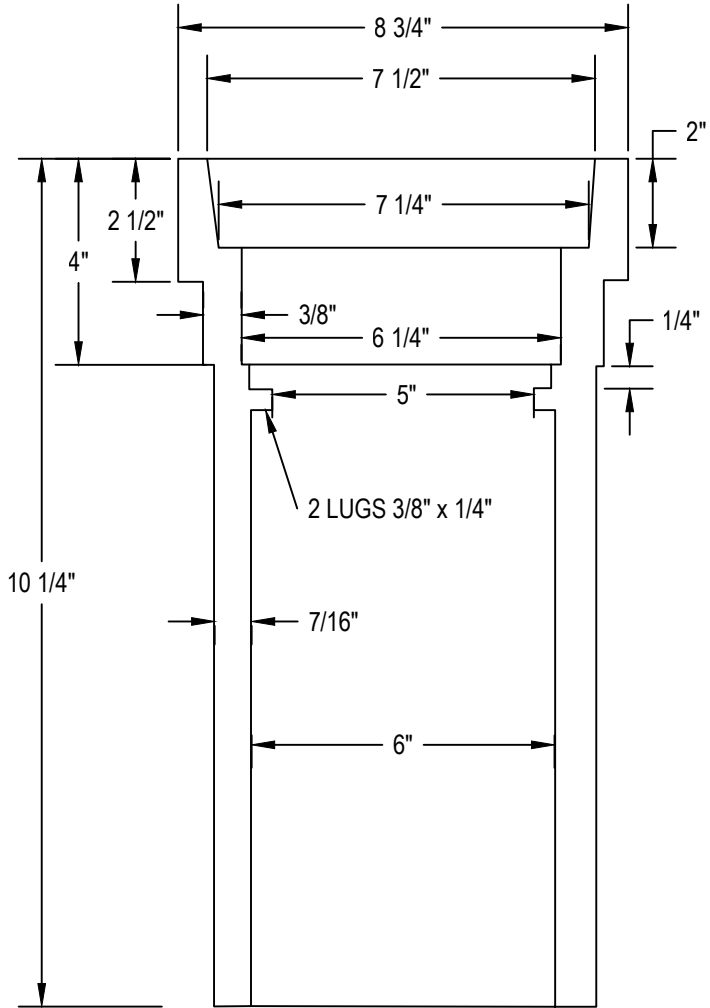


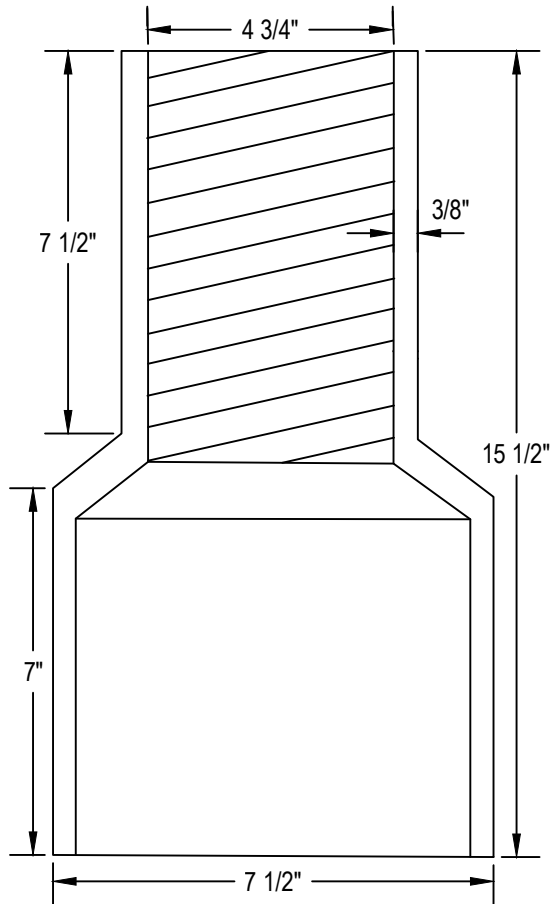
UNION COUNTY WATER STANDARD DETAILS		Rev. 09/13/2024
NUMBER	TABLE OF CONTENTS	REVISION DATE
1	Valve Box	09/13/24
1A	Valve Box Installation	09/13/24
1B	Dummy Valve Box	10/04/11
2	2" Blow-off	11/07/23
2A	Long Mainline Future Extension with Blow-off	09/13/24
2B	Short Mainline Future Extension with Blow-off	09/13/24
3	Fire Hydrant	09/13/24
4	Air Release	09/13/24
5	Service Connection	09/13/24
6	Meter Installation for ¾" and 1" Meters	09/13/24
6A	Meter Box Lid for ¾" and 1" Meters	02/06/20
7	8" or 6" x 2 Reducer	10/04/11
7A	Hydrant Tee x 2" Reducer	10/04/11
8	Pipe Bedding	11/17/06
8A	Sewer Bedding	09/13/24
8B	Water Trench	09/13/24
9	Ring & Cover	09/09/11
9A	Ring & Cover for Sealed Manhole	09/25/12
10	Manhole	09/13/24
10A	Cleanout Manhole	07/29/08
10B	Outside Drop Manhole	09/13/24
11	Sewer Lateral Detail	02/19/14
12	Reinforced Concrete Piers	11/17/06
13	Aerial Creek Crossing	11/17/06
14	Pipe Encasement	11/17/06
15	Pavement Replacement	11/17/14
16	Thrust Block	11/17/06
17	Thrust Block Specifications	11/17/06
18	Tapping Sleeve	09/13/24
19	2" Short Side Service for 1 ½" or 2" Meters	09/13/24
20	2" Long Side Service for 1 ½" or 2" Meters	05/22/13
21	Anti-Seep Collar	11/17/06
22	Water Connection Detail	12/12/19
23	Bypass Emergency Connection for Wet Well	09/27/07
24A	Reduced Pressure Zone Assembly (¾" - 2")	12/13/13
24B	Reduced Pressure Detector Assembly	01/02/14
25	Jumper Connection	09/02/10
25A	Direct Tap Jumper Connection (Short Side)	09/02/10
25B	Direct Tap Jumper Connection (Long Side)	09/02/10
26	Grease Interceptor	10/23/07
27	Water Relocation Detail	09/13/24
27A	Water Relocation Detail for Large Water Mains	03/08/11
27B	Water Relocation Detail for Small Water Mains	03/08/11
28	Meter and Vault – 3" or Larger	10/22/14
29	Standard 1 ½" & 2" Meter Installation & Vault	06/13/14
30	Irrigation and Dual Meter Tap	12/10/19
31	Water Main Under Storm Drain Crossing	09/13/24
32	Maximum Slope Across Water or Sewer Easement	03/02/18

NOTES:

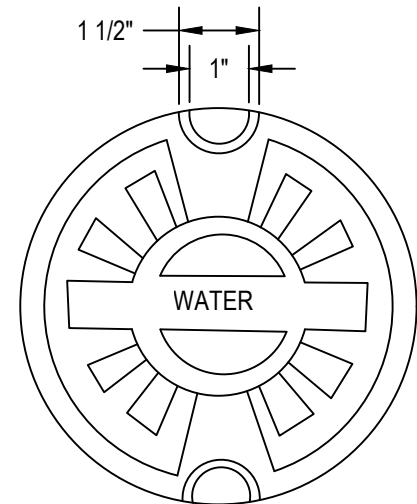
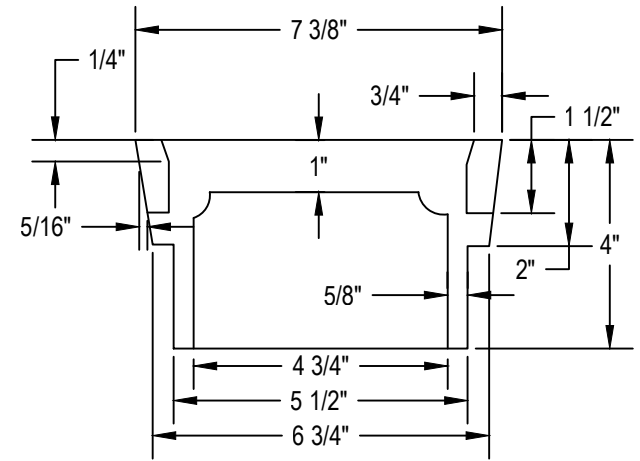
1. 2" GATE VALVES SHALL BE AWWA C515 COMPLIANT
2. 2" GATE VALVES SHALL BE NSF 61 COMPLIANT
3. 3" OR LARGER GATE VALVES SHALL BE AWWA C500 AND C509 COMPLIANT



TOP



BOTTOM  
(SCREW TYPE)



COVER



STANDARD DETAIL

VALVE BOX

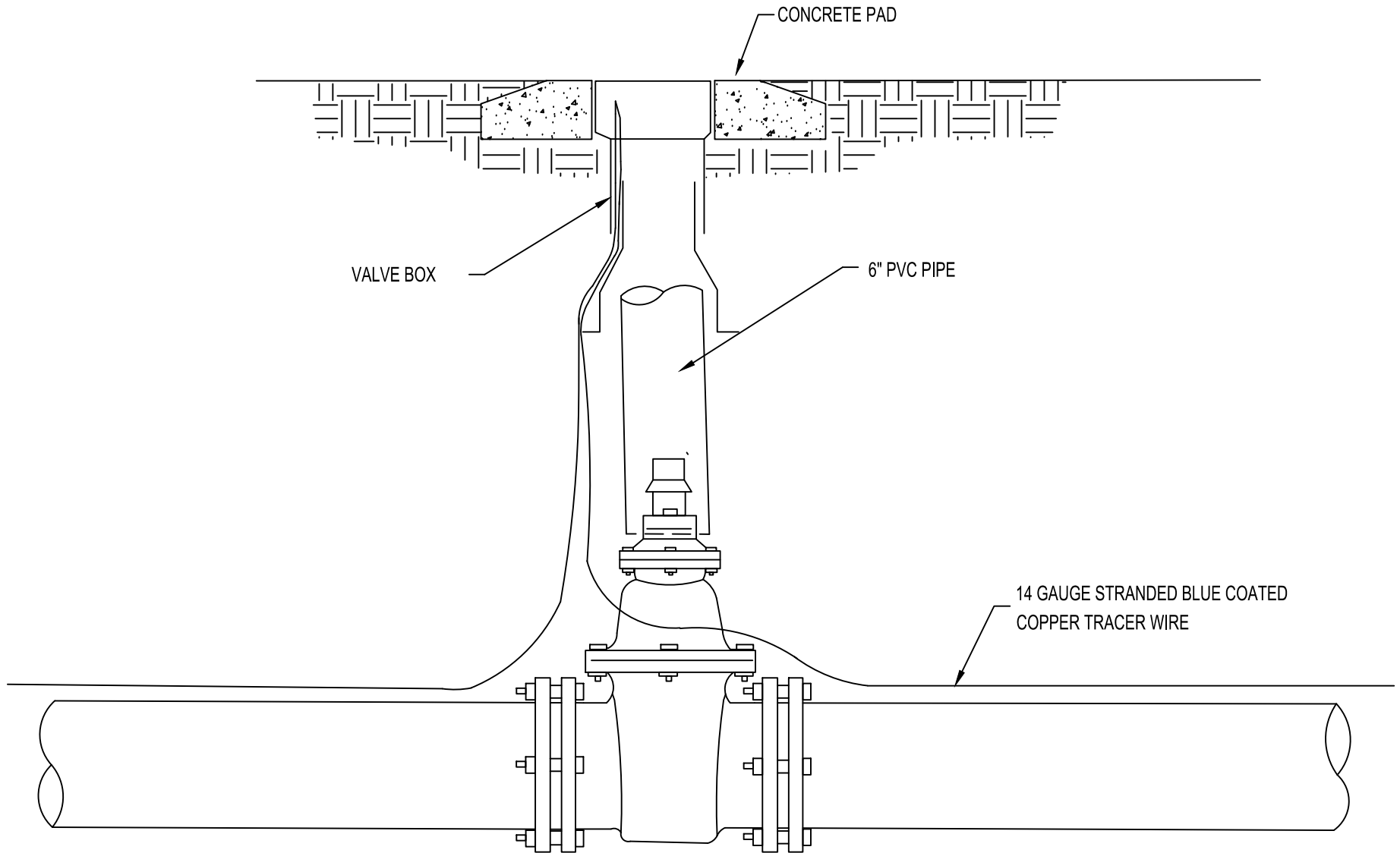
SCALE:  
N.T.S.

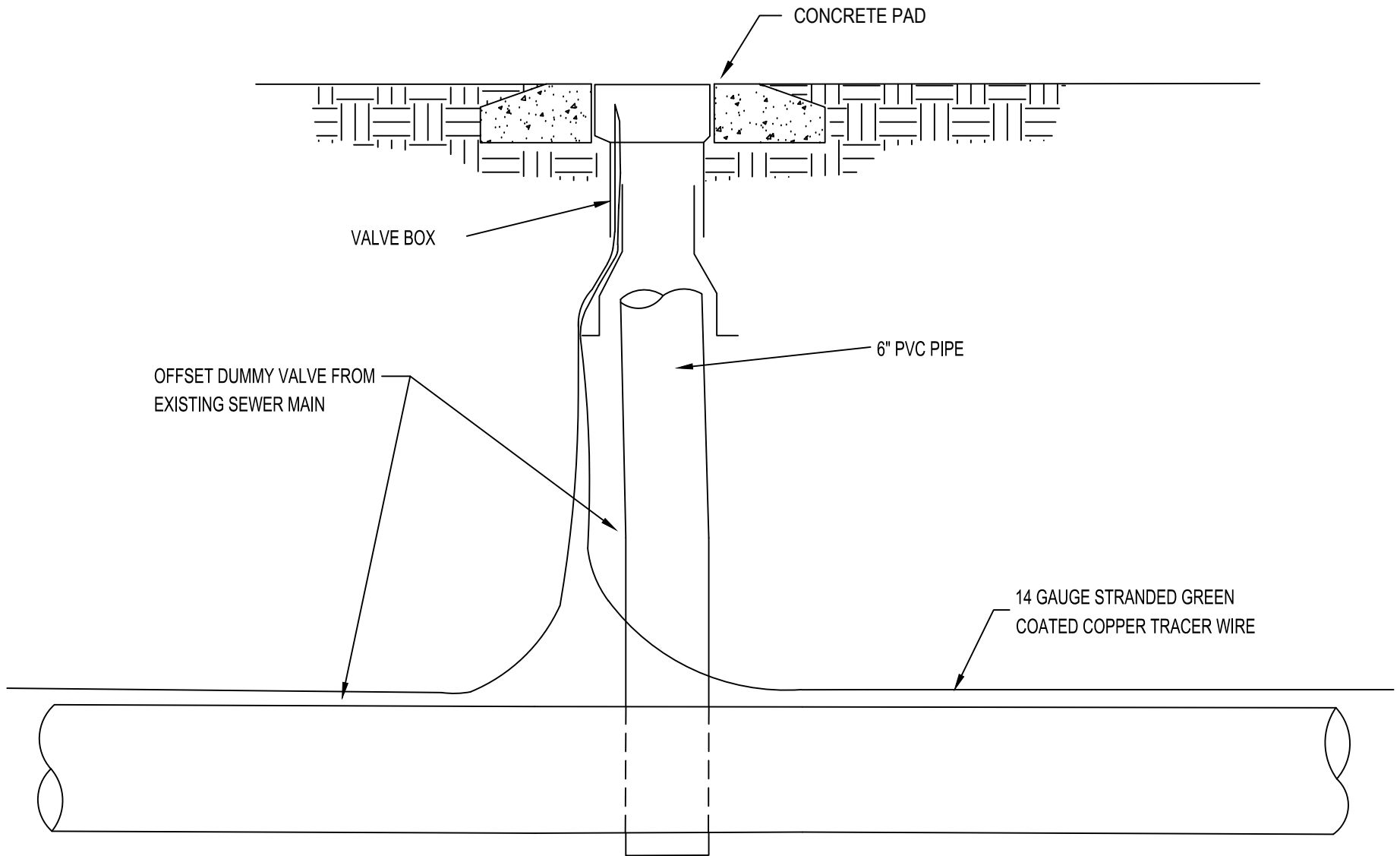
DATE:  
09-13-24

1

NOTES:

1. A 27" DIAMETER CONCRETE PAD SHALL BE PLACED AROUND EACH VALVE BOX
2. MINIMUM 18" SEPARATION BETWEEN GV AND MECHANICAL JOINT FITTINGS





STANDARD DETAIL

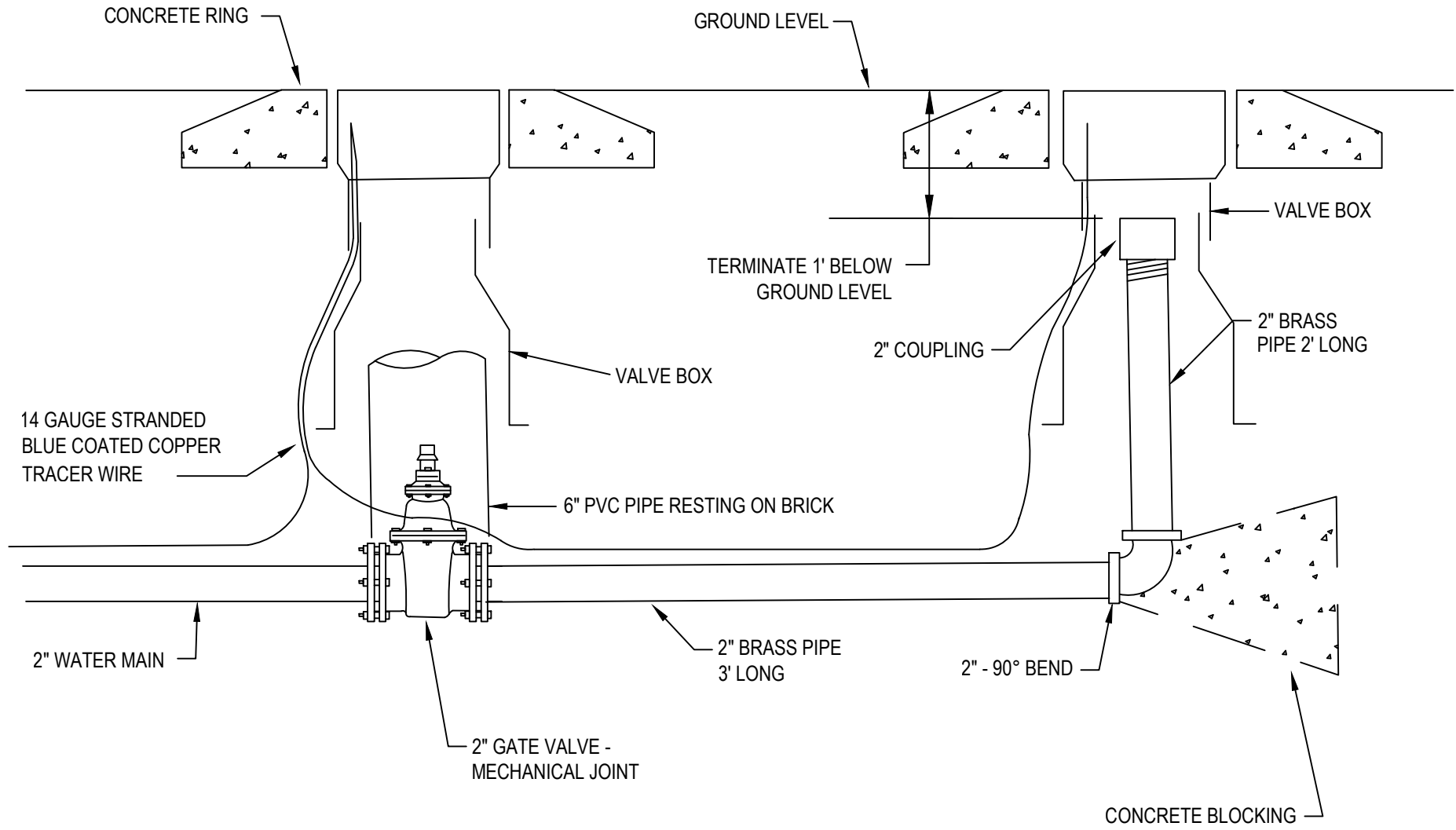
# DUMMY VALVE BOX



SCALE:  
N.T.S.

DATE:  
10-04-11

# 1B



STANDARD DETAIL

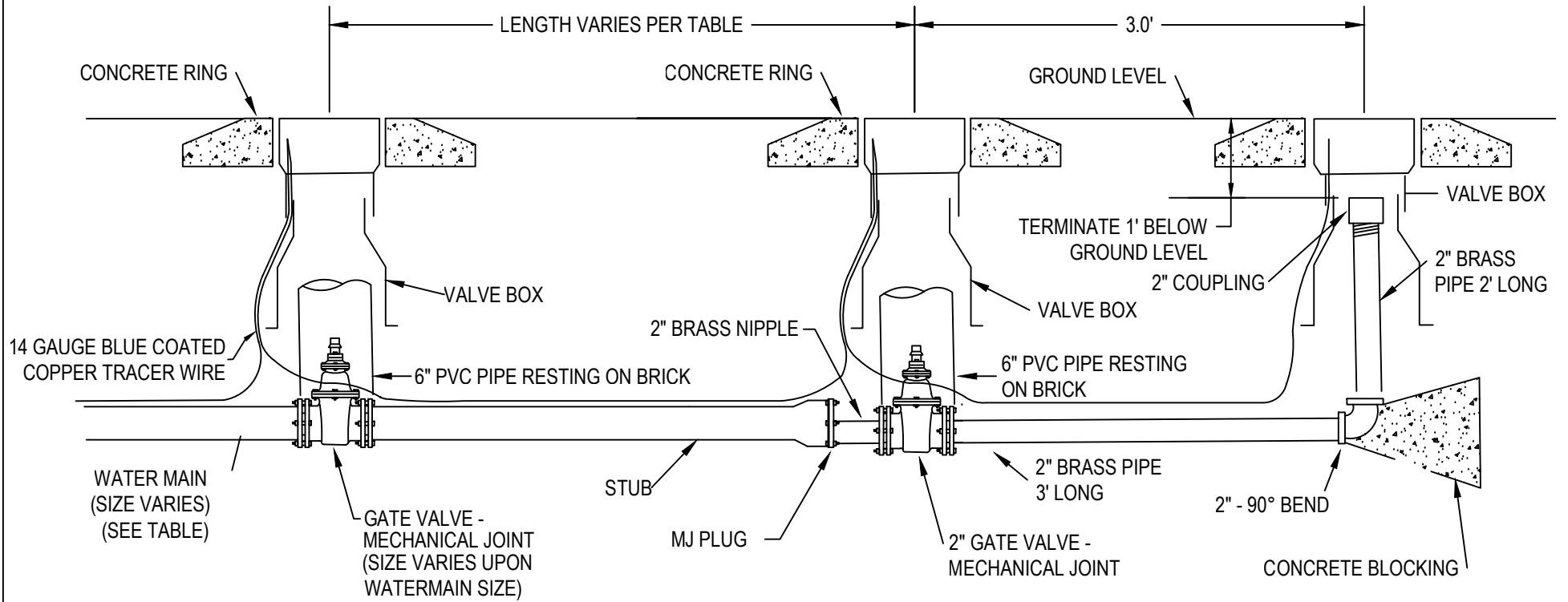
# 2" BLOW OFF

SCALE:  
N.T.S.  
DATE:  
11-07-23

# 2

TABLE

SIZE OF PIPE	LENGTH OF PIPE
6"	40'
8"	40'
12" AND LARGER	BY ENGINEER



STANDARD DETAIL

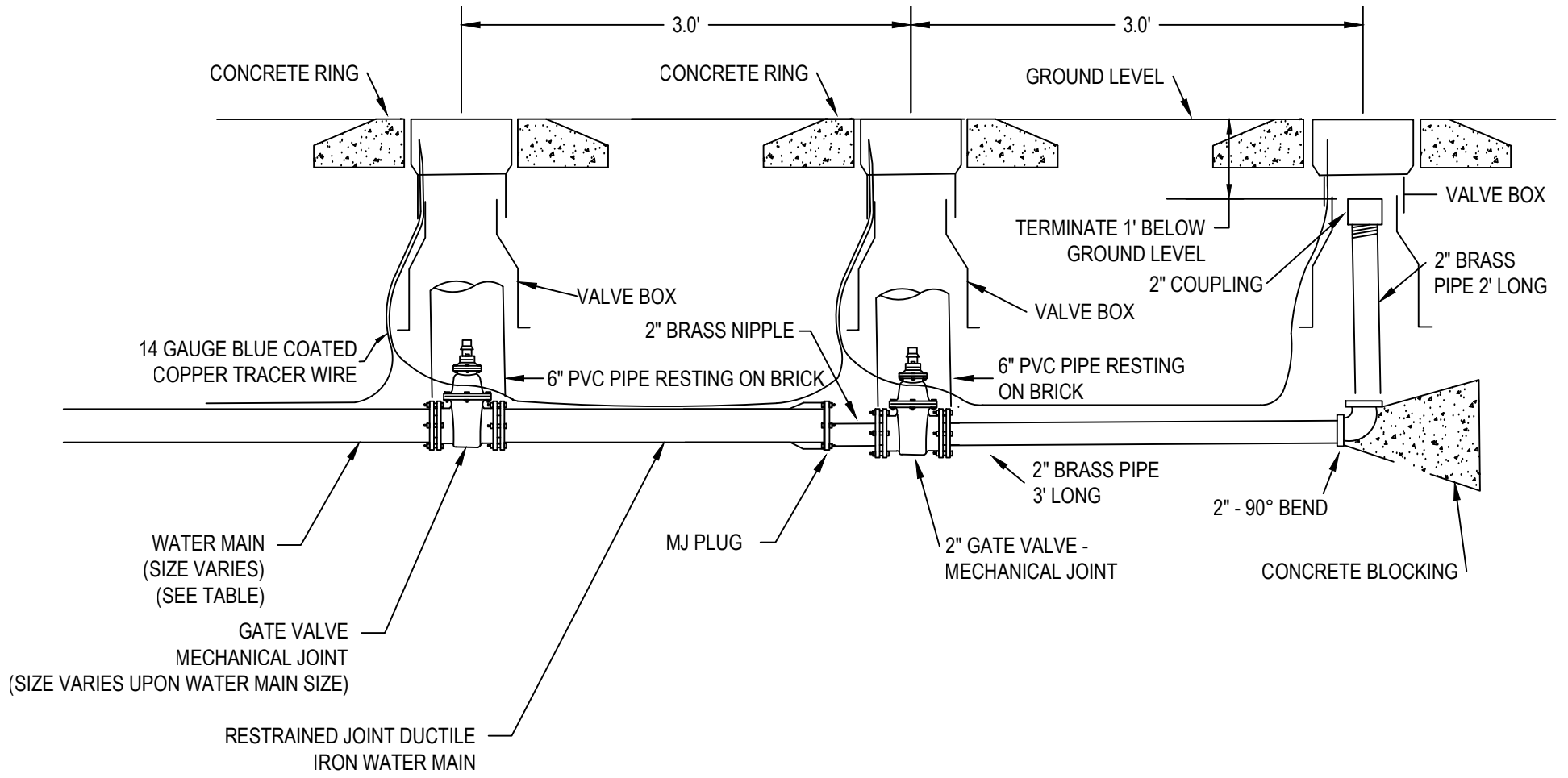
LONG MAIN LINE FUTURE EXTENSION WITH BLOW OFF

SCALE:  
N.T.S.  
DATE:  
09-13-24

2A

TABLE

SIZE OF PIPE	LENGTH OF PIPE
6"	54'
8"	54'
12" AND LARGER	BY ENGINEER



STANDARD DETAIL

SHORT MAIN LINE FUTURE EXTENSION WITH BLOW OFF



SCALE:  
N.T.S.  
DATE:  
09-13-24

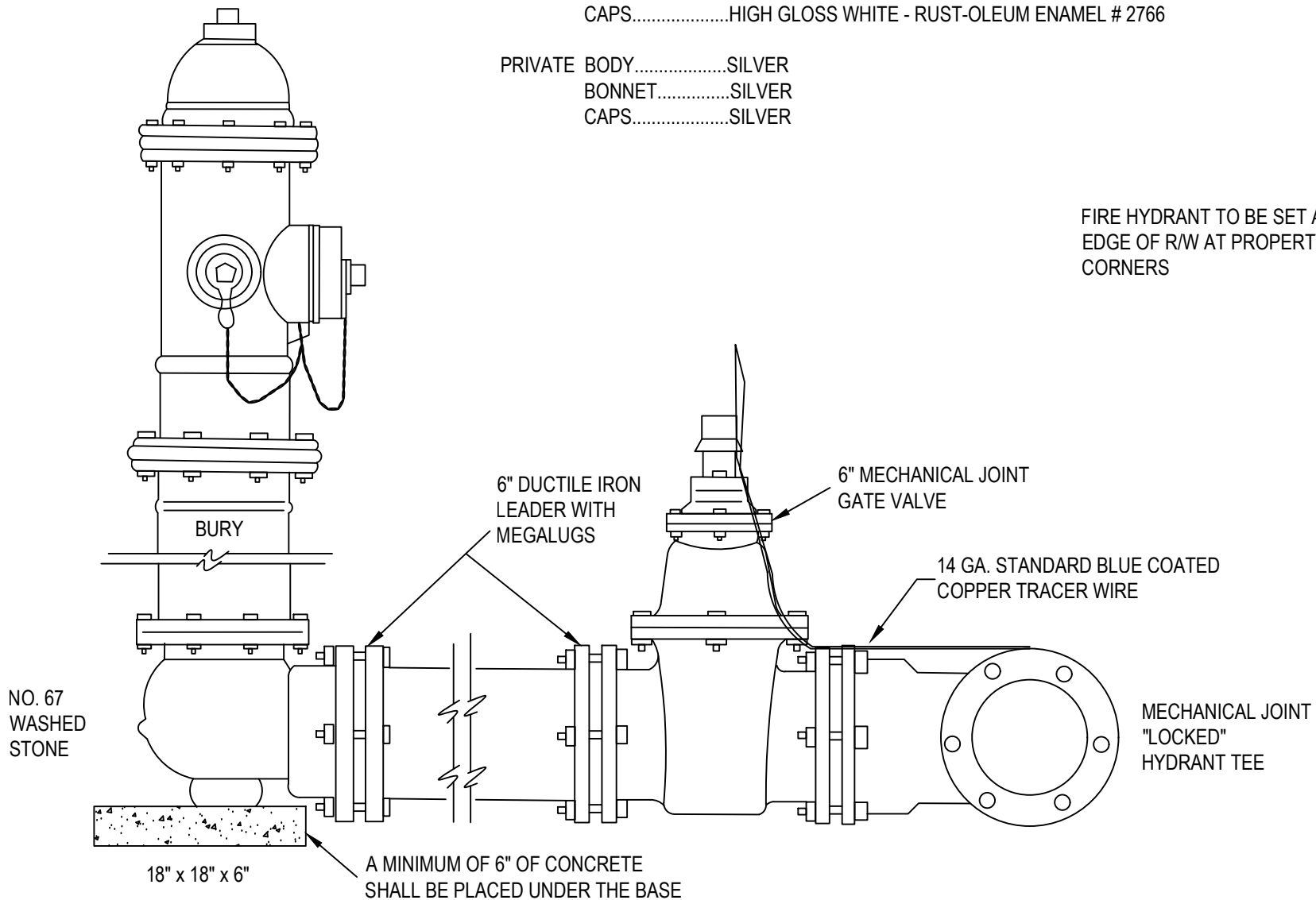
2B

PAINT COLORS

PUBLIC BODY.....FIRE HYDRANT RED - RUST-OLEUM ENAMEL # 1210 FIRE HYDRANT RED  
 BONNET.....HIGH GLOSS WHITE - RUST-OLEUM ENAMEL # 2766  
 CAPS.....HIGH GLOSS WHITE - RUST-OLEUM ENAMEL # 2766

PRIVATE BODY.....SILVER  
 BONNET.....SILVER  
 CAPS.....SILVER

FIRE HYDRANT TO BE SET AT  
 EDGE OF R/W AT PROPERTY  
 CORNERS



STANDARD DETAIL

# FIRE HYDRANT INSTALLATION

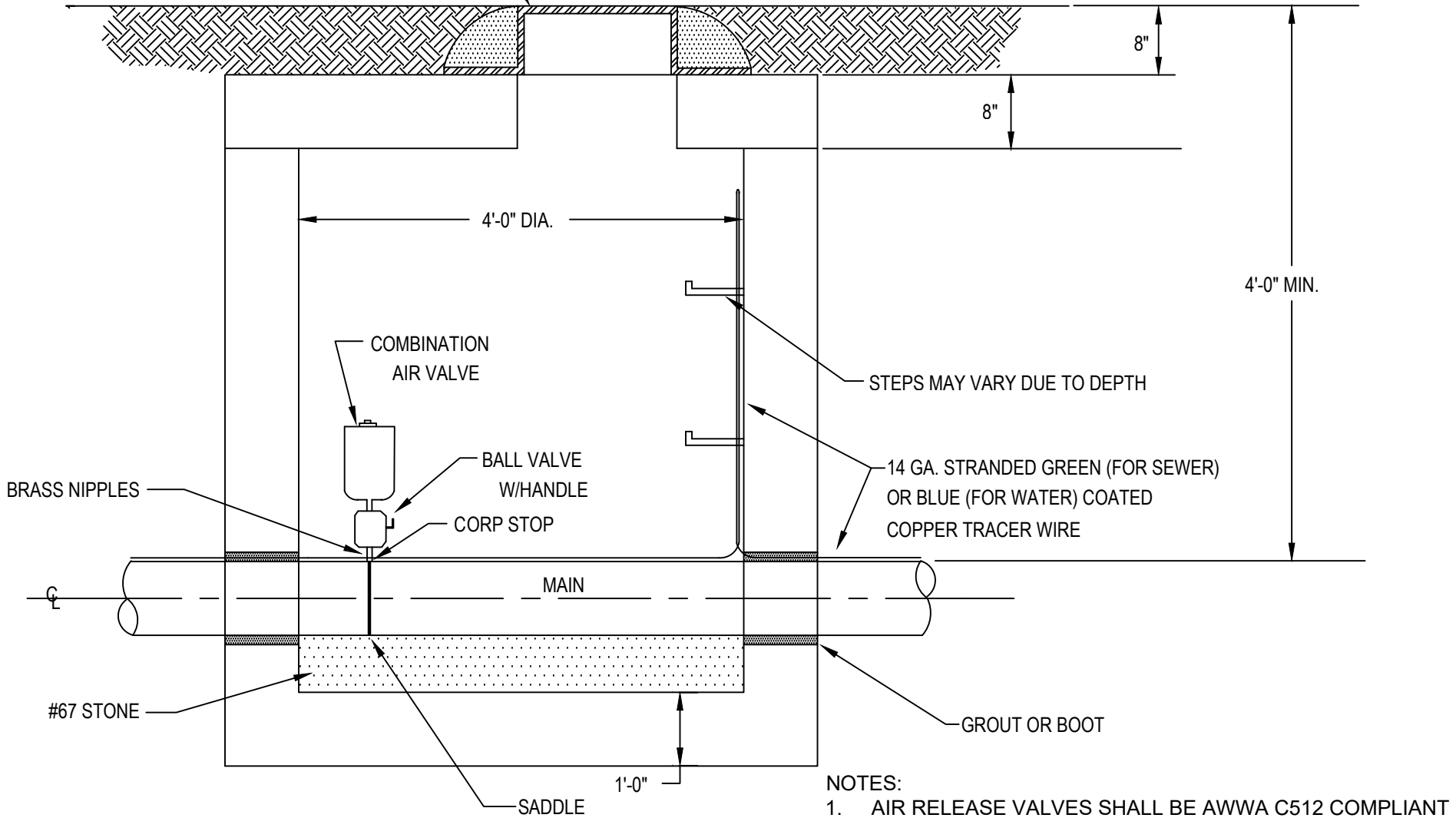
SCALE:  
 N.T.S.  
 DATE:  
 09-13-24

3



DEWEY BROTHERS MANHOLE 2001  
FRAME & COVER OR APPROVED EQUAL

APPROVED VALVES	WATER		SEWER
	1"	2"	2"
APCO	No. 50	No. 200	VENT-O-MAT
CRISPIN	No. 10	No. 20	VENT-O-MAT
VAL-MATIC	No. 25	No. 50	VENT-O-MAT



STANDARD DETAIL

# AIR RELEASE

SCALE:  
N.T.S.

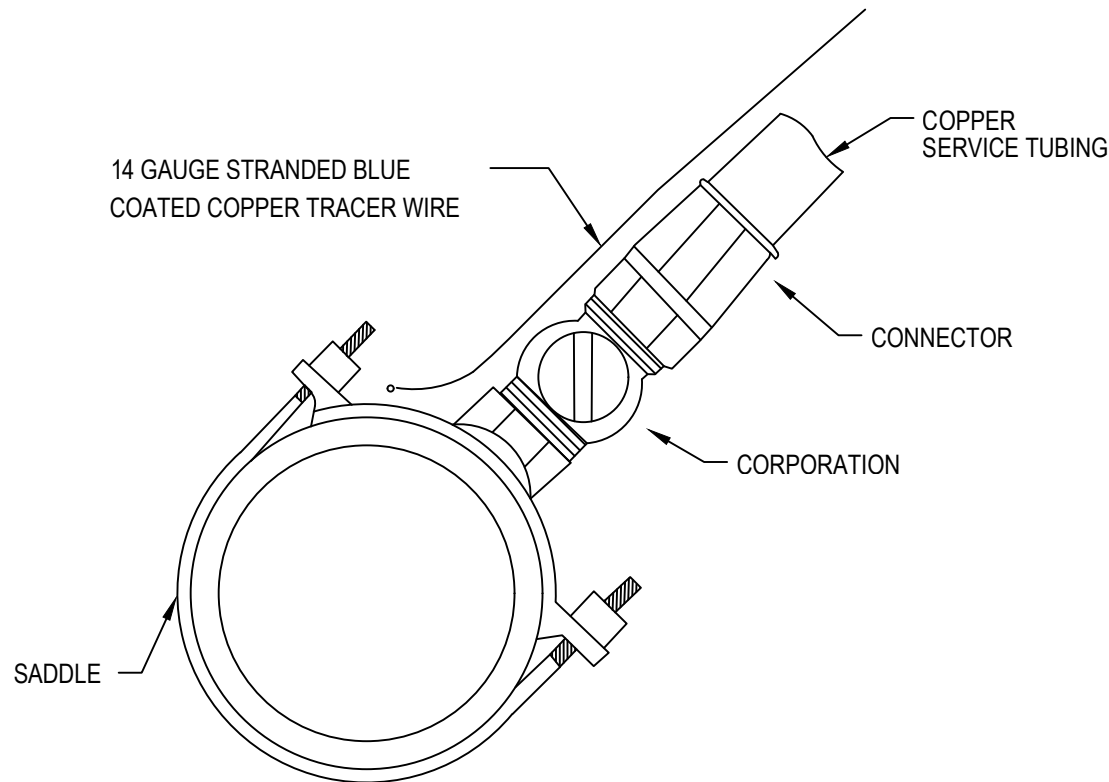
DATE:  
09-13-24

4

NOTE:

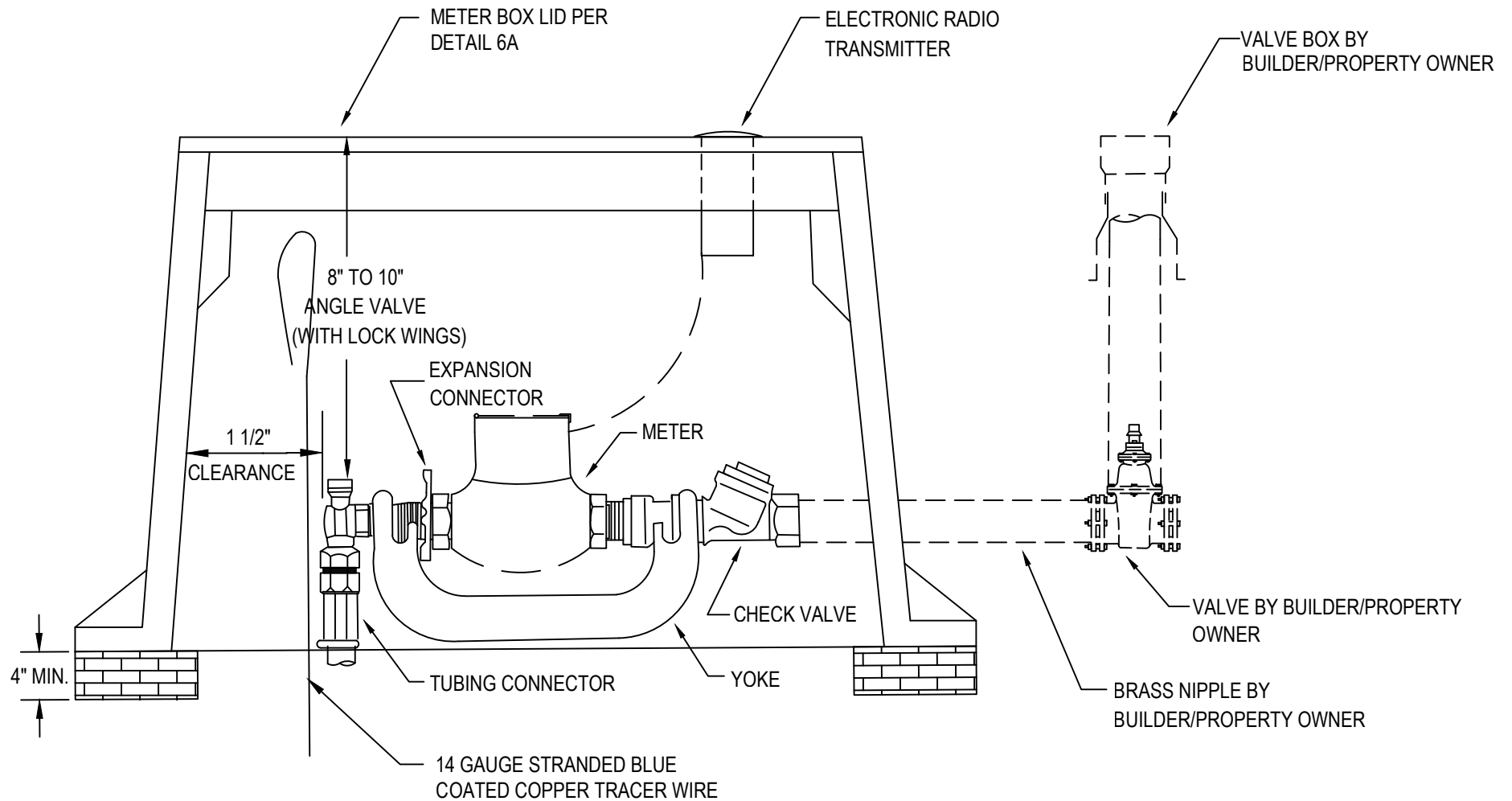
1. ROMAC 101N SHALL REPLACE MUELLER FOR PIPE DIAMETER UP TO 8"
2. SMITH BLAIR 317, FORD FC 202 OR ROMAC 202N SHALL REPLACE MUELLER FOR PIPE DIA. 12" AND UP
3. SERVICE SADDLES SHALL HAVE TWO FLAT STRAPS (PER UCW SPECIFICATION SECTION 5, 5.01, B)
4. EXISTING SERVICES BEING CONNECTED TO NEW LINES SHALL BE ONE CONTINUOUS ROLL OF COPPER
5. MINIMUM 18-INCH SEPARATION BETWEEN SERVICE CONNECTION AND MECHANICAL JOINT FITTINGS

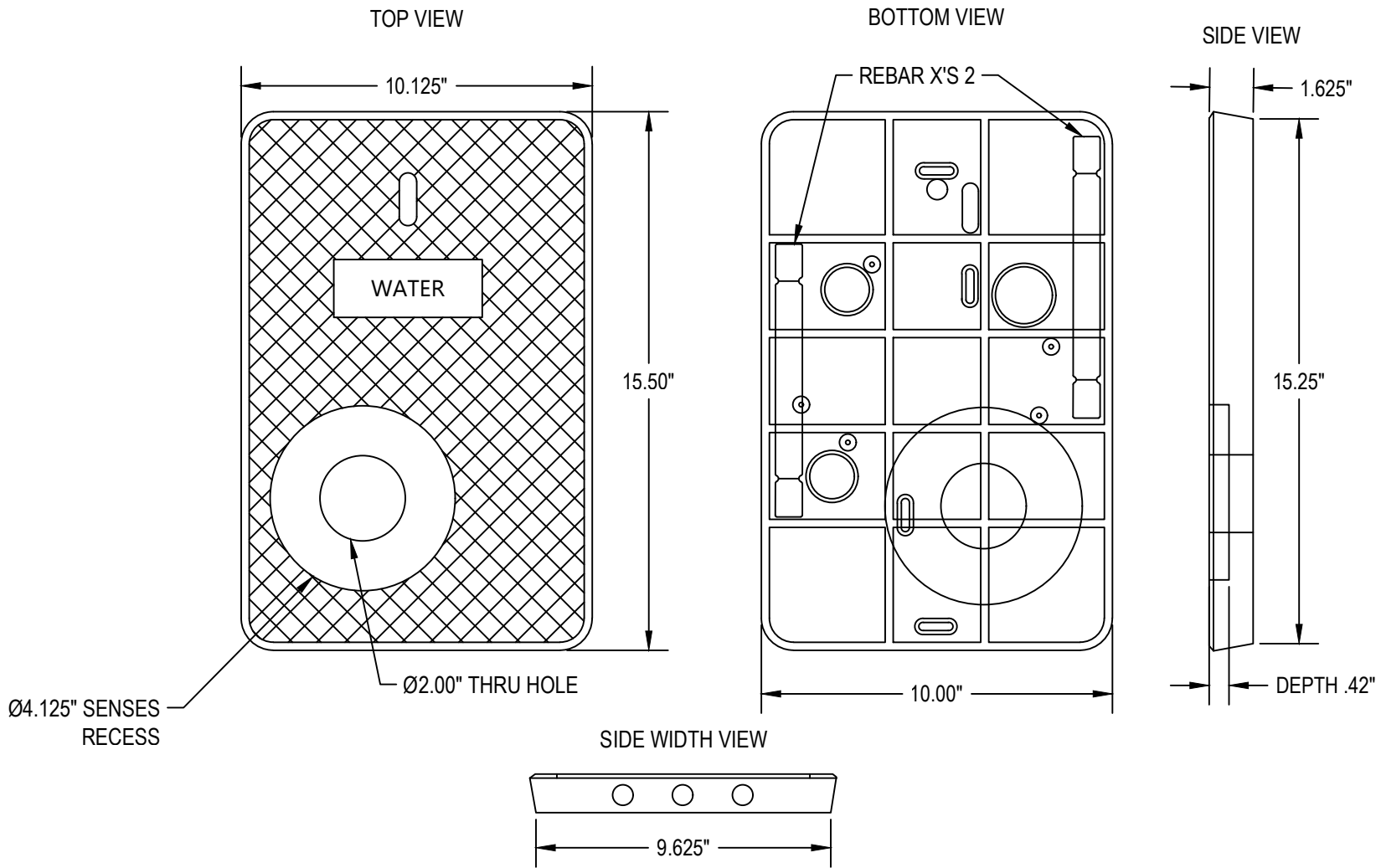
APPROVED SERVICE HARDWARE			
		MUELLER	FORD
	2" PVC	H-13420	S70
SADDLE	UP TO 8"	SEE NOTE	FC 101
BALL CORPORATION		B-25008	FB1000G
YOKE		H-5020	Y 502
ANGLE BALL VALVE		B-24273	BA94-323WG
CHECK VALVE		H-14247-A	HHS91-323
CONNECTORS	COPPER	STYLE 110	GRIP JOINT
EXPANSION CONNECTION			EC 23



GENERAL NOTES

1. BUILDER/PROPERTY OWNER TO INSTALL NIPPLE, VALVE AND VALVE BOX BEFORE METER WILL BE SET.
2. FOR SUBDIVISION WITH SIDEWALKS EXTEND COPPER TUBING AFTER THE METER BOX 2 FT BEYOND PROPOSED SIDEWALK
3. CONTRACTOR SHALL USE ONE CONTINUOUS ROLL OF COPPER FROM TAP TO METER. NO SPLICING IS PERMITTED
4. METER AND ERT BY UNION COUNTY AT PREVAILING RATE



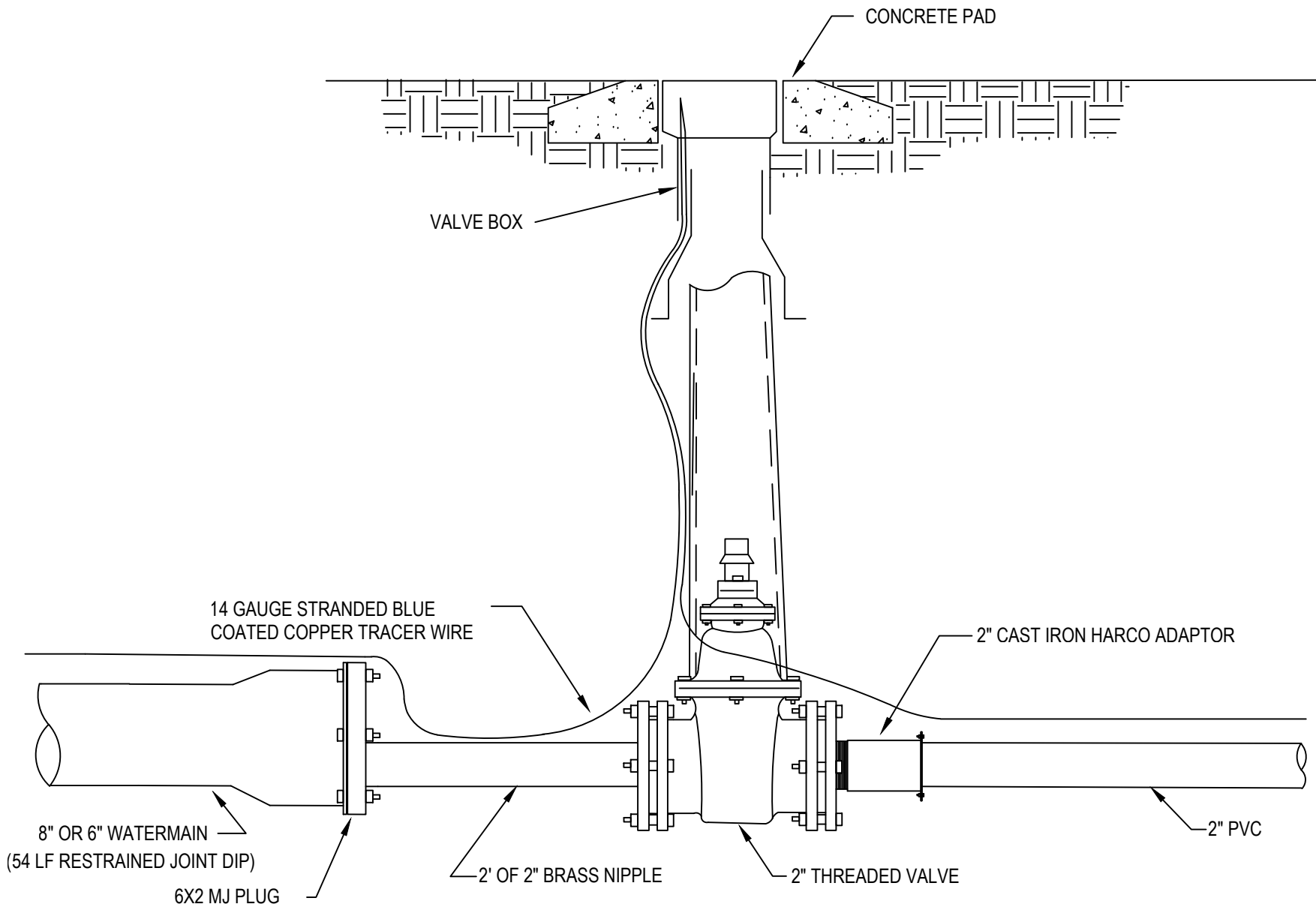


STANDARD DETAIL

METER BOX LID FOR 3/4" AND 1" METERS

SCALE:  
N.T.S.  
DATE:  
02/06/20

6A

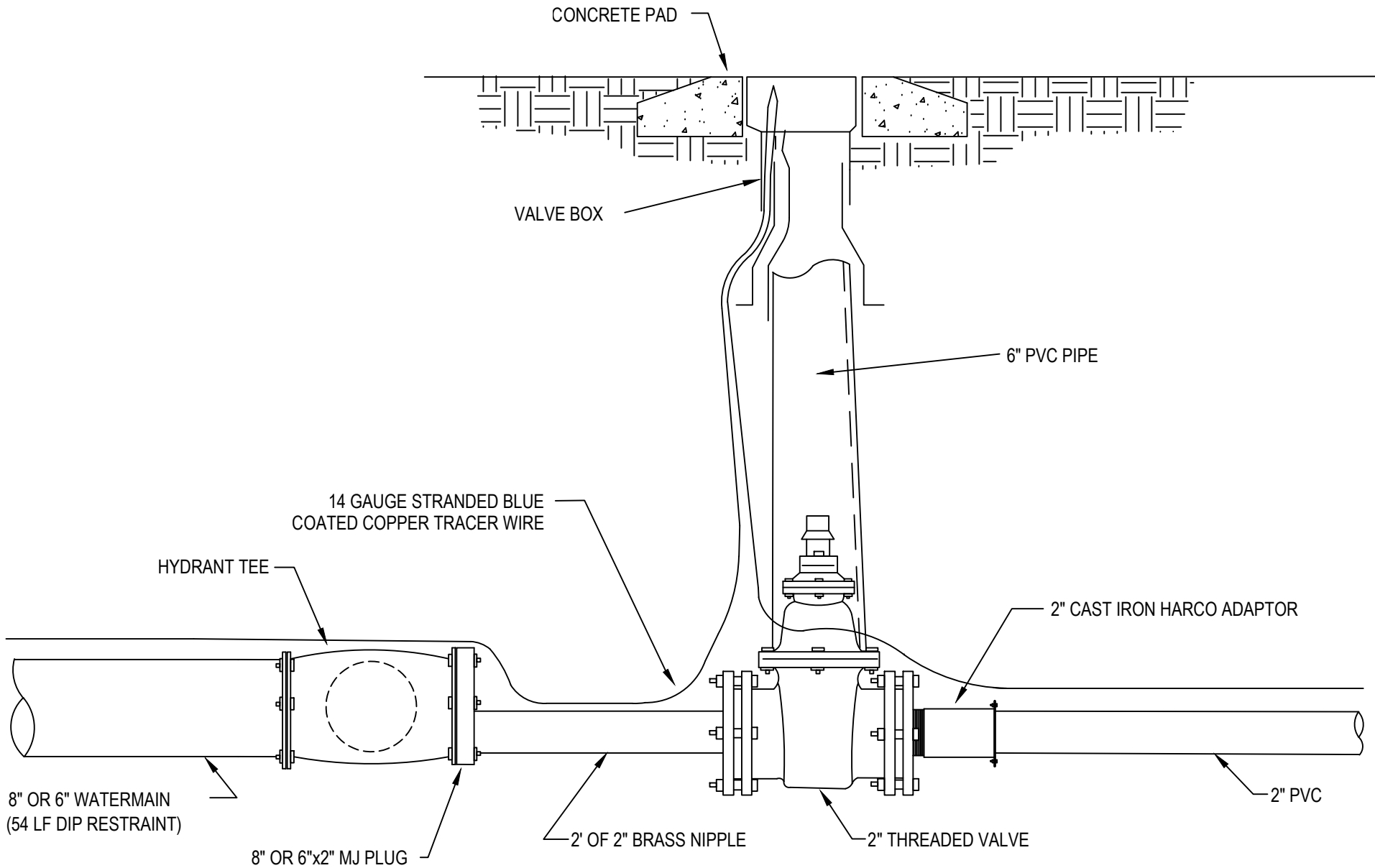


STANDARD DETAIL

# 8" OR 6" x 2" REDUCER

SCALE:  
N.T.S.  
DATE:  
10-04-11



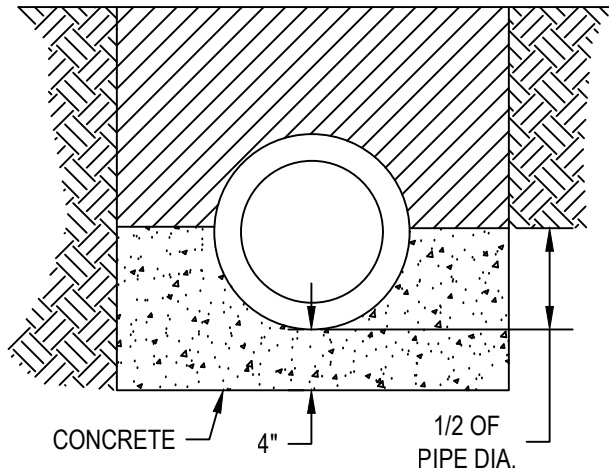


STANDARD DETAIL

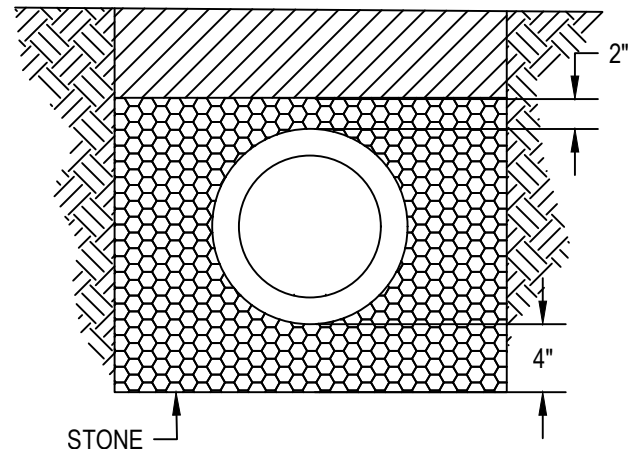
## HYDRANT TEE x 2" REDUCER

SCALE:  
N.T.S.  
DATE:  
10-04-11

# 7A



CLASS A



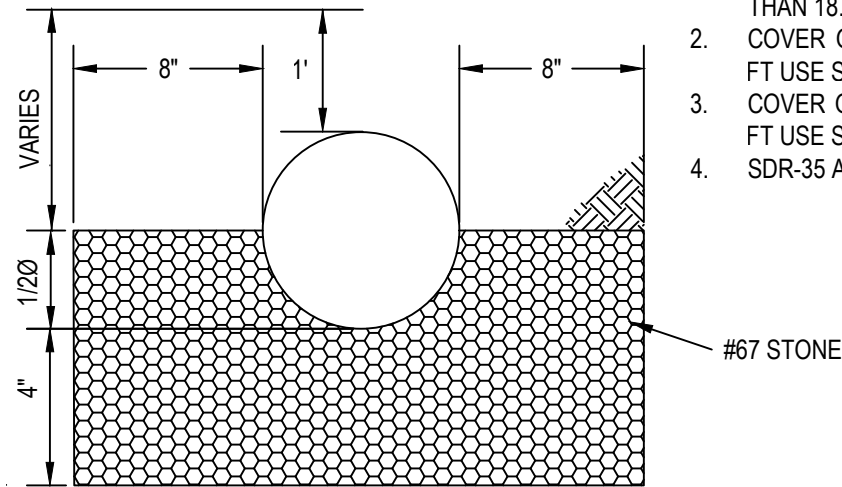
CLASS B

NOTES:  
 ALL CONCRETE = 3000 PSI  
 ALL STONE = N.C.D.O.T. NO. 67

NOTES

1. CAREFULLY COMACTED BACK FILL 1 FT ABOVE PIPE
2. NO STONES LARGER THAN # 67 SONE SHALL BE USED IN SELECT BACKFILL
3. 14 GA. STANDARD BLUE COATED COPPER TRACER WIRE SHALL BE INSTALLED MANHOLE TO MANHOLE
4. MINIMUM PIPE SLOPE IS 0.50%

GRAVITY SEWER - BEDDING DETAIL



CLASS C

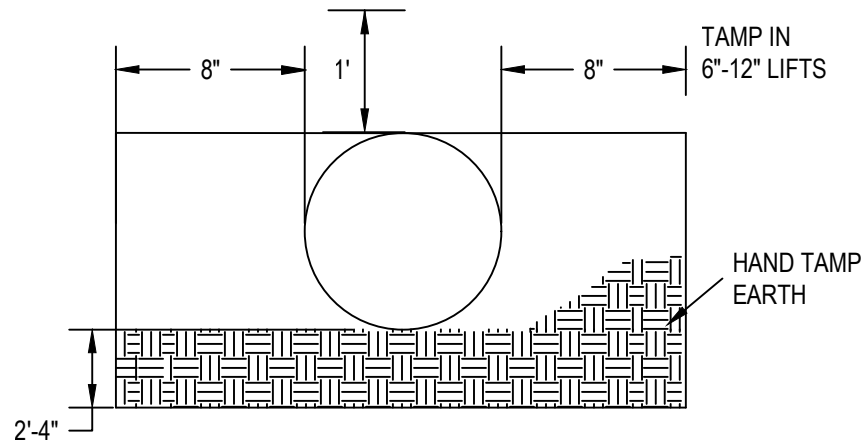
GRAVITY SEWER MINIMUM COVER IS 3.0' AND MAXIMUM COVER IS 14.0' UNLESS PRIOR APPROVAL IS GRANTED BY UCW

REQUIRED MATERIAL FOR DEPTH OF BURY:

1. COVER GREATER LESS THAN 3.0 FT OR GREATER THAN 18.0 FT USE DUCTILE IRON PIPE
2. COVER GREATER THAN 3.0 FT BUT LESS THAN 10.0 FT USE SDR-35
3. COVER GREATER THAN 10.0 FT BUT LESS THAN 18.0 FT USE SDR-26
4. SDR-35 AND SDR-26 REQUIRED CELL CLASS 12454

NOTES

1. CAREFULLY COMACTED BACK FILL 1 FT ABOVE PIPE
2. 14 GA. STANDARD BLUE COATED COPPER TRACER WIRE SHALL BE INSTALLED VALVE BOX TO VALVE BOX
4. PIPE 8-IN AND LESSER MINIMUM RESTRAINED JOINT DIP LENGTH 54 LF.
5. PIPE 12-IN AND LARGER LENGTH TO BE DETERMINED BY ENGINEER. MINIMUM LENGTH OF RESTRAINT JOINT DIP 54 LF FINAL



FORCE MAIN

FORCE MAIN MINIMUM COVER IS 3.0' AND MAXIMUM COVER IS 5.0' UNLESS PRIOR APPROVAL IS GRANTED BY UCW



STANDARD DETAIL

SEWER BEDDING

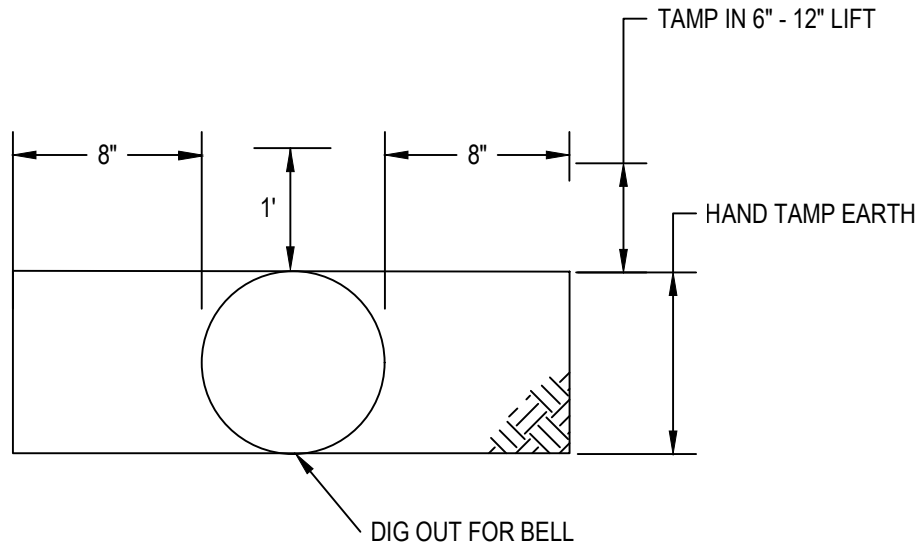
SCALE:  
N.T.S.  
DATE:  
09-13-24

8A



NOTES

1. 2" PVC SDR 21
2. 6"-8" PVC SDR 18
3. 12" OR LARGER DIP
4. CAREFULLY COMACTED BACK FILL 1 FT ABOVE PIPE
5. NO STONES LARGER THAN # 67 SONE SHALL BE USED IN SELECT BACKFILL
6. 14 GA. STANDARD BLUE COATED COPPER TRACER WIRE SHALL BE INSTALLED VALVE TO VALVE
7. PIPE 8-IN AND LESSER MINIMUM RESTRAINED JOINT DIP LENGTH 54 LF.
8. PIPE 12-IN AND LARGER MINIMUM LENGTH OF RESTRAINT JOINT DIP 54 LF FINAL LENGTH TO BE DETERMINED BY ENGINEER.



WATER MAIN MINIMUM COVER IS 3.0' AND MAXIMUM COVER IS 6.0' UNLESS PRIOR APPROVAL IS GRANTED BY UCW

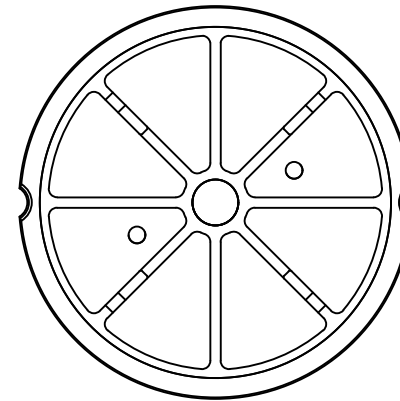
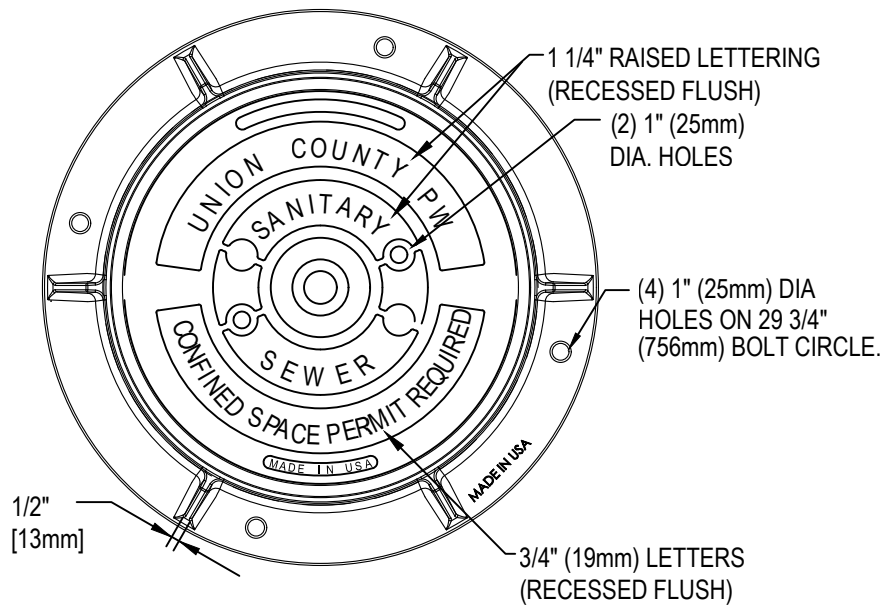


STANDARD DETAIL

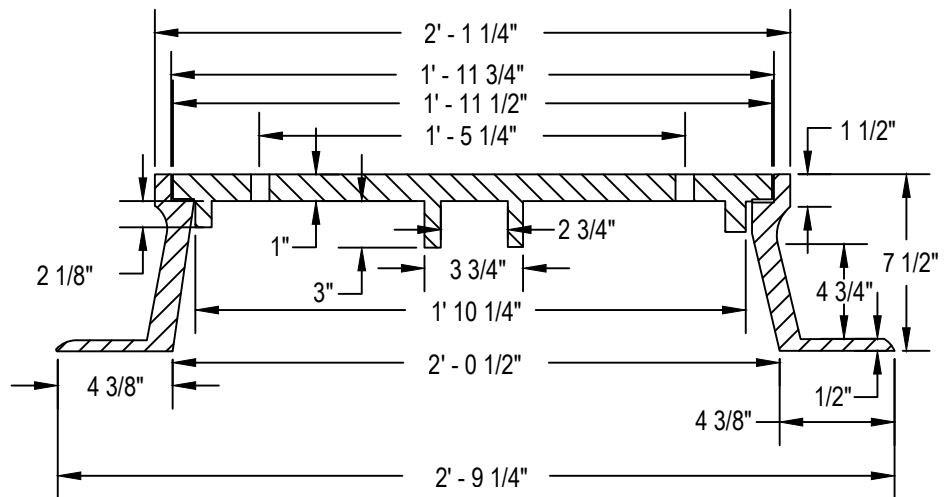
WATER TRENCH

SCALE:  
N.T.S.  
DATE:  
09-13-24

8B



BOTTOM VIEW



(U.S. FOUNDRY - 669, VULCAN - 1384 OR EQUAL)

NOTES:

1. ALL CASTINGS TO BE FREE FROM SAND HOLES. NO PLUGGING ALLOWED.
2. MACHINE ALL CONTACT SURFACES BETWEEN RING AND COVER.
3. PROVIDE TWO VENT HOLES IN COVER, 1" DIA. TAPERED TO 1-1/8" ON REVERSE SIDE.
4. MINIMUM WEIGHTS: COVER - 120 LBS. RING - 190 LBS.
5. ALL MANHOLE RINGS OUT OF ROAD RIGHT OF WAY SHALL BE BOLTED INTO MANHOLE WITH 5/8" DIAMETER KWIK BOLT STUD ANCHOR SYSTEM. HILTI BRAND OR APPROVED EQUAL.

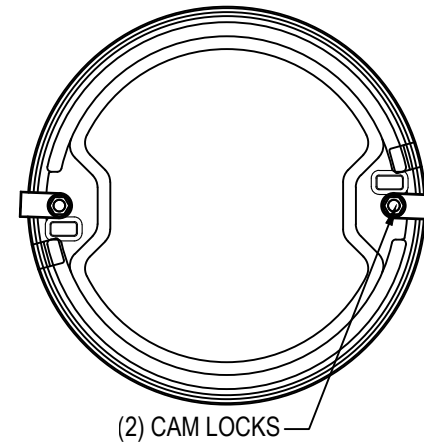
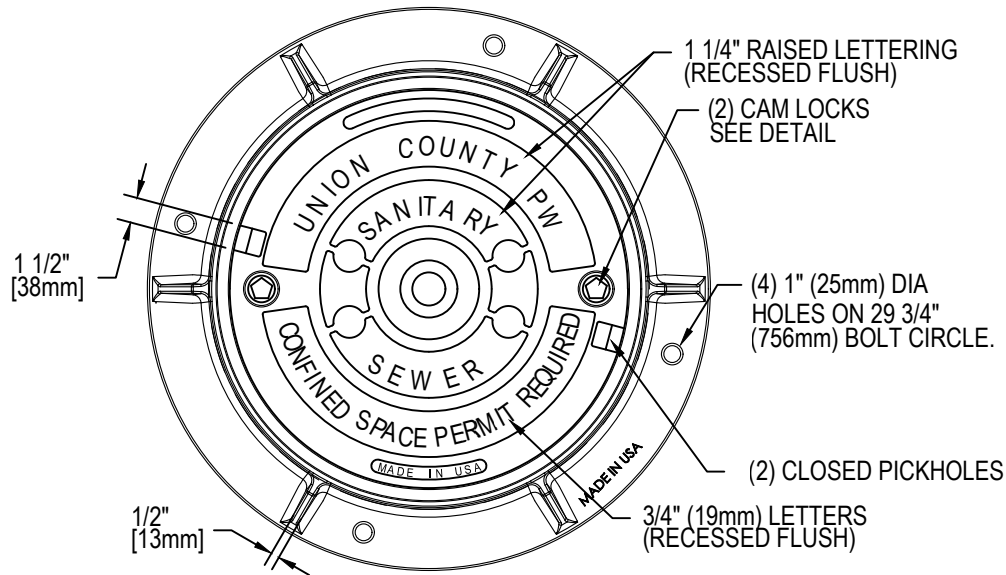


STANDARD DETAIL

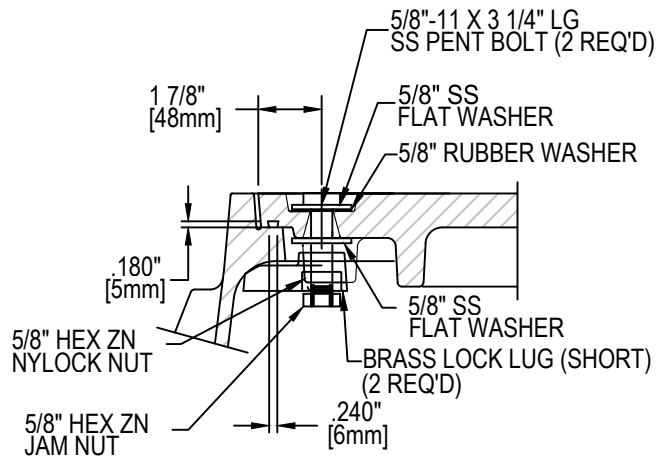
# RING AND COVER

SCALE:  
N.T.S.  
DATE:  
09-09-11

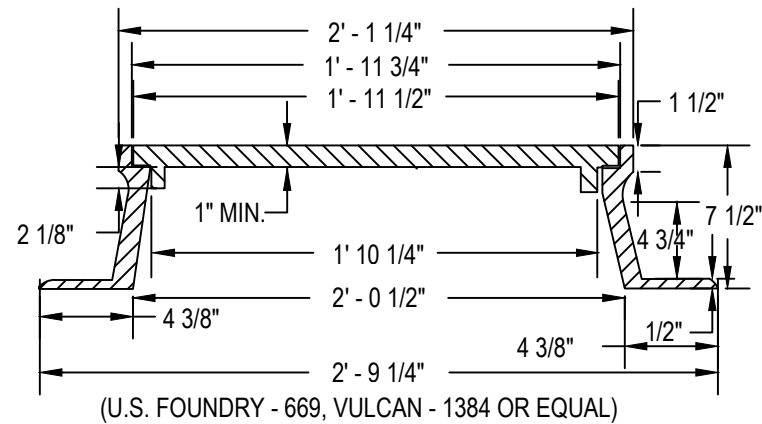
9



BOTTOM VIEW



CAM & GASKET GROOVE  
DETAIL



NOTES:

1. ALL CASTINGS TO BE FREE FROM SAND HOLES. NO PLUGGING ALLOWED.
2. MACHINE ALL CONTACT SURFACES BETWEEN RING AND COVER.
3. PROVIDE 2 CLOSED PICKHOLES
4. MINIMUM WEIGHTS: COVER - 95 LBS. RING - 190 LBS.
5. ALL MANHOLE RINGS OUT OF ROAD RIGHT OF WAY SHALL BE BOLTED INTO MANHOLE WITH 5/8" DIAMETER KWIK BOLT STUD ANCHOR SYSTEM. HILTI BRAND OR APPROVED EQUAL.

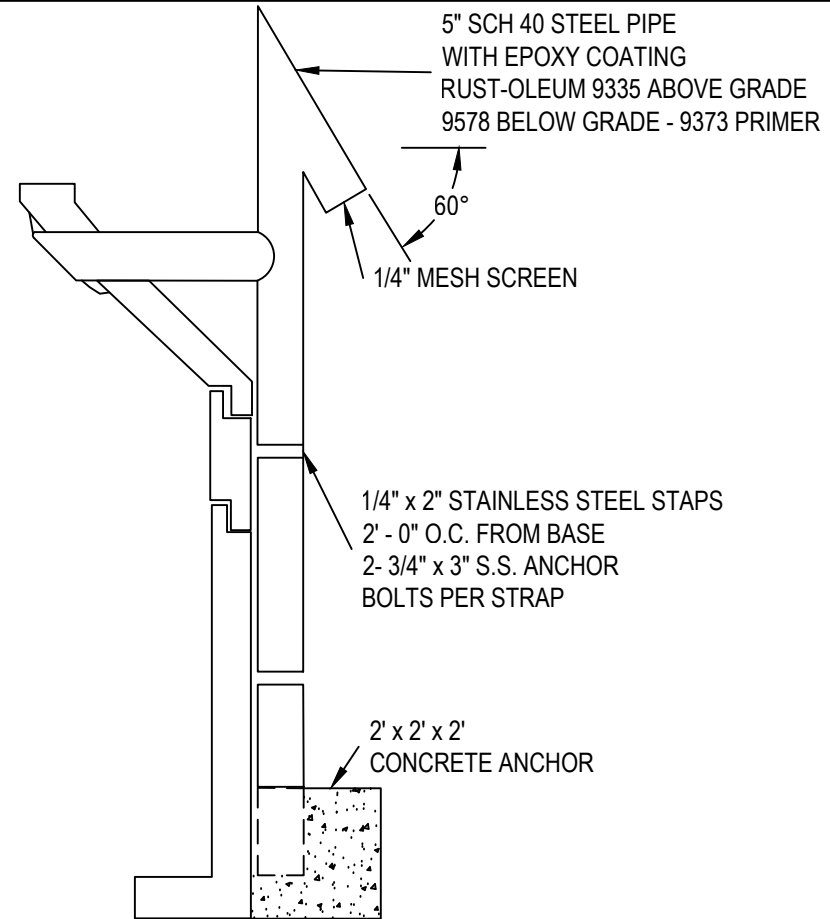
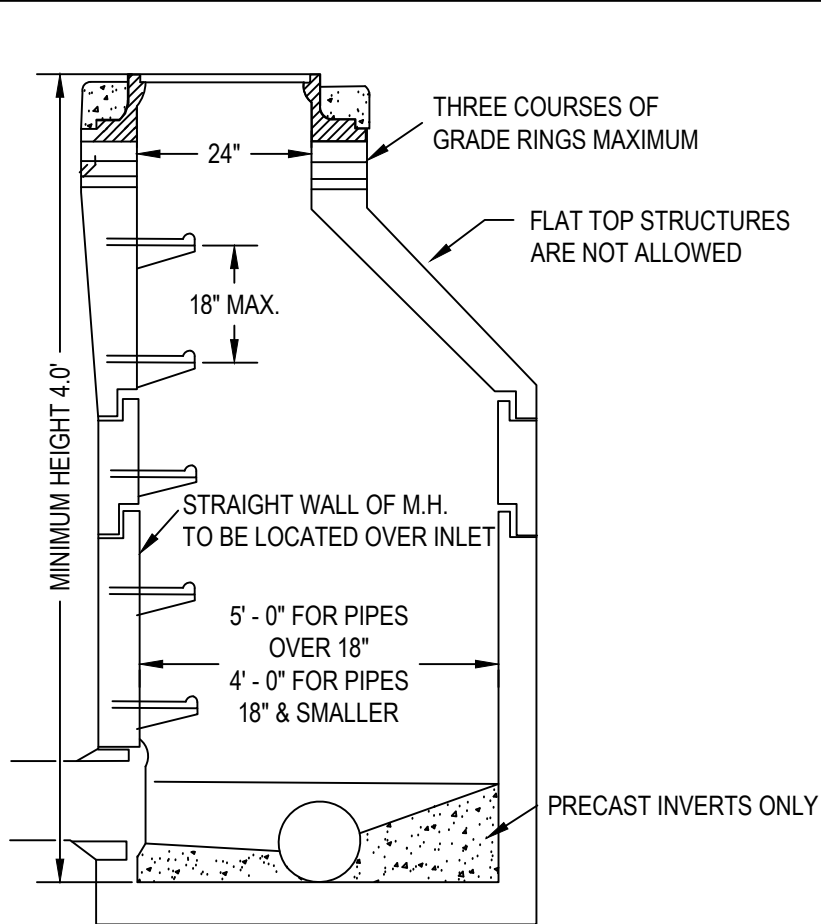


STANDARD DETAIL

RING AND COVER FOR SEALED MANHOLES

SCALE:  
N.T.S.  
DATE:  
09-25-12

9A



NOTES:

1. 1 ROLL OF MASTIC AND A 6" EXTERNAL JOINT/SEAM WRAP INSTALLED ON EACH MANHOLE SECTION
2. MANHOLE VACUUM TESTING - AFTER EACH MANHOLE IS INSTALLED AND ALL PIPES ARE CONNECTED, BUT BEFORE BACKFILLING, THE MANHOLE SHALL BE VACUUM TESTED. ALL PIPES ENTERING THE MANHOLE SHALL BE PLUGGED AND BRACED. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT NECESSARY TO PERFORM THE TESTING. A VACUUM OF 10 INCHES OF MERCURY SHALL BE CREATED ON THE INSIDE OF THE MANHOLE. AT THE VACUUM OF 10 INCHES OF MERCURY, THE PUMP SHALL BE STOPPED AND THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO 9 INCHES. FAILURE OF THE TEST SHALL BE ANY AMOUNT OF TIME LESS THAN THE FOLLOWING.
 

4 FT. DIAMETER MANHOLE = 60 SECONDS	7 FT. DIAMETER MANHOLE = 105 SECONDS
5 FT. DIAMETER MANHOLE = 75 SECONDS	8 FT. DIAMETER MANHOLE = 120 SECONDS
6 FT. DIAMETER MANHOLE = 90 SECONDS	10 FT. DIAMETER MANHOLE = 150 SECONDS

 UPON TEST FAILURE, THE CONTRACTOR SHALL REPAIR ALL LEAKS AND RETEST THE MANHOLE UNTIL THE TEST HAS PASSED.
3. 0.20' INSIDE DROP REQUIRED
4. INSTALL MANHOLE RIM AT 0.10' ABOVE GRADE IN LANDSCAPED AREAS AND WHILE ADJACENT TO RIGHTS-OF-WAY
5. INSTALL MANHOLE RIM AT 2.0' ABOVE GRADE IN SEWER EASEMENTS THAT ARE NOT LANDSCAPED.



STANDARD DETAIL

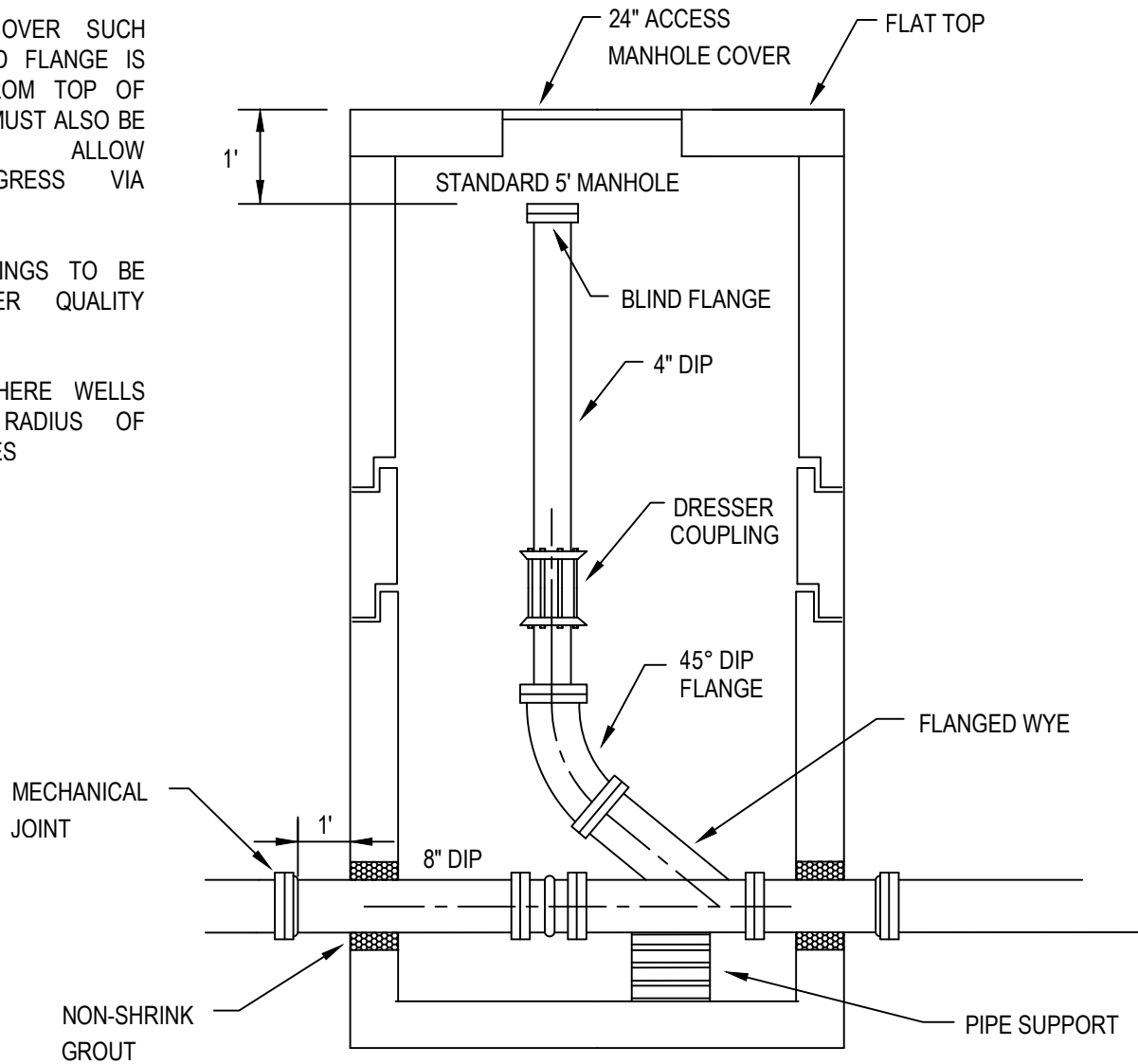
MANHOLE

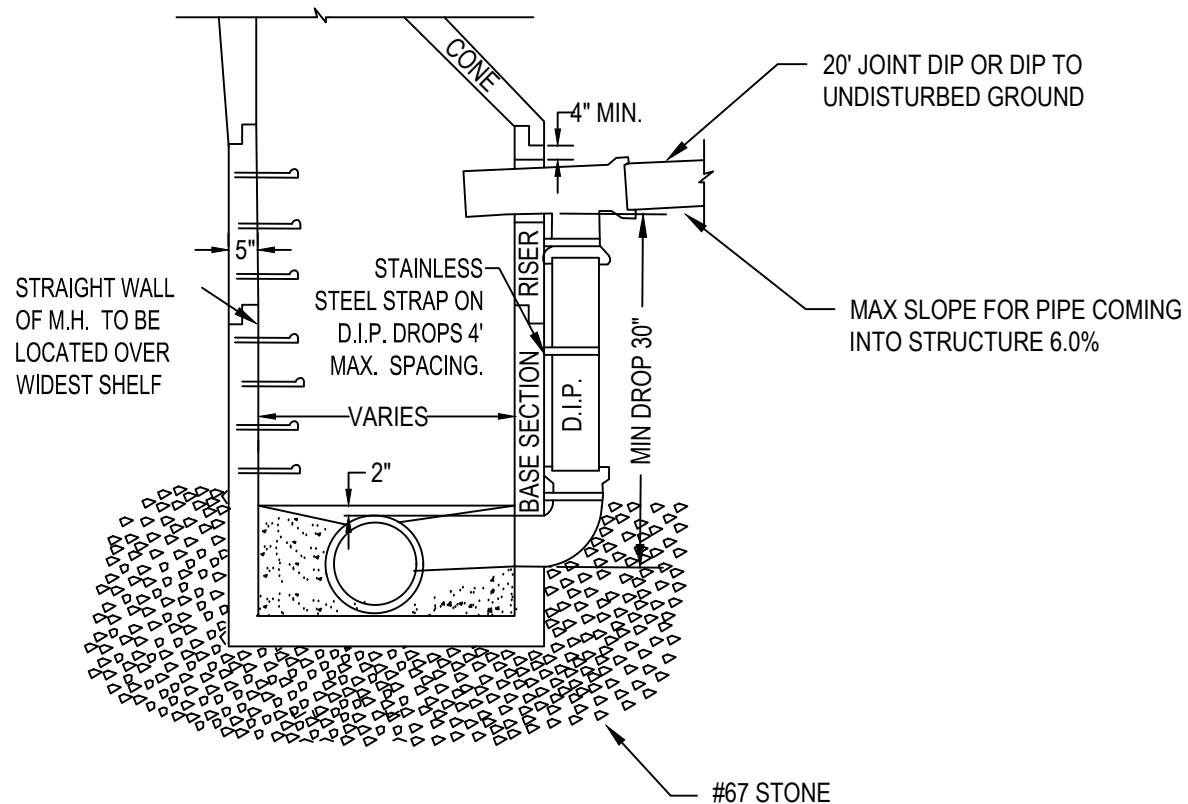
SCALE:  
N.T.S.  
DATE:  
09-13-24

10

**NOTES:**

1. LOCATE ACCESS COVER SUCH THAT THE BLIND FLANGE IS ACCESSIBLE FROM TOP OF MANHOLE. COVER MUST ALSO BE IN A POSITION TO ALLOW MANHOLE INGRESS/EGRESS VIA MANHOLE STEPS.
2. ALL PIPE AND FITTINGS TO BE TESTED TO WATER QUALITY STANDARDS.
3. FOR USE ONLY WHERE WELLS ARE WITHIN 100 FEET RADIUS OF SEWER LINE/MANHOLE





**GENERAL NOTES**

1. CARE MUST BE TAKEN TO FORM A SMOOTH FINISHED TROUGH FROM ENTRANCE PIPES TO EXIT PIPE, AND IN CURVED MANHOLES THE TROUGH MUST BE A SMOOTH CIRCULAR ARC TANGENT TO THE INSIDE WALLS OF THE PIPES AT THEIR ENDS.
2. THE SLOPE OF THE OUTSIDE DROP TROUGH SHALL BE 1/4" PER FOOT.
3. ALL PIPE OPENINGS TO BE NO GREATER THAN 3" LARGER THAN O.D. OF PIPE AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES. PIPE TO BE CENTERED IN OPENINGS. ADDITIONAL REINFORCING NOT REQUIRED FOR CORED OPENINGS.
4. OUTSIDE DROP SHALL NOT ENTER MANHOLE IN CONE SECTION.
5. MATCH DROP INFLUENT CROWN TO CROWN WITH EFFLUENT PIPE.
6. 0.20' INSIDE DROP REQUIRED
7. INSTALL MANHOLE RIM AT 0.10' ABOVE GRADE IN LANDSCAPED AREAS AND WHILE ADJACENT TO RIGHTS-OF-WAY
8. INSTALL MANHOLE RIM AT 2.0' ABOVE GRADE IN SEWER EASEMENTS THAT ARE NOT LANDSCAPED.



STANDARD DETAIL

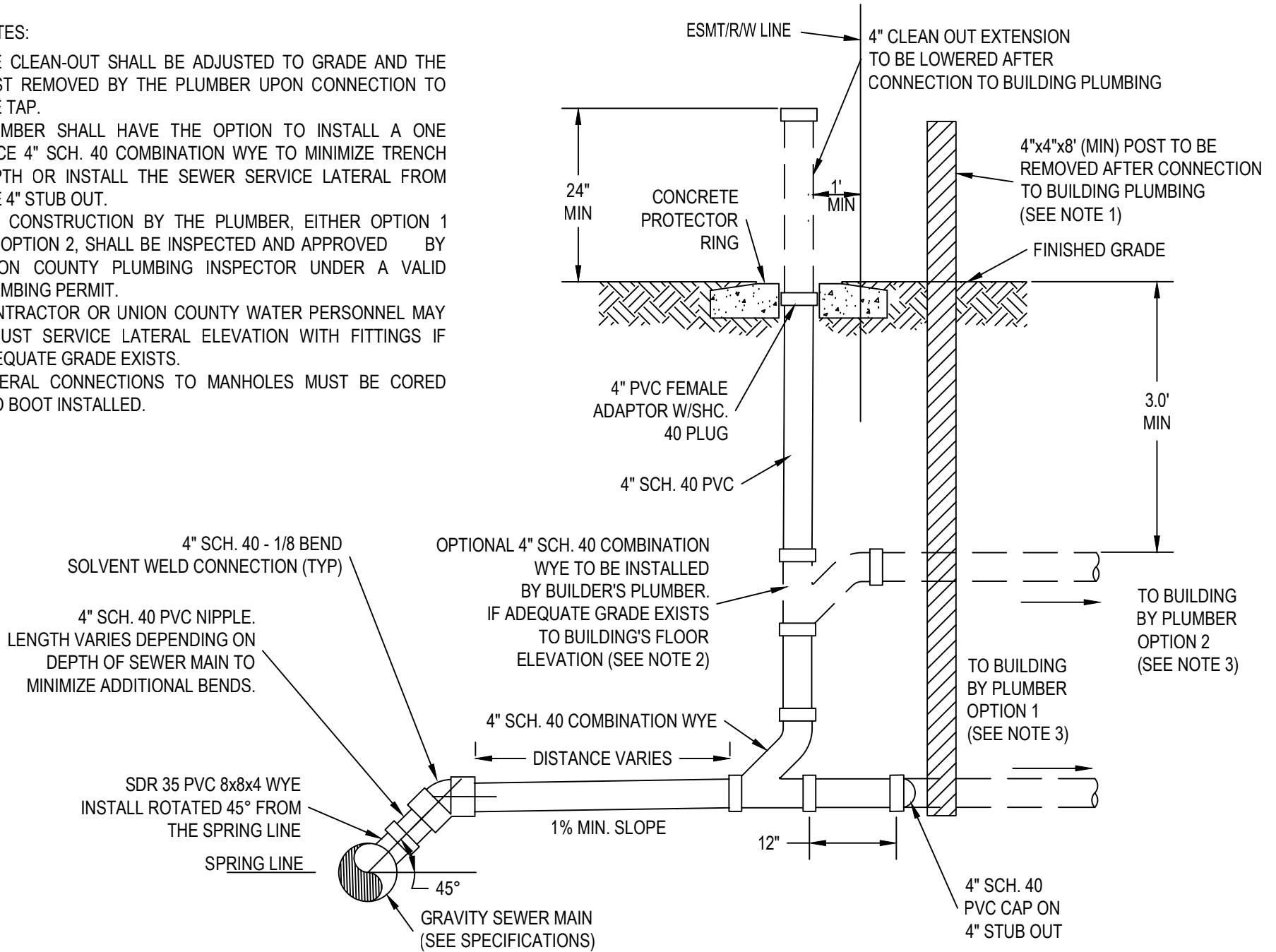
**OUTSIDE DROP MANHOLE**

SCALE:  
N.T.S.  
DATE:  
09-13-24

**10B**

NOTES:

1. THE CLEAN-OUT SHALL BE ADJUSTED TO GRADE AND THE POST REMOVED BY THE PLUMBER UPON CONNECTION TO THE TAP.
2. PLUMBER SHALL HAVE THE OPTION TO INSTALL A ONE PIECE 4" SCH. 40 COMBINATION WYE TO MINIMIZE TRENCH DEPTH OR INSTALL THE SEWER SERVICE LATERAL FROM THE 4" STUB OUT.
3. ALL CONSTRUCTION BY THE PLUMBER, EITHER OPTION 1 OR OPTION 2, SHALL BE INSPECTED AND APPROVED BY UNION COUNTY PLUMBING INSPECTOR UNDER A VALID PLUMBING PERMIT.
4. CONTRACTOR OR UNION COUNTY WATER PERSONNEL MAY ADJUST SERVICE LATERAL ELEVATION WITH FITTINGS IF ADEQUATE GRADE EXISTS.
5. LATERAL CONNECTIONS TO MANHOLES MUST BE CORED AND BOOT INSTALLED.

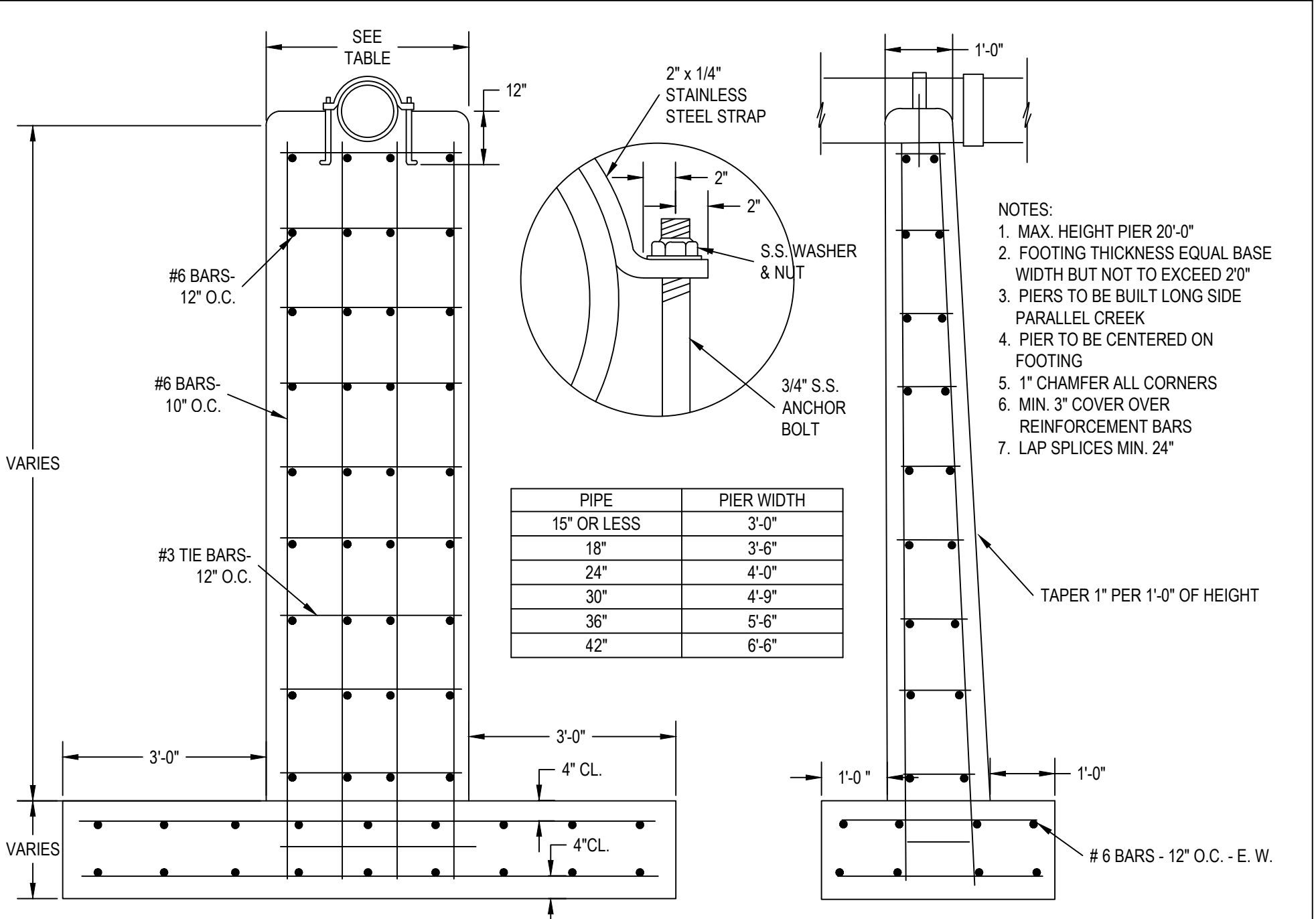


STANDARD DETAIL

SEWER LATERAL

SCALE:  
N.T.S.  
DATE:  
02-19-14

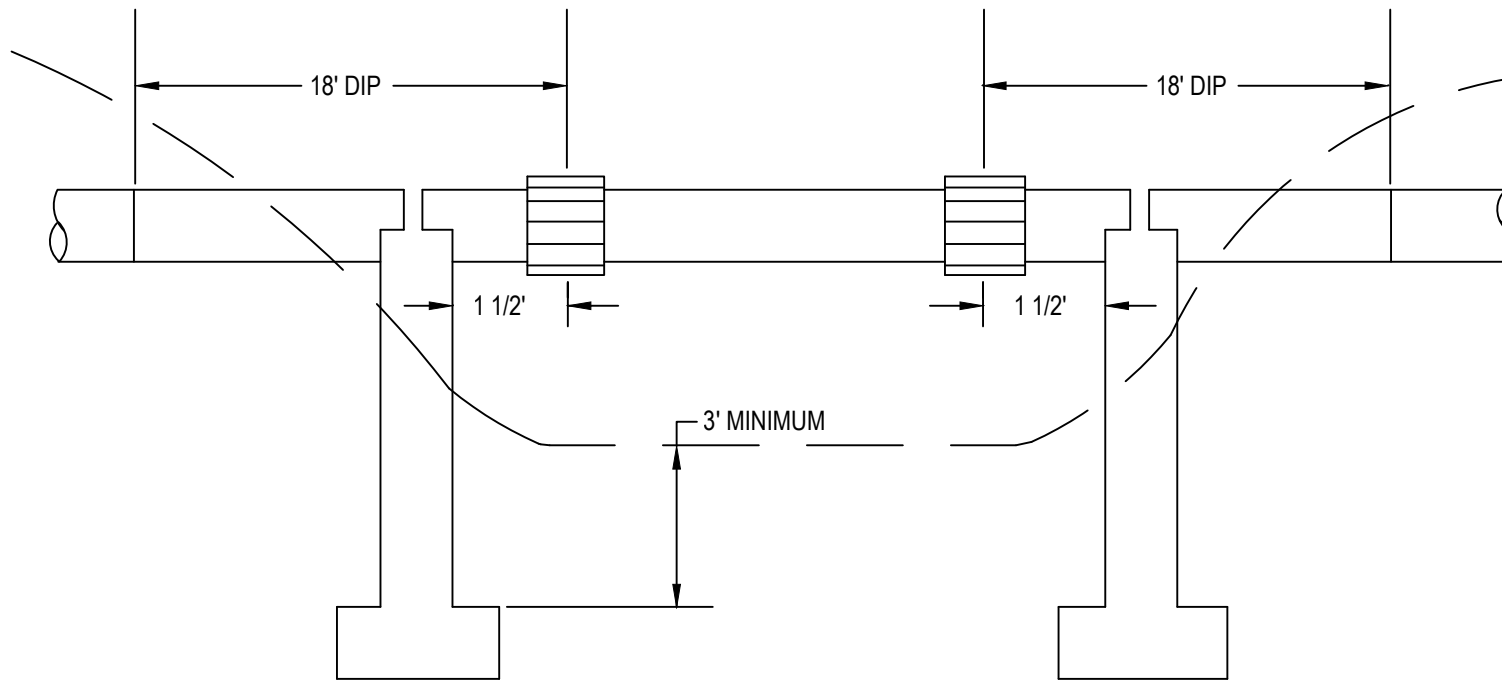
11



- NOTES:
1. MAX. HEIGHT PIER 20'-0"
  2. FOOTING THICKNESS EQUAL BASE WIDTH BUT NOT TO EXCEED 2'0"
  3. PIERS TO BE BUILT LONG SIDE PARALLEL CREEK
  4. PIER TO BE CENTERED ON FOOTING
  5. 1" CHAMFER ALL CORNERS
  6. MIN. 3" COVER OVER REINFORCEMENT BARS
  7. LAP SPLICES MIN. 24"

PIPE	PIER WIDTH
15" OR LESS	3'-0"
18"	3'-6"
24"	4'-0"
30"	4'-9"
36"	5'-6"
42"	6'-6"





NOTES:

1. AERIAL CREEK CROSSING REQUIRE PRIOR APPROVAL FROM UCW
2. TRANSITION COUPLINGS FROM STEEL TO DUCTILE IRON PIPE TO BE ROCKWELL STYLE 441 OR EQUAL
3. DUCTILE IRON PIPE TO BE CLASS 52
4. STEEL PIPE TO BE ASTM A53, TYPE S, GRADE B MIN. THICKNESS = 0.250"
5. COATING:
  - (A) SURFACE PREP. SSPC-SP-6
  - (B) PRIMER-RUST-OLEUM 9373  
2 MILLS D.F.T.
  - (C) INTERMEDIATE-RUST-OLEUM  
9391-2 MILS D.F.T.
  - (D) FINISH-RUST-OLEUM 9582  
2 COATS 6 MILS D.F.T.EACH

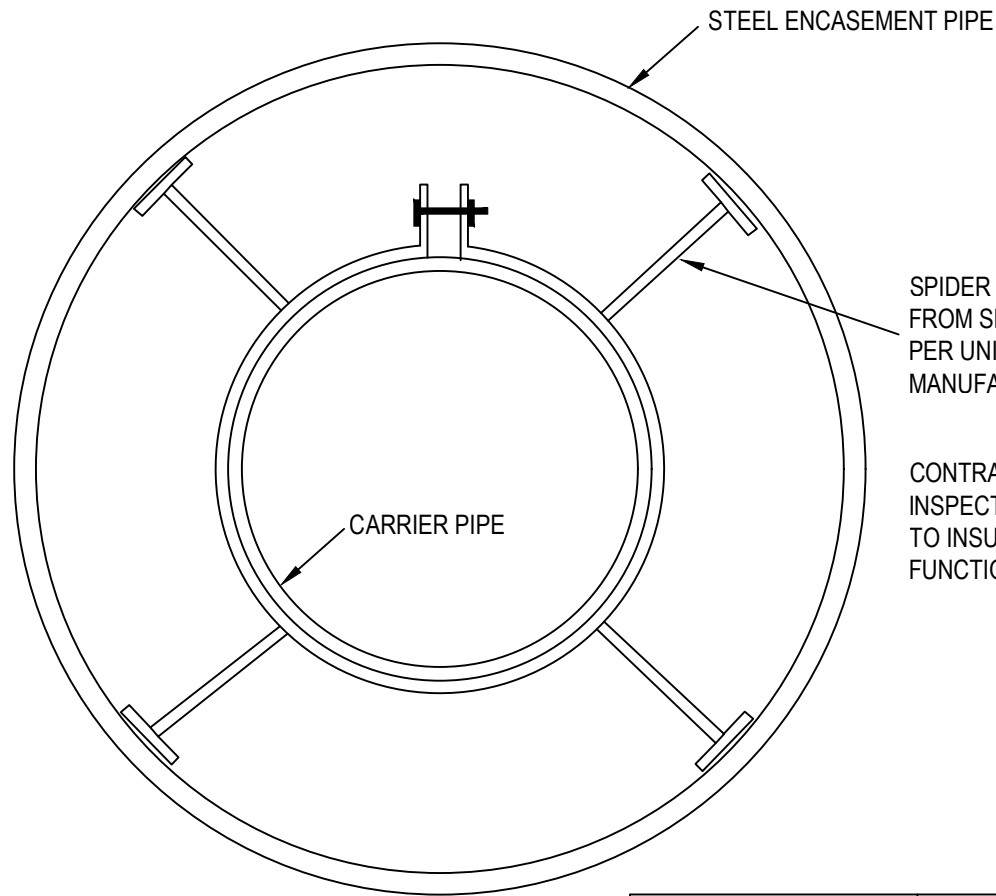


STANDARD DETAIL

AERIAL CREEK CROSSING

SCALE:  
N.T.S.  
DATE:  
11-17-06

13



SPIDER SUPPORT AND SPACER AVAILABLE FROM SPIDER MANUFACTURING, INC. INSTALL PER UNION COUNTY INSPECTOR AND PER MANUFACTURERS SPECIFICATIONS.

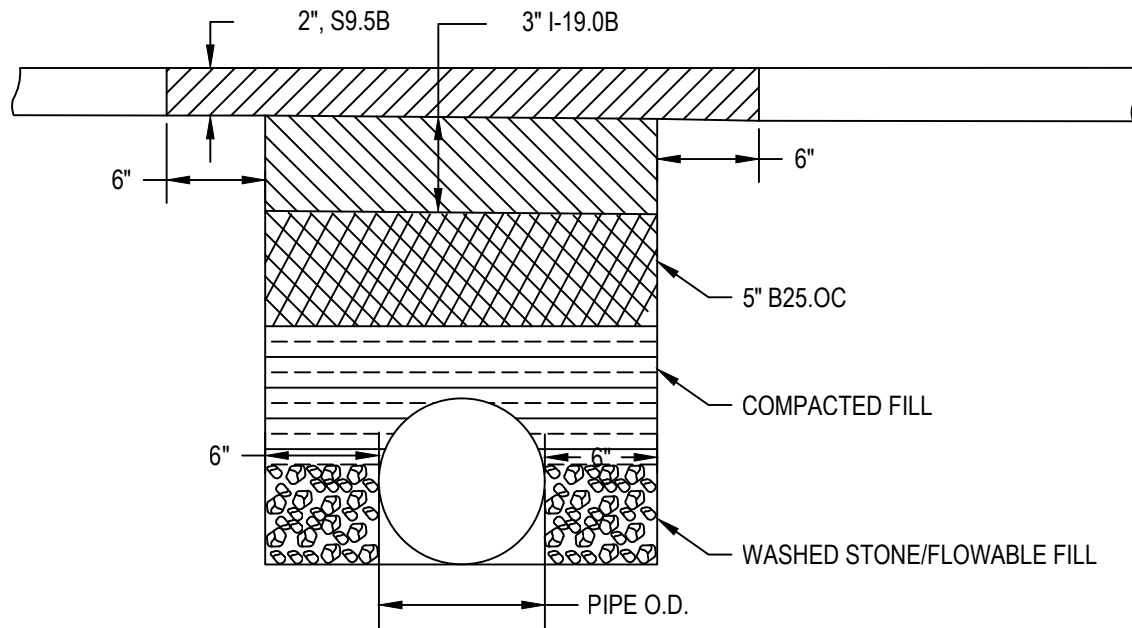
CONTRACTOR RESPONSIBLE FOR INSPECTING MATERIALS AND WELDS TO INSURE ALL SPIDERS WILL FUNCTION PROPERLY.

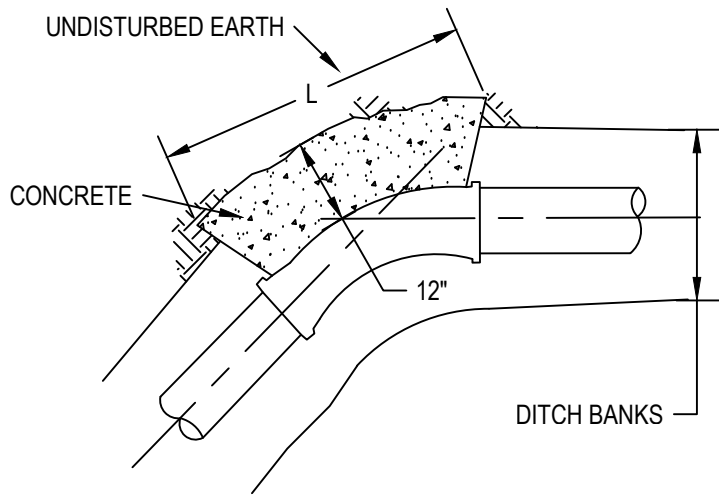
CARRIER PIPE	CASING PIPE I.D.	WALL THICKNESS
4"	8"	0.188"
6"	12"	0.188"
8"	16"	0.250"
10"	16"	0.250"
12"	20"	0.281"
16"	24"	0.344"
24"	30"	0.406"
30"	42"	0.500"
36"	48"	0.500"

NOTES:

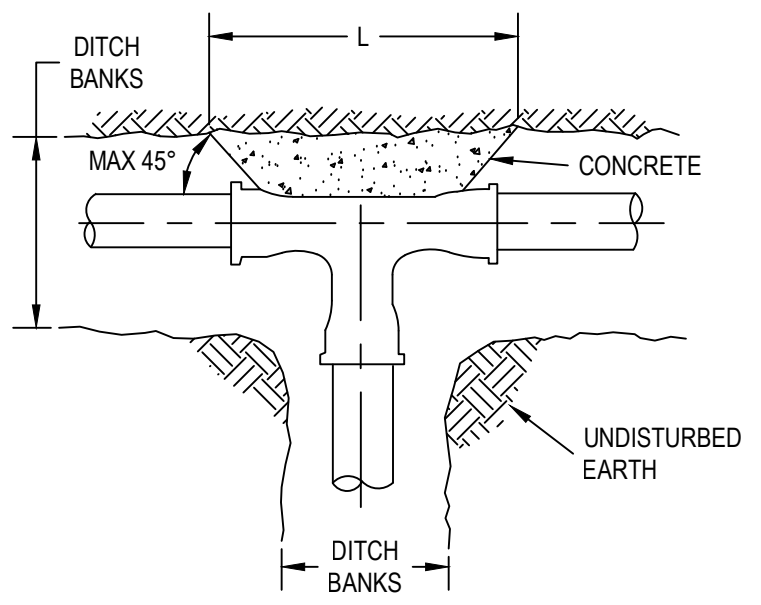
1. NO PIPE SHALL BE SUPPORTED BY BELL.
2. END SECTIONS LESS THAN 4' MAY BE UNSUPPORTED.
3. WALL THICKNESS AS PER TABLE UNLESS OTHERWISE SHOWN ON PLAN.
4. MASONRY SEAL AT ENDS -- 2" x 4" WEEP HOLE AT LOW END
5. ALL PRESSURE PIPES TO HAVE TRACING WIRE IN ALL CASING BORES.

NOTE:  
 FOR CONCRETE PAVEMENT SUBSTITUTE 3500 PSI  
 CONCRETE TO MATCH EXISTING THICKNESS FOR  
 I-2 ASPHALT 4" ABC STONE FOR H BASE.

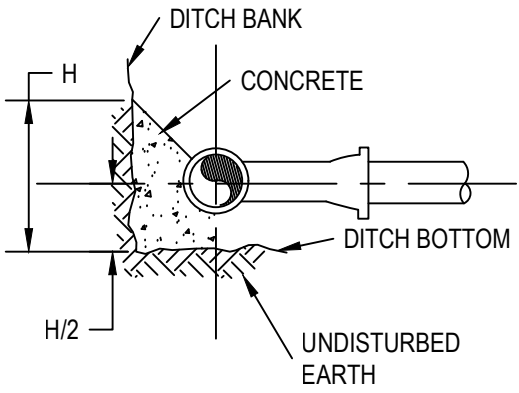




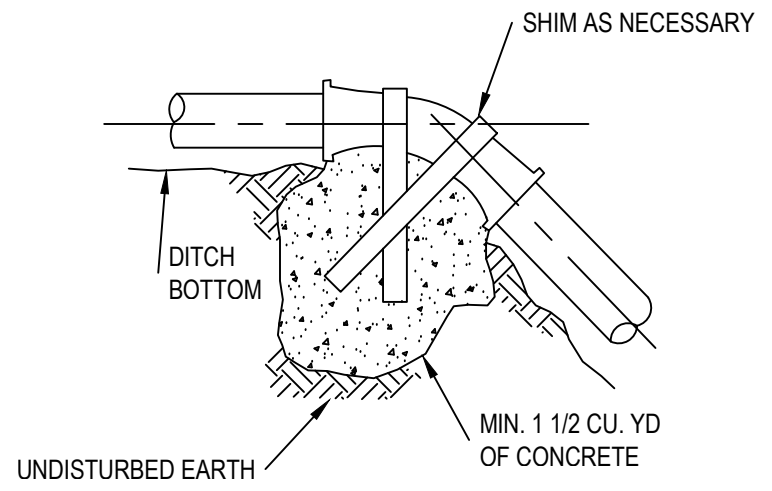
**PLAN 45° BENDS**  
**ALSO 90°, 22 1/2°, 11 1/2°**



**PLAN TEE**



**ELEVATION AT FITTINGS**



**VERTICAL BEND**



STANDARD DETAIL

**THRUST BLOCK**

SCALE:  
 N.T.S.  
 DATE:  
 11-17-06

ANCHORAGE SCHEDULE

PIPE SIZE	11 1/4° BEND		22 1/2° BEND		45° BEND		90° BEND		TEE		TEST PRESSURE (P.S.I.)
	L	H	L	H	L	H	L	H	L	H	
6"	1'3"	1'0"	2'3"	1'0"	2'6"	1'6"	2'9"	1'6"	2'0"	1'6"	200
	1'6"	1'3"	2'3"	1'6"	3'0"	1'6"	4'0"	1'6"	3'0"	1'6"	300
8"	1'6"	1'6"	2'6"	1'9"	3'0"	2'0"	3'9"	2'0"	2'6"	2'0"	200
	2'0"	1'6"	3'0"	2'0"	3'9"	2'3"	4'6"	2'6"	3'6"	2'3"	300
12"	2'6"	1'9"	4'0"	2'3"	4'3"	3'0"	5'0"	3'3"	4'0"	3'0"	200
	3'6"	2'0"	5'3"	2'6"	6'0"	3'3"	7'0"	3'6"	5'0"	3'6"	300
14"	3'0"	1'0"	4'0"	3'0"	4'6"	3'9"	6'0"	3'9"	4'6"	3'6"	200
	4'0"	2'6"	5'3"	3'6"	6'0"	4'3"	6'6"	5'0"	5'0"	5'0"	300
16"	3'0"	2'9"	4'6"	3'6"	5'0"	4'6"	7'0"	4'3"	5'0"	4'0"	200
	4'0"	3'0"	6'3"	3'9"	6'5"	5'3"	8'0"	5'3"	7'6"	4'0"	300

NOTES:

1. THRUST BLOCK DIMENSIONS BASED ON SOIL BEARING CAPACITY OF 2000 P.S.F. AND A WATER TEST PRESSURE OF 150 P.S.I. SIZES OF THRUST BLOCKS MAY BE REVISED BY THE ENGINEER WHERE BEARING CAPACITY OF SOIL VARIES.
2. PROVIDE TAR PAPER JOINT BETWEEN CONCRETE THRUST BLOCK AND PORTION OF PIPE BEING ANCHORED.
3. ALL CONCRETE THRUST BLOCKS SHALL BE 2500 P.S.I. CONCRETE.
4. MAXIMUM VERTICAL DEFLECTION SHALL BE 22 1/2°.
5. JOINTS SHALL REMAIN FREE OF CONCRETE FOR INSPECTION, REPAIR OR REPLACEMENT OF JOINTS.

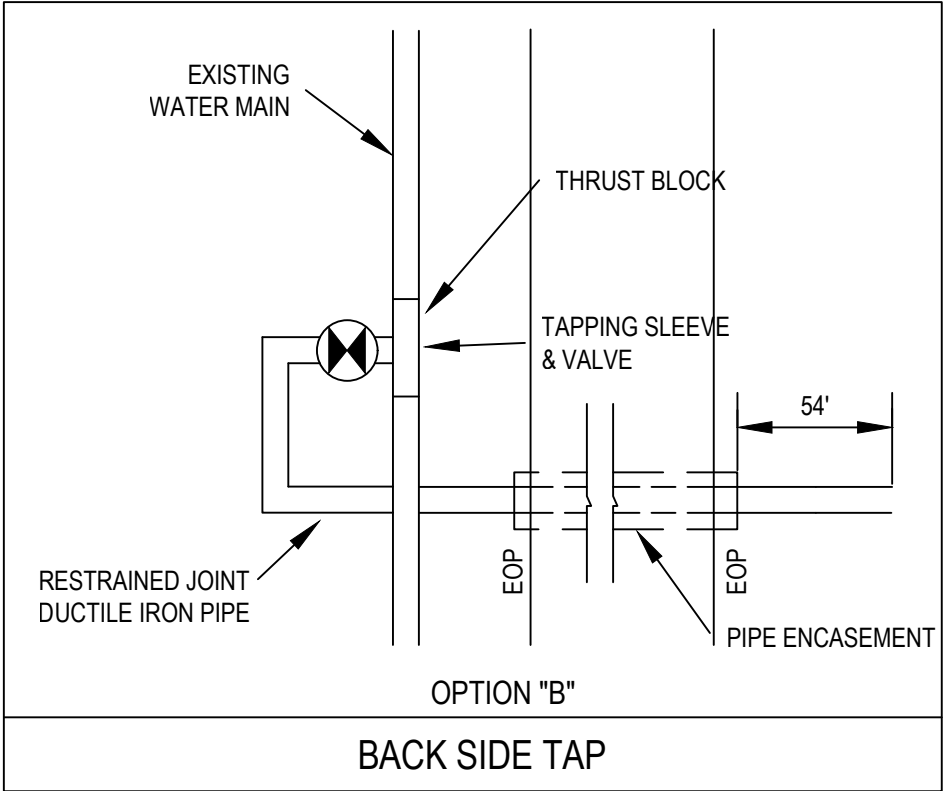
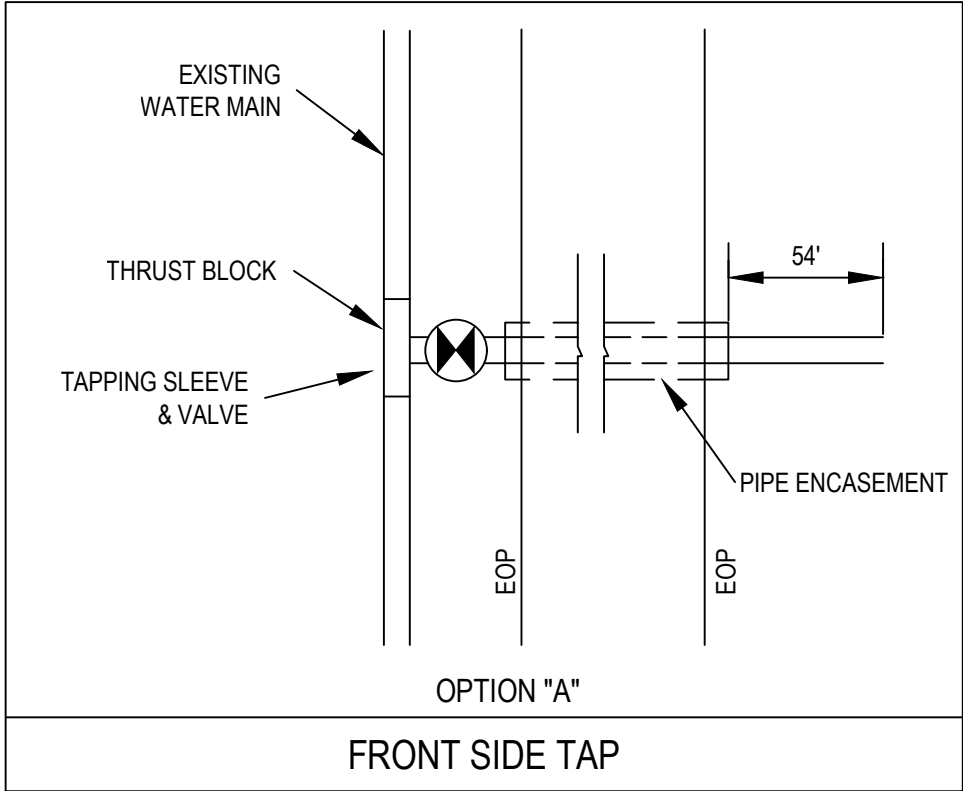


STANDARD DETAIL

## THRUST BLOCK SPECIFICATION

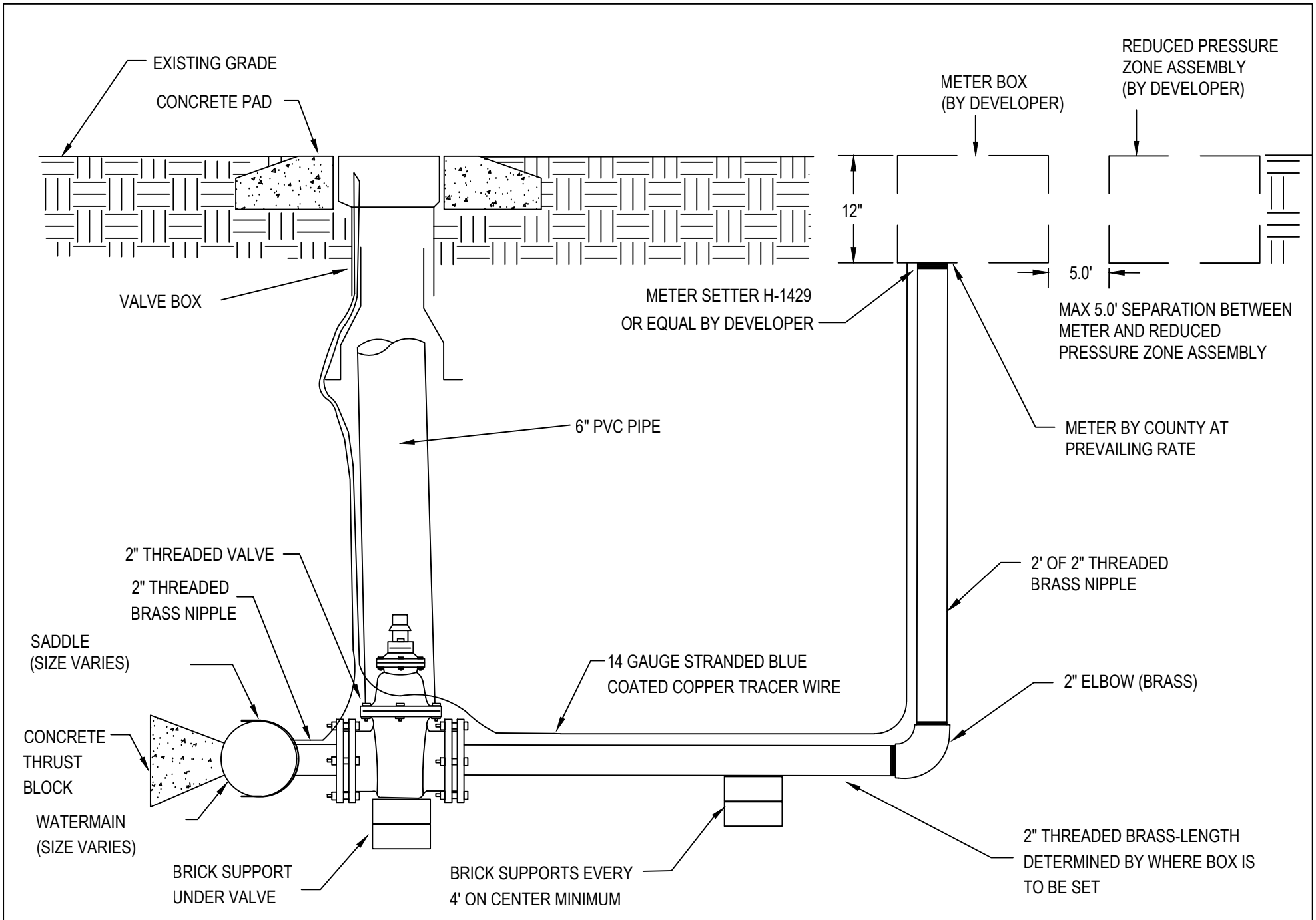
SCALE:  
N.T.S.  
DATE:  
02-19-14

# 17



NOTES:

1. OPTION "A" OR "B" WILL BE REQUIRED, DEPENDING ON THE AMOUNT OF SPACE AVAILABLE, TO BE FIELD VERIFIED.
2. RESTRAINED JOINT DUCTILE IRON PIPE REQUIRED FROM VALVE TO 54 LF BEYOND CASING.

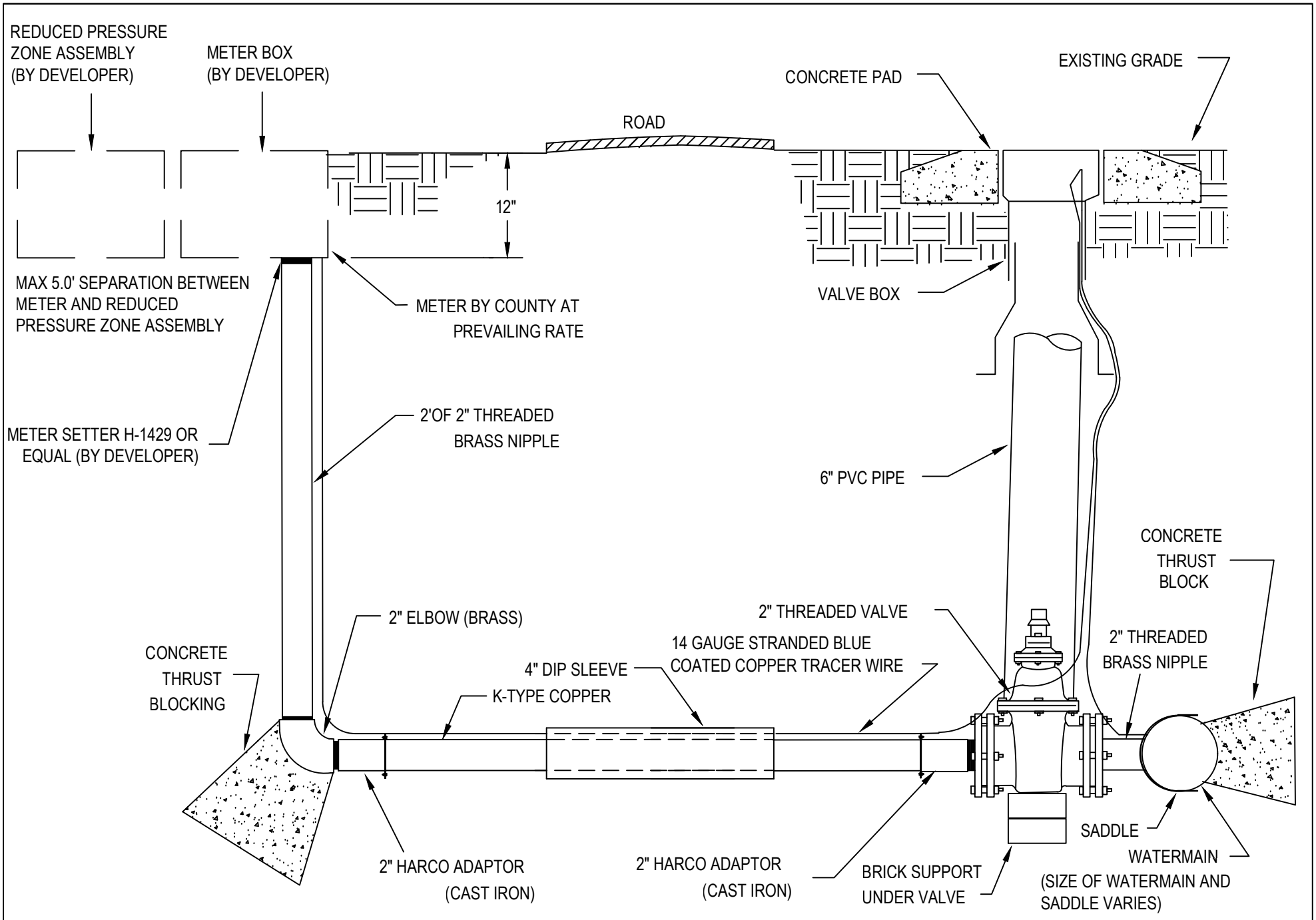


STANDARD DETAIL

# 2" SHORT SIDE SERVICE FOR 1 1/2 OR 2" METERS

SCALE:  
N.T.S.  
DATE:  
09-13-24

# 19



STANDARD DETAIL

# 2" LONG SIDE SERVICE FOR 1 1/2 OR 2" METERS

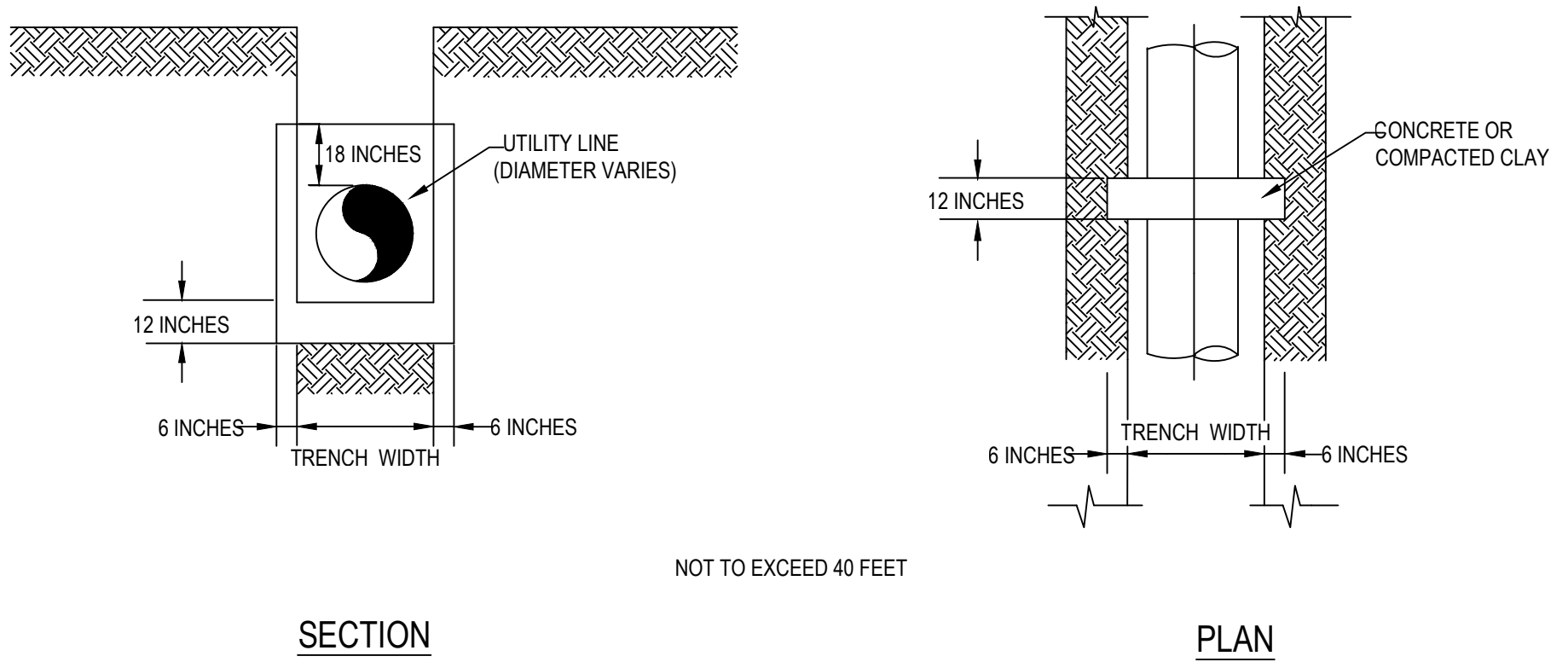
SCALE:  
N.T.S.  
DATE:  
09-13-24

# 20



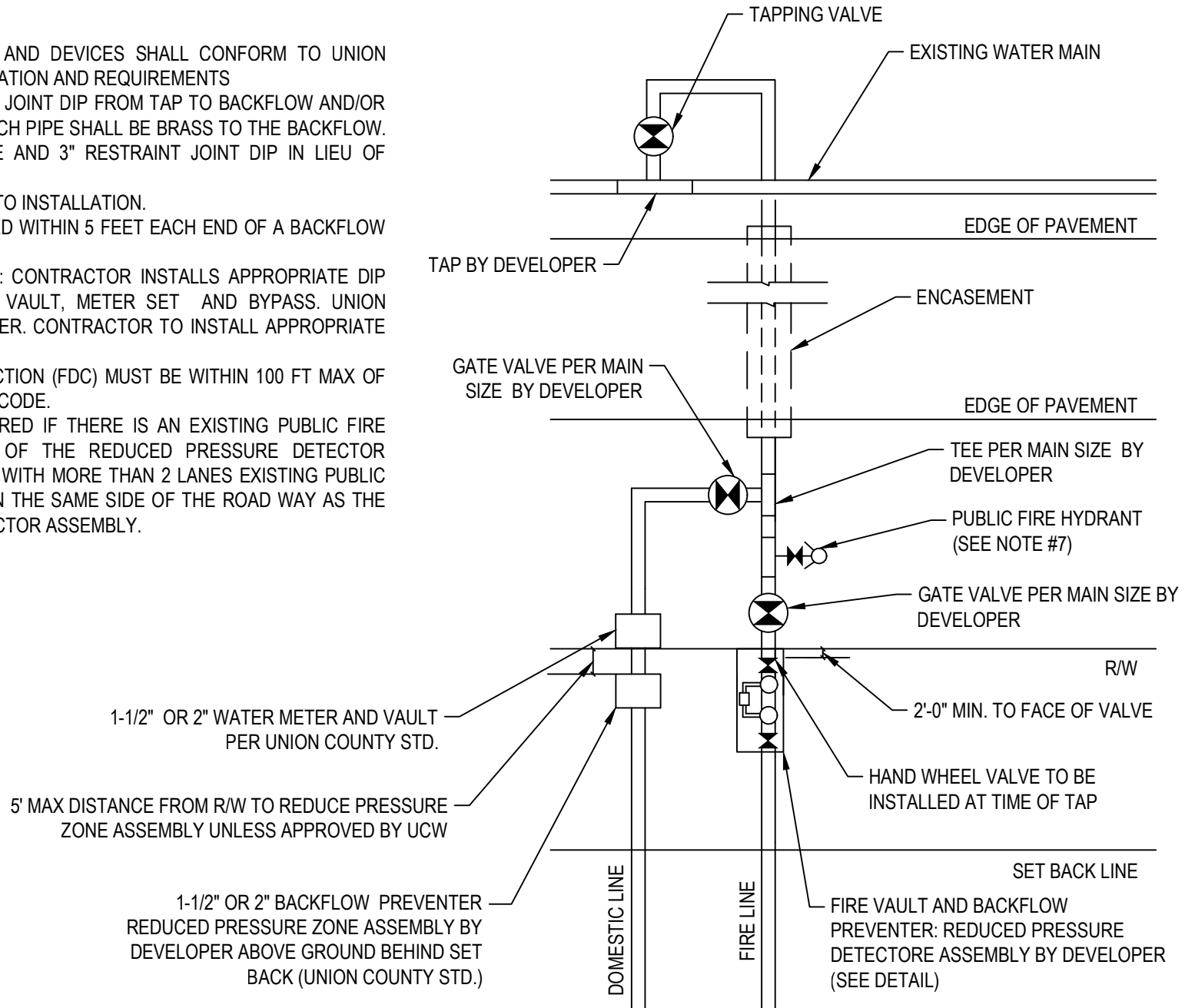
ANTI-SEEP COLLARS MAY BE CONSTRUCTED WITH CLASS B CONCRETE OR COMPACTED CLAY. THE COMPACTED CLAY SHALL HAVE A SPECIFIC DISCHARGE OF 1 X 10-5CM/SEC OR LESS. THE FOLLOWING SPECIFICATIONS APPLY TO CLASS B CONCRETE:

- A. MINIMUM CEMENT CONTENT, SACKS PER CUBIC YARD WITH ROUNDED COURSE AGGREGATE 5.0
- B. MINIMUM CEMENT CONTENT, SACKS PER CUBIC YARD WITH ANGULAR COURSE AGGREGATE 5.5
- C. MAXIMUM WATER-CEMENT RATIO GALLONS PER SACK 6.8
- D. SLUMP RANGE 2" TO 4"
- E. MINIMUM STRENGTH - 28 DAY PSI 2,500



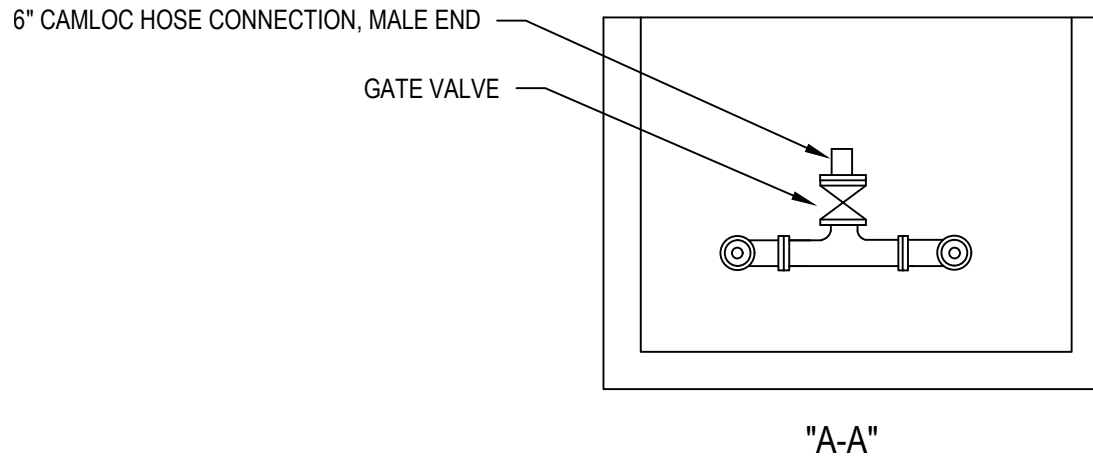
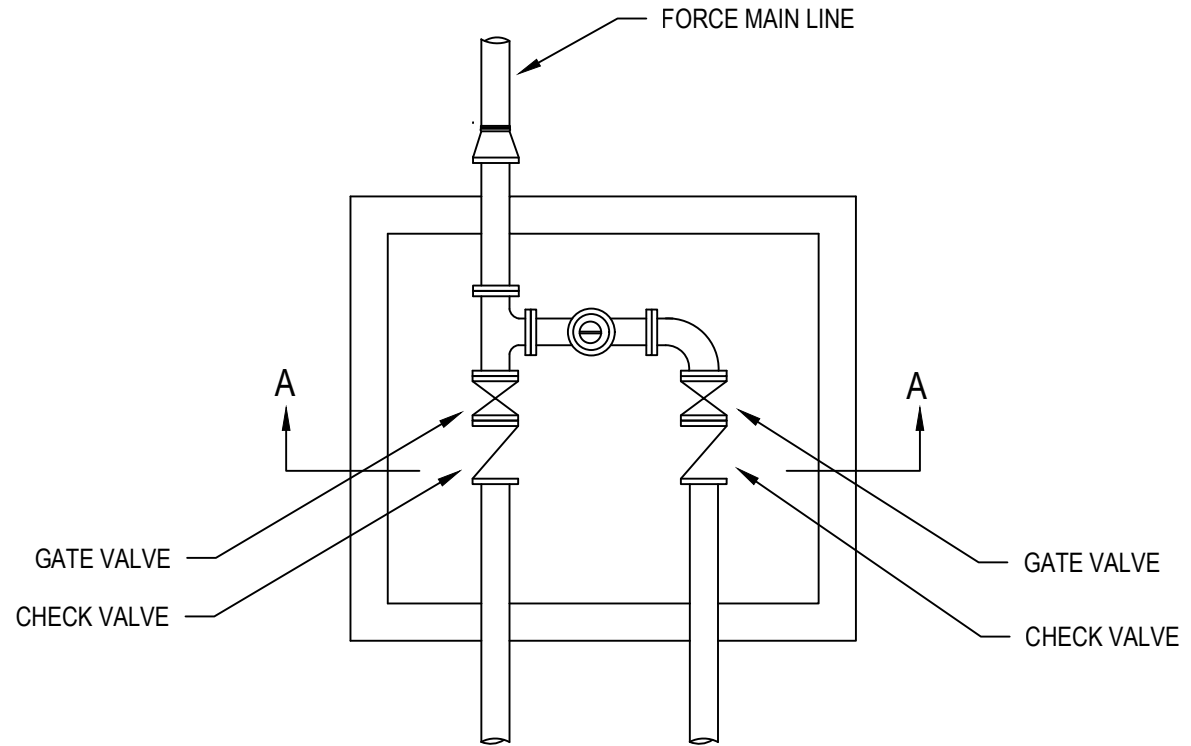
NOTES:

1. INSTALLATION, MATERIALS AND DEVICES SHALL CONFORM TO UNION COUNTY WATER'S SPECIFICATION AND REQUIREMENTS
2. ALL PIPE TO BE RESTRAINT JOINT DIP FROM TAP TO BACKFLOW AND/OR FIRE VAULT.THE 1-1/2 & 2 INCH PIPE SHALL BE BRASS TO THE BACKFLOW. ALTERNATE (3 INCH VALVE AND 3" RESTRAINT JOINT DIP IN LIEU OF BRASS)
3. FEES MUST BE PAID PRIOR TO INSTALLATION.
4. NO PVC PIPE SHALL BE USED WITHIN 5 FEET EACH END OF A BACKFLOW PREVENTER.
5. METERS 3 INCH & LARGER: CONTRACTOR INSTALLS APPROPRIATE DIP LINE THROUGH, SUPPLIES VAULT, METER SET AND BYPASS. UNION COUNTY WILL INSTALL METER. CONTRACTOR TO INSTALL APPROPRIATE SIZE RPZ.
6. FIRE DEPARTMENT CONNECTION (FDC) MUST BE WITHIN 100 FT MAX OF PUBLIC HYDRANT PER FIRE CODE.
7. FIRE HYDRANT NOT REQUIRED IF THERE IS AN EXISTING PUBLIC FIRE HYDRANT WITHIN 500 LF OF THE REDUCED PRESSURE DETECTOR ASSEMBLY. FOR ROADWAY WITH MORE THAN 2 LANES EXISTING PUBLIC FIRE HYDRANT MUST BE ON THE SAME SIDE OF THE ROAD WAY AS THE REDUCED PRESSURE DETECTOR ASSEMBLY.



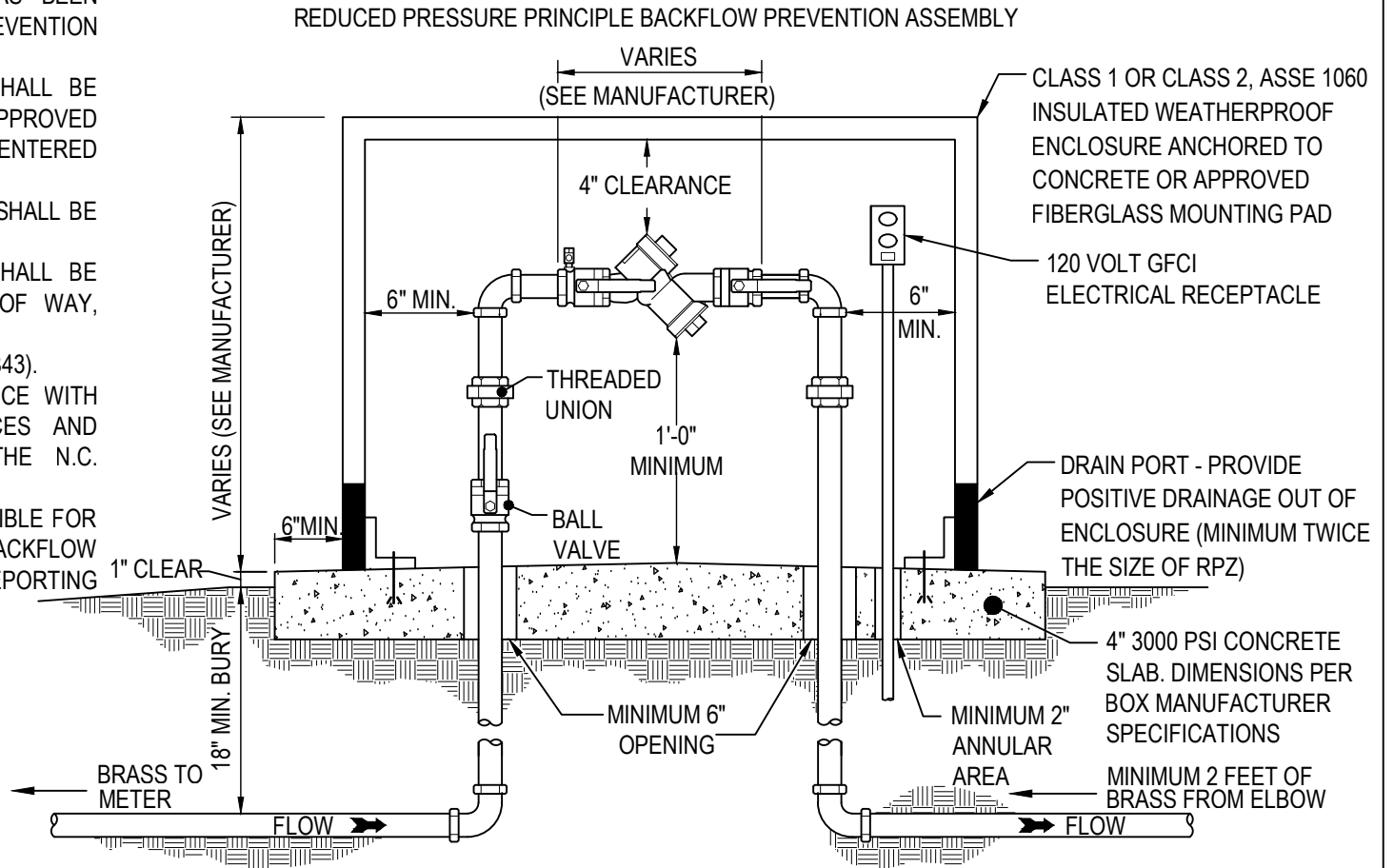
EMERGENCY CONNECTION

- 1 EA. FLANGE TEE
- 1 EA. FLANGE GATE VALVE
- 1 EA. COMPANION FLANGE (9"x4")
- 1 EA. 6" MALE1PT. x 6" MALE CAMLOC HOSE CONN.
- 4 EA. FLANGE ACCESSORY SETS



NOTES

1. RPZ SHALL BE INSTALLED FOR CUSTOMER APPLICATIONS APPROVED BY UNION COUNTY WATER.
2. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511 (FEBCO 825Y, WILKINS MODEL 975XL, HERSEY MODEL FRP11 OR EQUAL).
3. OWNER SHALL PROVIDE WRITTEN CERTIFICATION TO THE COUNTY THAT THE RPZ HAS BEEN TESTED BY A CERTIFIED BACKFLOW PREVENTION TECHNICIAN AFTER INSTALLATION.
4. BACKFLOW PREVENTION ASSEMBLY SHALL BE CENTERED ON CONCRETE OR APPROVED FIBERGLASS MOUNTING PAD AND CENTERED WITHIN ENCLOSURE.
5. REDUCER PRESSURE ZONE ASSEMBLY SHALL BE ABOVE GROUND ONLY.
6. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED OUTSIDE OF THE RIGHT OF WAY, MAXIMUM OF 5 FEET.
7. PIPE MATERIAL SHALL BE BRASS (ASTM B43).
8. INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE COUNTY ORDINANCES AND SPECIFICATIONS IN ADDITION TO THE N.C. PLUMBING CODE.
9. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW PREVENTION ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS.



STANDARD DETAIL

# REDUCED PRESSURE ZONE ASSEMBLY

(3/4" - 2")

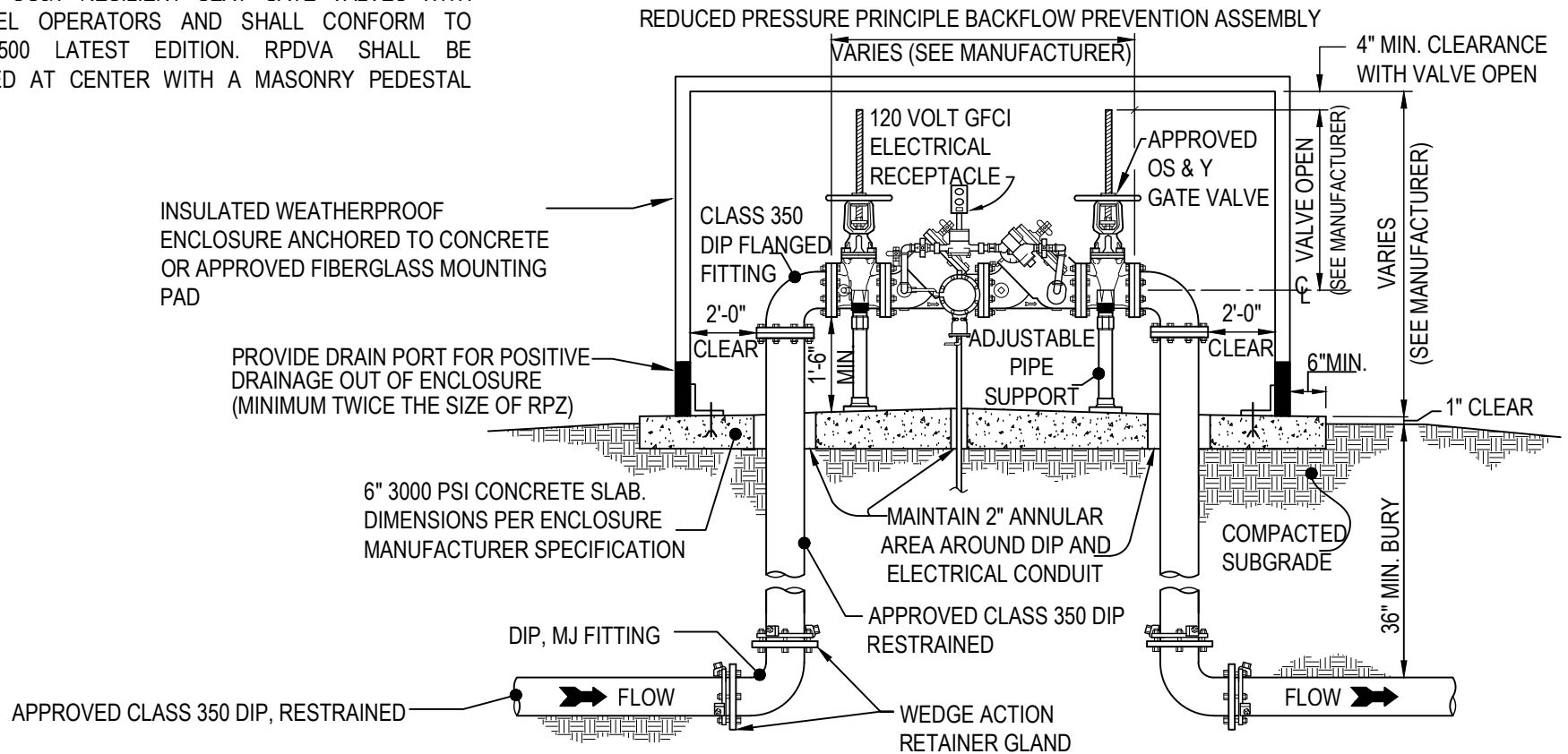
SCALE:  
N.T.S.  
DATE:  
02-19-14

# 24A

NOTES:

1. RPDA SHALL BE INSTALLED FOR CUSTOMER APPLICATIONS APPROVED BY UNION COUNTY WATER
2. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1047 & AWWA C511 (1) FEBCO 826YD, (2) WILKINS MODEL 375ADA, (3) AMES SERIES 5000 CIV. OR EQUAL
3. OWNER SHALL PROVIDE WRITTEN CERTIFICATION TO THE COUNTY THAT THE RPDA HAS BEEN TESTED BY A CERTIFIED BACKFLOW PREVENTION TECHNICIAN AFTER INSTALLATION.
4. COUNTY APPROVED 3"-10" RPDA INCLUDES SHUTOFF VALVES AS PART OF THE ASSEMBLY. SHUT OFF VALVES SHALL BE OS&Y RESILIENT SEAT GATE VALVES WITH HANDWHEEL OPERATORS AND SHALL CONFORM TO AWWA C500 LATEST EDITION. RPDA SHALL BE SUPPORTED AT CENTER WITH A MASONRY PEDESTAL

5. ADEQUATE TO MAINTAIN THE WEIGHT OF THE STRUCTURE AND PLUS AN ADDITIONAL 1,000 POUND LOAD.
6. REDUCED PRESSURE DETECTOR ASSEMBLY SHALL BE ABOVE GROUND ONLY.
7. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED OUTSIDE OF THE RIGHT OF WAY, MAXIMUM OF 5 FEET.
8. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS.
9. 3/4" BYPASS DETECTOR AMI METER: SENSUS SR11 WITH SMARTPOINT MODULE.



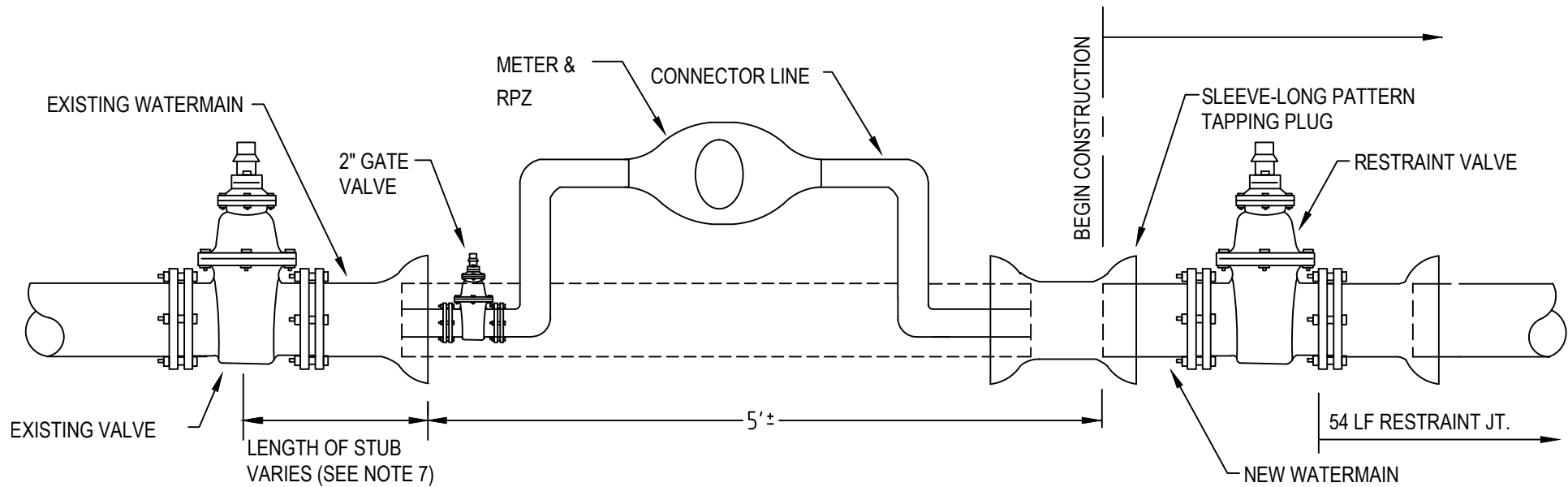
STANDARD DETAIL

# REDUCED PRESSURE DETECTOR ASSEMBLY

SCALE:  
N.T.S.  
DATE:  
01-02-14

# 24B





NOTES:

1. INSTALL CONNECTOR LINE FROM EXISTING BLOW OFF ASSEMBLY TO NEW MAIN FOR FILLING, TESTING AND STERILIZING NEW MAIN.
2. CONNECTOR LINE TO BE ASSEMBLED WITH RPZ AND METER BY CONTRACTOR AND TO BE OPERATED AND INDEPENDENT OF EXISTING MAIN.
3. BLOCKING ON EXISTING LINE NOT TO BE DISTURBED.
4. FINAL CONNECTION TO EXISTING MAIN TO BE MADE ONLY AFTER TOTAL PROJECT IS ACCEPTED BY UNION COUNTY WATER.
5. VALVES ON EXISTING SYSTEM TO BE OPERATED BY UCW FORCES ONLY.
6. ONLY ONE CONNECTION WILL BE ALLOWED BETWEEN THE EXISTING SYSTEM AND THE NEW CONSTRUCTION UNTIL TESTING AND DISINFECTION IS COMPLETE.
7. 6" OR 8" DIAMETER PIPE= 40 LF OF STUB, 12" OR 16" DIAMETER PIPE= 72 LF OF STUB

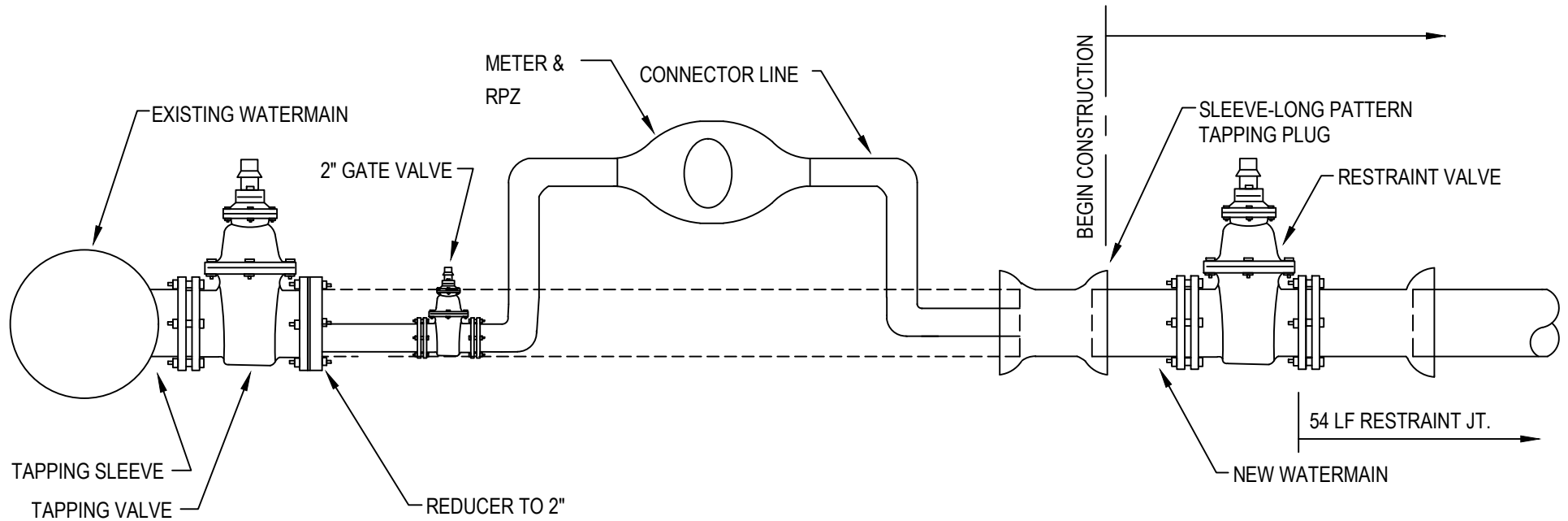


STANDARD DETAIL

# JUMPER CONNECTION

SCALE:  
N.T.S.  
DATE:  
09-02-10

# 25



NOTES:

1. INSTALL CONNECTOR LINE FROM TAPPING VALVE TO NEW MAIN FOR FILLING, TESTING AND STERILIZING NEW MAIN.
2. CONNECTOR LINE TO BE ASSEMBLED WITH RPZ AND METER BY CONTRACTOR AND TO BE OPERATED AND INDEPENDENT OF EXISTING MAIN.
3. FINAL CONNECTION TO EXISTING MAIN TO BE MADE ONLY AFTER TOTAL PROJECT IS ACCEPTED BY UNION COUNTY WATER.
4. VALVES ON EXISTING SYSTEM TO BE OPERATED BY UCW FORCES ONLY.
5. ONLY ONE CONNECTION WILL BE ALLOWED BETWEEN THE EXISTING SYSTEM AND THE NEW CONSTRUCTION UNTIL TESTING AND DISINFECTION IS COMPLETE.

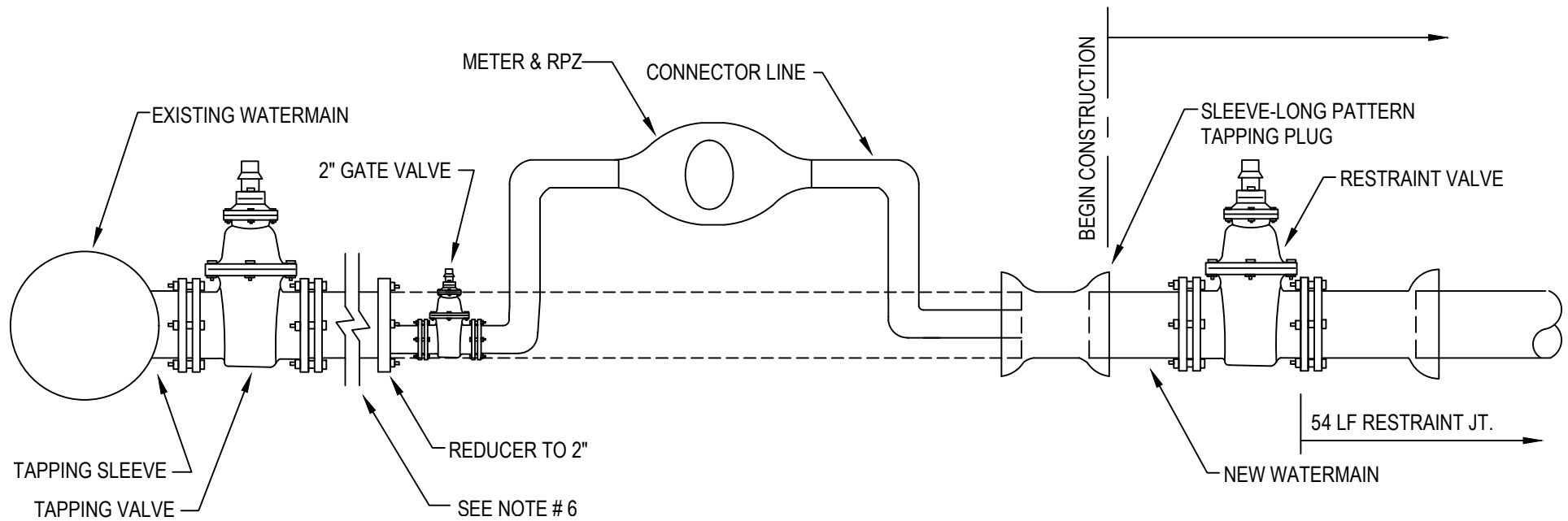


STANDARD DETAIL

# DIRECT TAP JUMPER CONNECTION (SHORT SIDE)

SCALE:  
N.T.S.  
DATE:  
09-02-10

# 25A



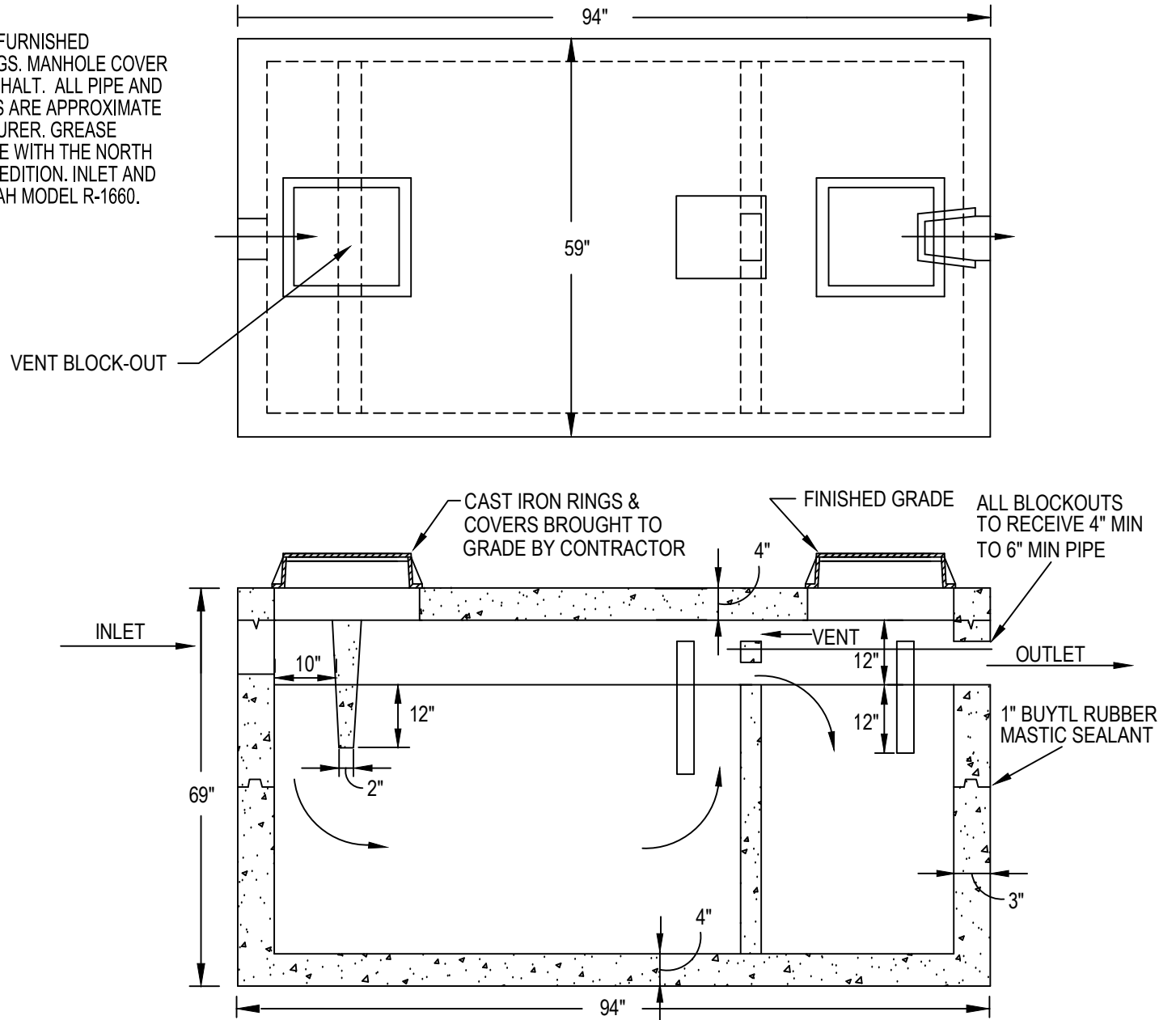
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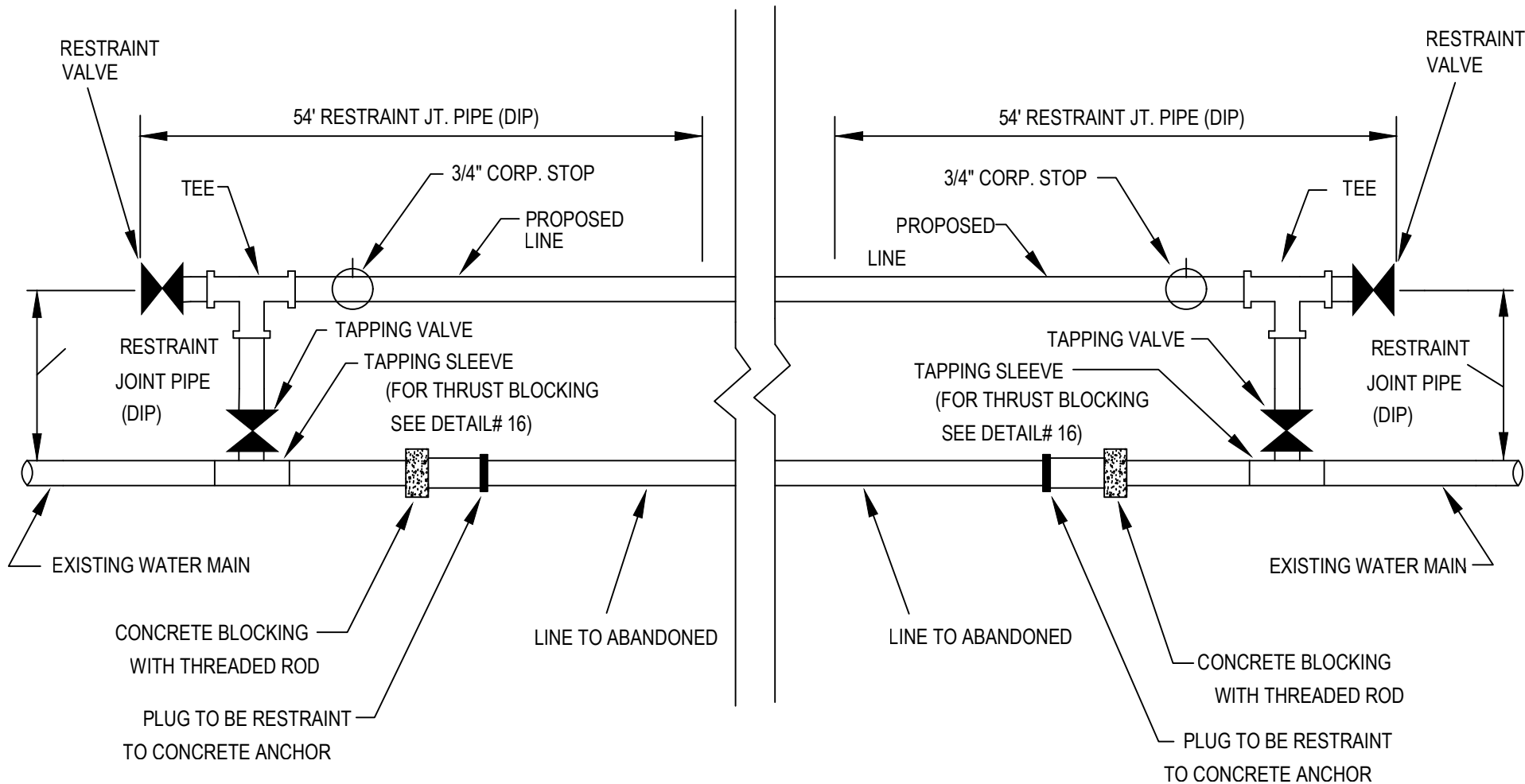
1. INSTALL CONNECTOR LINE FROM TAPPING VALVE TO NEW MAIN FOR FILLING, TESTING AND STERILIZING NEW MAIN.
2. CONNECTOR LINE TO BE ASSEMBLED WITH RPZ AND METER BY CONTRACTOR AND TO BE OPERATED AND INDEPENDENT OF EXISTING MAIN.
3. FINAL CONNECTION TO EXISTING MAIN TO BE MADE ONLY AFTER TOTAL PROJECT IS ACCEPTED BY UNION COUNTY PUBLIC WORKS.
4. VALVES ON EXISTING SYSTEM TO BE OPERATED BY UCW FORCES ONLY.
5. ONLY ONE CONNECTION WILL BE ALLOWED BETWEEN THE EXISTING SYSTEM AND THE NEW CONSTRUCTION UNTIL TESTING AND DISINFECTION IS COMPLETE.
6. MAXIMUM LENGTH OF PIPE NOT TO EXCEED 100'.

	STANDARD DETAIL	SCALE: N.T.S.	25B
	DIRECT TAP JUMPER CONNECTION (LONG SIDE)	DATE: 09-02-10	



1,000 GALLON MINIMUM GREASE INTERCEPTOR FURNISHED COMPLETE WITH CAST IRON MANHOLE AND RINGS. MANHOLE COVER SHALL BE FLUSH WITH FINISHED GRADE OR ASPHALT. ALL PIPE AND FITTINGS SHALL BE CAST IRON. ALL DIMENSIONS ARE APPROXIMATE ONLY AND SHALL BE VERIFIED WITH MANUFACTURER. GREASE INTERCEPTOR TO BE DESIGNED IN ACCORDANCE WITH THE NORTH CAROLINA STANDARD PLUMBING CODE LATEST EDITION. INLET AND DISCHARGE SHALL HAVE TEES EQUAL TO NEENAH MODEL R-1660.





NOTE:

1. ALL WATERMAINS ALONG EXISTING DOT ROADS MUST BE A MINIMUM DISTANCE OF A 1+ 1/1 RATIO OFF EDGE OF PAVEMENT OR BACK OF CURB.

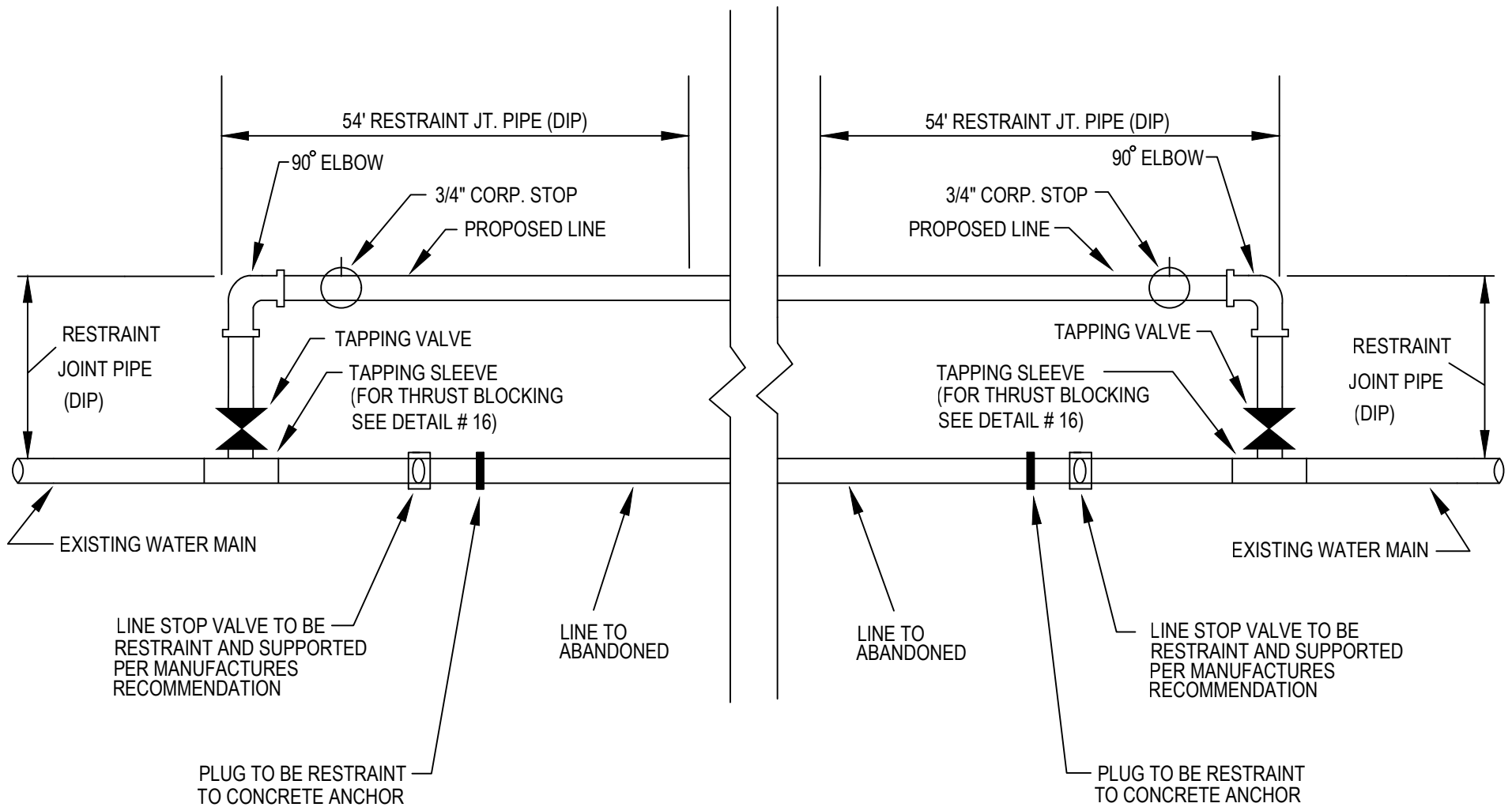


STANDARD DETAIL

# WATERMAIN RELOCATION DETAIL

SCALE:  
N.T.S.  
DATE:  
04-03-08

# 27



NOTE:  
 1. ALL WATERMAINS ALONG EXISTING DOT ROADS MUST BE A MINIMUM DISTANCE OF A 1+ 1/1 RATIO OFF EDGE OF PAVEMENT OR BACK OF CURB.

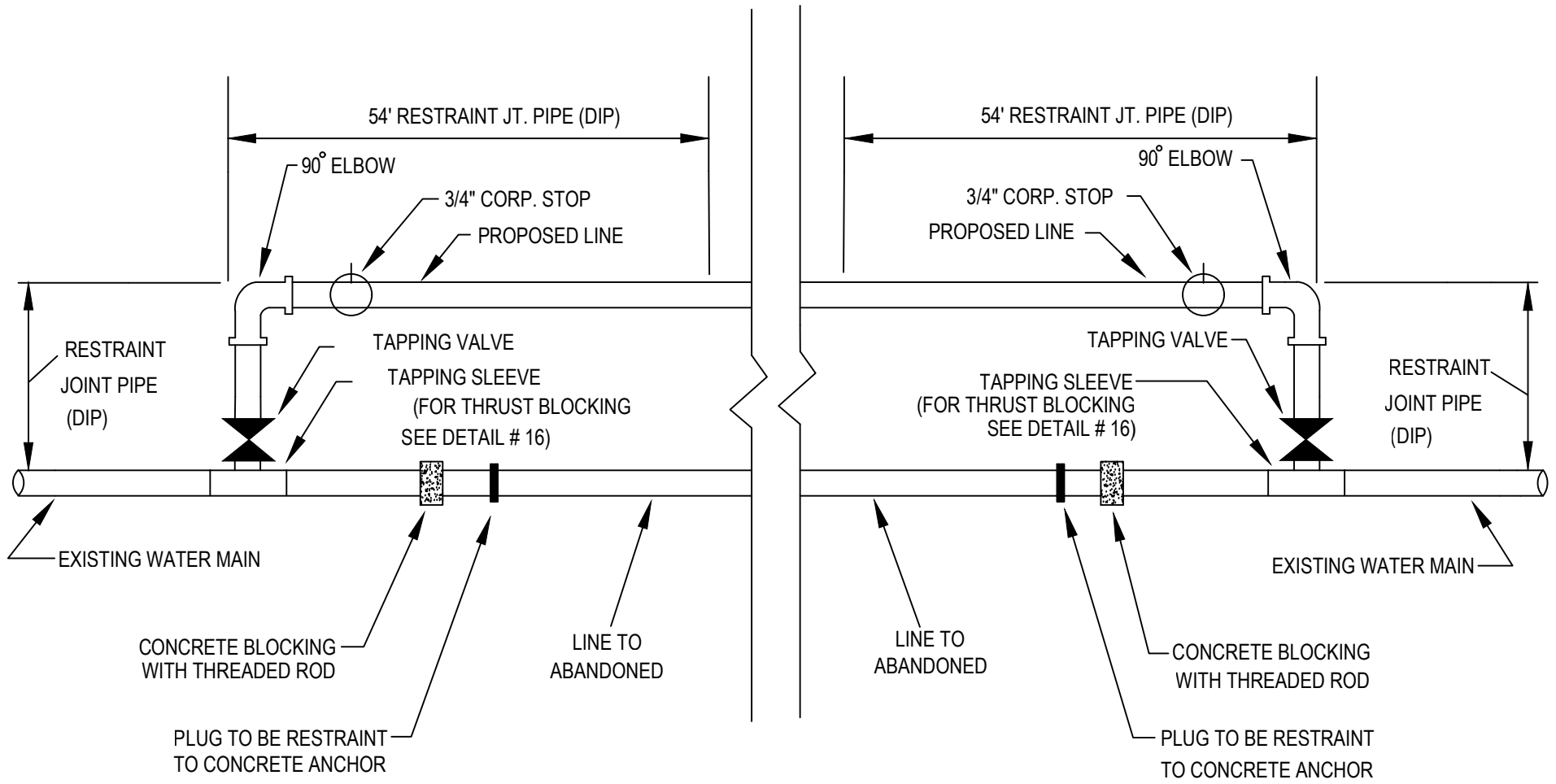


STANDARD DETAIL

# LARGE WATERMAIN RELOCATION DETAIL

SCALE:  
 N.T.S.  
 DATE:  
 03-08-11

# 27A



NOTE:  
 1. ALL WATERMAINS ALONG EXISTING DOT ROADS MUST BE A MINIMUM DISTANCE OF A 1+ 1/1 RATIO OFF EDGE OF PAVEMENT OR BACK OF CURB.

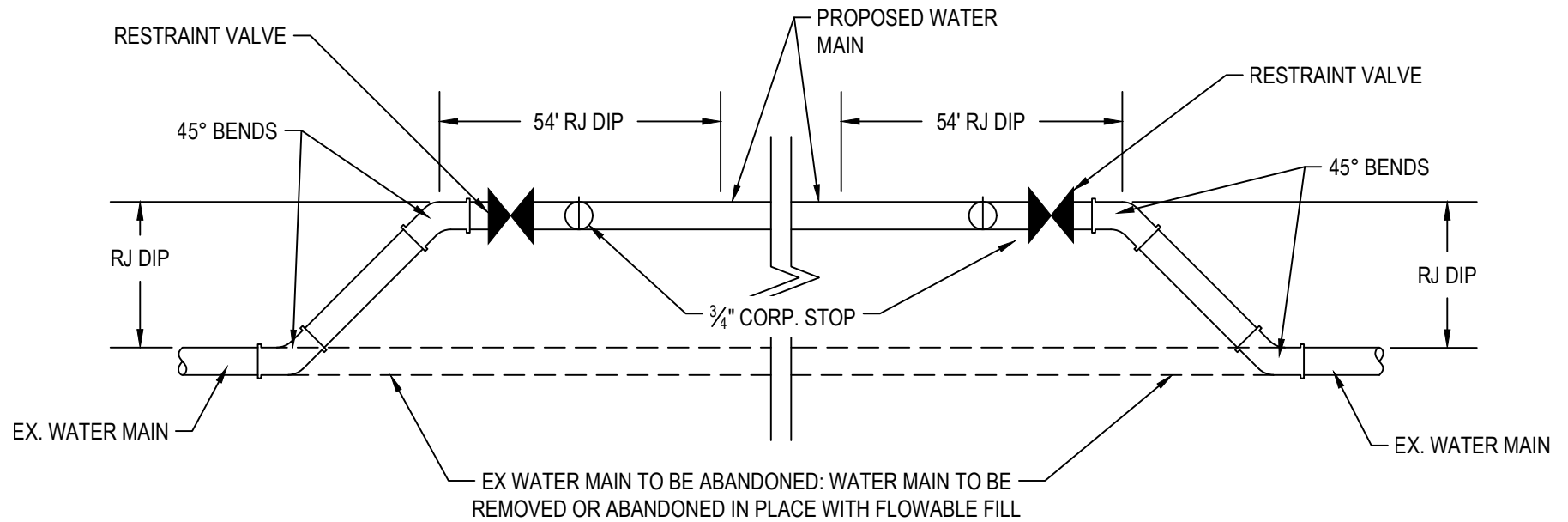


STANDARD DETAIL

# SMALL WATERMAIN RELOCATION DETAIL

SCALE:  
 N.T.S.  
 DATE:  
 03-08-11

# 27B



NOTE:

1. ALL WATERMAINS ALONG EXISTING DOT ROADS MUST BE A MINIMUM DISTANCE OF A 1+ 1/1 RATIO OFF EDGE OF PAVEMENT OR BACK OF CURB.
2. CONNECTION MUST BE MADE AT FACTORY ENDS IF EXISTING WATER MAIN IS ASBESTOS CONCRETE



STANDARD DETAIL

# LARGE WATER RELOCATION DETAIL

SCALE:  
N.T.S.  
DATE:  
09-13-24

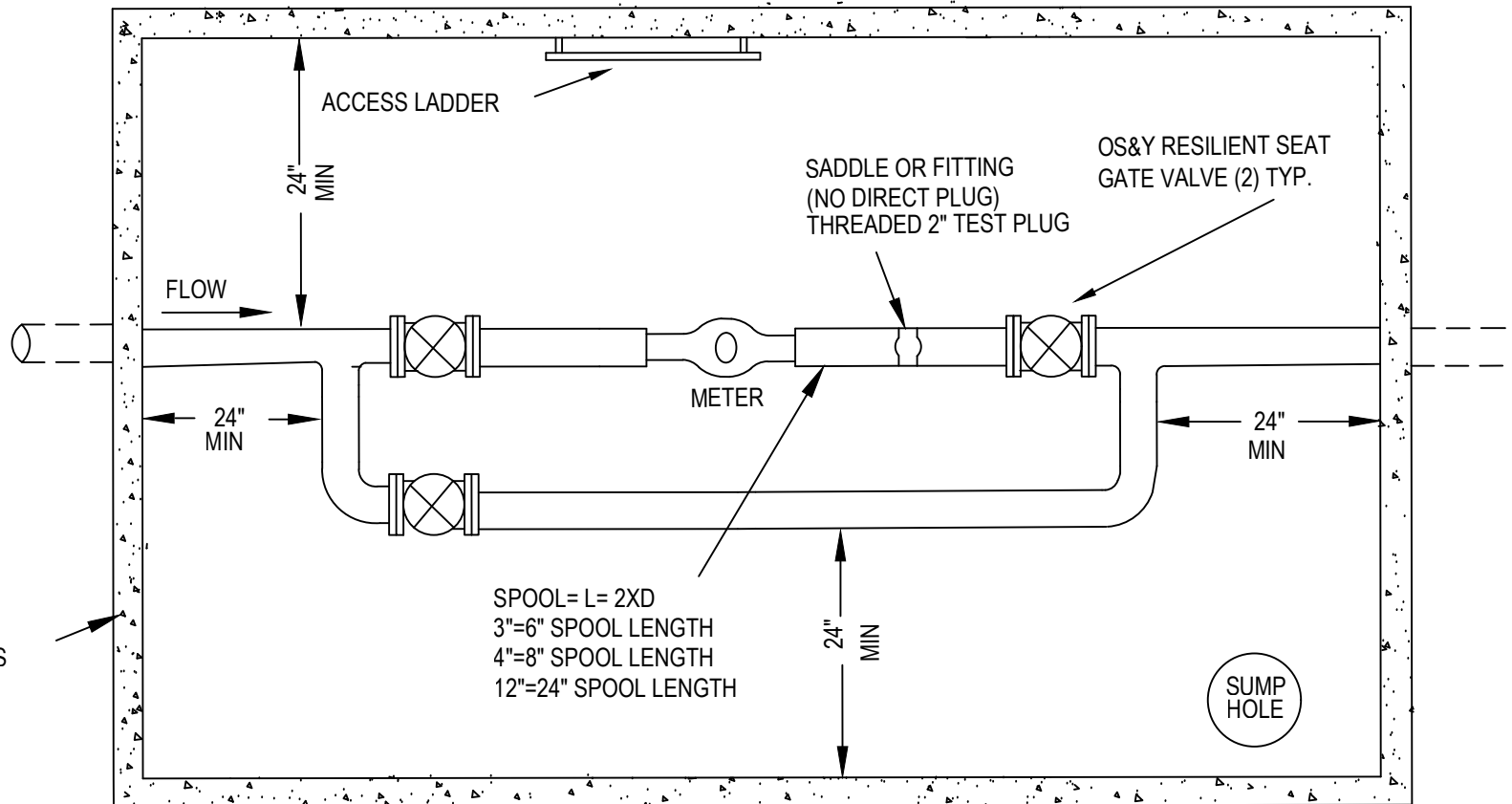
# 27C

NOTES:

1. PIPING AND FITTINGS SHALL BE DUCTILE IRON (AWWA C151) CLASS 350 AND SHALL BE RESTRAINED JOINT OR FLANGED AS INDICATED ON THE DETAIL. RESTRAINED JOINTS SHALL BE MEGA-LUG RESTRAINED OR AN APPROVED EQUAL.
2. ALL VAULTS SHALL BE 3800 PSI CONCRETE AND CAPABLE OF WITHSTANDING 150 PSF LOADING IN NON TRAFFIC AREAS.
3. ACCESS HATCHES SHALL BE ALUMINUM 150 PSF WITH LOCKABLE COVER DEVICE. MANUFACTURER SHALL BE BILCO, HALIDAY OR APPROVED EQUAL.
4. INSTALL VAULT AT EDGE OF RIGHT OF WAY. DO NOT PLACE IN PAVEMENT.
5. PIPING TO BE A MINIMUM OF 18" OFF OF FLOOR.
6. DEVELOPER MUST CONTACT UCW CUSTOMER SERVICE TO PAY METER COST & INSTALLATION FEES AND SCHEDULE THE WATER METER INSTALLATION
7. BYPASS PIPE EQUAL TO METER SIZE

METER DIMENSIONS

Model	Octave			
NOMINAL SIZE	3"	4"	6"	8"
L- LENGTH	12"	14"	18"	20"
B- WIDTH	7 1/2"	9"	11"	13 1/2"
H- HEIGHT	8 1/2"	9 7/8"	10 7/8"	12 7/8"



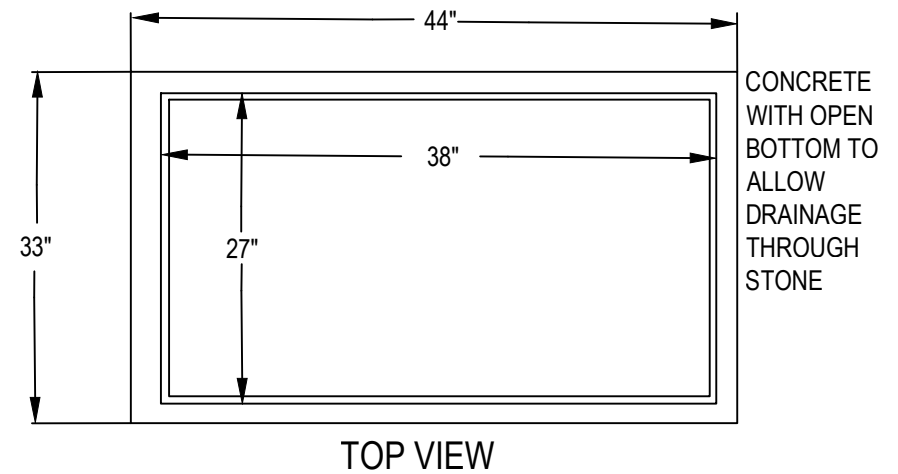
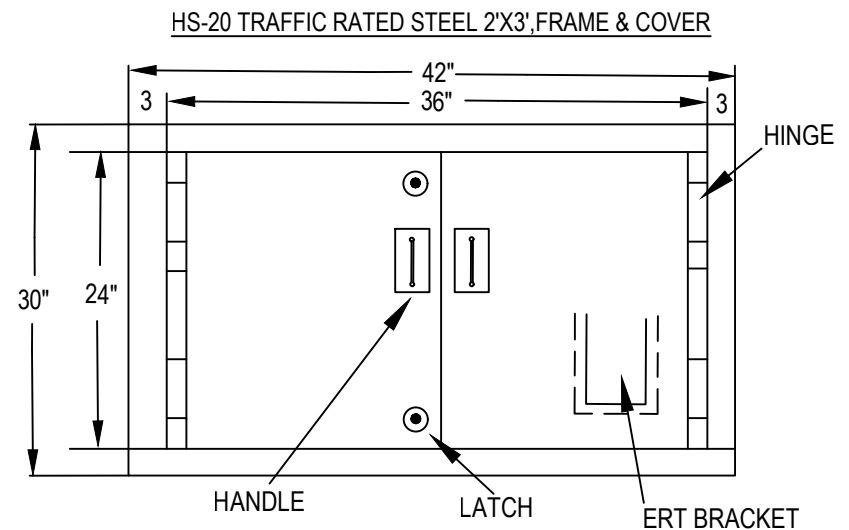
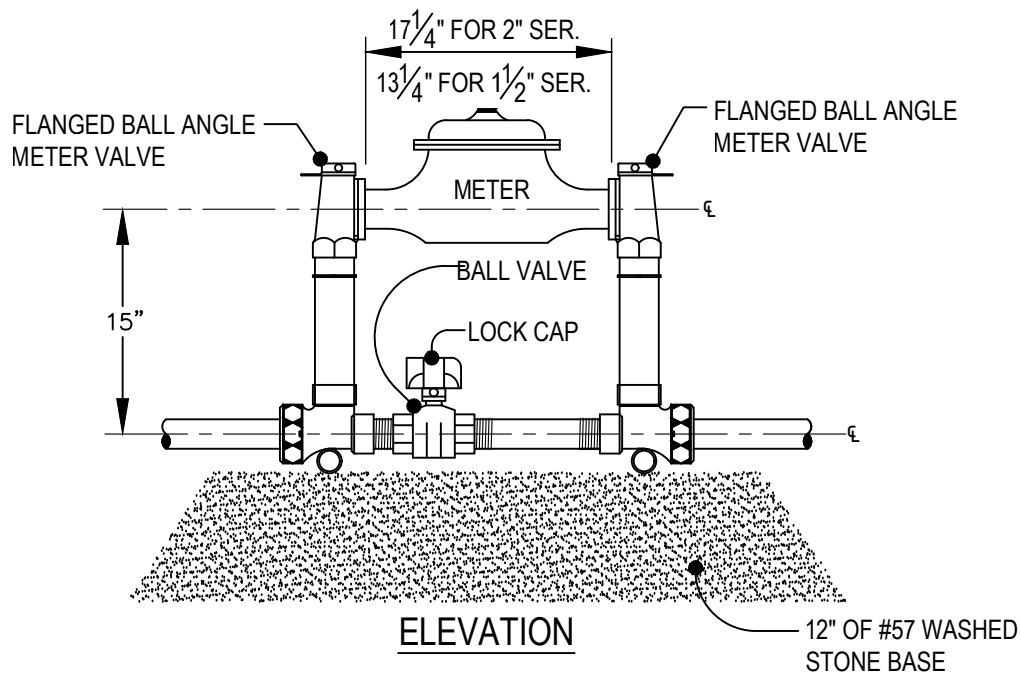
STANDARD DETAIL

METER AND VAULT - 3" OR LARGER

SCALE:  
N.T.S.  
DATE:  
10-22-14

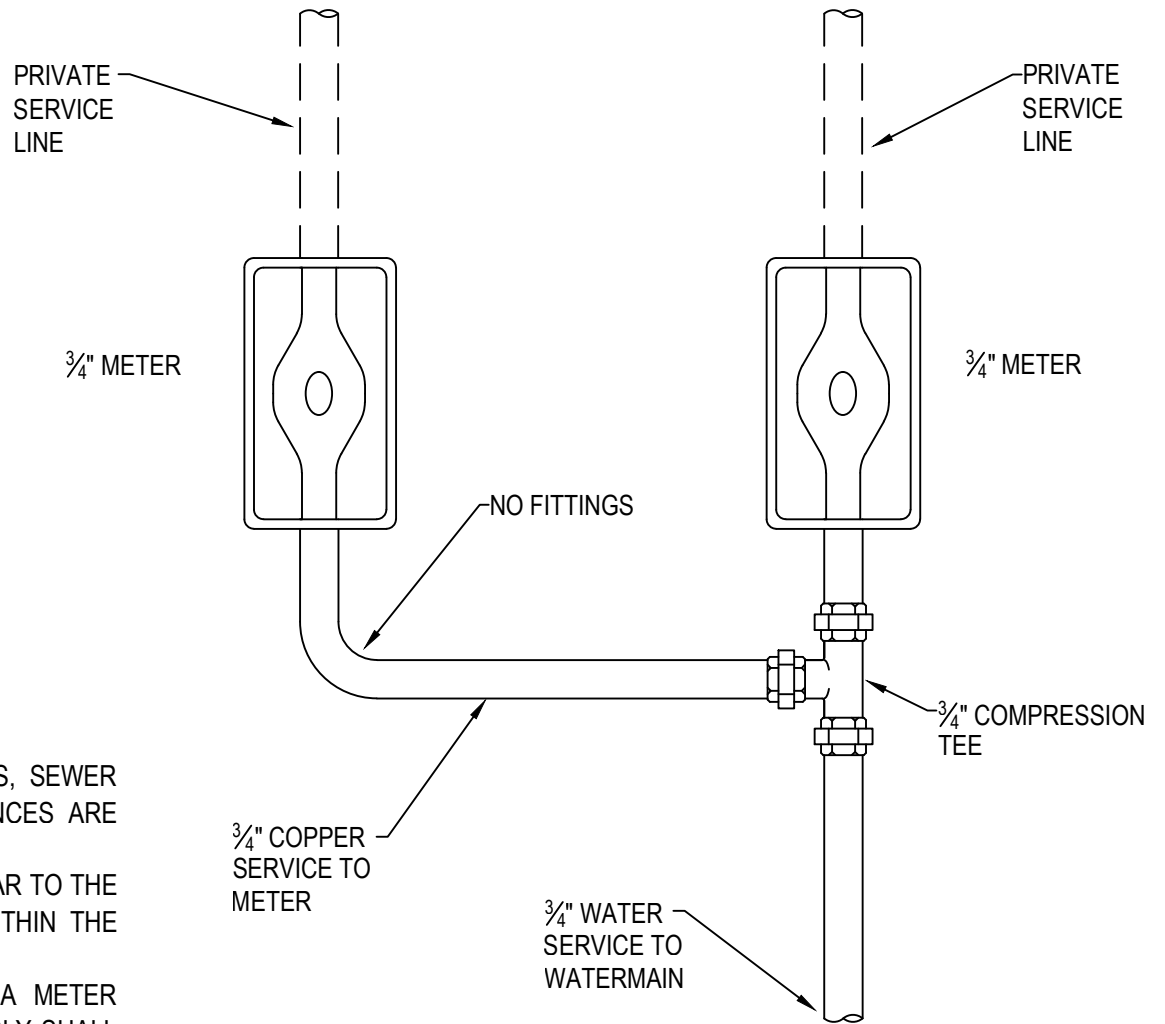
28





**NOTES:**

1. PIPING TO BE BRASS AND COPPER TUBING. METER INLET AND OUTLET TO BE EQUIPPED WITH FLANGED BALL ANGLE METER.
2. CUSTOM SETTERS SHALL BE EQUIPPED WITH STANDARD LOW BYPASS WITH BALL VALVE AND PADLOCK WINGS.
3. CUSTOM SETTERS SHALL BE AS MANUFACTURED BY MUELLER, FORD, ANY MCDONALD, OR APPROVED EQUAL.
4. CUSTOM SETTER SHALL BE INSTALLED SUCH THAT METER REGISTER IS LOCATED 5 TO 8 INCHES BELOW METER BOX COVER.
5. METER BY COUNTY AT PREVAILING RATE.



NOTES:

1. METERS WILL NOT BE SET IF WATER METER BOXES, SEWER CLEAN-OUTS, VALVE BOXES OR THEIR APPURTENANCES ARE DAMAGED OR IMPROPERLY POSITIONED.
2. WATER METERS ARE TO BE INSTALLED PERPENDICULAR TO THE ROAD AND WITHIN THE ROAD RIGHT-OF-WAY OR WITHIN THE LIMITS OF A PROPOSED UTILITY EASEMENT.
3. IF THE IRRIGATION LINE IS TO BE UTILIZED AND A METER SET, THE APPROPRIATE REDUCED PRESSURE ASSEMBLY SHALL BE INSTALLED BY THE CONTRACTOR PER UCPW DETAIL 24A.
4. THE PLUMBER/BUILDER IS RESPONSIBLE FOR LABELING IRRIGATION AND DOMESTIC METERS AT TIME OF THEIR CONNECTION



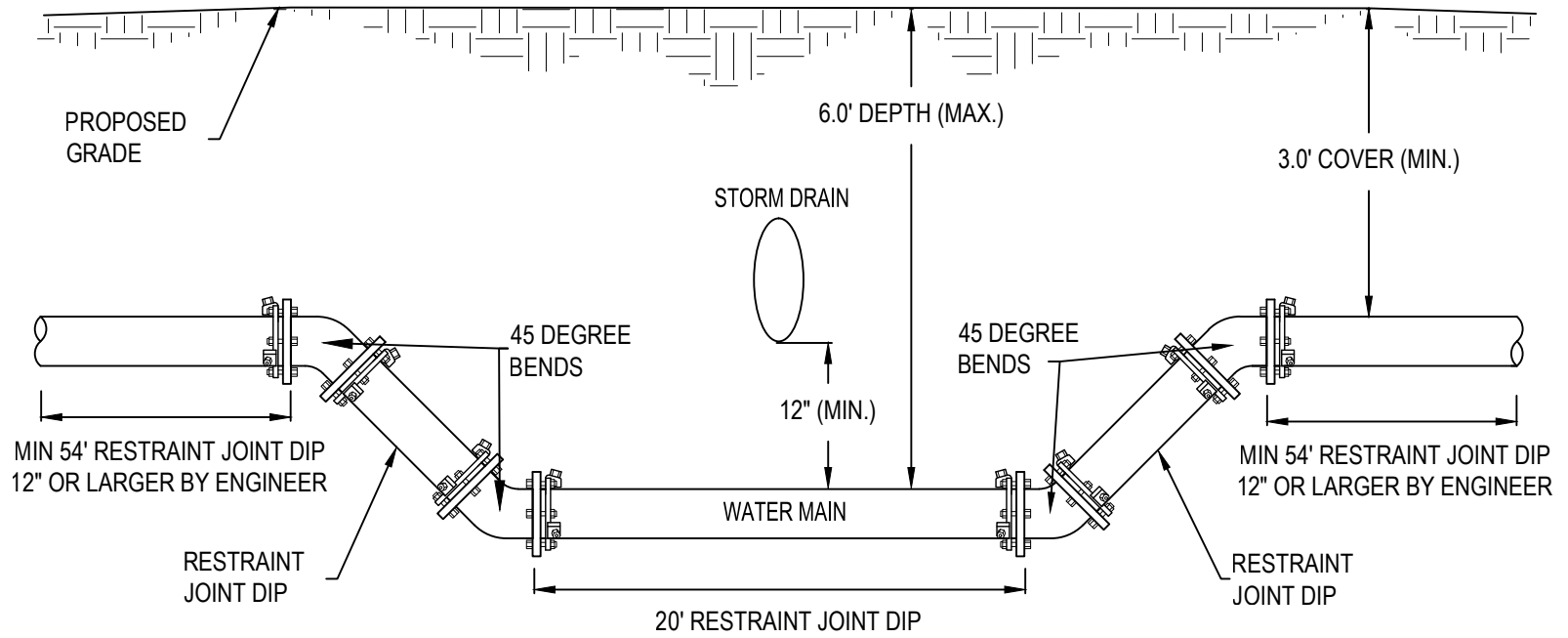
STANDARD DETAIL

# IRRIGATION AND DUAL METER TAP

SCALE:  
N.T.S.  
DATE:  
12-10-19

# 30





STANDARD DETAIL

# WATERMAIN UNDER STORM DRAIN CROSSING



SCALE:  
N.T.S.  
DATE:  
09-13-24

# 31

NOTE:

1. MAXIMUM GROUND SLOPE OF 5' TO 1' IN ANY DIRECTION INSIDE WATER OR SEWER EASEMENTS.
2. SLOPE GREATER THAN 5' TO 1' MUST HAVE PRIOR APPROVAL FROM UNION COUNTY WATER.

