

## ERIE COAL CREEK DITCH & RESERVOIR COMPANY

### LICENSE AGREEMENT FOR CROSSING (Water Line)

**1. PARTIES.** The parties to this License Agreement are the Erie Coal Creek Ditch & Reservoir Company, a Colorado non-profit corporation ("**Company**"), and the Town of Erie, a Colorado municipal corporation ("**Licensee**"). The Company and Licensee are jointly referred to herein as the "**Parties**."

**2. RECITALS.** The Company owns, operates and uses the Erie Coal Creek Ditch (the "**Ditch**"). As part of its Zone 3 Waterline Extension, the Licensee desires to obtain the permission of the Company to install over the Ditch a 24" waterline (the "**Pipeline**") where the Ditch crosses under Vista Parkway, in the southwest ¼ of Section 30, Township 1 North, Range 68 West of the 6<sup>th</sup> P.M., Weld County as depicted in **EXHIBIT A** (the "**Licensed Activity**"). The Ditch is a Horizontal Elliptical Reinforced Concrete Pipe at this location ("Piped Ditch Segment"). The plans and specifications for the Licensed Activity are described in **EXHIBIT B**. The Company agrees to license the proposed crossing, subject to the terms, conditions, covenants, and agreements set forth in this License Agreement. Accordingly, in consideration of the mutual promises set forth in this License Agreement, the Parties covenant and agree as follows:

### **3. CONSTRUCTION.**

- 3.1 Pursuant to the terms of this License Agreement, the Licensee is granted the license to install the Pipeline over the Piped Ditch Segment pursuant to the plans and specifications approved by the Company and attached hereto as **EXHIBIT B**. The Company's review of the plans and specifications is solely for its own benefit and creates no obligation on the Company.
- 3.2 The Pipeline shall be installed over the Piped Ditch Segment with a clearance of at least 1.82 feet above the top of the Piped Ditch Segment. If the Licensee proposes any change to the means or method of installation of the Pipeline from the plans attached as **EXHIBIT B**, the Licensee shall notify the Company immediately. The Licensee must receive approval of the altered plans in writing prior to continuing the Licensed Activity.
- 3.3 Any portion of the Piped Ditch Segment and all affected portions of the Company's easement that are disturbed by the License Activity shall be restored to their original condition so the flow of the water in the Ditch runs at the original amount and velocity. Any and all fencing and other facilities appurtenant to the Company's easement shall be replaced in a condition at least equal to the condition of such facilities and appurtenances prior to construction.
- 3.4 The Licensee agrees that the construction of the Pipeline shall proceed expeditiously and with reasonable diligence from the commencement of construction to its completion. The Pipeline shall be completed by May 31, 2018, subject to weather delays or other conditions outside of Licensee's control. If the Pipeline is not installed and completed by the aforementioned date (as may be extended by written agreement), this agreement shall be null and void, and of no force or effect.
- 3.5 If the Licensee's Licensed Activity interrupts the Company's water supply for any reason, and such interruption remains after Company has provided Licensee with notice, the Licensee shall pay as liquidated damages \$1,000.00 per day or any part of any day that the Company cannot deliver water to its shareholders who have a right to the delivery of water, have a need for water, have requested the delivery of water in accordance with the shareholders' rights and cannot deliver water to that shareholder or shareholders as a result of the Licensed Activity.

- 3.6 The Licensee shall clearly mark the crossing along both sides of the ditch with the appropriate markings and color for this type of underground utility. All such markings shall bear the name of the structure's owner and telephone contact information.
- 3.7 The Licensed Activity or Licensee's Pipeline may require any local, state, or federal permits or approvals. It is Licensee's obligation to investigate and determine the need for any such permits or approvals. The Licensee is responsible, at its own expense, for obtaining all local, state and federal permits or approvals and for compliance with all local, state and federal laws and regulations including but not limited to land use and environmental laws and regulations, and specifically including the Endangered Species Act, prior to beginning construction. To the extent permitted by law, the Licensee shall indemnify the Ditch Company for any and all costs, damages, fines, and fees, including reasonable attorneys' fees incurred by the Ditch Company as a result of Licensee's failure to obtain such permits or approvals or failure to comply with all applicable laws and regulations.

**4. PERMISSION OF LAND OWNERS.** Licensee is responsible, at its own expense, for obtaining the permission of any other land owners, if any, or any other person or entity who may claim an interest in and to the land shown in **EXHIBIT A**, for the purposes stated herein.

**5. LICENSE FEE.** The Licensee shall pay to the Company a license fee of \$2,500.00. The license fee shall be paid upon execution of this License Agreement and prior to the commencement of the Licensed Activity. This license fee shall be in addition to any other costs for which the Licensee is responsible pursuant to this License Agreement.

#### **6. INSPECTION.**

- 6.1 The Licensee shall notify the Company at least three (3) days prior to commencement of the Licensed Activity, or replacement or repair of the Pipeline permitted by this License Agreement, except for emergency repairs which are provided for in paragraph 8 of this License Agreement. The Company is permitted to inspect the Pipeline or replacements and repairs during construction. Upon completion of the Pipeline, the Company may inspect the Pipeline.
- 6.2 The Company's right to inspect the Licensed Activity or the construction of the Pipeline in no way relieves the Licensee of its liability for improper construction. The Company's inspection is solely for the benefit of the Company and creates no obligation to the Company.
- 6.3 Licensee shall provide the Ditch Company with one set of "as-built" plans of the Installations upon completion of the Installations.

#### **7. REIMBURSEMENT OF EXPENSES.**

- 7.1 The Licensee agrees to reimburse the Company (or pay directly) for all reasonable engineering and legal costs incurred by the Company in preparing and approving this License Agreement and the costs of inspection as described in paragraph 6.
- 7.2 Statements for the costs chargeable to the Licensee hereunder will be forwarded to the Licensee and the same shall be paid to the Company within 30 days after the billing is received. If payment has not been received by the Company within 30 days, the Licensee shall have breached this License Agreement and the Company may institute legal proceedings to collect the amount due

and owing. In such proceeding, the Company shall be entitled to its costs and reasonable attorney fees from the Licensee. However, Company shall not be entitled to terminate this License Agreement.

## **8. MAINTENANCE.**

- 8.1 The Licensee specifically agrees and pledges to maintain, repair, and replace the Pipeline so as not to require the Company to maintain, repair, or replace it unless damage is caused by the Company. If the Licensee fails to properly maintain, repair, or replace any portion of the Pipeline for which it is responsible and said failure results in damages or interference with flows in the Ditch or the Piped Ditch Segment, or reasonably threatens the same, after ten days' notice of the need for same, the Company may, at its own option, conduct its own maintenance, repair, or replacement. The Licensee shall reimburse the Company for the reasonable cost of such work within 30 days. In the event the Licensee fails to maintain, repair, or replace the Pipeline, it shall be held liable for any loss, damage or injury to the Company except to the extent caused by the Company. If the Company conducts its own maintenance, repair, or replacement, it does not waive the right to hold the Licensee liable for damages caused by Licensee's failure to maintain, repair or replace.
- 8.2 In the event of an emergency, the Company or the Licensee may conduct maintenance or repair immediately, giving notice to the other party as soon as possible at the emergency contacts identified below. If the Company conducts emergency work, it shall be reimbursed for the reasonable cost of the work. Under no circumstances shall the Company be responsible or held liable for damages to the Pipeline resulting from maintenance or repair to the Ditch except to the extent caused by the Company's negligence or willful misconduct.
- 8.3 If the maintenance, repair, or replacement of the Installations interrupts the Company's water supply for any reason, the Licensee shall pay as liquidated damages \$1,000.00 per day for any day that the Company has a valid request for water from a shareholder and cannot deliver water to that shareholder or shareholders as a result of the Installations.

### **EMERGENCY CONTACTS:**

Company: Russell Pennington  
Office: 303-926-2878

Jody Lambert  
Office: 303-926-2882  
Cell: 303-665-9420

Licensee: Director of Public Works  
Office: 303-926-2871

**9. WATER LOSS.** The Licensee agrees that the Licensed Activity will not increase carriage or transit loss over the loss which has occurred historically. The Licensee agrees to compact any disturbed earth materials, so that such additional water losses will not occur. If the Licensee's Licensed Activity increases carriage or transit loss in the Ditch, the Licensee agrees to repair the construction to prevent such additional loss.

## **10. LIABILITY AND INDEMNIFICATION.**

- 10.1 By virtue of entering into this License Agreement, the Company: (1) assumes no liability for use, operation, or existence of the Licensee's Pipeline except to the extent caused by the Company's negligence or willful misconduct; and (2) assumes no additional responsibilities or obligations related to the Licensed Activity, in the area described in **EXHIBIT A**, which are required by this License Agreement.
- 10.2 To the extent allowable under Colorado law, the Licensee agrees to indemnify and hold harmless the Company, from all claims and liability for damage or injury to property or persons arising or caused directly or indirectly by the Licensee's construction, restoration, maintenance of, or failure to maintain, the Pipeline and the Licensee's occupancy and use of the area located in **EXHIBIT A**, except to the extent caused by the Company's negligence or willful misconduct.
- 10.3 The Licensee does not waive or intend to waive the rights or protections guaranteed under the Colorado Governmental Immunity Act.

**11. EASEMENT RIGHTS.** The License granted to the Licensee herein in no way restricts the Company's right to the use of its easement to construct, operate, or maintain all existing structures and facilities of the Ditch

**12.ASSIGNMENT.** Licensee may not assign its rights and obligations hereunder without prior written consent of the Company, which will not be unreasonably withheld.

**13. TERMINATION.** The license granted herein shall terminate upon the abandonment of the Pipeline. Abandonment shall be deemed to have occurred when the Pipeline has not been used for a period of five consecutive years. However, the Licensee may avoid having said Pipeline deemed abandoned if, within five years of when the Pipeline were last used, the Licensee sends written notice to the Company, pursuant to paragraph 14 below that it is not abandoning the Pipeline. In that event, this Agreement shall continue for one (1) additional year. Thereafter, the Licensee shall either put the Pipeline in use, or it shall conclusively be deemed abandoned. Upon abandonment, the Licensee shall, upon the request of the Company, and at the Company's sole discretion, remove the Pipeline and all improvements and shall restore the Company's real property and improvements to their original condition.

**14. NOTICES.** Any notice required or permitted by this License Agreement shall be in writing or by facsimile and shall be deemed to have been sufficiently given for all purposes if sent by certified or registered mail, postage and fees prepaid, hand delivered, or sent via email, addressed to the party to whom such notice is intended to be given at the address set forth below. Such notice shall be deemed to have been given when deposited in the U.S. mail.

### **COMPANY:**

Angela Swanson, Secretary  
Erie Coal Creek Ditch & Reservoir Company  
P.O. Box 119  
Longmont, CO 80502

### **COPY TO:**

Jeffrey J. Kahn  
Lyons Gaddis  
P.O. Box 978  
Longmont, CO 80501  
jkahn@lyonsgaddis.com



**LICENSEE:**

Director of Public Works  
Town of Erie  
645 Holbrook  
Erie, CO 80516  
gbehlen@erieco.gov

**COPY TO:**

Paul Zilis  
Andrea Kehrl  
Vranesh and Raisch, LLP  
1720 14<sup>th</sup> Street, Suite 200  
Boulder, CO 80302  
pjz@vrlaw.com  
aak@vrlaw.com

**15. WAIVER OF BREACH.** The waiver by any party to this License Agreement of a breach of any term or provision of this License Agreement shall not operate or be construed as a waiver of any subsequent breach by any party.

**16. INTEGRATION AND AMENDMENT.** This Agreement represents the entire agreement between the parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in writing signed by both parties.

**17. BINDING EFFECT.** This License Agreement shall be a covenant running with the land and inures to the benefit of and is binding upon the Parties and their successors and assigns.

**18. RECORDATION.** This License Agreement shall be recorded at the cost of the Licensee and shall be binding on any successors of the Parties. The failure to record all or portions of exhibits because of the size of the documents shall not affect this License Agreement.

**19. EXHIBITS.** All exhibits referred to in this License Agreement are, by reference, incorporated in this License Agreement for all purposes.

**20. COUNTERPARTS.** This Agreement may be executed in several counterparts and, as so executed, shall constitute one Agreement, binding on all the parties even though all the parties have not signed the same counterpart. Any counterpart of this Agreement which has attached to it separate signature pages, which altogether contain the signatures of all the parties, shall be deemed a fully executed instrument for all purposes. Any signature relayed by electronic means, including facsimile or email, shall be considered to be originals for purposes of this agreement.

Dated: \_\_\_\_\_

**ERIE COAL CREEK DITCH & RESERVOIR COMPANY**

ATTEST

\_\_\_\_\_  
By: Russell Pennington, President

\_\_\_\_\_  
By: Angela R. Swanson, Secretary

Dated: \_\_\_\_\_

**TOWN OF ERIE**

---

By: \_\_\_\_\_

Its: \_\_\_\_\_

STATE OF COLORADO )  
 ) ss.  
City and County of \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 2017  
by \_\_\_\_\_, as \_\_\_\_\_ of the Town of Erie.

Witness my hand and official seal.

My Commission expires: \_\_\_\_\_

Notary Public

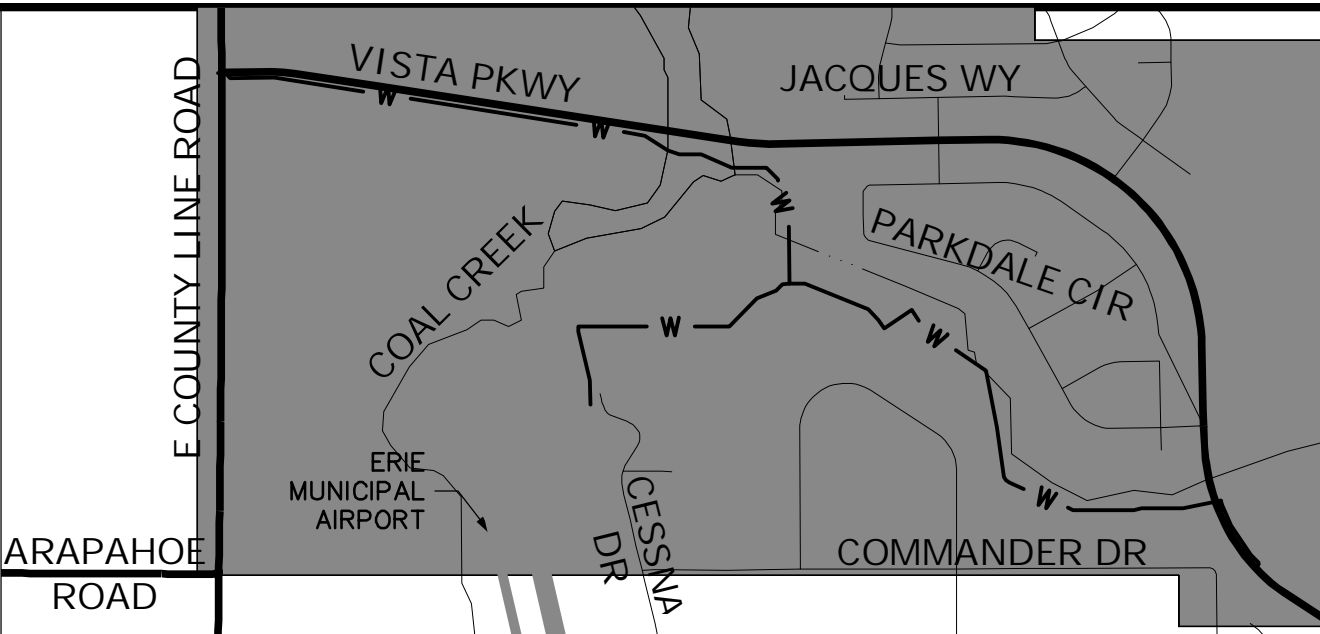
EXHIBIT A  
ERIE COAL CREEK DITCH AND RESERVOIR COMPANY  
LICENSE AGREEMENT

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Crossing Location

(see attached map)





UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR

TOWN OF ERIE  
DEPT OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

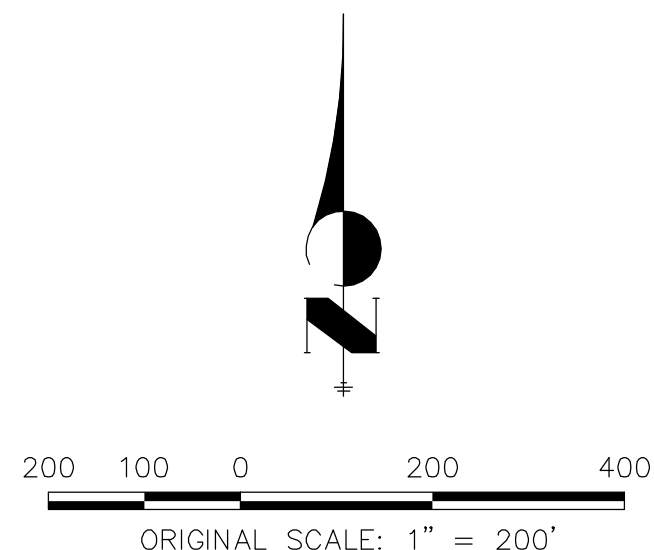
 TOWN OF ERIE  
8/4/14

**J·R ENGINEERING**  
A Westrian Company

Central 303-740-9383 • Colorado Springs 719-593-2593  
Fort Collins 970-491-9888 • [www.jrengineering.com](http://www.jrengineering.com)

H-SCALE	V-SCALE	N/A
DATE	4/18/17	
DESIGNED BY	AGR	
DRAWN BY	REB	
No.	REVISION	BY DATE
1"	"=200'	

SHEET	5	OF	19
JOB NO.	15708.05		
ZONE 3 WATERLINE EXTENSION			
SURVEY CONTROL DIAGRAM			



THE SOUTH LINE OF THE NORTHEAST ¼ OF SECTION 30, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN BEING MONUMENTED BY A 3-1/4" ALUMINUM CAP STAMPED "LS 25369" AT THE CENTER ¼ CORNER AND A 3-1/2" ALUMINUM CAP STAMPED "LS 7735" AT THE EAST ¼ CORNER, SAID LINE BEING ASSUMED TO BEAR N89°43'17"E A DISTANCE OF 2590.14 FEET.

THE BENCHMARK IS TOWN OF ERIE CONTROL MONUMENT 90, MONUMENTED BY A 3-1/2"BRASS CAP USGS BENCHMARK "TT-18J", HAVING A PUBLISHED ELEVATION OF 5135.14 NAVD88

PREPARED UNDER MY SUPERVISION.

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEER

BID SET



**EXHIBIT B**  
**ERIE COAL CREEK DITCH AND RESERVOIR COMPANY**  
**LICENSE AGREEMENT**

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Plans and Specifications

(see attached diagrams)

# ZONE 3 WATERLINE EXTENSION CONSTRUCTION PLANS

TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO

## KEY CONTACTS

### GOVERNING AUTHORITIES

TOWN OF ERIE  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER  
303-926-2875

CIVIL ENGINEER  
JR ENGINEERING  
7200 SOUTH ALTON WAY, SUITE C400  
CENTENNIAL, CO 80112  
ATTN: ELI FARNEY  
303-740-9393

ERIE COAL CREEK DITCH & RESERVOIR COMPANY  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: RUSSELL PENNINGTON  
303-926-2878

ELECTRIC UTILITIES  
UNITED POWER  
500 COOPERATIVE WAY  
BRIGHTON, CO 80601  
ATTN: MONICA HANSEN  
303-637-1336

XCEL ENERGY  
2655 NORTH 63RD ST.  
BOULDER, COLORADO 80301  
(303) 245-2254

TELECOMMUNICATION UTILITIES  
CENTURY LINK  
5325 ZUNI STREET, #728  
DENVER, CO 80221  
ATTN: PEGGY ABEYTA  
303-451-2098

COMCAST  
903 37TH AVE CT  
GREELEY CO 80634  
ATTN: JOHN HAMBURG  
970-336-6013

NORTHERN WATER  
220 WATER AVENUE  
BERTHOUD, CO 80513  
ATTN: CURT GRAMBERG  
888-823-6400

GAS UTILITIES  
ENCANA OIL & GAS  
370 - 17TH STREET, SUITE 1700  
DENVER, CO 80202  
ATTN: BOB BRESNAHAN  
303-774-3982

KERR MCGEE OIL & GAS  
1099 18TH ST.  
SUITE 600  
DENVER, CO 80202  
720-929-6000  
ATTN: RON OLSEN



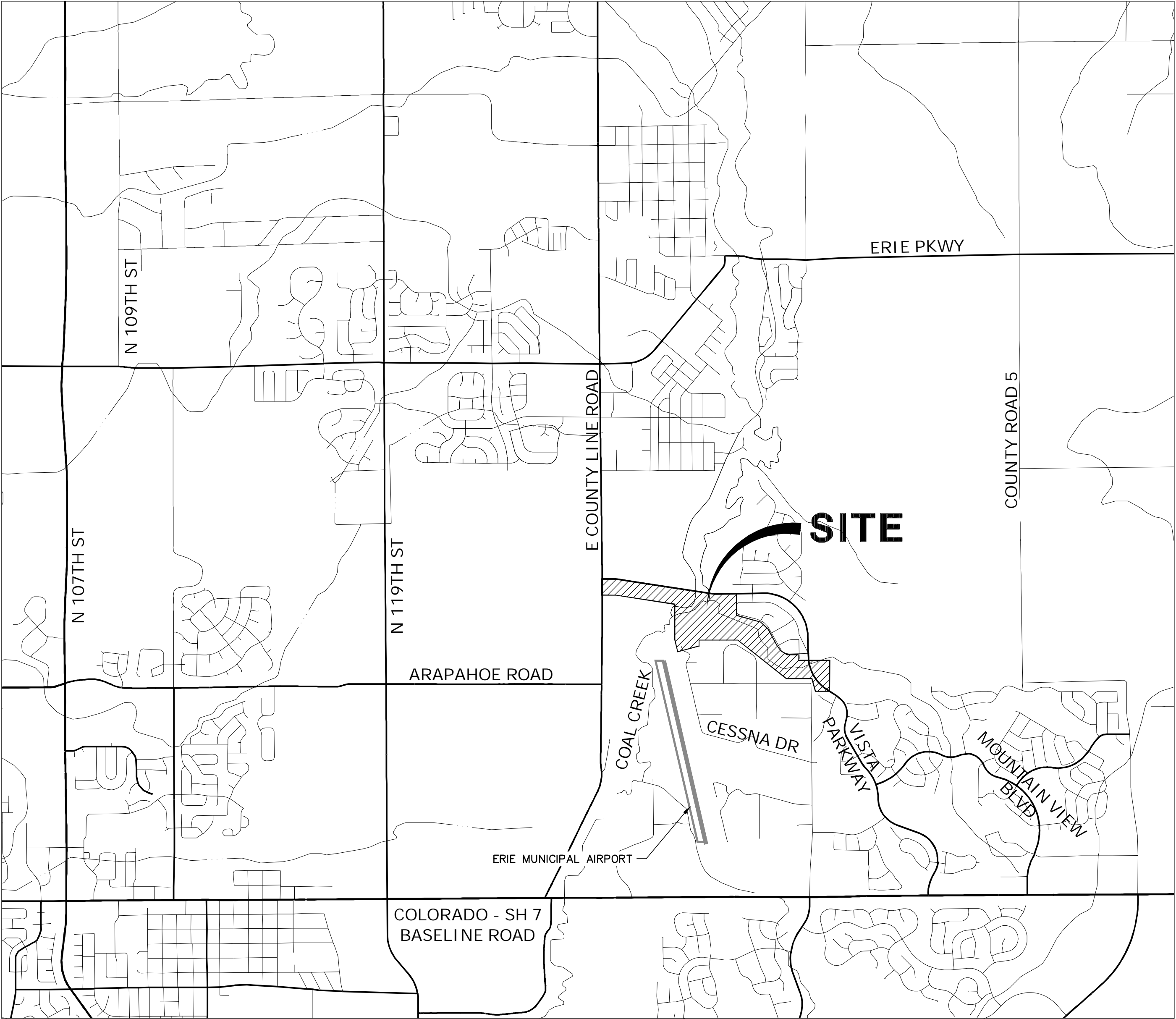
Know what's below.  
Call before you dig.

## BASIS OF BEARINGS

THE SOUTH LINE OF THE NORTHEAST ¼ OF SECTION 30, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH. PRINCIPAL MERIDIAN, BEING MONUMENTED BY A 3-1/4"ALUMINUM CAP STAMPED "LS 25369"AT THE CENTER ¼ CORNER AND A 3-1/2"ALUMINUM CAP STAMPED "LS 7735"AT THE EAST ¼ CORNER, SAID LINE BEING ASSUMED TO BEAR N89°43'17"E A DISTANCE OF 2590.14 FEET.

## BENCHMARK

THE BENCHMARK IS TOWN OF ERIE CONTROL MONUMENT 90, MONUMENTED BY A 3-1/2"BRASS CAP USGS BENCHMARK "TT-18J", HAVING A PUBLISHED ELEVATION OF 5135.14 NAVD88



## VICINITY MAP

SCALE: 1"=2000'



## PROJECT NUMBERS

TOWN OF ERIE PROJECT NO. P15-250  
JR ENGINEERING PROJECT NO. 15708.05

## SHEET INDEX

- 1 COVER SHEET
- 2 LEGEND & ABBREVIATIONS
- 3-4 GENERAL NOTES
- 5 SURVEY CONTROL DIAGRAM
- 6-13 WP01 PLAN AND PROFILE
- 14-15 WP02 PLAN & PROFILE
- 16-19 DETAIL SHEET

## TOWN OF ERIE APPROVALS

DRAWING ACCEPTANCE

ALL WORK SHALL BE CONSTRUCTED TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS. THIS DRAWING HAS BEEN REVIEWED AND FOUND TO BE IN GENERAL COMPLIANCE WITH THESE STANDARDS AND SPECIFICATIONS AND OTHER TOWN REQUIREMENTS.

THE ENGINEERING DESIGN AND CONCEPT REMAINS THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.

ACCEPTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
DEPUTY DIRECTOR OF PUBLIC WORKS

## ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

BID SET

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, THEY ARE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR  
TOWN OF ERIE  
DEPT. OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

J-R ENGINEERING  
A Western Company  
Centennial 303-740-9393 • Colorado Springs 719-589-2583  
Fort Collins 970-491-9888 • www.jrengineering.com

BY	DATE	No.	REVISION	H-SCALE	N/A	V-SCALE	N/A	DATE	4/18/17	DESIGNED BY	N/A	DRAWN BY	REB	CHECKED BY

ZONE 3 WATERLINE EXTENSION

COVER SHEET

SHEET 1 OF 19

JOB NO. 15708.05

LAYER LINETYPE LEGEND

EXISTING

PROPOSED

PHASE LINE

MATCH LINE

SECTION LINE

BOUNDARY LINE

PROPERTY LINE

EASEMENT LINE

RIGHT OF WAY

CENTERLINE

WIRE FENCE

CHAIN LINK FENCE

WOOD FENCE

CABLE TV

ELECTRIC

FIBER OPTIC

GAS MAIN

IRRIGATION MAIN

OIL/PETRO. MAIN

OVERHEAD UTILITY

SANITARY SEWER

STORM DRAIN

TELEPHONE

WATER MAIN

RAW WATER LINE

SWALE/WATERWAY FLOWLINE

TOP OF SLOPE

TOE OF SLOPE

EDGE OF WATER

INDEX CONTOUR

INTERMEDIATE CONTOUR

CUT AND FILL LINE

SILT FENCE

100 YEAR FLOODPLAIN

500 YEAR FLOODPLAIN

FLOODWAY

BASE FLOOD ELEVATION

EDGE OF WETLANDS

UTILITIES LEGEND

EXISTING

PROPOSED

STORM SEWER

MANHOLE

STORM INLET

AREA INLET – SQUARE

AREA INLET – ROUND

FLARED END SECTION

RIPRAP

SANITARY SEWER

LINE MARKER

SERVICE MARKER

CLEAN-OUT

MANHOLE W/ DIRECTIONAL FLOW ARROW

WATER LINE

LINE MARKER

SERVICE MARKER

FIRE HYDRANT

FIRE CONNECTION

MANHOLE

BEND

BLOW-OFF VALVE

WELL

METER

VALVE

REDUCER

THRUST BLOCK

CROSS

PLUG W/ THRUST BLOCK

TEE

REVERSE ANCHOR

ANODE

AIR & VACUUM VALVE ASSEMBLY

TRANSMISSION BLOW-OFF ASSEMBLY

GAS LINE

MARKER

SERVICE MARKER

METER

VALVE

PLUG

TEE

DRY UTILITIES

CABLE TV MARKER

CABLE TELEVISION PEDESTAL

ELECTRIC MARKER

ELECTRIC SERVICE MARKER

ELECTRICAL PEDESTAL

ELECTRICAL METER

ELECTRICAL MANHOLE

FIBER-OPTIC MARKER

IRRIGATION PEDESTAL

TELEPHONE MARKER

TELEPHONE PEDESTAL

TELEPHONE MANHOLE

UTILITY POLE

GUY ANCHOR

GUY POLE

MISC. UTILITIES

VENT PIPE

TEST HOLE DESIGNATOR

STORM WATER MANAGEMENT

KEY

SYMBOL

CHECK DAM

CONSTRUCTION ROAD STABILIZATION

CURB SOCK INLET PROTECTION

CONCRETE WASHOUT AREA

DIVERSION DITCH AND DIKE, TEMPORARY

DIVERSION CHANNEL, TEMPORARY

DEWATERING

EROSION CONTROL BLANKET

INLET FILTER

INLET PROTECTION

MULCHING

OUTLET PROTECTION

PAVED FLUME

PERMANENT SEEDING

REINFORCED CONCRETE DAM

ROUGH CUT STREET CONTROL

SEDIMENT BASIN

SEDIMENT CONTROL LOG

SILT FENCE

SURFACE ROUGHENING

STABILIZED STAGING AREA

SEDIMENT TRAP

STRAW BALE BARRIER

TERRACING

TEMPORARY SEEDING

TEMPORARY STREAM CROSSING CULVERT/BRIDGE

TEMPORARY STREAM CROSSING FORD TYPE

TEMPORARY SLOPE DRAIN

VEHICLE TRACKING CONTROL

VEHICLE TRACKING CONTROL WITH WASH RACK

ABBREVIATIONS

AC

AD

AH

ARCH

ASCE

ASS'Y

AVE

BB

BK

BNDY

BOP

BOV

BFV

BLVD

BW

C&G

CATV

CB

CBC

CDOT

CDS

CFS

CL

CLOMR

CLR

CMP

CO

COCs

CONC

CR

CSP

CSU

CT

CTRB

CY

DBPS

DE

DIA

DIP

DR

DRC

DU

E

EA

EGL

EL

ELEC

EOA

EPC

ESMT

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EX

FDP

FDR

FES

FG

FH

FL

FIL

FO

GB

GE

GIS

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GV

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HDPE

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MDDP

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NRCP

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PC

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PKWY

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PV

PVC

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RCP

RD

ROW

RT

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TB

TBC

TBW

TEL

TOA

TOB

TOC

TOF

TOP

TW

TYP

UDFCD

UE

U&DE

UGE

VCP

VPC

VPI

VPT

VTC

W

WL

WM

WRD

WS

WSE

WTR

YR

INVERT

IRRIGATION

KICK (THRUST) BLOCK

LANDSCAPE EASEMENT

LINEAR FEET

LANE

LETTER OF MAP REVISION

LOW POINT

LUMP SUM

LEFT

MAXIMUM

MASTER DEVELOPMENT

DRAINAGE PLAN

MANHOLE

MINIMUM

NORTH

NON-REINFORCED CONCRETE

PIPE

OFFICIAL DEVELOPMENT PLAN

OVERHEAD ELECTRIC

OVERHEAD UTILITY

POINT OF CURVATURE

POINT OF COMPOUND

CURVATURE

POINT OF CURB RETURN

PRELIMINARY DEVELOPMENT

PLAN

PROFESSIONAL ENGINEER

POINT OF INTERSECTION

PARKWAY

PROPERTY LINE

PROPOSED

POINT OF REVERSE CURVATURE

POINT OF TANGENCY

PLUG VALVE

POLYVINYL CHLORIDE

RADIUS

REINFORCED CONCRETE PIPE

ROAD

RIGHT OF WAY

SOUTH

STEEL

SANITARY SEWER

SQUARE FEET

STREET

STATION

STORM SEWER

SQUARE YARD

SQUARE YARD INCH

THRUST BLOCK

TOP BACK OF CURB

TOP BACK OF WALK

TELEPHONE

TOP OF ASPHALT

TOP OF BOX

TOP OF CURB OR CONCRETE

TOP OF FOUNDATION

TOP OF PIPE

TOP OF WALL

TYPICAL

URBAN DRAINAGE AND FLOOD

CONTROL DISTRICT

UTILITY EASEMENT

UTILITY & DRAINAGE EASEMENT

UNDERGROUND ELECTRIC

VITRIFIED CLAY PIPE

VERTICAL POINT OF CURVATURE

VERTICAL POINT OF INTERSECTION

VERTICAL POINT OF TANGENCY

VEHICLE TRACKING CONTROL

WEST

WATER LINE

WATER MAIN

WATER RESOURCES

DEPARTMENT

WATER SURFACE

WATER SURFACE ELEVATION

WATER

YEAR

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, THEY ARE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR

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J-R ENGINEERING  
A Western Company

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BY

DATE

REVISION

No.

N/A

N/A

4/18/17

DESIGNED BY

REB

DRAWN BY

REB

CHECKED BY

ZONE 3 WATERLINE EXTENSION

LEGEND & ABBREVIATIONS

SHEET 2 OF 19

JOB NO. 15708.05

ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

BID SET



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 WEBSITE. CONTRACTOR SHALL HAVE A SET ON SITE AT ALL TIMES.
2. THE CONTRACTOR 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 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 DESIGN ENGINEER UNDERSTANDS 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 TWENTY-FOUR (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 ACCEPTED 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. 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.
12. 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 NON-EMERGENCY, CALL 303-441-4444. CALL 911 FOR EMERGENCIES.

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.
13. PRIOR TO INSTALLATION OF UTILITY MAINS, ROAD CONSTRUCTION MUST HAVE PROGRESSED TO AT LEAST THE "SUB-GRADE" STAGE.
14. 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.
15. 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.
16. 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 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.
17. 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.
18. 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 CONTRACTOR SHALL BE 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.
19. 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.
20. 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.
21. ALL BACKFILL SHALL CONFORM TO THE TRENCH DETAIL LOCATED IN THE TOWN OF ERIE STANDARDS & SPECIFICATIONS.
22. THE CONTRACTOR SHALL IMMEDIATELY REMOVE ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS.
23. THE CONTRACTOR SHALL REPAIR ANY EXCAVATION OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.
24. 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.
25. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE EVERY MEASURE NECESSARY TO COMPLY WITH ANY STATE, COUNTY OR TOWN DUST CONTROL ORDINANCE.
26. CONSTRUCTION VEHICLES SHALL USE TRUCK ROUTES DESIGNATED BY THE TOWN.
27. THE CONTRACTOR SHALL 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 CONTRACTOR TO THE SATISFACTION OF THE TOWN OF ERIE AT NO EXPENSE TO THE TOWN.
28. 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 SOILS ENGINEER'S PURVIEW.
29. 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.
30. WHERE REQUIRED BY THE CONSTRUCTION ACTIVITY, EXISTING SPRINKLER HEADS AND RELATED FITTINGS AND TUBING SHALL BE REMOVED AND REPLACED AS CLOSE AS POSSIBLE TO THE ORIGINAL LOCATIONS. ALL SPRINKLER HEADS AND FITTINGS SHALL BE SALVAGED AND REUSED UNLESS DAMAGED. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH THE PROPERTY OWNER TO DETERMINE THE PRE-CONSTRUCTION CONDITION OF THE SYSTEM. DAMAGED ITEMS SHALL BE REPLACED WITH THE SAME TYPE AND QUALITY, OR BETTER, AS THE ORIGINAL ITEM. AFTER ASSEMBLY, THE SPRINKLER SYSTEM SHALL BE TESTED FOR LEAKAGE AND PROPER OPERATION. THE SYSTEM SHALL BE DRAINED AFTER TESTING IF WORK IS PERFORMED BEYOND THE IRRIGATION SEASON. REMOVAL, REPLACEMENT AND TESTING OF THE SPRINKLER SYSTEM WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCIDENTAL TO THE PROJECT.

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. THE CONTRACTOR SHALL 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 CONTRACTOR'S COPY OF THE SWMP.

F. THE CONTRACTOR 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.

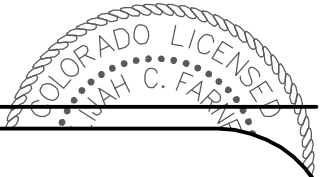
G. INSTALLATION AND MAINTENANCE OF BMPS SHALL BE SUPERVISED BY PERSONNEL CERTIFIED IN EROSION AND SEDIMENT CONTROL.
2. ALL SITE GRADING (EXCAVATION, EMBANKMENT, AND COMPACTION) SHALL CONFORM TO RECOMMENDATIONS OF THE LATEST SOILS INVESTIGATION FOR THE PROPERTY SHALL FURTHER BE IN CONFORMANCE WITH THE 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 EROSION 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 CONTRACTOR 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 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.

ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION



BID SET

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, THESE ARE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.		PREPARED FOR		TOWN OF ERIE DEPT OF PUBLIC WORKS 645 HOLBROOK STREET ERIE, CO 80516 ATTN: WENDI PALMER	
ZONE 3 WATERLINE EXTENSION		BY		DATE	
GENERAL NOTES		No.		REVISION	
DESIGNED BY		N/A		N/A	
DRAWN BY		N/A		N/A	
CHECKED BY		N/A		N/A	
SHEET 3 OF 19		H-SCALE		V-SCALE	
JOB NO. 15708.05		DATE		4/18/17	
		REB		REB	
		REB		REB	



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. 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.
6. 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.
7. 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.
8. 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.
9. DUCTILE IRON PIPE (DIP) SHALL CONFORM TO ANSI/AWWA C151/A21.51 AND ANSI/AWWA C111/A21.11 AS FOLLOWS: PUSH-ON JOINTS UTILIZING RUBBER RING GASKETS CONFORMING TO ANSI/AWWA C104/A21.11; CEMENT MORTAR LINING CONFORMING TO ANSI/AWWA C104/A21.4; BITUMINOUS OUTSIDE COATING APPROXIMATELY ONE MIL THICK; EACH PIPE MARKED WITH THE WEIGHT AND CLASS DESIGNATION. DIP SIZES 4-INCH THROUGH 12-INCH SHALL CONFORM TO PRESSURE CLASS 350. DIP SIZE 24-INCH SHALL CONFORM TO PRESSURE CLASS 200. DIP SHALL BE WRAPPED IN CLEAR POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5. THE CONTRACTOR AND DIP SUPPLIER SHALL REVIEW THE PROJECT'S GEOTECHNICAL STUDIES AND PROVIDE ADEQUATE CORROSION PROTECTION FOR BURIED METAL.
10. 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.
11. 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.
12. 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.
13. ALL WATER LINE PIPE SHALL BE PROVIDED WITH A MINIMUM GAGE SIZE OF #12 AWG INSULATED SINGLE-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.
14. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE WATER PIPE.
15. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
16. VALVES SHALL OPEN COUNTER CLOCKWISE. VALVES 12-INCH AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. LARGER VALVES SHALL BE BUTTERFLY VALVES.
17. 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.
18. ALL SERVICE LINE TAPS SHALL HAVE DOUBLE STRAP BRASS TAPPING SADDLES. (ROMAC 202B OR APPROVED EQUAL).
19. ALL RESIDENTIAL WATER TAPS SHALL BE THREE-QUARTER (3/4) INCH OR AS REQUIRED BY THE CURRENT BUILDING CODE.
20. 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".
21. 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.
22. 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.
23. ONLY ONE CONNECTION TO THE EXISTING WATER DISTRIBUTION SYSTEM SHALL BE MADE UNTIL ALL HYDROSTATIC TESTING, CHLORINATION AND FLUSHING HAS BEEN COMPLETED.
24. 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.
25. 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.
26. 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.
27. 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)
28. 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.
29. ALL WATER VAULTS SHALL BE WATER TIGHT. CONTRACTOR SHALL SEAL VAULTS TO ENSURE GROUND WATER DOES NOT INFILTRATE INTO THE VAULTS. VAULT LIDS SHALL BE PLACED TO ENSURE THAT SURFACE WATER DOES NOT FLOW INTO THE VAULTS.
30. ALL VALVES, BLOW-OFF ASSEMBLIES, AND AIR RELIEF VALVES PLACED OUTSIDE OF THE ROADWAY SHALL INCLUDE A MARKER POST IN ACCORDANCE WITH TOWN OF ERIE DETAIL W29.
31. FOR THE HORIZONTAL RESTRAINT LENGTH, SEE DETAIL W16. FOR THE VERTICAL RESTRAINT LENGTH, SEE DETAIL W27. EXISTING PIPE RESTRAINT LENGTHS ARE NOT LABELED ON THE PLANS.
32. PIPE LENGTHS ARE FROM CENTER OF FITTING TO CENTER OF FITTING.
33. ALL STATIONING IS CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.

GEOTECHNICAL NOTES

1. DEWATERING CONSIDERATIONS: GROUNDWATER WAS ENCOUNTERED AT DEPTHS RANGING FROM ABOUT 9 TO 17 FEET BELOW THE GROUND SURFACE AT THE TIME OF DRILLING. GROUNDWATER LEVELS ARE EXPECTED TO FLUCTUATE WITH TIME, AND MAY FLUCTUATE UPWARD AFTER WET WEATHER ESPECIALLY NEAR THE DRAINAGES. DEWATERING THE EXCAVATIONS MAY BE ACCOMPLISHED USING TRENCHES AND SUMPS; HOWEVER, A DEWATERING PLAN SHALL BE DESIGNED BY THE CONTRACTOR AND REVIEWED PRIOR TO EXCAVATION IN THE EVENT THAT TRENCHES AND SUMPS ARE NOT SUFFICIENT. DEWATERING WELL POINTS WILL LIKELY NOT BE AN EFFECTIVE MEANS OF DEWATERING DUE TO THE CLAYEY SUBSURFACE CONDITIONS. SURFACE WATER RUNOFF INTO THE EXCAVATIONS CAN ACT TO ERODE AND POTENTIALLY DESTABILIZE THE TRENCH SLOPES AND RESULT IN SOFT GROUND CONDITIONS ALONG THE TRENCH BOTTOM, AND SHALL NOT BE ALLOWED. DIVERSION BERMS AND OTHER MEASURES SHALL BE USED TO PREVENT SURFACE WATER RUNOFF INTO THE TRENCHES FROM OCCURRING.
2. TUNNELING/TRENCHLESS CONSTRUCTION CONSIDERATIONS: THE SUBSURFACE CONDITIONS AT THE JACKING AND RECEIVING PITS ARE EXPECTED TO CONSIST OF COHESIVE FINE-GRAINED CLAYEY FILL AND NATURAL LEAN CLAY TO SANDY LEAN CLAY POTENTIALLY UNDERLAIN BY NATURAL GRANULAR SOILS NEAR THE BOTTOM OF THE PITS. TEMPORARY SHORING AND DEWATERING MAY BE NECESSARY AT THE JACKING AND RECEIVING PITS IF THE SLOPES CANNOT BE LAID BACK AND/OR IF PERCHED GROUNDWATER IS ENCOUNTERED AT THE TIME OF EXCAVATION. TEMPORARY SHORING WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
3. DEWATERING WILL NOT BE MEASURED BUT WILL BE PAID BY LUMP SUM. DEWATERING SHALL INCLUDE ALL WORK NECESSARY TO DEWATER SECTIONS OF THE PROJECT IF GROUNDWATER AND WET SUBSURFACE SOIL CONDITIONS ARE ENCOUNTERED. PREPARATION OF THE DEWATERING PLAN AND DEWATERING PERMIT FEES SHALL BE INCLUDED IN THE WORK.

FLOODPLAIN NOTES

1. THE WORK SHOWN ON SHEETS 8, 9, 10, 14, AND 15 IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS.
2. CONTRACTOR SHALL OBTAIN A FLOODPLAIN PERMIT FROM THE TOWN OF ERIE.

AERONAUTICAL HAZARD NOTES

1. THIS PROJECT REQUIRES COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA) AND ERIE MUNICIPAL AIRPORT.
2. THE PROJECT HAS BEEN FILED WITH THE FAA AS AERONAUTICAL STUDY NO. 2016-ANM-3470-OE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING AND UPHOLDING ALL REQUIREMENTS AND LIMITATIONS SET FORTH IN THE DETERMINATION OF AERONAUTICAL STUDY NO. 2016-ANM-3470-OE.
4. THE CONTRACTOR SHALL NOT BEGIN CONSTRUCTION UNTIL ALL OF THE FOLLOWING REQUIREMENTS ARE MET:

4.1. CONTRACTOR SHALL CONFIRM ALL PROPOSED IMPROVEMENTS CAN BE BUILT WITHIN THE WORK AREA SHOWN ON THE PLANS.

4.2. CONTRACTOR SHALL CONFIRM NO EQUIPMENT OVER A MAX OPERATING HEIGHT OF 45 FEET WILL BE USED.

4.3. ALL EQUIPMENT GREATER THAN (7) FEET IN HEIGHT SHALL BE MARKED/LIGHTED IN ACCORDANCE WITH APPLICABLE FAA STANDARDS.

4.3.1. ANY FAILURE OR MALFUNCTION THAT LASTS MORE THAN 30 MINUTES OF A TOP LIGHT OR FLASHING OBSTRUCTION LIGHT SHALL BE REPORTED TO (877) 487-6867 IMMEDIATELY.

4.4. A MINIMUM OF (3) DAYS PRIOR TO BEGINNING CONSTRUCTION THE FOLLOWING PERSONNEL SHALL BE NOTIFIED:

4.4.1. JASON HURD, EIK AIRPORT MANAGER: (303) 664-0633

4.4.2. BILL DUNN, SUPPORT SPECIALIST, DENVER TRACON: (303) 342-1546

4.4. A MINIMUM OF (5) DAYS PRIOR TO BEGINNING CONSTRUCTION THE FOLLOWING PERSONNEL SHALL BE NOTIFIED WITH THE FOLLOWING INFORMATION: 1. SUBJECT: "NOTAM ALERT 2016-ANM-3470-OE", 2. START DATE, 3. END DATE, 4. TIME RESTRICTED EQUIPMENT WILL BE USED, 5. ON-SITE CONTACT NAME AND NUMBER.

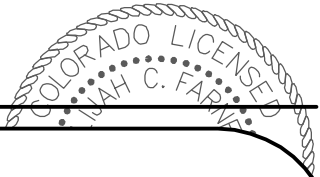
4.4.1. VEE STEWART, FAA OE SPECIALIST: VEE.STEWART@FAA.GOV / (816) 329-2508

4.4.2. DAVE MADDOX, FAA OE ALTERNATE: DAVID.MADDOX@FAA.GOV / (202) 267-4525

4.5. PLEASE NOTE, NOTIFICATION SHALL BE MADE VIA A LIVE PHONE CALL OR EMAIL WITH A READ RECEIPT. OTHER FORMS OF NOTIFICATION ARE NOT ACCEPTABLE.



ENGINEER'S STATEMENT

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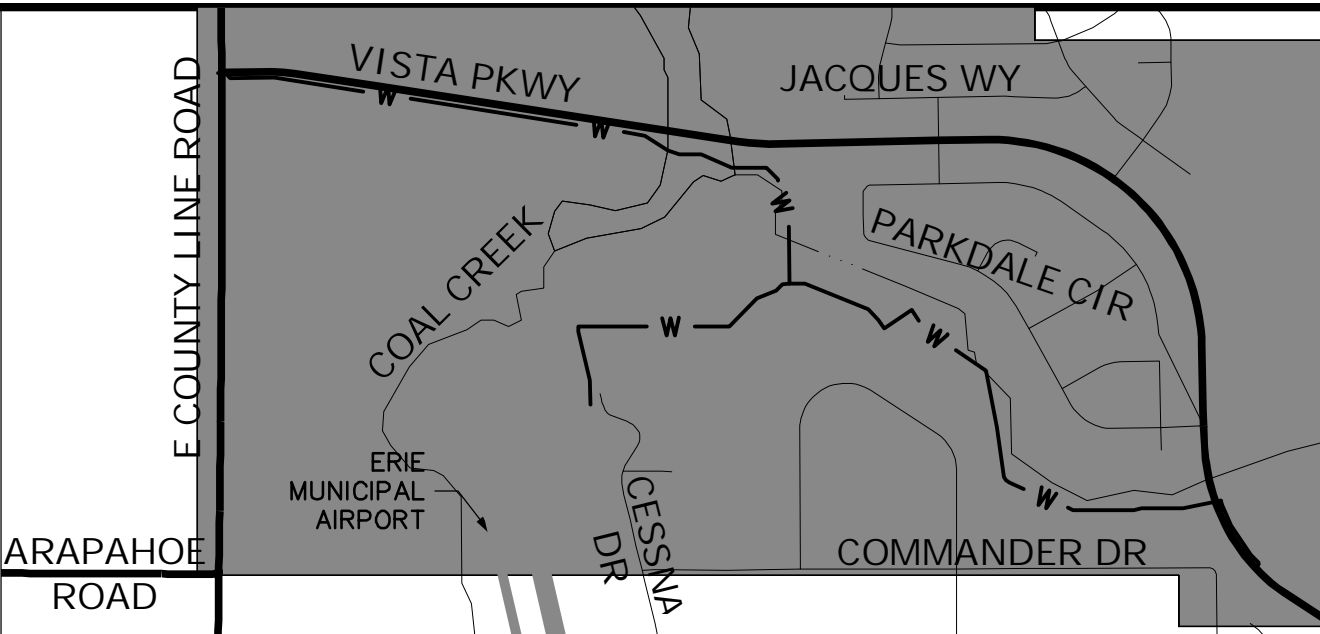


BID SET

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGI

ZONE 3 WATERLINE EXTENSION	GENERAL NOTES	UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING ENGINEER, THESE DRAWINGS ARE NOT TO BE USED FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.	PREPARED FOR <div>TOWN OF ERIE DEPT OF PUBLIC WORKS 645 HOLBROOK STREET ERIE, CO 80516 ATTN: WENDI PALMER</div>		J-R ENGINEERING A Western Company 	CENTENNIAL 303-740-9883 • COLORADO SPRINGS 719-589-2583 FORT COLLINS 970-491-9888 • WWW.JRENGINEERING.COM	BY	DATE	REVISION				H-SCALE		V-SCALE		DATE	DESIGNED BY	DRAWN BY	CHECKED BY
							No.	N/A	N/A	4/18/17	REB	REB								
SHEET 4 OF 19		JOB NO. 15708.05																		





PREPARED FOR

TOWN OF ERIE  
DEPT OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

 TOWN OF ERIE  
8/4/14

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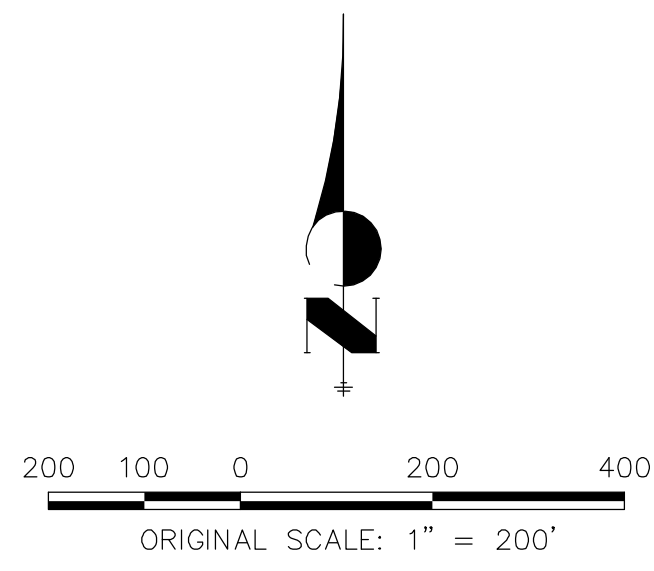
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1"=200'		No.	REVISION	BY	DATE
H-SCALE	V-SCALE	N/A			
	DATE	4/18/17			
	DESIGNED BY	AGR			
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	CHECKED BY				

### ZONE 3 WATERLINE EXTENSION

## SURVEY CONTROL DIAGRAM

SHEET 5 OF 19  
JOB NO. 15708.05



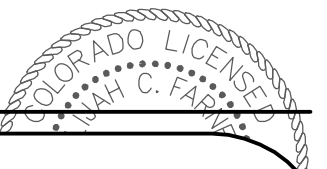
THE SOUTH LINE OF THE NORTHEAST ¼ OF SECTION 30, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN, BEING MONUMENTED BY A 3-1/4" ALUMINUM CAP STAMPED LS 25369" AT THE CENTER ¼ CORNER AND A 3-1/2" ALUMINUM CAP STAMPED LS 7735" AT THE EAST ¼ CORNER, SAID LINE BEING ASSUMED TO BEAR N89°43'17"E A DISTANCE OF 2590.14 FEET.

THE BENCHMARK IS TOWN OF ERIE CONTROL MONUMENT 90, MONUMENTED BY A 3-1/2"BRASS CAP USGS BENCHMARK "TT-18J", HAVING A PUBLISHED ELEVATION OF 5135.14 NAVD88

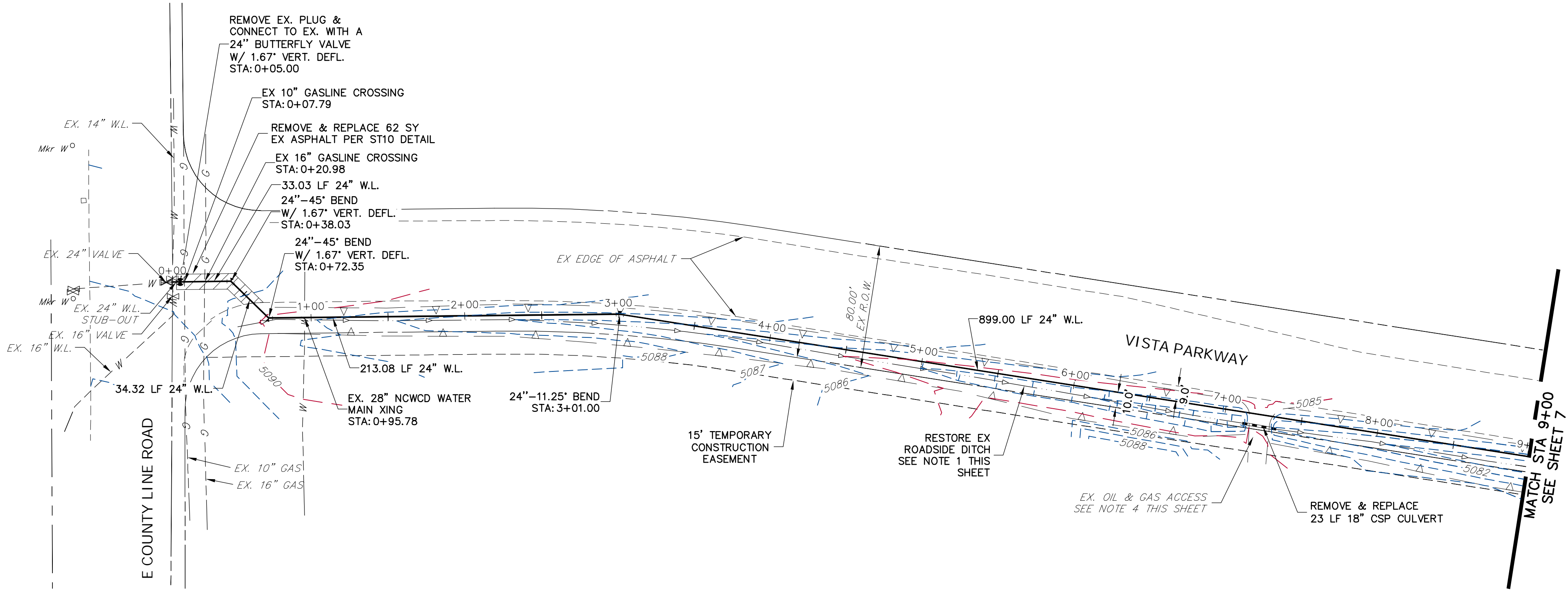
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FOR AND ON BEHALF OF JR ENGINE

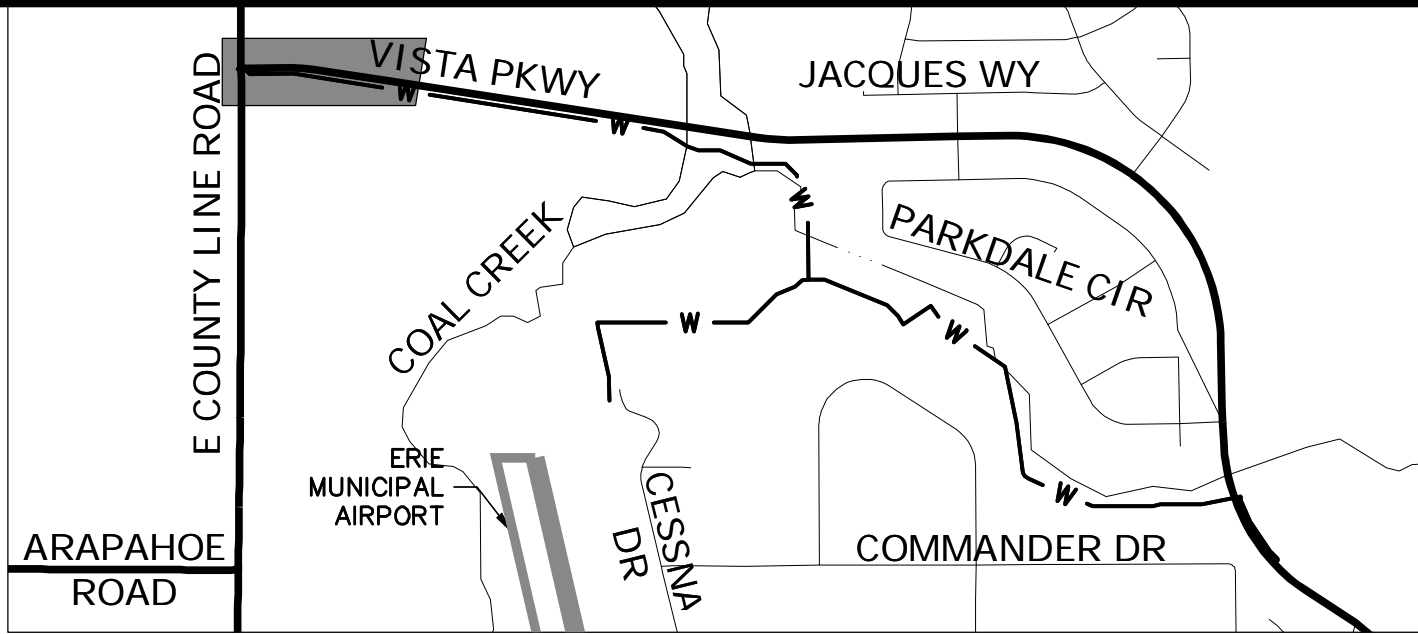
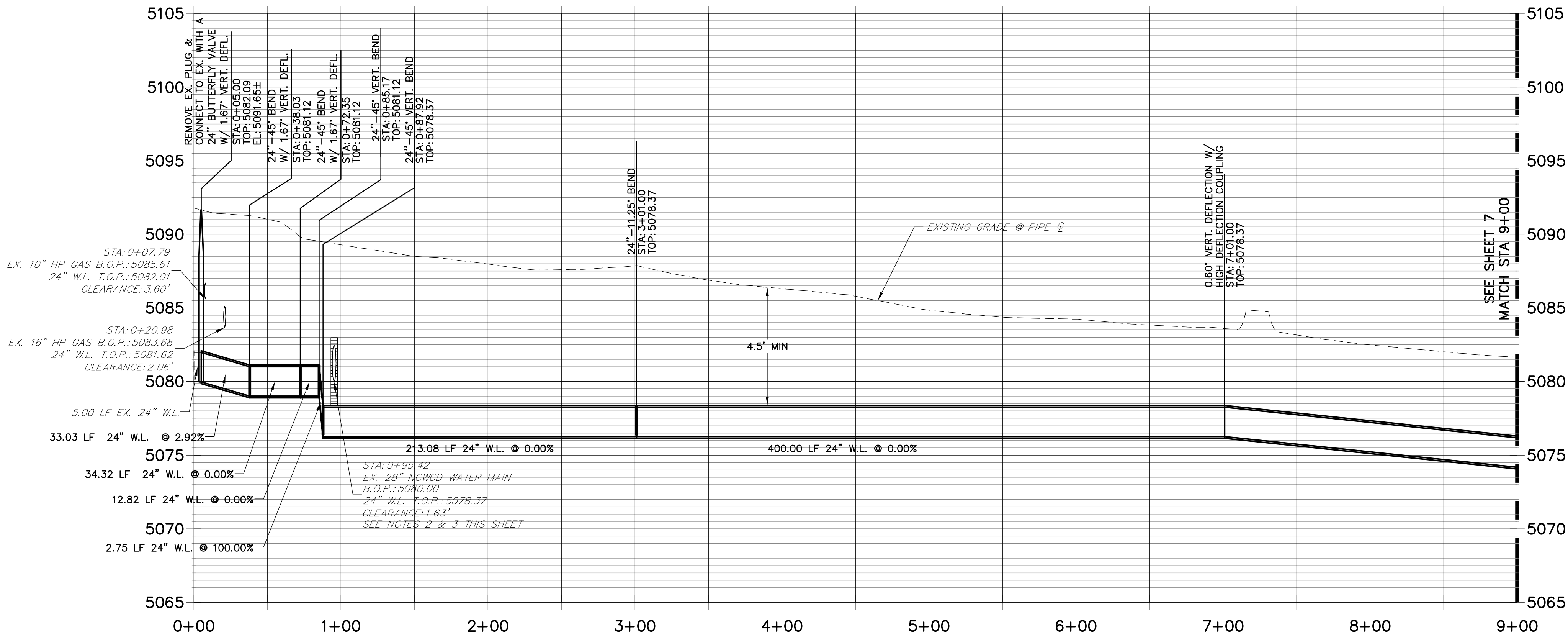
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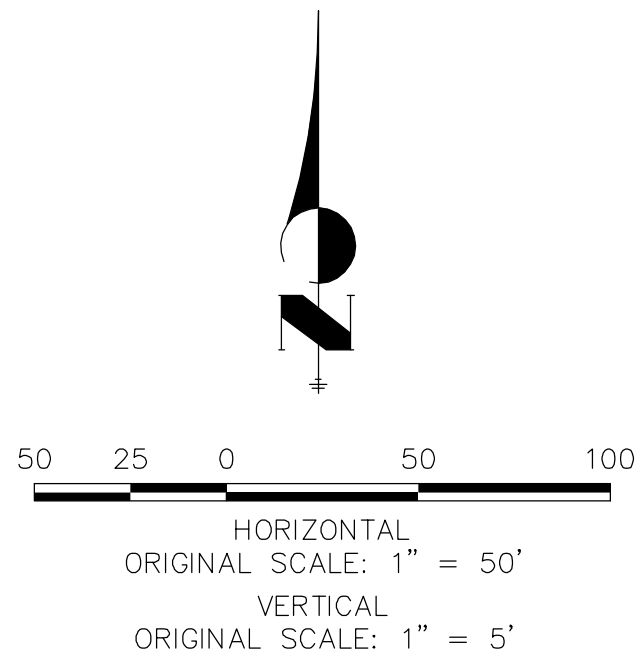


WP01 PROFILE  
STA 0+00.00 TO 9+00.00



### SHEET 6 NOTES

- RESTORE ROADSIDE DITCH GRADING TO EXISTING CONDITIONS OR BETTER. STABILIZE WITH EROSION CONTROL BLANKET, CHECK DAMS, AND NATIVE SEEDING.
- SPECIAL TRENCH BACKFILL INSTRUCTIONS FOR NCWD WATER MAIN: PROVIDE LOW STRENGTH STRUCTURE FLOW-FILL BACKFILL AROUND EXISTING NCWD WATER MAIN FOR LENGTH OF EXPOSED PIPE. MINIMUM LIMITS OF FLOW-FILL ARE AS FOLLOWS:
  - WIDTH=PIPE DIAMETER PLUS 1-FOOT EACH SIDE
  - DEPTH=2 FEET MINIMUM BELOW PIPE. IF DISTANCE FROM TOP OF ERIE ZONE 3 WATERLINE TO BOTTOM OF NCWD WATER MAIN IS 3 FEET OR LESS, START FLOW-FILL FROM TOP OF ERIE ZONE 3 WATERLINE FOR DISTANCE 3 FEET BEYOND ERIE ZONE 3 WATERLINE EDGE THEN MAINTAIN 2-FOOT DEPTH BELOW NCWD WATER MAIN THEREAFTER.
  - HEIGHT=6-INCH MINIMUM ABOVE NCWD WATER MAIN.
- PROVIDE CONTINUOUS SUPPORT OF NCWD WATER MAIN DURING CONSTRUCTION. NCWD REPRESENTATIVE TO VERIFY SUPPORT STRUCTURE IN THE FIELD. CONTRACTOR SHALL MAKE ADJUSTMENTS AS NECESSARY. IF AN EXISTING NCWD WATER MAIN JOINT IS EXPOSED AND THE PROTECTIVE WRAP BECOMES DAMAGED, COORDINATE WITH NCWD MAINTENANCE FOR REPAIRS. REPAIRS TO JOINT WRAPPINGS ONLY WILL BE PROVIDED BY NCWD.
- PROVIDE OIL AND GAS COMPANY A MINIMUM OF 2 WEEKS NOTIFICATION OF CROSSING AND WORK ADJACENT TO THE ACCESS.



### ENGINEER'S STATEMENT

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BID SET

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, THEY ARE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

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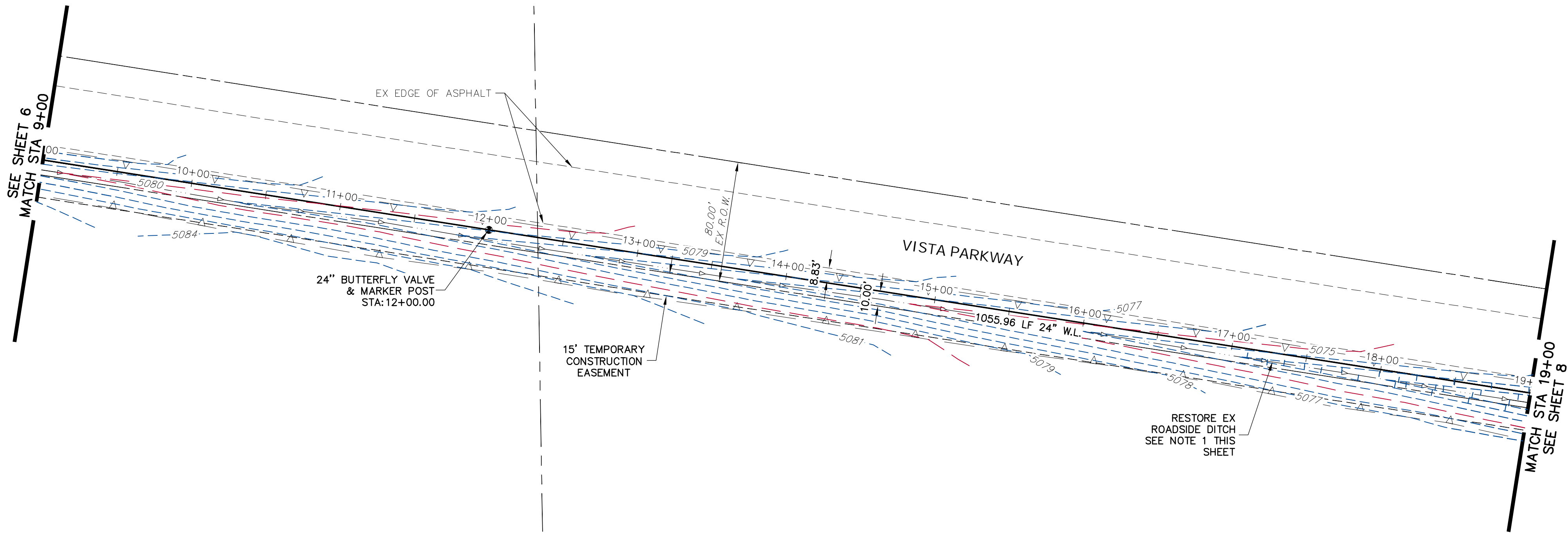
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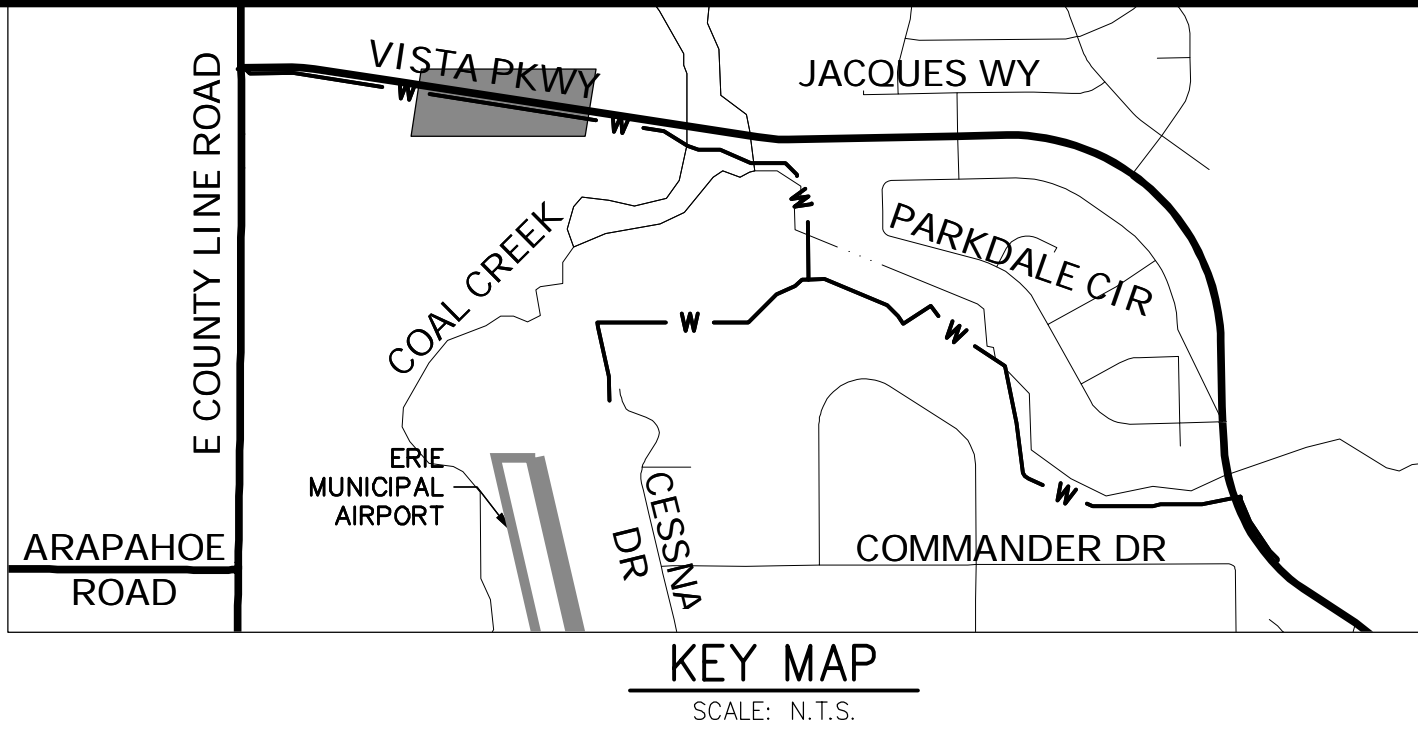
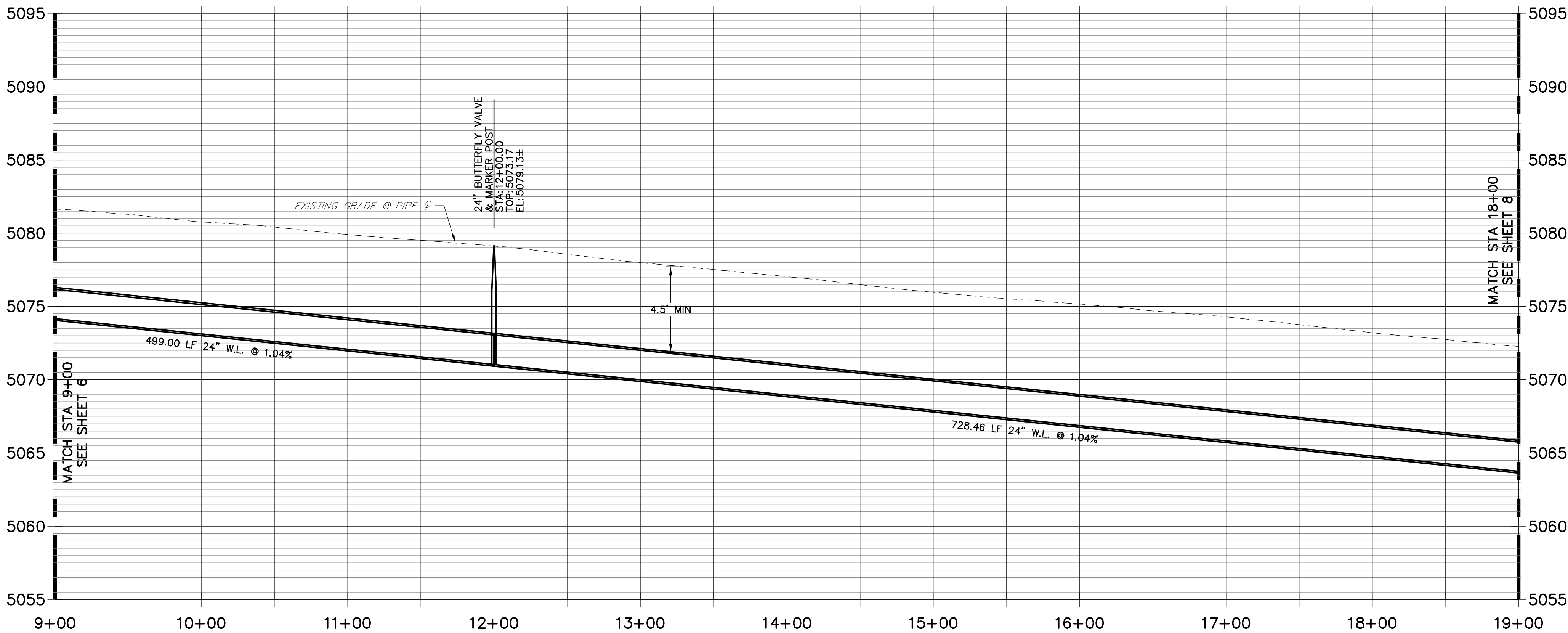
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No.	REVISION	BY	DATE

ZONE 3 WATERLINE EXTENSION	WP01 PLAN AND PROFILE
SHEET 6 OF 19	JOB NO. 15708.05

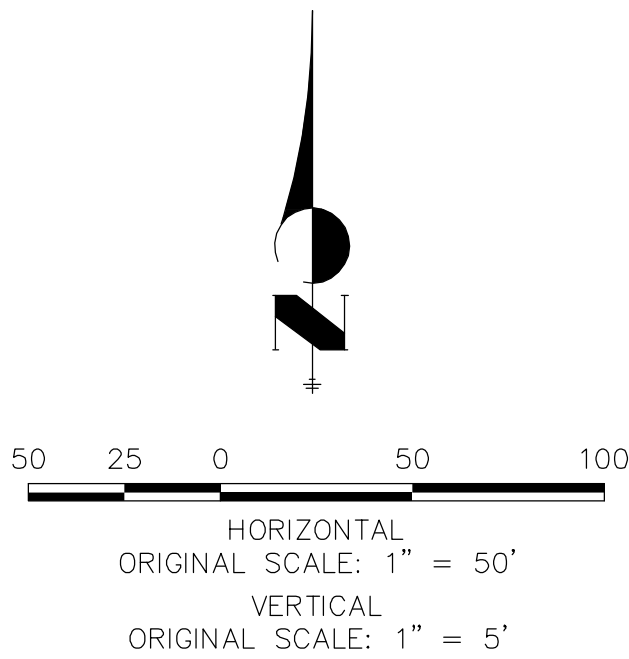


WP01 PROFILE  
STA 9+00.00 TO 19+00.00



SHEET 7 NOTES

- RESTORE ROADSIDE DITCH GRADING TO EXISTING CONDITIONS OR BETTER. STABILIZE WITH EROSION CONTROL BLANKET, CHECK DAMS, AND NATIVE SEEDING.



ENGINEER'S STATEMENT

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COLORADO P.E. #41677  
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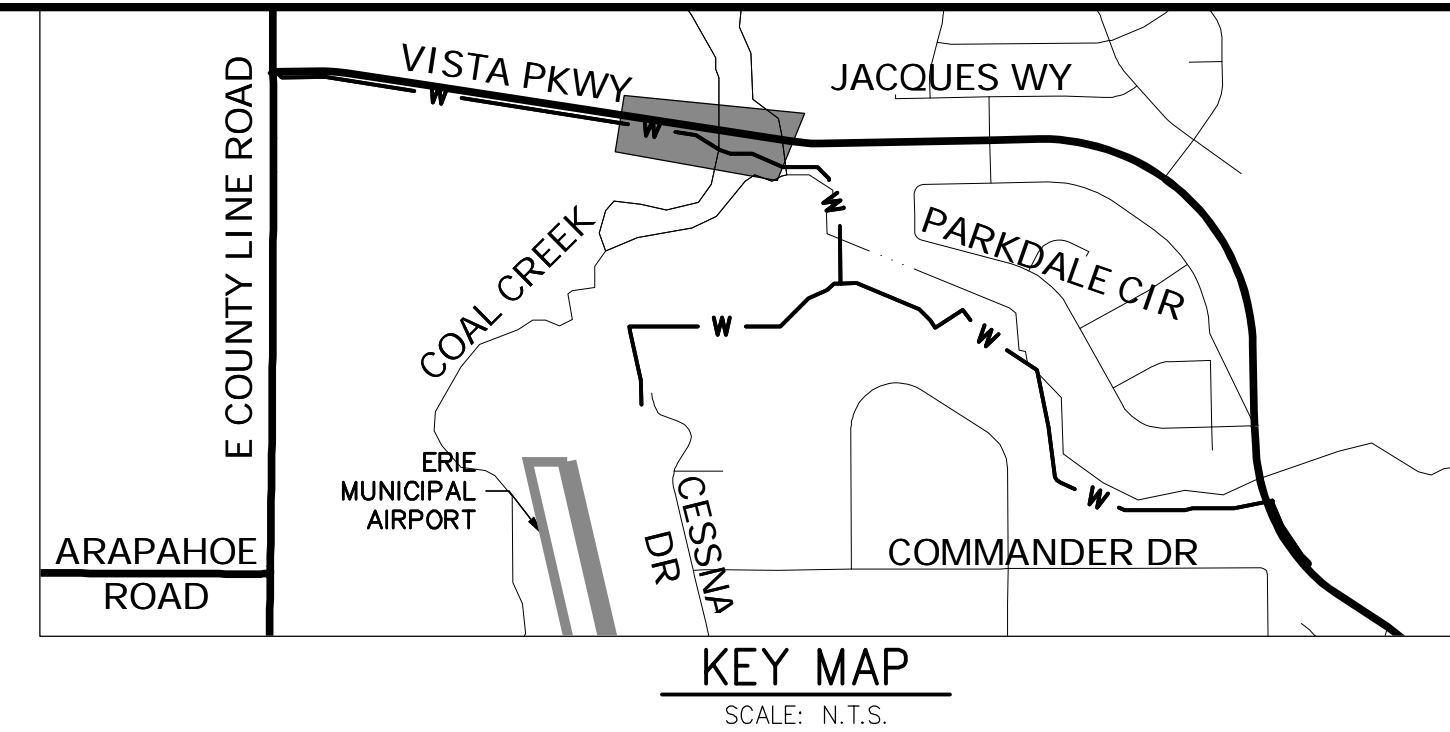
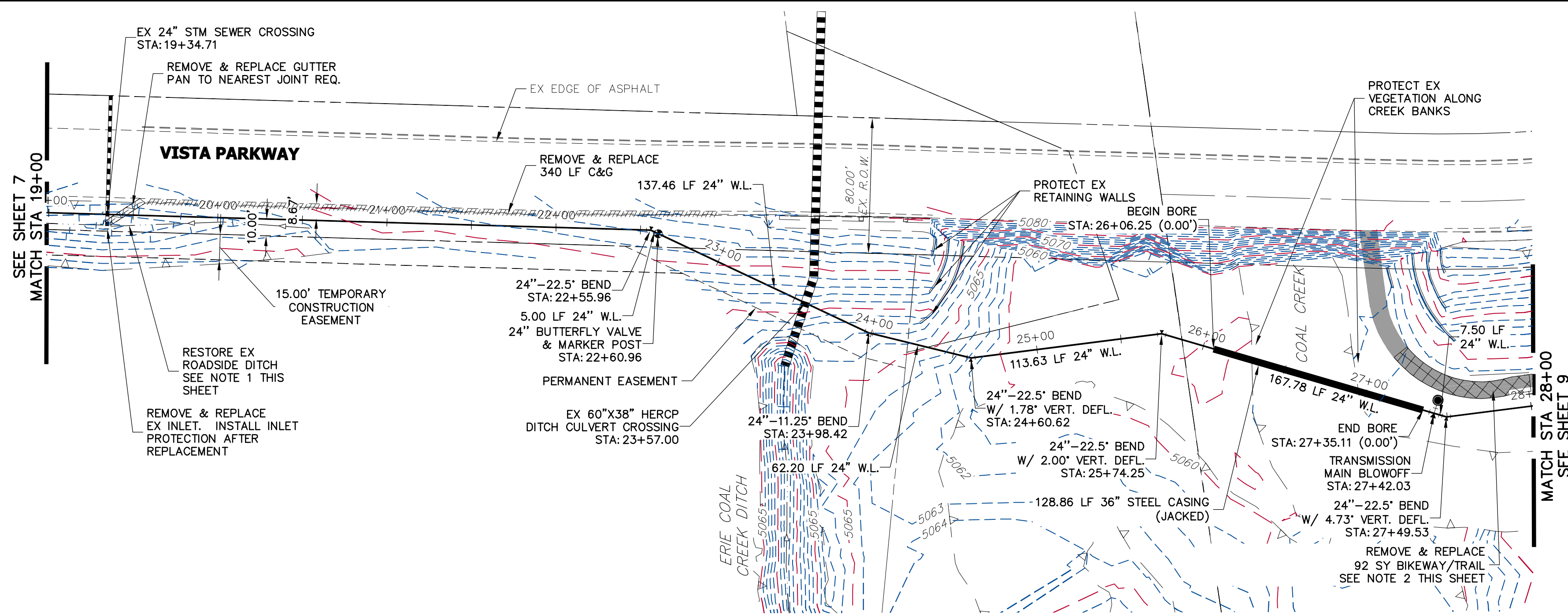
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No.	REVISION	BY	DATE

H-SCALE	1"=50'	V-SCALE	1"=5'	DATE	4/18/17	DESIGNED BY	AGR	DRAWN BY	REB	CHECKED BY
ZONE 3 WATERLINE EXTENSION										
WP01 PLAN AND PROFILE										
SHEET 7 OF 19										
JOB NO. 15708.05										

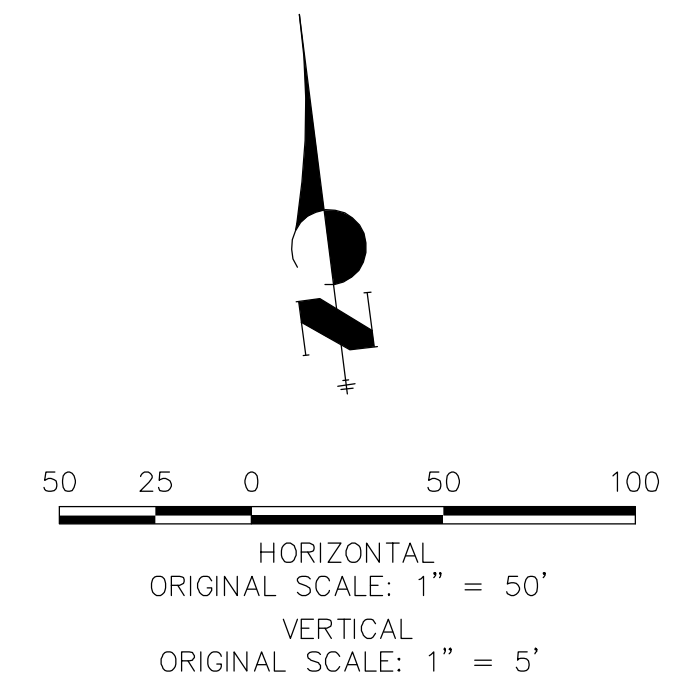
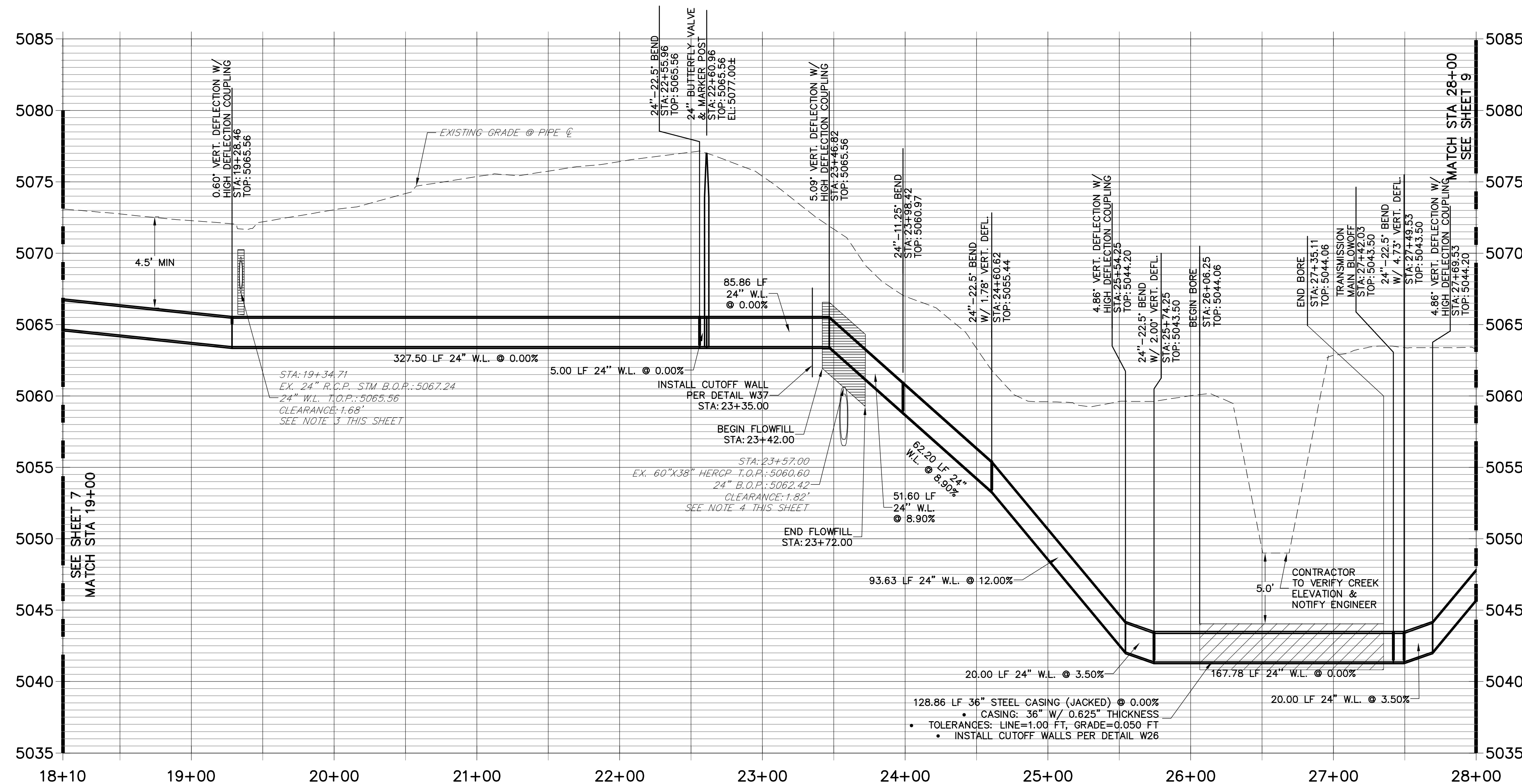




### SHEET 8 NOTES

- RESTORE ROADSIDE DITCH GRADING TO EXISTING CONDITIONS OR BETTER. STABILIZE WITH EROSION CONTROL BLANKET, CHECK DAMS, AND NATIVE SEEDING.
- REPLACE CONCRETE BIKEWAY AND CRUSHER FINE TRAIL IN ACCORDANCE WITH DETAIL P25. BIKEWAY/TRAIL REMOVAL AND REPLACEMENT OUTSIDE LIMITS SHOWN WILL BE PAID FOR BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT PEDESTRIAN AND BICYCLE DETOUR PLAN TO TOWN OF ERIE FOR APPROVAL.
- SPECIAL TRENCH BACKFILL INSTRUCTIONS FOR 24-INCH RCP:
  - PROVIDE LOW STRENGTH STRUCTURE FLOW-FILL BACKFILL AROUND EXISTING RCP FOR LENGTH OF EXPOSED PIPE. MINIMUM LIMITS OF FLOW-FILL ARE AS FOLLOWS:
    - 3.1. WIDTH=PIPE DIAMETER PLUS 1-FOOT EACH SIDE
    - 3.2. DEPTH=2 FEET MINIMUM BELOW PIPE. START FLOW-FILL FROM TOP OF ERIE ZONE 3 WATERLINE FOR DISTANCE 3 FEET BEYOND ERIE ZONE 3 WATERLINE EDGE THEN MAINTAIN 2-FOOT DEPTH BELOW RCP THEREAFTER
    - 3.3. HEIGHT=6-INCH MINIMUM ABOVE RCP
  - TO ENSURE PROPER BACKFILL AROUND THE WATERLINE WITHOUT MECHANICAL OR MANUAL COMPACTION DIRECTLY OVER THE 60"x38" HERCP, THE WATERLINE TRENCH SHALL BE BACKFILLED WITH LOW STRENGTH STRUCTURE FLOW-FILL BACKFILL TO A HEIGHT ONE FOOT ABOVE THE CROWN OF THE WATERLINE, FOR A DISTANCE OF APPROXIMATELY 15 FEET CENTERED ON THE 60"x38" HERCP.

### WP01 PROFILE STA 18+10.00 TO 28+00.00



### ENGINEER'S STATEMENT

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ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

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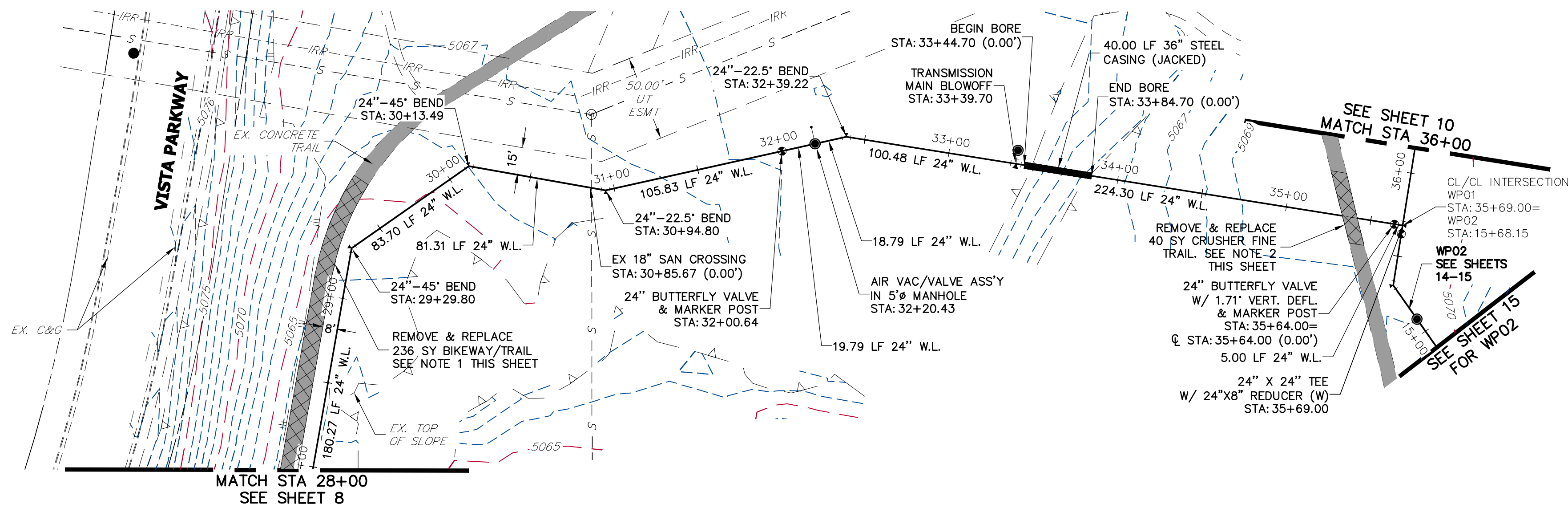


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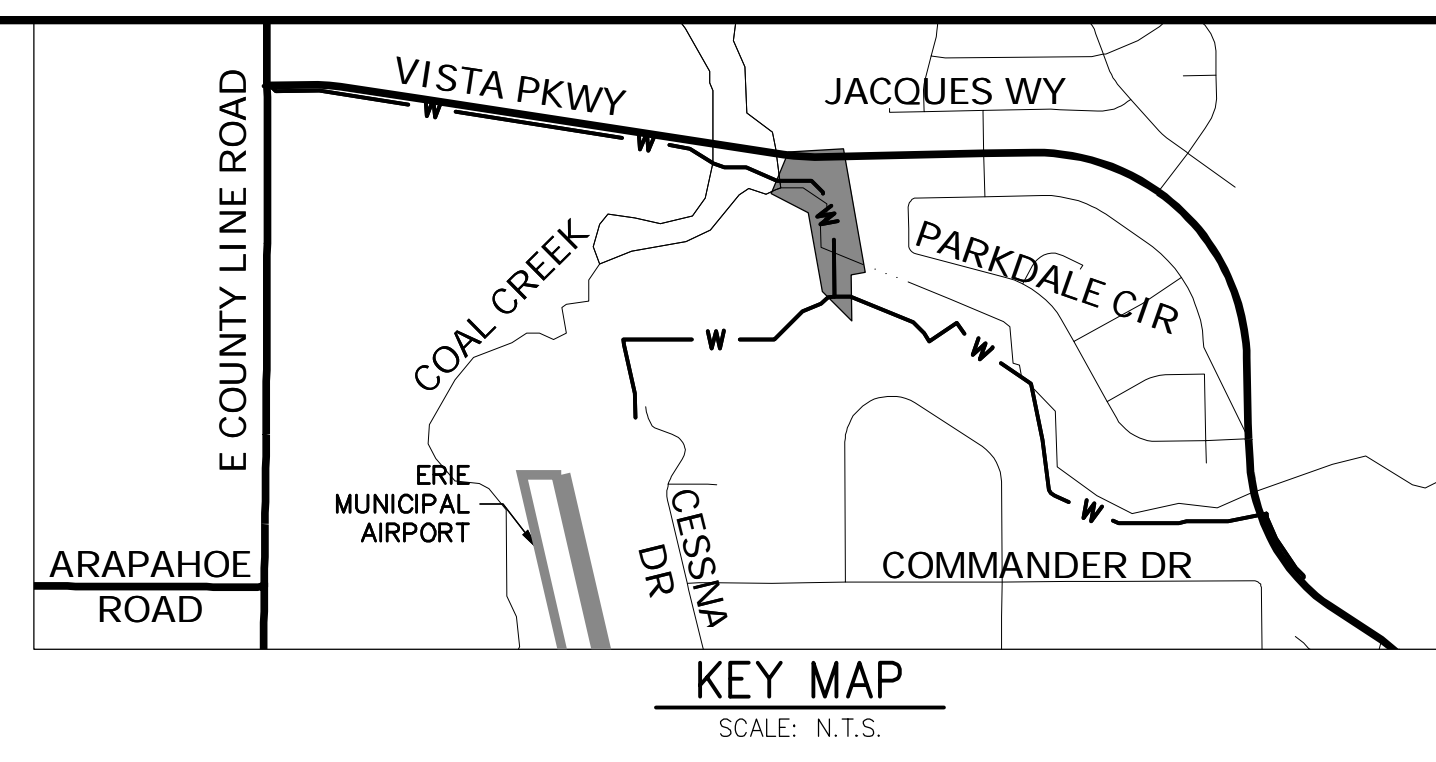
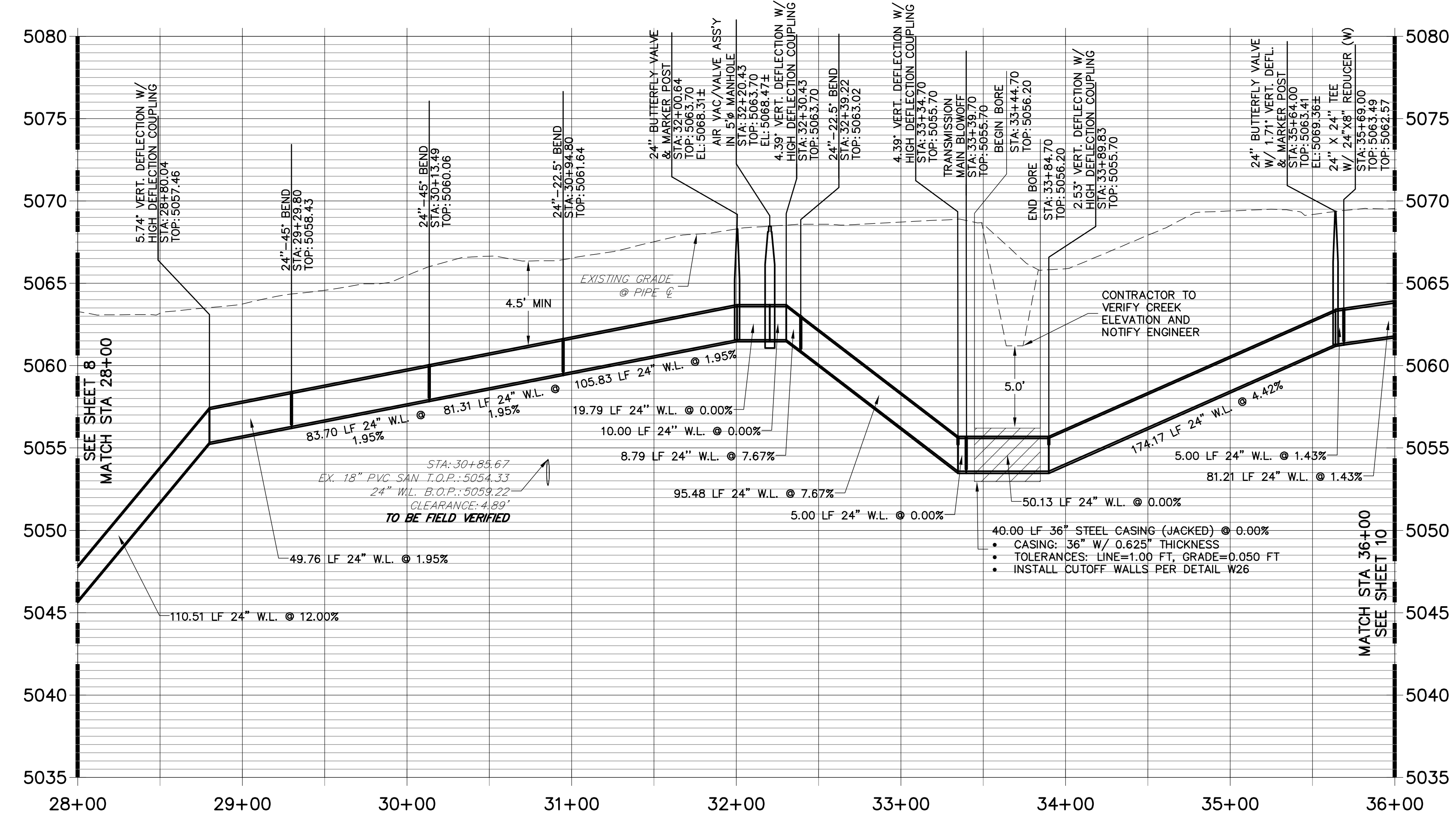
No.	REVISION	BY	DATE

ZONE 3 WATERLINE EXTENSION	H-SCALE 1"=50'	V-SCALE 1"=5'	DATE 4/18/17	DESIGNED BY AGR	DRAWN BY REB	CHECKED BY
	WP01 PLAN AND PROFILE					
SHEET 8 OF 19				JOB NO. 15708.05		



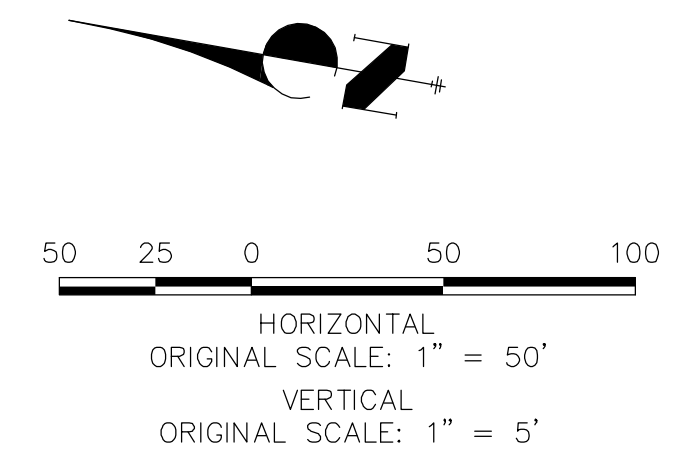


WP01 PROFILE  
STA 28+00.00 TO 36+00.00



SHEET 9 NOTES

1. REPLACE CONCRETE BIKEWAY AND CRUSHER FINE TRAIL IN ACCORDANCE WITH DETAIL P25. BIKEWAY/TRAIL REMOVAL AND REPLACEMENT OUTSIDE LIMITS SHOWN WILL BE PAID FOR BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT PEDESTRIAN AND BICYCLE DETOUR PLAN TO TOWN OF ERIE FOR APPROVAL.
2. REPLACE CRUSHER FINE TRAIL TO EXISTING CONDITIONS OR BETTER. TRAIL SHALL CONSIST OF POLYMER-STABILIZED CRUSHER FINES WITH GEOTEXTILE FABRIC UNDERLAYMENT. CONTRACTOR SHALL SUBMIT PEDESTRIAN AND BICYCLE DETOUR PLAN TO TOWN OF ERIE FOR APPROVAL.



ENGINEER'S STATEMENT

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FOR AND ON BEHALF OF JR ENGINEERING

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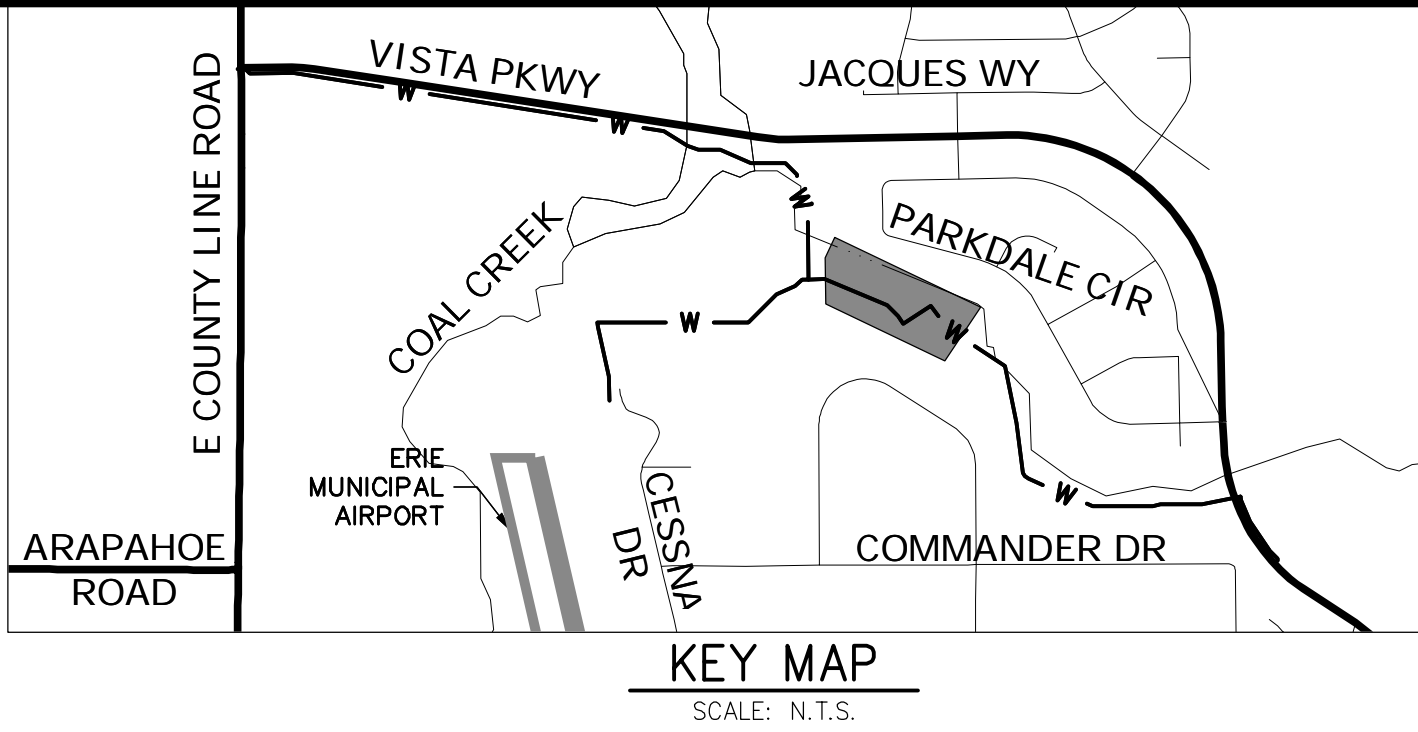
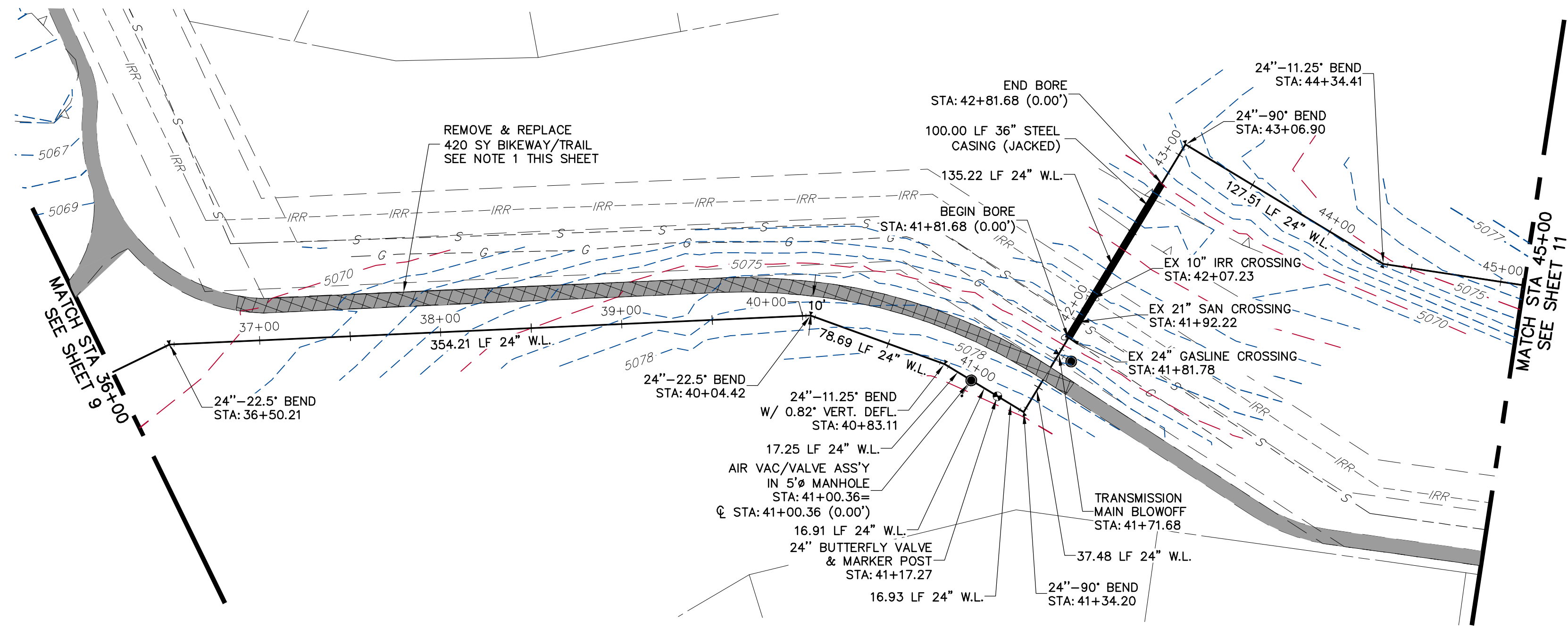
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ZONE 3 WATERLINE EXTENSION										
WP01 PLAN AND PROFILE										
SHEET 9 OF 19										
JOB NO. 15708.05										

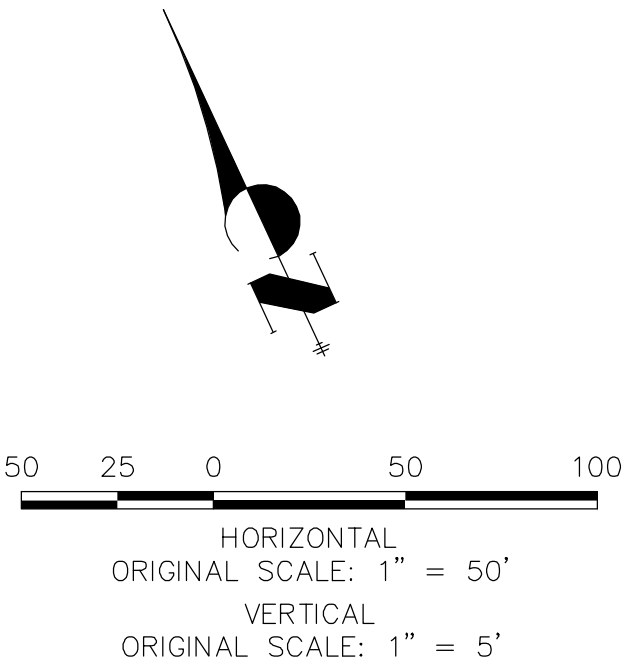
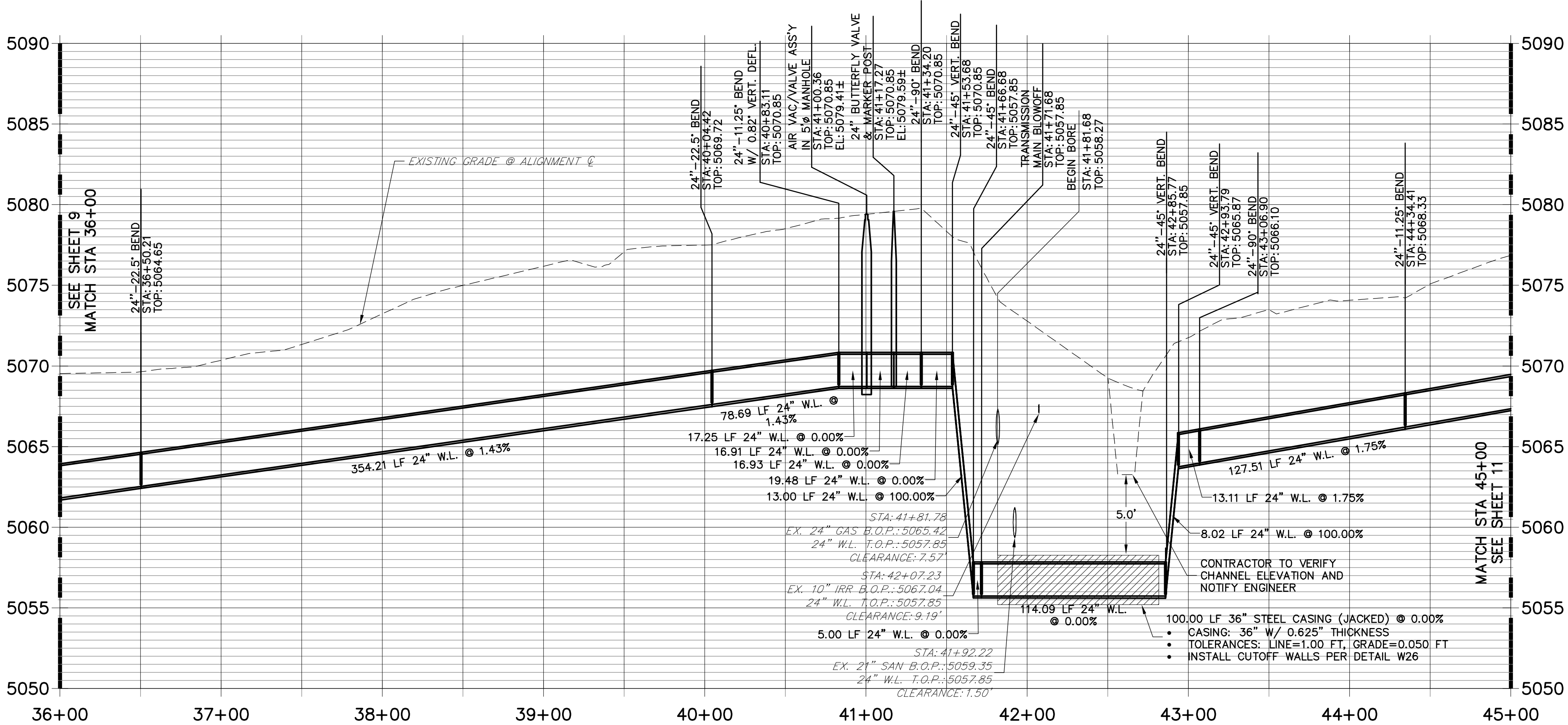




SHEET 10 NOTES

1. REPLACE CONCRETE BIKEWAY AND CRUSHER FINE TRAIL IN ACCORDANCE WITH DETAIL P25. BIKEWAY/TRAIL REMOVAL AND REPLACEMENT OUTSIDE LIMITS SHOWN WILL BE PAID FOR BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT PEDESTRIAN AND BICYCLE DETOUR PLAN TO TOWN OF ERIE FOR APPROVAL.

WP01 PROFILE  
STA 36+00.00 TO 45+00.00



ENGINEER'S STATEMENT

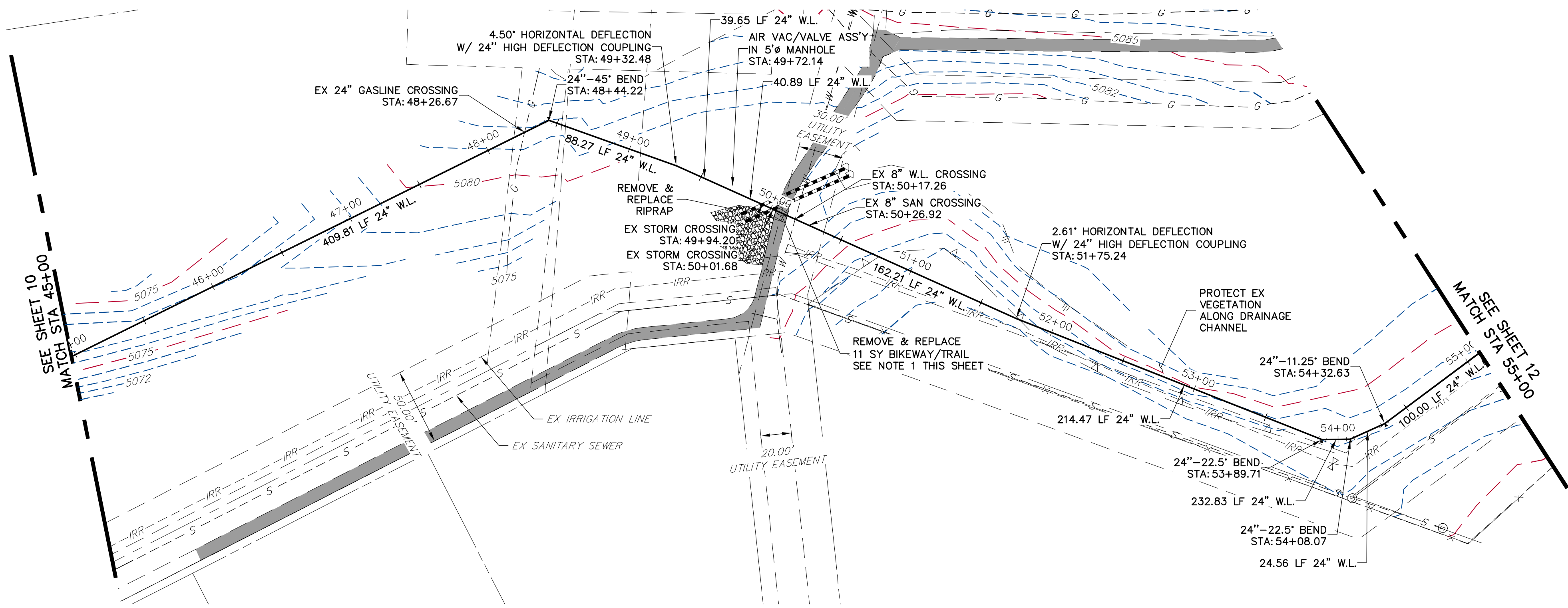
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COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

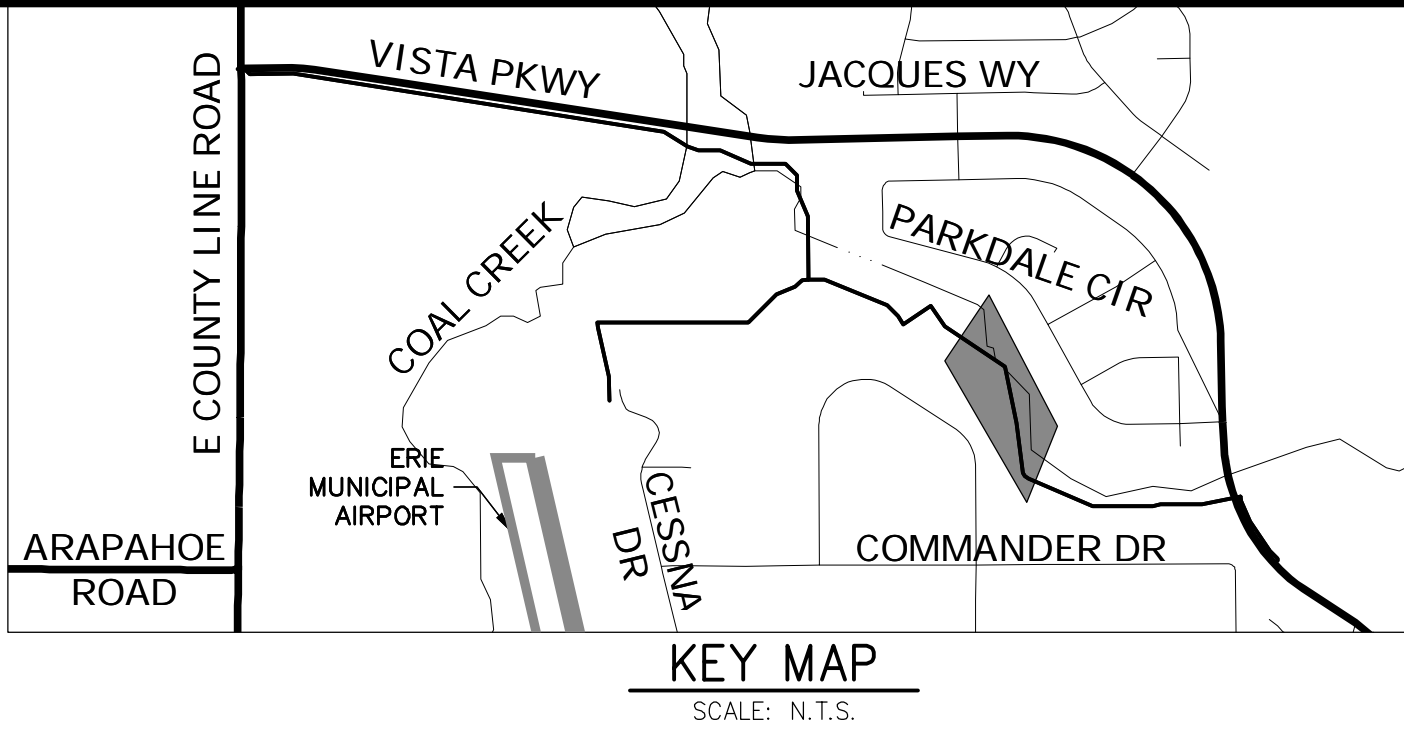
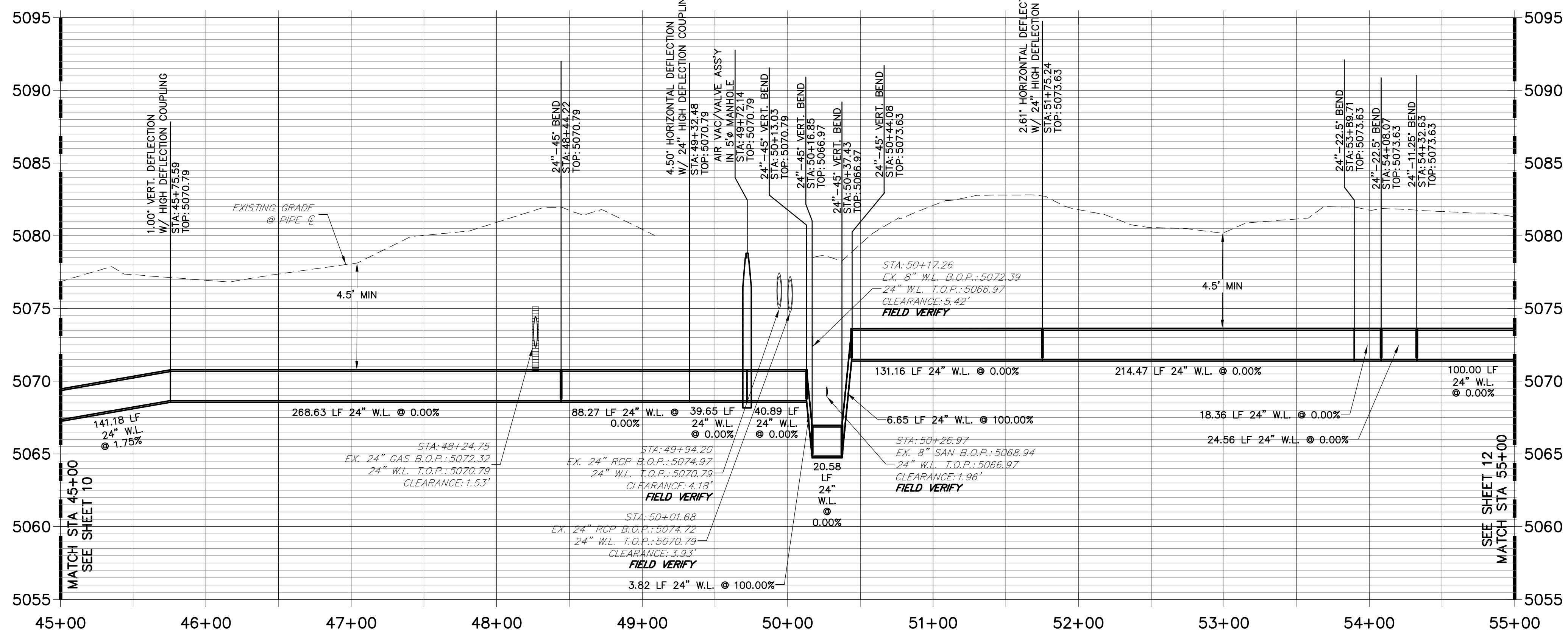
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PREPARED FOR	TOWN OF ERIE DEPT. OF PUBLIC WORKS 645 HOLBROOK STREET ERIE, CO 80516 ATTN: WENDI PALMER
Central 303-740-9888 • Colorado Springs 719-589-2583 Fort Collins 970-491-9888 • www.jrengineering.com	
BY	DATE
REVISION	No.
H-SCALE 1"=50'	1"=5'
V-SCALE 1"=5'	4/18/17
DESIGNED BY AGR	REB
DRAWN BY	CHECKED BY
ZONE 3 WATERLINE EXTENSION	
WP01 PLAN AND PROFILE	
SHEET	10 OF 19
JOB NO.	15708.05





WP01 PROFILE  
STA 45+00.00 TO 55+00.00



SHEET 11 NOTES

1. REPLACE CONCRETE BIKEWAY AND CRUSHER FINE TRAIL IN ACCORDANCE WITH DETAIL P25. BIKEWAY/TRAIL REMOVAL AND REPLACEMENT OUTSIDE LIMITS SHOWN WILL BE PAID FOR BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT PEDESTRIAN AND BICYCLE DETOUR PLAN TO TOWN OF ERIE FOR APPROVAL.

ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

BID SET

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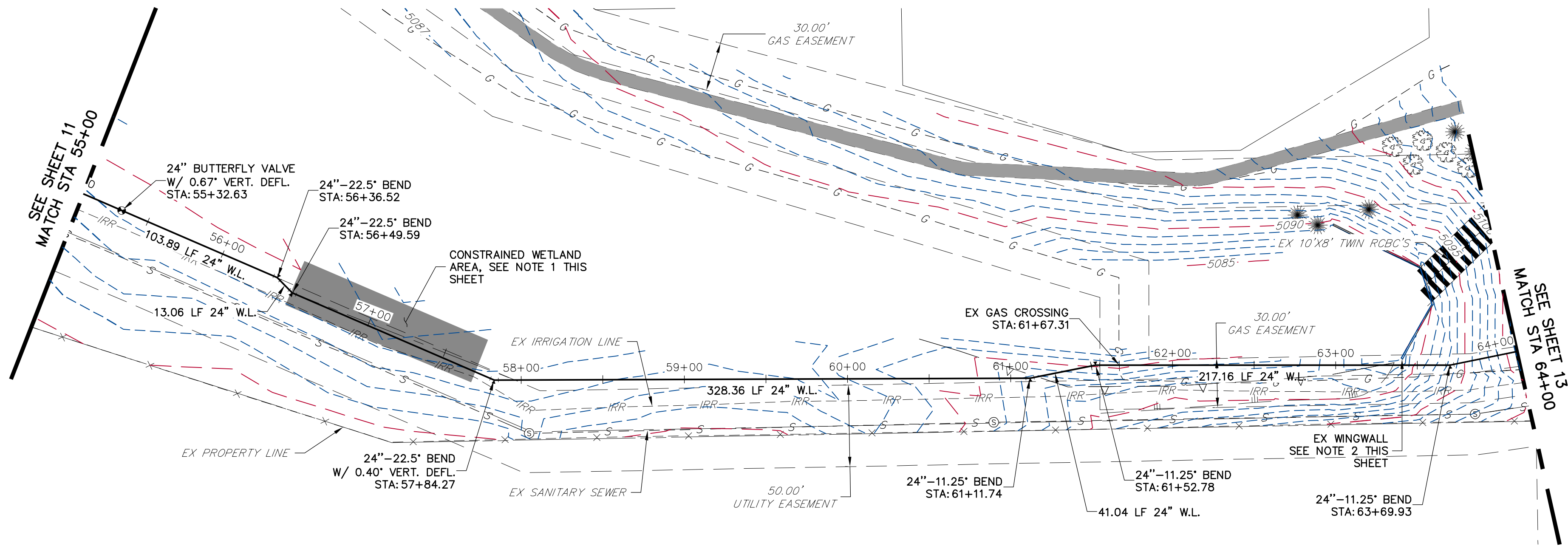
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TOWN OF ERIE  
DEPT. OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

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A Western Company  
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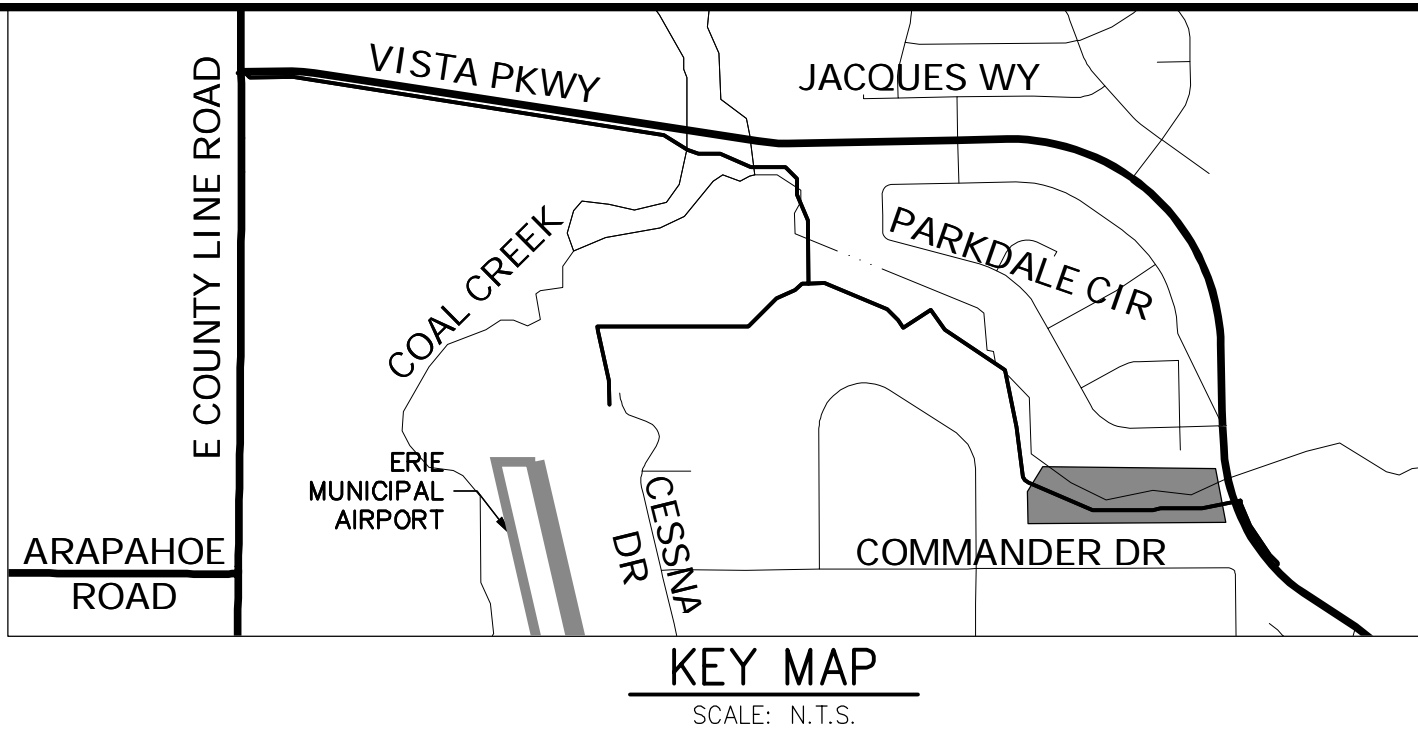
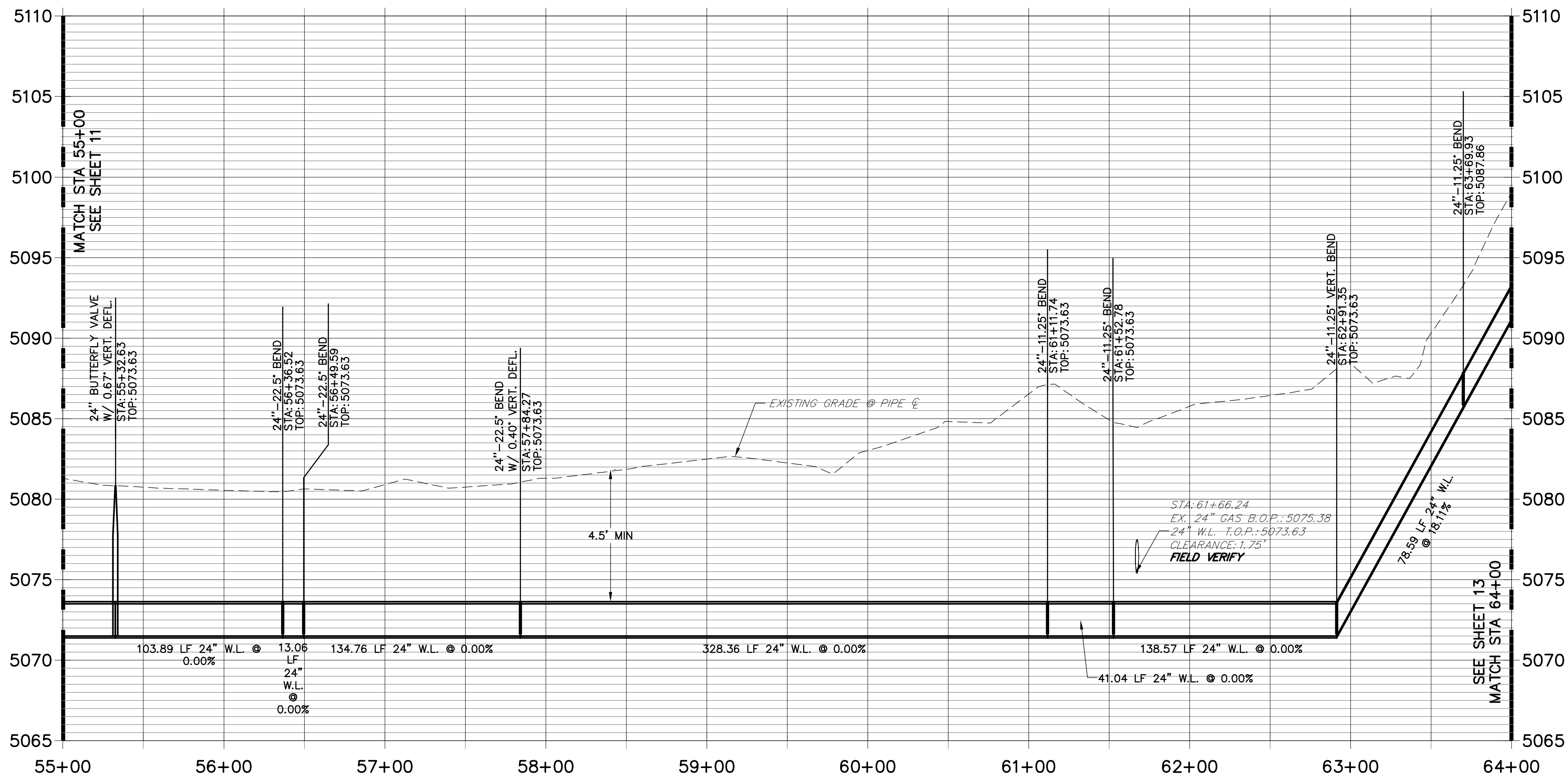
BY	DATE	REVISION	No.

ZONE 3 WATERLINE EXTENSION	WP01 PLAN AND PROFILE
SHEET 11 OF 19	JOB NO. 15708.05



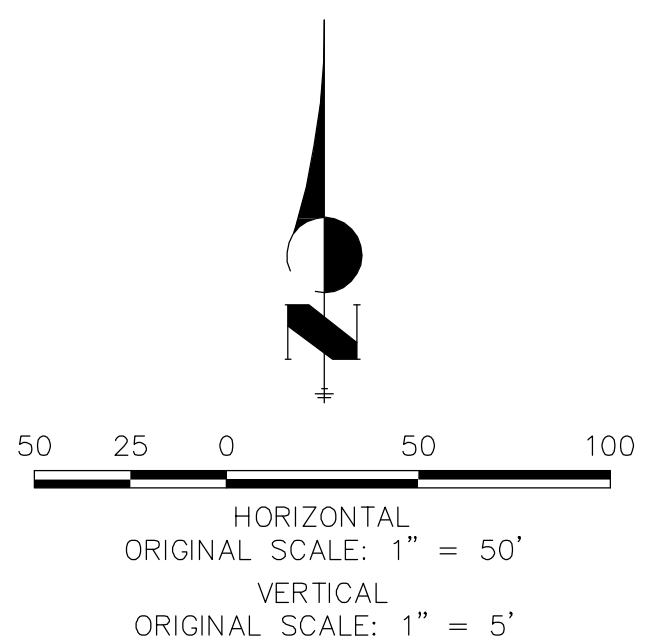


WP01 PROFILE  
STA 55+00.00 TO 64+00.00



SHEET 12 NOTES

1. WATERLINE INSTALLATION WORK WILL BE CONSTRAINED AGAINST EXISTING WETLAND VEGETATION. CONTRACTOR SHALL PROTECT WETLAND VEGETATION AND NOTIFY ENGINEER IN CASE REMOVAL OF VEGETATION IS NEEDED.
2. WATERLINE INSTALLATION WORK WILL BE CONSTRAINED AGAINST EXISTING WINGWALL. CONTRACTOR SHALL PROTECT WINGWALL. TEMPORARY SHORING IS ANTICIPATED AND WILL BE INCIDENTAL TO THE PROJECT.



ENGINEER'S STATEMENT


PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

BID SET

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PREPARED FOR  
TOWN OF ERIE  
DEPT. OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
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No.	REVISION	BY	DATE	H-SCALE		V-SCALE		DATE	DESIGNED BY	DRAWN BY	CHECKED BY
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								4/18/17	AGR	CWC	

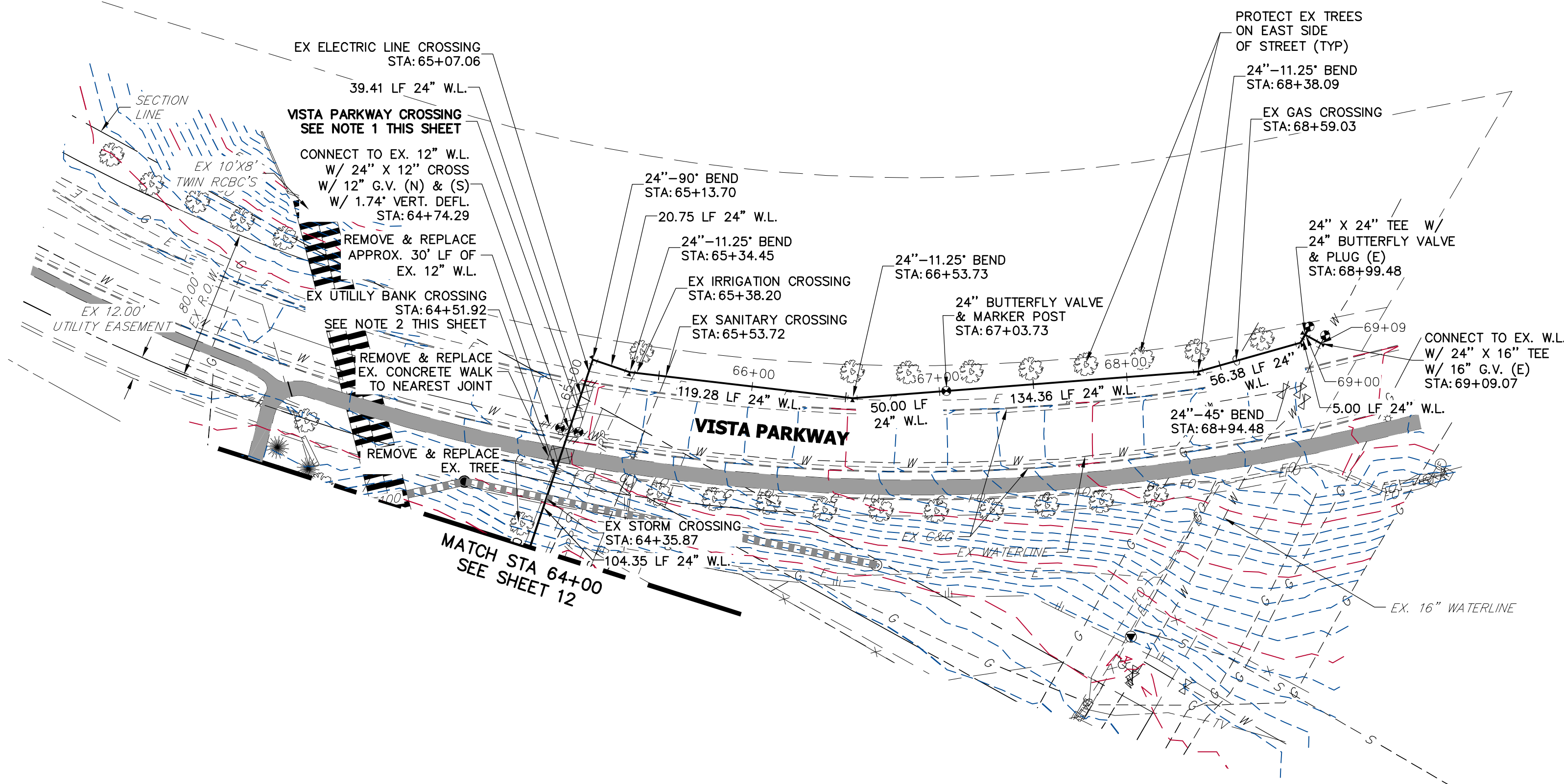
ZONE 3 WATERLINE EXTENSION

WP01 PLAN AND PROFILE

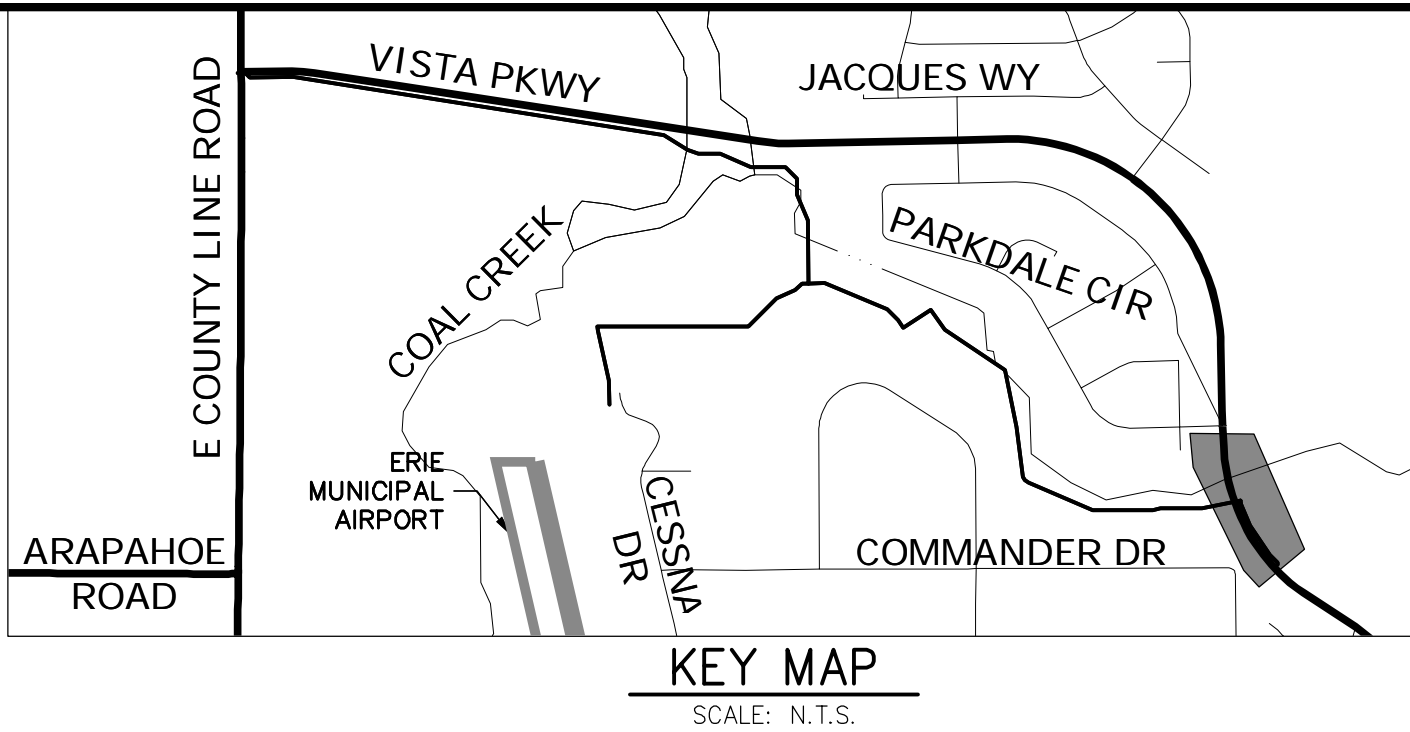
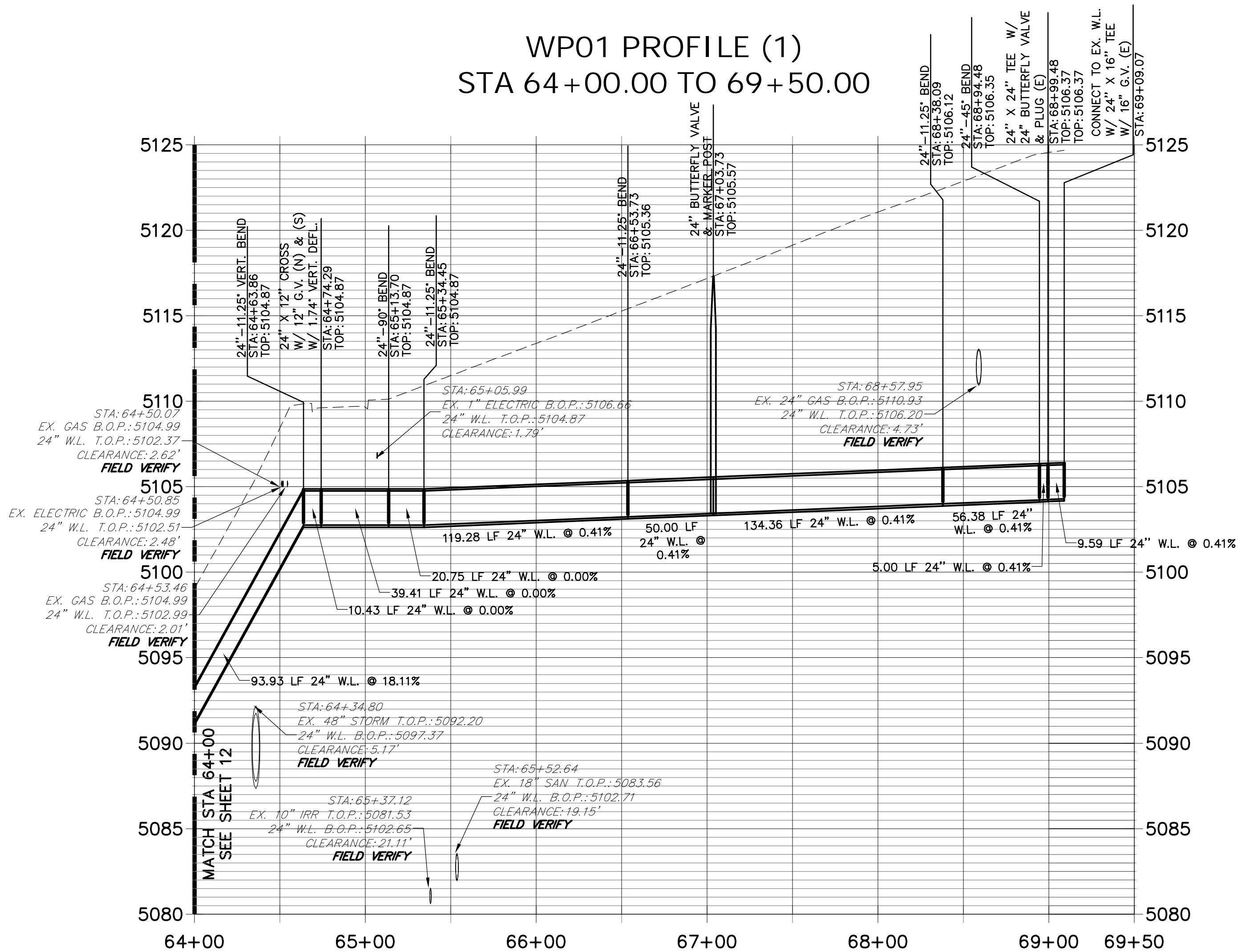
SHEET 12 OF 19

JOB NO. 15708.05



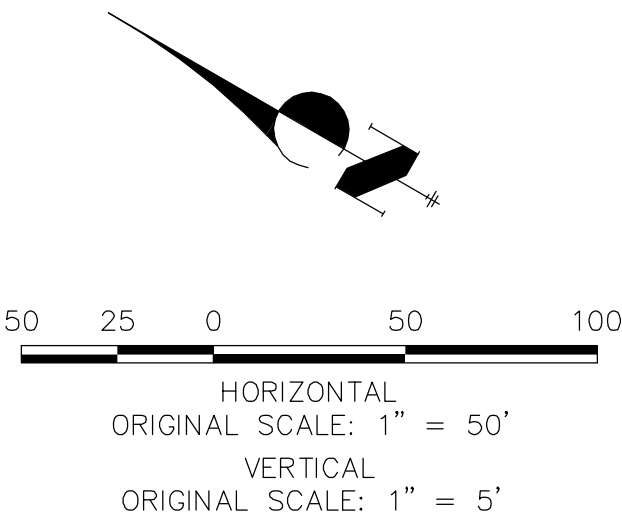


WP01 PROFILE (1)  
STA 64+00.00 TO 69+50.00



SHEET 13 NOTES

- VISTA PARKWAY CROSSING: REMOVE AND REPLACE EX ASPHALT PER DETAIL ST10. REMOVE AND REPLACE EX C&G AS NEEDED. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO TOWN OF ERIE ASSUMING A TWO-PHASE CROSSING AND KEEPING ONE LANE OPEN TO VEHICULAR TRAFFIC AT ALL TIMES.
- PROPOSED WATERLINE TO CROSS BANK OF UTILITIES INCLUDING GAS, ELECTRIC AND FIBER OPTIC LINES. CONTRACTOR TO FIELD VERIFY ALL UTILITIES.



ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

BID SET

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645 HOLBROOK STREET  
ERIE, CO 80516  
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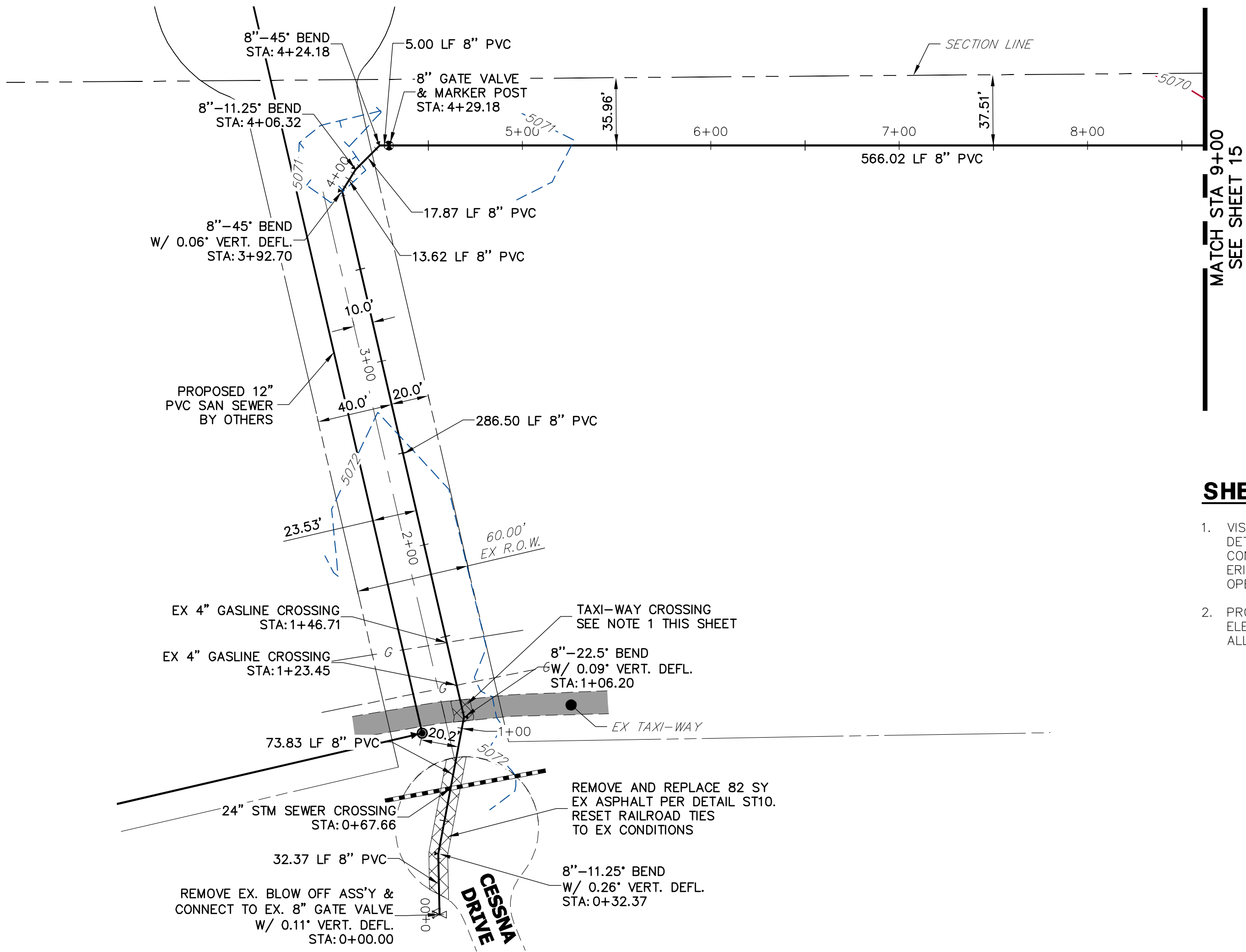
No.	REVISION	BY	DATE

H-SCALE	1"=50'
V-SCALE	1"=5'
DATE	4/18/17
DESIGNED BY	AGR
DRAWN BY	CWC
CHECKED BY	

ZONE 3 WATERLINE EXTENSION

WP01 PLAN AND PROFILE

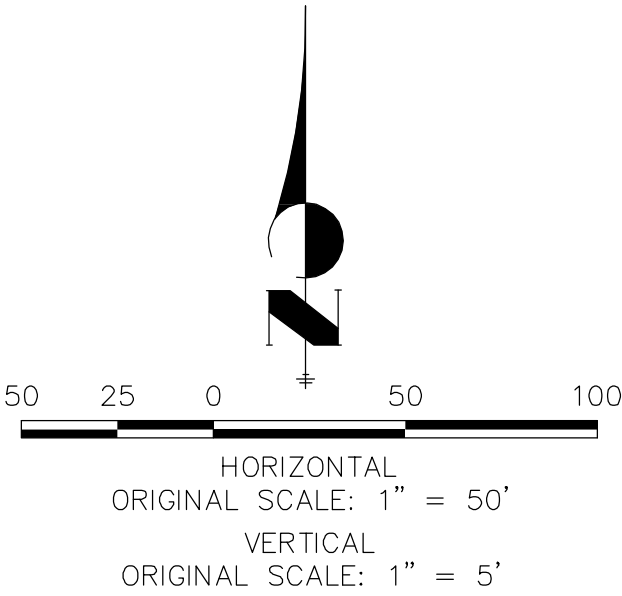
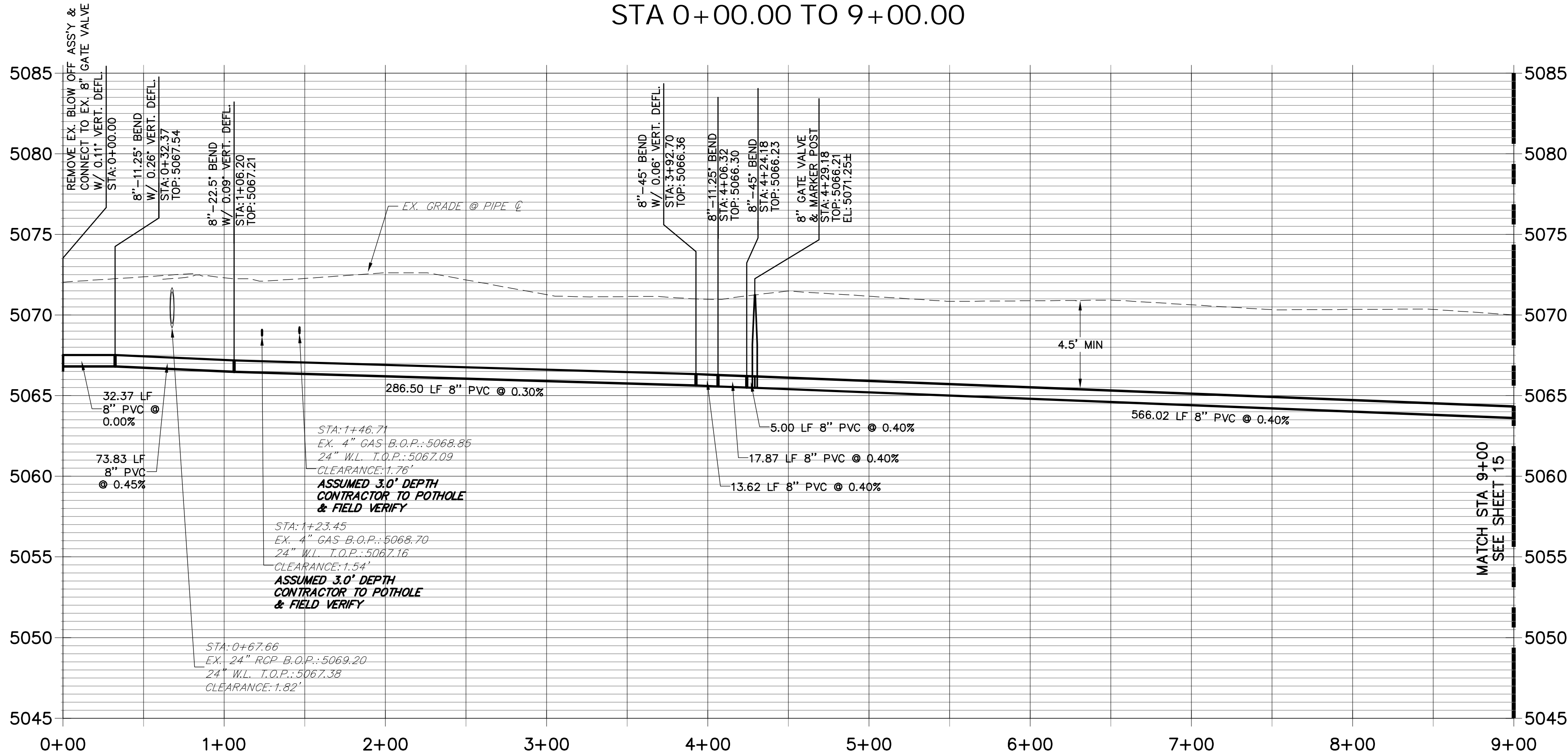




SHEET 13 NOTES

- VISTA PARKWAY CROSSING: REMOVE AND REPLACE EX ASPHALT PER DETAIL ST10. REMOVE AND REPLACE EX C&G AS NEEDED. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO TOWN OF ERIE ASSUMING A TWO-PHASE CROSSING AND KEEPING ONE LANE OPEN TO VEHICULAR TRAFFIC AT ALL TIMES.
- PROPOSED WATERLINE TO CROSS BANK OF UTILITIES INCLUDING GAS, ELECTRIC AND FIBER OPTIC LINES. CONTRACTOR TO FIELD VERIFY ALL UTILITIES.

WP02 PROFILE  
STA 0+00.00 TO 9+00.00

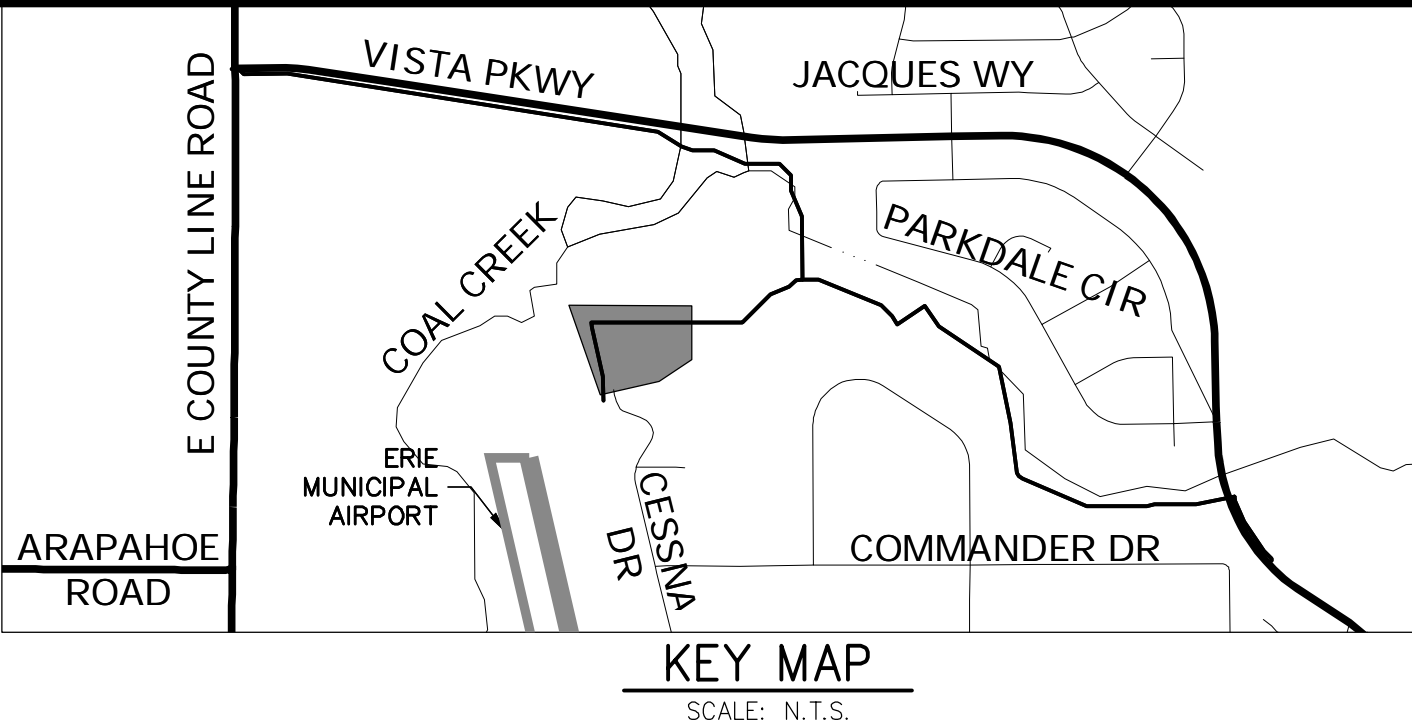


ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

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PREPARED FOR  
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645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

TOWN OF ERIE  
1877

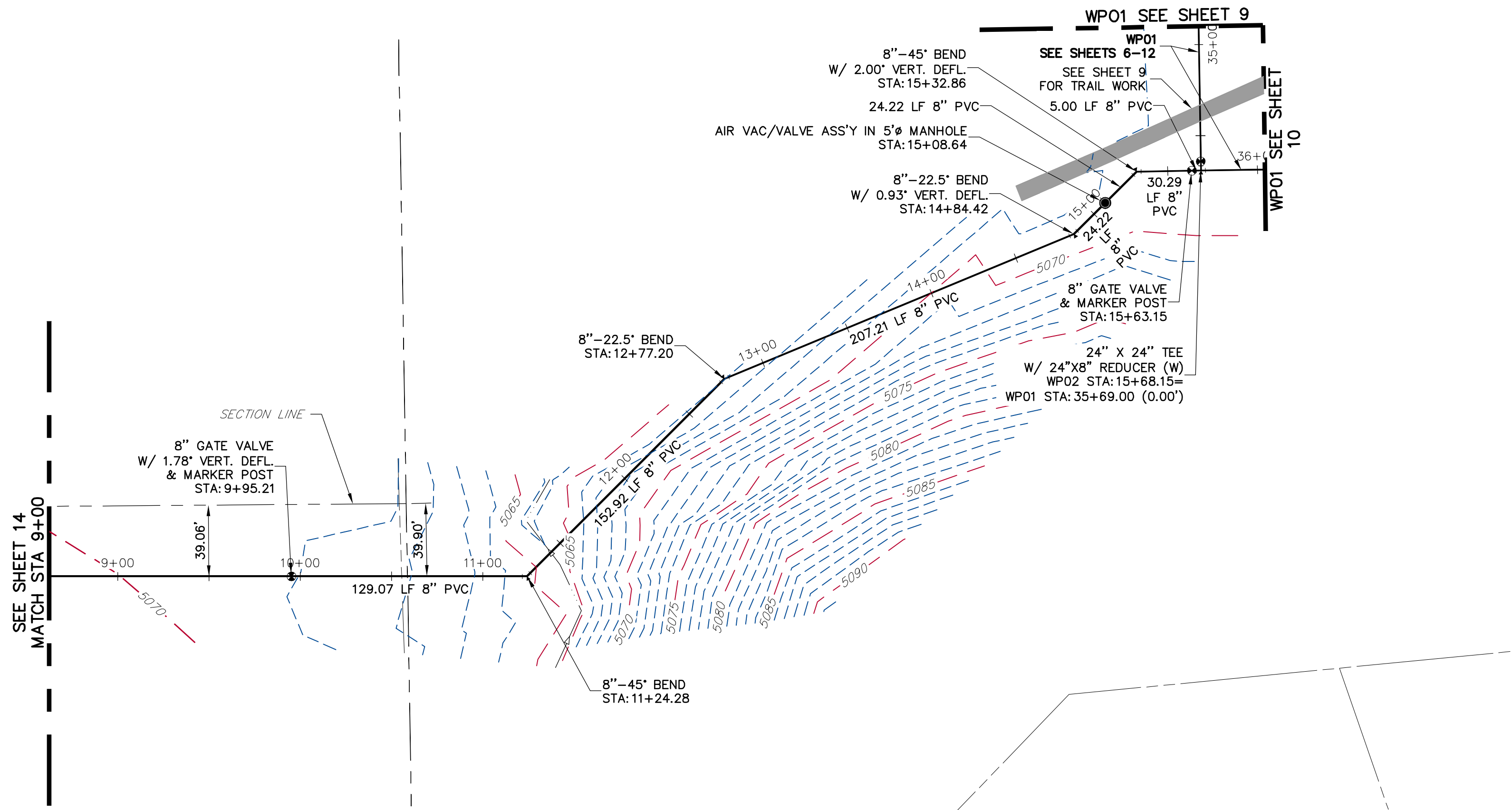
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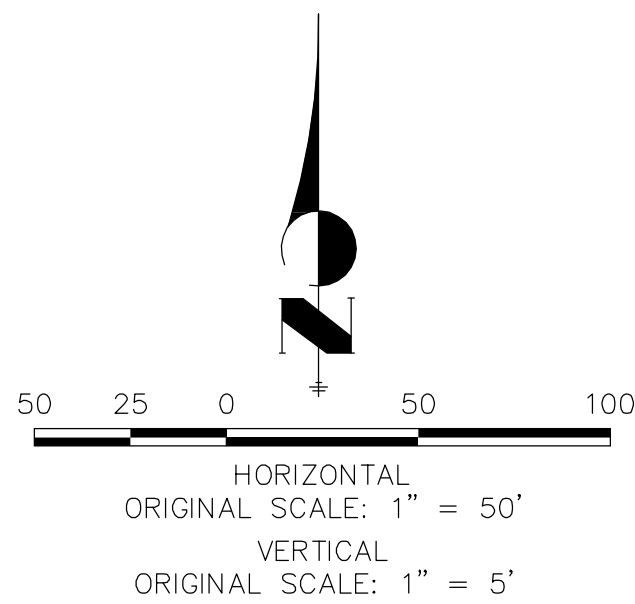
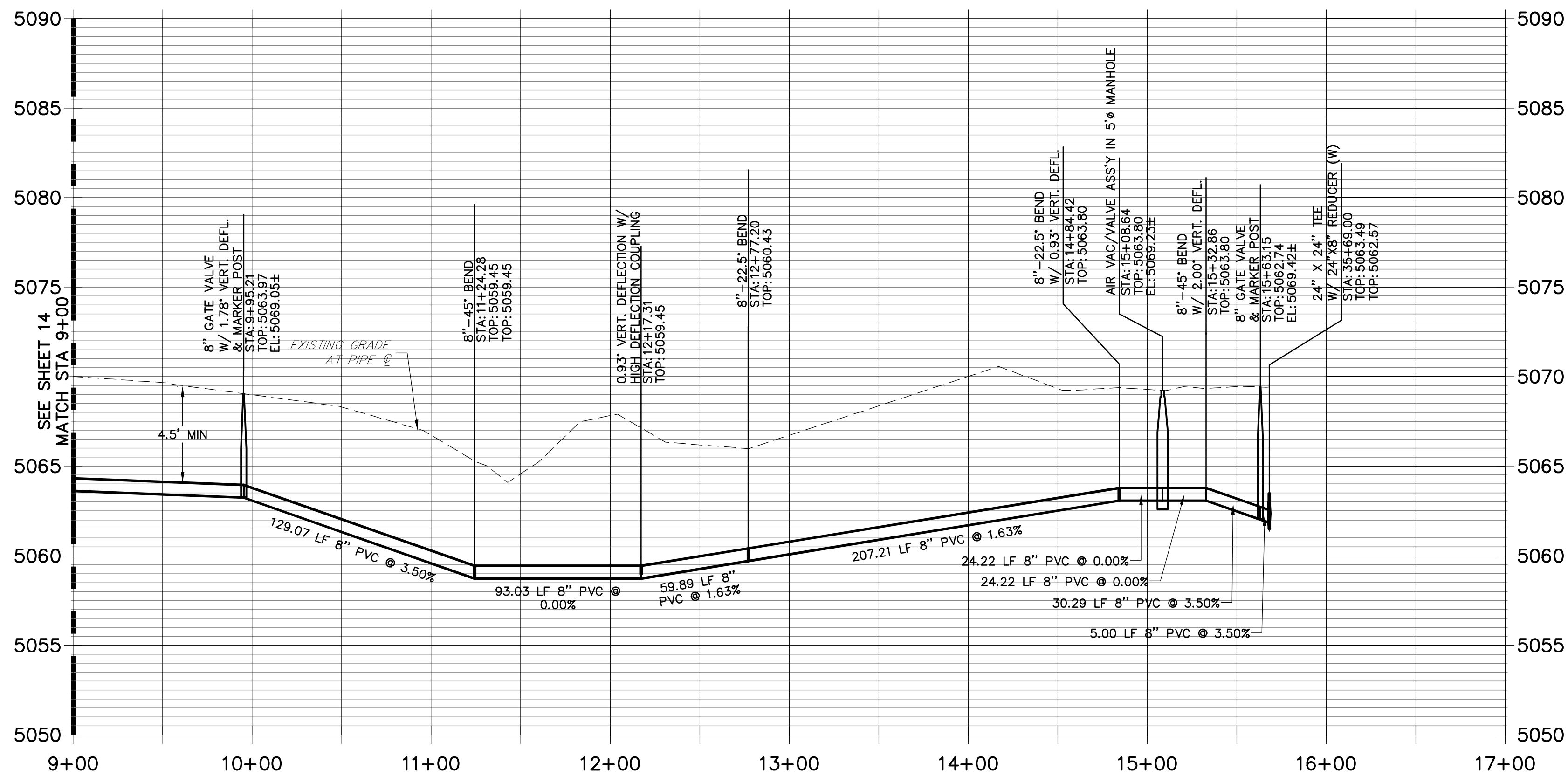
No.	REVISION	BY	DATE

H-SCALE	1"=50'
V-SCALE	1"=5'
DATE	4/18/17
DESIGNED BY	AGR
DRAWN BY	REB
CHECKED BY	

ZONE 3 WATERLINE EXTENSION	WP02 PLAN & PROFILE
SHEET 14 OF 19	JOB NO. 15708.05



WP02 PROFILE  
STA 9+00.00 TO 17+00.00

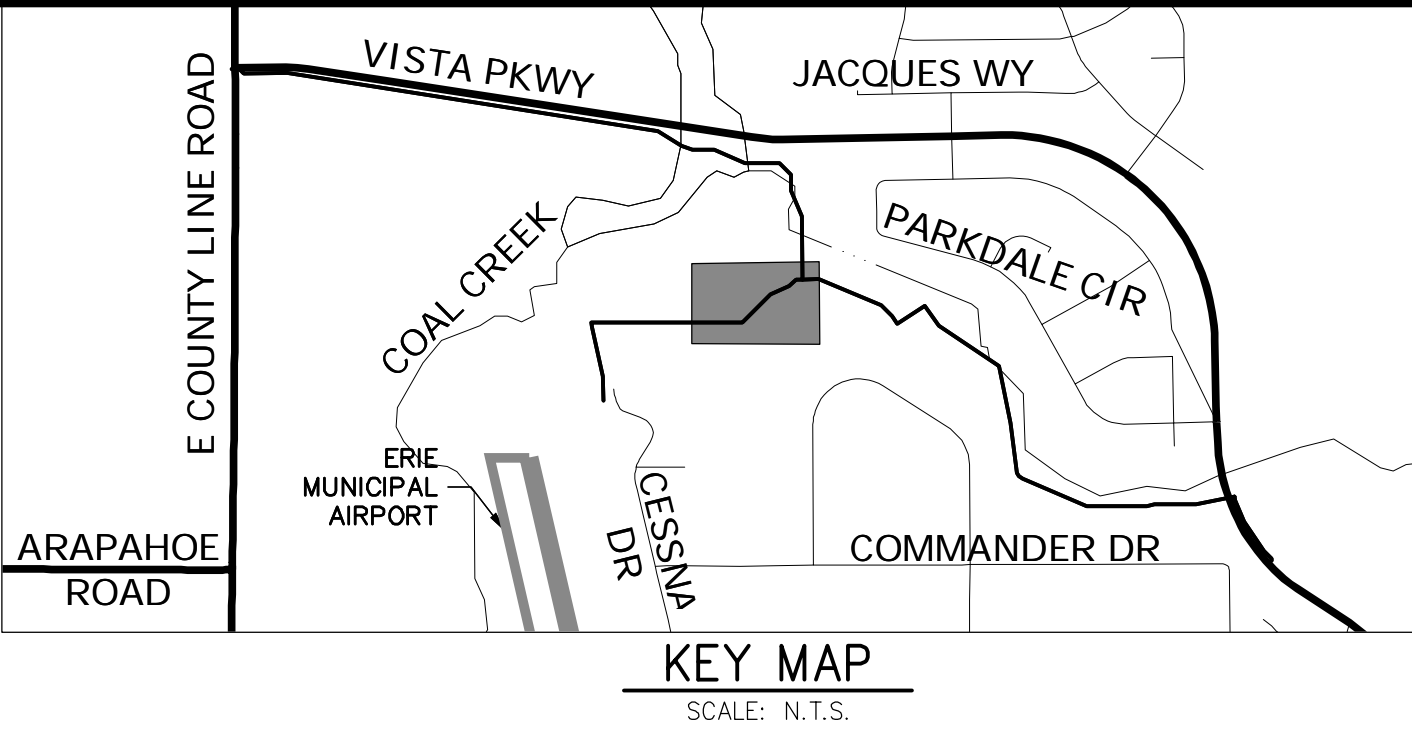


ENGINEER'S STATEMENT

PREPARED UNDER MY SUPERVISION

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING

BID SET



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DEPT. OF PUBLIC WORKS  
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ERIE, CO 80516  
ATTN: WENDI PALMER

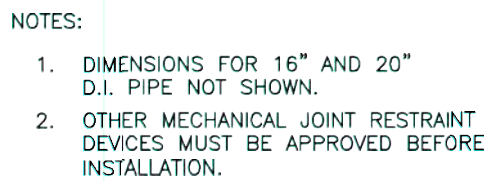
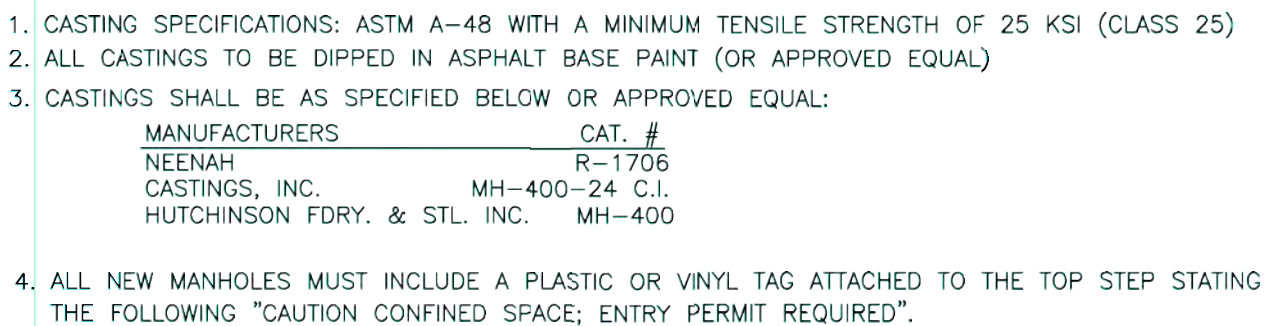
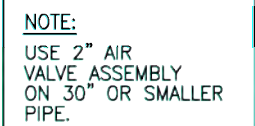
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No.	REVISION	BY	DATE

ZONE 3 WATERLINE EXTENSION	DESIGNED BY AGR	DRAWN BY REB	CHECKED BY
WP02 PLAN & PROFILE			
SHEET 15 OF 19			
JOB NO. 15708.05			






	NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
P V C	4"	2	2					P V C
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
D I	4"	4	2					D I
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	

NOTES:

1. DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN.
2. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.



TOWN OF ERIE  
DEPT OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

PREPARED FOR

**J·R ENGINEERING**  
A Westrian Company

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Fort Collins 970-491-9888 • [www.jrengineering.com](http://www.jrengineering.com)

DRAWING TITLE: VALVE OPERATION  
DRAWING NUMBER: W1  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV DATE: 01/2009

DRAWING TITLE: AIR RELIEF VALVE  
DRAWING NUMBER: W2  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

DRAWING TITLE: 24" MANHOLE RING AND COVER  
DRAWING NUMBER: W4  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2015

DRAWING TITLE: MECHANICAL JOINT  
RESTRAINT DETAIL

DRAWING NUMBER: W17

DRAWN BY: D. JENKINS    APPROVED BY: G. BEHLEN    REV. DATE: 01/2009



1. SEE THRUST BLOCKING CHART FOR MINIMUM BEARING SURFACE AREAS
2. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER  
 4" 6"-8" AND 12" WATER HAMMER=110 P.S.I.  
 16", 20" AND 24" WATER HAMMER =70 P.S.I.
3. BASED ON 3,000 pfs SOIL BEARING CAPACITY
4. THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED EARTH. FORMS SHALL BE USED AS REQUIRED TO OBTAIN ADEQUATE BEARING AND TO CONFIN THE CONCRETE. THRUST BLOCKING SHALL BEAR ON THE FITTING OR END CAP JOINT AND SHOULD NOT BE ALLOWED TO SPILL OVER THE JOINT OR AGAINST THE PIPE

TABLE OF BEARING AREAS IN SQ. FT. FOR CONCRETE THRUST BLOCKING  
FOR 100 P.S.I. INTERNAL STATIC PRESSURE AND 1,000 LBS. PER SQUARE  
FOOT SOIL BEARING CAPACITY.

SIZE	BENDS				TEES *	GATE VALVES	DEAD ENDS	CROSS W/ 1 BRANCH PLUGGED	CROSS W/ 2 BRANCHES PLUGGED
	90°	45°	22-1/2°	11-1/4°					
3	1.0	0.6	0.3	1.0	0.7	0.5	0.7	0.7	0.7
4	1.8	1.0	0.5	1.0	1.3	0.5	1.3	1.3	1.3
6	4.0	2.2	1.1	1.0	2.8	0.7	2.8	2.8	2.8
8	7.1	3.8	2.0	1.0	5.0	2.4	5.0	5.0	5.0
10	11.1	6.0	3.0	1.5	7.8	4.5	7.8	7.8	7.8
12	16.0	8.6	4.4	2.2	11.3	7.3	11.3	11.3	11.3
14	21.7	11.8	6.0	3.0	15.4	11.0	15.4	15.4	15.4
15	25.0	13.5	7.0	3.5	17.6	SPECIAL DESIGN	17.6	17.6	17.6
16	28.4	15.3	8.0	4.0	20.0		20.0	20.0	20.0
18	36.0	19.4	10.0	5.0	25.4		25.4	25.4	25.4
20	44.2	24.0	12.2	6.1	31.4		31.4	31.4	31.4
21	49.0	26.5	13.5	6.8	34.6		34.6	34.6	34.6
22	54.0	29.0	14.8	7.4	38.0		38.0	38.0	38.0
24	64.0	34.5	17.7	8.8	45.0		45.0	45.0	45.0
30	100.0	54.0	27.6	13.8	71.0		71.0	71.0	71.0
36	144.0	78.0	40.0	20.0	102.0		102.0	102.0	102.0

\* SIZE IS BRANCH SIZE

AREAS GIVEN IN TABLE ARE BASED UPON AN INTERNAL STATIC PRESSURE OF 100 P.S.I. AND A SOIL BEARING CAPACITY OF 1,000 LBS. PER SQUARE FOOT. BEARING AREAS FOR ANY PRESSURE AND SOIL BEARING CAPACITY MAY BE OBTAINED BY MULTIPLYING THE TABULATED VALUES BY A CORRECTION FACTOR "F".

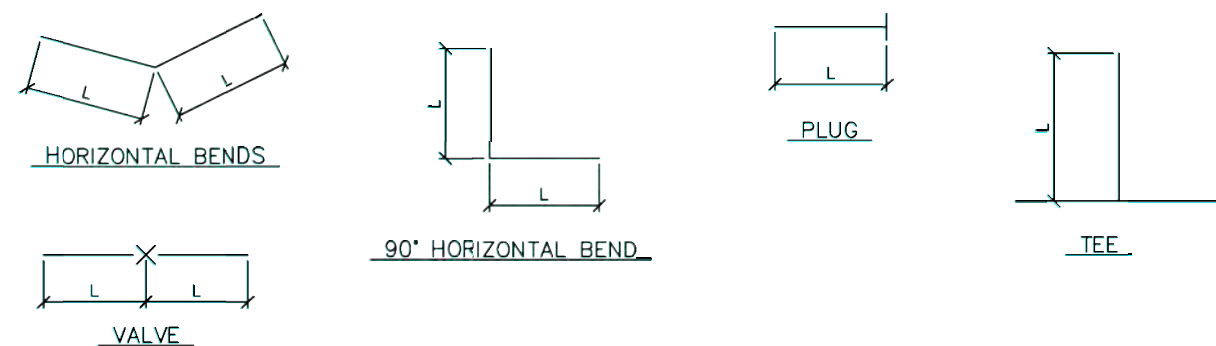
$$F = \frac{\text{ACTUAL SPECIFIED TEST PRESSURE IN HUNDRED OF LBS.}}{\text{ACTUAL SOIL BEARING CAPACITY IN THOUSANDS OF LBS.}}$$

EXAMPLE: TO FIND BEARING AREA FOR 8" - 90° BEND WITH A STATIC INTERNAL PRESSURE OF 150 P.S.I. AND WITH A SOIL BEARING CAPACITY OF 3,000 LBS. PER SQUARE FOOT.

$F = 1.5 \div 3 = 0.5$  TABULATED VALUE = 7.1 SQUARE FOOT.  
 $0.5 \times 7.1 = 3.56$  SAY 4 SQUARE FEET OF 2 FOOT LONG BY 2 FOOT HIGH.

ROD DIAMETER, GRADE &amp; LENGTH OF RESTRAINED PIPE

PIPE SIZE	4"			6"			8"			12"			16"			20"			24"		
FITTING	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
90° BEND, TEE, PLUG	3/4"	30"	MS	3/4"	45"	MS	3/4"	60"	MS	3/4"	86"	MS	1"	108"	HS	1 1/4"	132"	HS	-	155"	-
VALVE	-	-	-	-	-	-	-	-	-	-	-	-	1"	108"	HS	1 1/4"	132"	HS	-	155"	-
45° BEND	3/4"	9"	MS	3/4"	13"	MS	3/4"	18"	MS	3/4"	25"	MS	1"	32"	MS	3/4"	39"	HS	-	45"	-
22 1/2° BEND	3/4"	1"	MS	3/4"	4"	MS	3/4"	5"	MS	3/4"	7"	MS	3/4"	8"	MS	3/4"	10"	MS	-	12"	-
11 1/4° BEND	-	-	-	-	3/4"	1"	MS	3/4"	2"	MS	3/4"	2"	MS	3/4"	3"	MS	-	-	-	3"	-



NOTES:

1. LENGTH OF RESTRAINTED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS AND RODS NOT ALLOWED FOR 24" & LARGER PIPES.
3. D=DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. MIN 4.5" GROUND COVER REQUIRED.
5. BASED ON 150 PSI INTERNAL PRESSURE.
6. MS = MILD STEEL, ROD ASTM A 36.
7. HS = HIGH STRENGTH ROD ASTM A 193 GRADE 7.
8. NUTS SHALL BE ASTM A 307 OR A OR B HEXAGON HEAVY SERIES. HS NUTS SHALL CONFORM TO MS-22.
9. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINTED TOGETHER.
10. LENGTH OF RESTRAINTED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
11. TEES & CROSSES MUST BE RESTRAINTED IN ALL APPLICABLE DIRECTIONS.
12. 12" & SMALLER IN LINE VALVES AND TEES SHALL HAVE A MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE.
13. A SECOND VALVE WILL BE REG'D TO BE CLOSED WHEN EXCAVATING NEXT TO A EXIST VALVE.
14. WHEN REDUCERS ARE USED ON VALVE INSTALLATIONS THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.
15. ALL REDUCERS/INCREASERS SHALL HAVE MECHANICAL RESTRAINT DEVICES ON EACH SIDE OF FITTING.
16. PIPE JOINT RESTRAINT MAY BE ACCOMPLISHED USING HARNES RODS, MECHANICAL JOINT RESTRAINT OR RESTRAINTED JOINT PIPE AND FITTINGS.
17. ANALYSIS OF THE NECESSARY RESTRAINT LENGTH FOR PIPE LARGER THAN 24" SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPT FOR REVIEW AND APPROVAL ON A CASE BY CASE BASIS.

## ENGINEER'S STATEMENT

STANDARD DETAILS SHOWN WERE REVIEWED FOR  
APPLICATION ON THIS PROJECT.

BID SET

ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING, LLC

DRAWING TITLE: THRUST BLOCK  
DRAWING NUMBER: W14A  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV DATE 01/2015

DRAWING TITLE: THRUST BLOCKING CHART  
DRAWING NUMBER: W14B  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV DATE: 01/2015

DRAWING TITLE: RESTRAINED PIPE LENGTHS  
DRAWING NUMBER: W16  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

BY	DATE
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No.	REVISION
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N/A

H-SCALE

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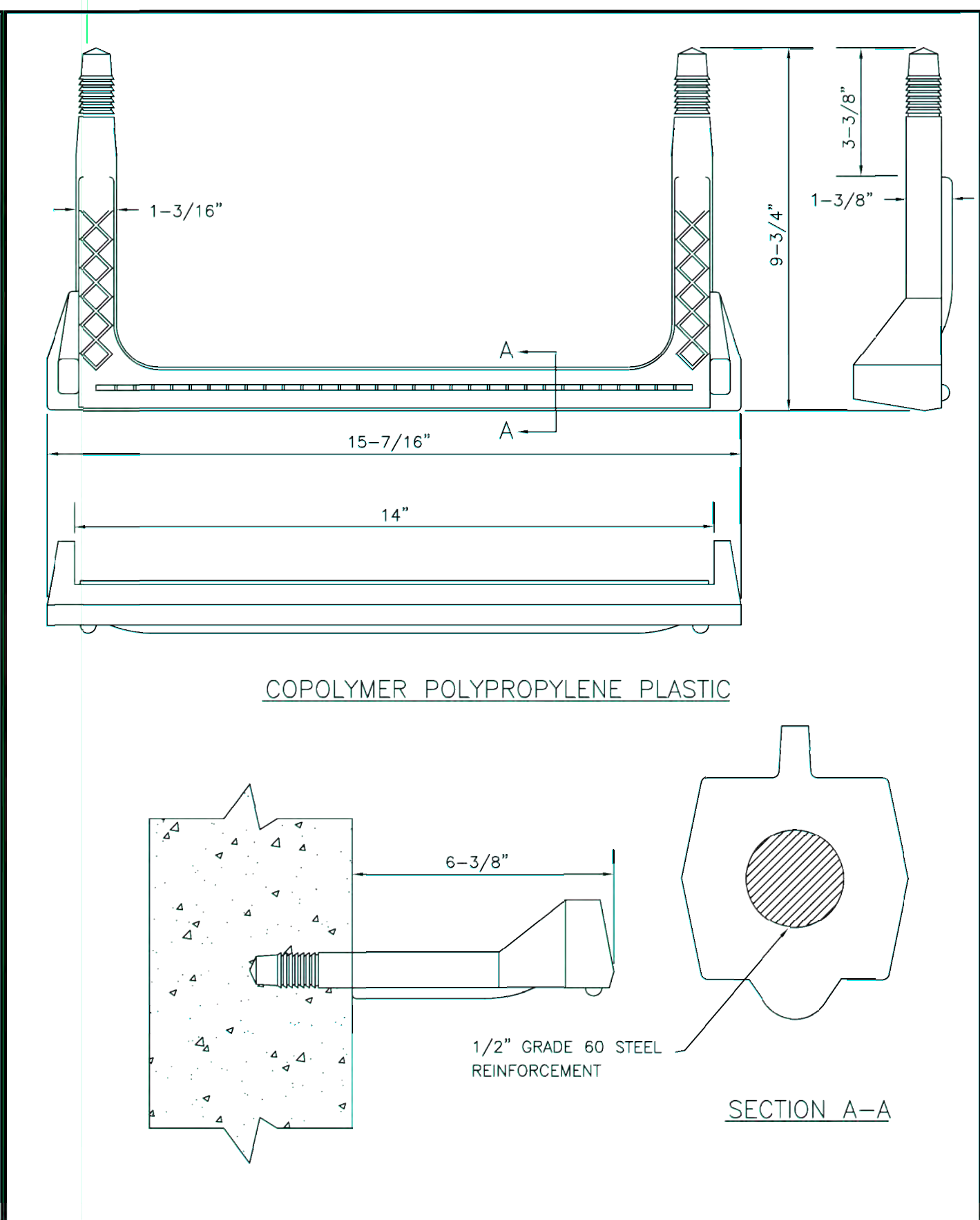
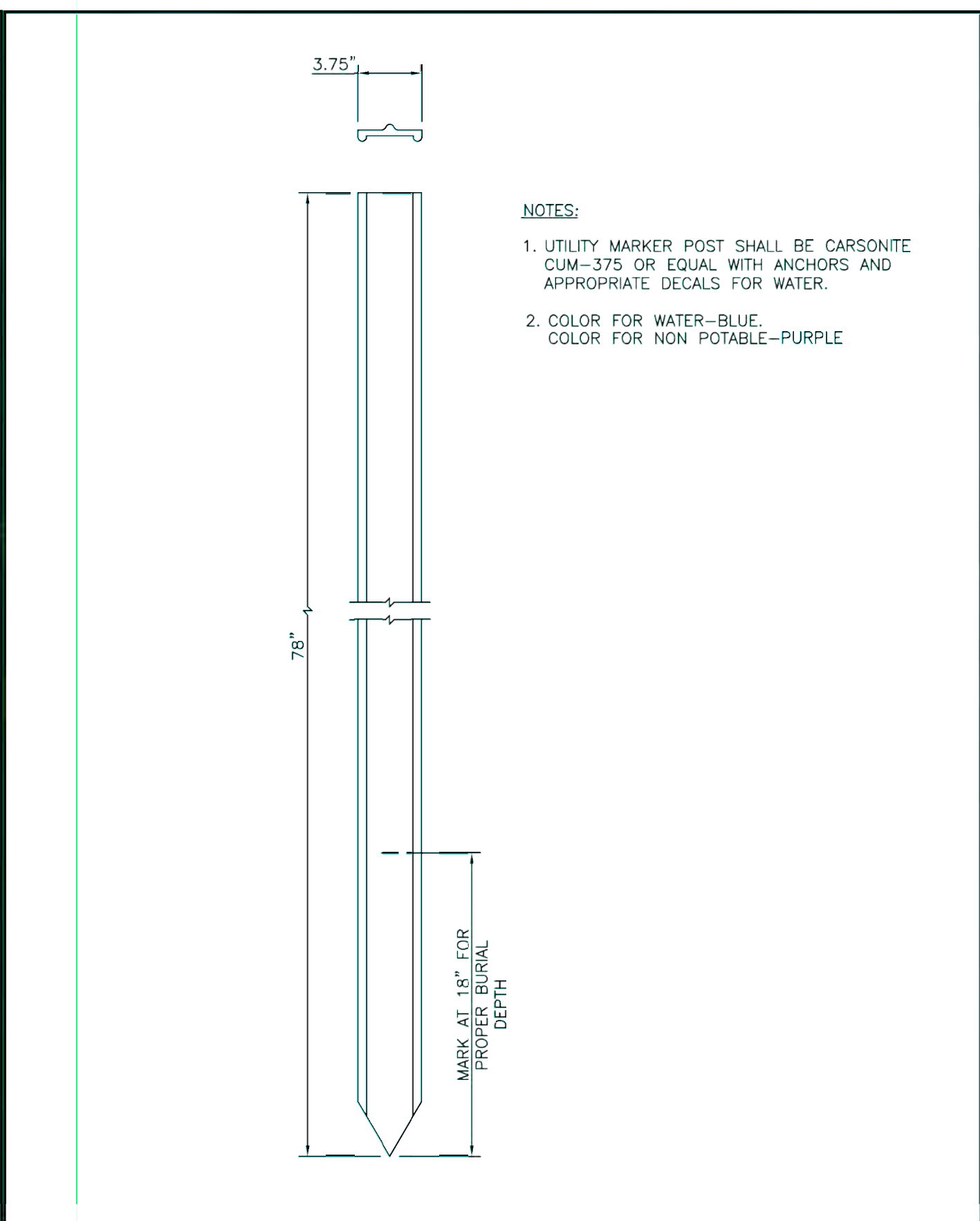
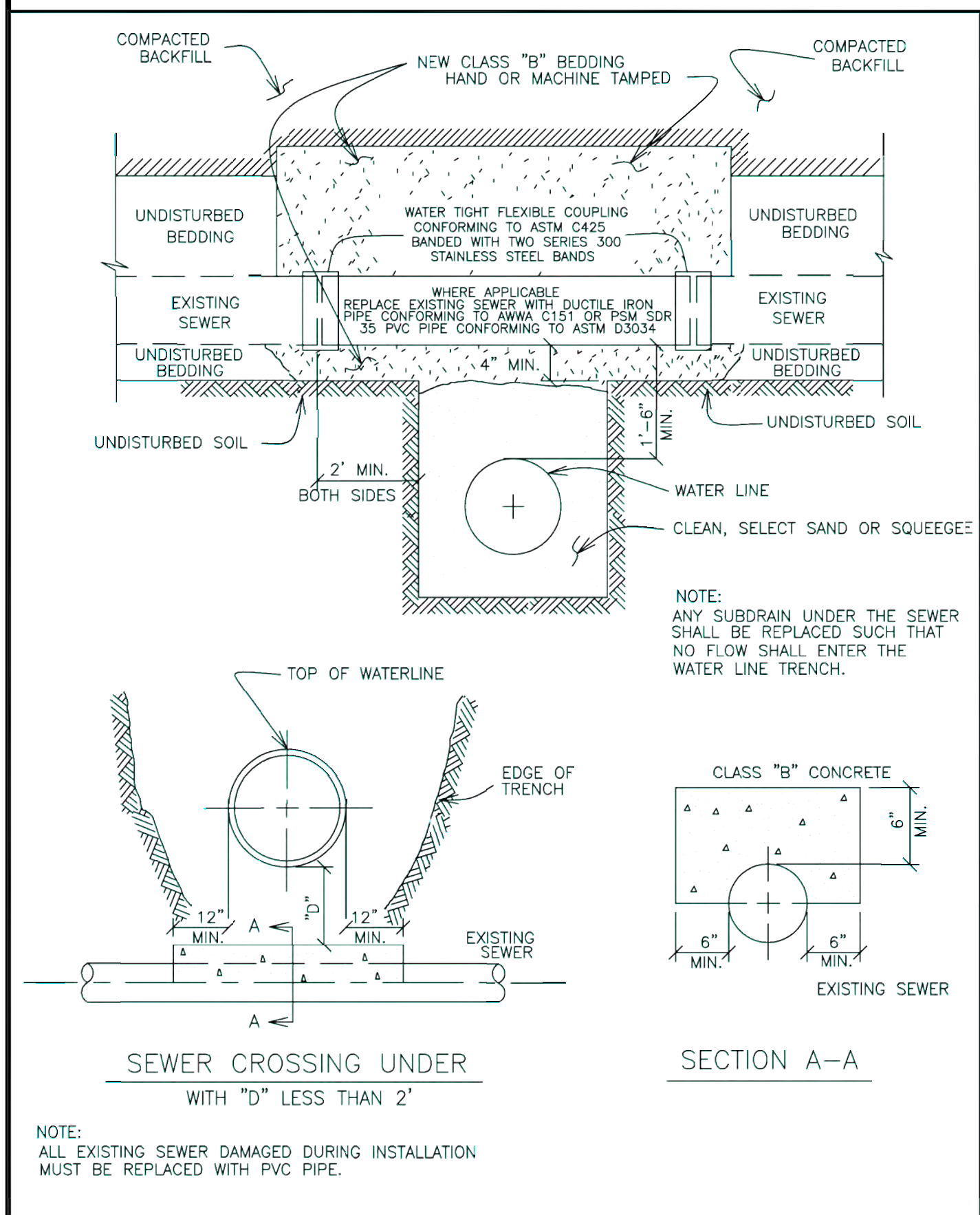
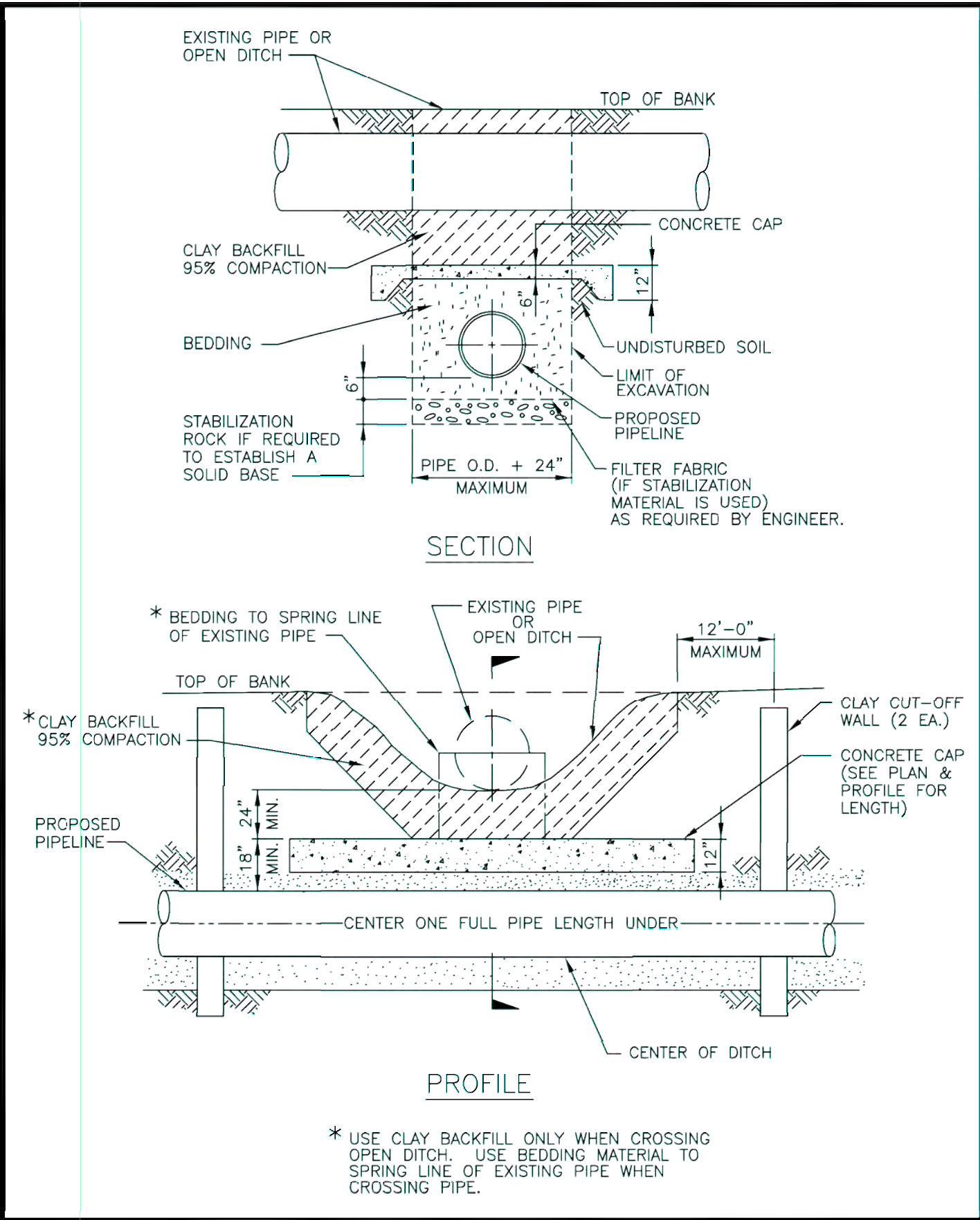
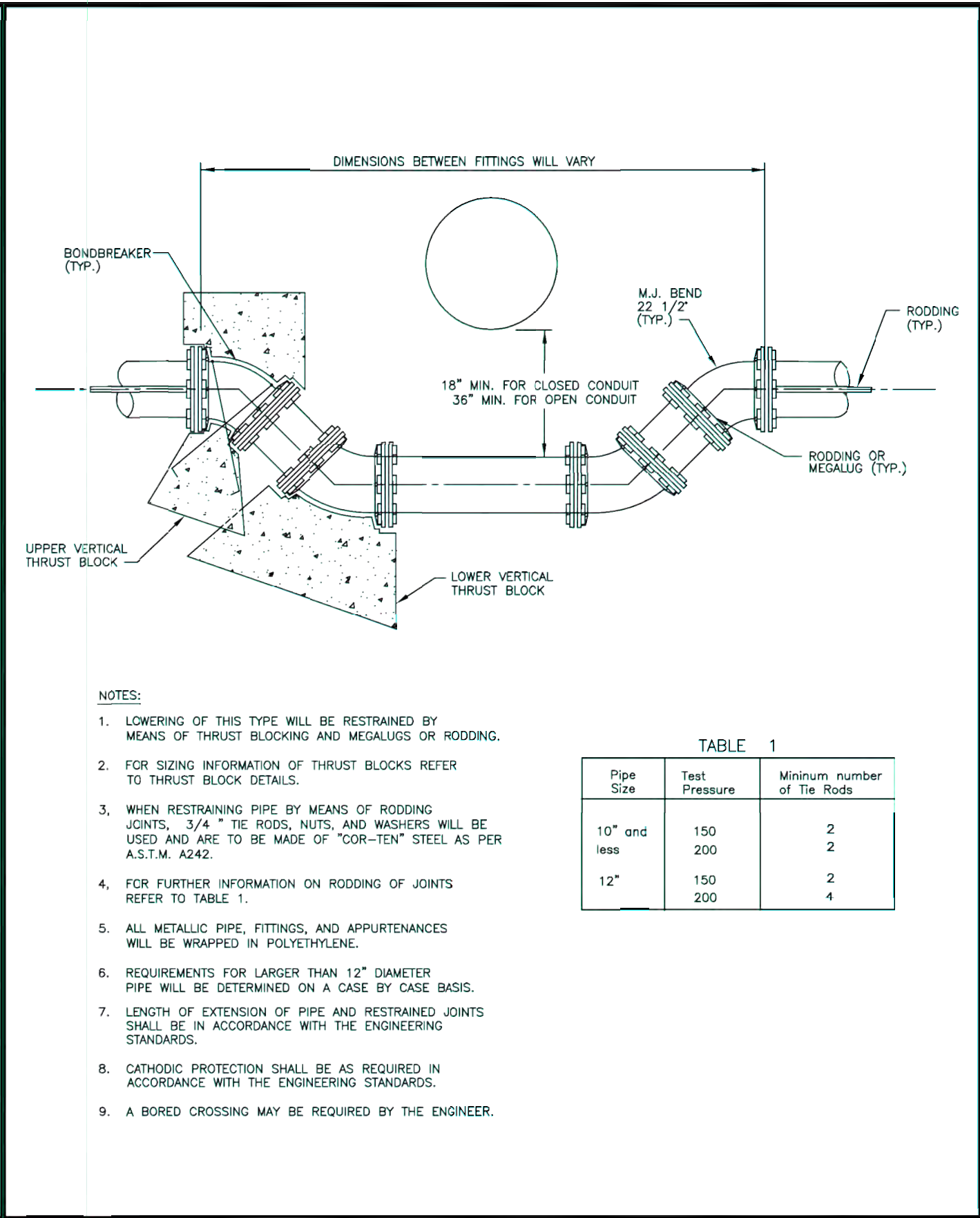
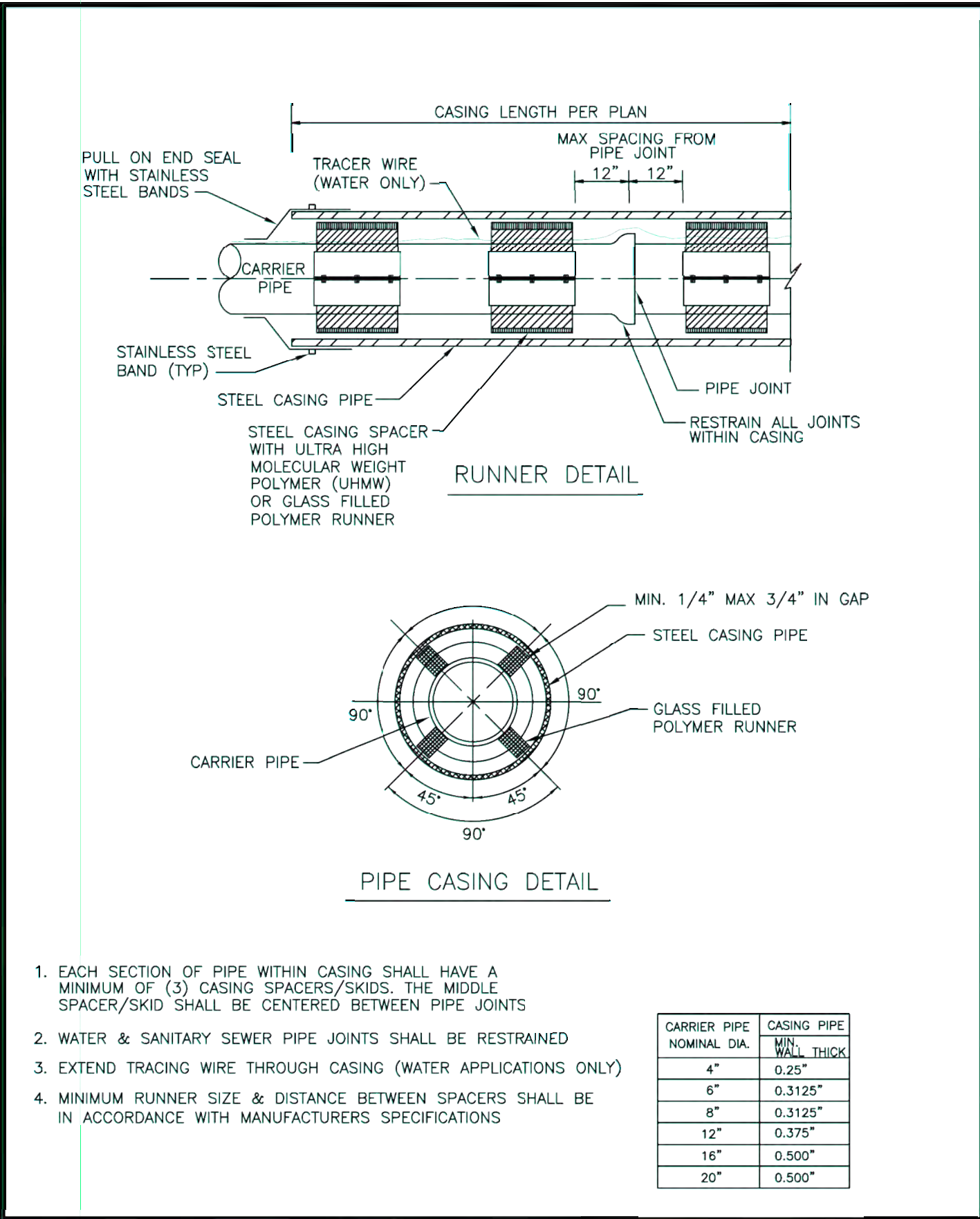
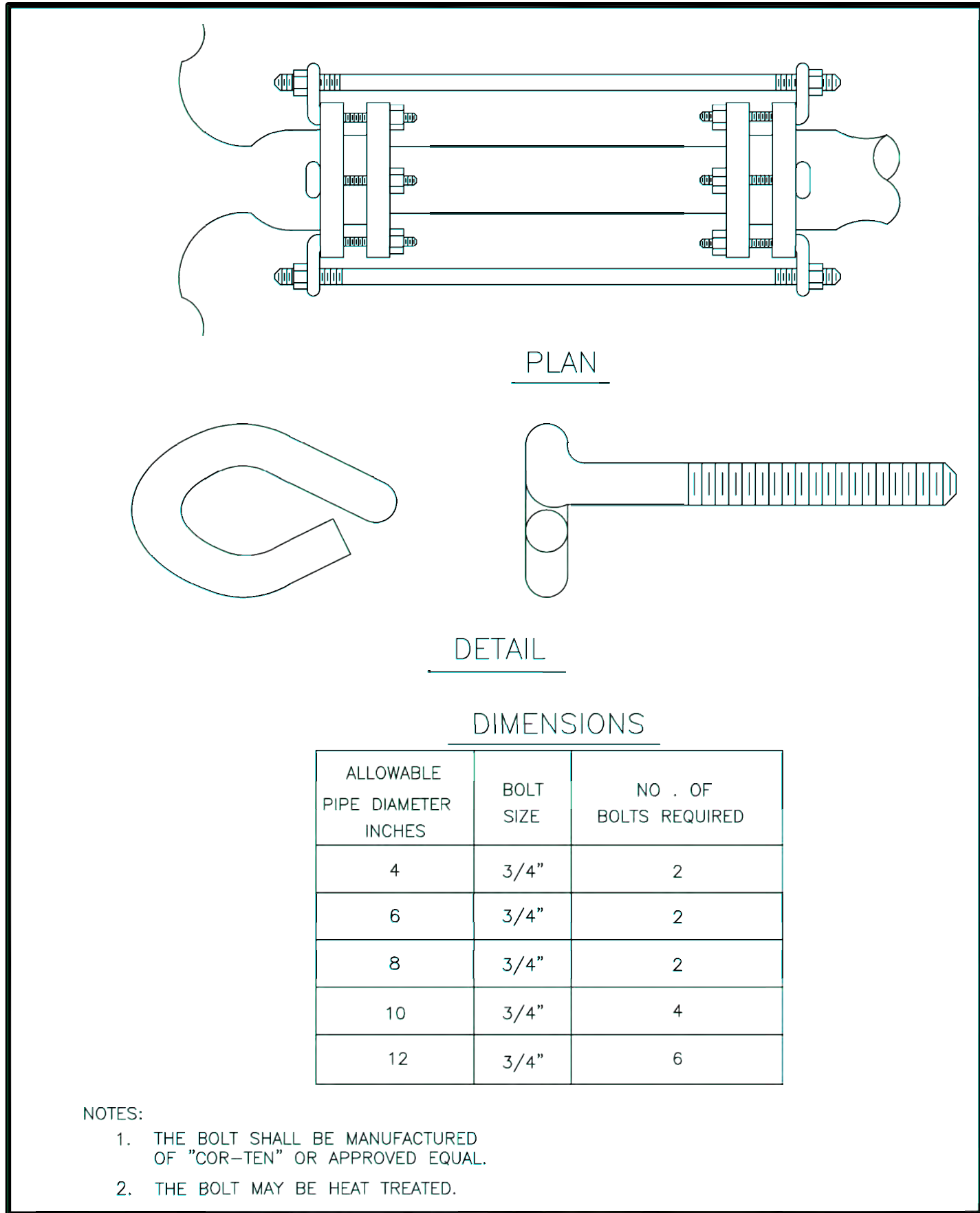
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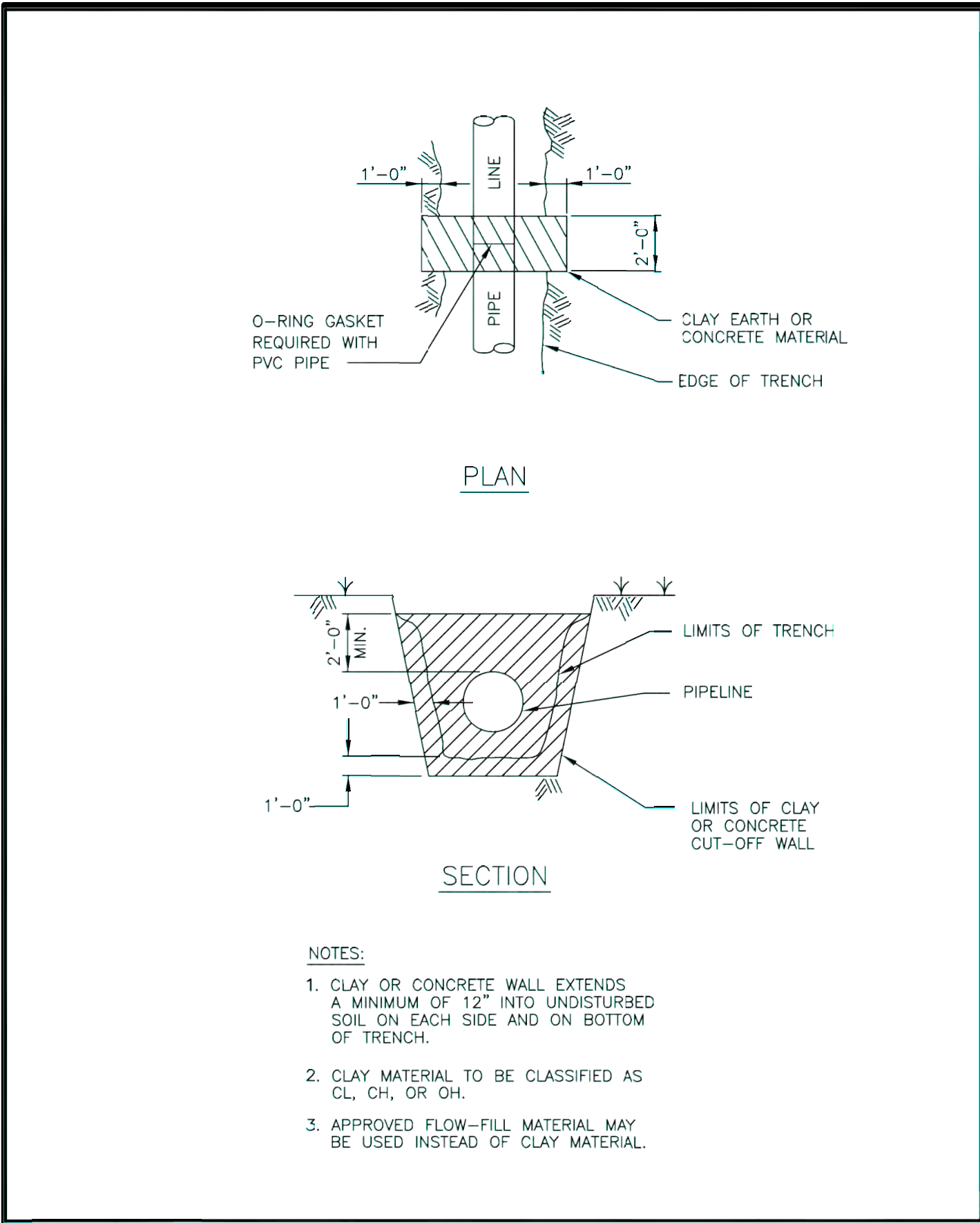
**ENGINEER'S STATEMENT**

STANDARD DETAILS SHOWN WERE REVIEWED FOR APPLICATION ON THIS PROJECT.

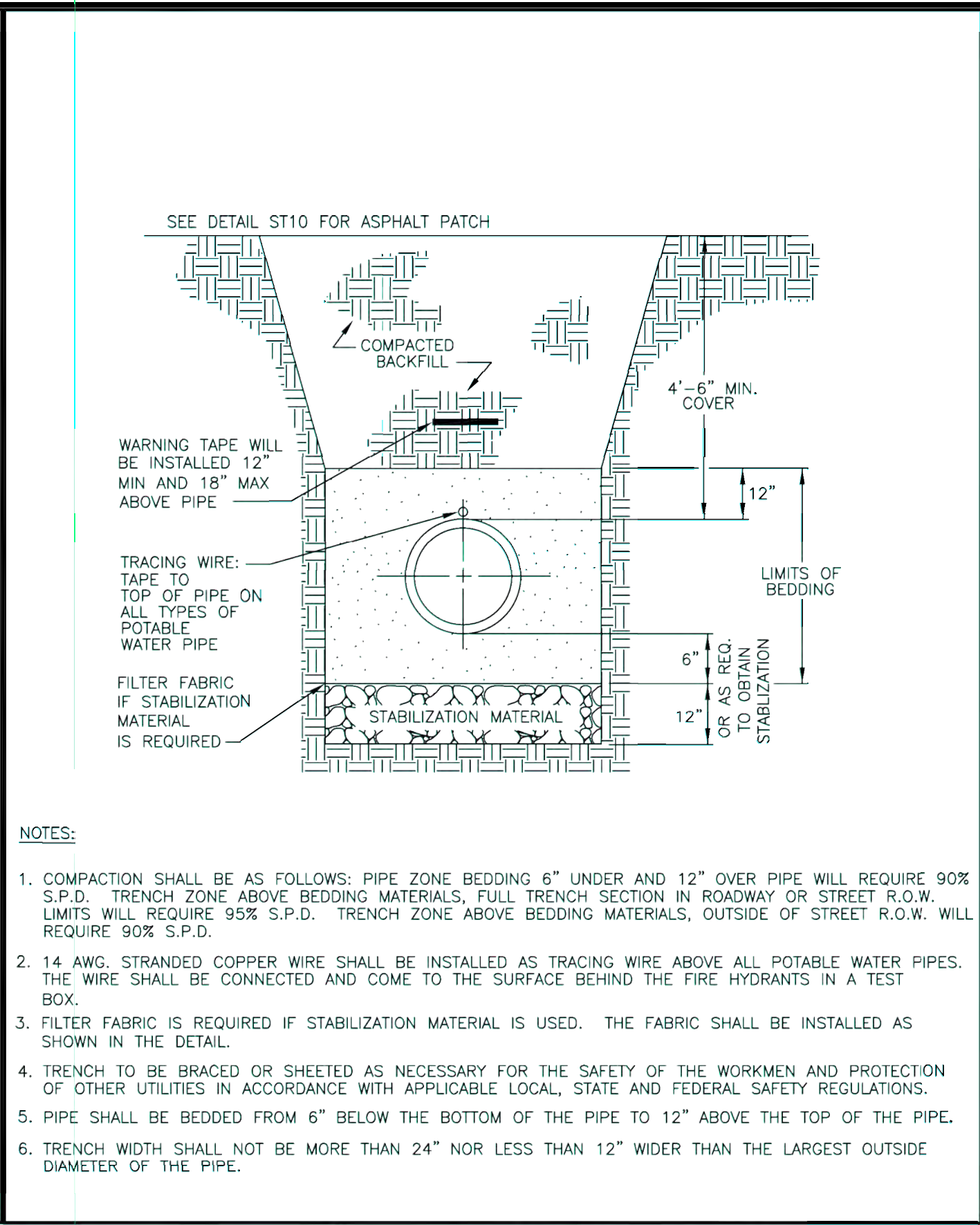


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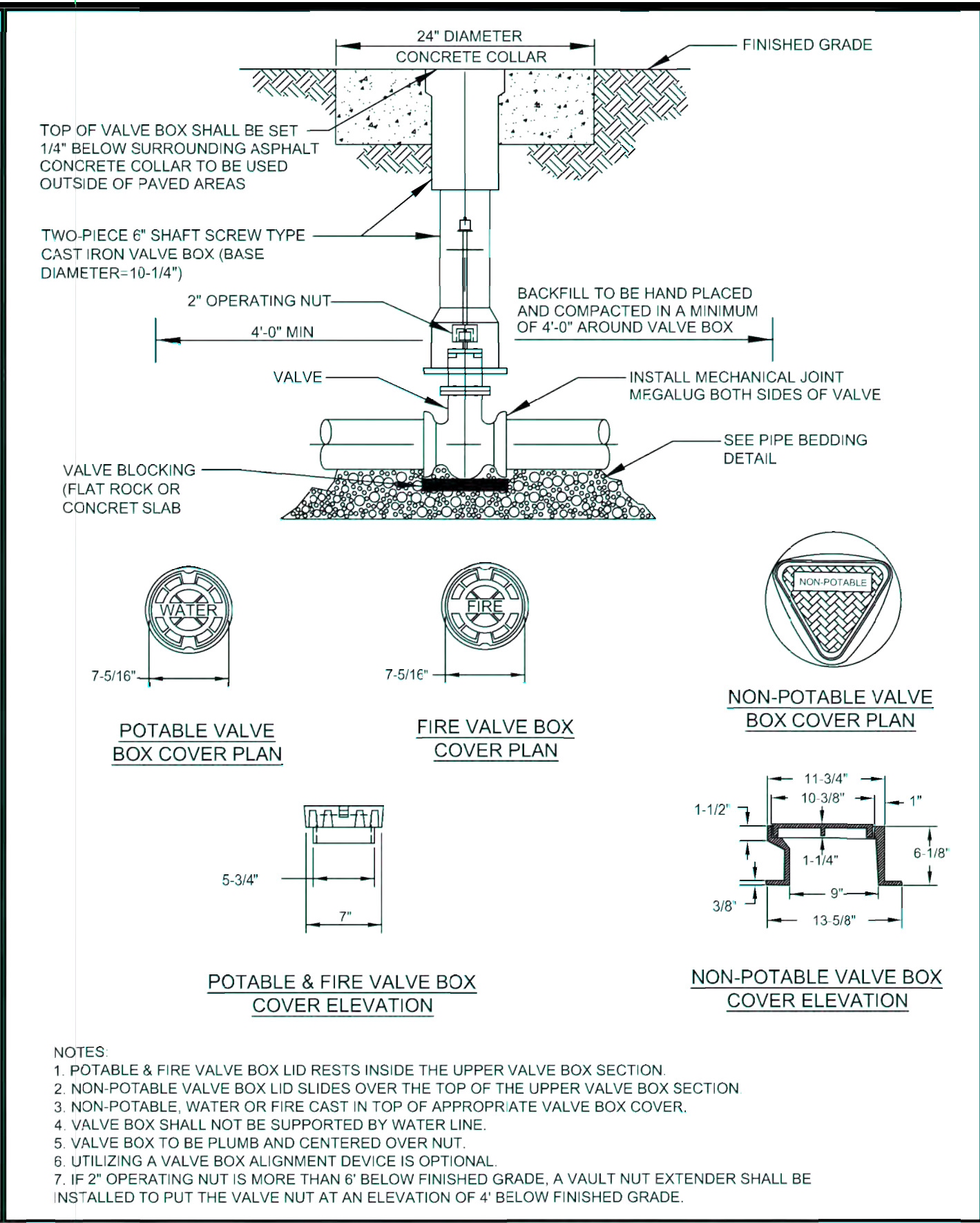




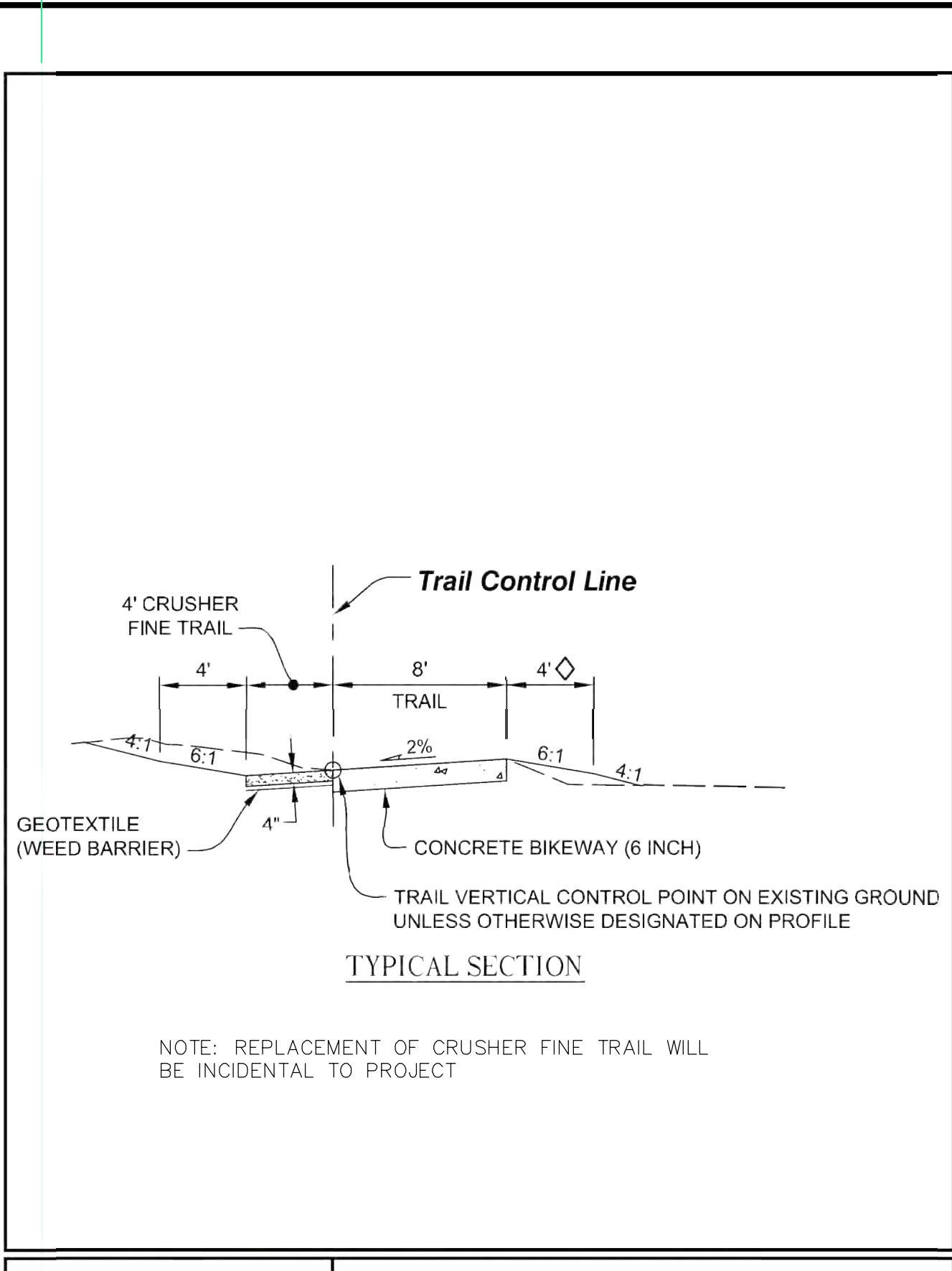
DRAWING TITLE: CLAY OR CONCRETE CUT-OFF WALL  
DRAWING NUMBER: W37  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



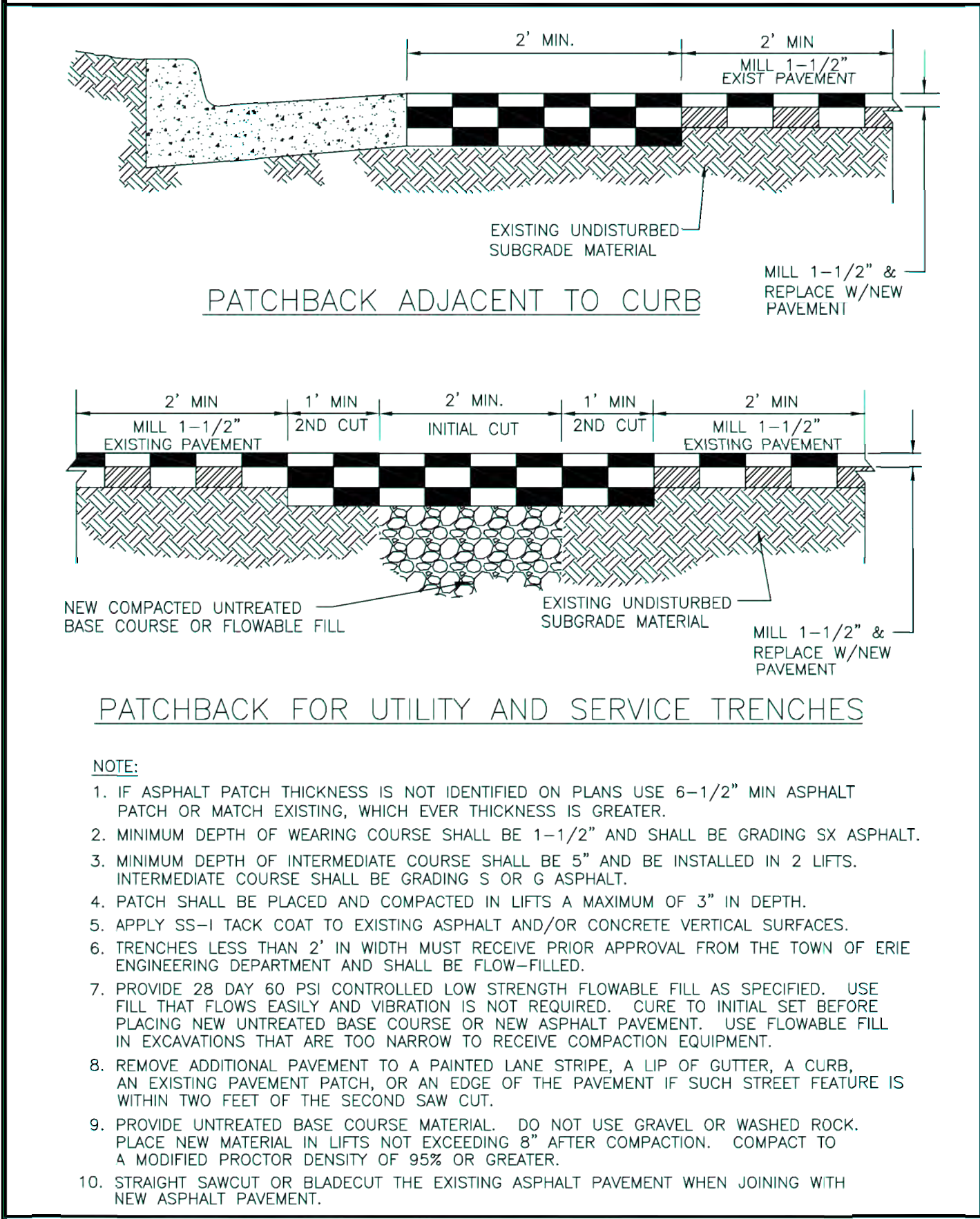
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DRAWING NUMBER: W35  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



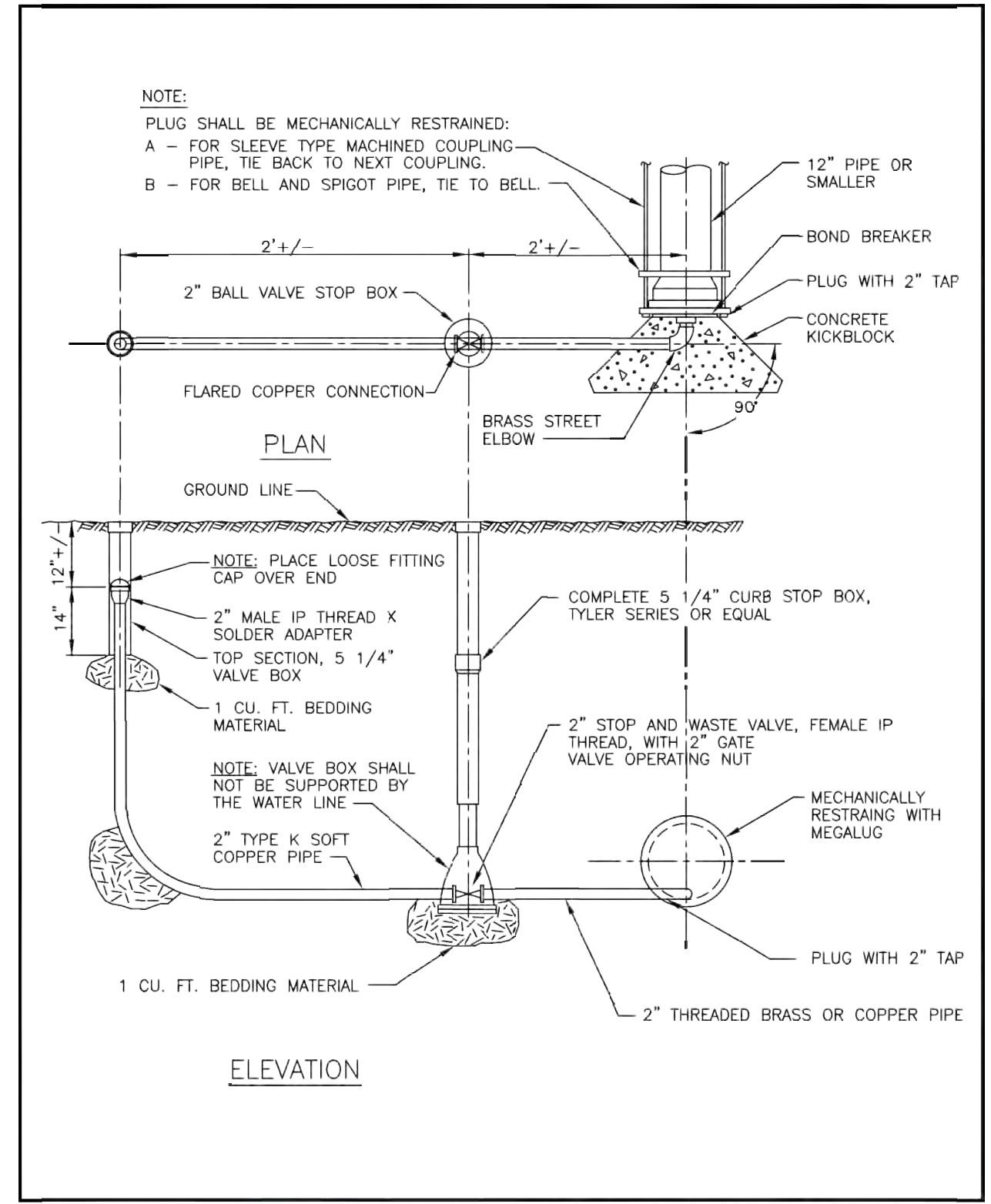
DRAWING TITLE: STANDARD VALVE AND BOX  
DRAWING NUMBER: W38  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 1/2015



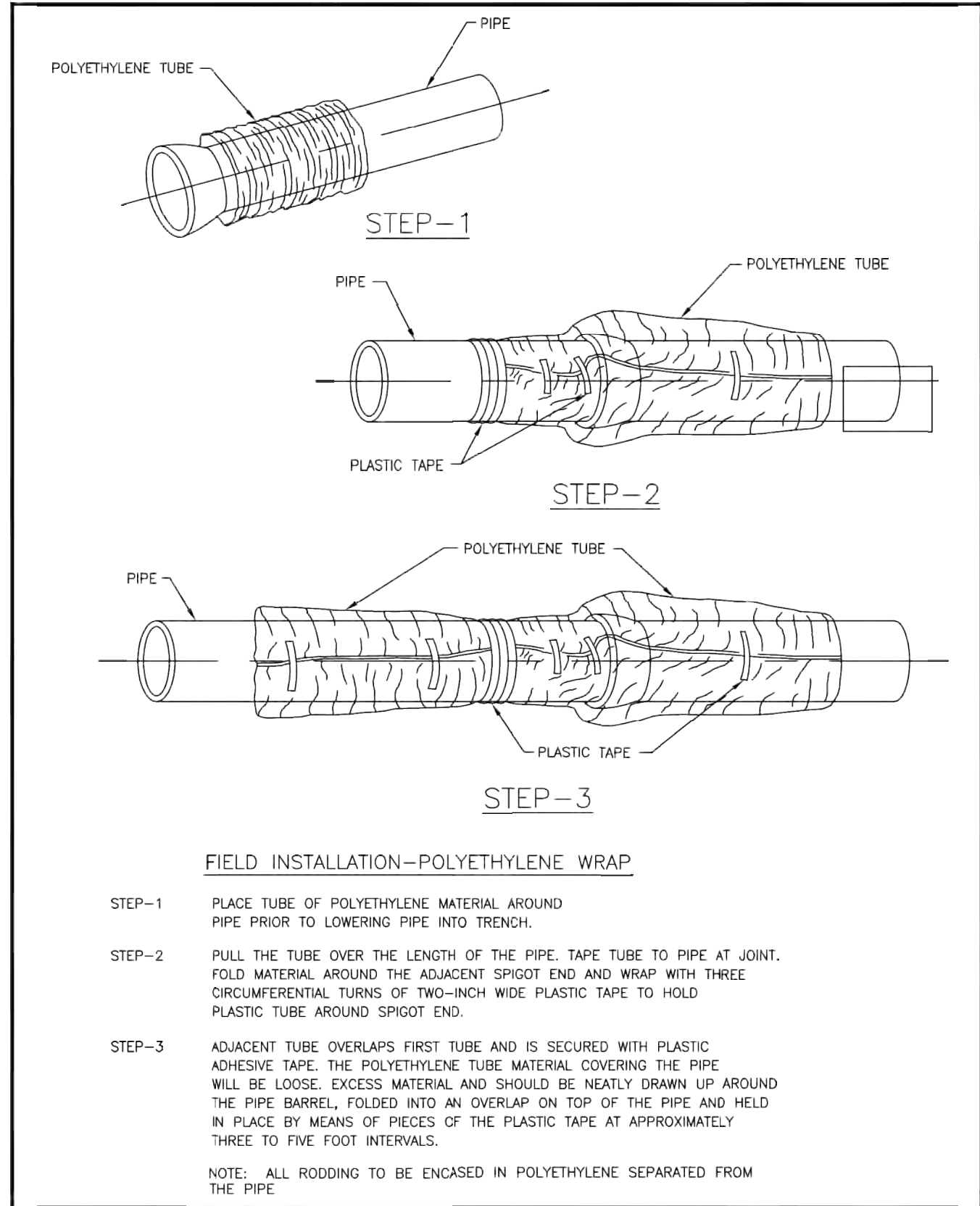
DRAWING TITLE: SPINE TRAIL DESIGN  
DRAWING NUMBER: P25  
DRAWN BY: D. JENKINS APPROVED BY: G. HEGNER REV. DATE: 01/2012



DRAWING TITLE: TRENCH AND CURB PATCH  
DRAWING NUMBER: ST10  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 1/2014



DRAWING TITLE: BLOW-OFF INSTALLATION FOR 12" AND SMALLER PIPE  
DRAWING NUMBER: W5  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 01/2016



DRAWING TITLE: POLYETHYLENE WRAP  
DRAWING NUMBER: W9  
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

ENGINEER'S STATEMENT

STANDARD DETAILS SHOWN WERE REVIEWED FOR APPLICATION ON THIS PROJECT.



ELIJAH C. FARNEY, P.E.  
COLORADO P.E. #41677  
FOR AND ON BEHALF OF JR ENGINEERING, LLC

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE ENGINEERING AGENCIES, THEY ARE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR  
TOWN OF ERIE  
DEPT. OF PUBLIC WORKS  
645 HOLBROOK STREET  
ERIE, CO 80516  
ATTN: WENDI PALMER

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Central 303-740-9883 • Colorado Springs 719-589-2583  
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

ZONE 3 WATERLINE EXTENSION

DETAIL SHEET

H-SCALE	N/A	V-SCALE	N/A	DATE	DESIGNED BY	DRAWN BY	CHECKED BY
				4/18/17	REB	REB	

SHEET 18 OF 19

JOB NO. 15708.05



