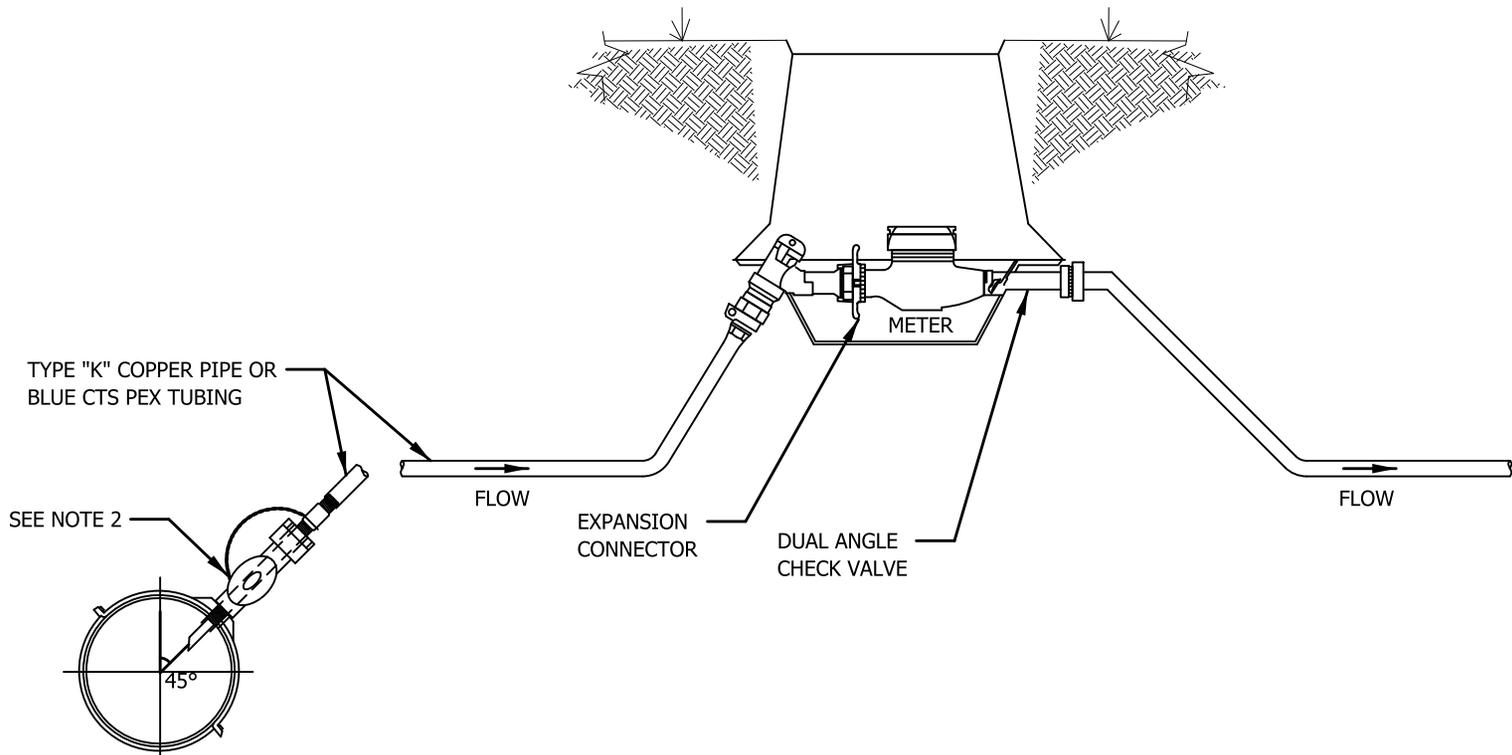


# Standard Detail Index

## SECTION 2 WATER DISTRIBUTION SYSTEM

<u>Detail #</u>	<u>Detail Description</u>
W-2.01.....	Typical 3/4" and 1" Water Service
W-2.02.....	Standard 1" and 2" Meter and Vault
W-2.03.....	Typical 3" and Larger Service Installation
W-2.04.....	Fire Defense Line with Meter and Bypass
W-2.05.....	1" RPZ Backflow Assembly
W-2.06.....	Standard 2" Backflow Assembly
W-2.07.....	Standard 3" and Larger Backflow Assembly
W-2.08.....	Valve Box Installation
W-2.09.....	Fire Hydrant Assembly
W-2.10.....	Tapping Sleeve and Valve
W-2.11.....	Standard 2" Blow-Off Assembly
W-2.12.....	Standard Temporary Capping
W-2.13.....	Standard Valve Rodding
W-2.14.....	Thrust Block for Horizontal Pipe Bends
W-2.15.....	Water Line Bedding
W-2.16.....	Yard Hydrant
W-2.17.....	Installation of Pipe Line at Culvert Detail
W-2.18.....	Backflow Prevention Device for Filling New Mains
W-2.19.....	Bore and Jack
W-2.20.....	HDPE/Fusible PVC Transition





NOTES:

- 1) BOX TO BE SIZED TO ACCOMMODATE METER, YOKE AND VALVES. 18" MINIMUM DEPTH.
- 2) ALL TAPS TO PIPE REQUIRE THE USE OF A SERVICE SADDLE WITH EITHER DOUBLE STRAP OR WIDE BAND SINGLE STRAP.

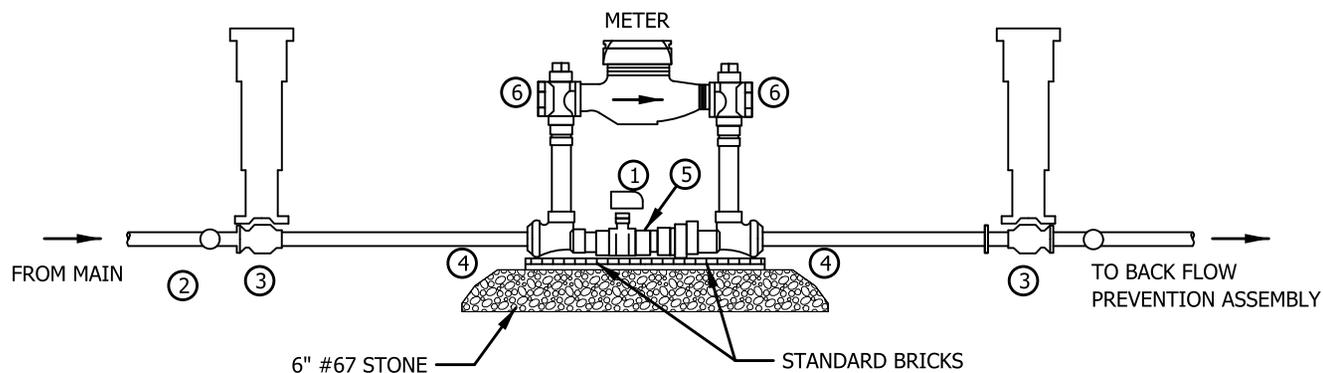
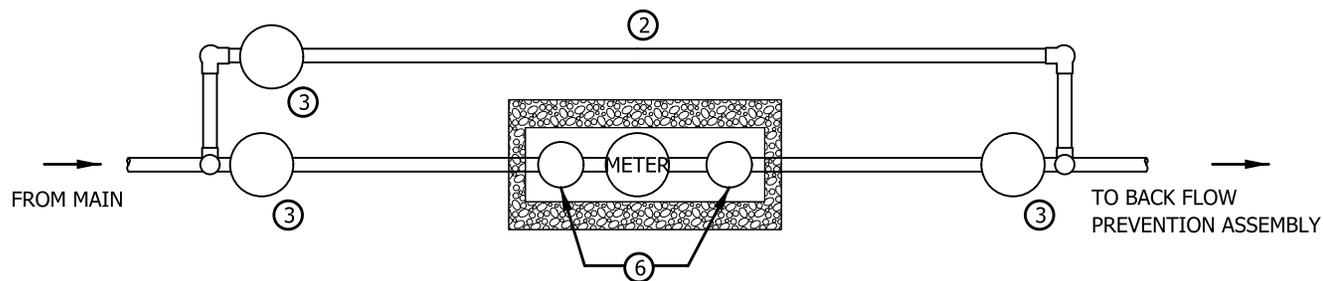
## TYPICAL 3/4" AND 1" WATER SERVICE

DATE:	REVISIONS

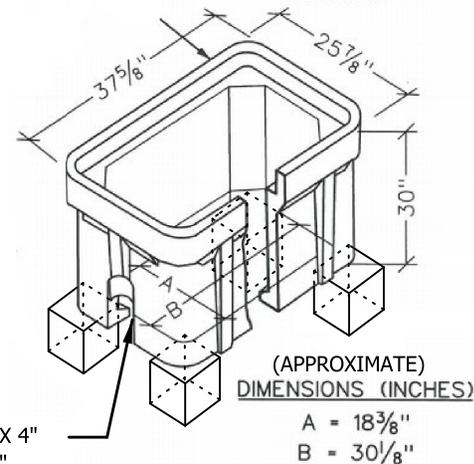
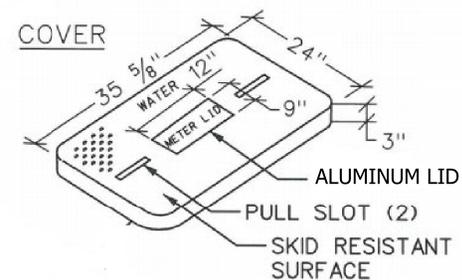
# STANDARD DETAIL

DATE: 03/07/2017  
SHEET 1 OF 1  
STD. No. W-2.01





SECTION



LEGEND

- ① 1" BALL VALVE
- ② COPPER TUBING TYPE K OR BLUE CTS PEX TUBING
- ③ CURB STOP BALL VALVE
- ④ 3' SECTION THREADED BRASS PIPE
- ⑤ 1" BYPASS
- ⑥ BALL ANGLE METER VALVE

NOTES:

- 1) METER SETTER IS STABIIZED USING (2) 1" DIA., 18" LONG PIPE RESTING ON (4) BRICKS.
- 2) WATER MUST DRAIN AWAY FROM CONCRETE VAULT. VAULT MUST BE LOCATED IN A GRASS OR LANDSCAPE AREA, AND NOT IN SIDEWALKS OR DRIVES.
- 3) 4 - CONCRETE BLOCK SUPPORTS UNDER BOX.

MOUSE HOLES (2), 4" X 4" OPENING WITH 4" X 4" KNOCKOUT ABOVE OPENING

PRE-CAST CONCRETE VAULT

# STANDARD 1" & 2" METER AND VAULT

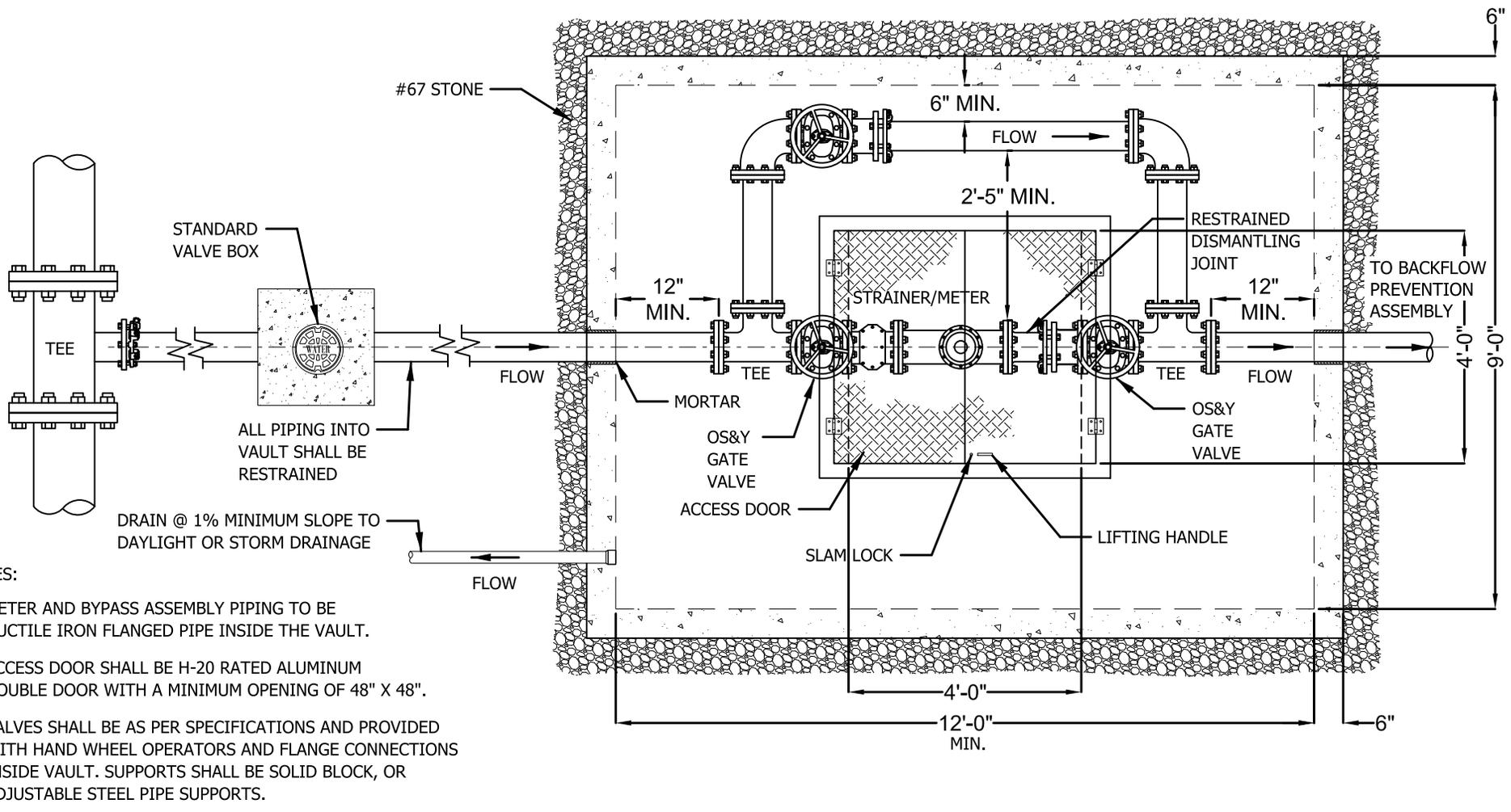
DATE:	REVISIONS

## STANDARD DETAIL

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.02







NOTES:

- 1) METER AND BYPASS ASSEMBLY PIPING TO BE DUCTILE IRON FLANGED PIPE INSIDE THE VAULT.
- 2) ACCESS DOOR SHALL BE H-20 RATED ALUMINUM DOUBLE DOOR WITH A MINIMUM OPENING OF 48" X 48".
- 3) VALVES SHALL BE AS PER SPECIFICATIONS AND PROVIDED WITH HAND WHEEL OPERATORS AND FLANGE CONNECTIONS INSIDE VAULT. SUPPORTS SHALL BE SOLID BLOCK, OR ADJUSTABLE STEEL PIPE SUPPORTS.
- 4) TO ENSURE POSITIVE DRAINAGE, THE VAULT SHALL BE TIED INTO THE STORM DRAINAGE SYSTEM, IF POSITIVE DRAINAGE IS UNOBTAINABLE, A SUMP PUMP SHALL BE LOCATED AND OPERATED IN THE VAULT.
- 5) DOUBLE DOORS SHALL BE LOCKABLE WITH CITY SUPPLIED PADLOCK.
- 6) ALL APPLICATIONS REQUIRE AN ABOVE GROUND BACKFLOW PREVENTER.
- 7) VAULT TO BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF N.C.

PLAN

NOTE:  
FOR SECTION VIEW  
SEE DETAIL W-2.03  
SHEET 1 OF 2

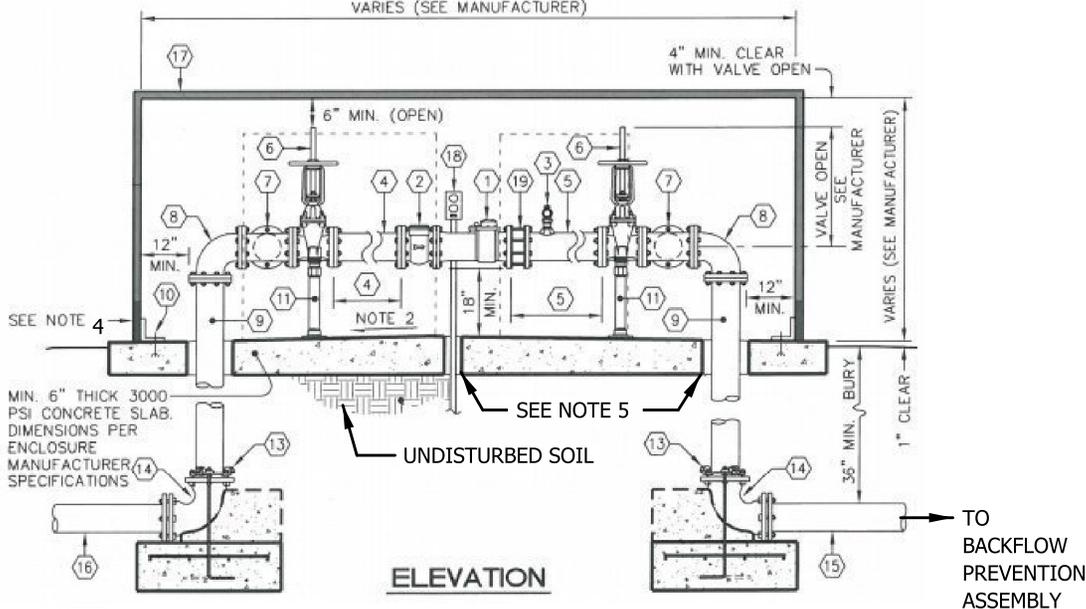
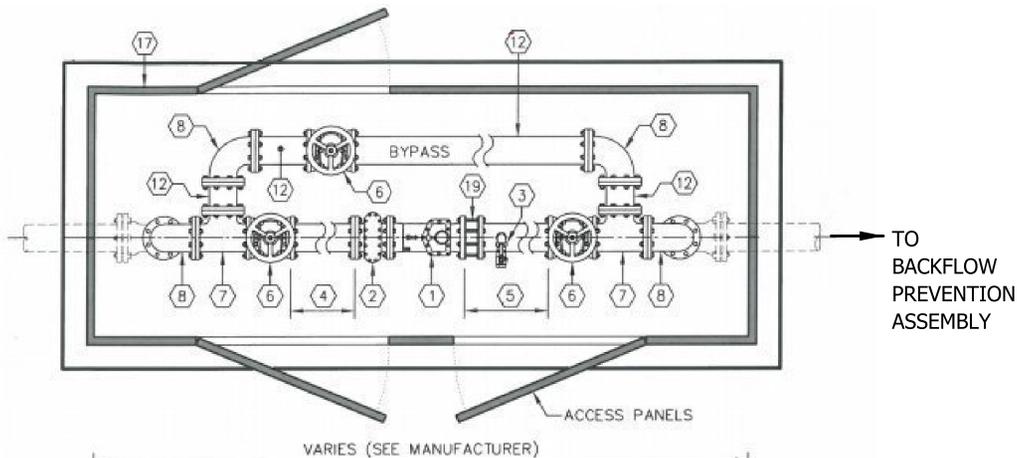
# TYPICAL 3" AND LARGER SERVICE INSTALLATION

DATE:	REVISIONS

## STANDARD DETAIL

DATE: 03/07/2017  
SHEET 2 OF 2  
STD. No. W-2.03





**NOTES:**

- 1) SLOPE FLOOR TO DRAIN TO PORTS AT BOTH ENDS. ENSURE POSITIVE SURFACE GRADE AWAY FROM ENCLOSURE.
- 2) 12" CLEARANCE AROUND ALL CONNECTIONS INSIDE VAULT FROM FLOOR AND WALLS. 18" CLEARING BETWEEN METER AND BYPASS PIPING.
- 3) VAULT SIZE TO BE APPROVED BY THE CITY.
- 4) PROVIDE DRAIN PORT FOR POSITIVE DRAINAGE OUT OF ENCLOSURE. (MINIMUM TWICE THE SIZE OF WATER MAIN PIPE.)
- 5) PROVIDE MINIMUM 3" ANNULAR CLEARANCE AROUND ALL D.I.P. RISERS AND 1" AROUND ELECTRICAL CONDUIT.

#	PART
1	METER
2	STRAINER
3	2" TEST PORT INSTALLED ON #5
4	DIP CLASS 350 NIPPLE (FLANGED) LENGTH = 5 TIMES THE PIPE DIAMETER
5	DIP CLASS 350 NIPPLE (FLANGED) LENGTH = 3 TIMES THE PIPE DIAMETER
6	OS&Y GATE VALVE
7	DIP CLASS 350 TEE (FLANGED)
8	DIP CLASS 350 90° BEND (FLANGED)
9	DIP CLASS 350 (FLANGED x PE)
10	STAINLESS STEEL EXPANSION ANCHOR BOLTS PER BOX MANUFACTURER RECOMMENDED SIZE & SPACING
11	ADJUSTABLE PIPE SUPPORTS HOT DIP GALVANIZED
12	DIP CLASS 350 NIPPLE (FLANGED) LENGH = VARIES
13	WEDGE ACTION RESTRAINER GLAND JOINT RESTRAINT
14	90° DIP MJ x MJ ELBOW
15	DIP PIPE (OUTLET)
16	DIP PIPE (INLET)
17	INSULATED ENCLOSURE WITH LOCKING ACCESS DOORS
18	PROVIDE 120V RECEPTACLE ON GFCI NEAR PIPE RISER, SET MINIMUM 12" ABOVE DISCHARGE POINT OF RPZ. (AS APPLICABLE)
19	FLANGED COUPLING ADAPTOR

## FIRE DEFENSE LINE WITH METER AND BYPASS

DATE:	REVISIONS

# STANDARD DETAIL

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.04



VARIES (SEE MANUFACTURER)  
 REDUCED PRESSURE PRINCIPLE ZONE (RPZ)  
 BACKFLOW PREVENTION ASSEMBLY

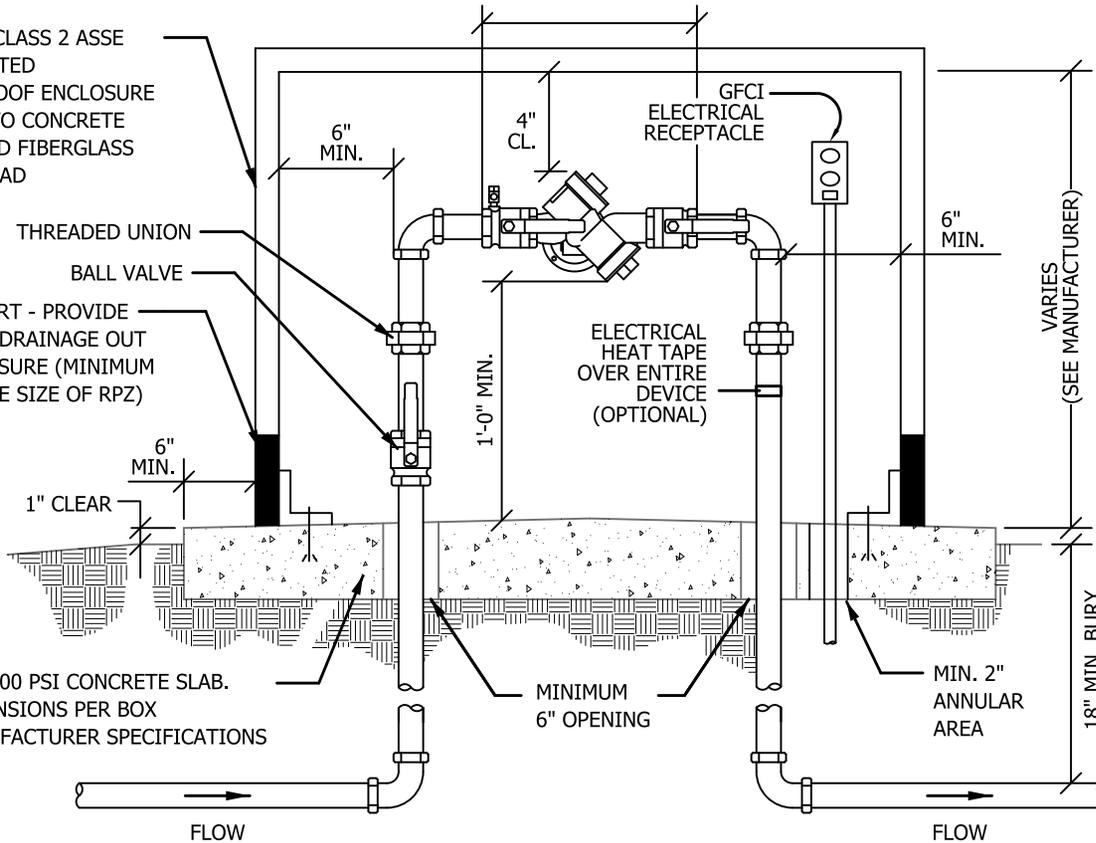
CLASS 1 OR CLASS 2 ASSE  
 1060 INSULATED  
 WEATHERPROOF ENCLOSURE  
 ANCHORED TO CONCRETE  
 OR APPROVED FIBERGLASS  
 MOUNTING PAD

THREADED UNION  
 BALL VALVE

DRAIN PORT - PROVIDE  
 POSITIVE DRAINAGE OUT  
 OF ENCLOSURE (MINIMUM  
 TWICE THE SIZE OF RPZ)

6" MIN.  
 1" CLEAR

4" 3,500 PSI CONCRETE SLAB.  
 DIMENSIONS PER BOX  
 MANUFACTURER SPECIFICATIONS



NOTES:

- 1) REDUCED PRESSURE PRINCIPLE ZONE (RPZ) BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511.
- 2) BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED WITHIN 5-FT OF THE METER BOX.
- 3) BACKFLOW PREVENTION ASSEMBLY SHALL BE CENTERED ON CONCRETE OR APPROVED FIBERGLASS MOUNTING PAD AND CENTERED WITHIN ENCLOSURE.
- 4) MINIMUM INSULATED CLASS I OR CLASS II, ASSE 1060 WEATHERPROOF ENCLOSURE WITH REQUIRED HEATING.
- 5) 120V GFCI ELECTRICAL RECEPTACLE TO BE INSTALLED IN ACCORDANCE WITH THE NC ELECTRICAL CODE FOR OUTDOOR OPERATION.
- 6) PIPE MATERIAL SHALL BE PVC (SCH. 80 OR BETTER), COPPER (TYPE K) OR BRASS (ASTM B43).
- 7) INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CITY ORDINANCES AND SPECIFICATIONS IN ADDITION TO THE NC PLUMBING CODE.

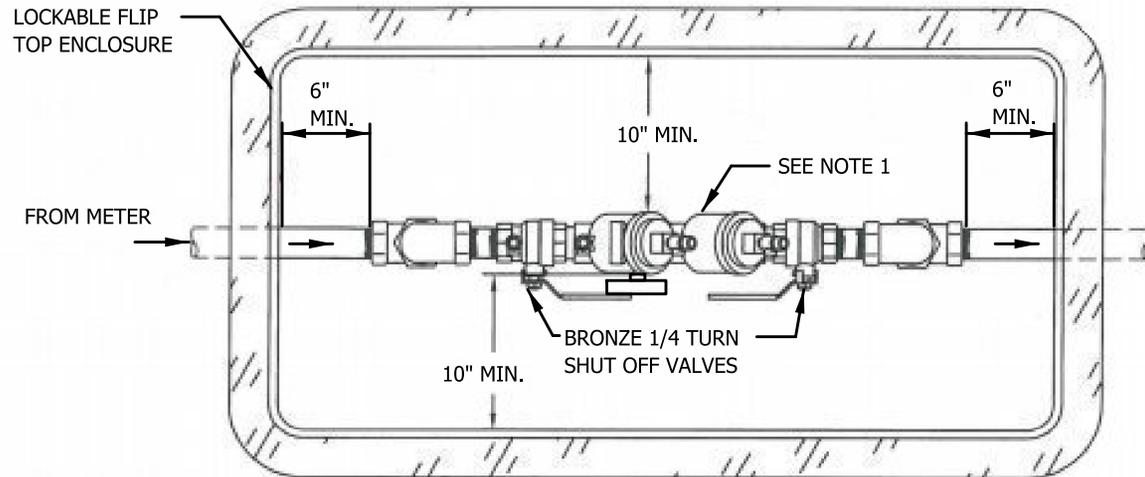
1" RPZ BACKFLOW ASSEMBLY

DATE:	REVISIONS

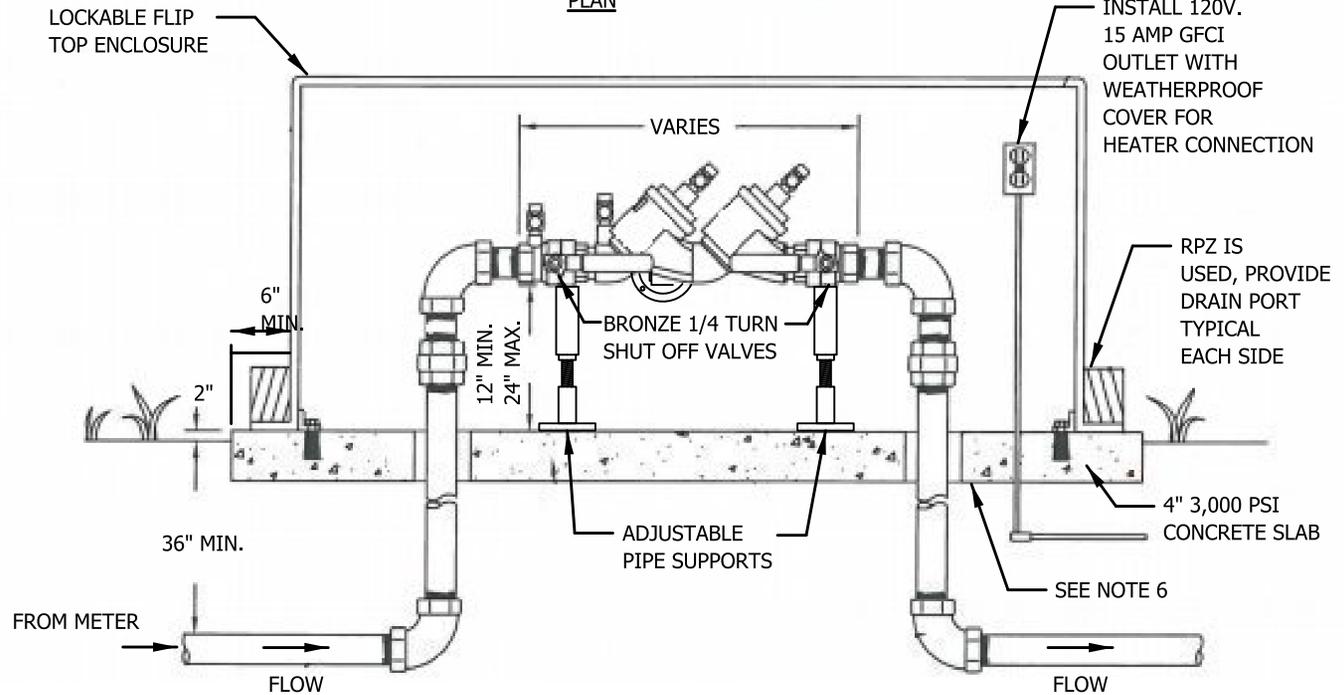
STANDARD DETAIL

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.05





PLAN



SECTION

NOTES:

- 1) REGARDLESS OF THE DEGREE OF HAZARD, USE A NO LEAD REDUCED PRESSURE ZONE ASSEMBLY. SELECTED TYPE MUST BE APPROVED BY THE CITY.
- 2) BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED ON THE CUSTOMERS' SIDE OF METER WITHIN 5 FEET OF THE METER BOX. ALTERNATE LOCATION MUST BE APPROVED BY THE CITY.
- 3) MINIMUM INSULATE CLASS I OR CLASS II ASSE 1060 WEATHERPROOF ENCLOSURE REQUIRED. (HEATING REQUIRED)
- 4) SLOPE CONCRETE PAD TO DRAIN PORTS.
- 5) PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW ASSEMBLY AND COMPLIANCE WITH TESTING AND REPORTING REQUIREMENTS.
- 6) CONCRETE SLAB 3,000 PSI @ 28 DAYS (CHECK ENCLOSURE SIZE FOR SLAB DIMENSIONS)

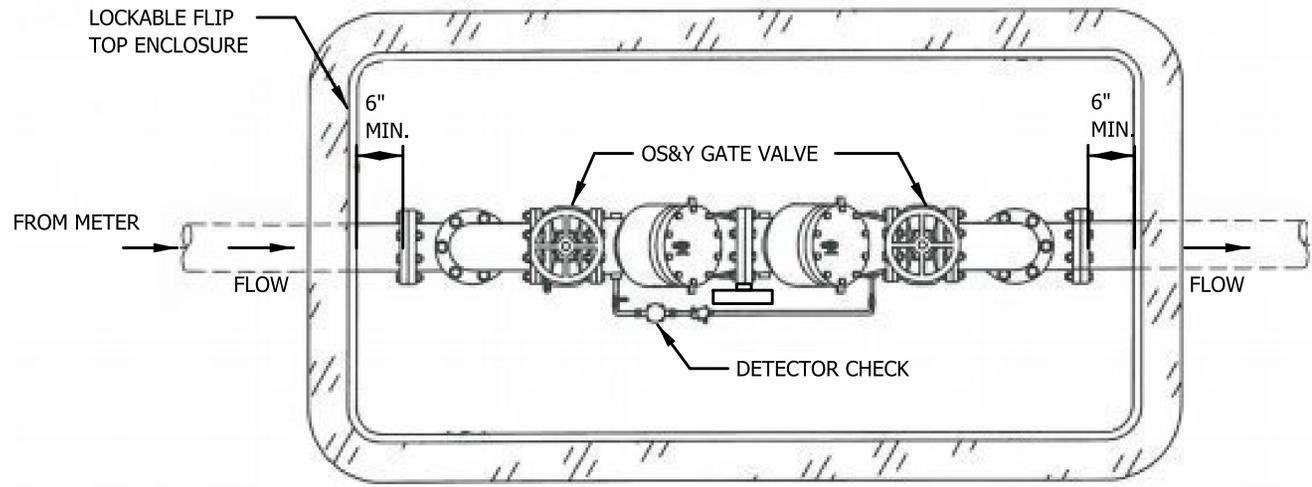
## STANDARD 2" BACKFLOW ASSEMBLY

DATE:	REVISIONS

## STANDARD DETAIL

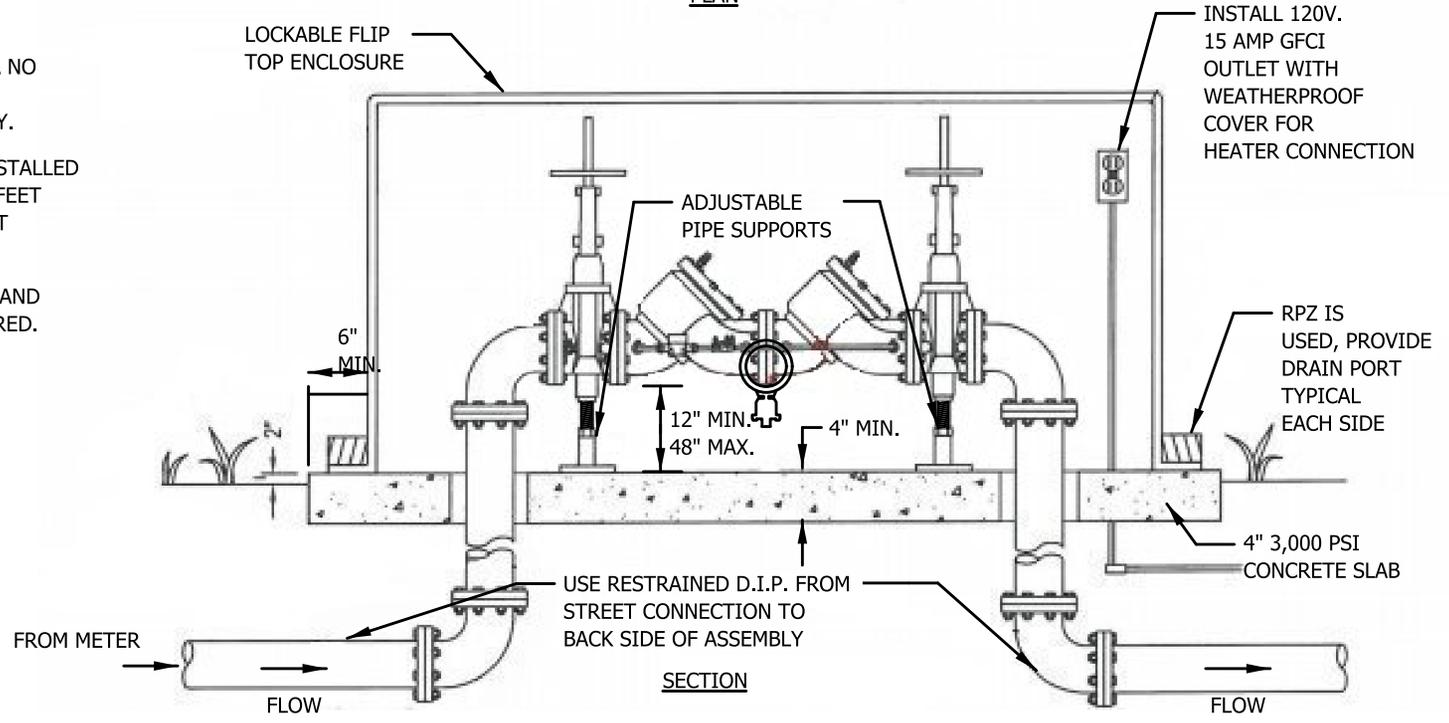
DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.06





PLAN

- NOTES:
- 1) REGARDLESS OF THE DEGREE OF HAZARD, USE A NO LEAD REDUCED PRESSURE ZONE ASSEMBLY. SELECTED TYPE MUST BE APPROVED BY THE CITY.
  - 2) BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED ON THE CUSTOMERS' SIDE OF METER WITHIN 5 FEET OF THE METER BOX. ALTERNATE LOCATION MUST BE APPROVED BY THE CITY.
  - 3) MINIMUM INSULATE CLASS I ASSE 1060 HEATED AND INSULATED WEATHERPROOF ENCLOSURE REQUIRED.
  - 4) SLOPE CONCRETE PAD TO DRAIN PORTS.
  - 5) PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW ASSEMBLY AND COMPLIANCE WITH TESTING AND REPORTING REQUIREMENTS.



SECTION

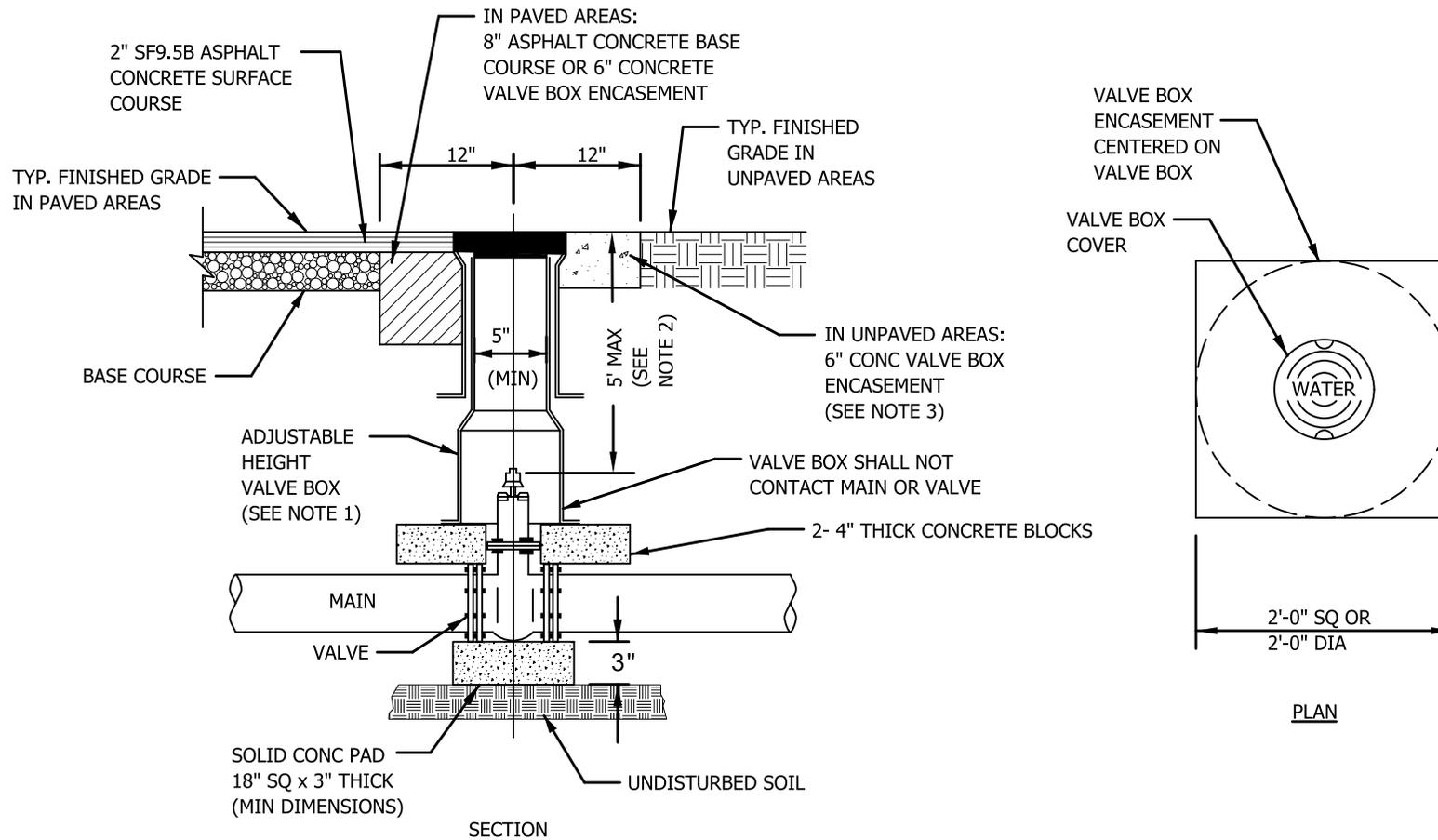
# STANDARD 3" AND LARGER BACKFLOW ASSEMBLY

DATE:	REVISIONS

## STANDARD DETAIL

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.07





NOTES:

- 1) DIP MAY BE USED FOR VALVE BOX EXTENSIONS.
- 2) WHERE DEPTH OF VALVE OPERATING NUT IS GREATER THAN 5', PROVIDE AND INSTALL EXTENSION STEM USING A MANUFACTURER APPROVED EXTENSION KIT. DEPTH OF EXTENDED OPERATING NUT SHALL BE NO GREATER THAN 2'.
- 3) PRECAST CONCRETE ENCASEMENT IS ALLOWED OUTSIDE OF PAVED AREAS.
- 4) VALVES LARGER THAN 12" MAY REQUIRE LARGER, THICKER CONCRETE SUPPORT PADS.

## VALVE BOX INSTALLATION

# STANDARD DETAIL

DATE:	REVISIONS

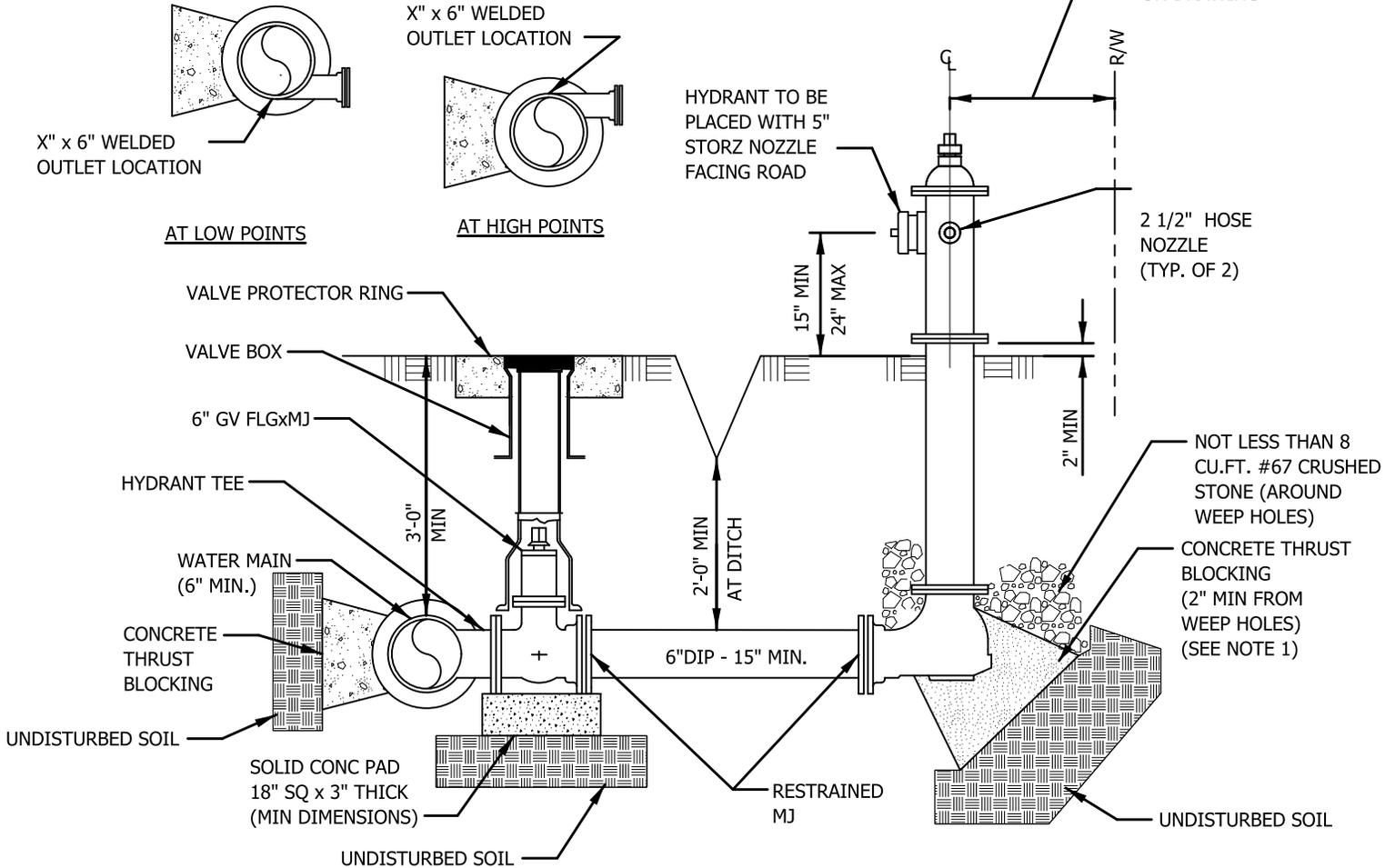
DATE: 03/07/2017

SHEET 1 OF 1

STD. No. W-2.08



ALTERNATE HYDRANT LEG POSITIONS FOR  
MAINS LARGER THAN 20" (SEE NOTE 3)



NOTES:

- 1) POUR CONCRETE SO THAT NO FITTING OR FLANGES ARE COVERED.
- 2) HYDRANT STANDPIPE TO BE EXTENDED AS NECESSARY TO MATCH FINISHED GROUND ELEVATION.
- 3) AT LOCATIONS INDICATED ON PLANS FOR MAINS LARGER THAN 20", USE ALTERNATE HYDRANT LEG POSITION AS SHOWN ABOVE WITH WELDED OUTLETS IN LIEU OF TEES.

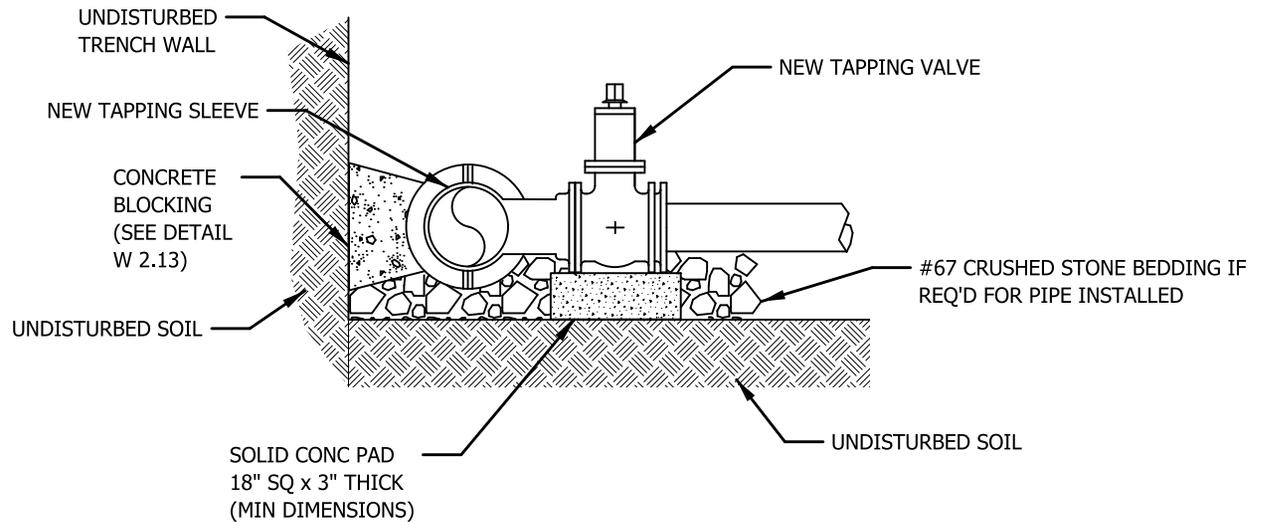
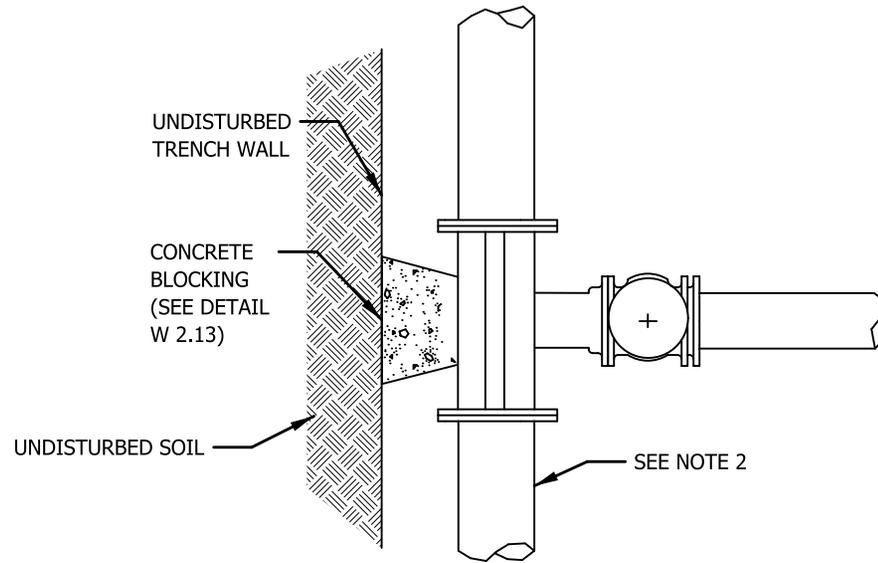
## FIRE HYDRANT ASSEMBLY

# STANDARD DETAIL

DATE:	REVISIONS

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.09





NOTES:

- 1) ALL FITTINGS SHALL BE COVERED WITH 10 MIL POLYETHYLENE SHEETS PRIOR TO POURING CONCRETE BLOCKING.
- 2) P.V.C. PIPES SHALL BE SUPPORTED EITHER SIDE OF SADDLE LOCATION WITH CONCRETE ENCASEMENT PRIOR TO INSTALLING SADDLE.
- 3) VALVES LARGER THAN 12" MAY REQUIRE LARGER, THICKER CONCRETE SUPPORT PADS.

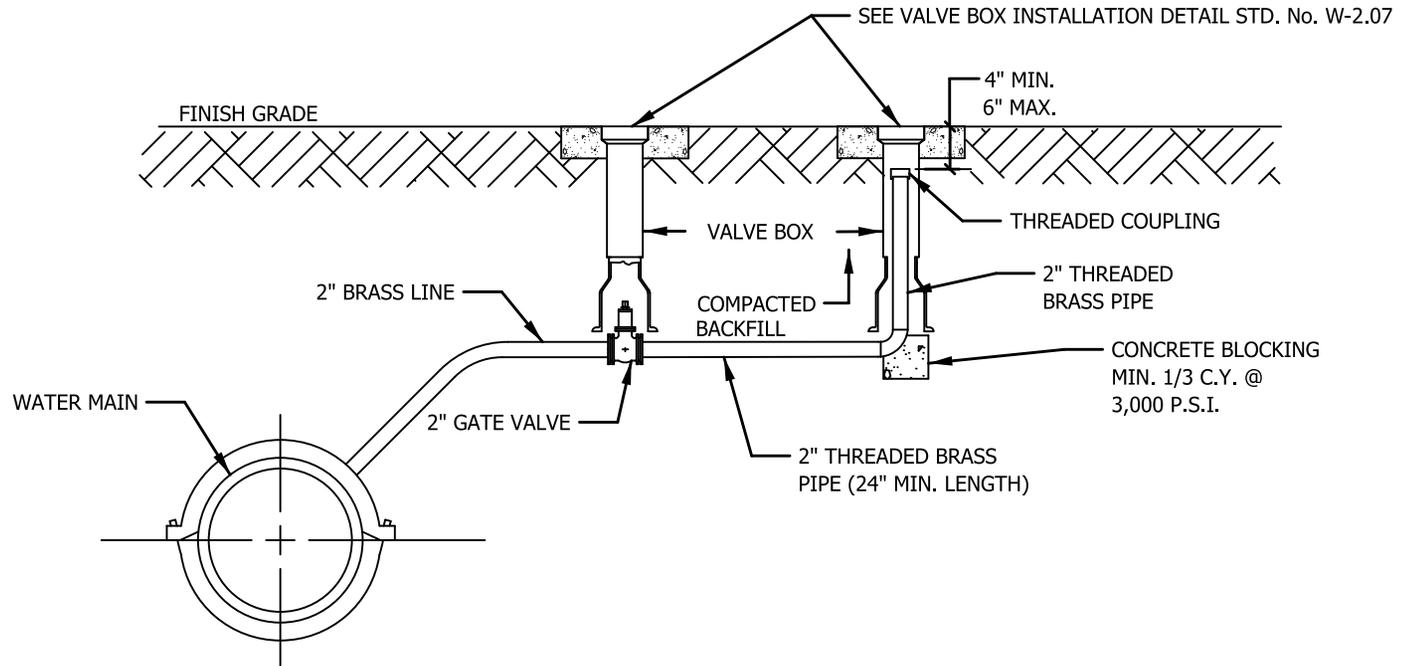
## TAPPING SLEEVE AND VALVE

### STANDARD DETAIL

DATE:	REVISIONS

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.10





NOTES:

- 1) FOR DEADEND INSTALLATIONS USE A MECHANICAL JOINT TAPPED CAP, TAPPED FOR 2" NIPPLE, IN LIEU OF TAPPING MAIN. CAP SHALL BE PROPERLY INSTALLED WITH THRUST COLLAR.
- 2) BLOW-OFF ASSEMBLY FOR 2" MAINS ARE TO BE CONSTRUCTED AS A CONTINUATION OF THE MAIN WITHOUT THE SERVICE SADDLE AND WITHOUT THE CORPORATION STOP.
- 3) FOR 6" MAIN LINES AND LARGER, FIRE HYDRANT ASSEMBLY MAY BE USED AS A BLOW OFF.
- 4) IF REQUIRED AND APPROVED BY THE CITY.

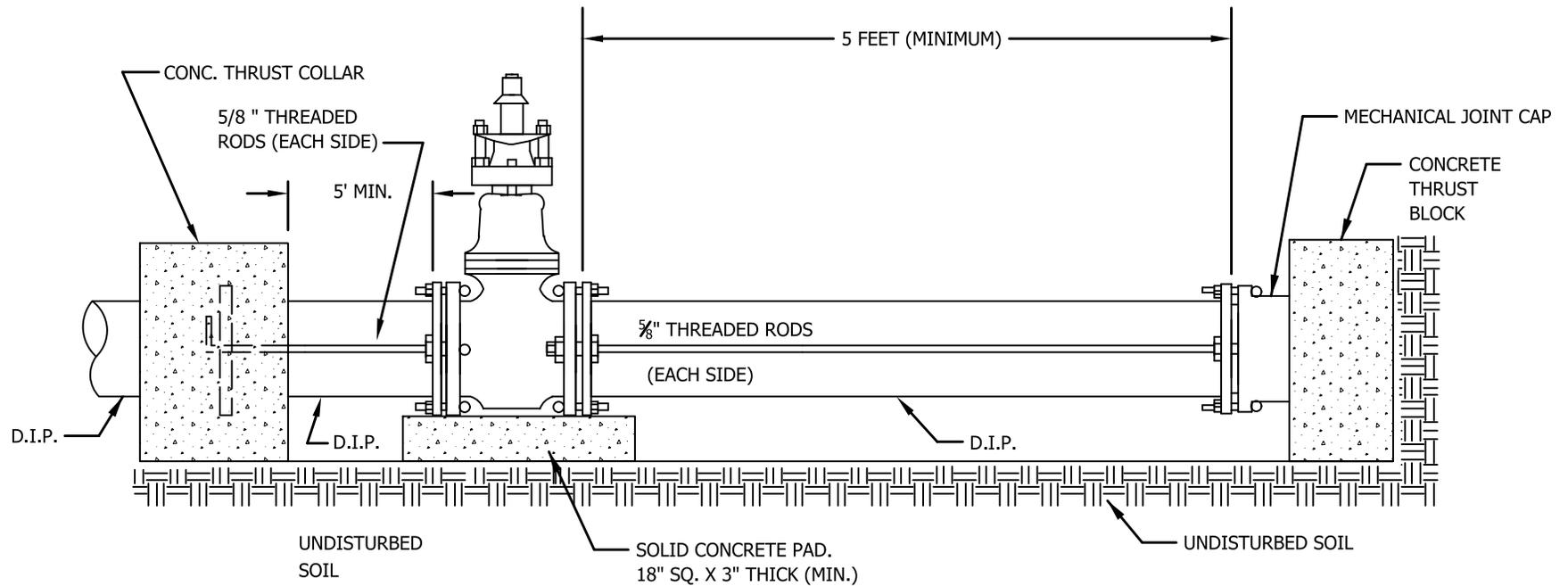
## STANDARD 2" BLOW-OFF ASSEMBLY

DATE:	REVISIONS

# STANDARD DETAIL

DATE: 03/07/2017  
SHEET 1 OF 1  
STD. No. W-2.11





NOTE:

- 1) VALVES LARGER THAN 12" MAY REQUIRE LARGER, THICKER CONCRETE SUPPORT PADS.
- 2) FOR PERMANENT CAPPING, RESTRAINED MECHANICAL JOINT IS REQUIRED UNLESS PRIOR WRITTEN APPROVAL HAS BEEN RECEIVED FROM THE CITY.

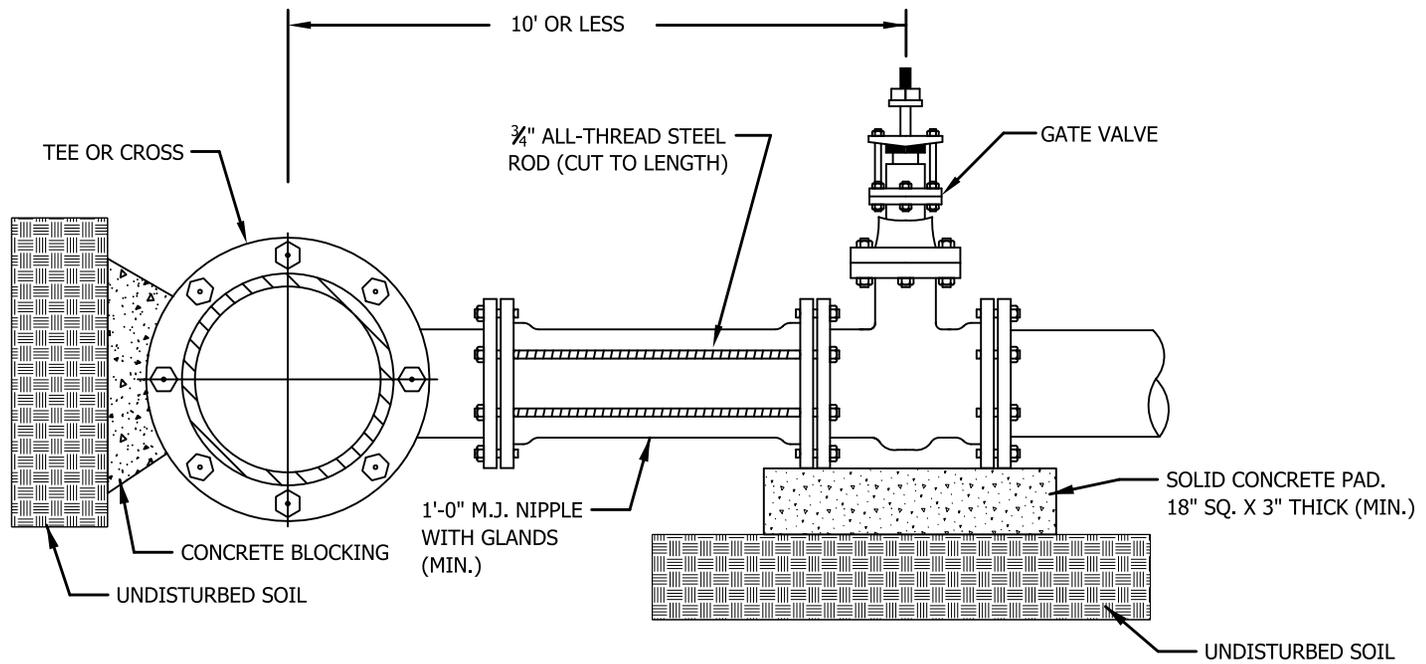
## STANDARD TEMPORARY CAPPING

DATE:	REVISIONS

## STANDARD DETAIL

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.12





ROD REQUIREMENTS

BRANCH SIZE	NO. OF RODS
4"	2
6"	2
8"	4
12"	4
16"	6
24"	6

NOTES:

- 1) ONCE INSTALLED AND TIGHT, THE STEEL RODS AND BOLTS SHALL BE COATED WITH 2 COATS OF BITUMINOUS BASE PAINT.
- 2) SEE STANDARD THRUST BLOCK DETAIL STD. No. W-2.13
- 3) CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
- 4) RESTRAINED JOINTS ARE ACCEPTABLE IN LIEU OF RODS.

## STANDARD VALVE RODDING

## STANDARD DETAIL

DATE:	REVISIONS

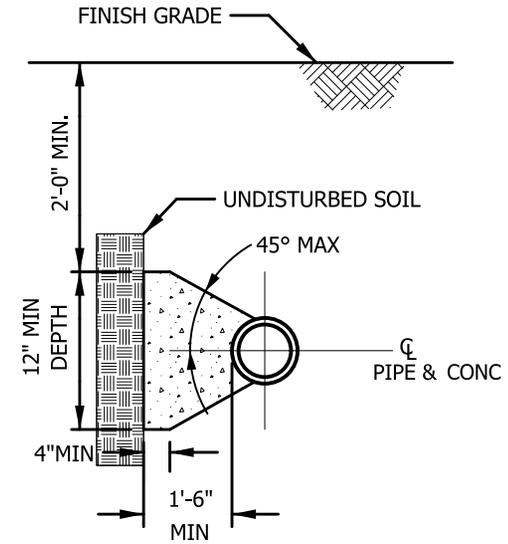
DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.13



SQ. FT. BEARING AREA					
FITTING	4"	6"	8"	12"	16"
90° BEND	3	5	7	10	16
D.E. OR TEE	2	3	5	8	11
45° OR LESS	1	2	4	6	8

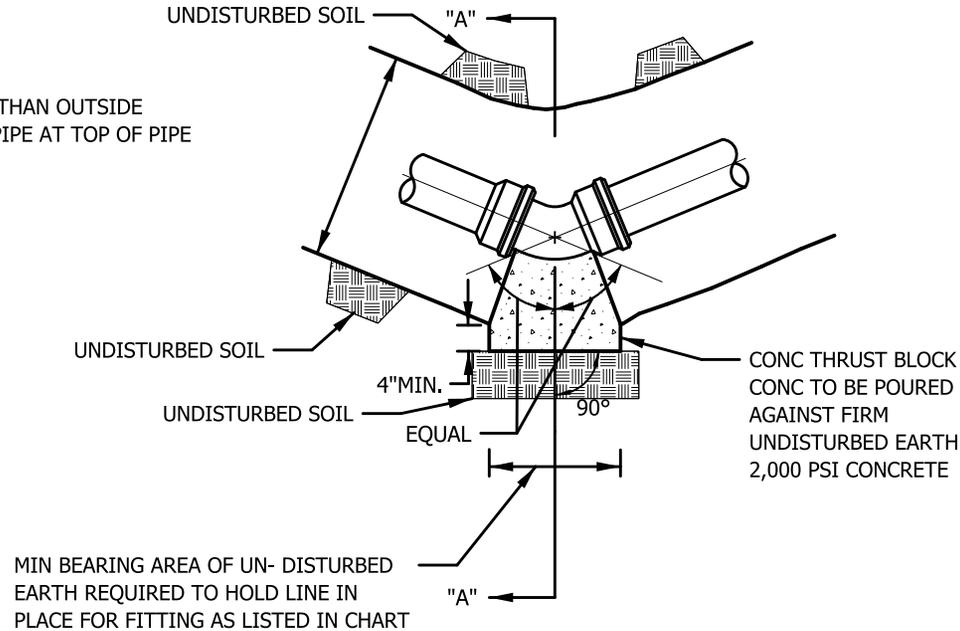
EXCAVATE AS NEARLY VERTICAL AS POSSIBLE

PROVIDE 4 MIL POLYETHYLENE  
AROUND PIPE TO PREVENT  
CONCRETE FROM BONDING TO PIPE



SECTION "A-A"

1'-6" GREATER THAN OUTSIDE  
DIAMETER OF PIPE AT TOP OF PIPE



## THRUST BLOCK FOR HORIZONTAL PIPE BENDS

DATE: REVISIONS

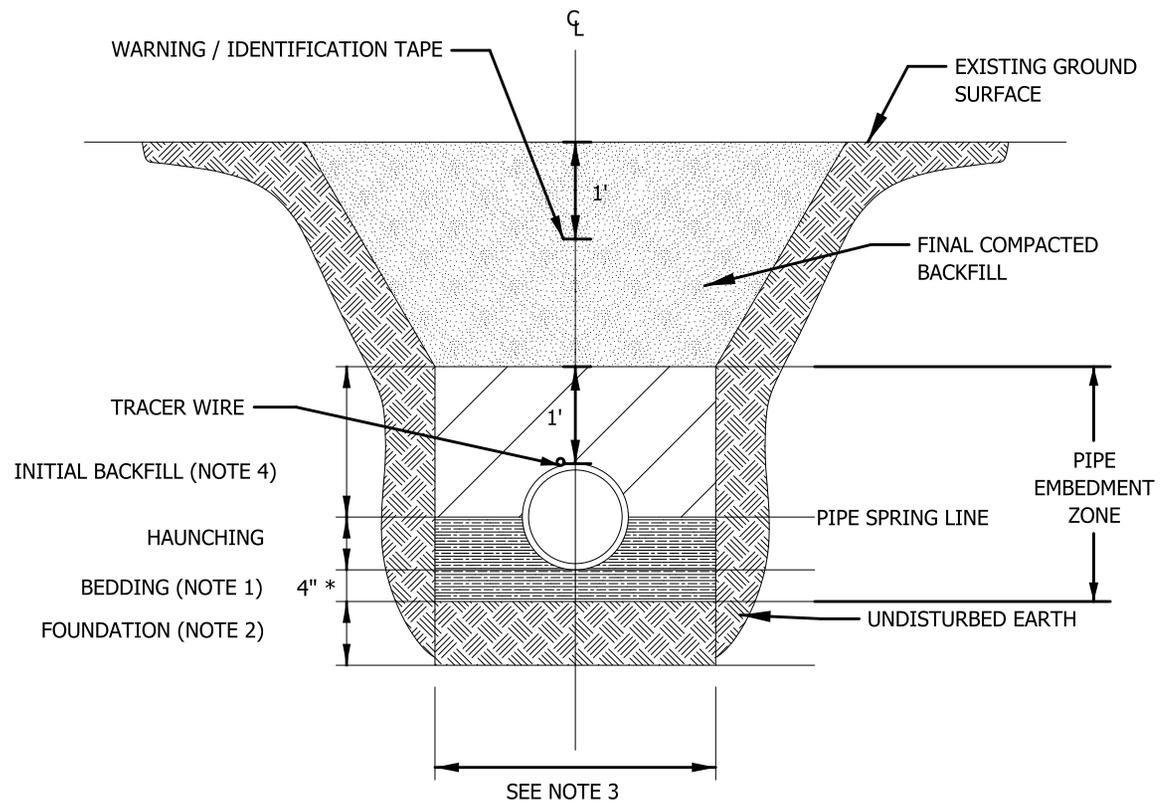
### STANDARD DETAIL

DATE: 03/07/2017

SHEET 1 OF 1

STD. No. W-2.14





**NOTES:**

- 1) STONE BEDDING IS NOT REQUIRED IN SUITABLE CLASS I, CLASS II, AND CLASS III, SOILS. PROVIDE STONE BEDDING IN UNSTABLE CLASS IV OR CLASS V SOILS, RUNNING WATER OR OTHER UNSTABLE SOIL CONDITIONS IN BEDDING AND HAUNCH ZONE. BACKFILL WITH CLASS I, II, OR III MATERIAL IN INITIAL BACKFILL.
- 2) CLASS I FOUNDATION STONE SHALL BE REQUIRED WHEN SOIL CONDITIONS ARE UNSTABLE. UNDERCUT DEPTH AS DIRECTED BY CITY.
- 3) TRENCH WIDTH IS MINIMUM OF THE PIPE O.D. PLUS 18" AND MAXIMUM OF PIPE O.D. PLUS 24".
- 4) INITIAL BACKFILL SHALL BE PLACED AND COMPACTED IN 6" LIFTS. INITIAL BACKFILL SHALL CONTAIN NO MATERIAL OVER 1 1/2" IN DIAMETER, FROZEN LUMPS, OR DEBRIS.
- 5) BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH SPECIFICATIONS.

\* 6" REQUIRED FOR PIPES GREATER THAN 30" IN DIAMETER

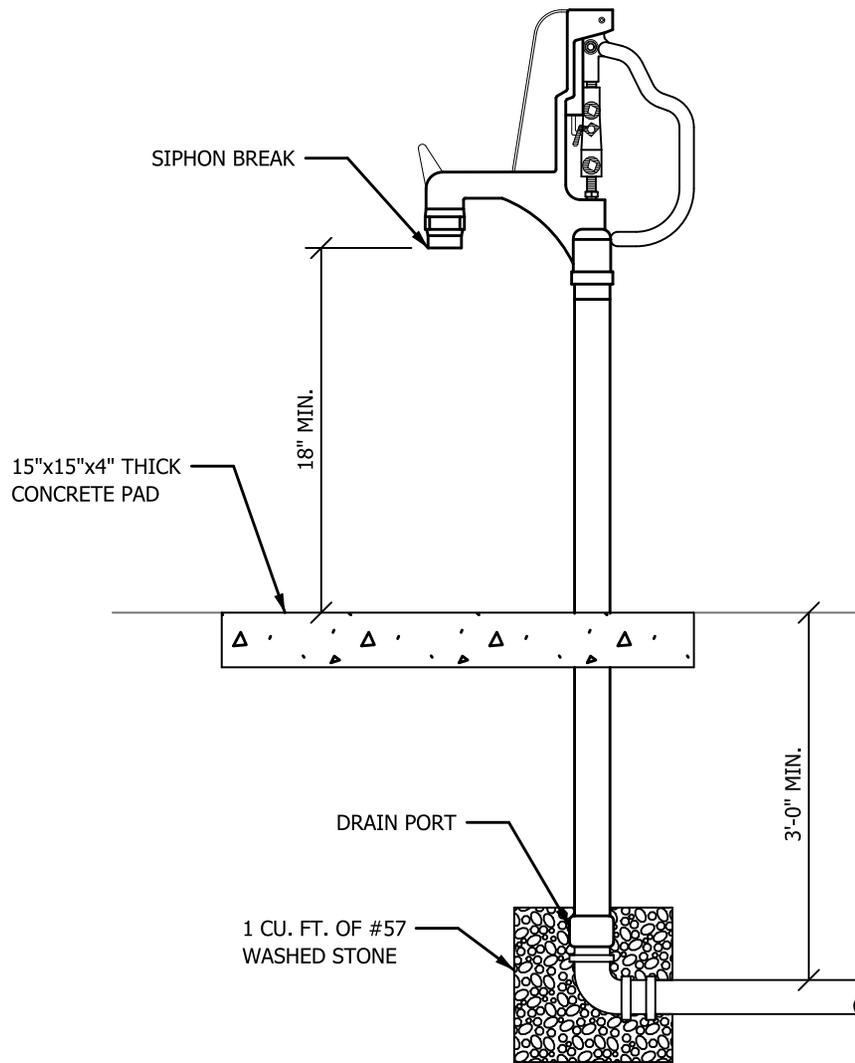
## WATER LINE BEDDING

## STANDARD DETAIL

DATE:	REVISIONS

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.15





NOTES:

- 1) HOSE BIBB SHALL ACCOMMODATE STD. 3/4" GARDEN HOSE.
- 2) YARD HYDRANT SHALL BE NON-FREEZE TYPE.
- 3) FOR USE IN DUPLEX PUMP STATIONS, OR AS APPROVED BY THE CITY.

## YARD HYDRANT

# STANDARD DETAIL

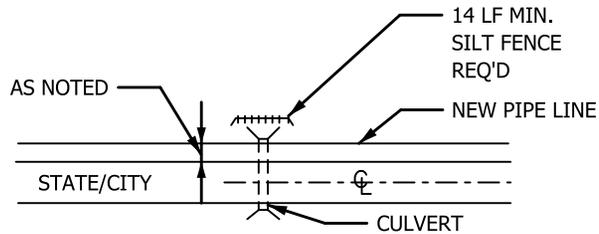
DATE:	REVISIONS

DATE: 03/07/2017

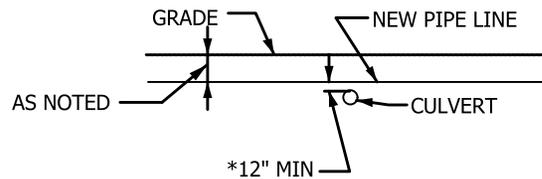
SHEET 1 OF 1

STD. No. W-2.16





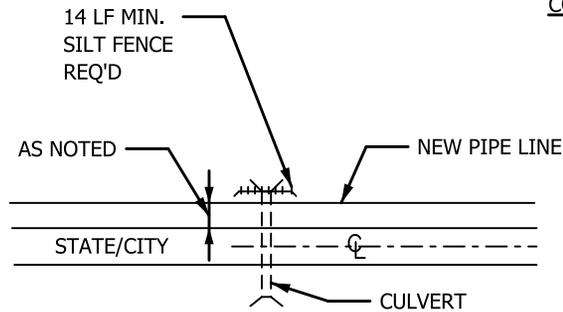
PLAN



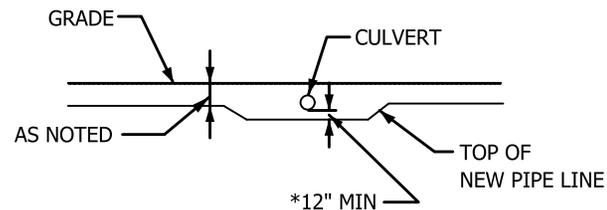
PROFILE

CONDITION 1

\*18" MIN FOR CROSSING OF SANITARY SEWER PIPE LINE OVER CULVERT



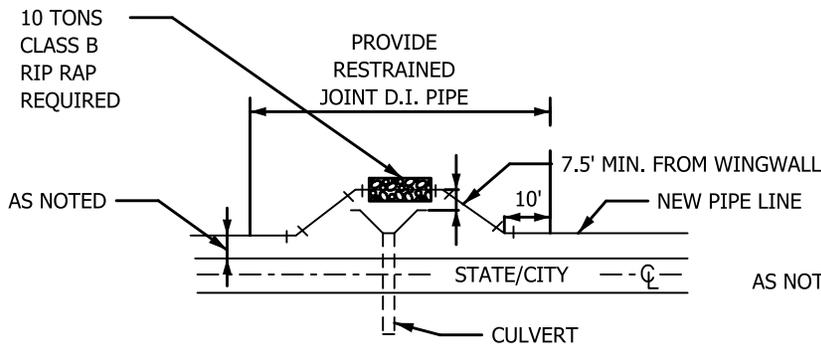
PLAN



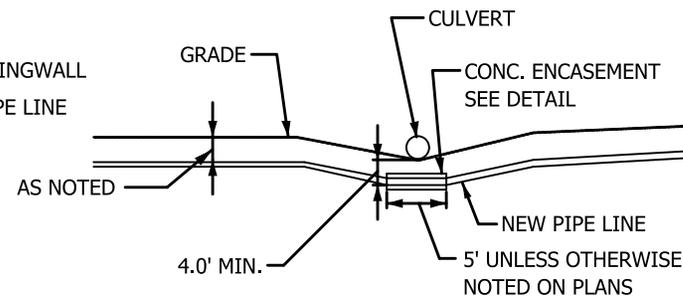
PROFILE

CONDITION 2

\*18" MIN FOR CROSSING OF SANITARY SEWER PIPE LINE UNDER CULVERT



PLAN



PROFILE

CONDITION 3

R.J.D.I. PIPE LINE AROUND END OF CULVERT

# INSTALLATION OF PIPE LINE AT CULVERT DETAIL

DATE:	REVISIONS

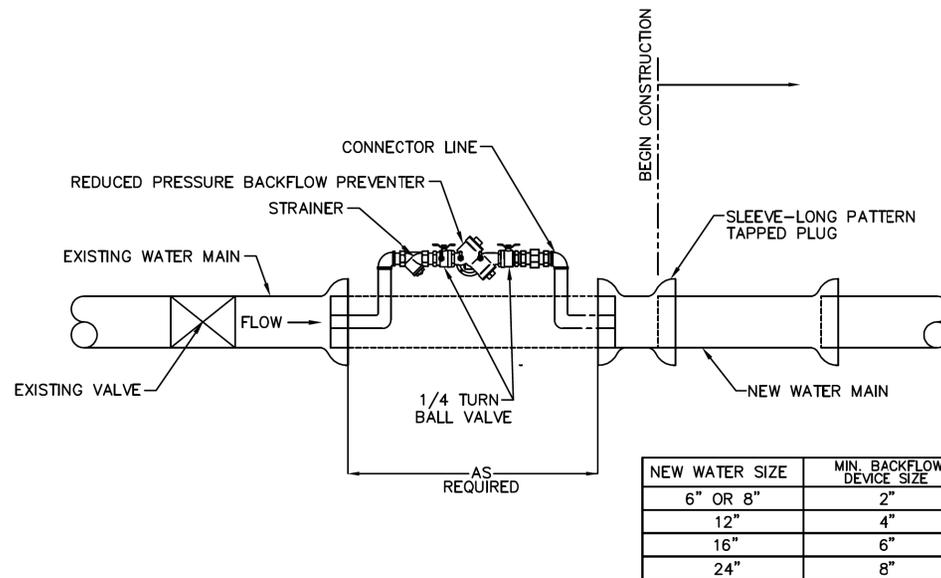
## STANDARD DETAIL

DATE: 03/07/2017

SHEET 1 OF 1

STD. No. W-2.17





BACKFLOW PREVENTION DEVICE FOR FILLING MAINS

NOTES:

- 1) INSTALL FROM EXISTING BLOW OFF ASSEMBLY TO NEW MAIN FOR FILLING, TESTING AND STERILIZING NEW MAIN.
- 2) BACKFLOW PREVENTION DEVICE SHALL BE OPERATED INDEPENDENT OF EXISTING MAIN.
- 3) BLOCKING ON EXISTING LINE IS NOT TO BE DISTURBED.
- 4) DEVICE SHALL BE A MINIMUM OF 12 INCHES ABOVE EXISTING GROUND.
- 5) FINAL CONNECTION TO EXISTING MAIN TO BE MADE ONLY AFTER TOTAL PROJECT IS ACCEPTED BY THE CITY.
- 6) VALVES ON EXISTING SYSTEM TO BE OPERATED BY THE CITY STAFF ONLY.
- 7) ONLY ONE CONNECTION WILL BE ALLOWED BETWEEN EXISTING SYSTEM AND THE NEW CONSTRUCTION UNTIL TESTING AND DISINFECTION ARE COMPLETE.
- 8) REDUCE PRESSURE ZONE ASSEMBLIES (RPZ) MUST CONFORM TO CITY'S CROSS CONNECTION CONTROL ORDINANCE, ARTICLE VII OF THE CITY CODE.
- 9) ALL LOCATIONS FOR RPZ'S REQUIRE APPROVAL OF THE CITY'S PUBLIC WORKS DIRECTOR AND MUST BE ON THE PROPERTY OWNER'S SIDE OF THE METER AND OUTSIDE OF THE RIGHT-OF-WAY.
- 10) EACH RPZ IS REQUIRED TO BE TESTED BY AN APPROVED CERTIFIED TESTER PRIOR TO PLACING THE WATER SYSTEM IN SERVICE.

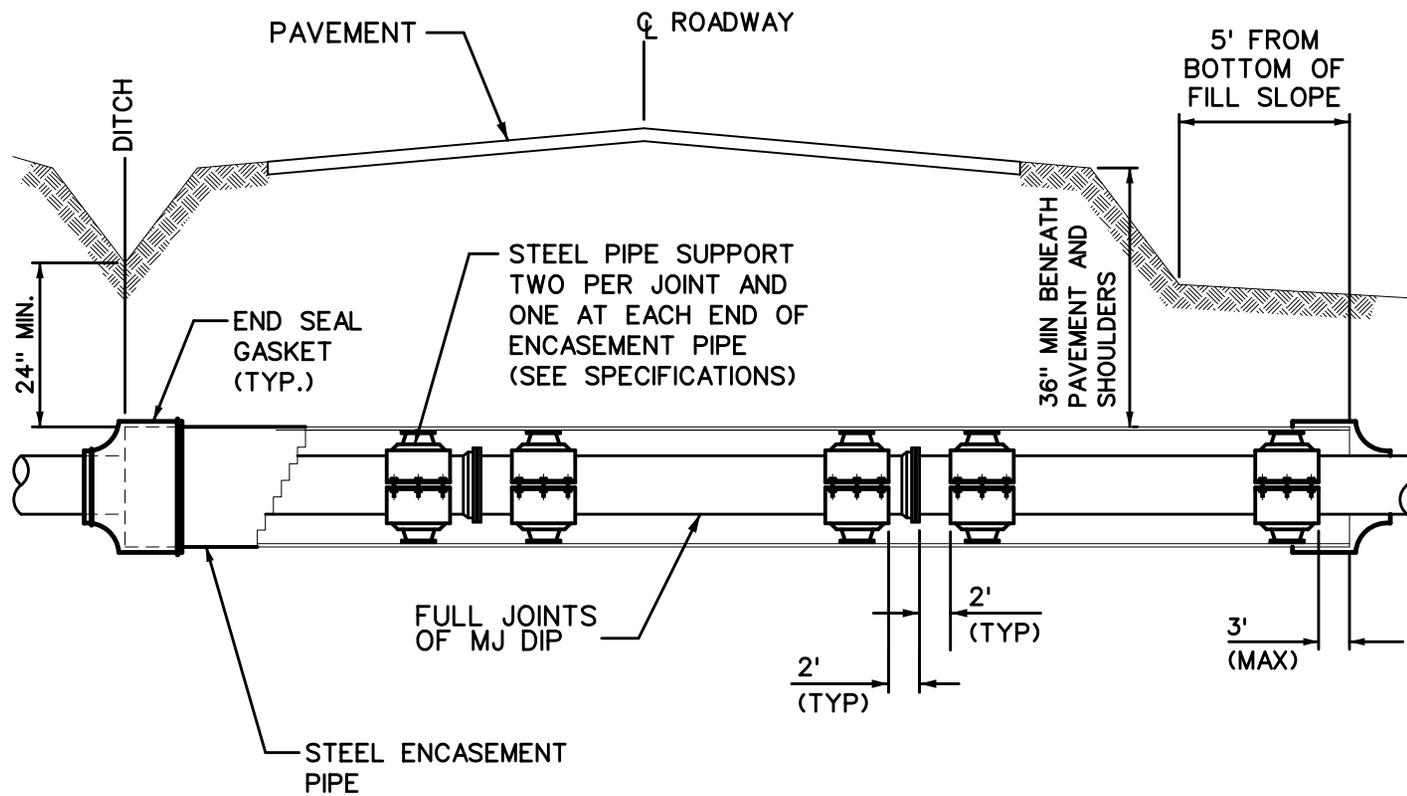
## BACKFLOW PREVENTION DEVICE FOR FILLING NEW MAINS

DATE:	REVISIONS

# STANDARD DETAIL

DATE: 03/07/2017
SHEET 1 OF 1
STD. No. W-2.18





## BORE AND JACK

# STANDARD DETAIL

DATE: REVISIONS

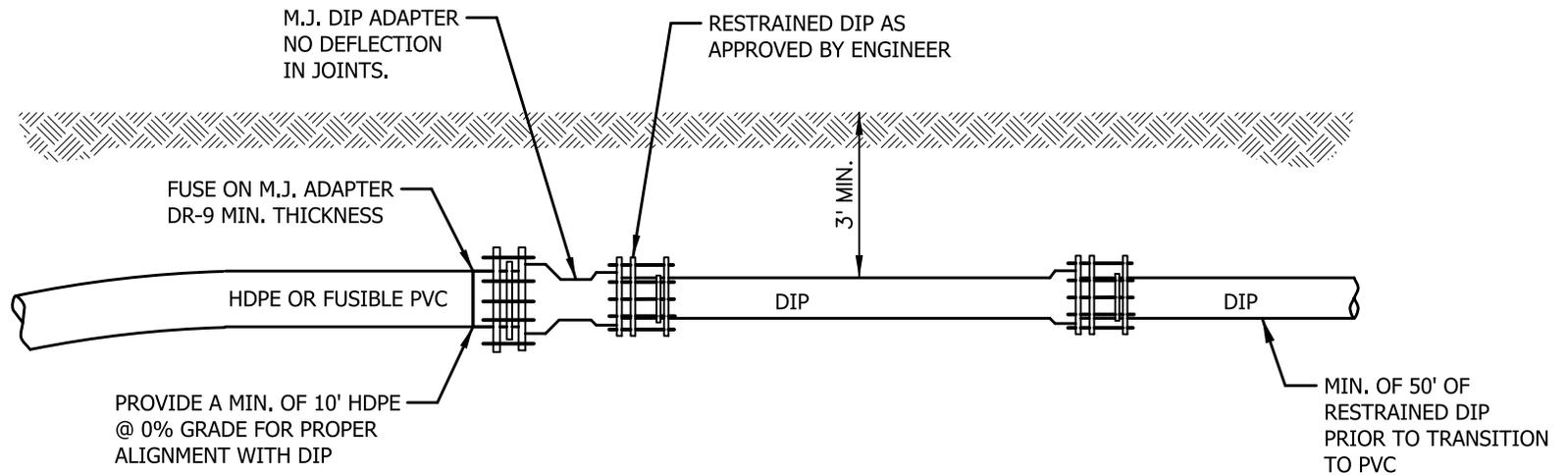
DATE: 03/07/2017

SHEET 1 OF 1

STD. No. W-2.19



Clinton  
NORTH CAROLINA



## HDPE/FUSIBLE PVC TRANSITION

DATE:	REVISIONS

# STANDARD DETAIL

DATE: 03/07/2017  
 SHEET 1 OF 1  
 STD. No. W-2.20

