

BUCKNER TARSNEY WATERLINE EXTENSION GRAIN VALLEY, MISSOURI LRA NO. 0322006.02 2022



CALL OR CLICK 3 DAYS BEFORE YOU DIG!
1-800-DIG-RITE OR 811
www.mo1call.com

ALL UTILITIES ARE SHOWN BASED ON THE INFORMATION AVAILABLE TO THE ENGINEER. THERE IS NO GUARANTEE ALL FACILITIES ARE SHOWN OR THAT THE LOCATION, DEPTH, AND SIZE OF EACH FACILITY IS CORRECT. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES AND SERVICE LINES PRIOR TO CONSTRUCTION. COORDINATE NECESSARY RELOCATIONS WITH UTILITY COMPANIES.

UTILITY CONTACTS

PATRICK MARTIN
PUBLIC WORKS SUPERVISOR
PMARTIN@CITYOFGRAINVALLEY.ORG
816-847-6200

DICK TUTTLE, P.E.
CITY ENGINEER
DTUTTLE@CITYOFGRAINVALLEY.ORG
816-847-6220

MODOT
600 NE COLBERN ROAD
LEE'S SUMMIT, MO 64086
NATHAN JULIANA
SENIOR TRAFFIC SPECIALIST
O: 816-607-2185
C: 816-835-5612
F: 816-622-0440

WATER
TRI-COUNTY WATER AUTHORITY
JOHN OVERSTREET
GENERAL MANAGER
28405 EAST BLUE VALLEY ROAD
INDEPENDENCE, MO 64058
816-796-4100 EXT. 204

JACKSON COUNTY PWSD 17
JASON HERMAN
102 3RD STREET, PO BOX 256
GRAIN VALLEY, MO 61029-0000

816-229-3838

ELECTRIC
EVERGY
BLUESPRINGS CENTER
1105 SE US-40 HWY
BLUE SPRINGS, MO 64014
GARY JONES
O: 816-220-5216
C: 816-813-1988
GARY.JONES@KCPL.COM

TELEPHONE
AT&T
LITHA RANDOLPH
LR2614@ATT.COM
JILL SCHROEDER
JB0311@ATT.COM
RICK BRYAN
AT&T CWO ENGINEERING
O: 913-727-9809
C: 913-669-4576
RB1697@ATT.COM
RELOCATION WORK ORDER
1-866-457-0777

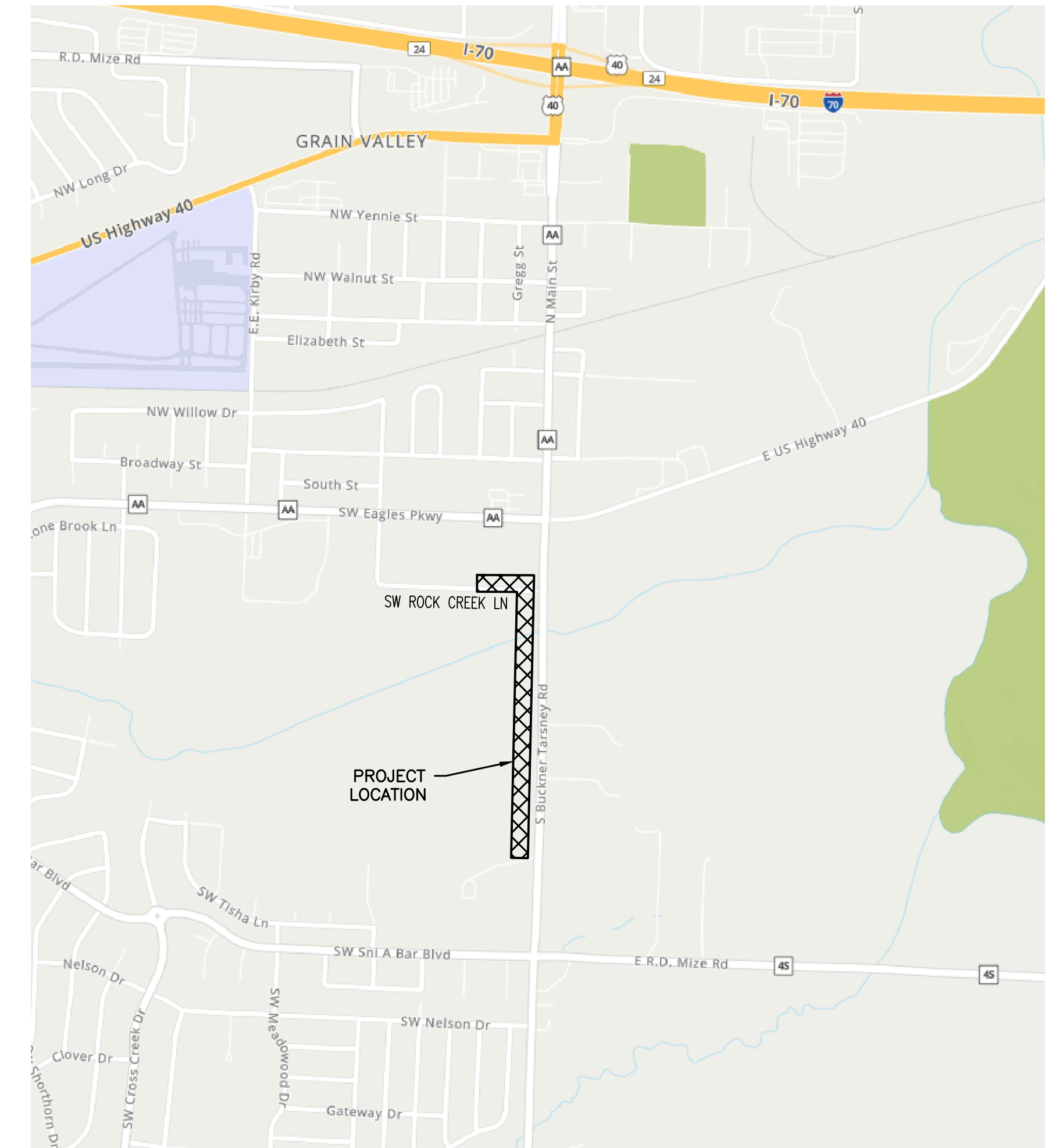
CENTURY LINK
1800-788-3500

COMCAST
816-358-5444

SPIRE
816-969-2200

GENERAL NOTES:

- The Contractor shall verify the location and depth of all utilities prior to construction. Prior to installation, Contractor shall adjust waterline accordingly to avoid utilities while maintaining minimum depth of bury. Any adjustment requiring fittings shall be approved by Engineer or Construction Observer. No extra payment shall be made for this adjustment.
- Contractor is to call 1-800-DIG-RITE to request utility locations to be marked at site(s) of proposed excavation.
- Contractor shall notify all those companies which have facilities in the vicinity 72 hours prior to the construction to be performed.
- Contractor is to coordinate with Owner prior to connection to existing waterlines. Where interruption of facilities are necessary the Contractor is to plan his work in cooperation with Owner personnel for the least possible disruption of service. Night or weekend work may be necessary. If system operation must be suspended because of the Contractor's work, he shall have all necessary materials and equipment on hand, and have ample force available prior to beginning the work.
- All work on Road/Street right-of-way shall be coordinated and in compliance with the applicable controlling authority. This includes traffic control as required.
- Contractor is to coordinate w/property owners prior to any temporary closing of drives and/or parking areas.
- Waterline shall be installed a minimum of 42" (inches) below surface of ground
- All Street and Private property monuments shall be protected.
- All structures, fences, pavement, driveways and other improvements disturbed by construction activities shall be restored by the Contractor to condition equal or better than pre-construction condition unless otherwise noted.
- When waterline crosses over or under other utilities, Contractor shall maintain, supply, and fill 18" min. separation between waterline and other utilities with crushed rock. Sewer separation shall be as per *Minimum Design Standards for Missouri Community Water Systems*, by MoDNR and as noted in project specifications
- Waterline is to be installed with a minimum of 10' horizontal clearance from any force main or sewer line.
- Locations of waterlines, and utilities shown are approximate only, and should be verified by Contractor prior to construction.
- Backfill all driveway crossings per specifications. Resurface drives with material to match existing type and thickness. Culverts, if damaged, shall be replaced and ditches graded to drain.
- The Contractor shall furnish and install all temporary flushing assemblies, fittings, thrust blocking and restraining devices required for temporary connections for flushing, pressure testing, chlorination, and de-chlorination of the new waterlines. Prior to placing new waterlines in service the Contractor shall remove any corporation cocks used for testing or chlorination and replace them with tapered brass plugs.
- Contractor to review and adhere to all provisions on easements provided to Contractor by Owner.
- Contractor shall include all temporary fittings on one end for flushing and pressure testing. Excessive flushing (more than twice for any portion of line) to meet disinfection criteria shall be paid for by the Contractor.
- Prior to setting valves, air release valves or fire hydrants, confirm location and orientation setting with Owner personnel.
- Open pits shall not be left at the end of a work day. All excavations shall be backfilled or completely enclosed with temporary fencing.
- All piping and fittings within 40' of connections shall be restrained joint.
- Driveway, street and culvert repairs/replacements shall be subsidiary to the cost of the waterline installation.



LOCATION MAP

INDEX OF SHEETS

SHEET	TITLE
01	COVER, GENERAL NOTES AND LEGEND SHEET
02-05	PLAN/PROFILE SHEETS
06-08	DETAIL SHEETS

LEGEND		
WATER MAINS	STRADDLE BLOCKS	PLUG ON TEE
FIRE HYDRANT	VALVES	PLUG ON CROSS
REMOVAL OR RELOCATION	TAPPING SLEEVE AND VALVE	CROSSES
SOLID SLEEVE	CHECK VALVES	SERVICE LINE CONNECTIONS
NON CONNECTING MAIN	BLOWOFF VALVES \ FLUSHING ASSEMBLIES	CURB STOPS
BACKING BLOCKS 90	AIR RELEASE VALVE	METERS
BACKING BLOCKS 45	REDUCERS	
BACKING BLOCKS 22.5	TEES	
BACKING BLOCKS 11.25	PLUG OR CAP SERVICE LINES	
	PLUG ON TEE	



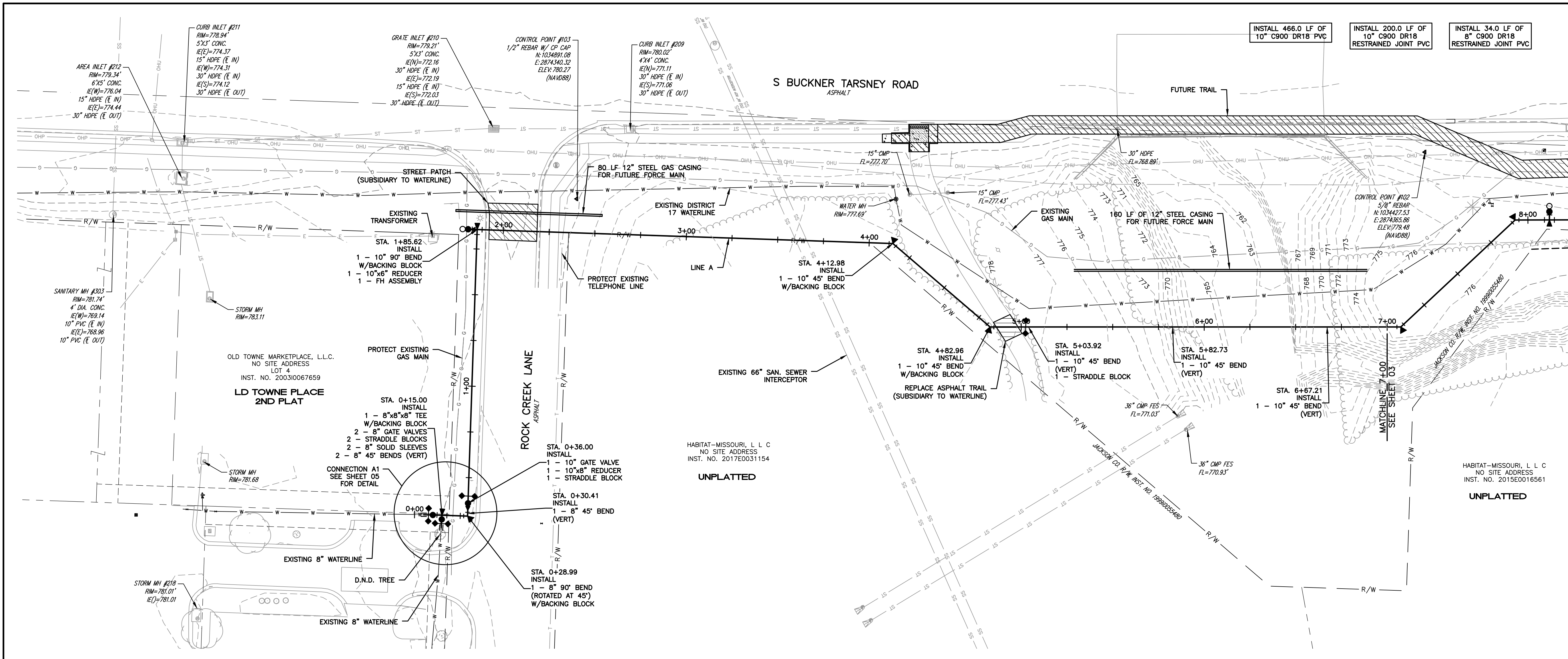
APPROVED: CHAD A. HARRINGTON, PE DATE: 08-01-2022
 LAMP RYNEARSON

APPROVED: _____ DATE: _____
 RICHARD TUTTLE, CITY ENGINEER
 GRAIN VALLEY, MISSOURI

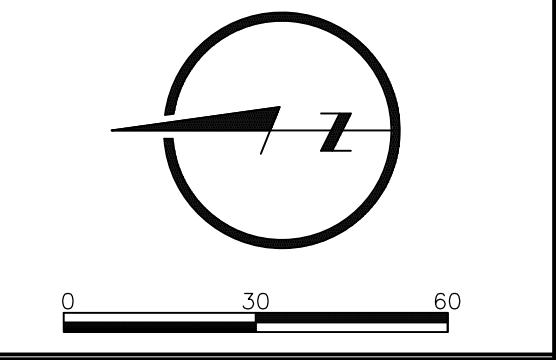
MISSOURI CERTIFICATE OF AUTHORITY NO. F01294734

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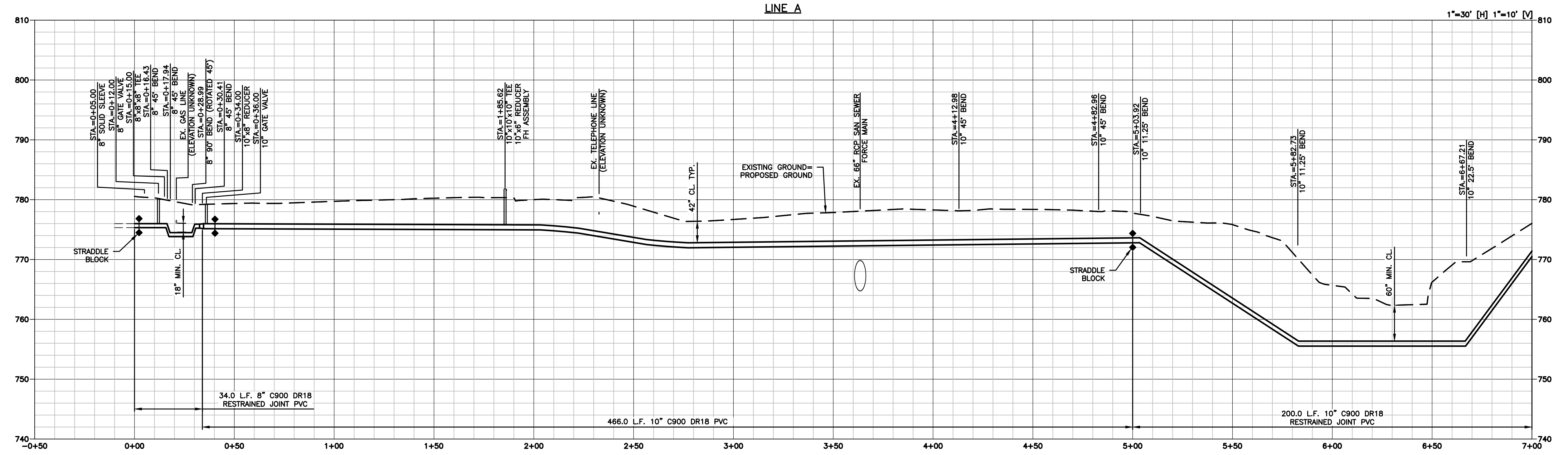
Professional Engineer
 Chad A. Harrington
 PE-2012003558
 08-01-2022
 CHAD A. HARRINGTON
 PE-2012003558

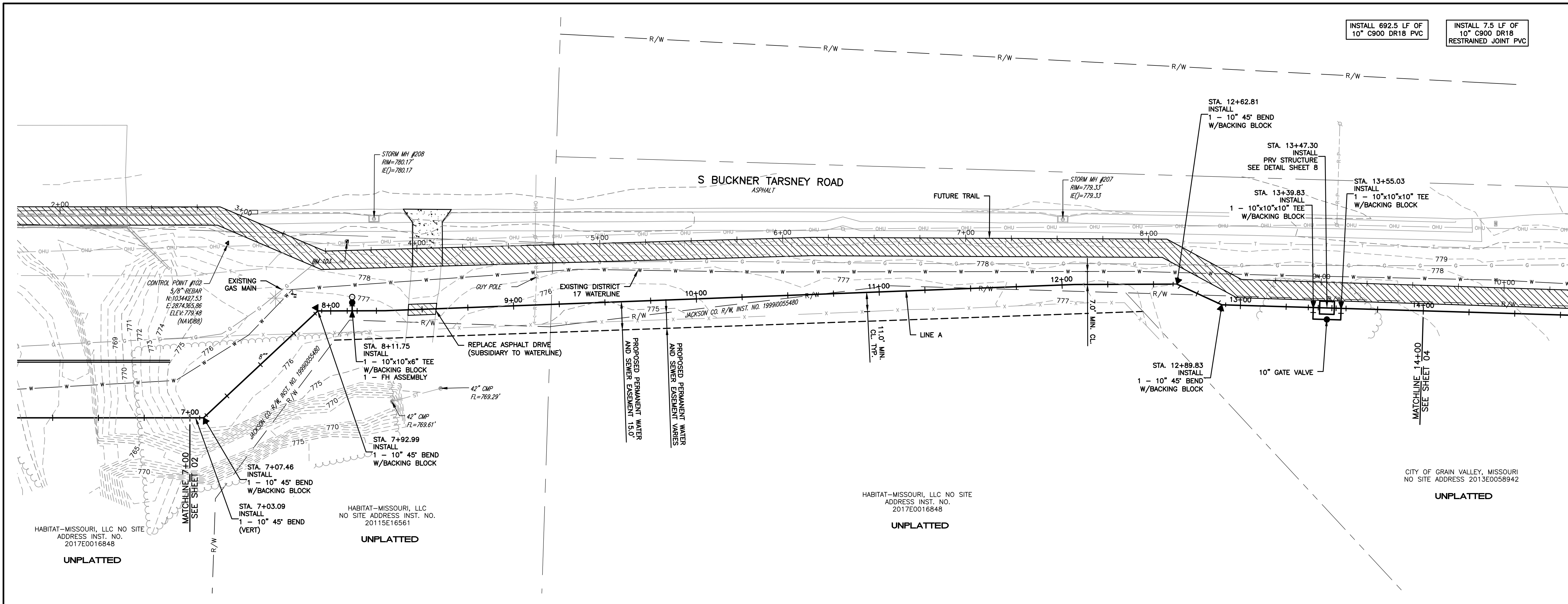
NEW WATER
 LINE A PLAN/PROFILE SHEET
 BUCKNER TARSNEY WATERLINE EXTENSION
 CITY OF GRAIN VALLEY, MISSOURI

811
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 Call before you dig.

DESIGNER / DRAFTER
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 BOOK AND PAGE
 MISSOURI AUTHORIZATION NUMBER
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 SHEET

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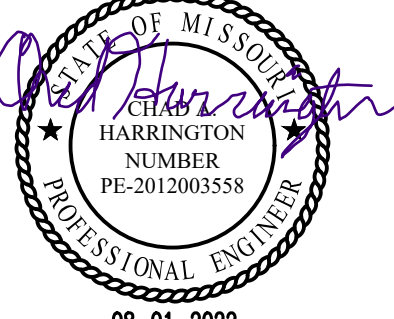
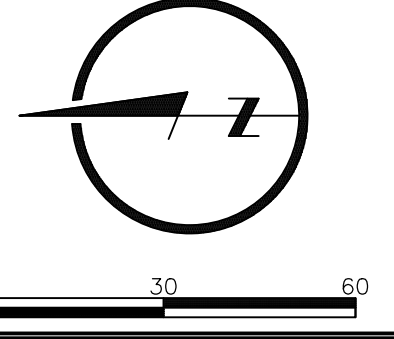


INSTALL 692.5 LF OF 10" C900 DR18 PVC

INSTALL 7.5 LF OF 10" C900 DR18 RESTRAINED JOINT PVC

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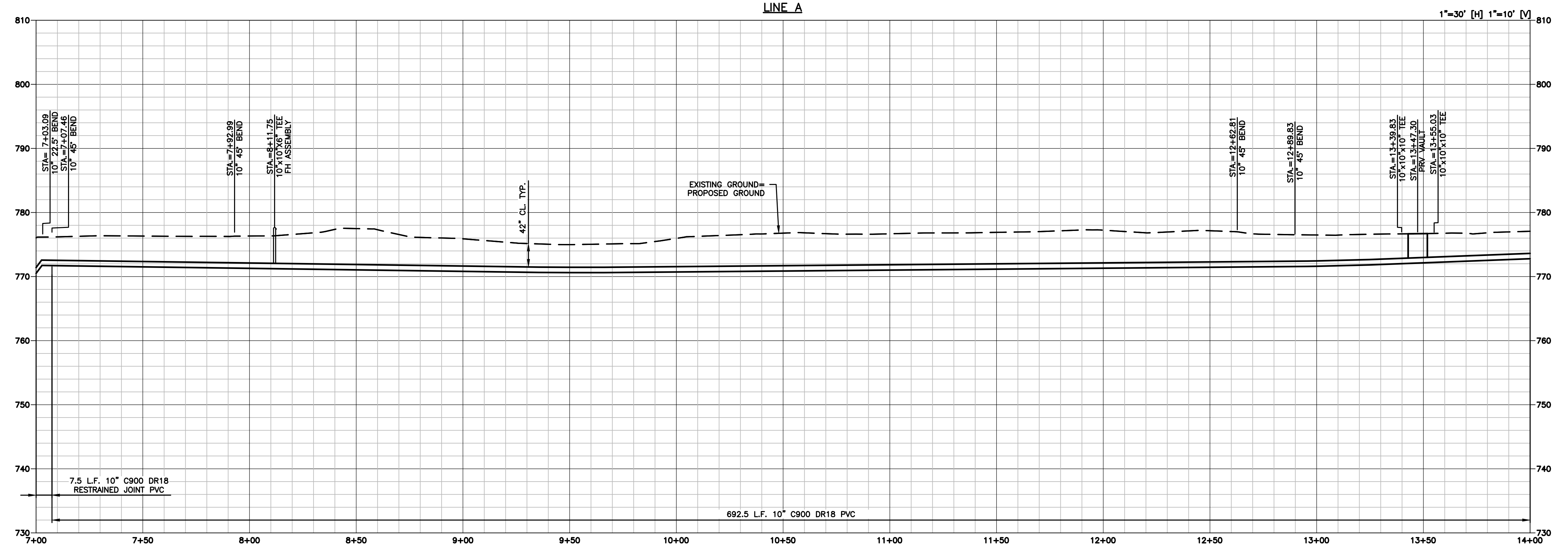
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 PE-2012003558

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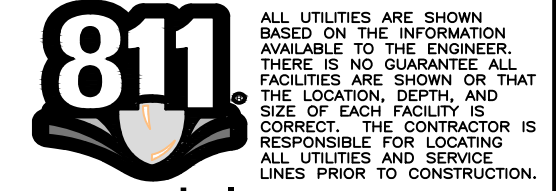
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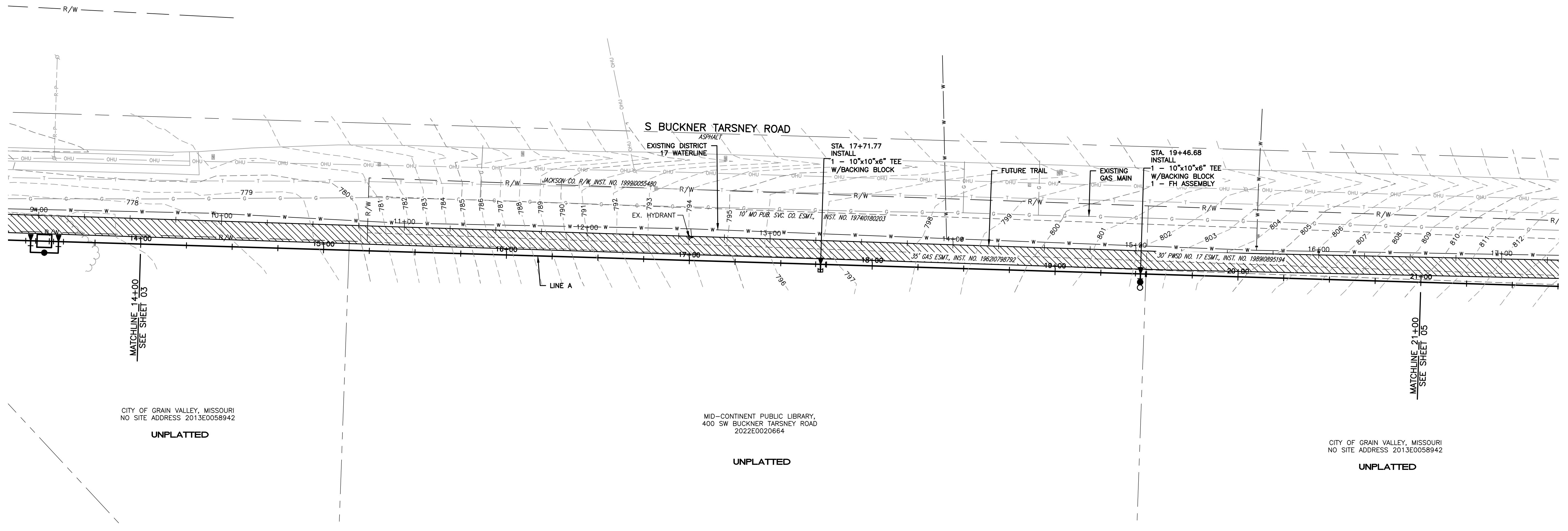
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 SHEET

INSTALL 700.0 LF OF
10" C900 DR18 PVC



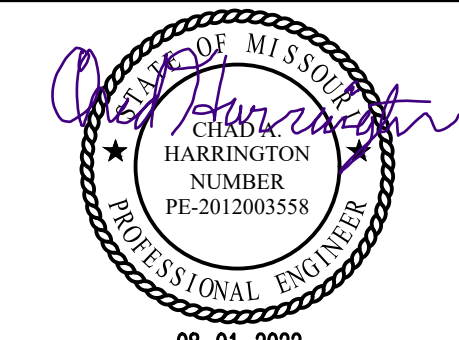
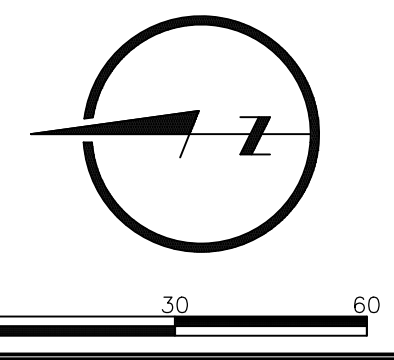
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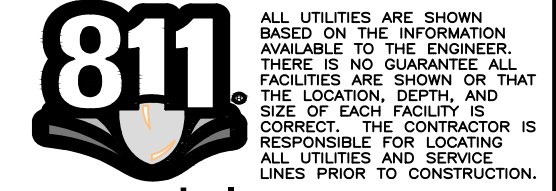
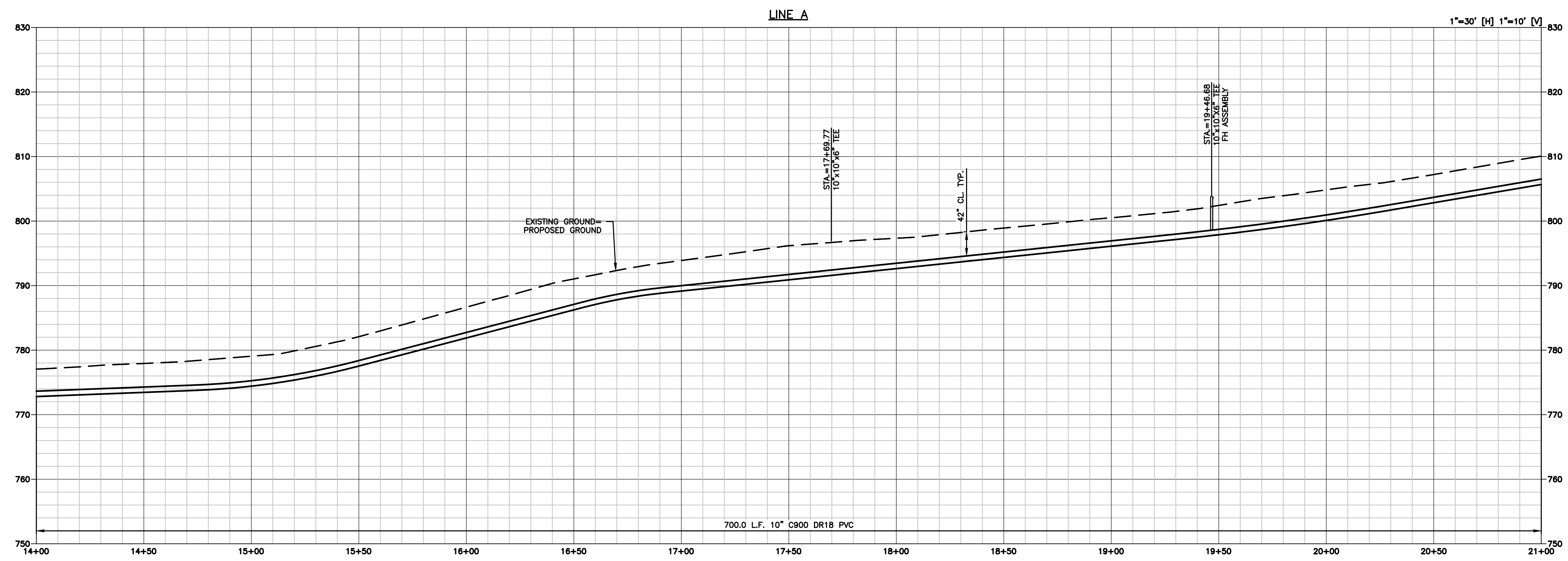
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CHAD A. HARRINGTON
PE-2012003558

NEW WATER LINE
LINE A PLAN/PROFILE SHEET

BUCKNER TARSNEY WATERLINE EXTENSION
CITY OF GRAIN VALLEY, MISSOURI



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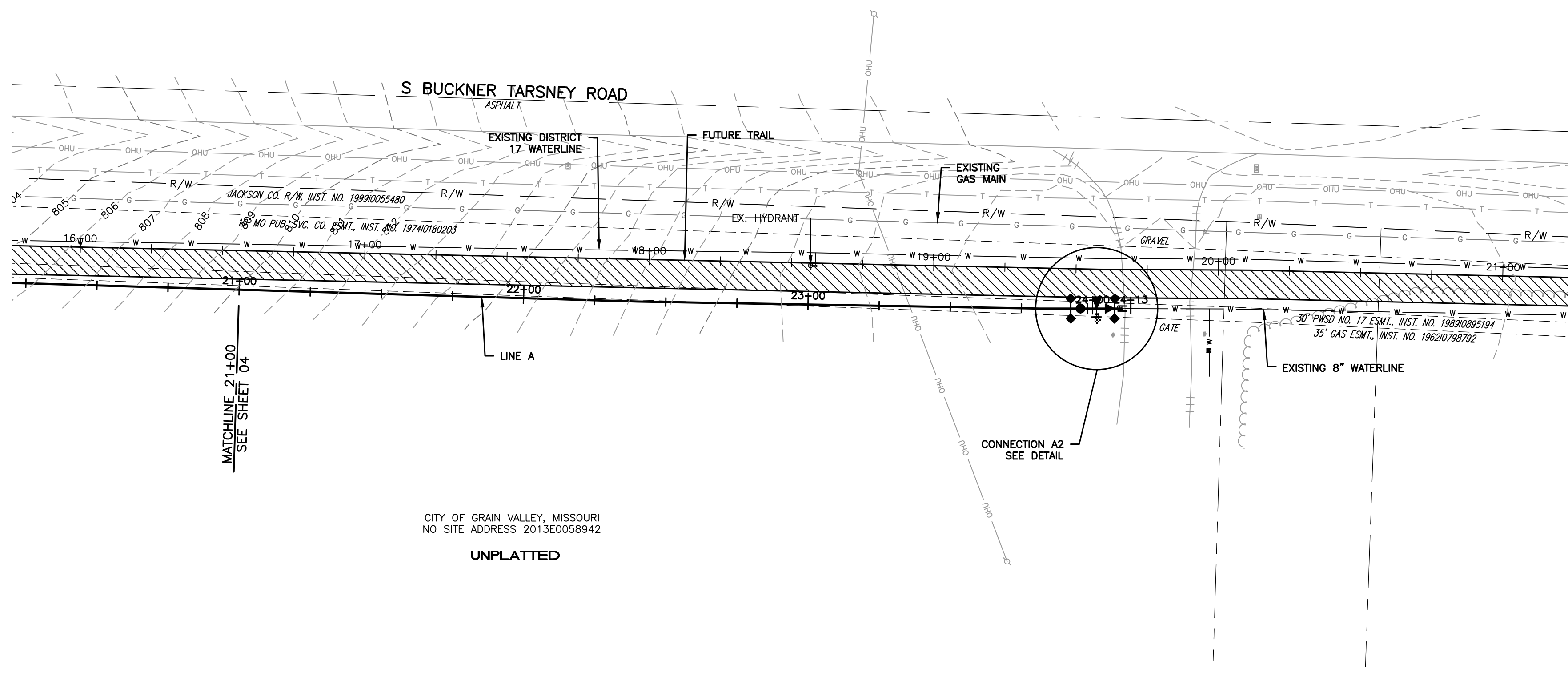
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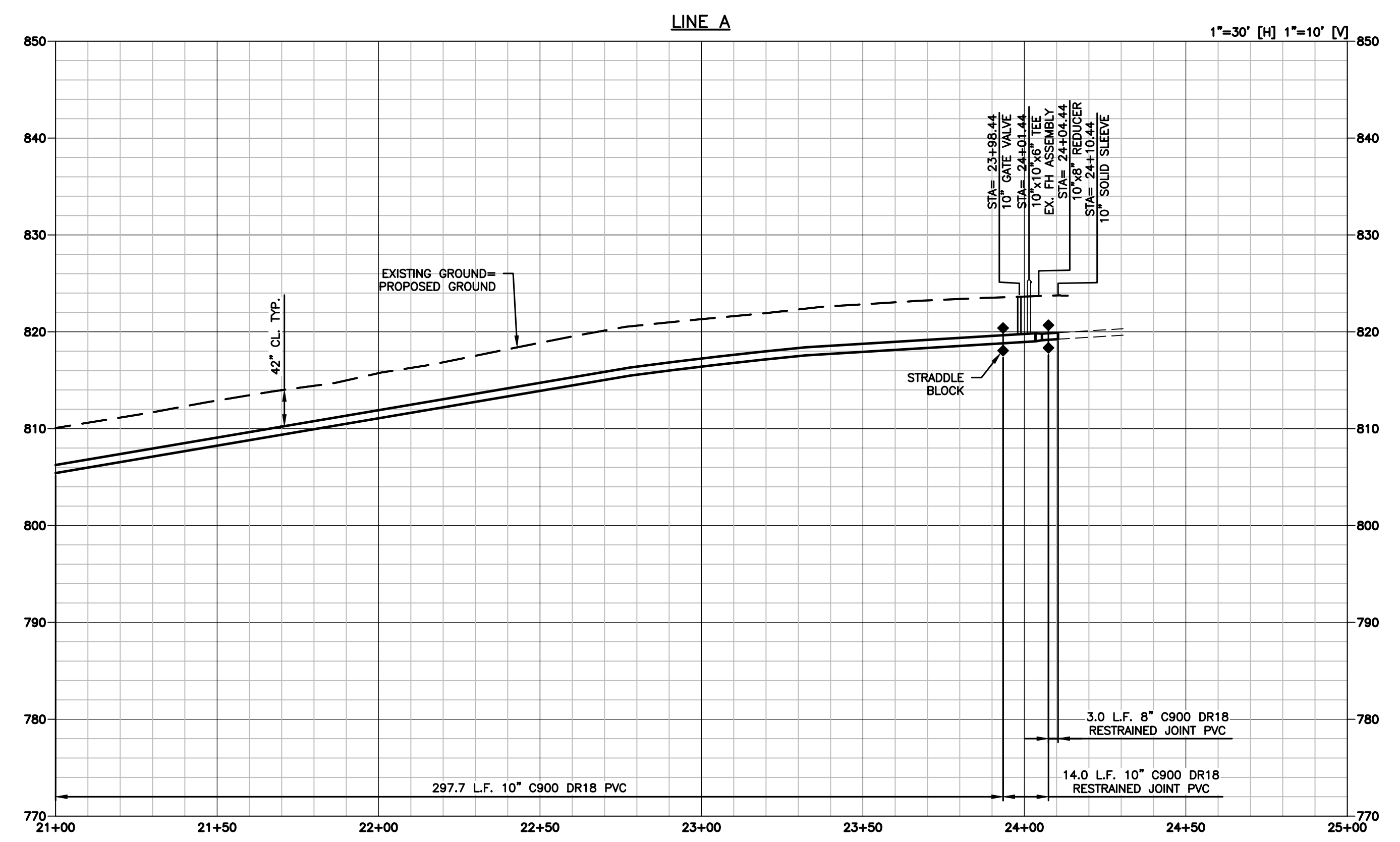
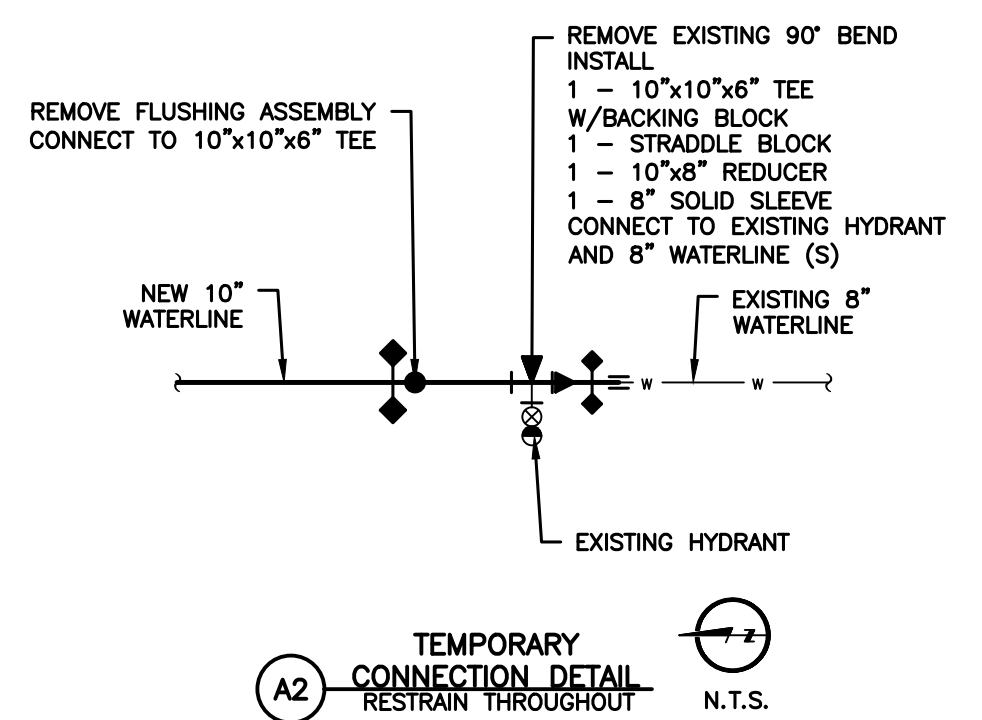
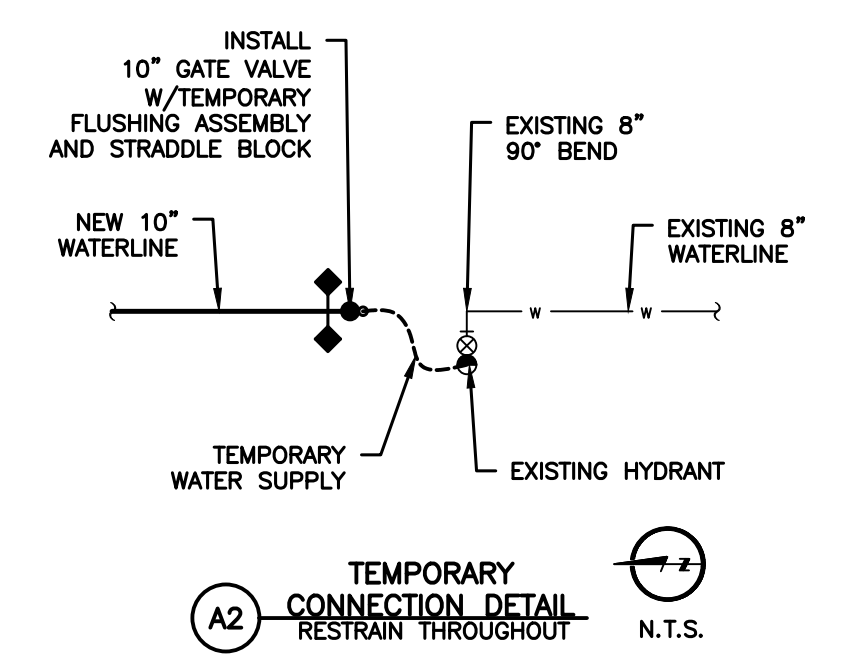
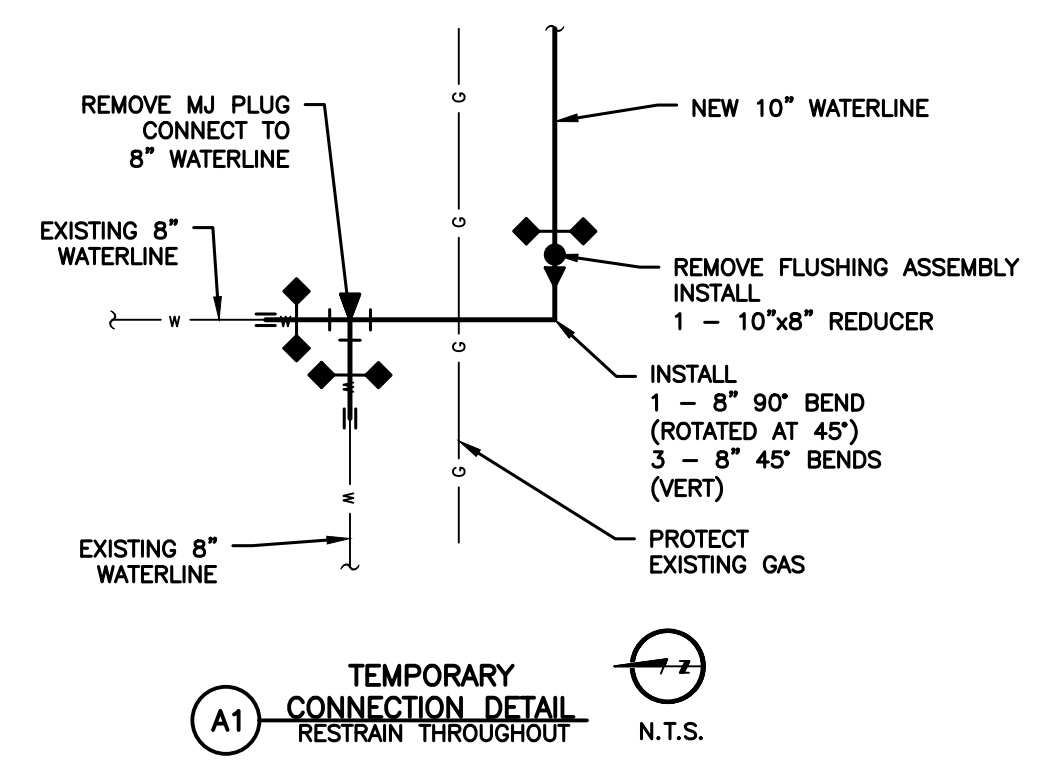
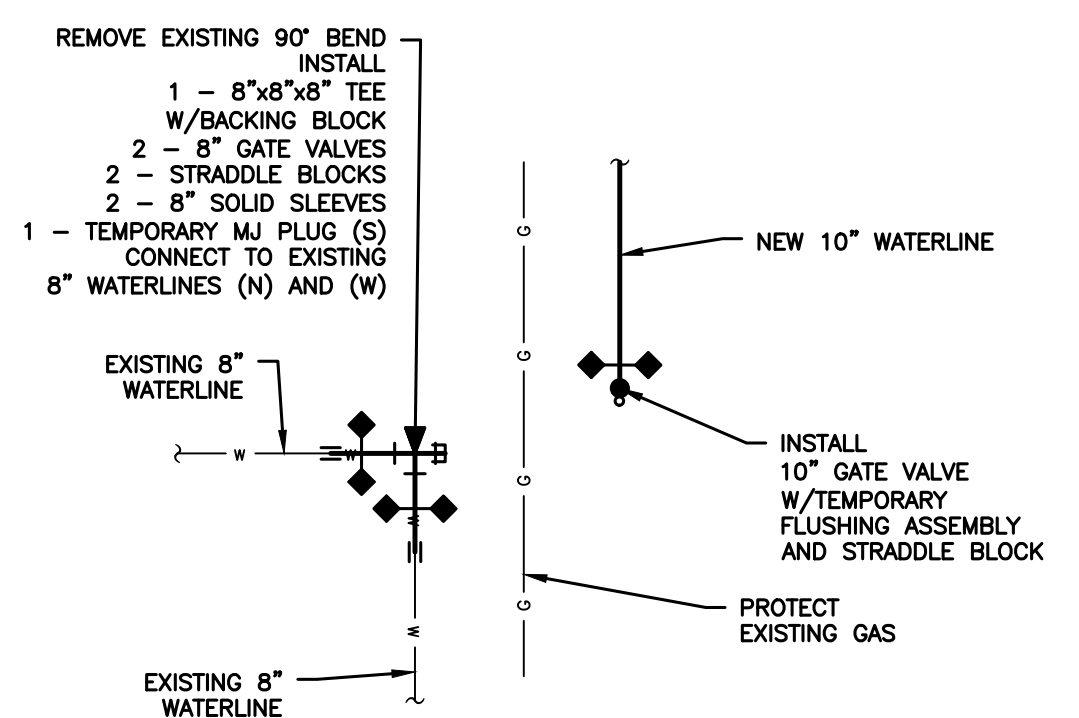
INSTALL 295.5 LF OF 10" C900 DR18 PVC

INSTALL 11.0 LF OF 10" C900 DR18 RESTRAINED JOINT PVC

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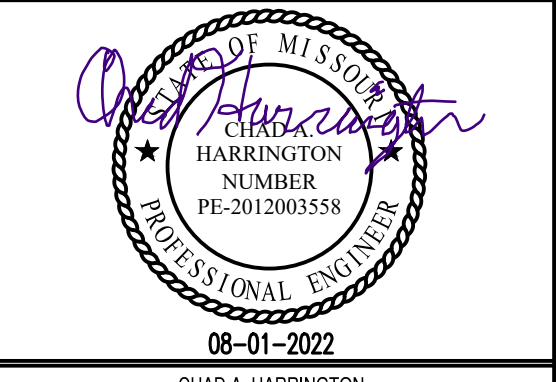
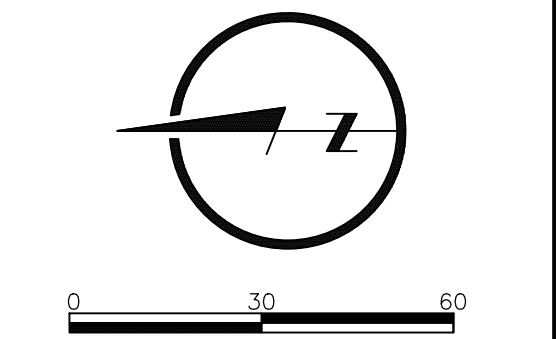


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NEW WATER LINE
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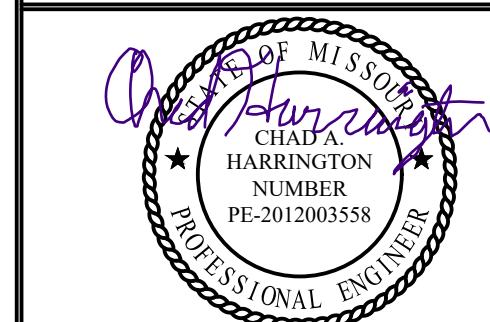
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SHEET
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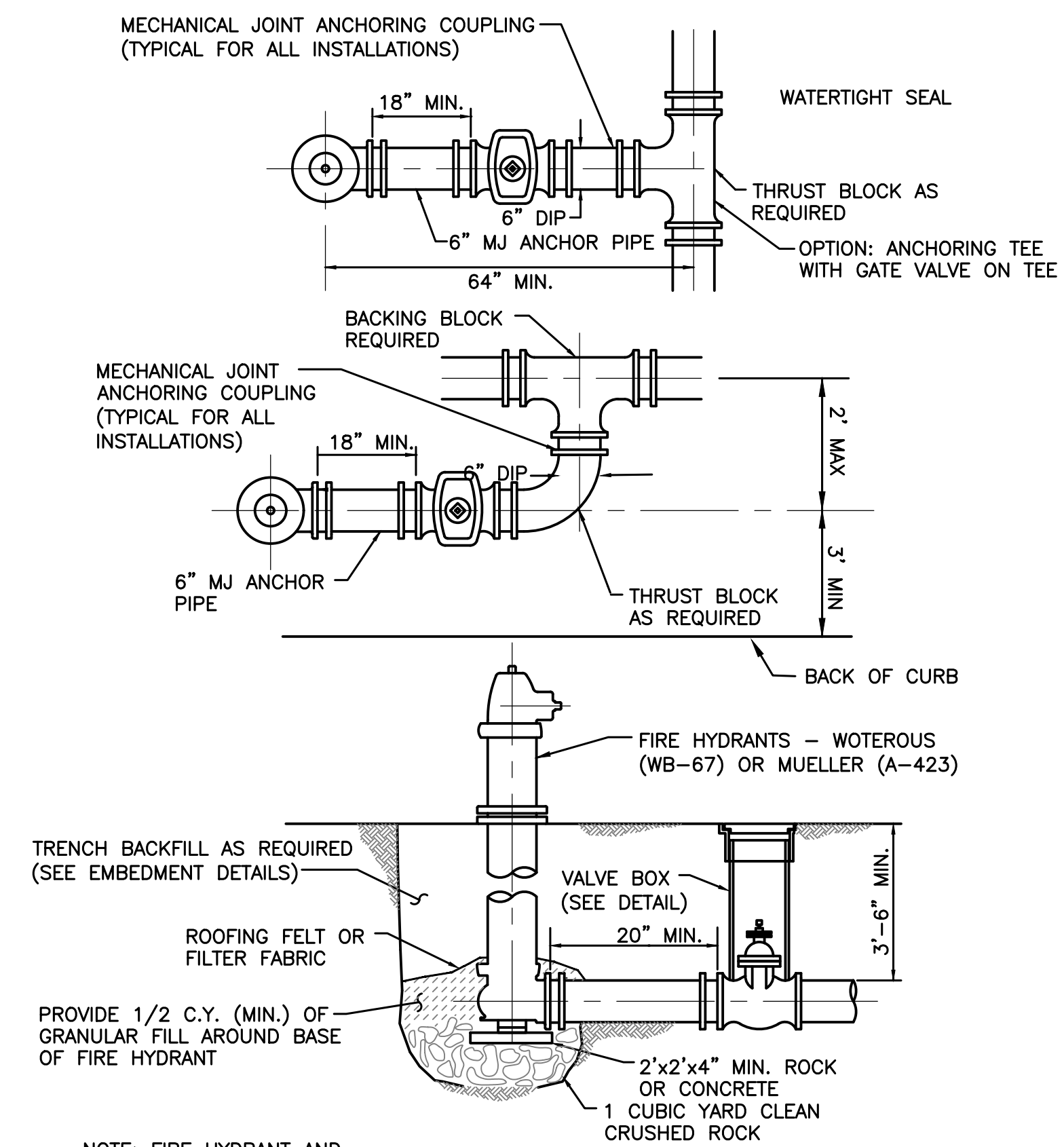
08-01-2022
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DETAIL SHEET

BUCKNER TARSNEY WATERLINE EXTENSION
 CITY OF GRAIN VALLEY, MISSOURI

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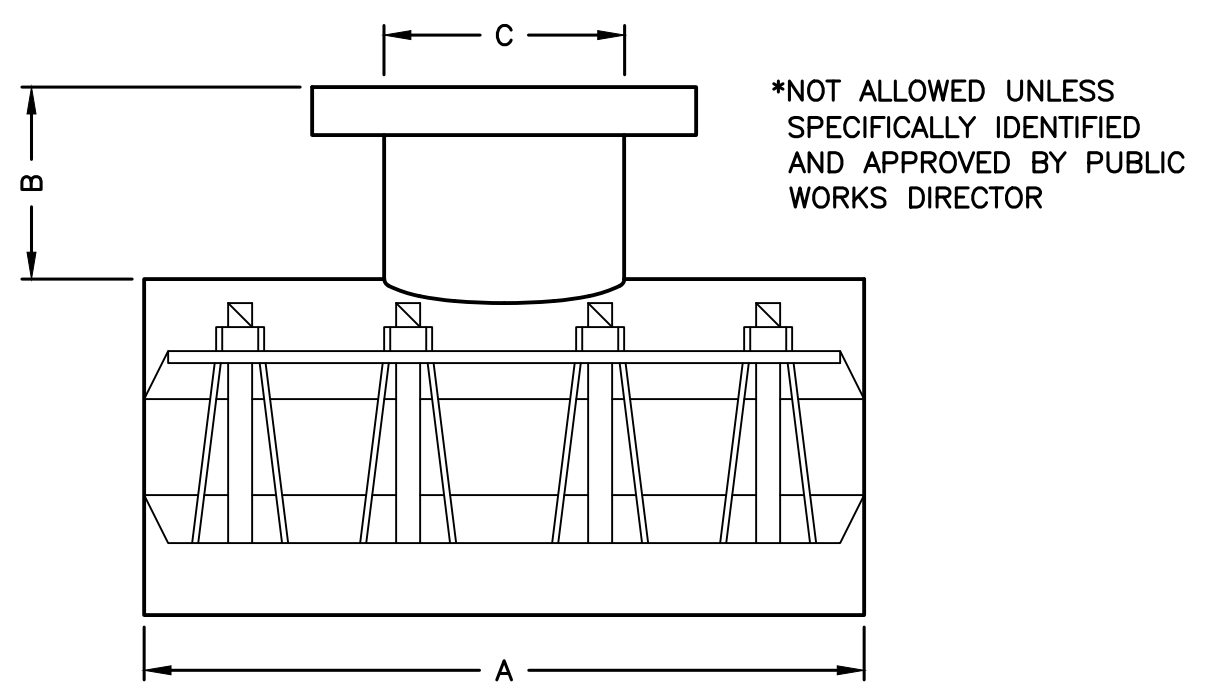
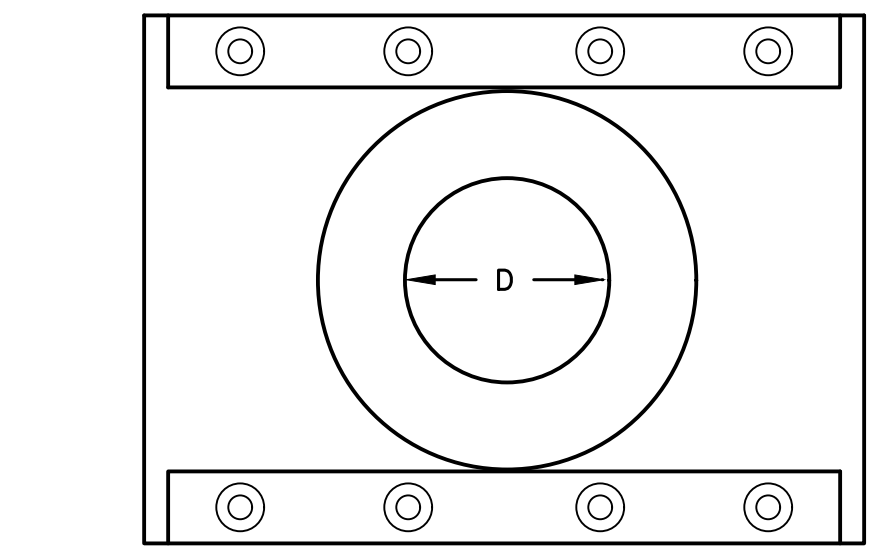


FIRE HYDRANT DETAIL

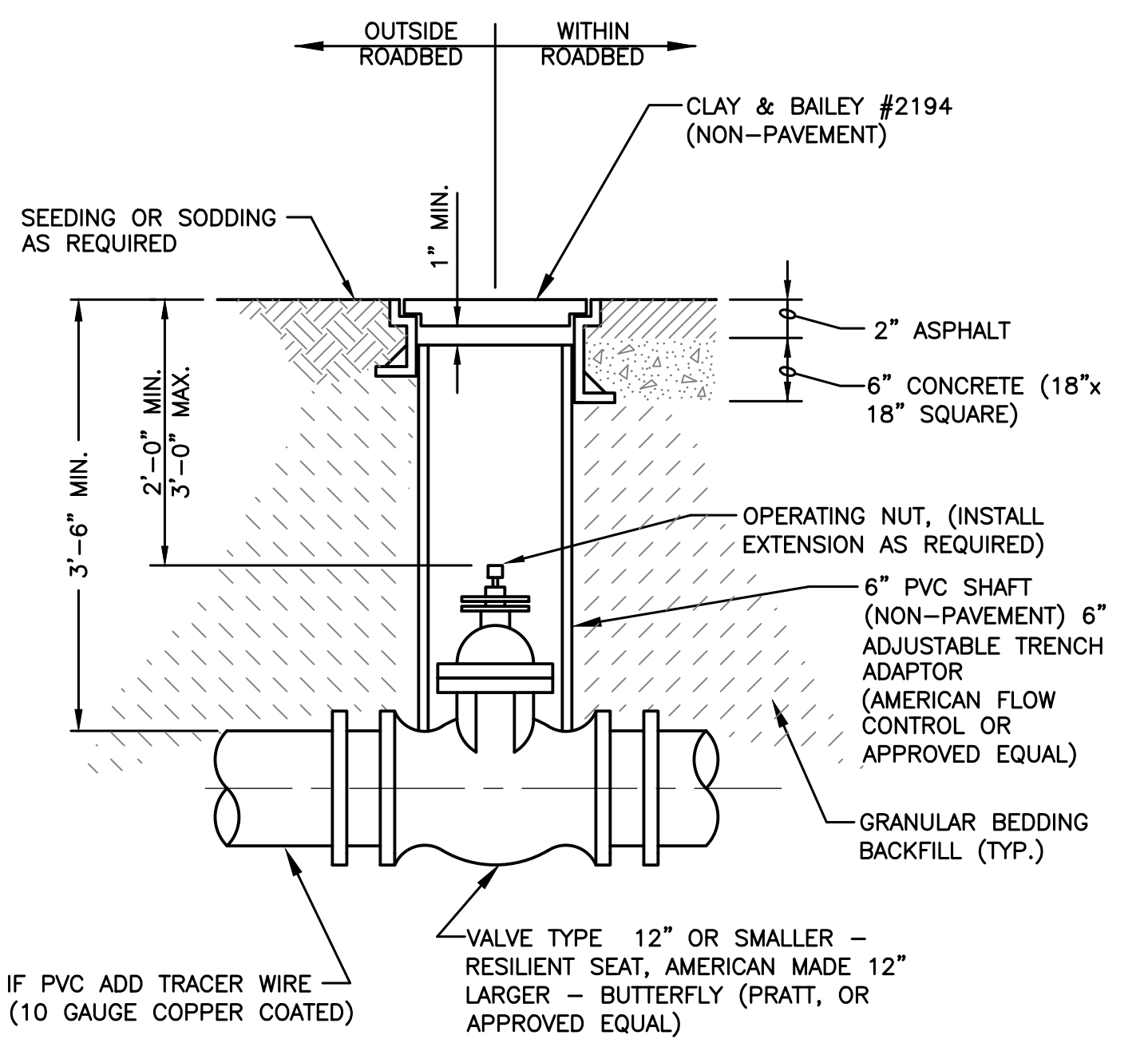
SMITH-BLAIR TAPPING SLEEVES
 662 & 663 OR EQUAL

FLANGE SIZE	STANDARD				SIZE ON SIZE		NUMBER OF BOLTS
	A	B	C	D	C	D	
4"	15"	5"	5-1/16"	4-11/16"	NONE	NONE	8
6"	15"	5"	7-1/16"	6-11/16"	7-1/16"	6.00	8
8"	20"	5"	9-1/16"	8-11/16"	9-1/16"	8.00	10

* AVAILABLE IN 6" - 12" NOMINAL PIPE SIZES.



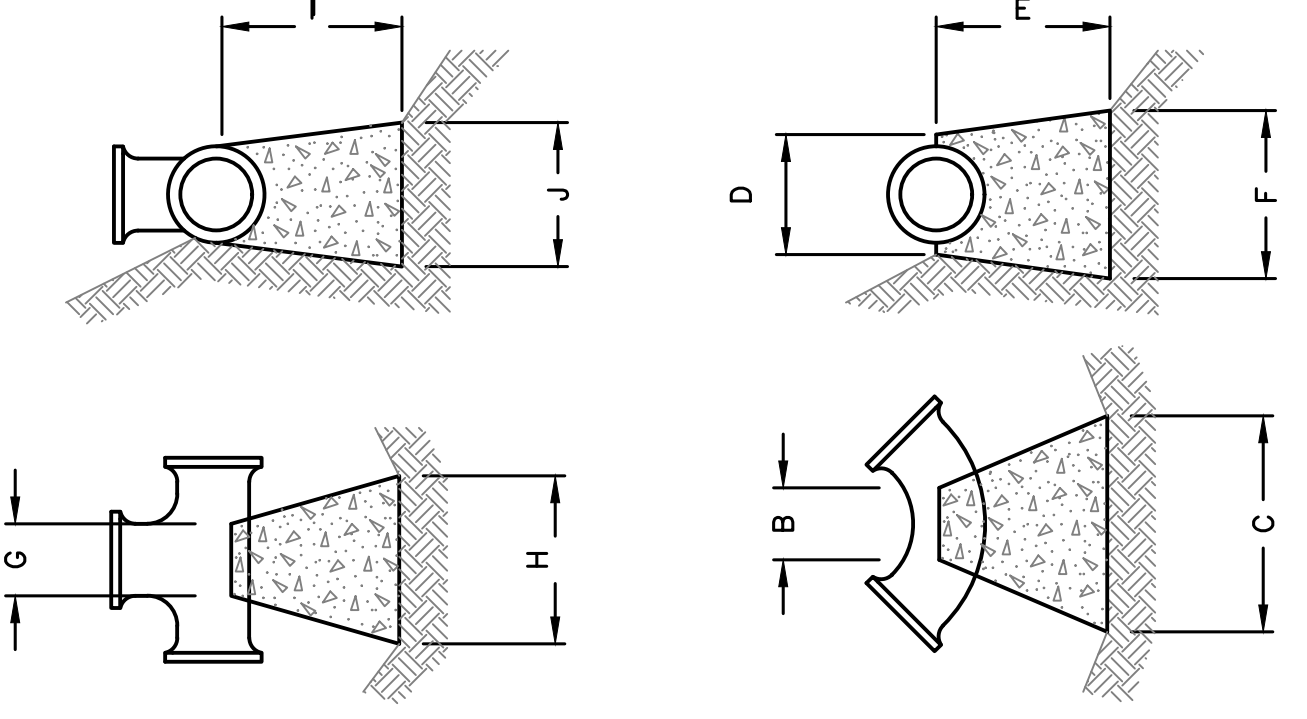
STAINLESS STEEL TAPPING SLEEVES



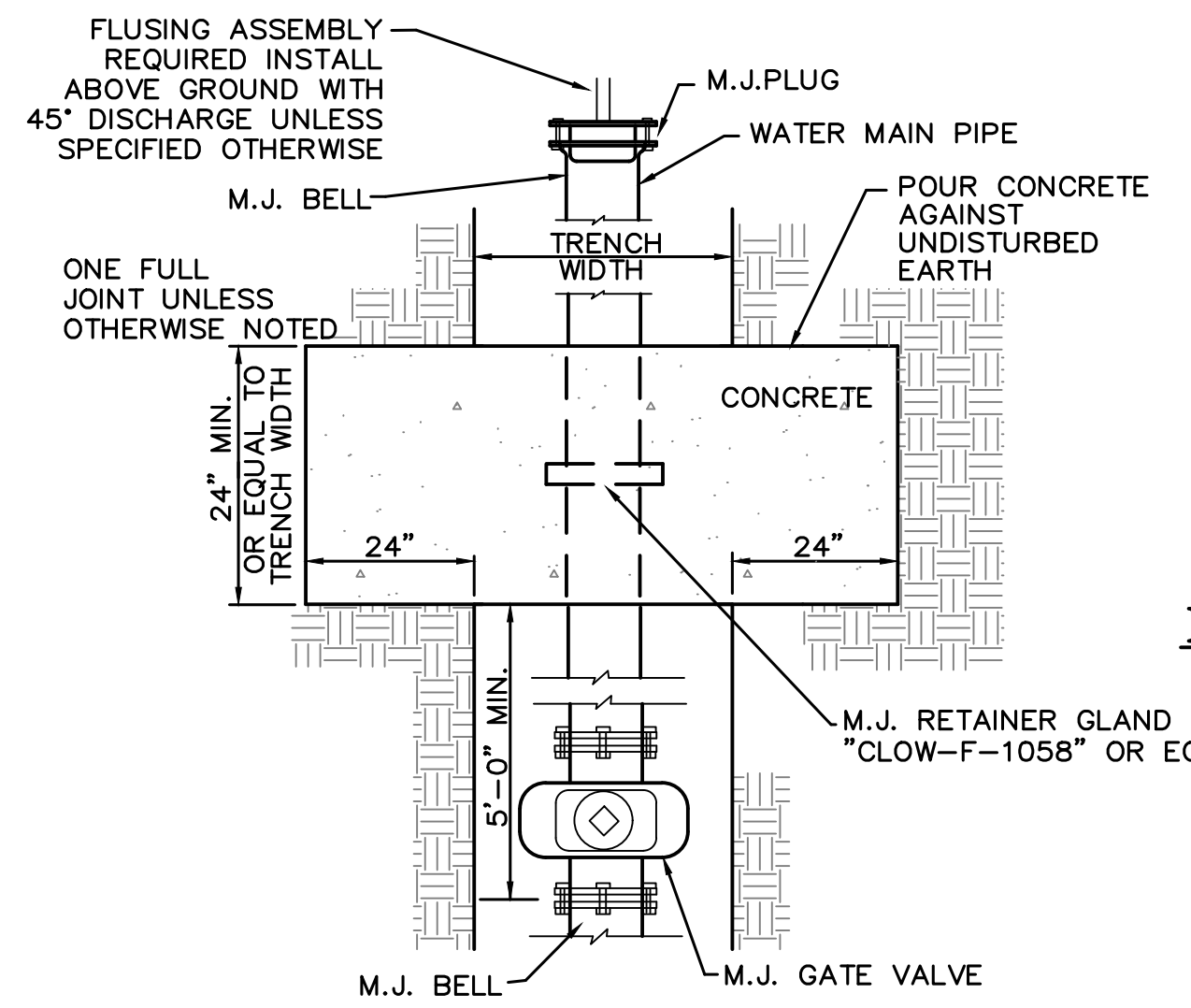
VALVE BOX DETAIL

BENDS LESS THAN 45°	B	C	D	E	F	BENDS THRU 90°	B	C	D	E	F
	6"	8"	18"	12"	24"		12"	6"	8"	30"	12"
8"	8"	24"	12"	24"	18"	8"	8"	36"	12"	24"	36"
10"	8"	24"	12"	24"	18"	10"	8"	42"	12"	24"	42"
12"	8"	36"	18"	24"	24"	12"	12"	54"	18"	30"	48"
16"	12"	36"	18"	24"	30"	16"	18"	60"	18"	30"	48"
24"	18	42	30	30	36	24"	24"	72"	30"	36"	54"

TEES	G	H	I	J	TEES	G	H	I	J
	6"x 6"x 6"	12"	24"	24"		18"	16"x 16"x 6"	12"	24"
8"x 8"x 6"	12"	24"	24"	18"	16"x 16"x 8"	12"	24"	24"	24"
8"x 8"x 8"	12"	24"	24"	24"	16"x 16"x 12"	12"	36"	24"	36"
10"x 10"x 6"	12"	24"	24"	18"	16"x 16"x 16"	18"	48"	30"	48"
10"x 10"x 8"	12"	24"	24"	24"	24"x 24"x 8"	12"	24"	24"	24"
10"x 10"x 10"	12"	24"	24"	30"	24"x 24"x 10"	12"	30"	24"	30"
12"x 12"x 6"	12"	24"	24"	18"	24"x 24"x 12"	18"	36"	24"	36"
12"x 12"x 8"	12"	24"	24"	24"	24"x 24"x 16"	18"	48"	30"	48"
12"x 12"x 12"	12"	36"	24"	36"	24"x 24"x 24"	24"	60"	36"	60"



THRUST BLOCK DETAIL



DEAD END LINE ASSEMBLY

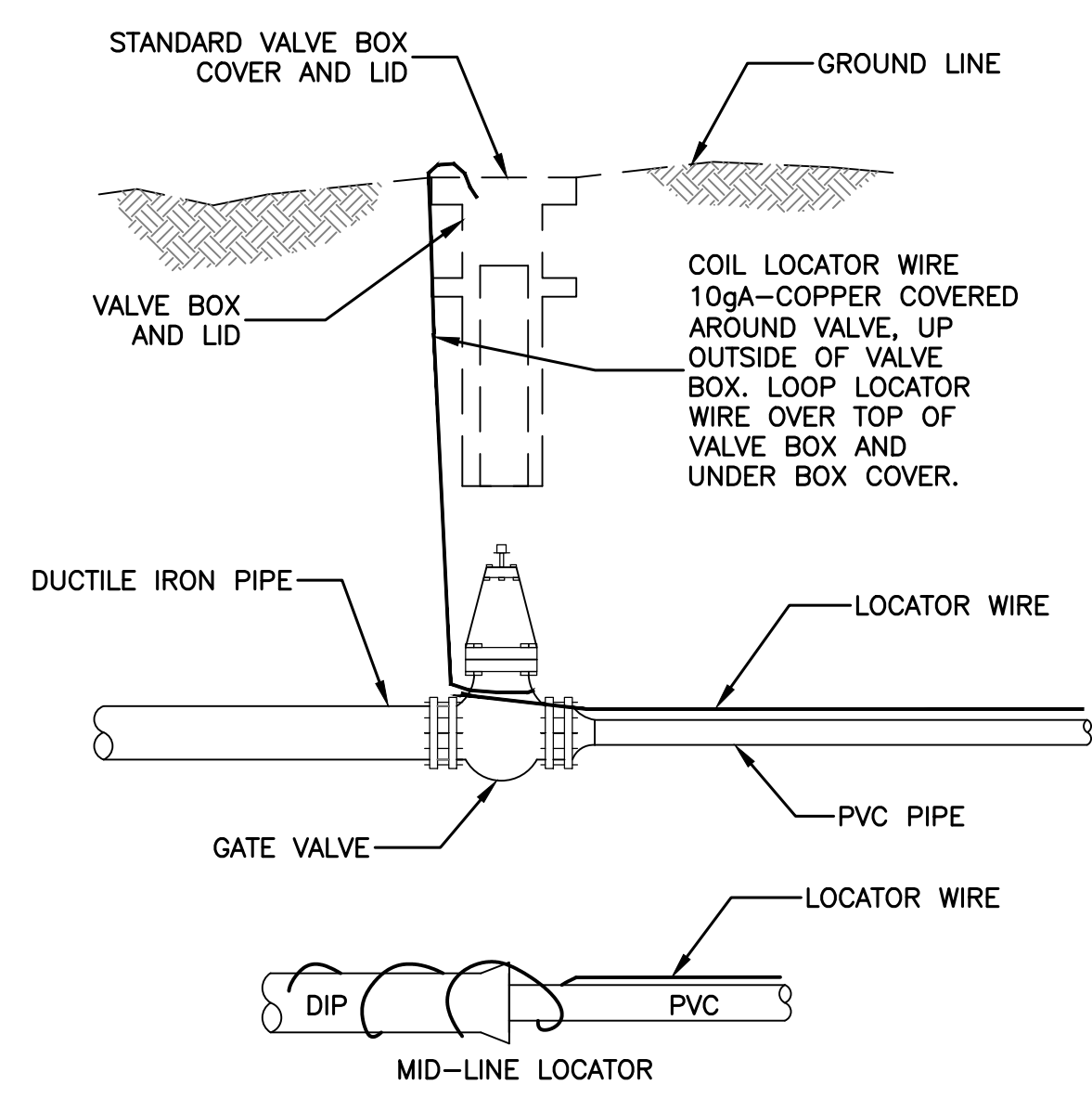
PIPE SIZE	D MIN.
6"	4"
8"	7"
12"	15"

ALLOWABLE LEAKAGE PER 1,000 FEET OF PIPELINE* - gph
 NOMINAL PIPE DIAMETER (INCHES)

AVERAGE TEST PRESSURE (psi)	4	6	8	10	12	14	16	18	20	24
300	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12
275	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99
250	0.47	0.71	.095	1.19	1.42	1.66	1.90	2.14	2.37	2.85
225	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70
200	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55
175	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38
150	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21
125	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01
100	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80

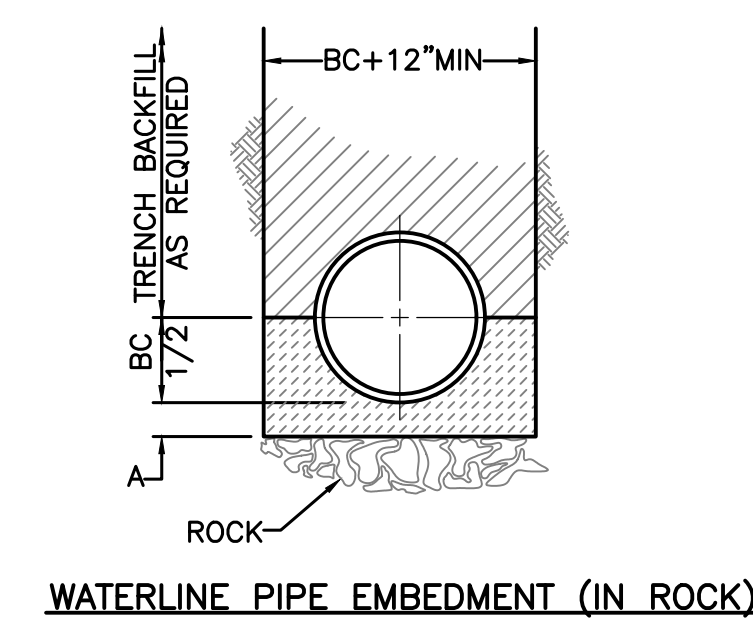
* FOR PIPE WITH 18-FOOT NOMINAL LENGTHS. TO OBTAIN THE RECOMMENDED ALLOWABLE LEAKAGE FOR PIPE WITH 20-FOOT LENGTHS, MULTIPLY THE LEAKAGE CALCULATED FROM THE TABLE BY 0.9. IF THE PIPELINE UNDER TEST CONTAINS SECTIONS OF VARIOUS DIAMETERS, THE ALLOWABLE LEAKAGE WILL BE THE SUM OF THE COMPUTED LEAKAGE FOR EACH SIZE.

ALLOWABLE LEAKAGE FOR WATERLINES

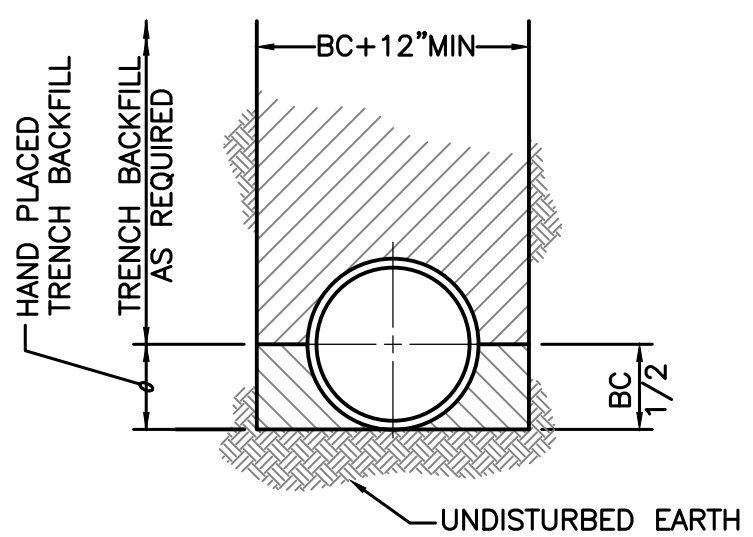


LOCATOR WIRE DETAIL

L:\Engineering\322006.02 Grain Valley MO Buckner Tarsney Waterline\DRAWINGS\CONSTRUCTION DRAWINGS\BUCKNER TARSNEY STANDARD DETAILS.dwg, 8/1/2022 10:02 PM, JAMIE MCNULTY, LAMP RYNEARSON



WATERLINE PIPE EMBEDMENT (IN ROCK)



WATERLINE PIPE EMBEDMENT (IN SOIL)

TRENCH EMBEDMENT NOTES:

1. GRANULAR BEDDING SHALL BE CRUSHED ROCK OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING 3/4" (95% PASSING 1" FOR 30" AND LARGER PIPE) AND NOT LESS THAN 95% RETAINED ON A 3/8"; TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL OR VIBRATING.
2. TAMPED GRANULAR BACKFILL (TYPE 3) SHALL BE GRANULAR MATERIAL CONFORMING TO THE REQUIREMENTS OF SECTION 1007.3 OF THE 1990 MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
3. TRENCH BACKFILL (TYPE 1) SHALL BE FINELY DIVIDED MATERIAL FREE FROM DEBRIS AND STONES, COMPACTED TO 95% MAXIMUM DENSITY.

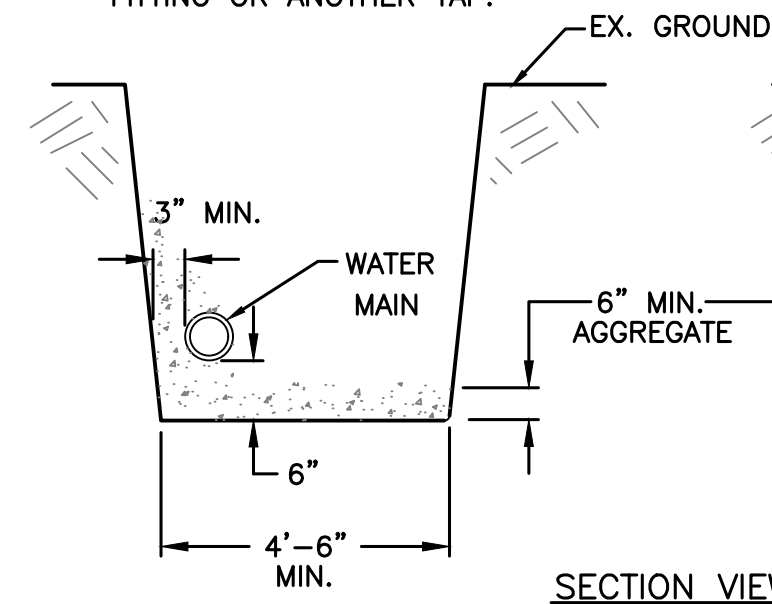
LEGEND	
BC	OUTSIDE DIA. OF PIPE
D	NOMINAL PIPE SIZE
A	EMBEDMENT BELOW PIPE
[Hatched pattern]	TRENCH BACKFILL
[Cross-hatched pattern]	TAMPED GRANULAR BACKFILL (TYPE 3)
[Dotted pattern]	GRANULAR BEDDING
[Solid grey]	CONCRETE
[Diagonal lines]	CLEAN CRUSHED STONE

TABLE OF EMBEDMENT DEPTHS BELOW PIPE		
D	A MIN SOIL	A MIN ROCK
0"-27"	0"	6"
30"-60"	0"	9"
66"-UP	0"	12"

WATERLINE PIPE EMBEDMENT DETAILS

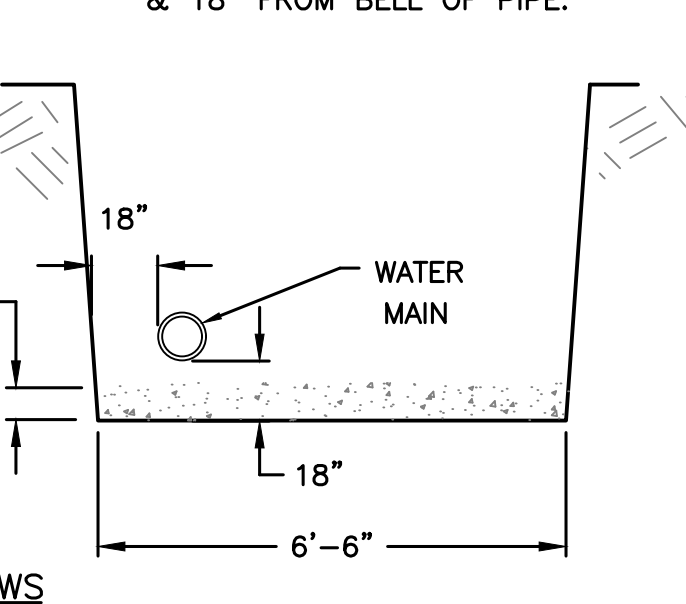
CORPORATION TAPS

NOTE: A CORPORATION TAP SHALL NOT BE CLOSER THAN 18" TO A BELL FITTING OR ANOTHER TAP.

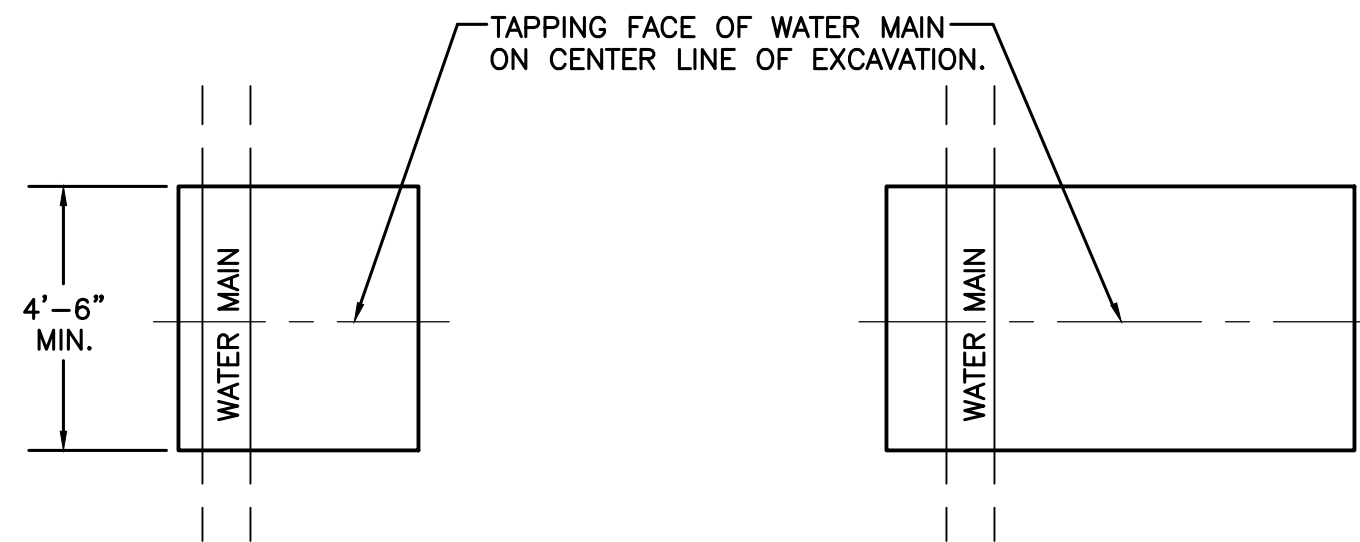


TAPPING VALVES

NOTE: TAPS SHALL NOT BE LESS THAN 3' FROM SPIGOT END & 18" FROM BELL OF PIPE.



SECTION VIEWS

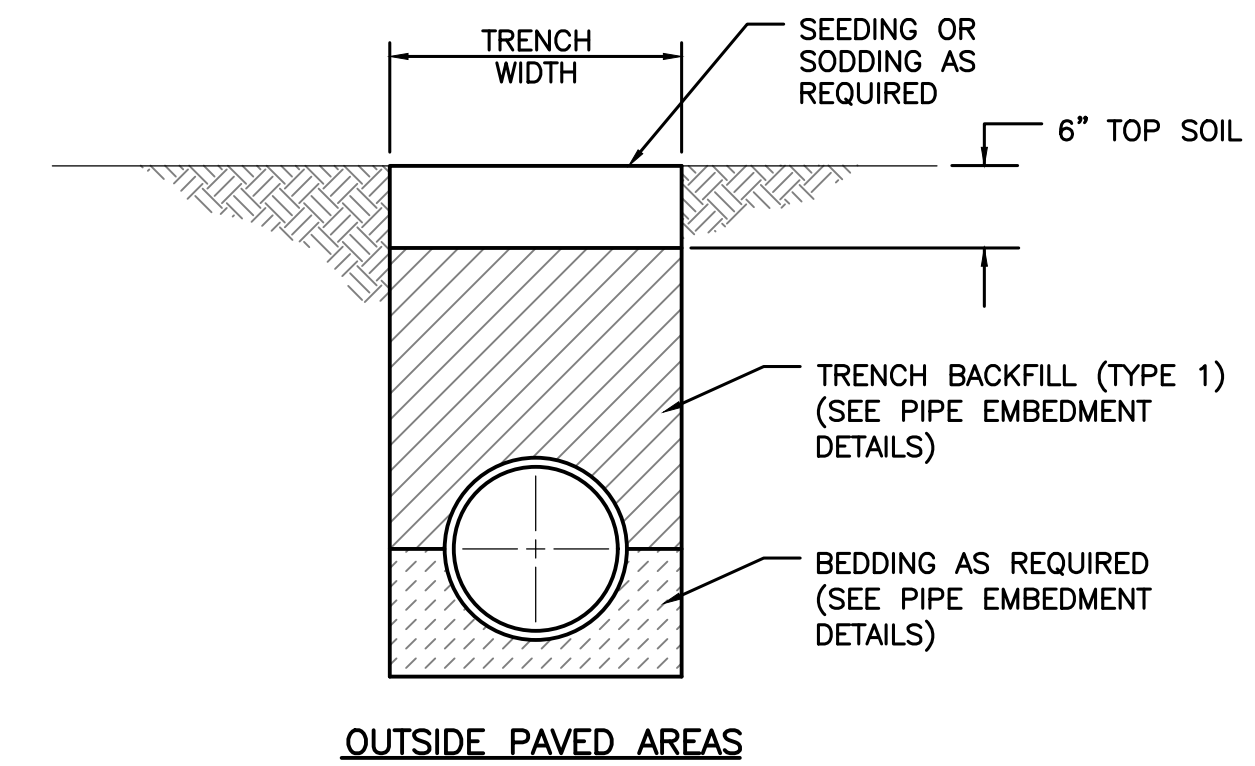


NOTES:

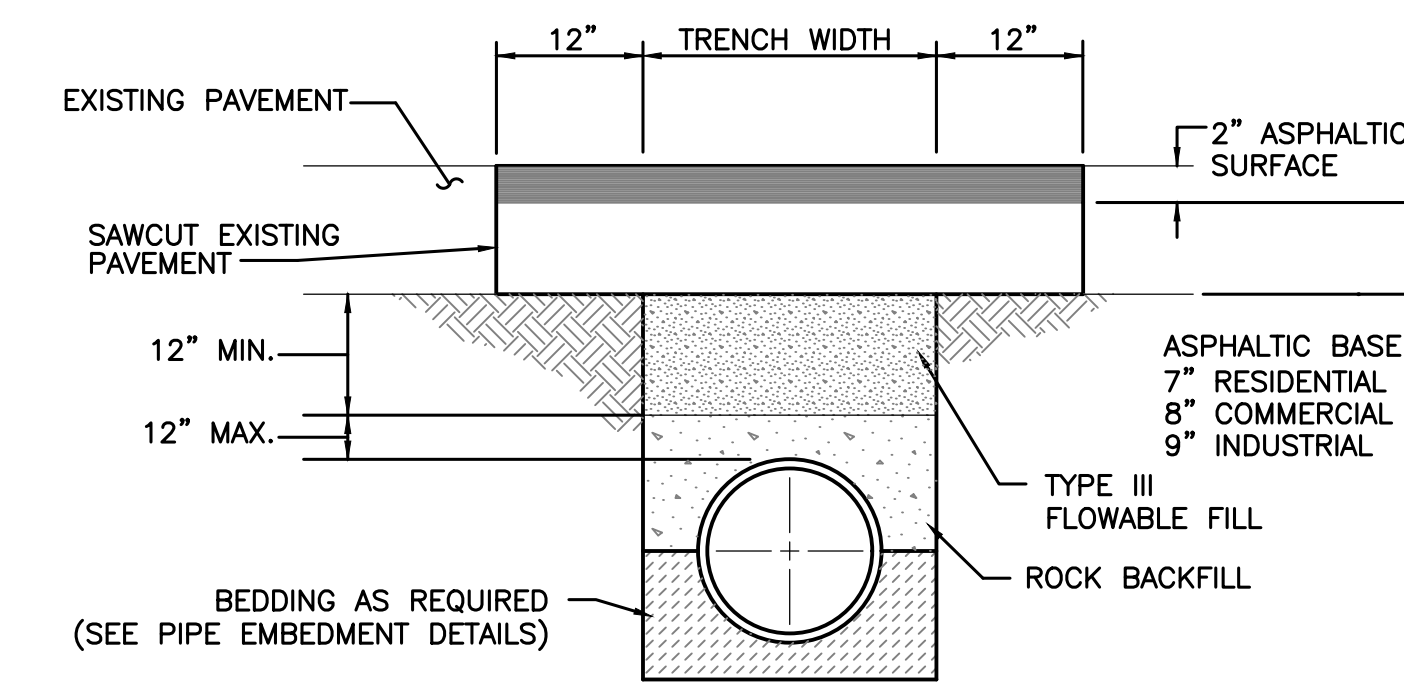
1. EXCAVATIONS EXCEEDING 5' IN DEPTH MUST BE SHORED, BY CONTRACTOR.
2. ALL MATERIAL FOR SERVICE MUST BE INSTALLED PRIOR TO TAP BEING MADE.

PLAN VIEWS

WATERLINE EXCAVATION DETAILS



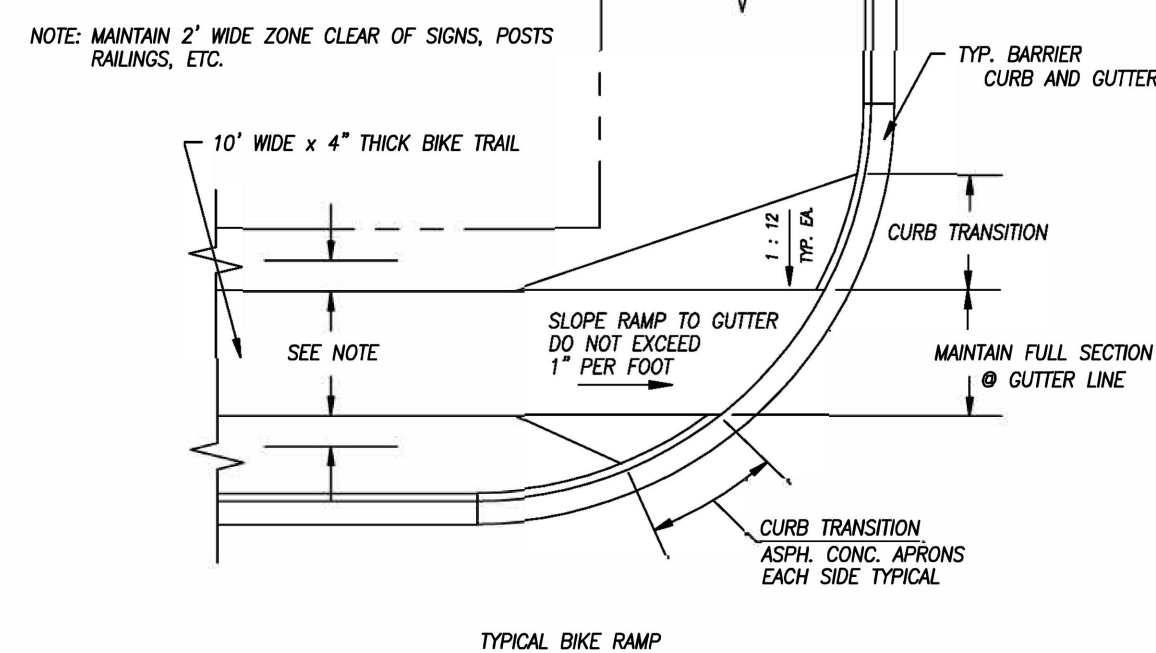
OUTSIDE PAVED AREAS



INSIDE EXISTING PAVED AREAS

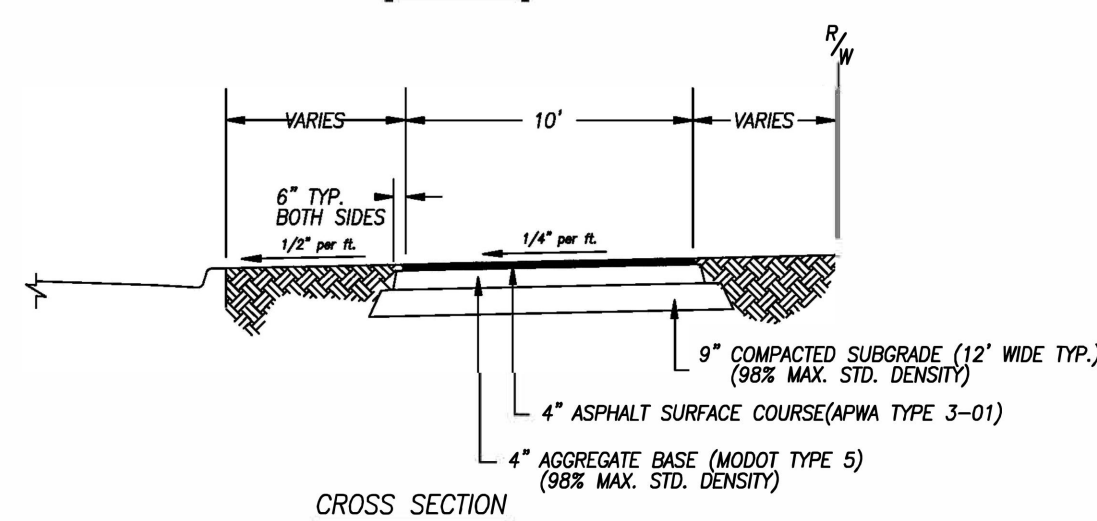
(TO ONE FOOT BEHIND CURB) FOR ANY TESTED ROAD BASE OR ANY EXISTING ROAD

TYPICAL TRENCH BACKFILL DETAIL



TYPICAL BIKE RAMP

PLAN VIEW



CROSS SECTION

STANDARD DETAILS ASPHALT TRAIL

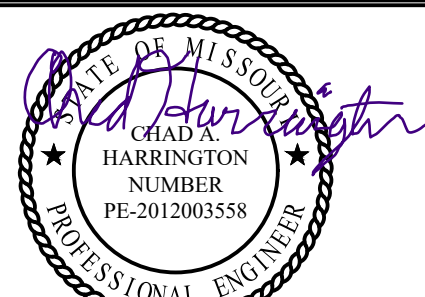


DATE: 6/2/20
SCALE: NO SCALE

MISC-023

LAMP RYNEARSON

LAMPRYNEARSON.COM
OMAHA, NEBRASKA
14710 W. DODGE RD., STE. 100 (402)498.2498
FORT COLLINS, COLORADO
4715 INNOVATION DR., STE. 100 (970)228.0342
KANSAS CITY, MISSOURI
9001 STATE LINE RD., STE. 200 (816)381.0440



08-01-2022
CHAD A. HARRINGTON
PE-2012003558

DETAIL SHEET

BUCKNER TARSNEY WATERLINE EXTENSION
CITY OF GRAIN VALLEY, MISSOURI

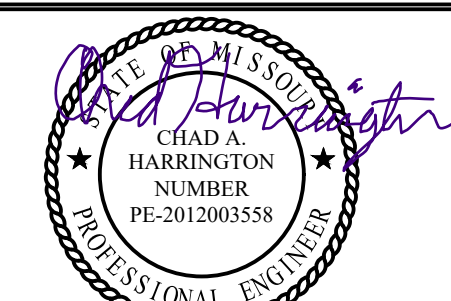


Know what's below.
Call before you dig.

REVISIONS

DESIGNER / DRAFTER
AJM/SAM
DATE
JULY 2022
PROJECT NUMBER
0322006.02
BOOK AND PAGE

MISSOURI AUTHORIZATION NUMBER
F01294734
SHEET



08-01-2022

CHAD A. HARRINGTON

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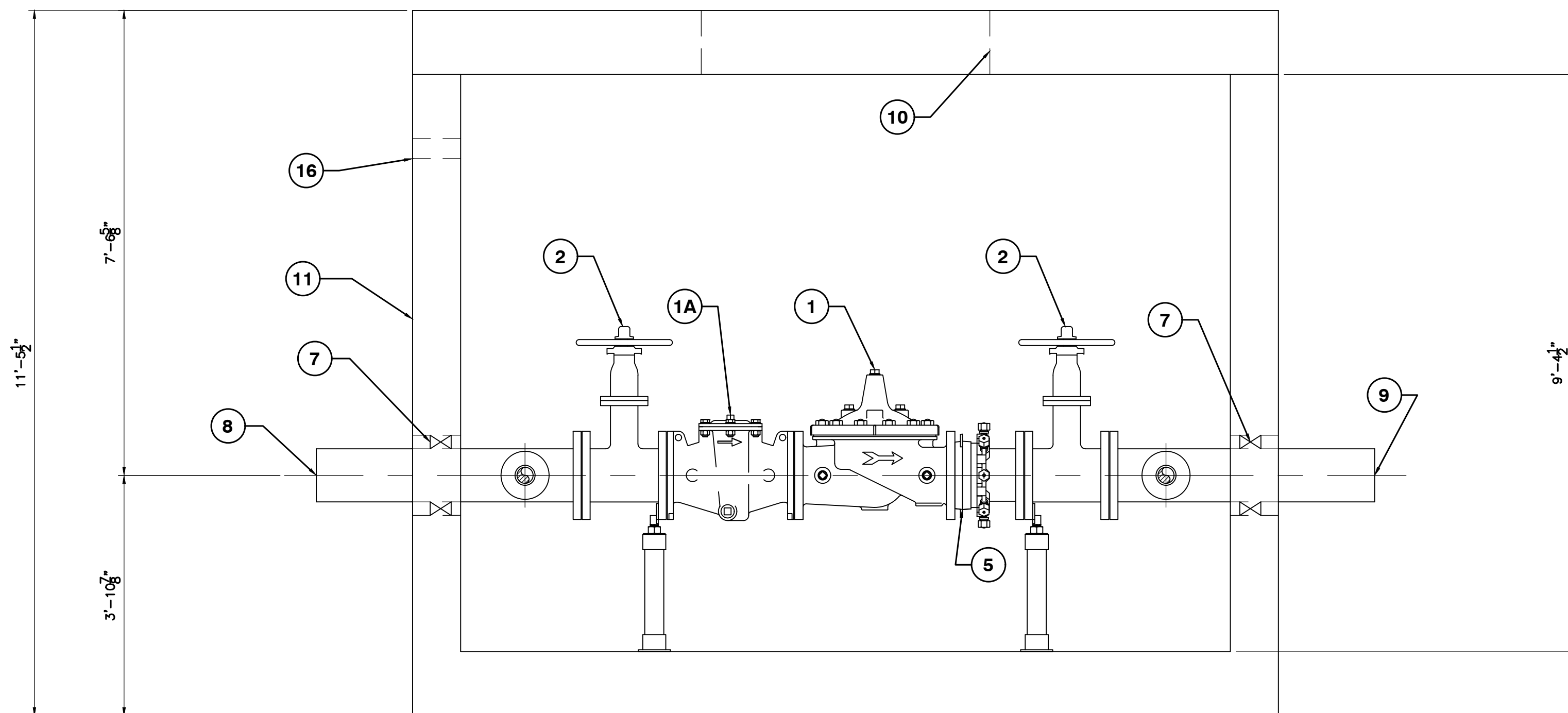
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SHEET

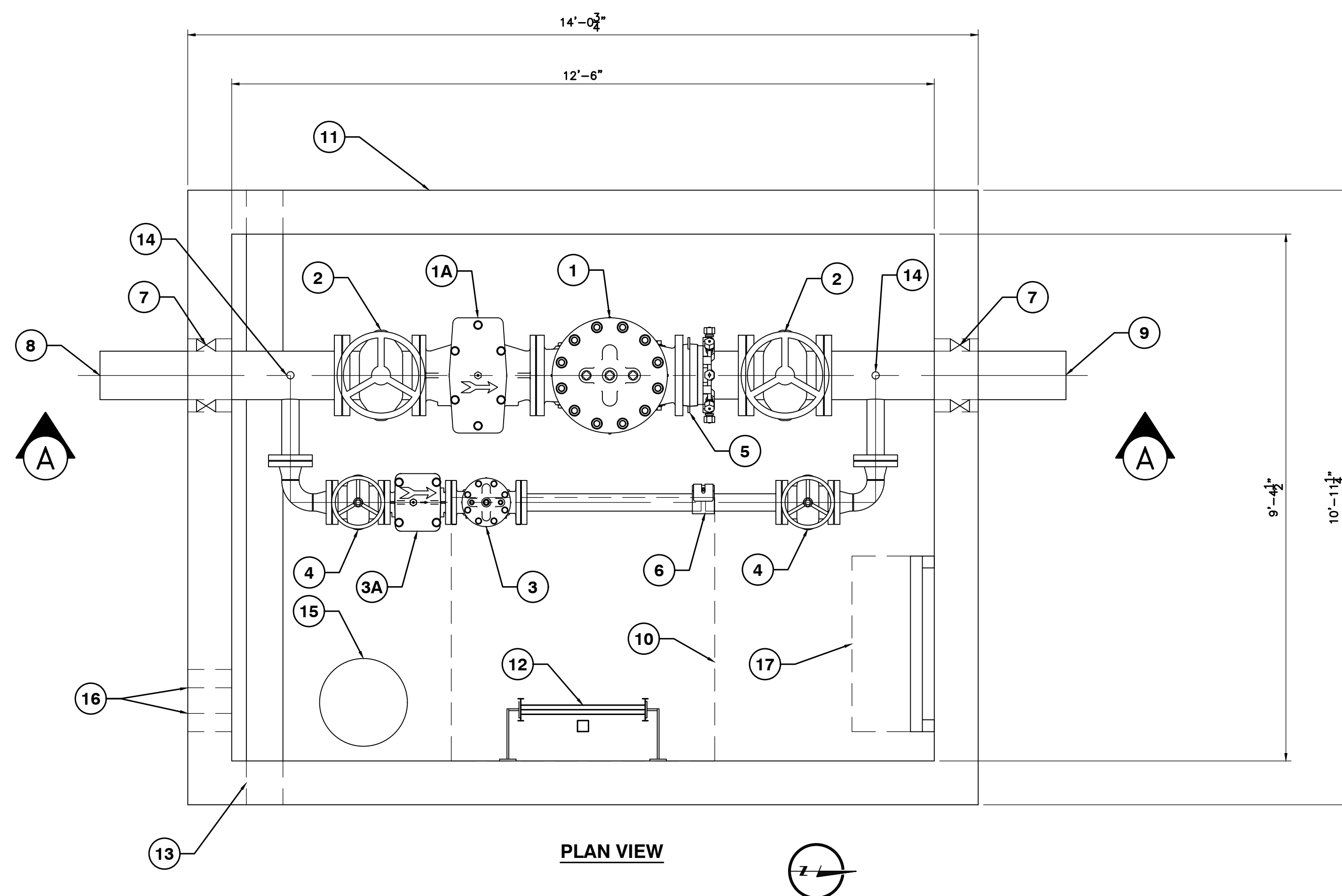
BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	6" CLA-VAL MODEL 90-01 PRESSURE REDUCING VALVE (COA) RH TRIM
1A	1	6" CLA-VAL MODEL X43H STRAINER
2	2	6" NRS GATE VALVE
3	1	2" CLA-VAL MODEL 90-01 PRESSURE REDUCING VALVE (COA) RH TRIM
3A	1	2" CLA-VAL MODEL X43H STRAINER
4	2	2" NRS GATE VALVE
5	1	6" RESTRAINED FLANGE ADAPTER
6	1	2" RESTRAINED COUPLING
7	2	PIPE PENETRATION SEAL
8	1	6" STEEL PIPE INLET
9	1	6" STEEL PIPE OUTLET
10	1	36"x36" ALUMINUM HATCH
11	1	CONCRETE VAULT
12	1	ALUMINUM LADDER WITH SAFETY POST
13	1	TRENCH DRAIN
14	2	1" TAP AND BALL VALVE FOR FUTURE PRESSURE TRANSMITTERS (ALTERNATE ADDITIVE)
15	1	12"Ø SUMP (ALTERNATE ADDITIVE)
16	2	2.5" OPENING FOR 1" OR 3/4" CONDUIT (ALTERNATE ADDITIVE)
17	1	TELEMETRY PANEL (ALTERNATE ADDITIVE)

NOTES:

1. PRV, VALVE VAULT, AND ACCESSORIES AS SHOWN ON THIS SHEET WILL BE PROVIDED BY ESI. CONTRACTOR/DISTRIBUTOR TO COORDINATE DIRECTLY WITH ESI.
2. INSTALL 4" PVC DRAIN TO DAYLIGHT W/FLAP VALVE AT THE END. (NOT PROVIDED BY ESI.) (SUBSIDIARY TO PRV)



PROFILE A-A



PLAN VIEW