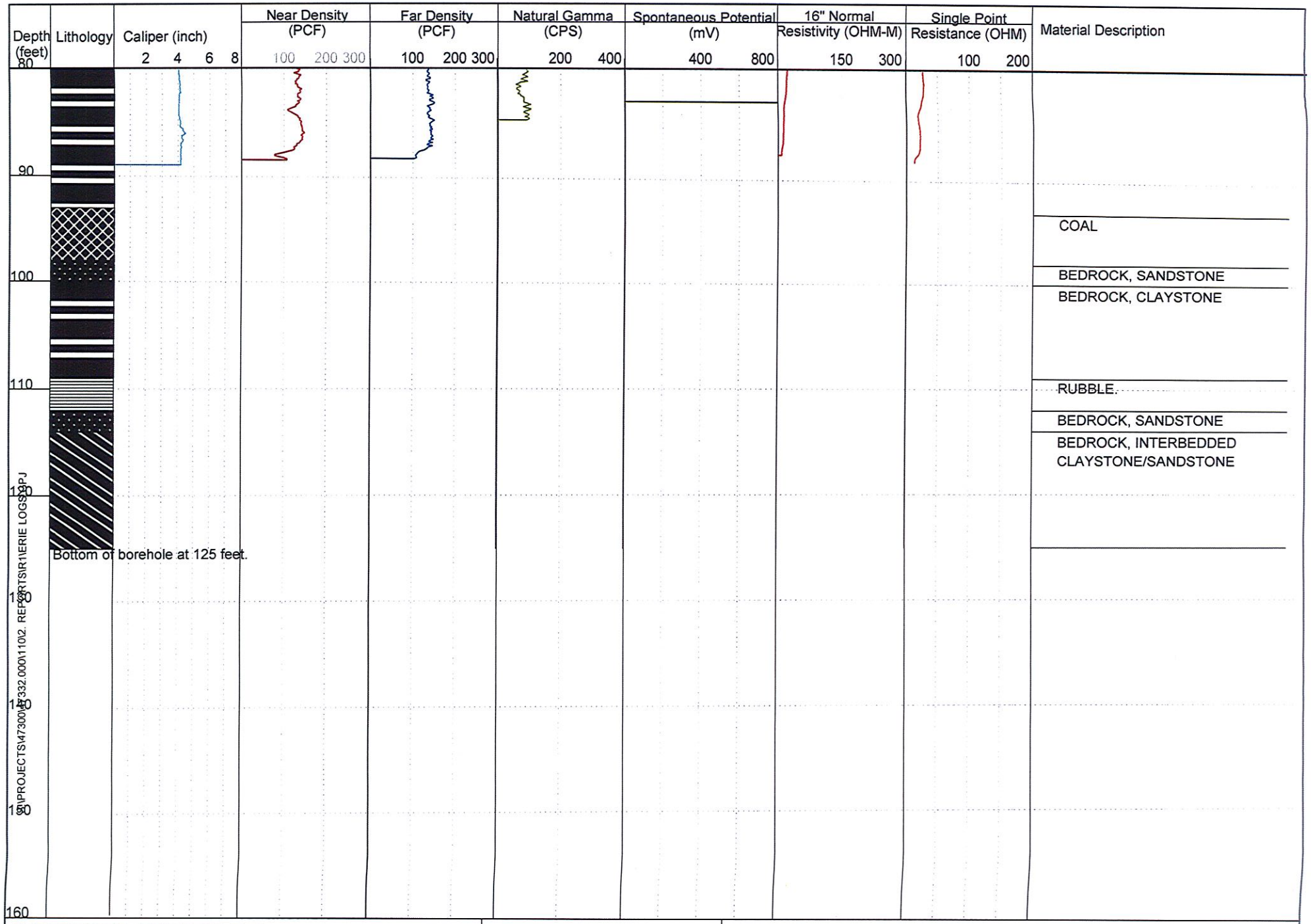
GEOPHYSICAL TEST LOG: B-6

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



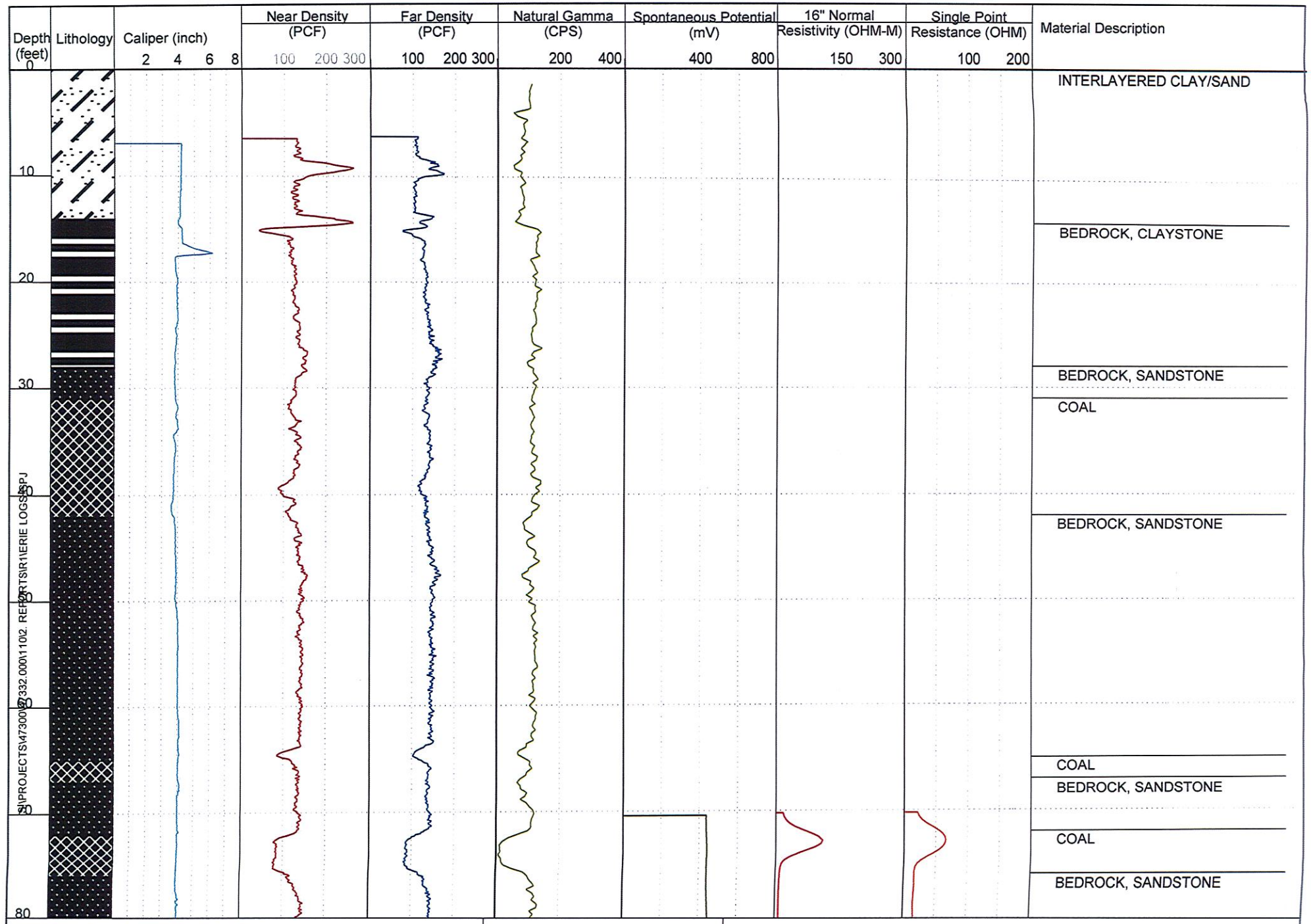
GEOPHYSICAL TEST LOG: B-6

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



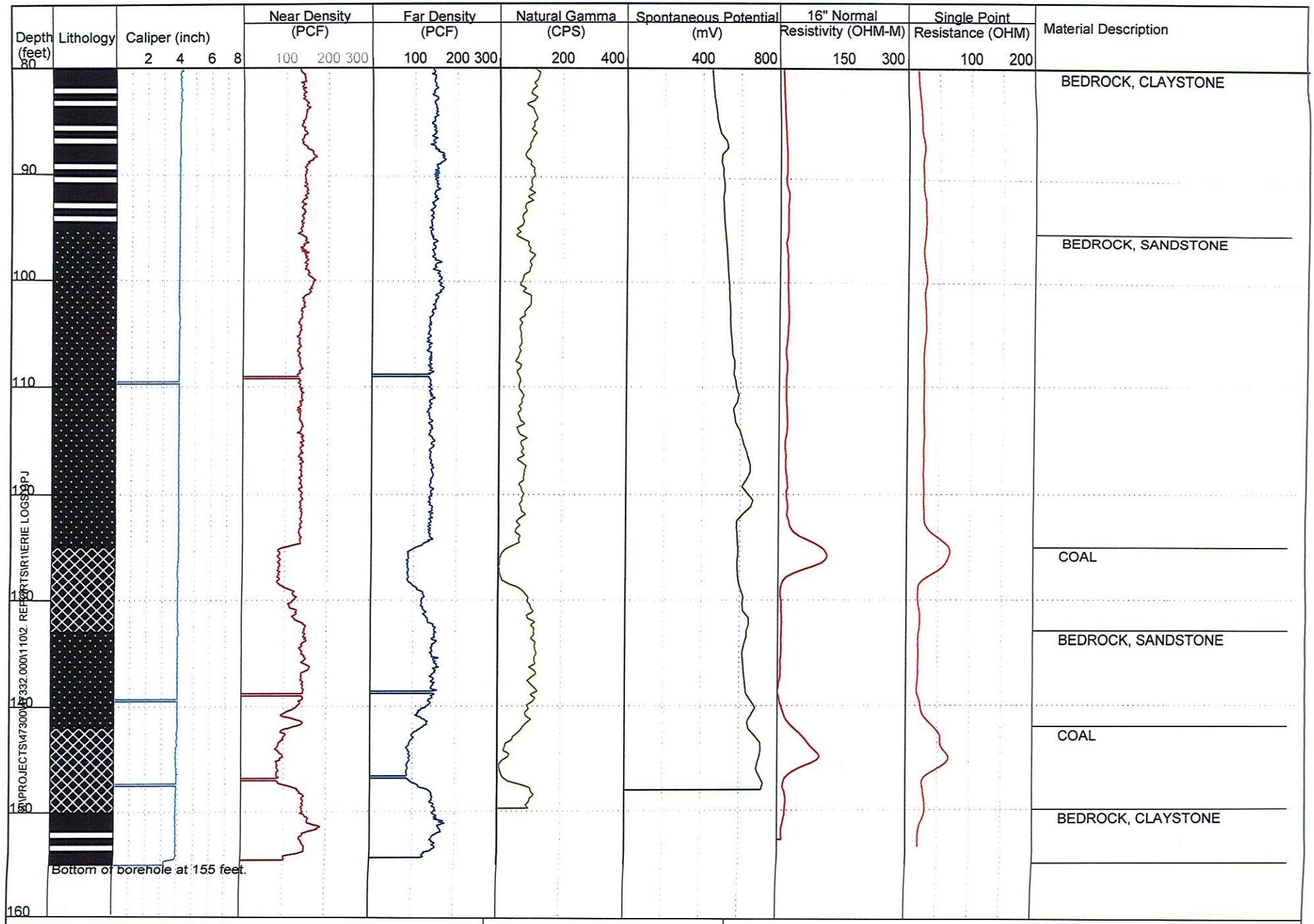
GEOPHYSICAL TEST LOG: B-7

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



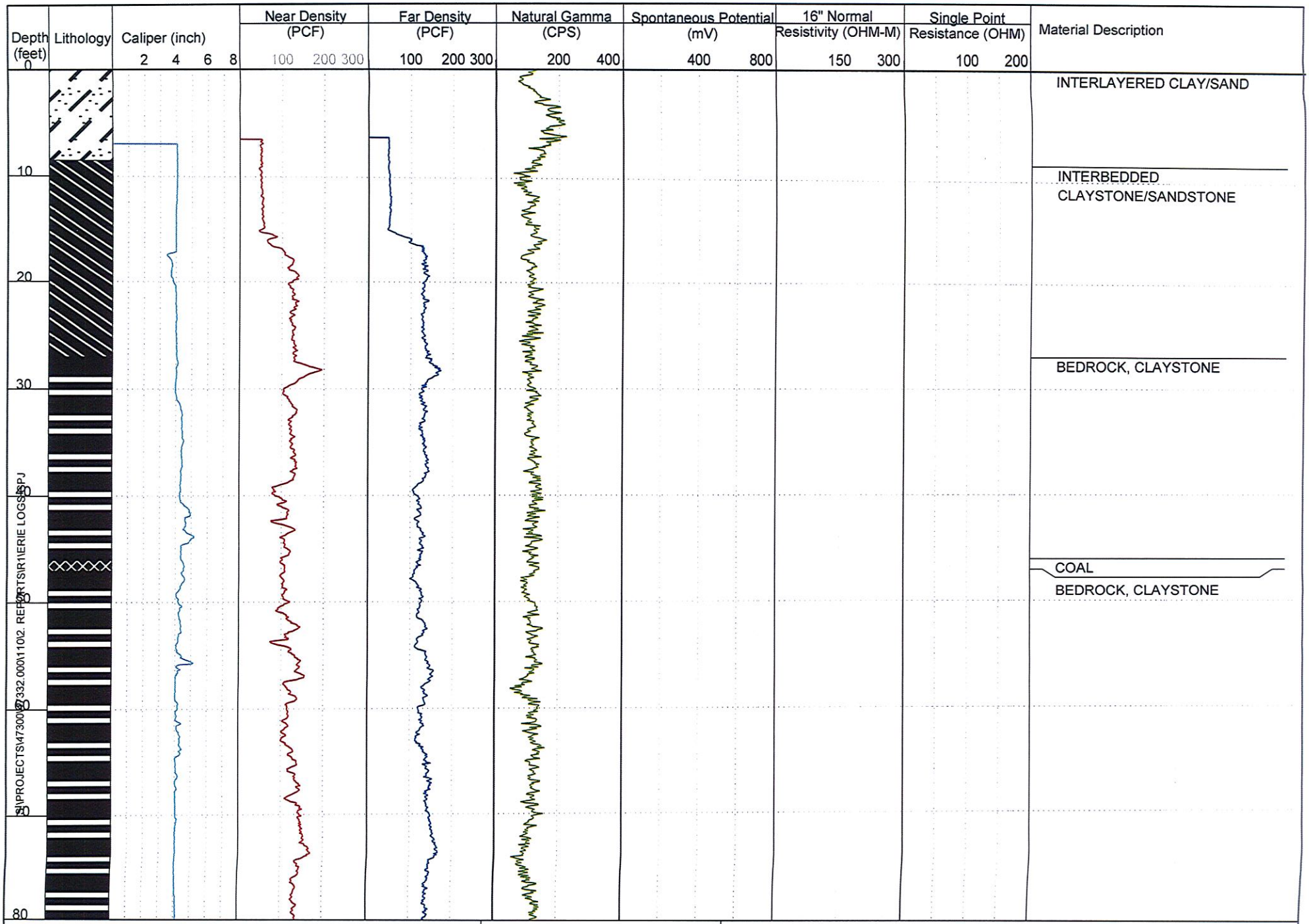
GEOPHYSICAL TEST LOG: B-7

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



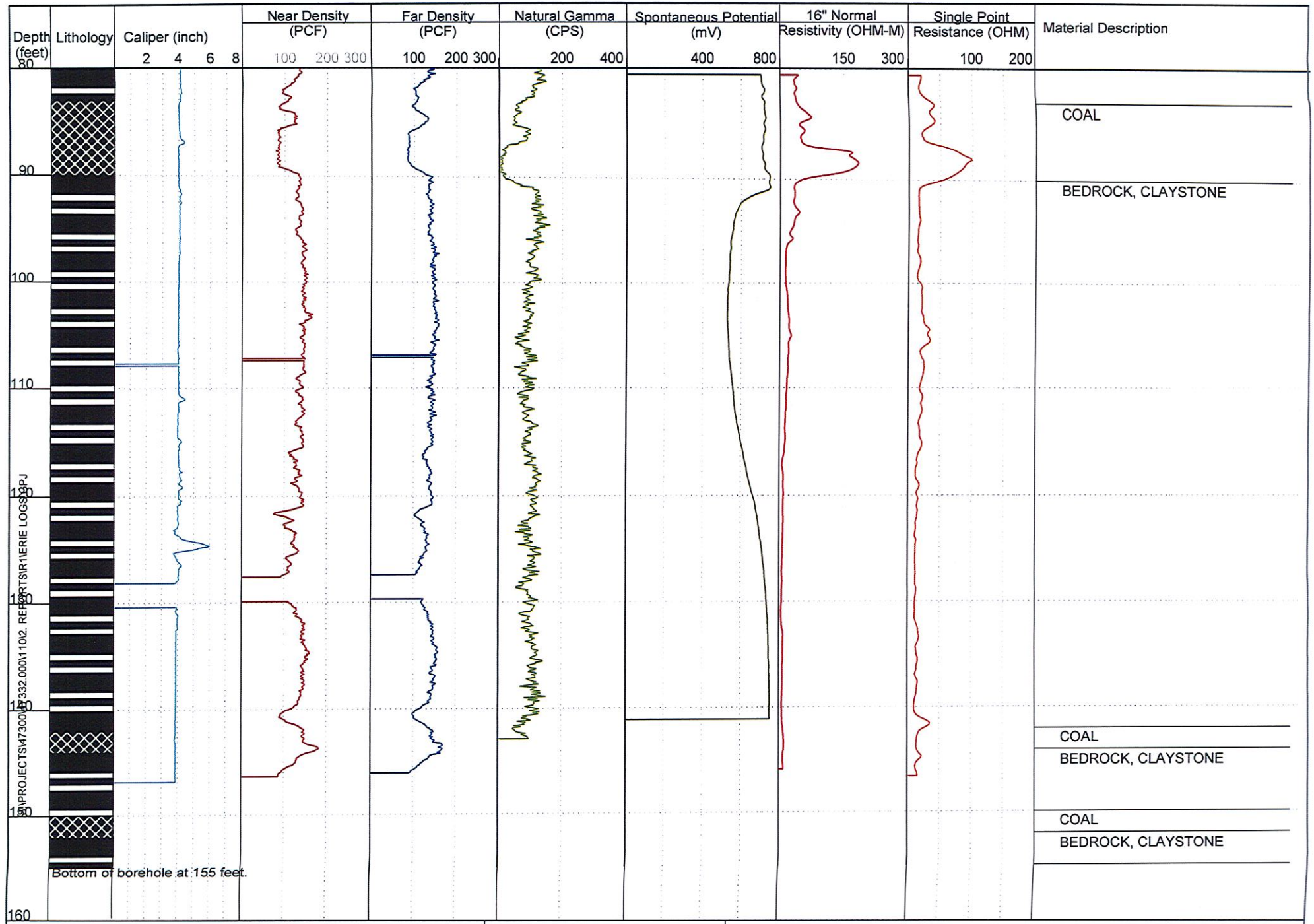
GEOPHYSICAL TEST LOG: B-8

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



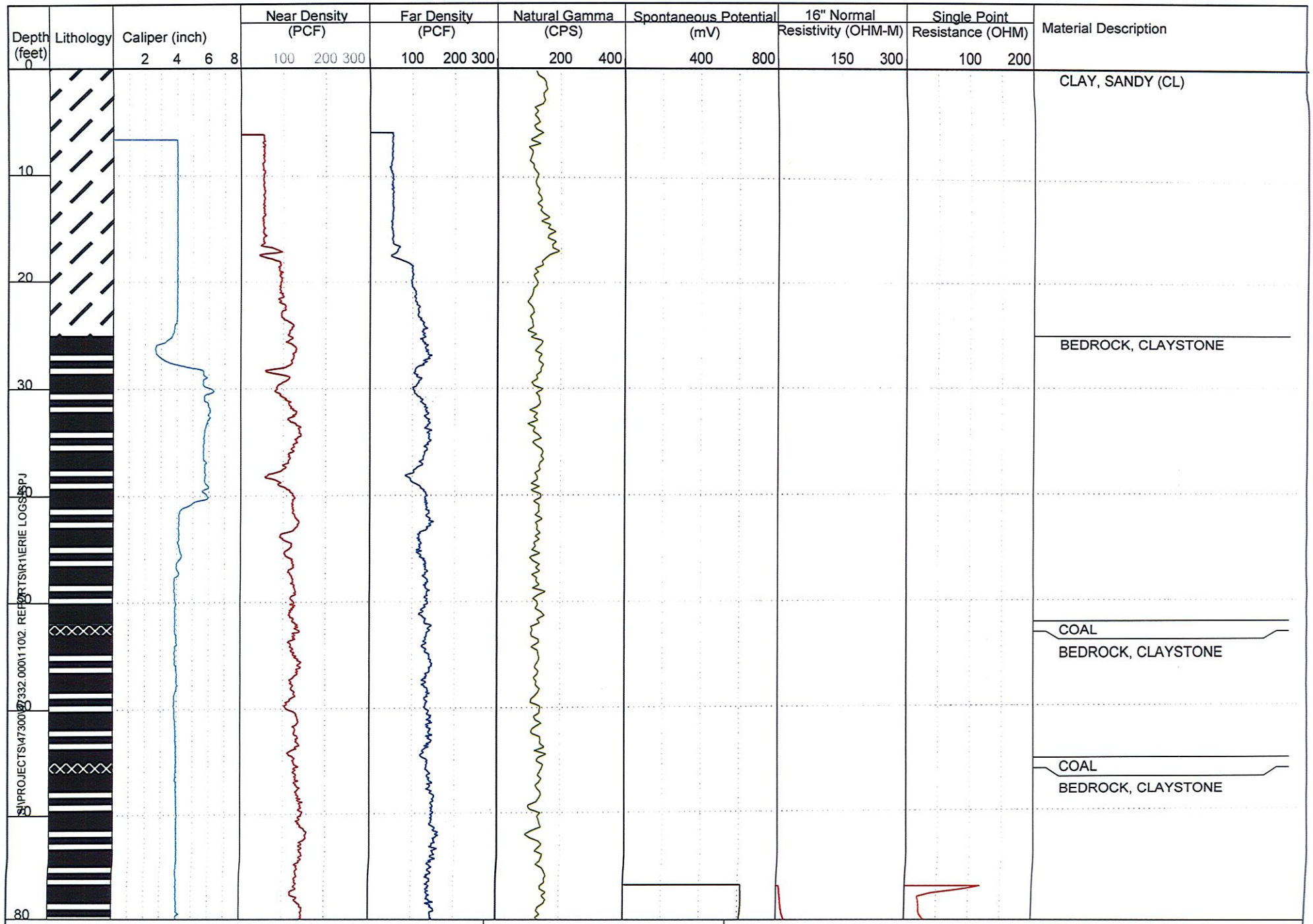
GEOPHYSICAL TEST LOG: B-8

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



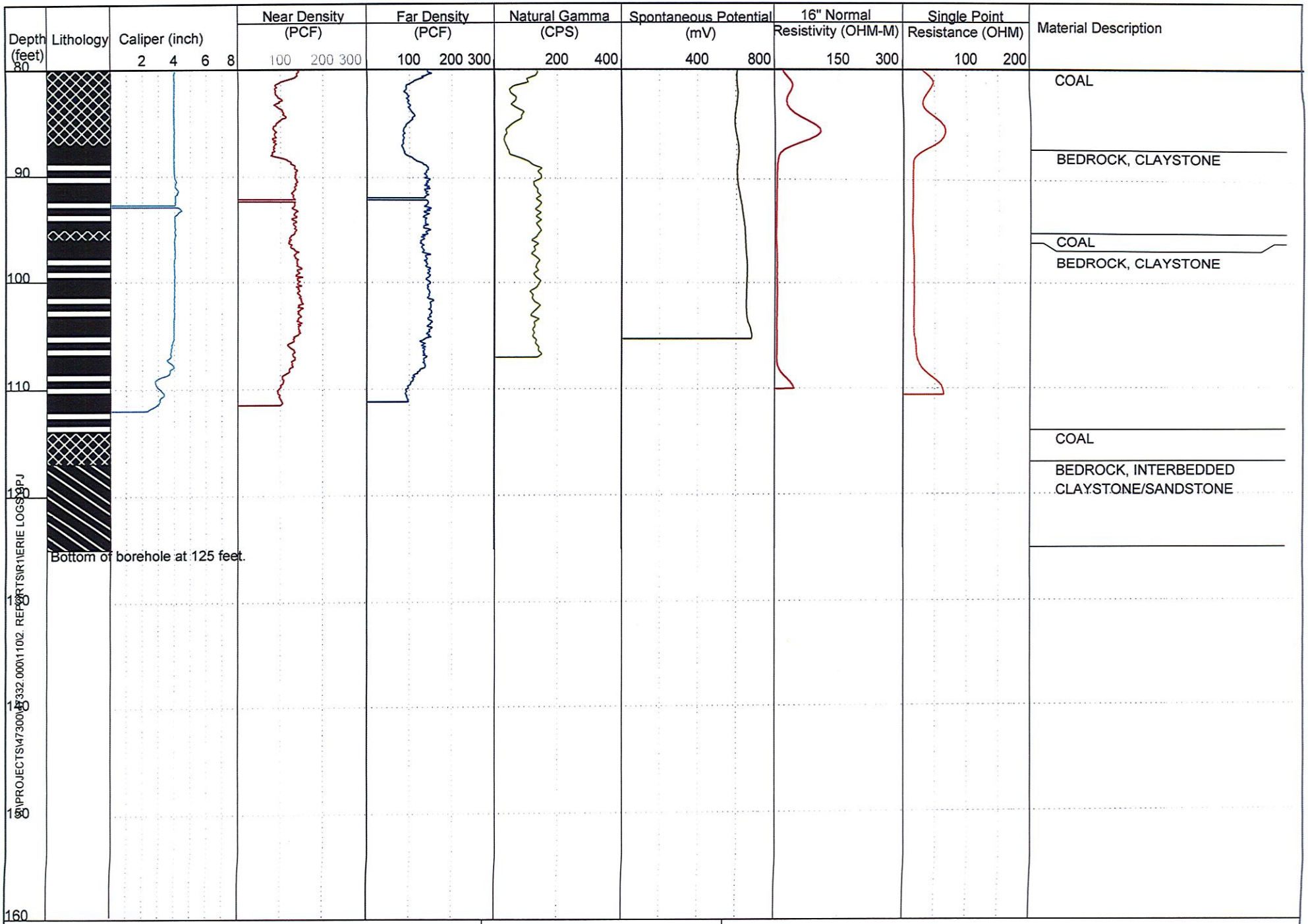
GEOPHYSICAL TEST LOG: B-9

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



I:\PROJECTS\47300\47332.000\110\2. REPORT\SIR\1\ERIE LOGS.GPJ

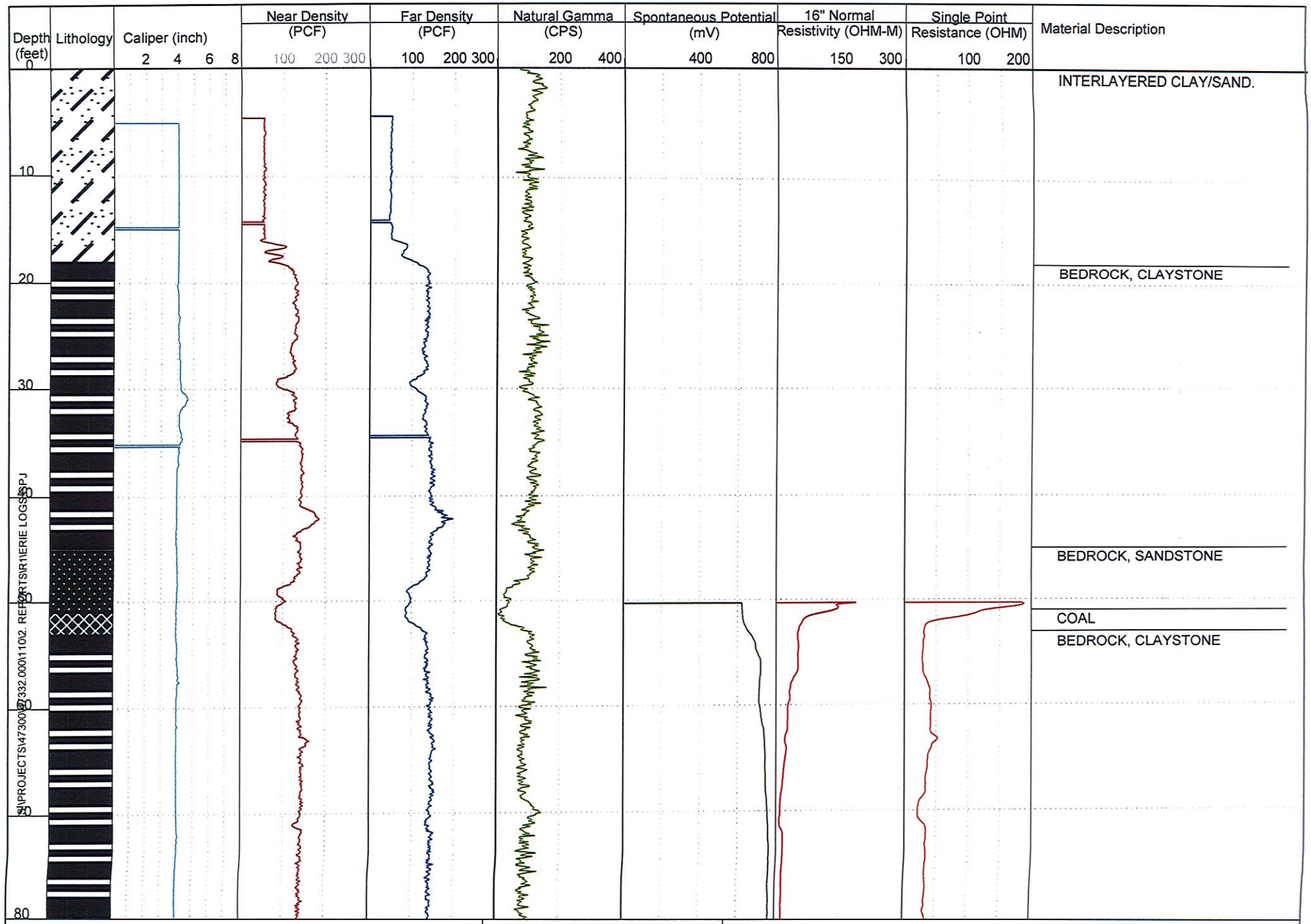
GEOPHYSICAL TEST LOG: B-9

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



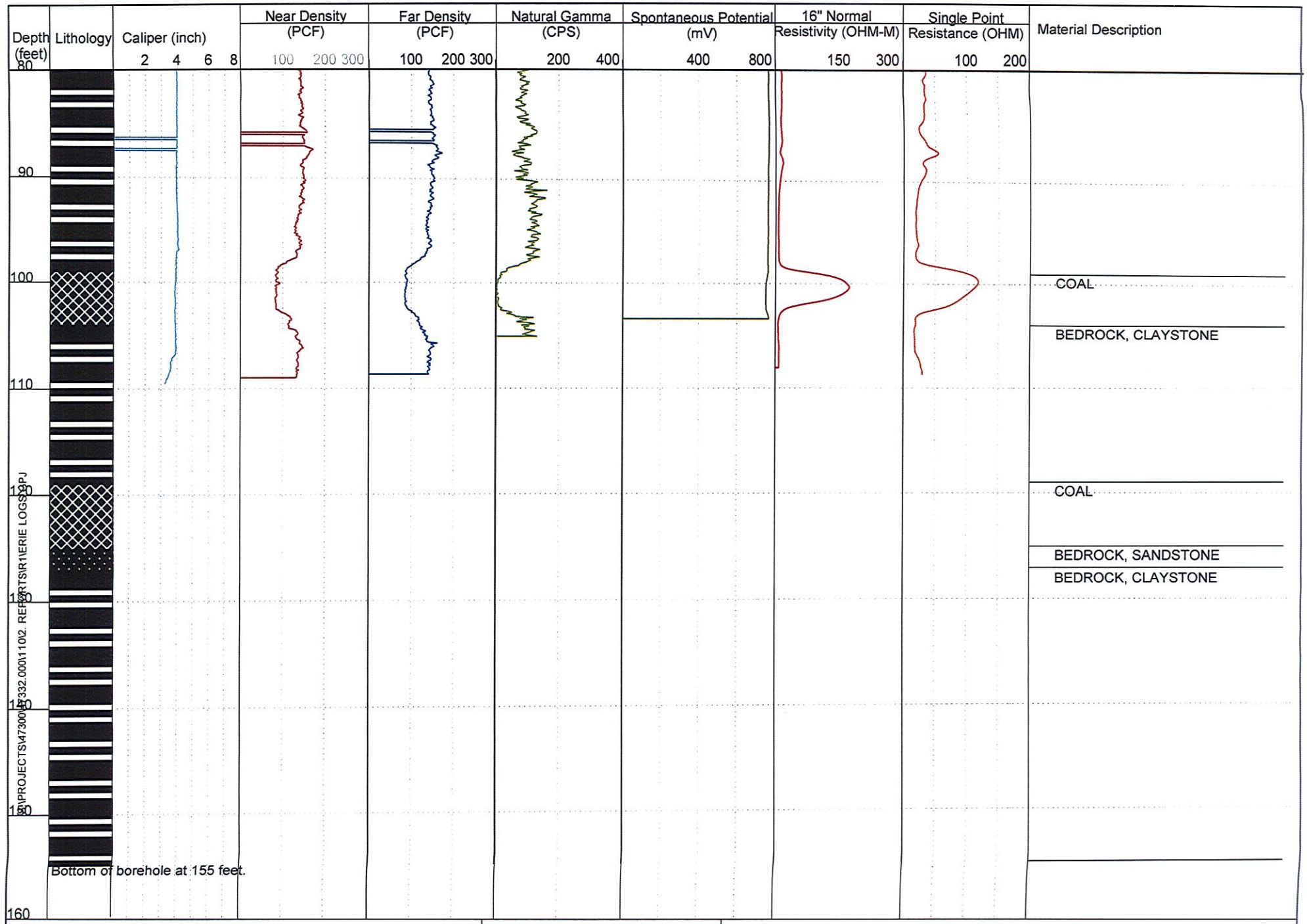
GEOPHYSICAL TEST LOG: B-10

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110



GEOPHYSICAL TEST LOG: B-10

CTL/THOMPSON, INC.
1971 W. 12th Avenue
Denver, CO 80204
Phone: 303-825-0777

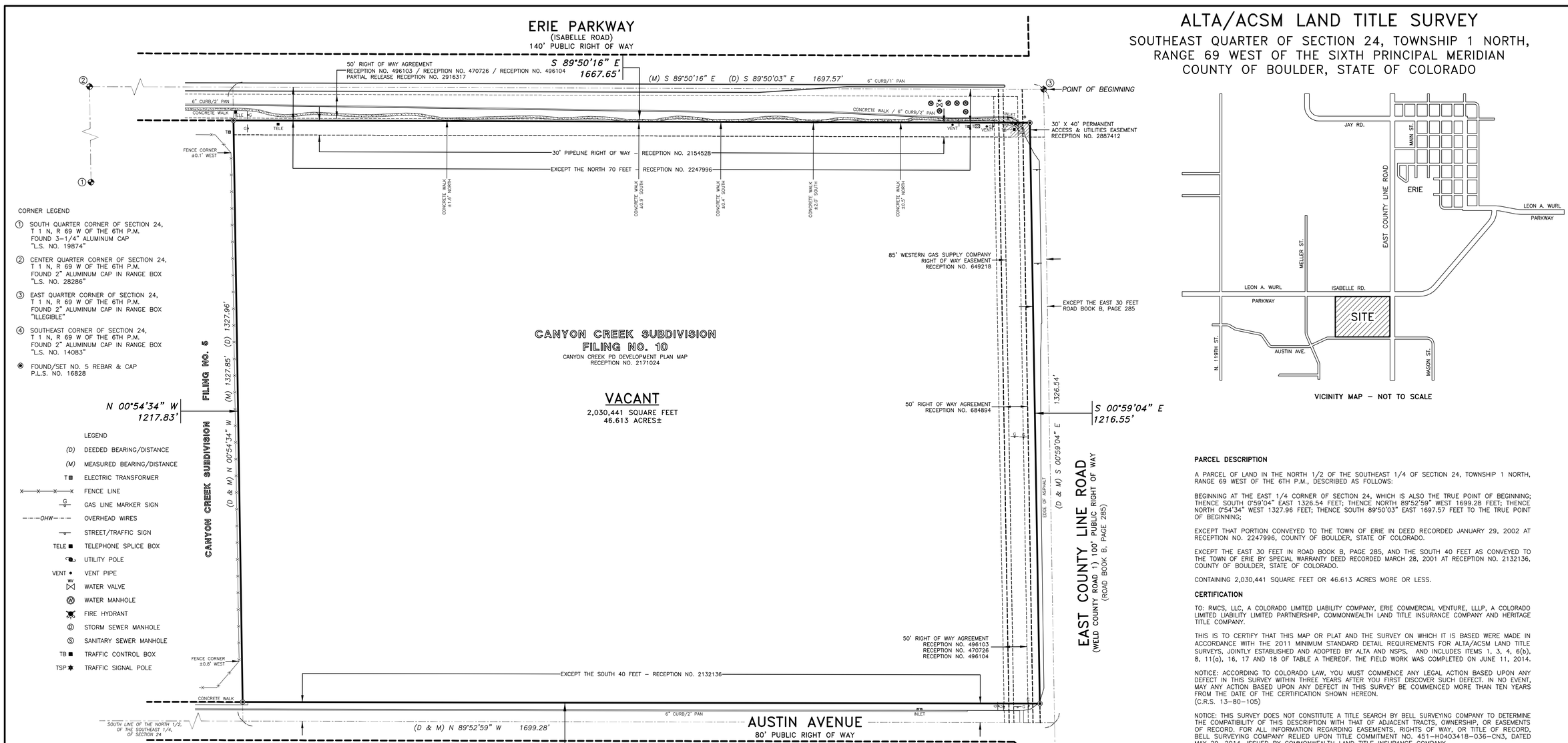
GEOPHYSICAL CONTRACTOR:
IDS- COLOG

Erie Parcel

Project No.DN47,332-110

ALTA/ACSM LAND TITLE SURVEY

SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN COUNTY OF BOULDER, STATE OF COLORADO



VICINITY MAP – NOT TO SCALE

CORNER LEGEND

1. SOUTH QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 3–1/4" ALUMINUM CAP "L.S. NO. 19874"
2. CENTER QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "L.S. NO. 28286"
3. EAST QUARTER CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "ILLEGIBLE"
4. SOUTHEAST CORNER OF SECTION 24, T 1 N, R 69 W OF THE 6TH P.M. FOUND 2" ALUMINUM CAP IN RANGE BOX "L.S. NO. 14083"

◉ FOUND/SET NO. 5 REBAR & CAP P.L.S. NO. 16828

LEGEND

(D)	DEEDED BEARING/DISTANCE
(M)	MEASURED BEARING/DISTANCE
T■	ELECTRIC TRANSFORMER
–x–x–x–x–	FENCE LINE
G	GAS LINE MARKER SIGN
–OHW–	OVERHEAD WIRES
	STREET/TRAFFIC SIGN
TELE ■	TELEPHONE SPLICE BOX
	UTILITY POLE
VENT •	VENT PIPE
WV	WATER VALVE
Ⓦ	WATER MANHOLE
	FIRE HYDRANT
Ⓓ	STORM SEWER MANHOLE
Ⓢ	SANITARY SEWER MANHOLE
TB ■	TRAFFIC CONTROL BOX
TSP ✱	TRAFFIC SIGNAL POLE

THE SUBJECT PROPERTY LIES WITHIN OR PARTIALLY WITHIN THE LEGAL DESCRIPTION OR EXHIBITS FOUND IN THE FOLLOWING RECORDED INSTRUMENTS AND IN ACCORDANCE WITH THE TITLE COMMITMENT MAY THEREFORE BE SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED THEREIN.
(COMMONWEALTH LAND TITLE INSURANCE COMPANY COMMITMENT NO. 451–H0403418–036–CN3)

10. AN UNDIVIDED INTEREST IN ALL OIL, GAS AND OTHER MINERALS AS CONVEYED TO WALLACE H. GRANT BY MINERAL DEED, RECORDED AUGUST 24, 1981 AT RECEPTION NO. 460729, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)
11. AN UNDIVIDED INTEREST IN ALL OIL, GAS AND OTHER MINERALS CONVEYED TO DOUGLAS GRANT BY MINERAL DEED, RECORDED AUGUST 24, 1981 AT RECEPTION NO. 460730, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)
12. AN UNDIVIDED 1/4 INTEREST IN ALL OIL, GAS AND OTHER MINERALS CONVEYED TO SUSAN J. TROUDT, MARIAN J. BOTINELLI AND CARLA JOHNSON HOBBS DBA JOHNSON FARMS BY MINERAL DEED, RECORDED SEPTEMBER 23, 1981 AT RECEPTION NO. 465242, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (NOT PLOTTABLE – REFER TO DOCUMENT)
13. A RIGHT OF WAY FOR PIPELINES AND APPURTENANCES GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY BY THE INSTRUMENT RECORDED MAY 26, 1982 AT RECEPTION NO. 496103, AND RECORDED SEPTEMBER 21, 1981 AT RECEPTION NO. 470726, PARTIAL RELEASE OF RIGHT OF WAY RECORDED MARCH 13, 2008 AT RECEPTION NO. 2916317, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
14. A RIGHT OF WAY FOR PIPELINES AND APPURTENANCES GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY BY THE INSTRUMENT RECORDED MAY 26, 1982 AT RECEPTION NO. 496104, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
15. A RIGHT OF WAY FOR PIPELINES GRANTED TO WESTERN GAS SUPPLY COMPANY BY THE INSTRUMENT RECORDED SEPTEMBER 28, 1984 AT RECEPTION NO. 649218, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
16. ANY ASSESSMENT OR LIEN OF THE ERIE WATER AND SANITATION DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED JANUARY 17, 1985 AT RECEPTION NO. 667325. (NOT PLOTTABLE – REFER TO DOCUMENT)
17. ANY ASSESSMENT OR LIEN OF THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED SEPTEMBER 24, 1997 AT RECEPTION NO. 1733175. (NOT PLOTTABLE – REFER TO DOCUMENT)
18. A RIGHT OF WAY FOR PIPELINES GRANTED TO VESSELS OIL AND GAS COMPANY BY THE INSTRUMENT RECORDED APRIL 25, 1985 AT RECEPTION NO. 684894, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
19. A RIGHT OF WAY FOR PIPELINES GRANTED TO HS GATHERING, L.L.C., BY THE INSTRUMENT RECORDED MAY 30, 2001 AT RECEPTION NO. 2154528, AND ANY AND ALL ASSIGNMENTS, LEASES OR INTERESTS THEREIN. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
20. THE EFFECT OF CANYON CREEK PD DEVELOPMENT PLAN MAP RECORDED JULY 9, 2001 AT RECEPTION NO. 2171024. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
21. TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS SPECIFIED UNDER THE GRANT OF PERMANENT ACCESS AND UTILITIES EASEMENT BY AND BETWEEN ERIE COMMERCIAL VENTURES, LLLP, A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, AND TOWN OF ERIE, A COLORADO MUNICIPAL CORPORATION, RECORDED OCTOBER 3, 2007 AT RECEPTION NO. 2887412. (PLOTTED / NOTED HEREON – REFER TO DOCUMENT)
22. ASSIGNMENTS AND CONVEYANCES OF MINERAL INTERESTS TO JOHNSON DEVELOPMENT COMPANY IN INSTRUMENTS RECORDED JULY 13, 2001 AT RECEPTION NO. 2173368 AND INSTRUMENTS RECORDED APRIL 3, 2001 AT RECEPTION NOS. 2134267 THROUGH 2134284 INCLUSIVE, INCLUSIVE, AND MINERAL DEED RECORDED MAY 1, 2008 AT RECEPTION NO. 2927263. (NOT PLOTTABLE – REFER TO DOCUMENT)
23. QUIT CLAIM, ASSIGNMENT, BILL OF SALE AND CONVEYANCE OF INTERESTS AS RECORDED OCTOBER 17, 2002 AT RECEPTION NO. 2344511, AND ANY AND ALL ASSIGNMENTS OR LEASES THERETO. (NOT PLOTTABLE – REFER TO DOCUMENT)
24. MINERAL RIGHTS AS CONVEYED TO ECV MINERALS, LLC IN MINERAL DEED RECORDED MAY 1, 2008 AT RECEPTION NO. 2927263. (NOT PLOTTABLE – REFER TO DOCUMENT)
25. TERMS CONDITIONS PROVISIONS AS SET FORTH IN THE WELL ABANDONMENT AGREEMENT AS RECORDED MAY 1, 2008 AT RECEPTION NO. 2927262. (NOT PLOTTABLE – REFER TO DOCUMENT)
26. TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE RESTRICTIVE COVENANT AND NON–DISTURBANCE AGREEMENT RECORDED MAY 29, 2008 AT RECEPTION NO. 2932960. (NOT PLOTTABLE – REFER TO DOCUMENT)
27. OIL AND GAS LEASE FROM ECV MINERALS, LLC TO ENCANA OIL & GAS USA INC. AS RECORDED JULY 2, 2008 AT RECEPTION NO. 2941006. (NOT PLOTTABLE – REFER TO DOCUMENT)
28. ALL OF THE FOLLOWING DOCUMENTS AS THEY RELATE TO MINERAL INTERESTS, WELLBORE SPECIFIC DECLARATION OF POOLING AS RECORDED SEPTEMBER 22, 2009 AT RECEPTION NO. 3031124, OPERATING AGREEMENT AND FINANCING STATEMENT AS RECORDED JUNE 16, 2010 AT RECEPTION NO. 03080637, QUITCLAIM DEED AS TO OIL GAS AND MINERAL INTERESTS AS RECORDED FEBRUARY 11, 2011 AT RECEPTION NO. 3132655, ASSIGNMENT, BILL OF SALE AND CONVEYANCE FROM ENCANA OIL & GAS TO KERR –MCGEE GATHERING LLC AS RECORDED APRIL 14, 2011 AT RECEPTION NO. 3143701. (NOT PLOTTABLE – REFER TO DOCUMENT)

GENERAL NOTES:

1. VISIBLE SURFACE UTILITY APPURTENANCES HAVE BEEN LOCATED USING THE STANDARD OF CARE PREVAILING AMONG PROFESSIONAL LAND SURVEYORS PRACTICING IN THE METROPOLITAN AREA. NO OTHER REPRESENTATIONS OF UTILITY LOCATIONS ARE MADE OR IMPLIED. BEFORE COMMENCING ANY EXCAVATION THE UTILITIES SHOULD BE FIELD LOCATED BY CALLING UTILITY LOCATES AT 811.
2. THE SUBJECT PROPERTY LIES WITHIN THE FLOOD HAZARD AREA DESIGNATED AS "ZONE X" IN ACCORDANCE WITH F.E.M.A. PANEL 441 OF 615, MAP NUMBER 08013C0441J, DATED DECEMBER 18, 2012.

   ZONE X – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
3. BEARINGS BASED ON THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN AS BEARING S 00°59'04" E (MONUMENTS DESCRIBED ON PLAT).
4. NO OBSERVABLE EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS WITHIN RECENT MONTHS.
5. NO OBSERVABLE EVIDENCE OR KNOWLEDGE OF ANY CHANGES IN STREET RIGHT OF WAY LINES EITHER COMPLETED OR PROPOSED, AND AVAILABLE FROM THE CONTROLLING JURISDICTION. NO OBSERVABLE EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS.
6. NO OBSERVABLE EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
7. CANYON CREEK PD DEVELOPMENT PLAN – FILING NO. 10

   PRINCIPAL LAND USES:
   COMMERCIAL / BUSINESS / RETAIL (CBR)
   OPEN SPACE, PARKS & RECREATION FACILITIES (OS)

   MINIMUM SET BACK TO PRINCIPAL BUILDINGS:
   FRONT – 20 FEET
   SIDE (INTERIOR LOT) – 10 FEET
   SIDE (ALONG STREET) – 20 FEET
   REAR – 20 FEET
   BUILDING HEIGHT – 35 FEET

   MINIMUM SET BACK TO ACCESSORY BUILDINGS:
   FRONT – 30 FEET
   SIDE (INTERIOR LOT) – 5 FEET
   SIDE (ALONG STREET) – 20 FEET
   REAR – 5 FEET
   BUILDING HEIGHT – 25 FEET

   ZONING COMPLIANCE AND REQUIREMENTS NOT PROVIDED TO SURVEYOR.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

PARCEL DESCRIPTION

A PARCEL OF LAND IN THE NORTH 1/2 OF THE SOUTHEAST 1/4 OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH P.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE EAST 1/4 CORNER OF SECTION 24, WHICH IS ALSO THE TRUE POINT OF BEGINNING; THENCE SOUTH 0°59'04" EAST 1326.54 FEET; THENCE NORTH 89°52'59" WEST 1699.28 FEET; THENCE NORTH 0°54'34" WEST 1327.96 FEET; THENCE SOUTH 89°50'03" EAST 1697.57 FEET TO THE TRUE POINT OF BEGINNING;

EXCEPT THAT PORTION CONVEYED TO THE TOWN OF ERIE IN DEED RECORDED JANUARY 29, 2002 AT RECEPTION NO. 2247996, COUNTY OF BOULDER, STATE OF COLORADO.

EXCEPT THE EAST 30 FEET IN ROAD BOOK B, PAGE 285, AND THE SOUTH 40 FEET AS CONVEYED TO THE TOWN OF ERIE BY SPECIAL WARRANTY DEED RECORDED MARCH 28, 2001 AT RECEPTION NO. 2132136, COUNTY OF BOULDER, STATE OF COLORADO.

CONTAINING 2,030,441 SQUARE FEET OR 46.613 ACRES MORE OR LESS.

CERTIFICATION

TO: RMCS, LLC, A COLORADO LIMITED LIABILITY COMPANY, ERIE COMMERCIAL VENTURE, LLLP, A COLORADO LIMITED LIABILITY LIMITED PARTNERSHIP, COMMONWEALTH LAND TITLE INSURANCE COMPANY AND HERITAGE TITLE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 3, 4, 6(b), 8, 11(a), 16, 17 AND 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JUNE 11, 2014.

NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON. (C.R.S. 13–80–105)

NOTICE: THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY BELL SURVEYING COMPANY TO DETERMINE THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF ADJACENT TRACTS, OWNERSHIP, OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS OF WAY, OR TITLE OF RECORD, BELL SURVEYING COMPANY RELIED UPON TITLE COMMITMENT NO. 451–H0403418–036–CN3, DATED MAY 29, 2014, ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY.

CERTIFICATION DEFINED

THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A REGISTERED PROFESSIONAL SURVEYOR IN THE PRACTICE OF LAND SURVEYING, CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OF FINDINGS WHICH ARE THE SUBJECT OF THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

COPIES OF THIS DOCUMENT MAY BE MADE AND DISTRIBUTED TO OTHER PARTIES FOR REFERENCE PURPOSES AND REVIEW, HOWEVER, ONLY PRINTS OF THIS SURVEY BEARING ORIGINAL SIGNATURE AND WET SEAL BY THE SURVEYOR NAMED HEREON SHALL BE CONSIDERED VALID CERTIFIED DOCUMENTS.

DEAN O. DANIELSON, P.L.S. NO. 16828

DATE OF SURVEY: 6/11/2014

DEAN O. DANIELSON — REGISTERED — 16828 — LAND SURVEYOR — STATE OF COLORADO

COUNTY SURVEYORS CERTIFICATE

DEPOSITED THIS____DAY OF_____20___
AT____.M., IN BOOK_____ OF THE COUNTY SURVEYOR'S LAND SURVEY/RIGHT OF WAY SURVEYS AT PAGE_____, RECEPTION NUMBER _____

COUNTY SURVEYOR BY DEPUTY COUNTY SURVEYOR

ALTA/ACSM LAND TITLE SURVEY

ORDERED BY: OVERTON & ASSOCIATES, LLC
6950 EAST BELLEVIEW AVENUE #202
GREENWOOD VILLAGE, COLORADO 80111

REVISION: PREV: 0710–113 | DRAWN: WB

BELL SURVEYING COMPANY
500 KALAMATH STREET
DENVER, COLORADO 80204
303–629–0165 FAX 303–629–0168
www.BELLSURVEYING.com

SCALE: 1"=100'

DATE: 6/11/2014

DRAWING NO.: 1406–102

ATTACHMENT B

TOWN OF ERIE
1874

Department of Community Development
Planning and Building

The Town of Erie
645 Holbrook St.
P.O. Box 750
Erie, CO 80516
(303) 926-2775
FAX (303) 926-2706

Memo

To: Justin McClure

From: Deborah Bachelder

Date: March 24, 2015

Re: **SK-000206-2015:** Canyon Creek Filing No. 10 Sketch Plan
Development Review Team Meeting (3/19/2015) – Community Development Comments

cc: Paul Shoukas, Marty Ostholthoff, Russell Pennington, Matt Wiederspahn, Farrell Buller, Paula Mehle

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Comments:

Staff reviewed the Canyon Creek Filing No. 10 Sketch Plan applications at our March 19th Development Review Team meeting.

Community Development is forwarding the other staff comments and referral agency responses that have been received. Those referral comments received by the Town after the date of this memo shall be forwarded on to the applicant.

Community Development Review Comments:

1. Sketch Plan:
   a. Please provide a separate PDF for each of the separate sections in the notebook; and, each report separately. When we get to hearings, the public sometimes requests specific information that we send by PDF and we eliminate some of the information from the PDF files we prepare for hearings.
2. Residential Land Uses:
   a. Housing Diversity (MC 10.6.7 D.1):
      ii. Housing diversity is based on the number of acres that are zoned for residential uses as required in the Municipal Code. The Sketch Plan has 29 acres of residentially zoned property. The MC requires only one housing type for this size property and you have proposed three types in the Sketch Plan (apartment, duplex, and single family) of dwelling units.
   b. HR Density: In order for you to request 480 dwelling units in HR with a higher density than allowed by our MC; you need to illustrate in the Sketch Plan how you can layout the site with the maximum number of units requested while meeting setback, parking, and landscaping area requirements within the zone district.

c. Sketch Plan Sheet 3: Please label the buildings and lots on the sheet. Single Family; Duplex (2 per lot); Apartment; and Commercial.

3. Commercial Land Uses:
   a.
4. Roads and Alleys:
   a. Erie Parkway:
      ii. Align drive access with Ranchwood for full movement traffic light. Applicant would be responsible for their share of installation of the light; Public Works will advise.
      iii. You may want to consider a right-in/right-out access into the grocery parking lot since the new entry with the traffic light will be moved west.
      iv. Existing median will need to be reconfigured to accommodate full movement traffic light. Median will need to be planted in similar style to existing median landscaping to the west.
      v. Reimbursements may be due to the Town; Public Works will advise.
   b. County Line Road:
      ii. Additional right of way dedication shown appears to be adequate for a major arterial.
      iii. Street improvements will be required; the transportation report with Preliminary Plat will help better identify the improvements.
      iv. Staff may not support the southern entry into parking from County Line.
      v. The intersection with Austin Avenue will have a traffic light installed by the Town; you will be responsible for a portion of the cost; Public Works will advise.
      vi. Reimbursements may be due to the Town; Public Works will advise.
   c. Austin Avenue:
      ii. Reimbursements may be due for street improvements.
      iii. The street intersection with Austin should align with Graham Way.
      iv. The setback to lots and parking should be 30 feet to be consistent with the existing setbacks of adjacent properties.
      v. You currently are showing several residential lots fronting onto Austin Avenue. Austin Avenue was constructed as a major collector street without parking. Public Works has stated that they would entertain the idea of you adding on street parking on your side of the street if improvements, such as bump outs, were installed.
   d. Internal Streets:
      ii. The internal street classifications are typically based on the transportation report submitted with the Preliminary Plat. It is difficult for staff to comment in detail at Sketch Plan.
      iii. The PDA shows a 60 foot right of way and the Sketch Plan shows a 54 foot right of way; staff supports the Town standard road standards.
      iv. An 8 foot tree lawn is required on streets adjacent to multifamily residential.
   e. Alleys:
      ii. Pavement width is adequate for both cross sections.

iii. Provide clarification on Sheet 3 that the 20 foot alley cross-section and easement is not inclusive of Town main lines.
iv. The Public Improvement main lines need to be in 30 foot easements and should not be located in residential lots; exception to this may be multiple residential structures on one lot (apartments).
v. Staff is concerned about conflicts of residential and commercial traffic due to the intersection of the duplex alley and the commercial service alley. You may want to reconsider this area. Additionally, Public Works does not support the alley access directly onto Austin Avenue (major collector).

f. Sidewalks:
ii. Existing 5 foot sidewalk, on Erie Parkway, will need to be expanded or replaced to meet 8 foot width requirement.
iii. Sidewalk on County Line Road needs to be 8' in width (MC 10.6.2 D).
iv. Sidewalk on Austin Avenue will need to be constructed to connect to the existing sidewalk.
v. Street Section A-A and B-B shows the sidewalk outside the right of way on both sides of the street. Staff is concerned about the sidewalks outside of the right of way adjacent to single family and duplex lots. Staff will not support sidewalks that encroach into a single family, duplex or townhome lot.
vi. Single Family lots: Please add the walk connections from the street to each the front of each single family lots.
vii. Duplex lots:
1. The sidewalks that go to the front doors should connect to the sidewalks on Austin Avenue.
2. Show sidewalks to Block 11 Lots 3-7.

5. Oil/Gas Pipelines:
a. Applicant has shown several improvements over the oil/gas lines along County Line Road and Erie Parkway. Applicant will need to enter an agreement for improvements over the facilities and in the existing easements.
6. Mine Shafts:
a. Mine shafts are appropriately located in a parking area and park area. Both have shown recommended shaft setback to structures. If the applicant wants Town park credit for the park, the shaft setback area will have to be deducted from the dedication total.
7. Parks and Open Space:
a. The Sketch Plan does not indicate how the parks and open space dedication requirements are being met. See PD Amendment comments above. Please add a parks and open space dedication table that is similar to the example below. The "Acres Required" is calculated based upon the maximum number of dwelling units allowed by the PD. The "Acres to be Provided" indicates the minimum acreage that you anticipate being provided within the development toward the requirement or payment of fee in lieu for the dedication requirement.

PARKS & OPEN SPACE		
PARK AREA	ACRES REQUIRED	ACRES TO BE PROVIDED
COMMUNITY PARK	13.87	FEE IN LIEU
NEIGHBORHOOD PARK	8.32	8.32
POCKET PARK	1.39	1.97
OPEN SPACE (PUBLIC)	47.15	32.65 + FEE IN LIEU

Staff has calculated the parks and open space dedications required (MC 10.6.3) based on the proposed 530 dwelling units and the Town's standard people per dwelling unit of 2.79 (based on US Census). If the applicant amends the number of units then the table will need to be adjusted to address the new dedication requirement. Once the dwelling unit types are finalized, during plat and site plan application review, we can look at modifying the people per unit in the PD for the calculation of parks and open space which also may modify the dedication requirement.

Filing 10	**Acres Required**
Pocket Park	0.74
Neighborhood Park	4.44
Community Park	7.39
Open Space	25.14

b. Pocket Park: The applicant needs to add a location for the pocket park and meet the minimum size requirement on site. Pocket parks are owned/maintained by an HOA/Metro District and have a public access easement. The requirement for facilities in a pocket park can be found in the Parks, Recreation, Open Space and Trails (PROST) Master Plan.
c. Neighborhood Park: During our review meeting, the Parks and Recreation Director stated that she would consider recommending the GS be considered toward the Neighborhood Park dedication only if it is owned and maintained by an HOA/Metro District and not the Town. The GS Park does not meet the minimum neighborhood park dedication requirement of 7 acre minimum size.
d. Community Park and Open Space: Staff will support fee-in-lieu payment for the community park and open space dedication requirements.
e. Trails: Erie is known for its trail systems and they are always brought up in hearings. Please illustrate on the Sketch Plan how you are connecting to the trails to the south of the property and how people can walk through the proposed neighborhood to access the commercial on your property and the Community Center/Library site to the northeast of the site.

8. Sheet 1:
   a. Please remove "Lucky's Market" from the illustration of the grocery store. We don't want a brand name on the illustrations unless you are under contract with them.
   b. Outlot Summary Chart:

ii. Outlot A and B are right of way dedications for County Line Road. Please remove from the Outlot table and add to the Land Use Summary Chart as Public ROW.
iii. The Town does not use Outlots; we only use lots and tracts. Please convert Outlot C into a tract and add it to the Tract Summary Chart and revise the Land Use Summary Chart.

c. Tract Summary Chart:
ii. Change all "Green Space" references to Landscaping or Park, as appropriate. Our Planning Commission and Board of Trustees will not relate to "Green Space".
iii. Change all "Private Lane" references to Alley; our PC and BOT will not relate to "Private Lane".

d. Land Use Summary Chart:
ii. Modify the HR and MR land use areas based on staff comments for including the duplex area into MR.
iii. Change "Green Space" to Landscaping or Park, as appropriate.
iv. Change "Private Lane" references to Alley.

e. Add a Chart that reports the number of units and commercial square footage represented on the Sketch Plan:
ii. The number of dwelling units by unit type (single family, duplex, apartment); by district; with gross density in the district.
iii. The square footage of commercial.

9. Sheet 3:
a. Change the outlots to right of way and tracts as requested above for Sheet 1.
b. The Sketch Plan should represent the maximum density requested in the PDA with appropriate parking, landscaping, and park dedication shown on the plan. All elements should be labeled on the plan.
c. Add labels to the Sketch Plan that call out the single family residential lots; duplex lots (2 units on each lot); apartments; and, commercial buildings. Additionally, label a pocket park, and potentially the neighborhood park.
d. Add traffic light locations on Erie Parkway and County Line Road.

Department of Public Works

TOWN OF ERIE
1874

Memo

To: Deb Bachelder
From: Matt Wiederspahn, P.E., CFM, Development Engineer
Date: March 24, 2015
Subject: **Four Corners Sketch Plan**
CC: Russell Pennington
Wendi Palmer

Comments for Sketch Plan:

1. The proposed ¾ access on Erie Parkway needs to be lined up with the proposed full movement access for the Ranchwood Property on the north side of Erie Parkway.
2. The main residential full movement access on Austin Avenue needs to align with Graham Way to the south.
3. The proposed alley intersection to Austin Avenue will not be allowed. It already has two connections to lower classification local streets.
4. Town Standards require the proposed commercial full movement access on Austin Avenue to be 400 feet east of County Line Road.
5. The proposed right-in/right-out just north of Austin Avenue does not meet the Town's access spacing standards for arterial roadways.
6. The Town's standard local street cross-section is 60 feet of right-of-way.
7. The local street cross-section is only applicable to roadways with less than 1,000 vehicles per day (vpd). A residential collector cross-section (70 foot right-of-way) needs to be used for roadways with 1,000 to 2,000 vpd and a collector cross-section (80 foot right-of-way) needs to be used for roadways with greater than 2,000 vpd. Determining actual roadway classifications will be done with the Preliminary Plat and a more in depth traffic study.
8. The following reimbursements for existing Public Improvements will be due at the first Final Plat of the development:
    a. 25% of the cost of the signal at Erie Parkway and County Line Road; $57,507 to the Town
    b. Erie Parkway construction along frontage; $913,546 to the Town
    c. Erie Parkway & County Line Road Intersection Improvements; $75,000 to the owner of the Coal Creek Center (Erie Commercial LLC)
    d. Austin Avenue Improvements; Final costs to be determined by and paid to the owner of Canyon Creek Filing 5/6 (Johnson Development Company)
    e. 15 inch and 30 inch Coal Creek Sewer Interceptor; $177.66 per single-family equivalent (SFE) to the Town
    f. NWRF Sewer Interceptor; $410.00 per SFE to the Town

Comments for Phase I Drainage Report:

1. The Full Spectrum Detention Volume Worksheet includes a water quality capture volume (WQCV) in the 100-year detention volume. The Town does not require

any additional WQCV as the EURV is already included in the 100 year detention volume (see note 5 on the worksheet).

Comments for PD Amendment:

1. Access points need to be removed from the PD Amendment as they will be finalized through the preliminary plat process.

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Community Development
X Town of Erie Parks & Recreation
___Town of Erie OSTAB
___Erie Airport Manager
___St. Vrain Valley School District
___Coal Creek Center Lot Owners Assoc.
___Sunwest HOA
___EnCana Oil & Gas (USA) Inc.
___Western Gas Supply Company
___Town of Erie Engineering
___Town of Erie Economic Development
___Public Review
___Mountain View Fire Protection District
___Felsburg Holt & Ullevig
___Country Meadows Filing 4,5,& 6 HOA
___Vessel Oil & Gas Company
___ECV Minerals, LLC
___HS Gathering, LLC & Panhandle Eastern Pipeline Company

Planner: Deborah Bachelder **Date: February 24, 2015**

Project: Canyon Creek Filing 10 **Applicant: RMCS, Inc.**

Description: Canyon Creek PD Amendment No. 9 & Canyon Creek F. 10 – 4 Corners – Sketch Plan

Location: SW Corner of Erie Parkway and WCR 1

Legal Description: See Attached Materials

This application is submitted to you for review and comment. Please reply by **Tuesday, March 17, 2015,** so that we may give full consideration to your comments. Any response not received by this date may be deemed to be a positive response to the Town of Erie. Email responses can be sent to dbach@erieco.gov. If you have any questions about this application, please call 303-926-2775.

___We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

X See comments below or attached letter.

Comments: We recommend to have neighborhood park be owned & responsibility of HOA. It does not meet size requirements of neighborhood park. Willing to give credit toward fee-in-lieu.

Signature: [signature] **Date:** March 20, 2015

Name (Please Print) Rob Crabb

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

___Town of Erie Community Development
___Town of Erie Parks & Recreation
___Town of Erie OSTAB
___Erie Airport Manager
___St. Vrain Valley School District
___Coal Creek Center Lot Owners Assoc.
___Sunwest HOA
___EnCana Oil & Gas (USA) Inc.
___Western Gas Supply Company
___Town of Erie Engineering
X Town of Erie Economic Development
___Public Review
___Mountain View Fire Protection District
___Felsburg Holt & Ullevig
___Country Meadows Filing 4,5,& 6 HOA
___Vessel Oil & Gas Company
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Planner: Deborah Bachelder **Date: February 24, 2015**

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XX We have reviewed this application and find no conflicts with our interests
___We have reviewed this application and find conflicts with our interests.
X See comments below or attached letter.

Comments: Recommend Removing "Lucky's Market" sign from Sheet 1 of 3 of sketch plan exhibit.
Please forward future submittals

Signature: Paula Mehle **Date:** 3.19.15

Name (Please Print) Paula Mehle

TOWN OF ERIE
1874

Department of Community Development
Planning and Building

The Town of Erie
645 Holbrook St.
P.O. Box 750
Erie, CO 80516
(303) 926-2775
FAX (303) 926-2706

Memo

To: Justin McClure

From: Deborah Bachelder

Date: June 3, 2015

Re: **SK-000206-2015:** Canyon Creek Filing No. 10 Sketch Plan
Development Review Team Meeting (5/28/2015) – Community Development Comments

cc: Paul Shoukas, Marty Ostholthoff, Russell Pennington, Matt Wiederspahn, Farrell Buller, Paula Mehle

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Comments:

Staff reviewed the Canyon Creek Filing No. 10 Sketch Plan applications at our May 28th Development Review Team meeting.

Community Development is forwarding our department comments, the other department comments, and the Felsburg, Holt & Ullevig (FHU) referral agency response. As we move into public hearings you will need to address the staff revision requests but not the FHU comments. The FHU comments will need to be more fully addressed as you move into the Preliminary Plat application process.

Community Development Review Comments:

1. General Comment:
   a. The PDF and Paper Copies of the Sketch Plan are different but have the same revision date on the plans. Sheet 3 of the paper copy has text on the right side of the sheet and Sheet 3 of the PDF has street sections. Community Development has commented on the paper copy of the submittal.
2. Sheet 1:
   a. Unit and SF FAR Summary Chart: Remove "FAR" from the table header.
3. Sheet 3:
   a. Sketch Plan Illustration:
      i. Sunwest Subdivision label: You have the wrong zoning referenced for this property. Please change "Planned Development (PD)" to "Low Density Residential (LR)".
      ii. Note on Erie Parkway "Future Full Signalization By the Town of Erie". Please remove "By the Town of Erie" from the note.

iii. Parks and Open Space: You have not noted where a pocket park would be located; and you have stated that you will be requesting a modification of people per unit. Our comments are:
    1. Parks and open space dedication requirements shall be made in conformance with MC 10.6.3. Staff supports the requirement for a pocket park within the development and fee in lieu for the other park/open space dedication requirements. Design of the pocket park shall be in conformance with the Parks, Recreation, Open Space and Trails (PROST) Master Plan that includes a large list of alternative design elements.
    2. The Municipal Code allows modification of people per unit and defines dedication options. We will consider the appropriate modification based on the actual residential dwelling units that are proposed for development of the site.

b. General Notes for HR & MR:
    i. Note 3: Delete "Administratively"; the Sketch Plan review process is for comment only and will not grant any approvals for review types in the future.
    ii. Note 4:
        1. This note is very confusing because in the Town Municipal Code the definition of "Parking Structure" includes parking garages and parking decks where the principal use of this use is parking. I don't think that's what you are trying to address. We will review detached carports/garages as an accessory use to the primary use of residential. Attached carports, garages, under housing parking will all be a part of the principal structure. I would suggest that you eliminate this note so that the Planning Commission and Board of Trustees don't get drawn into a detail item.
        2. In the last line of this note you state that "Parking garages shall be permitted as a principal use." I'm not sure what you mean by parking garage; if it is a part of the residential housing then you are correct; if you mean a stand-alone parking garage, then you are not correct. Modification of the note may be necessary based on your intent.
    iii. Note 7: This note is not accurate. You are subject to required 30 foot landscape buffers along County Line Road and Erie Parkway; these are not setbacks. Please remove note.
    iv. Note 8:
        1. Please add "The location of" at the front of the 1st sentence.
        2. You misspelled "Erie Parkway".

4. Sheet 4:
    a. Signage will be regulated as specified in MC 10.6.12. You can request modifications to the sign code through the process specified in this section at the time of platting/site plan application.
5. Sheet 5:
    a. Street Section A: Please modify so that the illustration and dimension lines match up better.
5. Sheet 6:

a. Lighting is regulated as specified in MC 10.6.10. No action necessary at this time.

6. Supplemental Graphic:
   a. Please note that at the time of Site Plan application all residential primary and guest parking needs to be within 200 feet of the primary building entrance that is serves; and all non-residential parking within 600 feet. MC10.6.6 D. No action necessary at this time.
7. Parks and Open Space:
   a. Previous Comment: The Sketch Plan does not indicate how the parks and open space dedication requirements are being met. See PD Amendment comments above. Please add a parks and open space dedication table that is similar to the example below. The "Acres Required" is calculated based upon the maximum number of dwelling units allowed by the PD. The "Acres to be Provided" indicates the minimum acreage that you anticipate being provided within the development toward the requirement or payment of fee in lieu for the dedication requirement.

PARKS & OPEN SPACE		
PARK AREA	ACRES REQUIRED	ACRES TO BE PROVIDED
COMMUNITY PARK	13.87	FEE IN LIEU
NEIGHBORHOOD PARK	8.32	8.32
POCKET PARK	1.39	1.97
OPEN SPACE (PUBLIC)	47.15	32.65 + FEE IN LIEU

Staff has calculated the parks and open space dedications required (MC 10.6.3) based on the proposed 530 dwelling units and the Town's standard people per dwelling unit of 2.79 (based on US Census). If the applicant amends the number of units then the table will need to be adjusted to address the new dedication requirement. Once the dwelling unit types are finalized, during plat and site plan application review, we can look at modifying the people per unit in the PD for the calculation of parks and open space which also may modify the dedication requirement.

Filing 10	**Acres Required**
Pocket Park	0.74
Neighborhood Park	4.44
Community Park	7.39
Open Space	25.14

   i. Although you have responded that you will be requesting modification of the 2.79 people/du staff will be reporting the parks/open space dedication requirement in our staff report to the Planning Commission and Board of Trustees.

   b. Previous Staff Review Comment. Pocket Park: The applicant needs to add a location for the pocket park and meet the minimum size requirement on site. Pocket parks are owned/maintained by an HOA/Metro District and have a public access easement.

The requirement for facilities in a pocket park can be found in the Parks, Recreation, Open Space and Trails (PROST) Master Plan.

i. You have responded that they have not provided a pocket park on the new sketch plan; why wouldn't you provide the linear park as a pocket park. Staff recommends that you identify the linear park on the sketch plan as the location you would meet your pocket park requirement.

Department of Public Works

TOWN OF ERIE
1874

Memo

To: Deb Bachelder
From: Matt Wiederspahn, P.E., CFM, Development Engineer
Date: June 3, 2015
Subject: **Four Corners Sketch Plan**
CC: Russell Pennington
Wendi Palmer

Previous (March 2015) Comments for Sketch Plan:

1. The proposed ¾ access on Erie Parkway needs to be lined up with the proposed full movement access for the Ranchwood Property on the north side of Erie Parkway.
   RESPONSE: The north south road has been realigned pending an agreement with Ranchwood to shift access to the east. This has been discussed and it is our understanding that Staff supports the access location as shown; contingent upon cooperation from the property owners to the north. It is pertinent to note that the commercial portion of this project is dependent on securing the access location as shown.

   While the Town is acceptable to the location of the full movement access contingent on neighboring property approval and engineering feasibility, the additional right-in movement is not supported given the proximity to both the County Line Road intersection and the proposed full movement. Also, the applicant should be aware that there will be significant improvements required to Erie Parkway and potentially County Line Road to allow for the full movement access which will be the applicant's responsibility to construct.

It appears that the electronic version provided of the Sketch Plan does not match the hard copy versions provided; therefore comments are split up based on the version.

New Comments for Electronic Version of Sketch Plan:

1. The 75 foot Street A cross-section on sheets 3 and 5 do not match. The Town is supportive of the cross-section on sheet 3, but not of the one on sheet 5.

New Comments for Hard Copy of Sketch Plan:

1. On sheet 3, for the future full signalization please remove "By the Town of Erie" from the label. A sketch plan is a non-binding review document that doesn't determine obligations. However, it is current Town Policy that traffic signals necessary for a development is that developments obligation to construct.
2. On sheet 5, the 75 foot Street A cross-section is not acceptable to the Town but as stated above, the cross-section shown on Sheet 3 of the electronic version of the Sketch Plan is acceptable.

Community Development Services
Planning and Building

Town of Erie, Colorado
Development Referral

RECEIVED
MAY 12 2015
FELSBURG, HOLT & ULLEVIG

___Town of Erie Community Development

___Town of Erie Engineering

___Town of Erie Parks & Recreation

X Felsburg Holt & Ullevig

Planner: Deborah Bachelder **Date: May 11, 2015**

Project: Canyon Creek Filing 10 **Applicant: RMCS, Inc.**

Description: Canyon Creek PD Amendment No. 9 & Canyon Creek F. 10 – 4 Corners – Sketch Plan

Location: SW Corner of Erie Parkway and WCR 1

Legal Description: See Attached Materials

This application is submitted to you for review and comment. Please reply by **Thursday, May 28, 2015,** so that we may give full consideration to your comments. Any response not received by this date may be deemed to be a positive response to the Town of Erie. Email responses can be sent to dbach@erieco.gov. If you have any questions about this application, please call 303-926-2775.

___We have reviewed this application and find no conflicts with our interests

___We have reviewed this application and find conflicts with our interests.

X See comments below or attached letter.

Comments:_____

_____

_____

_____

Signature: _____ **Date:** 05/27/15

Name (Please Print) CHARLES M. BUCK

FELSBURG HOLT & ULLEVIG

connecting and enhancing communities

May 27, 2015

MEMORANDUM

TO: Deborah Bachelder

FROM: Charles M. Buck, PE, PTOE

SUBJECT: Review of Sketch Plan

PROJECT: Canyon Creek PD Amendment No. 9 & Canyon Creek Filing No. 10 – 4 Corners
FHU # 95-190

I have reviewed the materials provided relative to the PD Amendment and Sketch Plan for Canyon Creek PD Amendment No. 9 & Canyon Creek Filing No. 10 – 4 Corners. The materials included the applicant's response to comments (RMCS, Inc. May 1, 2015), Narrative and Comparative Chart, PD – DP Plan (undated), drainage report (May 1, 2015) and Sketch Plan (May 1, 2015). I have reviewed the materials provided from the perspective of traffic engineering and transportation planning but not general civil or utility engineering. The following are my review comments:

Per the applicant's responses to our March 13, 2015 comments, proposed access to 4 Corners is under review and coordination with Town staff. The future access to Erie Parkway (previously identified as a right-in/right-out access in the traffic study), is now proposed to be a full-movement access, aligning with a future full-movement access on the north side of Erie Parkway, and would be a signalized intersection in the future (an additional right-in-only access is also shown). This condition is depicted on Sheet 3 of 7 of the Sketch Plan. The traffic study, previously submitted, did not address this condition. Our concern is that a traffic signal at this location, in close proximity to the existing signalized intersection at County Line Road, could impact progressive movement along Erie Parkway.

The proposed full-movement access to Austin Avenue has been moved west to align with the south side access (Saint Luke Church access). The alley access, previously proposed, has been eliminated. These changes are an improvement from a traffic engineering perspective.

We understand that the revised internal street cross sections shown on Sheet 5 of 7 of the Sketch Plan were developed in coordination with Town staff.

The above comments constitute our review of the materials provided. Please call if you have any questions or need additional information.

6300 South Syracuse Way, Suite 600 Centennial, CO 80111 tel 303.721.1440 fax 303.721.0832
www.fhueng.com info@fhueng.com

ATTACHMENT C

From: Ken Martin
Sent: Thursday, March 19, 2015 11:16 PM
To: Deb Bachelder
Cc: Monica Kash
Subject: Canyon Creek Filing 10, Sketch Plan

Deb,

I have very recently learned from Monica that she was not able to prepare OSTAB's response to the Canyon Creek Filing 10 Sketch Plan, due to a "tidal wave" of work responsibilities. I cannot be a substitute this week, since my daughter just arrived from out of state for a visit, plus I have an all-day commitment Friday. Lastly, all the documents and my notes are at Monica's house.

However, I thought it would be useful to provide a short recap of what OSTAB had planned to submit. Our primary concern is to provide safe passageways, for both the new residents of this development (500+ DU's) and the hundreds of DU's in other sections of Canyon Creek to the west and south, to access town and school facilities immediately east – Erie Community Center, High Plains Library, and the Austin Ridge Preparatory School.

Thus we are recommending the following:

1. Adding an 8 foot sidewalk the along the south side on Austin Ave.;
2. Expanding the existing sidewalk along the north side on Erie Parkway from 5 to 8 feet;
3. Adding an 8 foot concrete trail along the western border of the proposal, with open space on each side as defined in the UDC.

We realize that the application includes a sidewalk along County line Road between Erie Parkway and Austin Ave. However, there are multiple (3?) entrances into the commercial section of the proposal from County Line Road, so we believe that sidewalk would NOT be a safe option for children, nor desirable for adults

I would be able to prepare a formal response this weekend, if that would be useful to you. Please advise.

Thanks,

Ken Martin,
Chair, OSTAB