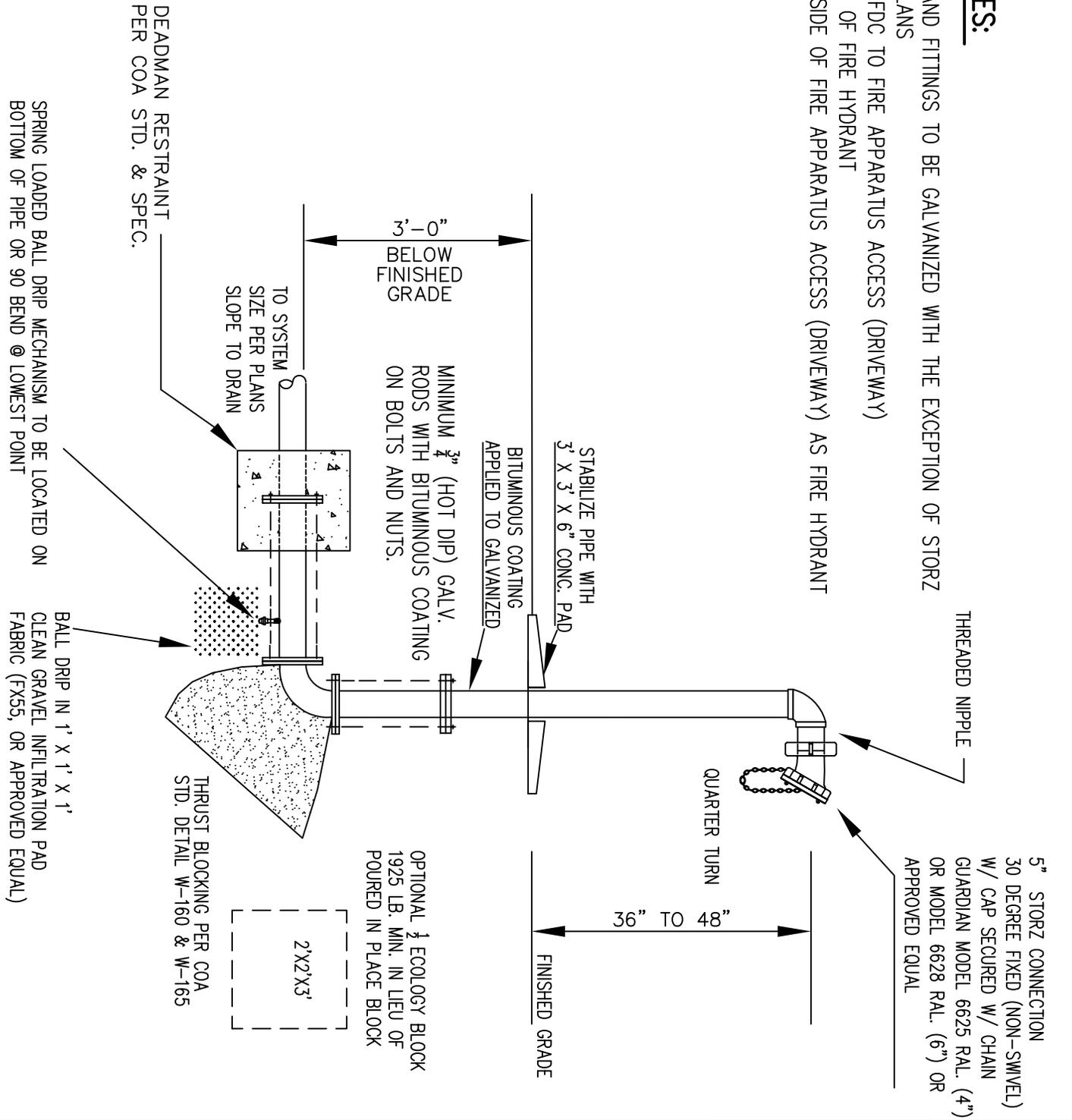


TYPICAL NOTES:

- 1)- ALL EXPOSED PIPING AND FITTINGS TO BE GALVANIZED WITH THE EXCEPTION OF STORZ CONNECTION; SIZE PER PLANS
- 2)- 6' TO 10' MAX. FROM FDC TO FIRE APPARATUS ACCESS (DRIVEWAY)
- 3)- FDC TO BE WITHIN 50' OF FIRE HYDRANT
- 4)- FDC TO BE ON SAME SIDE OF FIRE APPARATUS ACCESS (DRIVEWAY) AS FIRE HYDRANT



5" STORZ CONNECTION
 30 DEGREE FIXED (NON-SWIVEL)
 W/ CAP SECURED W/ CHAIN
 GUARDIAN MODEL 6625 RAL. (4")
 OR MODEL 6628 RAL. (6") OR
 APPROVED EQUAL

36" TO 48"
 FINISHED GRADE

OPTIONAL 1/2 ECOLOGY BLOCK
 1925 LB. MIN. IN LIEU OF
 POURED IN PLACE BLOCK

2'X2'X3'

THRUST BLOCKING PER COA
 STD. DETAIL W-160 & W-165

BALL DRIP IN 1' X 1' X 1'
 CLEAN GRAVEL INFILTRATION PAD
 FABRIC (FX55, OR APPROVED EQUAL)

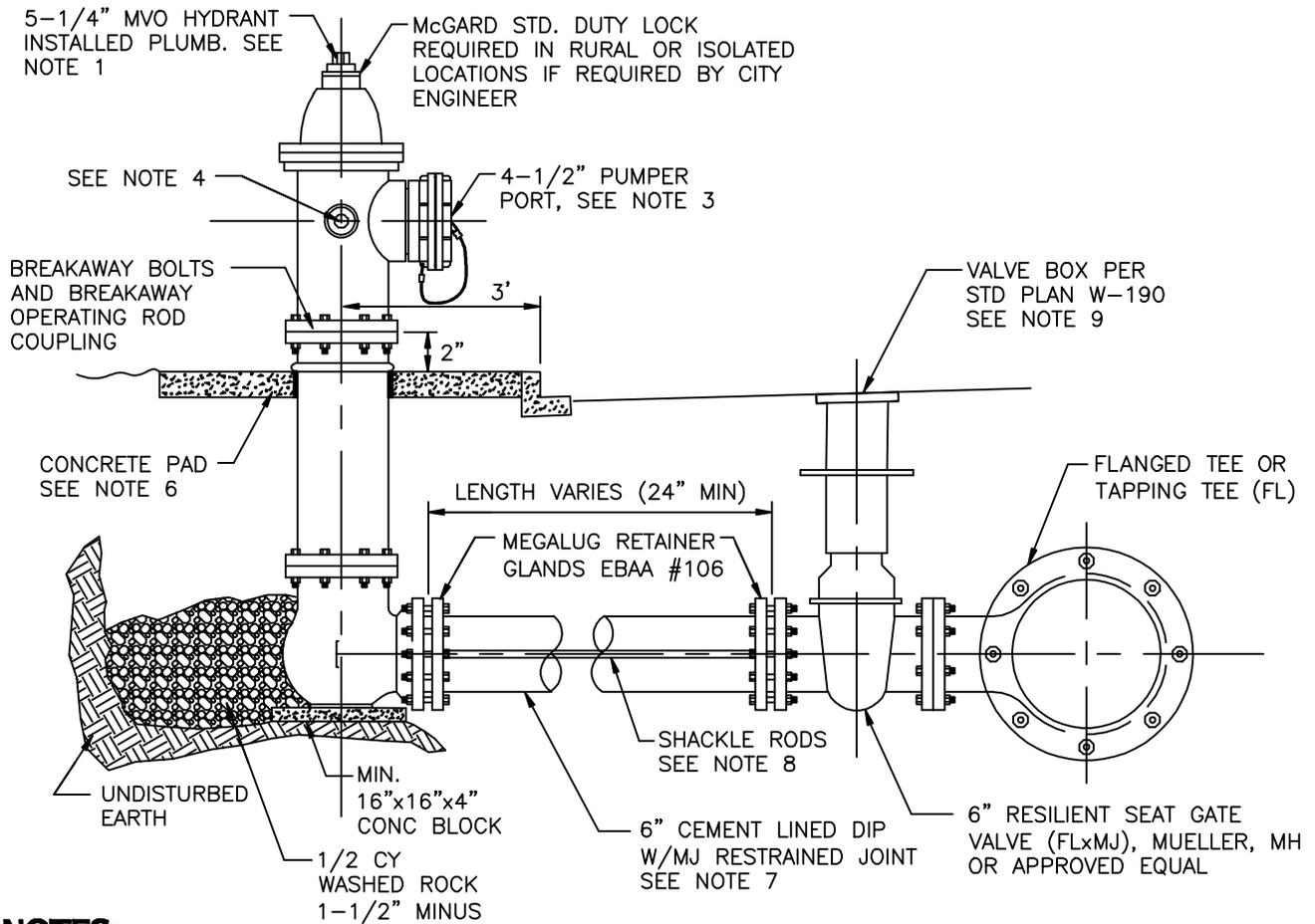
DEADMAN RESTRAINT
 PER COA STD. & SPEC.

SPRING LOADED BALL DRIP MECHANISM TO BE LOCATED ON
 BOTTOM OF PIPE OR 90 BEND @ LOWEST POINT

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

STANDARD DETAIL
 NUMBER
W - 230

APPROVED BY	
DATE	
REF STAD SPEC	



NOTES:

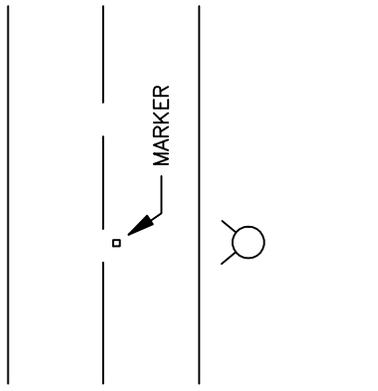
1. HYDRANTS AND ALL MATERIALS SHALL CONFORM TO AWWA STANDARDS AND SHALL BE OF STANDARD MANUFACTURE (M&H 929 RELIANT OR MUELLER SUPER CENTURION 250 ONLY).
2. THE CENTER OF THE HYDRANT SHALL BE 3' FROM FACE OF CURB. IF THERE IS NO CURB, THE CENTER OF HYDRANT SHALL BE 3' FROM RIGHT-OF-WAY AND A MINIMUM OF 5' FROM TRAVELED LANE.
3. ONE 5" TO 4-1/2" PUMPER PORT W/N.S.T. AND STORZ ADAPTER ASSEMBLY. PUMPER PORT TO BE FACING STREET OR ROADWAY FOR THE FIRE ENGINE ACCESS.
4. TWO 2-1/2" HOSE PORTS W/N.S.T. AND 1-1/4" OPERATING NUTS.
5. PROVIDE GUARD POSTS FOR VEHICULAR TRAFFIC PROTECTION IF REQUIRED BY CITY ENGINEER PER STD. DETAIL W-030.
6. INSTALL 3'x3'x4" CONCRETE PAD (3000 PSI) AROUND HYDRANT IN UNPAVED AREAS INCLUDING PLANTER STRIPS. COMPLETELY SURROUND HYDRANT W/FULL DEPTH OF CONCRETE PAD WITH 1/4" JOINT MATERIAL BEFORE PLACING CONCRETE.
7. HYDRANT RUN TO BE 6" CEMENT LINED DUCTILE IRON PIPE CLASS 52 WITH RESTRAINED JOINTS (MEGALUG OR APPROVED EQUAL). HYDRANT RUN LONGER THAN 50 FEET SHALL BE 8" DIA. OR LARGER.
8. 3/4" GALV. SHACKLE RODS WITH THE EYE BOLTS AT BOTH ENDS REQUIRED FROM VALVE TO HYDRANT.
9. FIRE HYDRANTS SHALL BE PAINTED WITH TWO COATS OF HIGH GLOSS EQUIPMENT YELLOW "RUST-OLEUM" TYPE PAINT.
10. INSTALL 24"x24"x4" CONCRETE PAD (3000 PSI) AROUND VALVE BOX AND 48"x48"x4" FOR MULTIPLE VALVE BOXES IN UNPAVED AREA.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

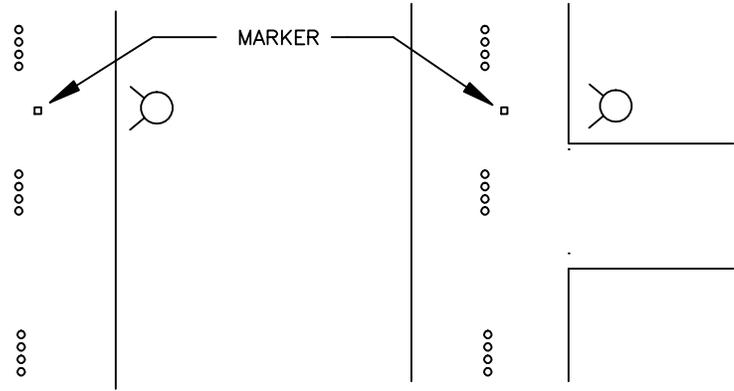
DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
FIRE HYDRANT ASSEMBLY

STANDARD DETAIL
NUMBER
W-010



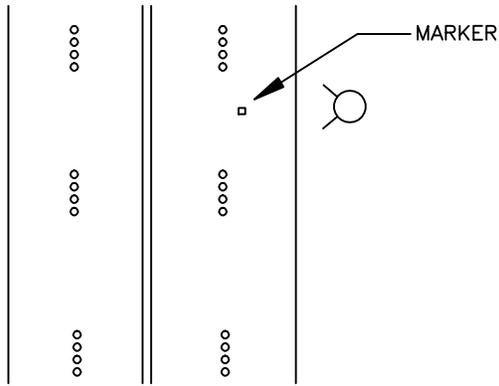
TWO LANE ROAD

OFFSET MARKER TO INDICATE WHICH SIDE OF STREET HYDRANT IS ON. MARKER TO BE PLACED 4" TO 6" OFF OF CENTERLINE



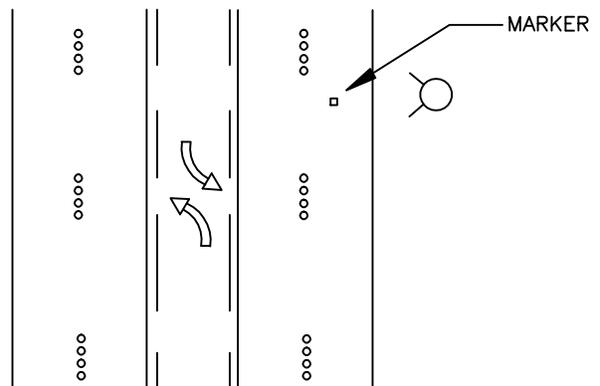
ON SIDE STREETS

WHERE THE HYDRANT IS WITHIN 20' OF THE MAIN TRAVELED STREET, THE MARKER IS TO BE INSTALLED ON THAT MAIN STREET AND 4" TO 6" OFF THE CENTERLINE.



FOUR LANE ROAD

OFFSET MARKER TO INDICATE WHICH SIDE OF STREET HYDRANT IS ON. MARKER TO BE PLACED 4" TO 6" OFF OF DOTS OR PAINTED LANE DIVIDER.



FIVE LANE ROAD

OFFSET MARKER TO INDICATE WHICH SIDE OF STREET HYDRANT IS ON. MARKER TO BE PLACED 4" TO 6" OFF OF DOTS OR PAINTED LANE DIVIDER.

NOTE:

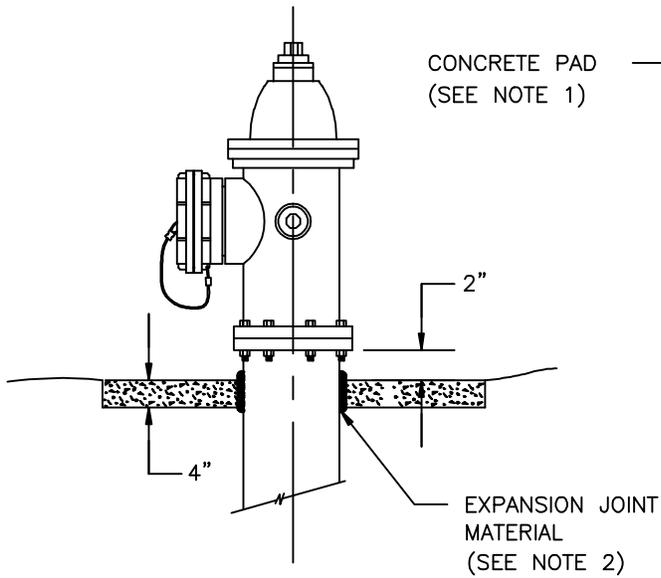
MARKER: TYPE 88 AB STIMSONITE TWO WAY (BLUE)



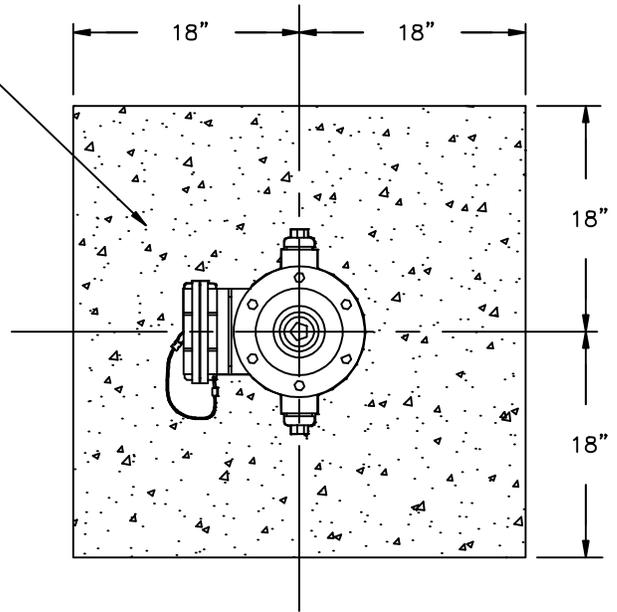
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS
FIRE HYDRANT MARKER

STANDARD DETAIL NUMBER W-015



ELEVATION



PLAN

NOTES:

1. CONCRETE SHALL BE CLASS 3000 PSI MIN.
2. INSTALL 1/4" EXPANSION JOINT MATERIAL WITH FULL DEPTH OF CONCRETE PAD AROUND HYDRANT.

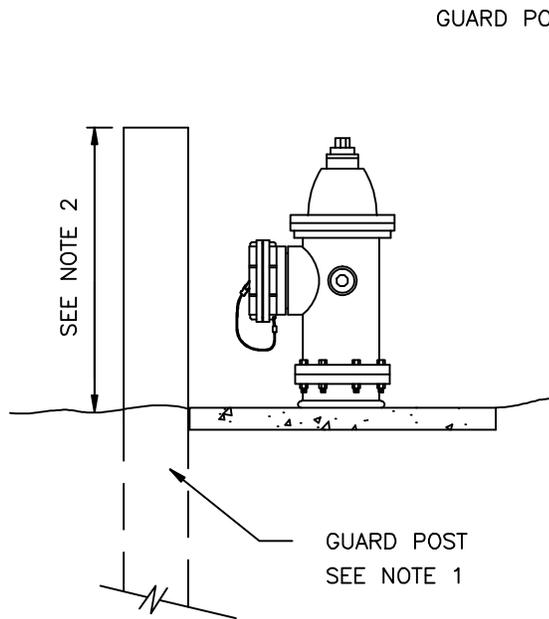


APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

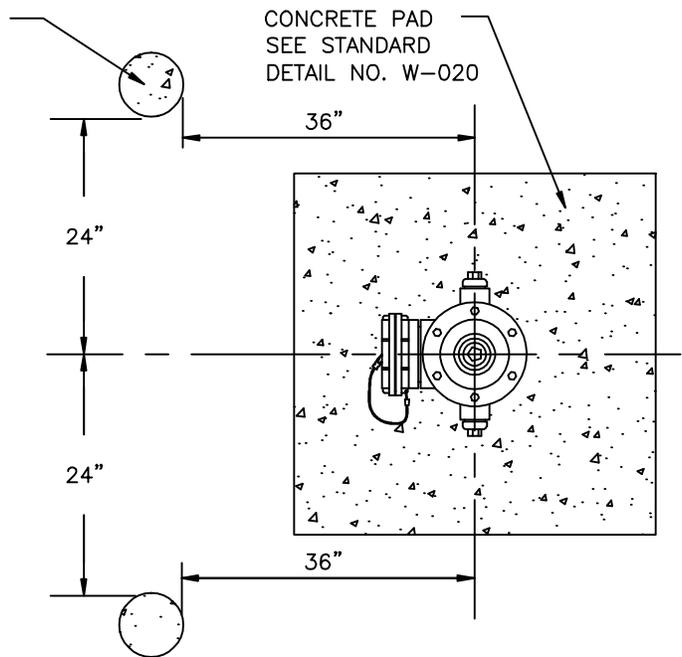
DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

FIRE HYDRANT CONCRETE PAD

STANDARD DETAIL
 NUMBER
W-020



ELEVATION



PLAN

NOTES:

1. GUARD POSTS SHALL BE 8' LONG, 6" DIAMETER, CONCRETE FILLED CLASS 52 D.I. PIPE OR 8' LONG 8" DIAMETER REINFORCED CONCRETE. PAINTED WITH TWO COATS OF HIGH GLOSS CATERPILLAR YELLOW (RUST-OLEUM) TYPE PAINT.
2. TOP OF GUARD POST SHALL BE LEVEL WITH TOP OF OPERATING NUT.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

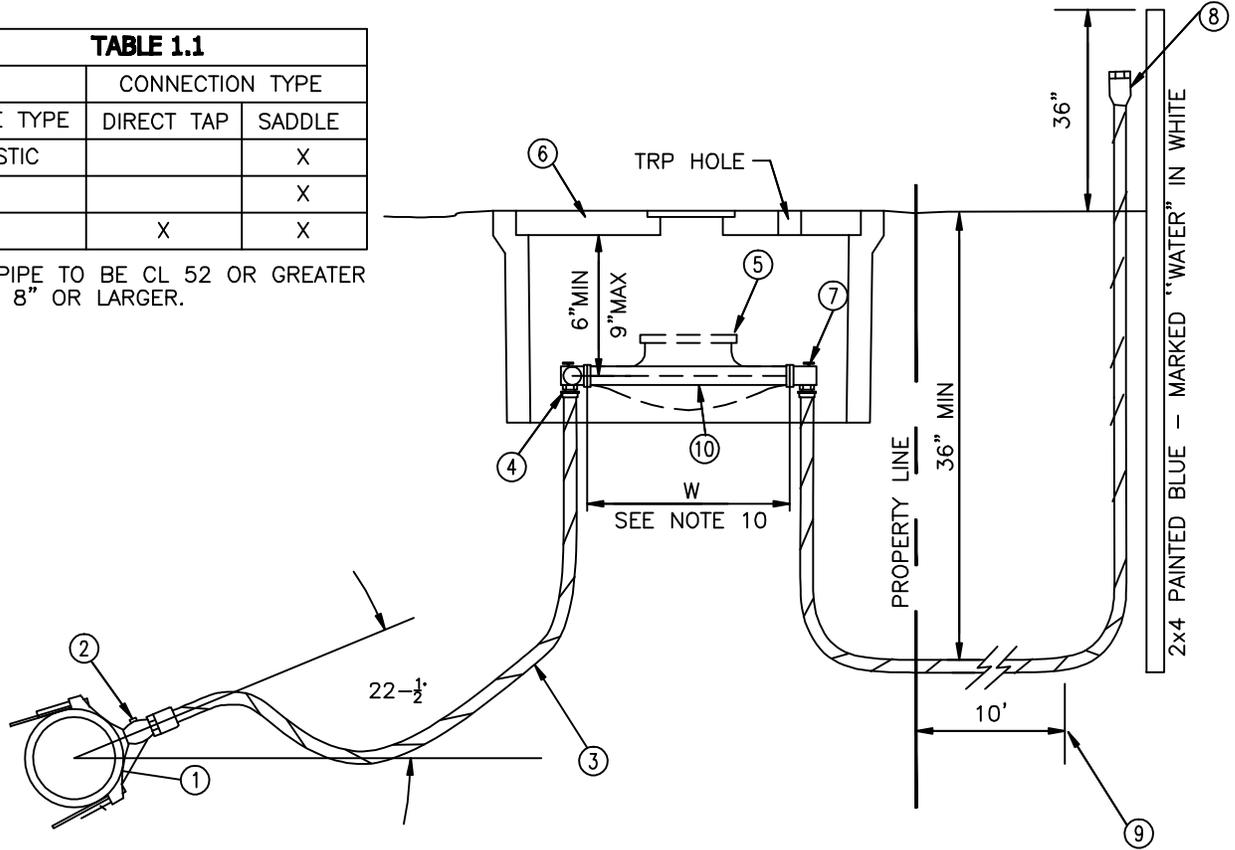
DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

 FIRE HYDRANT GUARD POST

STANDARD DETAIL
 NUMBER
W-030

TABLE 1.1		
	CONNECTION TYPE	
PIPE TYPE	DIRECT TAP	SADDLE
PLASTIC		X
AC		X
DI *	X	X

* DI PIPE TO BE CL 52 OR GREATER AND 8" OR LARGER.



NOTES AND MATERIALS:

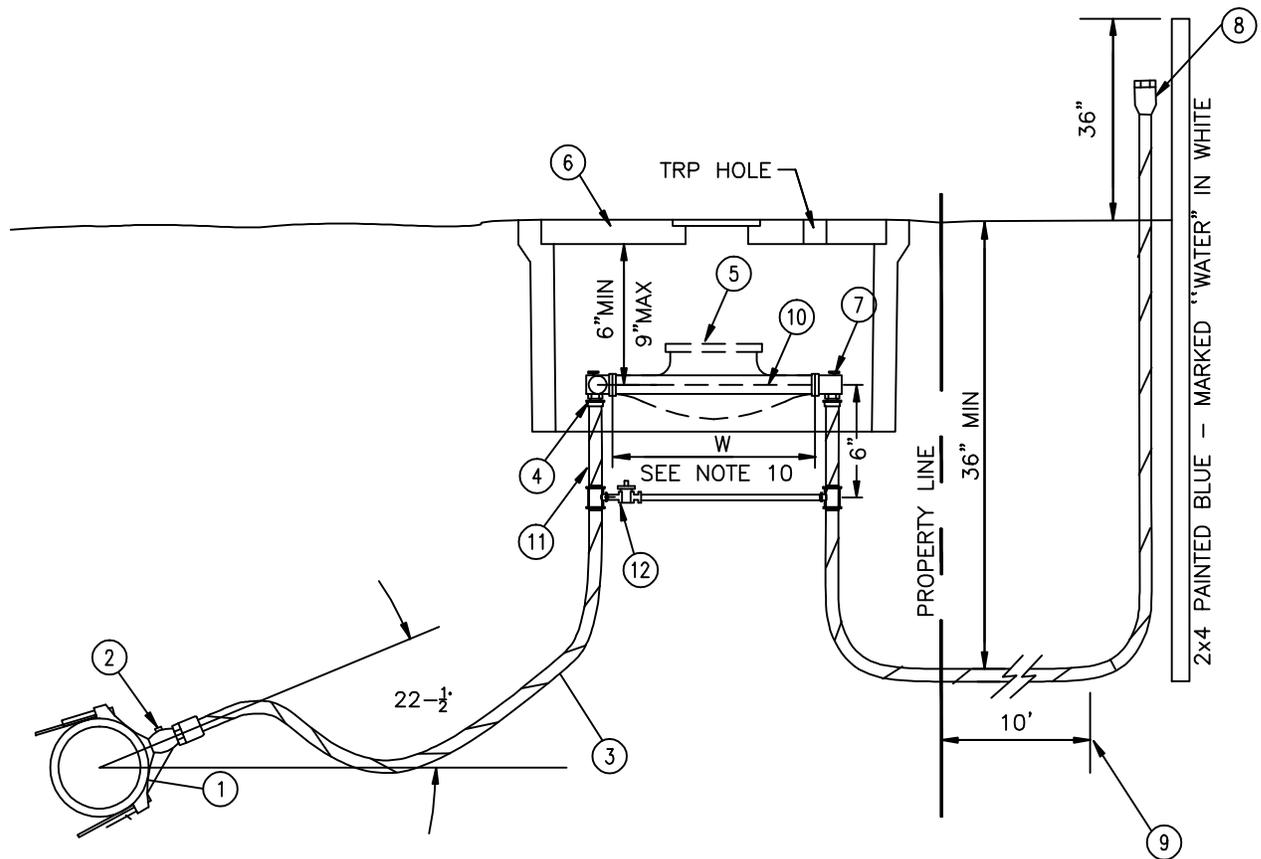
- ① 1" CC SERVICE SADDLE W/DOUBLE STAINLESS STEEL STRAP OR DIRECT TAP CC THREAD CORP SEE TABLE 1.1 ABOVE.
- ② 1" BALL VALVE CORPORATE STOP CC X COMPRESSION WITH KEY FACING UP, MUELLER OR FORD ONLY.
- ③ 1" HDPE CTS CLASS 200 HIGH SERVICE PIPE (200 PSI RATING) WITH STAINLESS STEEL STIFFENER AND 10 GAUGE COATED COPPER TRACER WIRE WRAPPED AROUND THE PIPE AND ATTACHED ON BOTH ENDS.
- ④ FOR 5/8"X3/4" METER, A 1" COMPRESSION ANGLE METER BALL VALVE x 5/8" METER IS REQUIRED. FOR 1" METER, A 1" COMPRESSION ANGLE METER BALL VALVE x 1" METER IS REQUIRED. BALL VALVES ARE LOCKABLE.
- ⑤ METER SHALL BE INSTALLED BY CITY UTILITIES DIVISION AT OWNER'S EXPENSE.
- ⑥ METER BOX SHALL BE MIDSTATES PLASTICS 1324-12 W/SOLID DI LID WITH 1 3/4" HOLE FOR TOUCH READ PAD (TRP).
- ⑦ 5/8" x 3/4" METERS REQUIRE A 3/4" ANGLE METER CHECK COUPLING x 5/8" METER WITH A 3/4" MIPT x 1" COMPRESSION ADAPTER. 1" METER REQUIRES A 1" ANGLE METER CHECK COUPLING x 1" METER.
- ⑧ 1" COMPRESSION x FIPT ADAPTER WITH 1" PLASTIC PLUG.
- ⑨ EXTEND SERVICE PIPE 10' BEYOND PROPERTY LINE AND AN ADDITIONAL 5' BEYOND EASEMENT LINE.
- ⑩ METER LENGTH BLANK STUB.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 5/8" x 3/4" & 1"
 RESIDENTIAL WATER SERVICE

STANDARD DETAIL
 NUMBER
W-040



NOTES AND MATERIALS:

- ① 2" CC SERVICE SADDLE W/DOUBLE STAINLESS STEEL STRAP.
- ② 2" BALL VALVE CORPORATE STOP COMPRESSION WITH KEY FACING UP, MUELLER OR FORD ONLY.
- ③ 2" HDPE CTS CLASS 200 HIGH SERVICE PIPE (200 PSI RATING) WITH STAINLESS STEEL STIFFENER AND 10 GAUGE COATED COPPER TRACER WIRE WRAPPED AROUND THE PIPE AND ATTACHED ON BOTH ENDS.
- ④ 2" COMPRESSION ANGLE METER BALL VALVE (LOCKABLE).
- ⑤ METER (SIZE AS SHOWN IN PLAN) SHALL BE INSTALLED BY CITY UTILITIES DIVISION AT OWNER'S EXPENSE. CITY WILL INSTALL ADAPTERS AT BOTH ENDS OF METER IF THE METER IS NOT 2".
- ⑥ METER BOX SHALL BE MIDSTATES PLASTICS (1730-18) W/SOLID DI LID WITH 1 3/4" HOLE FOR TOUCH READ PAD (TRP).
- ⑦ 2" ANGLE METER CHECK COUPLING (LOCKABLE).
- ⑧ COMPRESSION x FIPT ADAPTER WITH PLASTIC PLUG.
- ⑨ EXTEND SERVICE PIPE 10' BEYOND PROPERTY LINE AND AN ADDITIONAL 5' BEYOND EASEMENT LINE.
- ⑩ METER LENGTH BLANK STUB FOR A 2" METER, W=17-1/4".
- ⑪ 2" METER SETTER, FORD OR MUELLER.
- ⑫ BYPASSES MUST BE HIGH BYPASS OR SIDE-BY SIDE WITH THE METER.



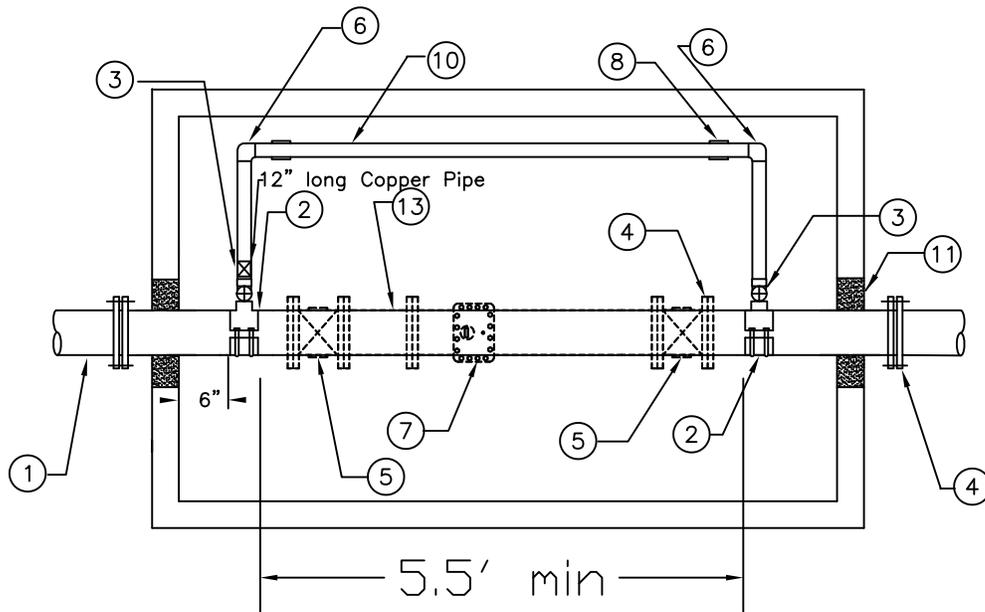
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

2" AND SMALLER
NON-RESIDENTIAL WATER SERVICE

STANDARD DETAIL
NUMBER

W-050



MATERIAL LIST:

- | | |
|---|--|
| <ul style="list-style-type: none"> ① DIP SIZED TO MATCH METER. ② DOUBLE STAINLESS STRAP SADDLE w/ 2" ③ 2" BALL CORP WITH FIPT x COMP ADAPTER ④ MEGA LUG (TYP) ⑤ GATE VALVE RS (FLxFL) and 1 (FL MJ) WITH PIPE SUPPORTS ⑥ 2" 90 DEGREE BEND, COMPRESSION W/ 2" CTS X MIP COMPRESSION FITTING ⑦ METER ASSEMBLY PROVIDED BY COA | <ul style="list-style-type: none"> ⑧ FABRICATED ADJ. STAINLESS OR GALV. STEEL PIPE 2" SUPPORT ⑨ UTILITY VAULT CO WITH DOUBLE DOOR TRAFFIC LOAD RATED LOCKING STEEL COVERS OR EQUAL. ⑩ UTILITY VAULT CO OR APPROVED EQUAL, PRECAST VAULT THAT PROVIDES MINIMUM CLEARANCES. ⑪ NON-SHRINK GROUT ⑫ 2" TYPE K COPPER OR SDR 9 POLY CTS ⑬ CONTRACTOR SHALL INSTALL SOLID DI PIPE THROUGH VAULT, SIZED TO MATCH METER. METER ASSEMBLY SHALL BE PROVIDED AND INSTALLED BY COA. |
|---|--|

NOTES:

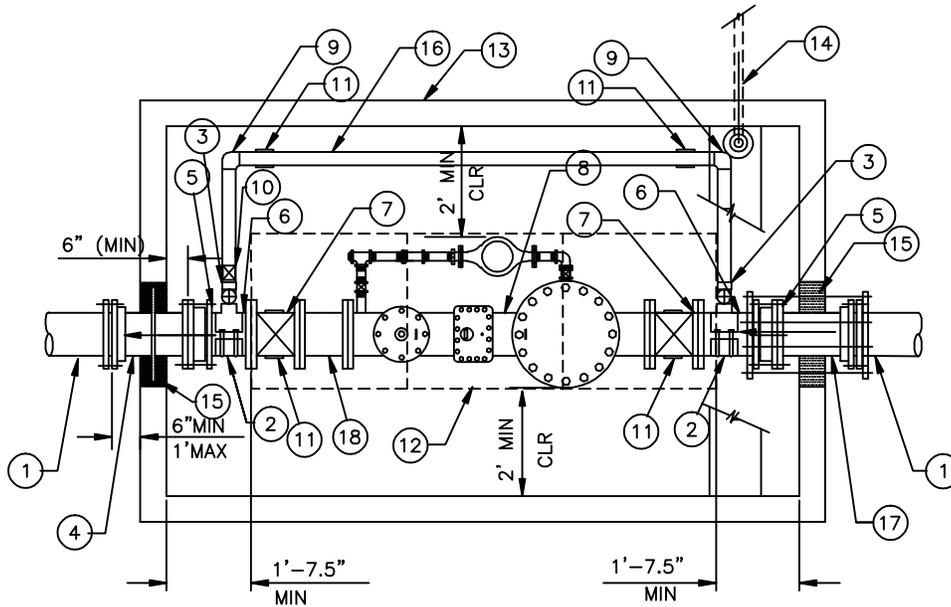
- | | |
|--|---|
| <ul style="list-style-type: none"> 1. MINIMUM VAULT INSIDE HEIGHT SHALL BE 78". 2. METERS SHALL HAVE A 12" MINIMUM CLEARANCE BETWEEN FLOOR AND LOWEST PART OF METER. 3. MINIMUM CLEARANCE BETWEEN METER AND TOP OF VAULT SHALL BE 36". 4. BRAND AND STYLE OF METER AND ACCESSORIES TO BE DETERMINED BY CITY OF ARLINGTON UTILITIES DIVISION 6. PROVIDE BOLT KITS AND GASKETS FOR METER INSTALLATION | <ul style="list-style-type: none"> 5. PIPING AND VALVES SHALL BE SUPPORTED BY POURED-IN-PLACE CONCRETE OR GALVANIZED STEEL STANDS. THE NUMBER OF AND PLACEMENT OF SUPPORT STANDS TO BE DETERMINED BY CITY ENGINEER ACCORDING TO SIZE OF PIPE AND METER. 6. VERTICAL CLEARANCES PER STD. DETAIL NO. W-100 7. PROVIDE ALL APPURTENANCE FOR METER INSTALLATION TO COA UTILITY PERSONNEL |
|--|---|



APPROVED BY	R. MORRISON
DATE	6/2021
REF STD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
3" AND 4" WATER SERVICE

STANDARD DETAIL
NUMBER
W-060
MODIFIED



MATERIAL LIST:

- ① DIP SIZED TO MATCH METER. USE 4" DIP AND REDUCERS IF METER IS SMALLER THAN 4".
- ② 4" x 1-1/2" FIPT NYLON COATED DOUBLE STAINLESS STRAP SADDLE
- ③ 1-1/2" BALL CORP WITH FIPT x COMP ADAPTER
- ④ WALL SLEEVE (FLxMJ) TO BE USED WITH CAST IN-PLACE VAULTS.
- ⑤ FLANGE COUPLING ADAPTOR (FLxMJ)
- ⑥ SPOOL (PExFL) IF NEEDED
- ⑦ GATE VALVE RS CL 200 (FLxFL).
- ⑧ METER ASSEMBLY SEE NOTE 4.
- ⑨ 1-1/2" 90 DEGREE BEND, COMPRESSION
- ⑩ 1-1/2" FIPT "Y" STRAINER
- ⑪ FABRICATED ADJ. STAINLESS OR GALV. STEEL SUPPORT
- ⑫ UTILITY VAULT CO WITH DOUBLE DOOR TRAFFIC LOAD RATED LOCKING STEEL COVERS OR EQUAL.
- ⑬ UTILITY VAULT CO OR APPROVED EQUAL, PRECAST VAULT THAT PROVIDES MINIMUM CLEARANCES.
- ⑭ 2" GRAVITY SUMP DRAIN EXTEND TO DAYLIGHT OR STORM DRAINAGE SYSTEM.
- ⑮ NON-SHRINK GROUT
- ⑯ 1-1/2" TYPE K COPPER
- ⑰ SPOOL (FLxPE) WITH SHACKLE BOLTS TO BE USED ON PRECAST VAULTS.
- ⑱ FLANGE x FLANGE SPOOL, LENGTH AS REQUIRED
- ⑲ VERTICAL CLEARANCES PER STANDARD DETAIL NO. W-100

NOTES:

- 1. MINIMUM VAULT INSIDE HEIGHT SHALL BE 78".
- 2. METERS SHALL HAVE A 12" MINIMUM CLEARANCE BETWEEN FLOOR AND LOWEST PART OF METER.
- 3. MINIMUM CLEARANCE BETWEEN METER AND TOP OF VAULT SHALL BE 36".
- 4. BRAND AND STYLE OF METER AND ACCESSORIES TO BE DETERMINED BY CITY OF ARLINGTON UTILITIES DIVISION
- 5. PIPING AND VALVES SHALL BE SUPPORTED BY POURED-IN-PLACE CONCRETE OR GALVANIZED STEEL STANDS. THE NUMBER OF AND PLACEMENT OF SUPPORT STANDS TO BE DETERMINED BY CITY ENGINEER ACCORDING TO SIZE OF PIPE AND METER.
- 6. OS&Y VALVES SHALL HAVE A MINIMUM CLEARANCE OF 3" BETWEEN STEM AND TOP OF VAULT WHEN VALVE IS FULLY OPEN.



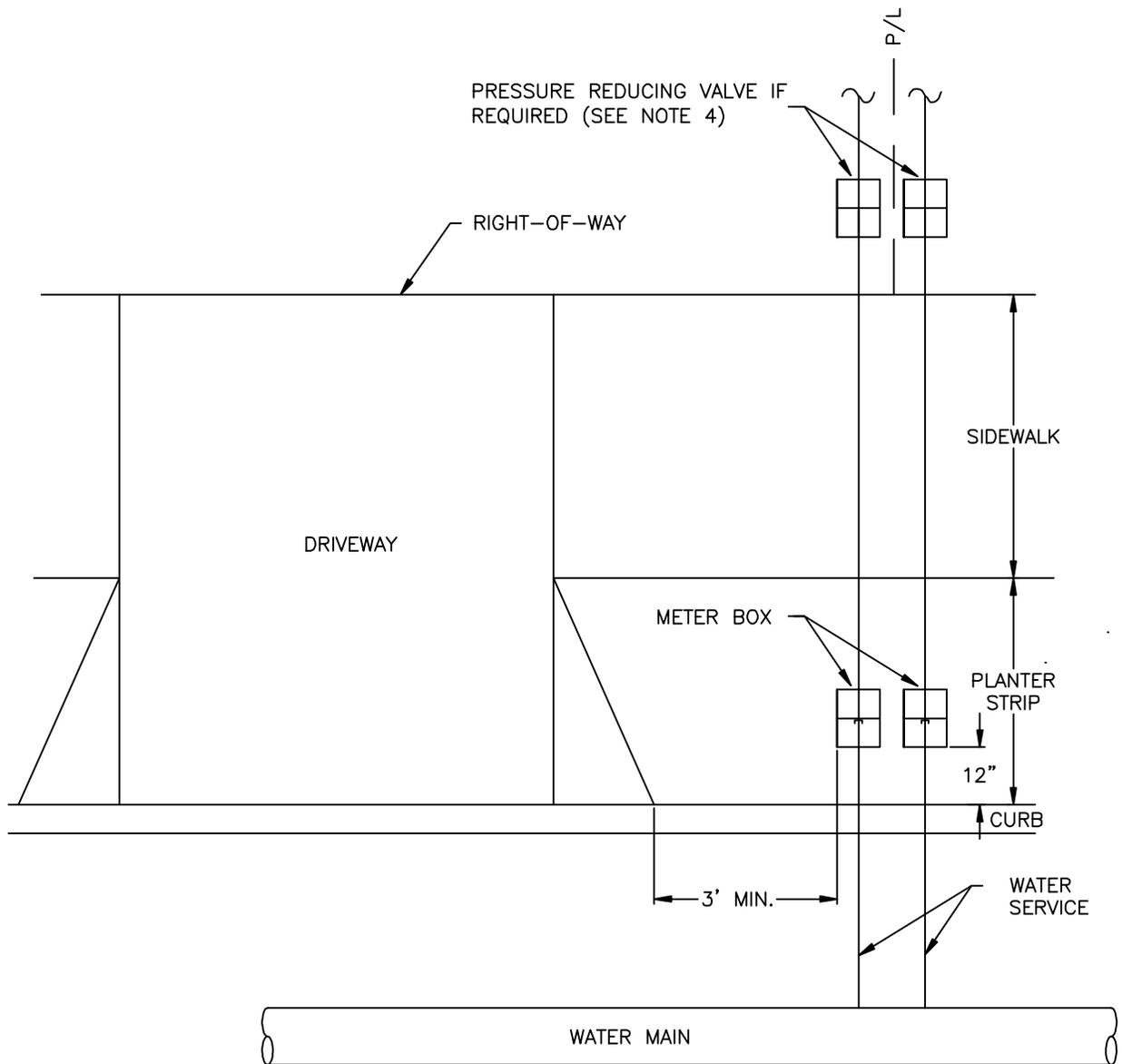
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

3" AND 4" WATER SERVICE

STANDARD DETAIL
NUMBER

W-060



NOTES:

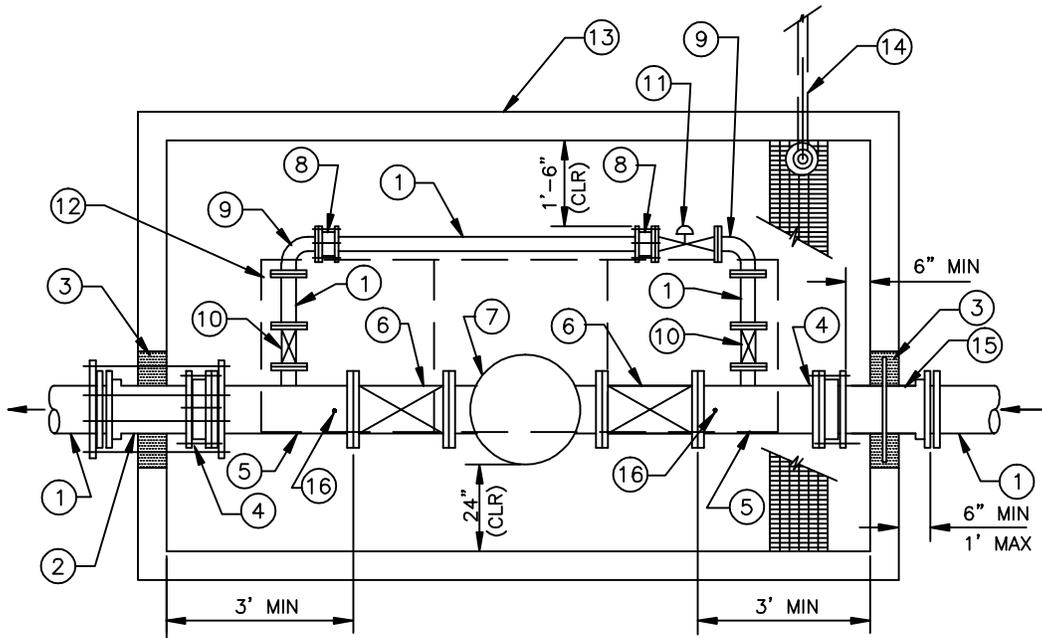
1. INDIVIDUAL METERS ARE REQUIRED FOR EACH RESIDENTIAL UNIT UP TO AND INCLUDING TRIPLEXES.
2. SEE STANDARD DETAIL NO. W-040 FOR CONFIGURATION OF METER AND SERVICE CONNECTION.
3. METER AND PRESSURE REDUCING VALVE (PRV) LOCATIONS SHOWN IN THE PLAN ARE APPROXIMATE. FINAL LOCATIONS SHALL BE DETERMINED BY CITY INSPECTOR DURING CONSTRUCTION.
4. A PRV IS REQUIRED IF THE STATIC PRESSURE AT THE METER IS GREATER THAN 80 POUNDS PER SQUARE INCH (PSI).
5. METER BOXES SHALL NOT BE INSTALLED IN DRIVEWAY OR OTHER TRAFFIC AREA UNLESS APPROVED BY CITY ENGINEER.
6. WHEN POSSIBLE CLUSTER METER BOXES AT PROPERTY LINES.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 WATER METER INSTALLATION LOCATIONS

STANDARD DETAIL
 NUMBER
W-070



MATERIAL LIST:

- | | |
|---|---|
| ① DUCTILE IRON PIPE | ⑩ GATE VALVE (FLxFL) |
| ② SPOOL (MJxPE) WITH SHACKLE BOLTS TO BE USED IN PRECAST VAULTS | ⑪ PRV (FLxFL) MOD 92G-01 GLOBE CL 200 TRIM SS303 |
| ③ NON-SHRINK GROUT | ⑫ UTILITY VAULT CO LID WITH TRAFFIC SPRING LOADED LOCKING STEEL COVERS OR APPROVED EQUAL THAT PROVIDES MINIMUM CLEARANCE. |
| ④ FLANGE COUPLING ADAPTOR (FLxMJ) | ⑬ UTILITY VAULT CO PRECAST VAULT WITH TRAFFIC LOAD RATED DOUBLE DOOR. |
| ⑤ TEE (ALL FL) | ⑭ 2" GRAVITY SUMP DRAIN EXTEND TO DAYLIGHT DRAIN |
| ⑥ RESILIENT SEAT GATE VALVE CL 200 (FLxFL), MUELLER, MH OR APPROVED EQUAL | ⑮ WALL SLEEVE (FLxPE) TO BE USED WITH CAST IN PLACE VAULTS. |
| ⑦ PRV CLAY-VAL (FLxFL) MOD 92G-01 GLOBE CL 200 TRIM SS303 | ⑯ 1/4" PRESSURE GAUGE TAPS WITH 1/4" BALL VALVES FOR ISOLATION. |
| ⑧ FLANGE COUPLING ADAPTOR | |
| ⑨ 90° ELL (ALL MJ W/MEGA LUGS) | |

NOTES:

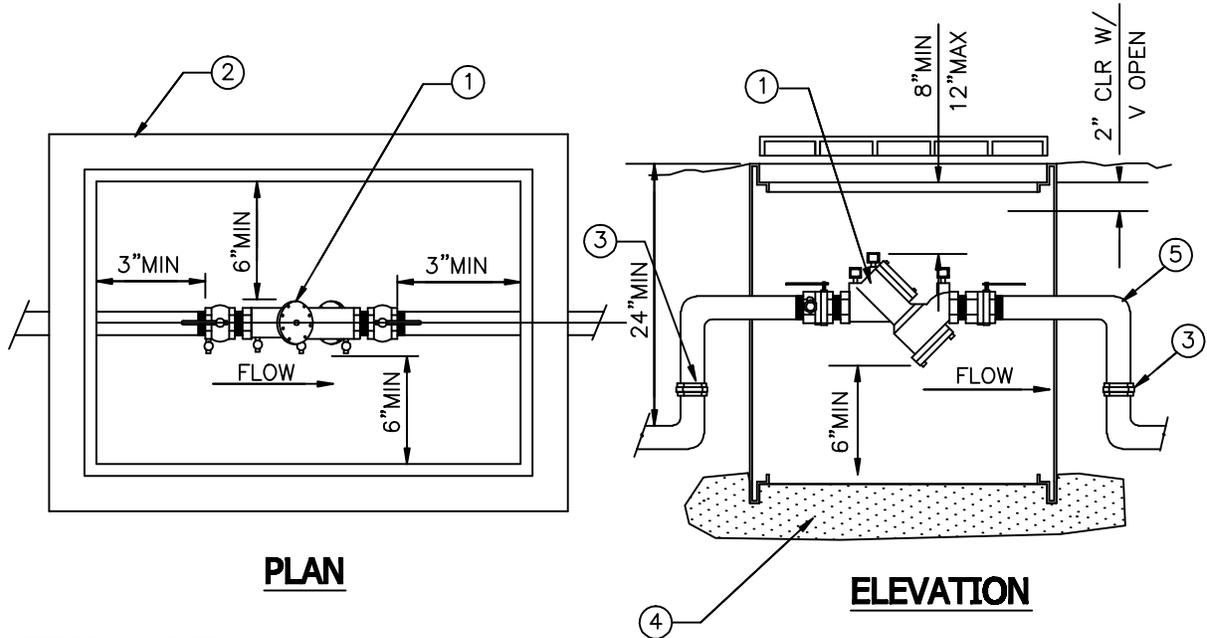
- | | |
|---|--|
| 1. MINIMUM VAULT INSIDE HEIGHT SHALL BE 78", OR AS APPROVED BY CITY ENGINEER. | 5. PIPING AND VALVES SHALL BE SUPPORTED BY ADJUSTABLE GALVANIZED OR STAINLESS SUPPORTS. NUMBER OF AND PLACEMENT OF SUPPORTS TO BE DETERMINED BY CITY ENGINEER ACCORDING TO VALVE SIZE. |
| 2. MINIMUM CLEARANCE BETWEEN PRV'S AND FLOOR SHALL BE 12". | 6. BRAND, MINIMUM CLEARANCES, TYPE OF PRV AND ACCESSORIES TO BE DETERMINED BY CITY OF ARLINGTON UTILITIES DIVISION. |
| 3. PROVIDE LIQUID FILLED 2 1/2" GAUGES AMETEK SERIES 550L OR EQUAL. | 7. ADDITIONAL VALVES ARE REQUIRED AT BOTH ENDS OF THE PRV STATION |
| 4. ALL EQUIPMENT MUST BE RATED FOR SOURCE PRESSURE. | |



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
PRESSURE REDUCING STATION

STANDARD DETAIL
NUMBER
W-080



PLAN

ELEVATION

MATERIAL LIST:

- ① WASHINGTON STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING TWO BRASS BALL VALVES AND FOUR RESILIENT SEATED TEST COCKS.
- ② IN NON-TRAFFIC AREAS USE:
FOR 3/4" TO 1" ASSEMBLIES, USE A MID STATE MSBCF 1324-12.
FOR 1-1/4" TO 2" ASSEMBLIES, USE A MID STATE MSBCF 1730-18.
IN TRAFFIC AREAS:
A TRAFFIC LOADED BOX MUST BE USED AND LOCATION APPROVED BY THE CITY OF ARLINGTON PRIOR TO INSTALLATION.
- ③ PROVIDE TWO UNIONS.
- ④ IF A DAYLIGHT DRAIN CANNOT BE PROVIDED THERE MUST BE A 6" MIN LAYER OF FREE DRAINING GRAVEL AT THE BOTTOM OF BOX.
- ⑤ ANGLES MAY BE IN OR OUT OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPERATION AND DCVA REPAIR OR MAINTENANCE.

NOTES:

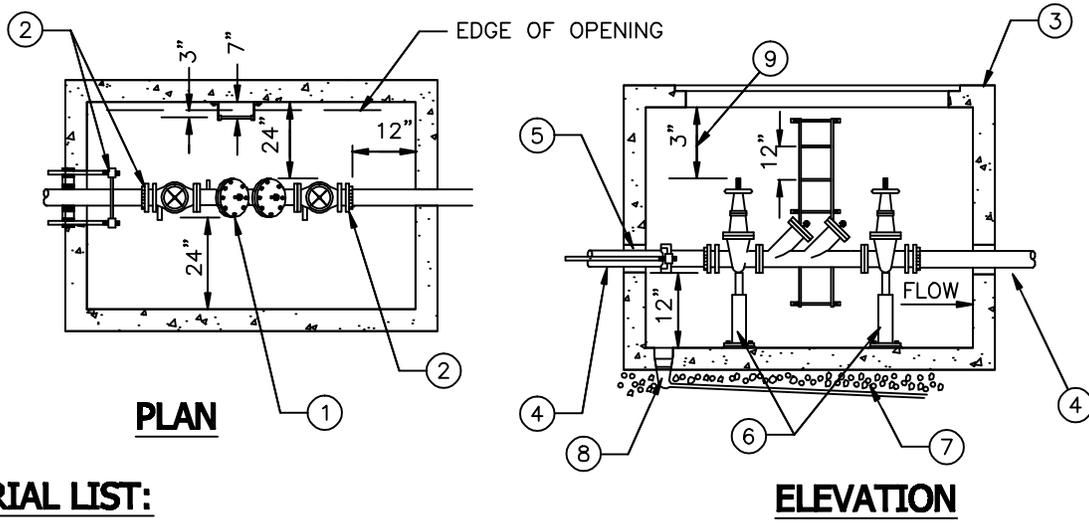
1. INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. INSTALL ONLY IN HORIZONTAL CONFIGURATION, UNLESS APPROVED OTHERWISE BY CITY ENGINEER.
3. INSTALL TEST COCKS FACE UP OR TO ONE SIDE.
4. INSTALL BRASS PLUGS IN ALL TEST COCKS.
5. FOR 3/4" TO 1" ASSEMBLIES, USE A MIDSTATES 1324-12.
6. FOR 1-1/4" TO 2" ASSEMBLIES, USE A MID STATE MSBCF 1730-18.
7. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION AND RECERTIFICATION ANNUALLY.
8. ALL MINIMUM CLEARANCES MUST BE MET. SEE STANDARD DETAIL NO. W-100.
9. ASSEMBLY MAY BE INSTALLED INSIDE BUILDING IF MINIMUM CLEARANCES ARE MET AND APPROVED BY CITY ENGINEER.
10. ALL BRANCH CONNECTIONS SHALL BE LOCATED DOWN STREAM OF THE ASSEMBLY. ANY BRANCH CONNECTION ON THE SUPPLY SIDE OF THE ASSEMBLY MUST BE PROTECTED BY A SEPARATE APPROVED BACKFLOW PREVENTION DEVICE.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 DOUBLE CHECK VALVE ASSEMBLY
 (DCVA) FOR 2" AND SMALLER

STANDARD DETAIL
 NUMBER
W-090



MATERIAL LIST:

- ① WASHINGTON STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING: 2 EACH O.S.& Y RESILIENT SEATED GATE VALVES, AND FOUR RESILIENT SEATED TEST COCKS.
- ② UNI-FLANGE WITH SET SCREWS OR MJ x FL ADAPTER WITH MEGALUG OR GALVANIZED SHACKLE TO MAIN WITH TWO 3/4" RODS, OR MJ RETAINER GLANDS.
- ③ PRECAST CONCRETE VAULT WITH STEEL ACCESS HATCH (AS MANUFACTURED BY UTILITY VAULT 675 LA/WA CO OR AN APPROVED EQUAL). COVER TO READ "WATER". PROVIDE OSHA APPROVED HOT DIPPED GALVANIZED STEEL LADDER. INSTALL LADDER IN SUCH A WAY AS TO PROVIDE VAULT ACCESS THAT DOES NOT INTERFERE WITH INSTALLED EQUIPMENT OR MAINTENANCE THEREOF. PROVIDE A SPRING LOADED TRAFFIC LOAD RATED DOUBLE DOOR.
- ④ DUCTILE IRON PIPE (SIZED AS REQUIRED) CLASS 52.
- ⑤ WATER TIGHT GROUT SHALL BE USED IN ALL VAULT PENETRATIONS.
- ⑥ 2 EACH GALVANIZED OR STAINLESS STEEL ADJUSTABLE PIPE SUPPORTS FOR 2-1/2" AND LARGER PIPE.
- ⑦ GRAVEL FOUNDATION AS REQUIRED.
- ⑧ DRAIN, SLOPE TO DAYLIGHT WHEN POSSIBLE PROVIDE A MINIMUM OF 12" FREE DRAINING GRAVEL UNDER THE VAULT IF DAYLIGHT DRAIN CANNOT BE PROVIDED.
- ⑨ 3" MIN CLEARANCE FROM UNDERSIDE OF VAULT LID TO STEM AND OS&Y WHEN FULLY OPEN.

NOTES:

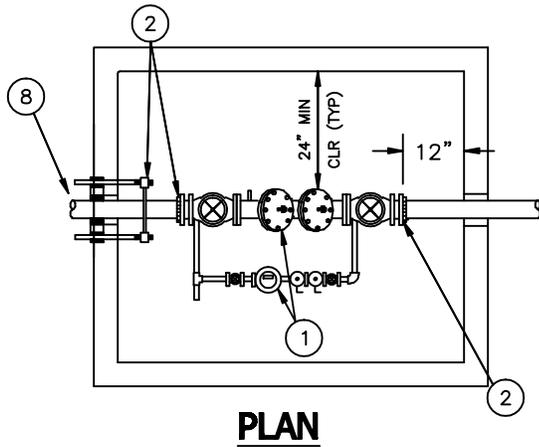
- 1. TEE AND GATE VALVE REQUIRED ON MAIN.
- 2. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION AND RECERTIFICATION ANNUALLY.
- 3. TEST COCKS ARE REQUIRED TO BE PLUGGED IF ASSEMBLY IS INSTALLED UNDERGROUND.
- 4. INDOOR INSTALLATION OF ASSEMBLY IN PERMISSIBLE IF MINIMUM CLEARANCES ARE MET AND APPROVED BY CITY ENGINEER.
- 5. MAXIMUM HEIGHT OF ASSEMBLY IS FIVE FEET UNLESS AN OSHA APPROVED PLATFORM IS PROVIDED.
- 6. MINIMUM INSIDE VAULT HEIGHT IS 78", OR AS APPROVED BY THE ENGINEER, FOR 2-1/2" SERVICE AND LARGER.
- 7. METER SHALL BE INSTALLED SUCH THAT IT CAN BE READ WITHOUT ENTERING VAULT WITH ACCESS HATCH OPEN.
- 8. ALL DIMENSIONS ARE MINIMUM CLEARANCE REQUIREMENTS.



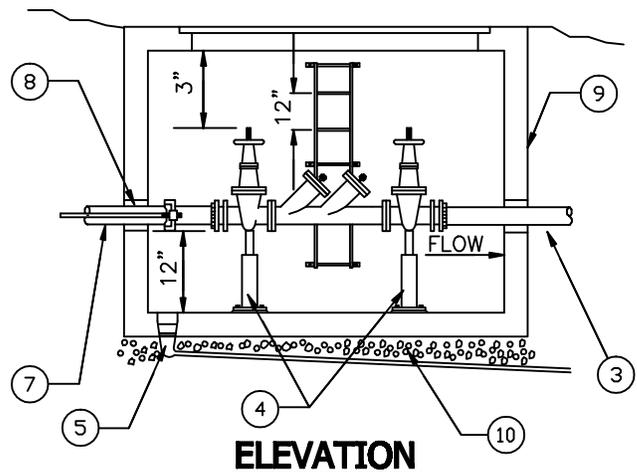
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
DOUBLE CHECK VALVE ASSEMBLY
(DCVA) 2-1/2" AND LARGER

STANDARD DETAIL
 NUMBER
W-100



PLAN



ELEVATION

MATERIAL LIST:

- ① WASHINGTON STATE APPROVED DOUBLE CHECK DETECTOR VALVE ASSEMBLY WHICH MUST BE INSTALLED IN THE SAME ORIENTATION FOR WHICH IT WAS APPROVED. ASSEMBLY TO INCLUDE: TEST COCKS, 3/4" BRASS OR COPPER BYPASS WITH IN-LINE VALVES AND A 5/8" REMOTE METER. METER TO READ IN CUBIC FEET, AND BE REMOTED TO AN EXTERNAL WALL OF BUILDING METER BOX.
- ② UNI-FLANGE WITH SET SCREWS OR MJ x FL ADAPTER WITH MEGALUG OR GALVANIZED SHACKLE TO MAIN WITH TWO 3/4" RODS, OR MJ RETAINER GLANDS FOR BOTH UPSTREAM AND DOWNSTREAM OF ASSEMBLY.
- ③ DUCTILE IRON PIPE (SIZED AS REQUIRED) CLASS 52.
- ④ TWO GALVANIZED ADJUSTABLE PIPE SUPPORTS FOR 2-1/2" DIAMETER AND LARGER PIPE.
- ⑤ A MINIMUM 4" FLOOR DRAIN OR WALL FOOTING DRAIN MUST BE PROVIDED.
- ⑥ FLUSHING CAPABILITIES MUST BE PROVIDED WITH A 2" FLUSHING LINE DOWNSTREAM OF ASSEMBLY TO OUTSIDE OR APPROVED INTERNAL DRAIN.
- ⑦ WHERE ASSEMBLY IS TO BE LOCATED ABOVE EXTERNAL GROUND LEVEL, ALL BENDS REQUIRED TO LOWER INLET PIPE (TO PROVIDE REQUIRED EXTERNAL GROUND COVER) SHALL BE FLANGE FITTINGS OR BE WITH HORIZONTAL AND VERTICAL THRUST RESTRAINTS.
- ⑧ WATER TIGHT GROUT SHALL BE USED IN ALL VAULT PENETRATIONS.
- ⑨ PRECAST CONCRETE VAULT WITH STEEL ACCESS HATCH (AS MANUFACTURED BY UTILITY VAULT 675 LA/WA CO OR AN APPROVED EQUAL). COVER TO READ "WATER". PROVIDE OSHA APPROVED HOT DIPPED GALVANIZED STEEL LADDER. INSTALL LADDER IN SUCH A WAY AS TO PROVIDE VAULT ACCESS THAT DOES NOT INTERFERE WITH INSTALLED EQUIPMENT OR MAINTENANCE THEREOF PROVIDE A TRAFFIC LOAD RATED DOUBLE DOOR.
- ⑩ 5/8" CRUSHED ROCK BASE (6" MIN. DEPTH).

NOTES:

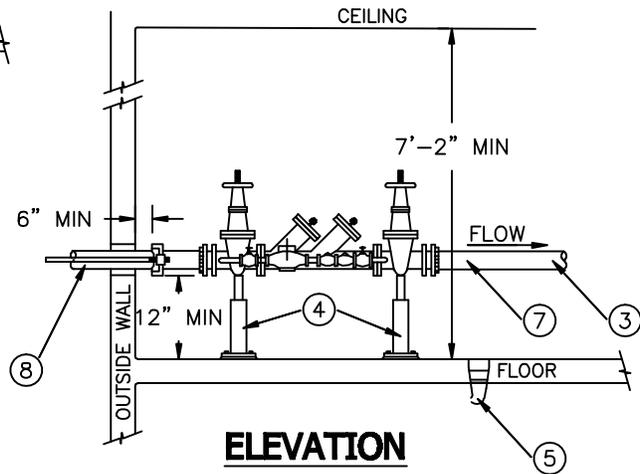
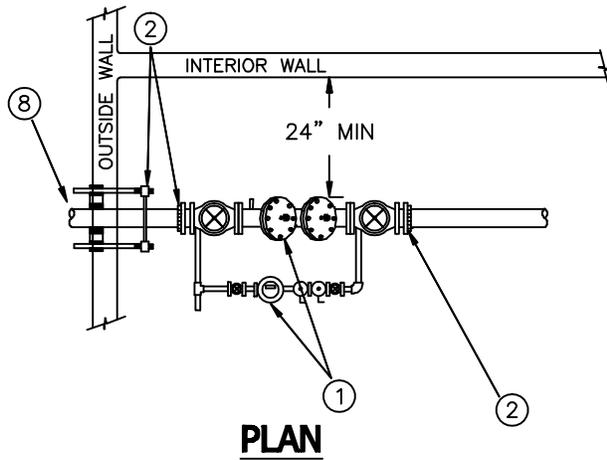
1. TEE AND GATE VALVE REQUIRED AT WATER MAIN.
2. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION, AND RECERIFICATION ANNUALLY AT OWNER'S EXPENSE.
3. TEST COCKS ARE REQUIRED TO BE PLUGGED.
4. MAXIMUM HEIGHT OF ASSEMBLY FROM FLOOR IS FIVE FEET UNLESS AN OSHA APPROVED PLATFORM IS PROVIDED.
5. FIRE DEPARTMENT PUMPER CONNECTION MUST BE DOWNSTREAM OF ASSEMBLY.
6. NEITHER OS & Y VALVE CAN BE USED AS A POST INDICATOR VALVE. (THESE ARE ONLY PART OF THE BACKFLOW ASSEMBLY)



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
DOUBLE CHECK DETECTOR ASSEMBLY-OUTSIDE
(DCDA) 2-1/2" AND LARGER SERVICES

STANDARD DETAIL
NUMBER
W-110



MATERIAL LIST:

- ① UL-FM LISTED SOFT SEATED WASHINGTON ST APPROVED DOUBLE CHECK DETECTOR VALVE ASSEMBLY WHICH MUST BE INSTALLED IN THE SAME ORIENTATION FOR WHICH IT WAS APPROVED. ASSEMBLY TO INCLUDE: TEST COCKS, 3/4" BRASS OR COPPER BYPASS WITH IN-LINE VALVES AND A 5/8" REMOTE METER. METER TO READ IN CUBIC FEET, AND BE REMOTED TO AN EXTERNAL WALL OF BUILDING METER BOX.
- ② UNI-FLANGE WITH SET SCREWS OR MJ x FL ADAPTER WITH MEGALUG OR GALVANIZED SHACKLE TO MAIN WITH TWO 3/4" RODS, OR MJ RETAINER GLANDS FOR BOTH UPSTREAM AND DOWNSTREAM OF ASSEMBLY.
- ③ DUCTILE IRON PIPE (SIZED AS REQUIRED) CLASS 52.
- ④ TWO GALVANIZED ADJUSTABLE PIPE SUPPORTS FOR 2-1/2" DIAMETER AND LARGER PIPE.
- ⑤ A 4" MINIMUM FLOOR DRAIN OR WALL FOOTING DRAIN MUST BE PROVIDED IN THE SAME ROOM.
- ⑥ FLUSHING CAPABILITIES MUST BE PROVIDED WITH A 2" FLUSHING LINE DOWNSTREAM OF ASSEMBLY TO OUTSIDE OR AN APPROVED INTERNAL DRAIN.
- ⑦ WHERE ASSEMBLY IS TO BE LOCATED ABOVE EXTERNAL GROUND LEVEL, ALL BENDS REQUIRED TO LOWER INLET PIPE (TO PROVIDE REQUIRED EXTERNAL GROUND COVER) SHALL BE FLANGE FITTINGS OR BE WITH HORIZONTAL AND VERTICAL THRUST RESTRAINTS.
- ⑧ ALL WALL PENETRATIONS SHALL BE SEALED PER THE CURRENT BUILDING CODE.

NOTES:

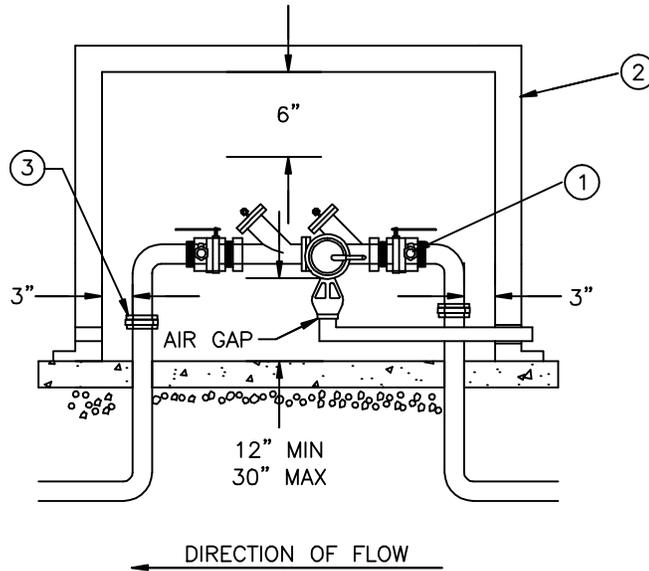
- 1. TEE AND GATE VALVE REQUIRED AT WATER MAIN.
- 2. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION, AND RECERTIFICATION ANNUALLY AT OWNER'S EXPENSE.
- 3. TEST COCKS ARE REQUIRED TO BE PLUGGED.
- 4. MAXIMUM HEIGHT OF ASSEMBLY FROM FLOOR IS FIVE FEET UNLESS AN OSHA APPROVED PLATFORM IS PROVIDED.
- 5. ALL DIMENSIONS ARE MINIMUM CLEARANCE REQUIREMENTS.
- 6. FIRE DEPARTMENT PUMPER CONNECTION MUST BE DOWNSTREAM OF ASSEMBLY.
- 7. NEITHER OS & Y VALVE CAN BE USED AS A POST INDICATOR VALVE (THESE ARE ONLY PART OF THE BACKFLOW ASSEMBLY).
- 8. THE ROOM SHOULD BE INSULATED PER THE CURRENT BUILDING CODE AND HEATED TO ABOVE FREEZING. ONLY CONSTRUCTION MATERIALS THAT CAN WITHSTAND OCCASIONAL SUBMERGENCE WILL BE ALLOWED.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
DOUBLE CHECK DETECTOR ASSEMBLY-INSIDE
(DCDA) 2-1/2" AND LARGER SERVICES

STANDARD DETAIL
NUMBER
W-120



ELEVATION

MATERIAL LIST:

- ① UL-FM LISTED WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING TWO BALL VALVES, AND TESTS COCKS.
- ② INSULATED PROTECTIVE ENCLOSURE (HOT BOX) REQUIRED FOR OUTSIDE INSTALLATIONS. THE PROTECTIVE ENCLOSURE MUST BE PROVIDED WITH DRAINS AT BOTH ENDS OF THE BOTTOM SUFFICIENTLY SIZED TO PROVIDED FREE GRAVITY DRAINAGE OF MAXIMUM DISCHARGE OF RELIEF VALVE PORT (2" MIN).
- ③ 90° ELBOW WITH A CLOSE NIPPLE AND UNION ON VERTICAL.

NOTES:

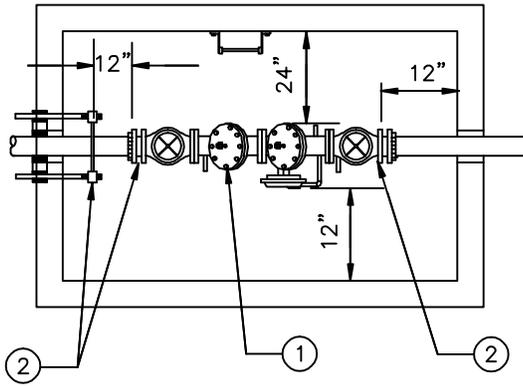
1. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION AND RECERTIFICATION ANNUALLY, BY OWNER.
2. THE ENCLOSURE MUST BE INSTALLED ON A 4" THICK CONCRETE PAD.
3. AN ELECTRICAL OUTLET MUST BE PROVIDED.
4. GUARD POSTS SHALL BE INSTALLED IF LOCATED IN A TRAFFIC AREA.
5. ALL BRANCH CONNECTIONS SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF THE ASSEMBLY.



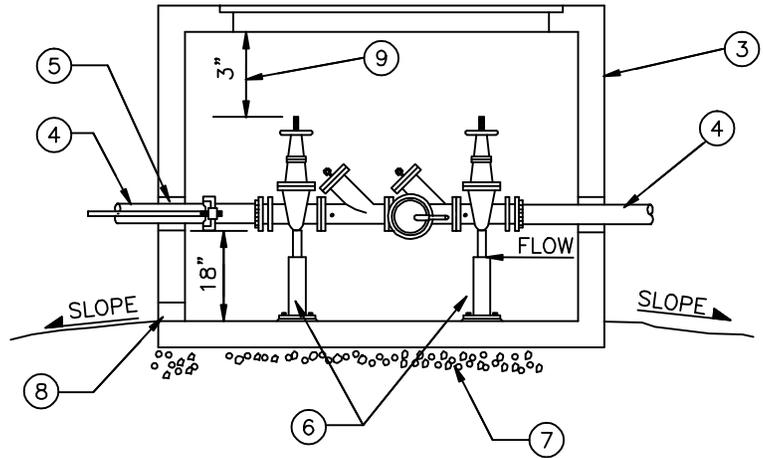
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS
REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) 2" AND SMALLER

STANDARD DETAIL NUMBER
W-130



PLAN



ELEVATION

MATERIAL LIST:

- ① WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING: 2-0.S.& Y RESILIENT SEATED GATE VALVES, AND TEST COCKS.
- ② UNI-FLANGE WITH SET SCREWS OR MJ x FL ADAPTOR WITH MEGALUG OR GALVANIZED SHACKLE TO MAIN WITH TWO 3/4" RODS, OR MJ RETAINER GLANDS.
- ③ PRECAST CONCRETE ENCLOSURE WITH STEEL ACCESS HATCH (AS MANUFACTURED BY UTILITY VAULT CO OR APPROVED EQUAL). ABOVE GROUND INSTALLATIONS WILL BE PROVIDED WITH 6'-6"x36" STEEL DOOR FOR ACCESS, THE EXTERIOR WILL BE PAINTED WITH AN APPROVED PAINT, PROVIDED WITH SUFFICIENT INSULATION TO PREVENT FREEZING AND SITE WILL BE PROVIDED WITH A 6' HIGH SECURITY FENCE WITH PEDESTRIAN AND VEHICLE GATES. SEMI-BURIED INSTALLATIONS WILL BE PROVIDED WITH OSHA APPROVED LADDER. INSTALLED IN SUCH A WAY AS TO NOT INTERFERE WITH INSTALLED EQUIPMENT MAINTENANCE.
- ④ DUCTILE IRON PIPE (SIZED AS REQUIRED) CLASS 52.
- ⑤ WATER TIGHT GROUT SHALL BE USED IN ALL VAULT PENETRATIONS.
- ⑥ 2 EACH GALVANIZED ADJUSTABLE PIPE SUPPORTS.
- ⑦ 5/8" CRUSHED ROCK FOUNDATION AS REQUIRED.
- ⑧ DRAIN SHALL BE INSTALLED WITH APPROVED AIR GAP, BE ABLE TO BE BORE SIGHTED TO DAYLIGHT WHICH MUST BE ABOVE 100 YEAR FLOOD LEVEL. DRAIN WILL BE SIZED SO AS TO PROVIDE FREE GRAVITY DRAINAGE OF MAXIMUM DISCHARGE OF RELIEF VALVE PORT.
- ⑨ 3" MIN CLEARANCE FROM UNDERSIDE OF VAULT LID TO STEM OF OS&Y WHEN FULLY OPEN.

NOTES:

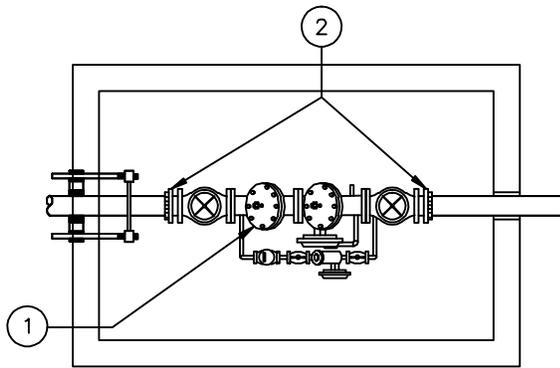
1. TEE AND GATE VALVE REQUIRED AT WATER MAIN.
2. TEST COCKS ARE REQUIRED TO BE PLUGGED.
3. MAXIMUM HEIGHT OF ASSEMBLY IS FIVE FEET UNLESS AN OSHA APPROVED PLATFORM IS PROVIDED.
4. MINIMUM INSIDE VAULT HEIGHT IS 78", OR AS APPROVED BY CITY ENGINEER, FOR 2-1/2" SERVICE AND LARGER.
5. INSIDE INSTALLATIONS SEE STD. DETAIL NO. W-120.
6. ALL DIMENSIONS ARE MINIMUM CLEARANCE REQUIREMENTS.
7. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION AND RECERTIFICATION ANNUALLY.



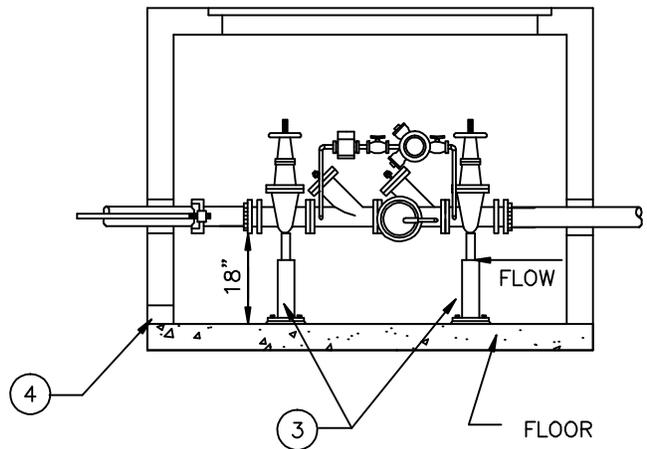
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
REDUCED PRESSURE BACKFLOW ASSEMBLY
(RPBA) 2-1/2" AND LARGER

STANDARD DETAIL
NUMBER
W-140



PLAN



ELEVATION

MATERIAL LIST:

- ① WASHINGTON STATE APPROVED REDUCED PRESSURE DETECTOR ASSEMBLY INCLUDING: 2 EACH O.S.& Y RESILIENT SEATED GATE VALVES, TEST COCKS, 3/4" BRASS OR COPPER BYPASS WITH IN-LINE VALVES, 5/8" METER (METER TO READ IN CUBIC FEET), AND A 3/4" REDUCED PRESSURE BACKFLOW ASSEMBLY.
- ② UNI-FLANGE WITH SET SCREWS OR MJ x FL ADAPTER WITH MEGALUG OR GALVANIZED SHACKLE TO MAIN WITH 2 EACH 3/4" RODS, OR MJ RETAINER GLANDS.
- ③ TWO - GALVANIZED ADJUSTABLE PIPE SUPPORTS FOR 2-1/2" DIAMETER AND LARGER PIPE.
- ④ DRAIN SHALL BE INSTALLED WITH APPROVED AIR GAP, BE ABLE TO BE BORE SIGHTED TO DAYLIGHT WHICH MUST BE ABOVE 100 YEAR FLOOD LEVEL. DRAIN WILL BE SIZED SO AS TO PROVIDE FREE GRAVITY DRAINAGE OF MAXIMUM DISCHARGE OF RELIEF VALVE PORT.

NOTES:

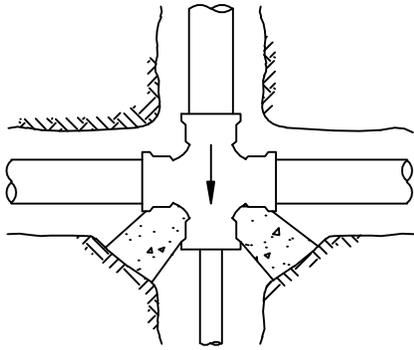
- 1. TEE AND GATE VALVE REQUIRED AT WATER MAIN.
- 2. TEST CLOCKS ARE REQUIRED TO BE PLUGGED IF ASSEMBLY IS INSTALLED UNDERGROUND.
- 3. ASSEMBLY REQUIRES CERTIFICATION UPON INSTALLATION AND RECERTIFICATION ANNUALLY, BY OWNER.
- 4. 3" AND LARGER RPDAS REQUIRE EITHER AN APPROVED BUILDING ENCLOSURE OR MUST BE INSTALLED INSIDE THE BUILDING BEING SERVED.



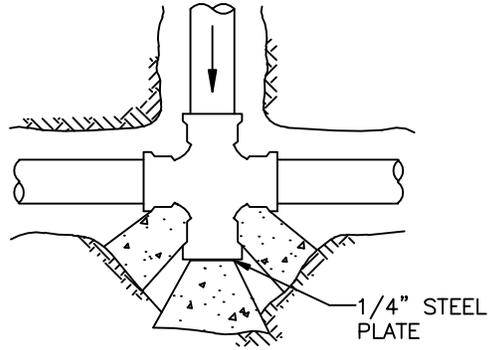
APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 REDUCED PRESSURE DETECTOR ASSEMBLY
 (RPDA) 3" AND LARGER

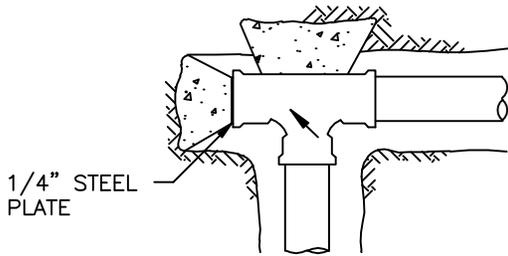
STANDARD DETAIL
 NUMBER
W-150



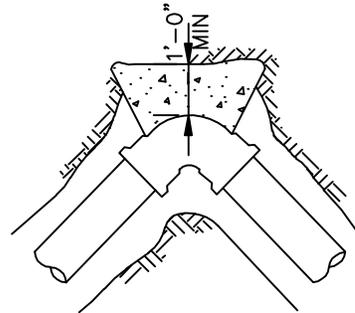
UNBALANCED CROSS



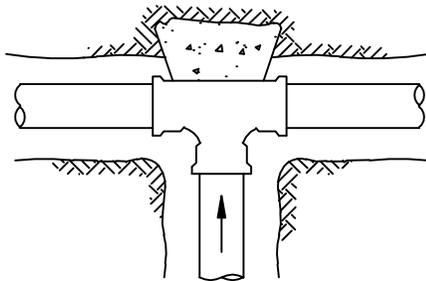
CROSS WITH PLUG



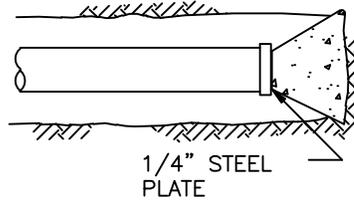
PLUGGED TEE



HORIZONTAL BEND



TEE



PIPE & CAP

THRUST BLOCK AREA IN SQUARE FEET (SEE STD DETAIL NO W-165)												
PIPE SIZE	FIRM SILT OR FIRM SILTY SAND				COMPACT SAND				COMPACT SAND & GRAVEL			
	90° BEND	TEE	45° BEND CAP OR PLUG	11 1/4' & 22 1/2' BEND	90° BEND	TEE	45° BEND CAP OR PLUG	11 1/4' & 22 1/2' BEND	90° BEND	TEE	45° BEND CAP OR PLUG	11 1/4' & 22 1/2' BEND
4"	7.0	4.2	4.2	1.7	2.9	2.1	2.1	1.0	2.2	1.6	1.6	1.0
6"	13.3	9.4	9.4	3.8	6.7	4.7	4.7	1.9	5.0	3.5	3.5	1.4
8"	23.3	16.7	16.7	6.7	11.7	8.4	8.4	3.4	8.8	6.3	6.3	2.5
12"	53.0	37.5	37.5	15.0	26.5	18.8	18.8	7.5	20.0	14.0	14.0	5.6

AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN

IF ECOLOGY BLOCKS MAY BE USED IN LIEU OF POURED-IN-PLACE BLOCKING FOR FITTINGS IN SHADED PORTION OF TABLE RESTRAINED JOINTS MUST BE USED.

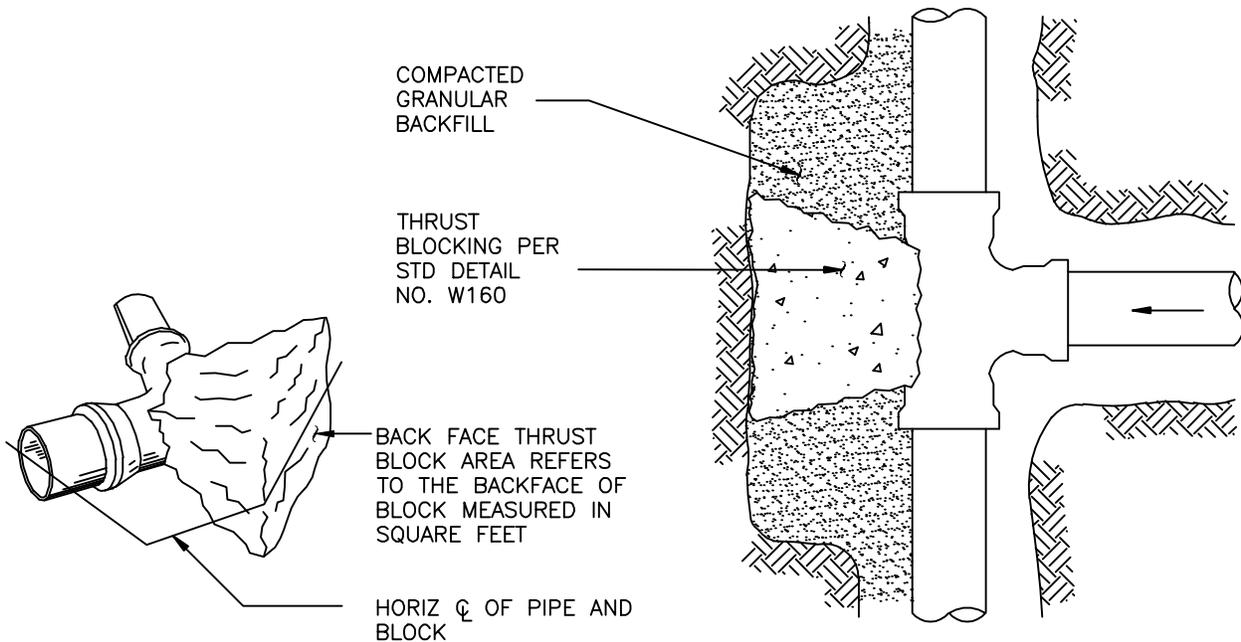
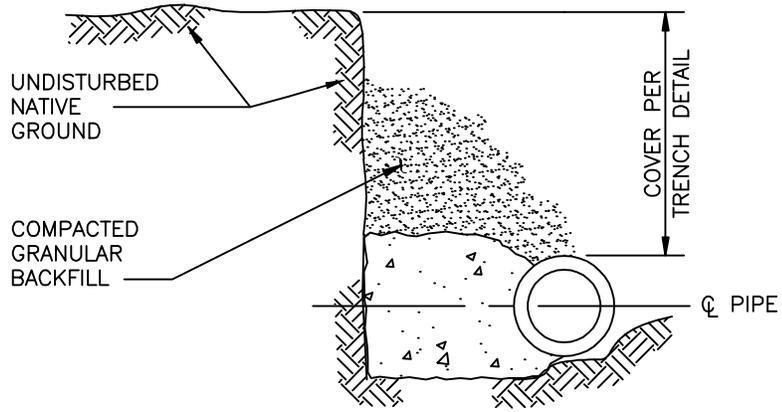
FOR NOTES SEE STD DETAIL NO W-165



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD PLANS
 THRUST BLOCK

STANDARD DETAIL NUMBER
W-160



THRUST BLOCK DETAIL

NOTES:

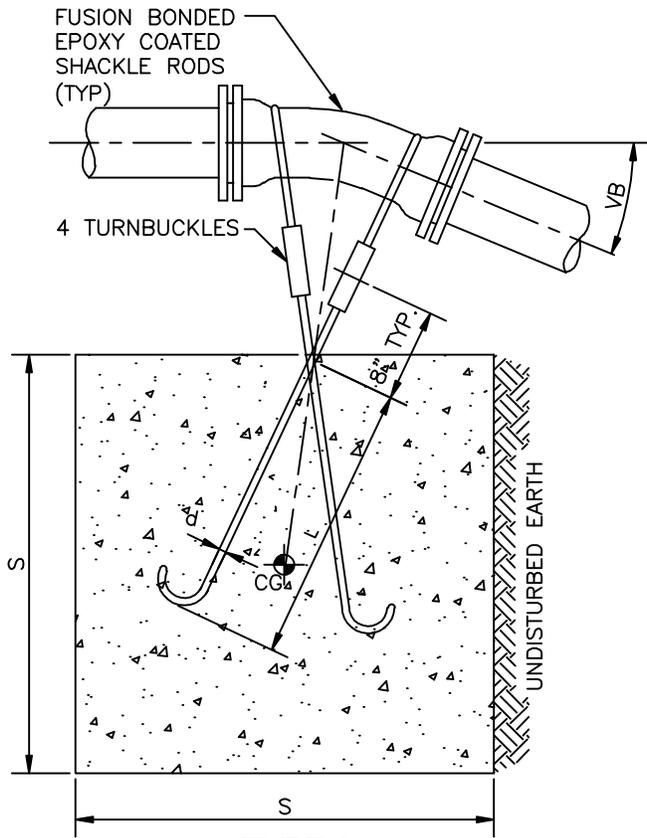
1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN SHALL BE DETERMINED BY THE CITY ENGINEER.
2. ALL BLOCKING FOR HORIZONTAL FITTINGS (POURED IN PLACE) SHALL BEAR AGAINST UNDISTURBED NATIVE GROUND OR FILL MATERIAL COMPACTED TO 95% MAXIMUM DENSITY.
3. ALL POURED THRUST BLOCKS SHALL BE BACKFILLED AFTER MINIMUM 1 DAY. PRESSURE TESTING SHALL OCCUR AFTER CONCRETE HAS REACHED COMPRESSIVE STRENGTH (f'c).
4. ALL BLOCKING TO BE CONCRETE CL 3000-1 (3000 PSI).
5. BLOCKING AGAINST FITTINGS SHALL BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT SHALL NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS. ACCESS TO BOLTS AND GLANDS SHALL BE PROVIDED.
6. ALL HORIZONTAL BLOCKING THRUST AREAS SHALL BE CENTERED ON PIPE.
7. WHERE POURED-IN-PLACE BLOCKING IS REQUIRED AT A POINT OF CONNECTION TO AN EXISTING WATERMAIN, THE BLOCKING SHALL BE INSTALLED PRIOR TO CONNECTION WHENEVER POSSIBLE OR AS DIRECTED BY THE CITY ENGINEER.
8. TEMPORARY BLOCKING, IF USED, SHALL BE APPROVED BY THE CITY ENGINEER.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

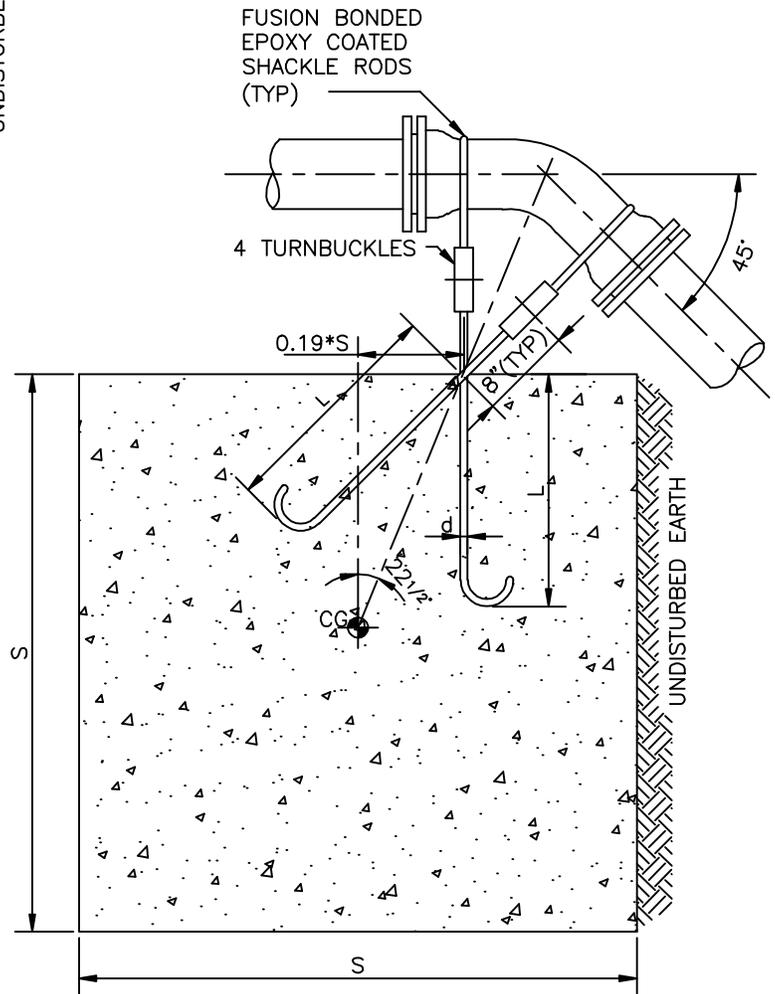
DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 THRUST BLOCK

STANDARD DETAIL
 NUMBER
W-165



TYPE A

TYPE A BLOCKING FOR 11 1/4' & 22 1/2' VERTICAL BENDS						
PIPE SIZE NOM DIA INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	NO OF CU FT OF CONC BLOCKING	S SIDE OF CUBE FEET	d DIA OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE INCHES
4"	300	111/4	8	2	3/4	18
		221/2	12	2 1/4		24
6"	300	111/4	12	2 1/4	3/4	24
		221/2	27	3		
8"	300	111/4	16	2 1/2	3/4	24
		221/2	43	3 1/2		
12"	300	111/4	64	4	1	36
		221/2	125	5	1	36



TYPE B

TYPE B BLOCKING FOR 45° VERTICAL BENDS						
PIPE SIZE NOM DIA (INCHES)	TEST PRESSURE (PSI)	VB VERTICAL BEND (DEGREES)	NO OF CU FT OF CONC BLOCKING	S SIDE OF CUBE (FEET)	d DIA OF SHACKLE RODS (4) (INCHES)	L DEPTH OF RODS IN CONCRETE (INCHES)
4"	300	45	27	3	3/4	20
6"			64	4		
8"			125	5		
12"			216	6		

FOR NOTES SEE STD DETAIL NO. W-175

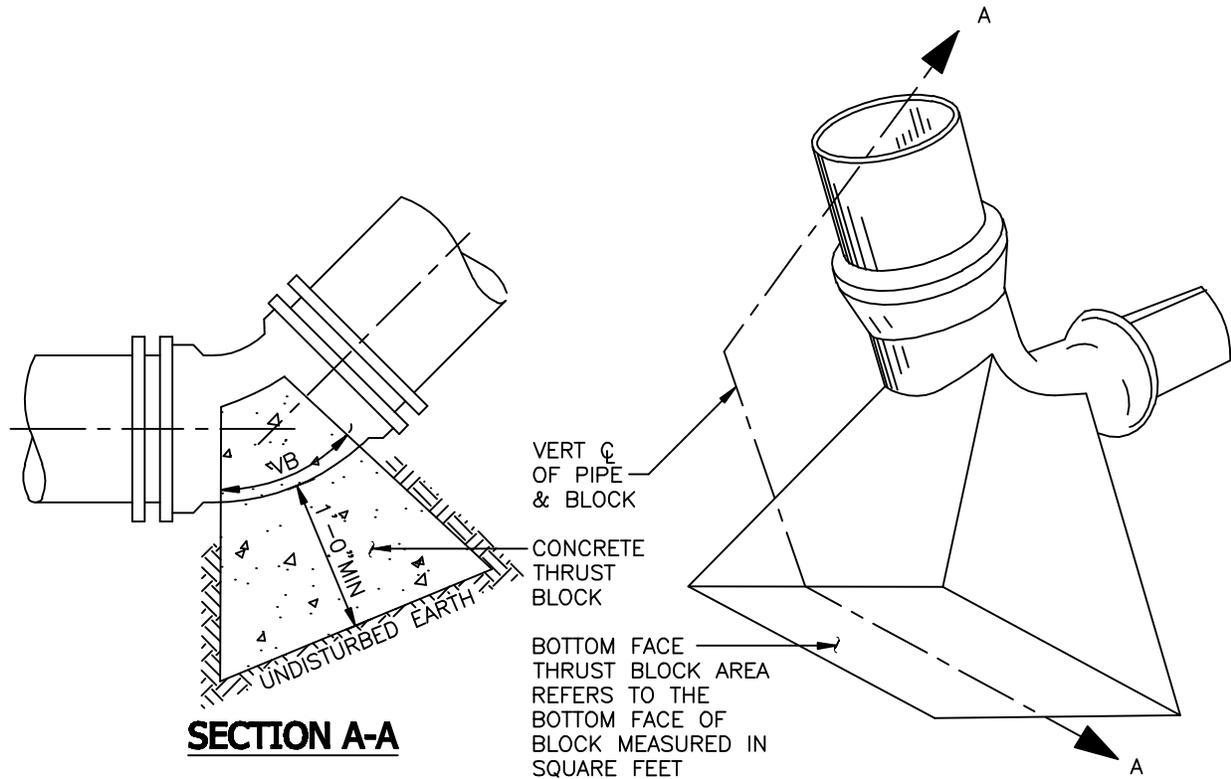


APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
VERTICAL THRUST BLOCK
TYPE A & TYPE B

STANDARD DETAIL
NUMBER

W-170



TYPE "C" BLOCKING FOR 11 1/4', 22 1/2', 45° AND 90° VERTICAL BENDS									
THRUST BLOCK AREA IN SQUARE FEET									
PIPE SIZE	FITTING	FIRM SILT OR FIRM SILTY SAND			COMPACT SAND			COMPACT SAND & GRAVEL	
		90° BEND	TEE, 45° BEND & DEAD END	11 1/4' & 22 1/2' BEND	90° BEND	TEE, 45° BEND & DEAD END	11 1/4' & 22 1/2' BEND	90° BEND	TEE, 45° BEND & DEAD END
4"	5.8	4.2	1.7	2.9	2.1	1.0	2.2	1.6	1.0
6"	13.3	9.4	3.8	6.7	4.7	1.9	5.0	3.5	1.4
8"	23.3	16.7	6.7	11.7	8.4	3.4	8.8	6.3	2.5
12"	53.0	37.5	15.0	26.5	18.8	7.5	20.0	14.0	5.6

AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN

NOTES:

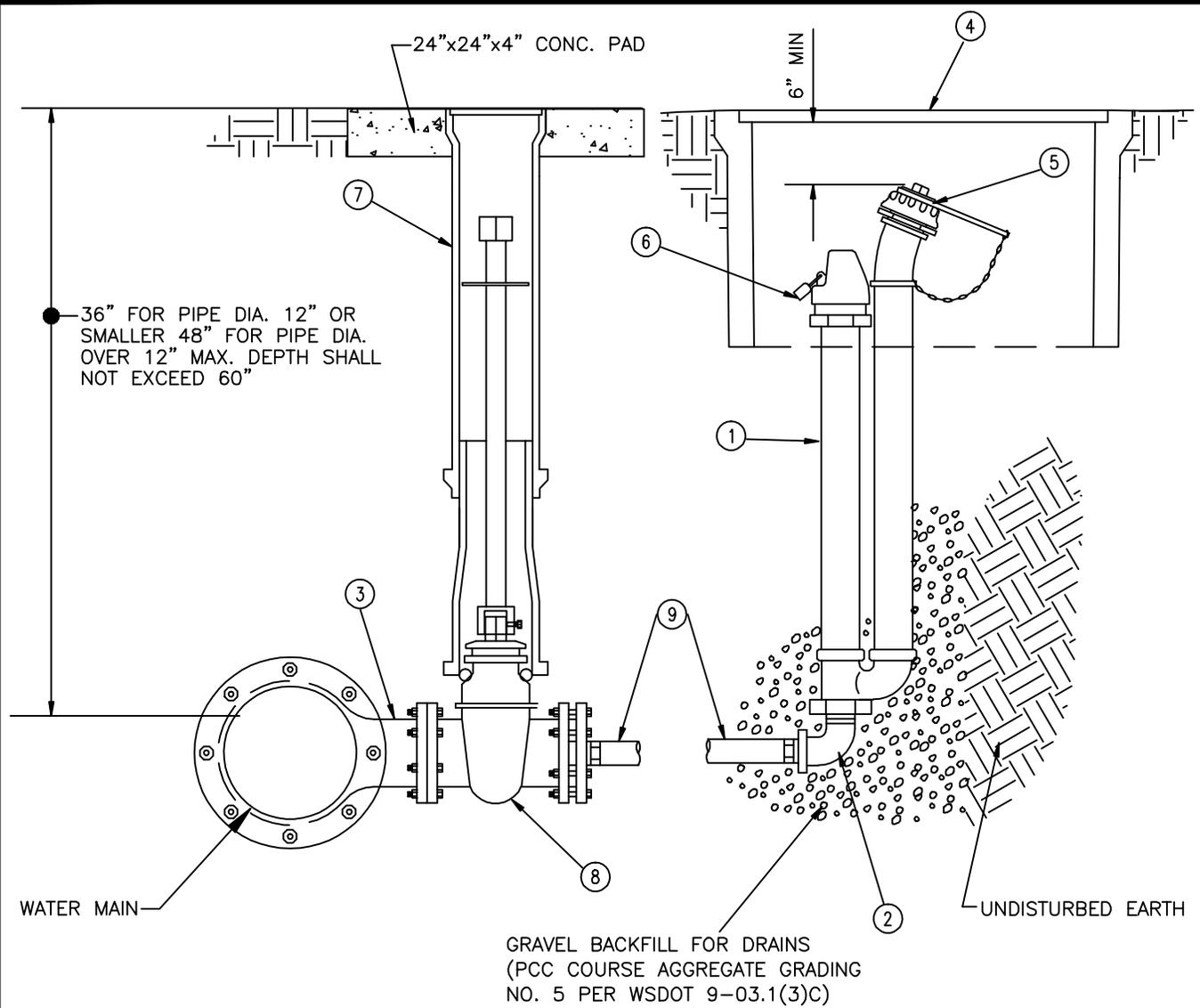
1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN SHALL BE DETERMINED BY THE CITY ENGINEER.
2. ALL BLOCKING FOR VERTICAL FITTINGS (POURED IN PLACE) SHALL BEAR AGAINST UNDISTURBED NATIVE GROUND.
3. ALL POURED THRUST BLOCKS SHALL BE BACKFILLED AFTER MINIMUM 1 DAY. PRESSURE TESTING SHALL OCCUR AFTER CONCRETE HAS REACHED COMPRESSIVE STRENGTH (f'c).
4. ALL BLOCKING SHALL BE CONCRETE CL 3000-1 (3000 psi).
5. AFTER INSTALLATION, SHACKLE RODS & TURNBUCKLES SHALL BE CLEANED AND COATED WITH 2 COATS OF ASPHALTIC VARNISH, ROYSTON ROYKOTE #612M OR APPROVED EQUAL.
6. SHACKLE RODS SHALL BE FUSION BONDED EPOXY COATED ROUND MILD STEEL, ASTM A 36.
7. BLOCKING AGAINST FITTINGS SHALL BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT SHALL NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS REASONABLE ACCESS TO BOLTS AND GLANDS SHALL BE PROVIDED.



APPROVED BY	L. OLIVE
DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 VERTICAL THRUST BLOCK TYPE C

STANDARD DETAIL NUMBER
W-175



MATERIAL LIST:

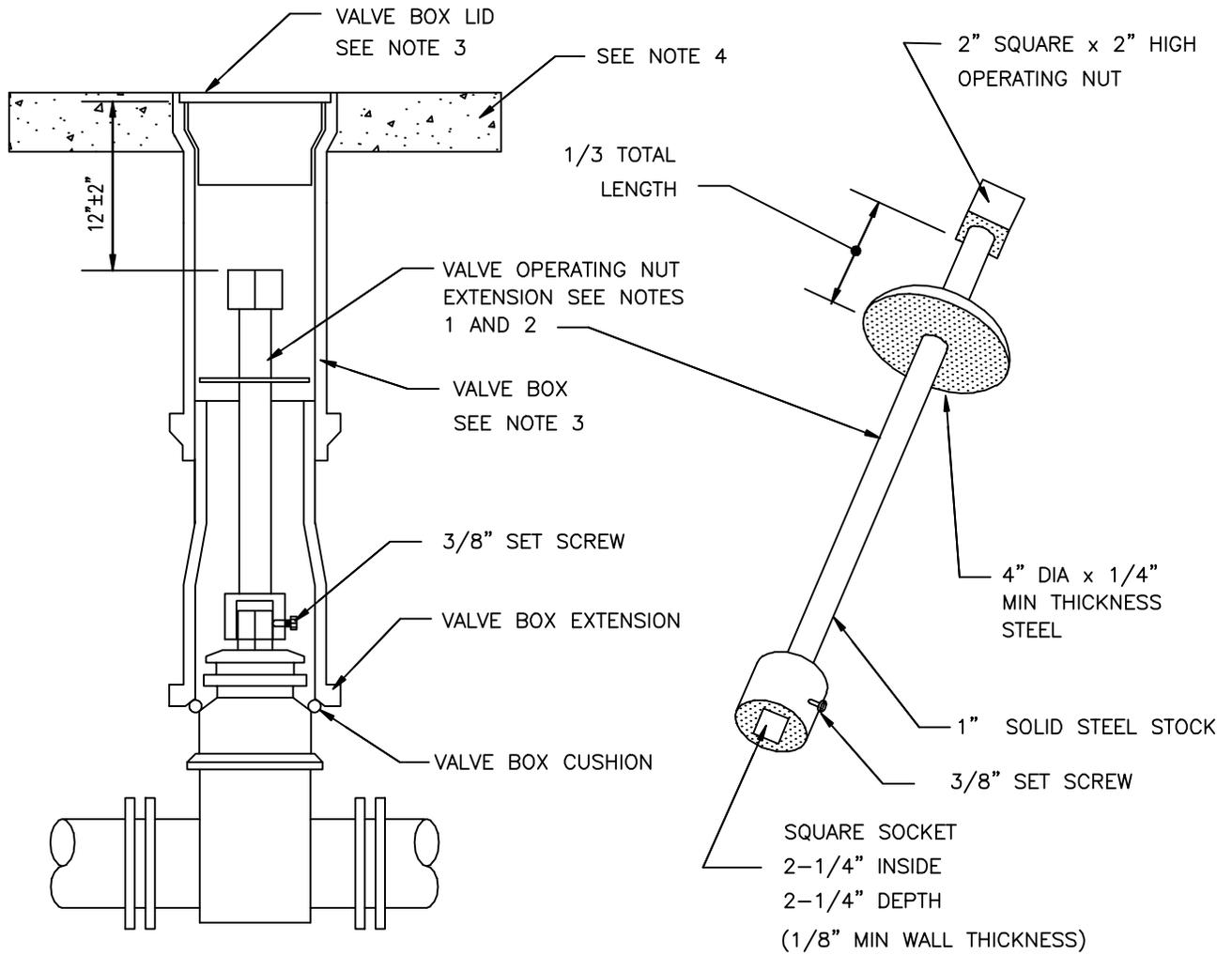
- ① BLOWOFF HYDRANT KUPFERLE FOUNDRY #78 BRONZE TO BRONZE DESIGN SERVICEABLE FROM ABOVE WITH OUTLET EXPOSED. 2-1/2" NST OUTLET LOCKING CAP ON OPERATOR.
- ② 2" BRASS 90° BEND
- ③ MAINLINE SIZE TEE WITH 6" FLANGE
- ④ MID-STATES PLASTICS METER BOX MSBCF 1730-18/W DI LID.
- ⑤ 2-1/2" CAP NATIONAL STANDARD THREAD.
- ⑥ LOCK TO BE SUPPLIED BY CITY OF ARLINGTON.
- ⑦ CAST IRON VALVE BOX AND EXTENSION PER STD DETAIL W-190
- ⑧ 6" GATE VALVE WITH RESILIENT SEAT (MUELLER, M&H OR APPROVED EQUAL) WITH A 6" FLANGE X 2" COMPANION FLANGE
- ⑨ 2" HDPE HI MOL CL 200 CTS POLY PIPE W/2 2" MIP COMPRESSION ADAPTERS



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DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 2" BLOWOFF ASSEMBLY

STANDARD DETAIL NUMBER
W-180



VALVE BOX AND EXTENSION

VALVE OPERATING NUT EXTENSION

NOTES:

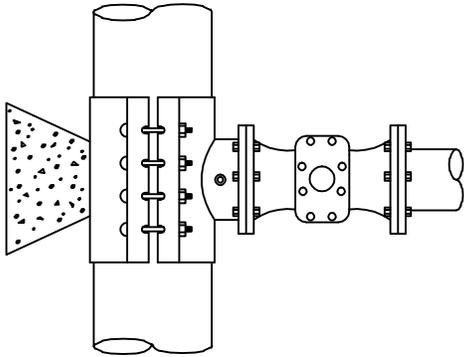
1. VALVE OPERATING NUT EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN THREE (3) FEET BELOW FINISHED GRADE. EXTENSIONS ARE TO BE A MINIMUM OF ONE (1) FOOT LONG. ONLY ONE EXTENSION WILL BE ALLOWED PER VALVE.
2. ALL VALVE OPERATING NUT EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.
3. VALVE BOXES SHALL BE CAST IRON, TWO PIECE UNITS, DESIGNED WITH DEEP SKIRT (2") LIDS W/LUGS, EQUAL TO "RICH NO. 940" AS MANUFACTURED BY RICH OR SATHER.
4. 4" THICK CONCRETE PAD AROUND VALVE BOXES OUTSIDE OF PAVED AREAS. 2'x2' SQUARE AROUND SINGLE VALVE BOXES AND 4'x4' AROUND MULTIPLE VALVE BOXES.



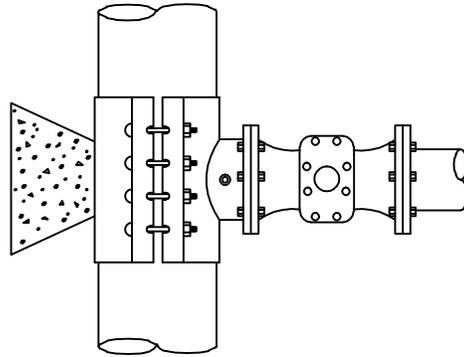
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DATE	07/31/2008
REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 VALVE BOX AND
 OPERATING NUT EXTENSION

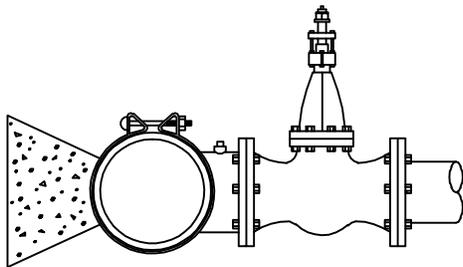
STANDARD DETAIL
 NUMBER
W-190



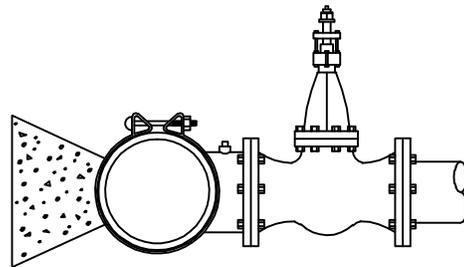
PLAN



PLAN



ELEVATION



ELEVATION

**STEEL FABRICATED EPOXY
COATED TAPPING SLEEVE**

INSTALLED ON DI PIPE

**FABRICATED STAINLESS STEEL
TAPPING SLEEVE**

INSTALLED ON AC PIPE

NOTES:

1. STAINLESS STEEL TAPPING TEES SHALL HAVE FULL CIRCLE SEAL.
2. STEEL TAPPING TEES SHALL BE EPOXY COATED.
3. ALL TEES AND VALVES TO BE WATER TESTED BEFORE TAPPING.



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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

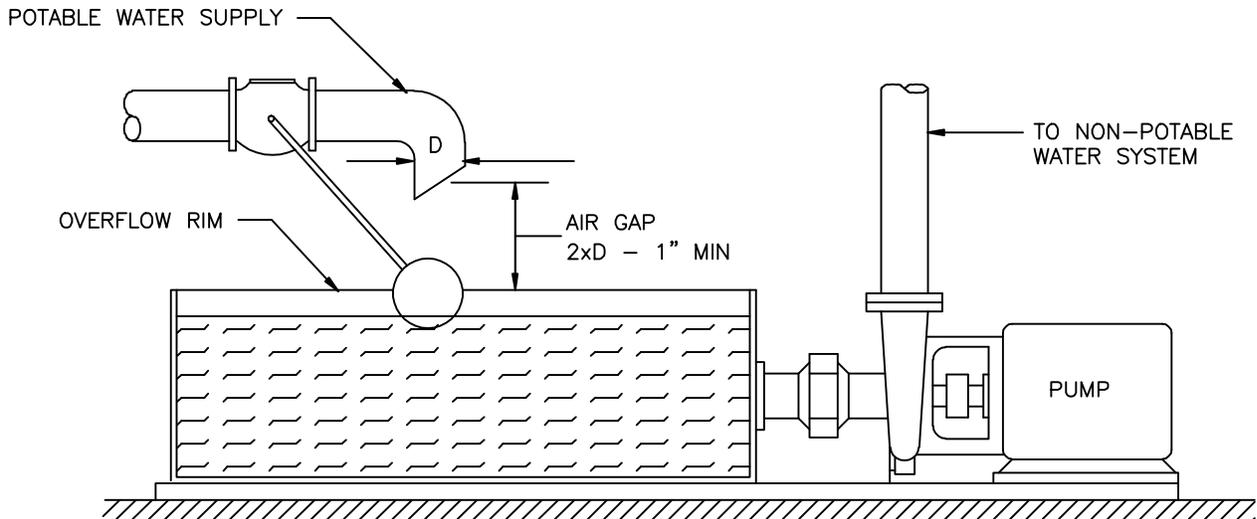
TAPPING SLEEVES

STANDARD DETAIL
NUMBER

W-200

APPROVED AIR GAP SEPARATION

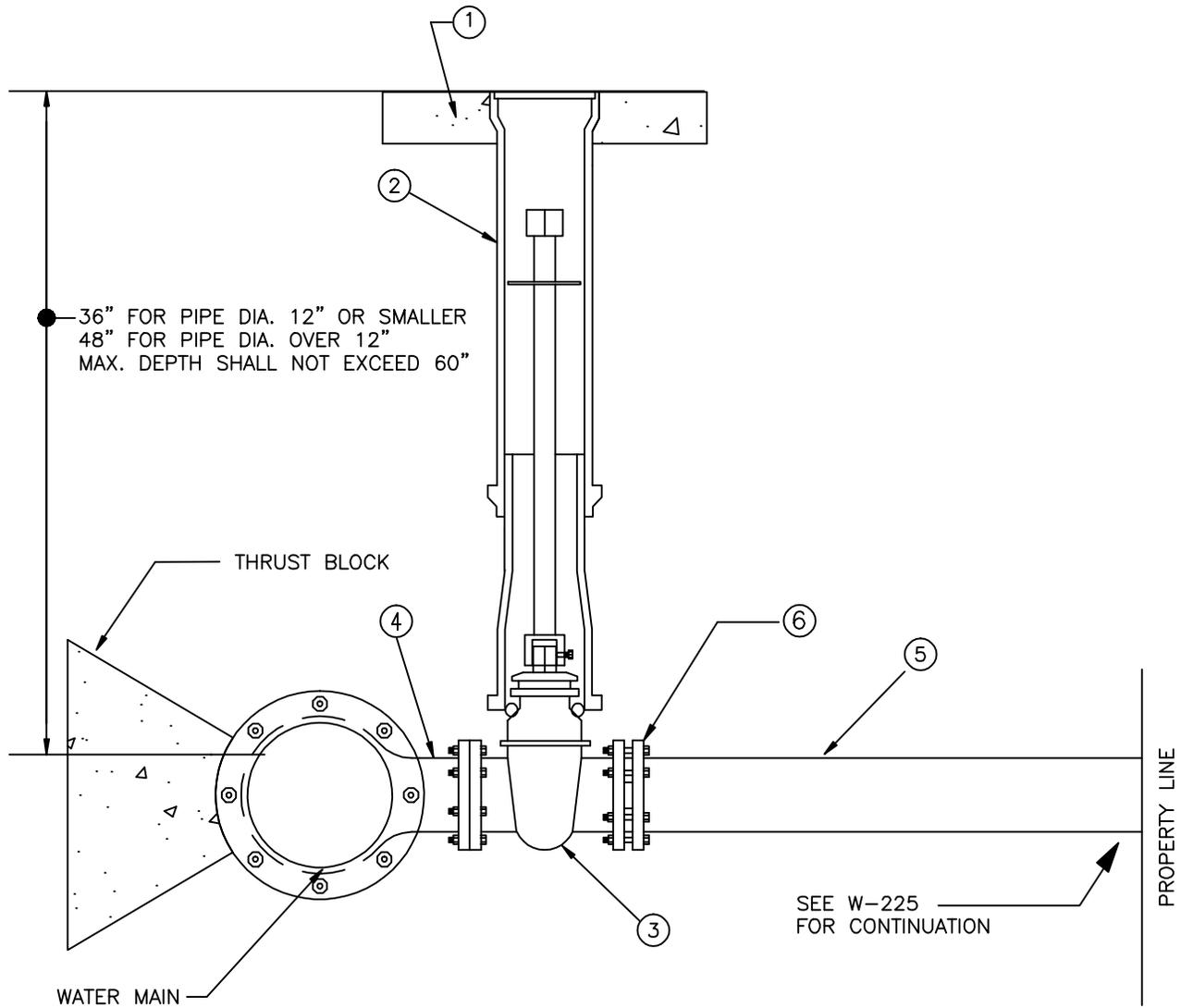
AN APPROVED AIR GAP IS A PHYSICAL SEPARATION BETWEEN THE FREE FLOWING DISCHARGE END OF A POTABLE WATER SUPPLY PIPELINE AND THE OVERFLOW RIM OF AN OPEN OR NON-PRESSURE RECEIVING VESSEL. THESE VERTICAL, PHYSICAL SEPARATIONS MUST BE AT LEAST TWICE THE DIAMETER OF THE INLET PIPE BUT NEVER LESS THAN ONE INCH. IF SPLASHING IS A PROBLEM, TUBULAR SCREENS MAY BE ATTACHED OR THE SUPPLY LINE OUTLET MAY BE CUT AT A 45 DEGREE ANGLE. IF SUPPLY LINE IS CUT AT A 45 DEGREE ANGLE THE AIR GAP DISTANCE IS MEASURED FROM THE CENTER OF THE ANGLE. HOSES ARE NOT ALLOWED. BYPASSES ARE NOT ALLOWED. THE INSPECTION OF AIR GAPS SHALL BE INCLUDED IN THE YEARLY TESTING PROGRAM FOR BACKFLOW DEVICES.



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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 AIR GAP
 FOR MAKEUP TANK

STANDARD DETAIL
 NUMBER
W-210



MATERIAL LIST:

- ① 24"x24"x4" CONCRETE PAD IN UNPAVED AREA
- ② CAST IRON VALVE BOX AND EXTENSION PER STANDARD DETAIL NO. W-190
- ③ 6" GATE VALVE WITH RESILIENT SEAT (MUELLER, M&H OR APPROVED EQUAL)
- ④ MAINLINE SIZE TEE WITH FLANGE
- ⑤ 6" D.I.P.
- ⑥ MEGALUG

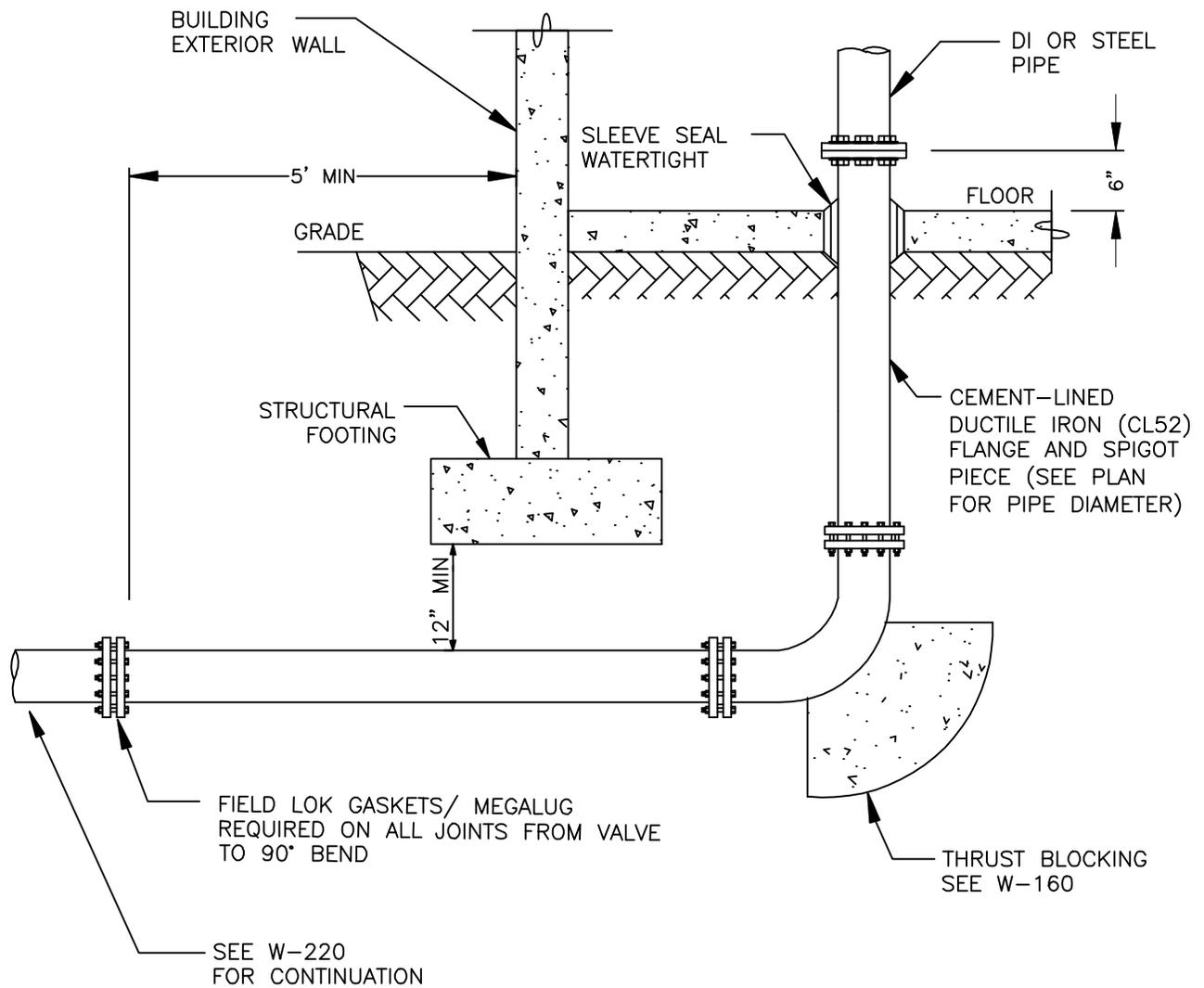


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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

FIRE LINE CONNECTION

STANDARD DETAIL
NUMBER
W-220



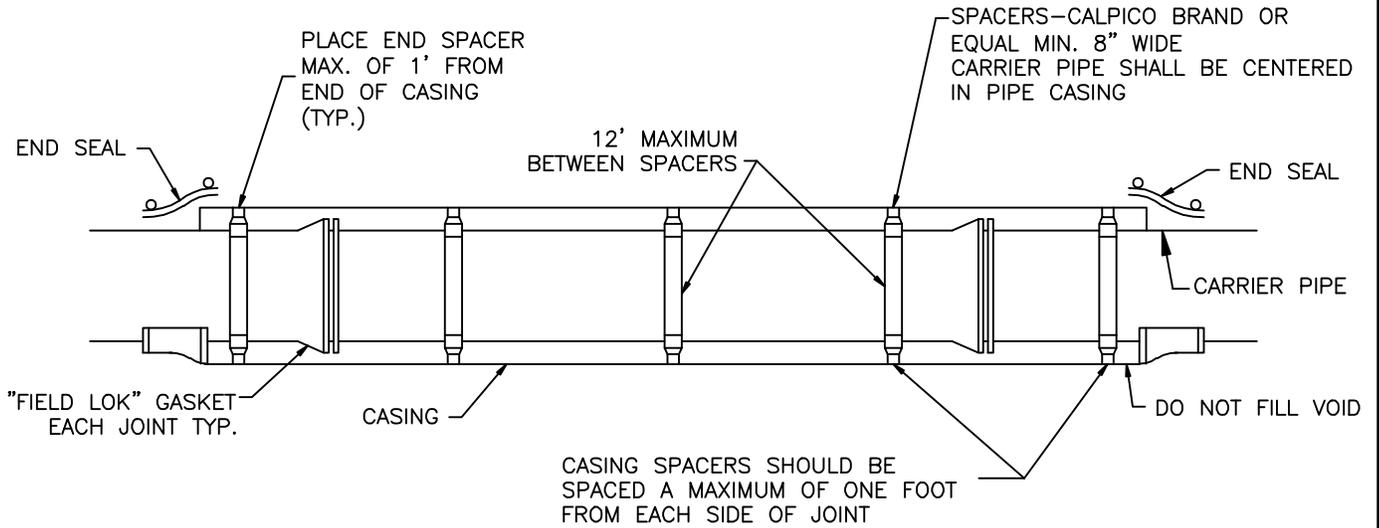
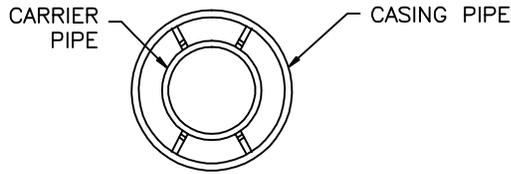
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REF STAD SPEC	

DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

FIRE LINE UNDERGROUND
FLOOR FLANGE DETAIL

STANDARD DETAIL
NUMBER

W-225



CARRIER PIPE DIAMETER	4"	6"	8"	10"	12"
CASING DIAMETER (MJ/MEGALUG JOINT CARRIER PIPE)	14"	16"	18"	20"	22" *
STEEL CASING THICKNESS	0.25"	0.25"	0.25"	0.25"	0.25"
SPACER BAND WIDTH	8"	8"	8"	8"	8"

* USE 24" DUCTILE IRON PIPE

NOTES:

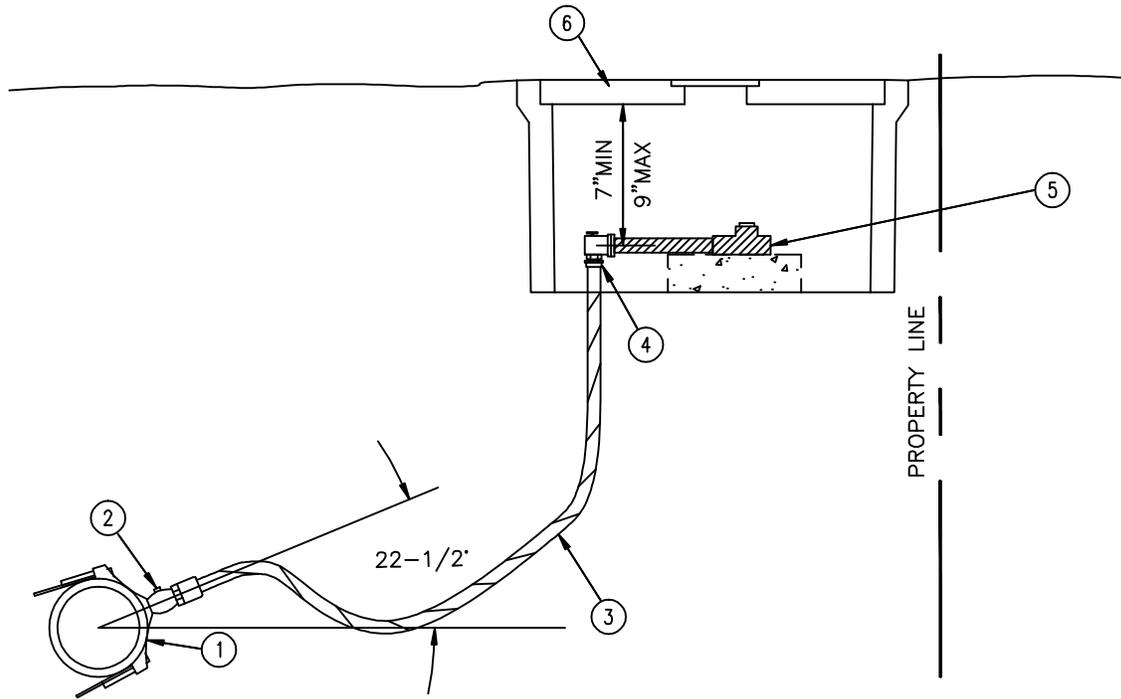
1. ANY VARIATION TO THIS DETAIL SHALL BE REVIEWED AND APPROVED BY CITY ENGINEER.
2. CASING SHALL BE SEALED AT BOTH ENDS.
3. PIPE CASINGS SHALL EXTEND 6 FEET BEYOND THE EDGE OF PAVEMENT. IF THE RIGHT-OF-WAY IS NOT OWNED BY CITY OF ARLINGTON, PIPE CASING SHALL EXTEND 6 FEET BEYOND RIGHT-OF-WAY.



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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
WATER LINE CASING DETAIL

STANDARD DETAIL
 NUMBER
W-230



NOTES:

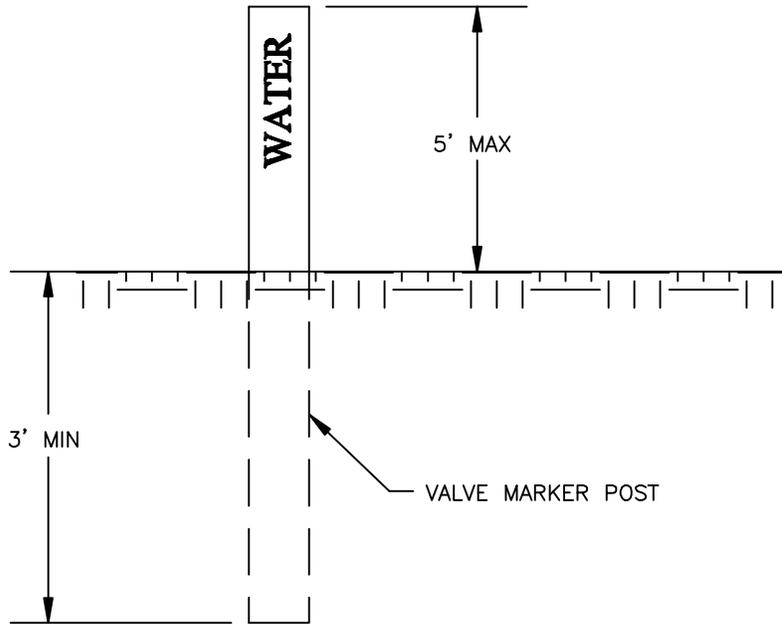
- ① STAINLESS STEEL DOUBLE STRAP SERVICE SADDLE WITH CC THREAD TO BE USED ON ALL MAINS 4" DIAMETER AND LARGER INCLUDING AC MAINS.
- ② CORPORATION STOP, MUELLER OR FORD ONLY, CC x COMPRESSION BALL CORPORATION.
- ③ 1" HDPE CTS SERVICE PIPE (200 PSI RATING). REQUIRES STAINLESS STEEL STIFFENER. #10 TRACER WIRE REQUIRED ON BOTH ENDS.
- ④ 1" COMPRESSION ANGLE METER BALL VALVE X 5/8" METER.
- ⑤ SAMPLING STATION EQUIPMENT TO BE SUPPLIED BY THE DEVELOPER BUT NOT INSTALLED. DELIVER TO CITY OF ARLINGTON UTILITIES DIVISION. THE COMPLETE LIST OF EQUIPMENT COMPONENTS IS AVAILABLE FROM THE CITY OF ARLINGTON UTILITIES DIVISION.
- ⑥ METER BOX SHALL BE MIDSTATES PLASTICS 1324-12 W/READER DI LID.



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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS
 SAMPLING STATION

STANDARD DETAIL
 NUMBER
W-240



NOTES:

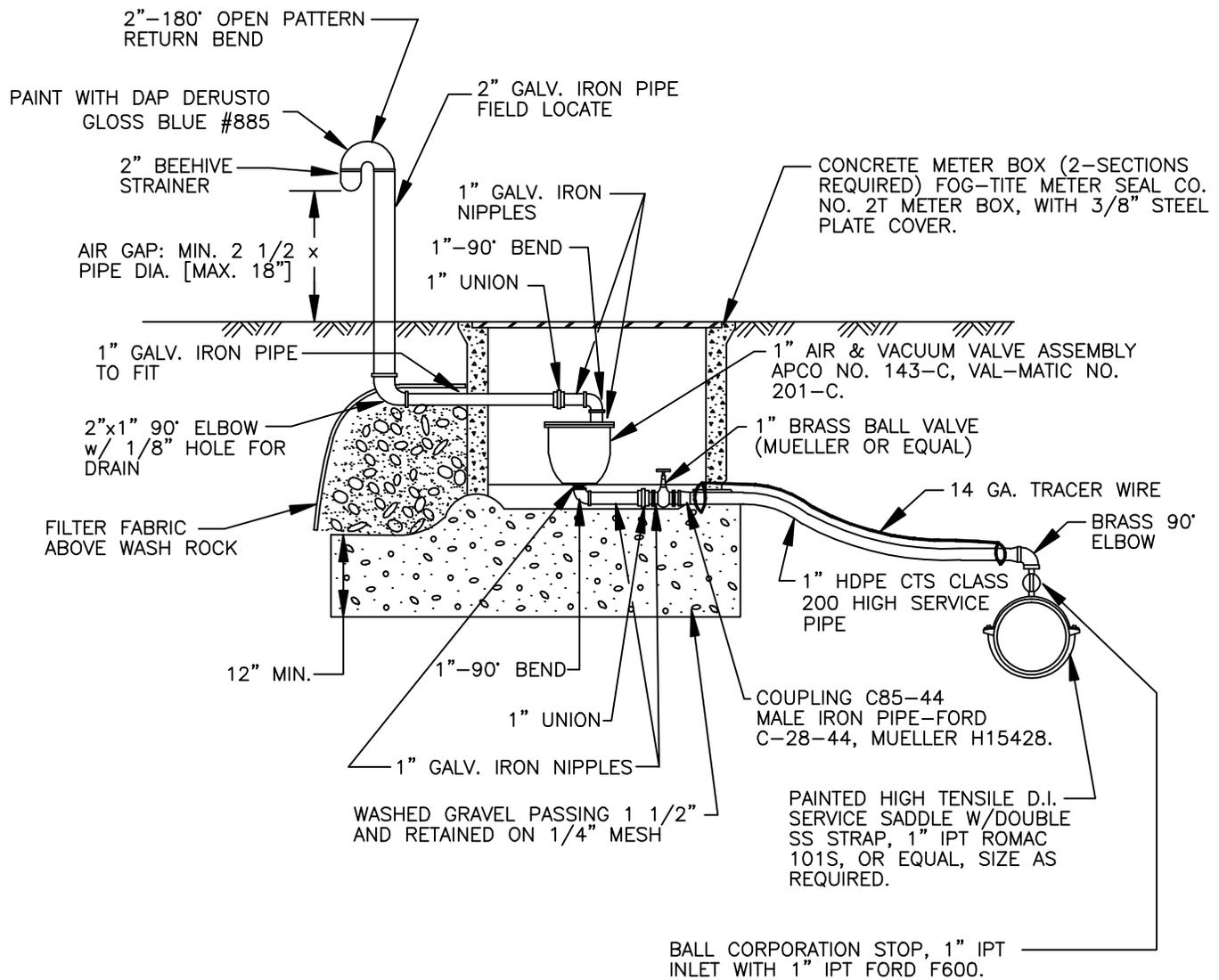
1. CARSONITE PLASTIC POST MARKER, BLUE, LABELED "WATER".
2. VALVE MARKER POSTS SHALL BE INSTALLED FOR ALL VALVES LOCATED IN UNPAVED AREAS. VALVE MARKER POSTS SHALL BE SET AS DIRECTED BY THE PUBLIC WORKS INSPECTOR IN A SAFE AND REASONABLY CONSPICUOUS LOCATION.
3. VALVE MARKER POSTS MAY NOT BE REQUIRED FOR AUXILIARY HYDRANT VALVES.



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DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS
VALVE MARKER POST

STANDARD DETAIL NUMBER W-250



NOTES:

1. ALL FITTINGS TO BE BRASS OR COPPER FROM WATER MAIN TO 1" AIR & VACUUM ASSEMBLY.
2. AIR & VACUUM RELEASE VALVE ASSEMBLY MUST BE INSTALLED AT THE HIGHEST POINT OF THE LINE. IF THE HIGH POINT FALLS IN A LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.



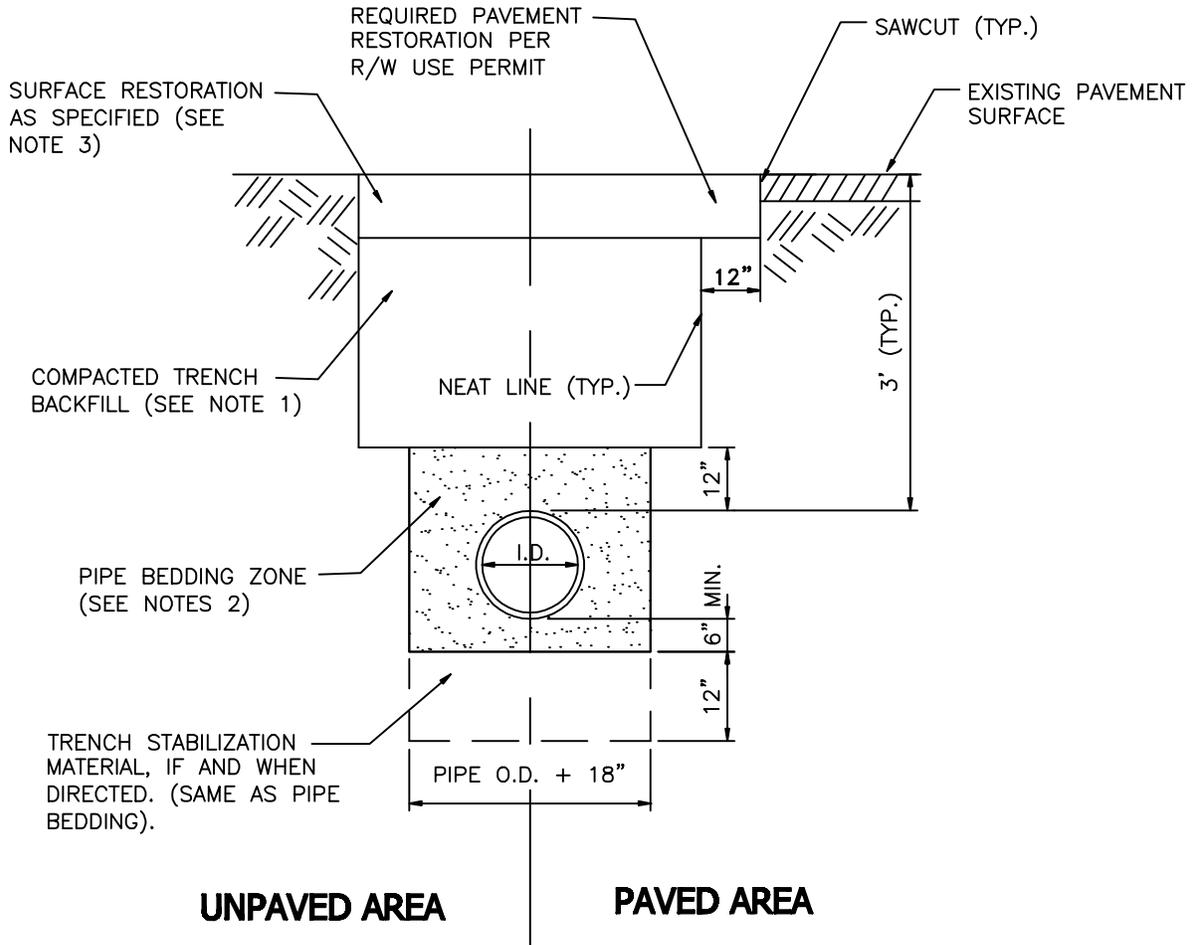
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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

**1" COMBINATION AIR
VALVE ASSEMBLY**

STANDARD DETAIL
NUMBER

W-260



NOTES:

1. TRENCH BACKFILL SHALL BE:
 - * PAVED AREA: GRANULAR BACKFILL AS APPROVED BY LOCAL AGENCY, OR PER WSDOT 9-03.9(3), OR CDF, OR 5/8" MINUS CRUSHED SURFACING, OR APPROVED NATIVE MATERIAL COMPACTED TO 95% OF MAXIMUM DENSITY.
 - * UNPAVED AREA: SELECTED GRANULAR MATERIAL WITH MAXIMUM DIMENSION OF 6" PER WSDOT 9-03.15, COMPACTED TO 90% OF MAXIMUM DENSITY.
2. GRAVEL BACKFILL FOR PIPE ZONE BEDDING SHALL BE SELECTED GRANULAR MATERIAL PER WSDOT 9-03.12(3), WASHED SAND, OR APPROVED SUITABLE EXCAVATED MATERIAL WITH MAXIMUM DIMENSION OF 1-1/2" COMPACTED TO 95% OF MAXIMUM DENSITY BY APPROVED HAND-HELD TOOLS.
3. EXCAVATE FOR THE PIPE BELL TO ENSURE UNIFORM SUPPORT FOR THE PIPE BARREL.
4. UNPAVED AREA SHALL BE RESTORED WITH 4" TOP SOIL, FERTILIZER AND SEED, OR AS SPECIFIED. PAVEMENT RESTORATION SHALL BE DONE PER RIGHT-OF-WAY USE PERMIT, OR AS SPECIFIED.



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DEPARTMENT OF PUBLIC WORKS
STANDARD DETAILS

TYPICAL TRENCH DETAIL

STANDARD DETAIL
 NUMBER
W-270