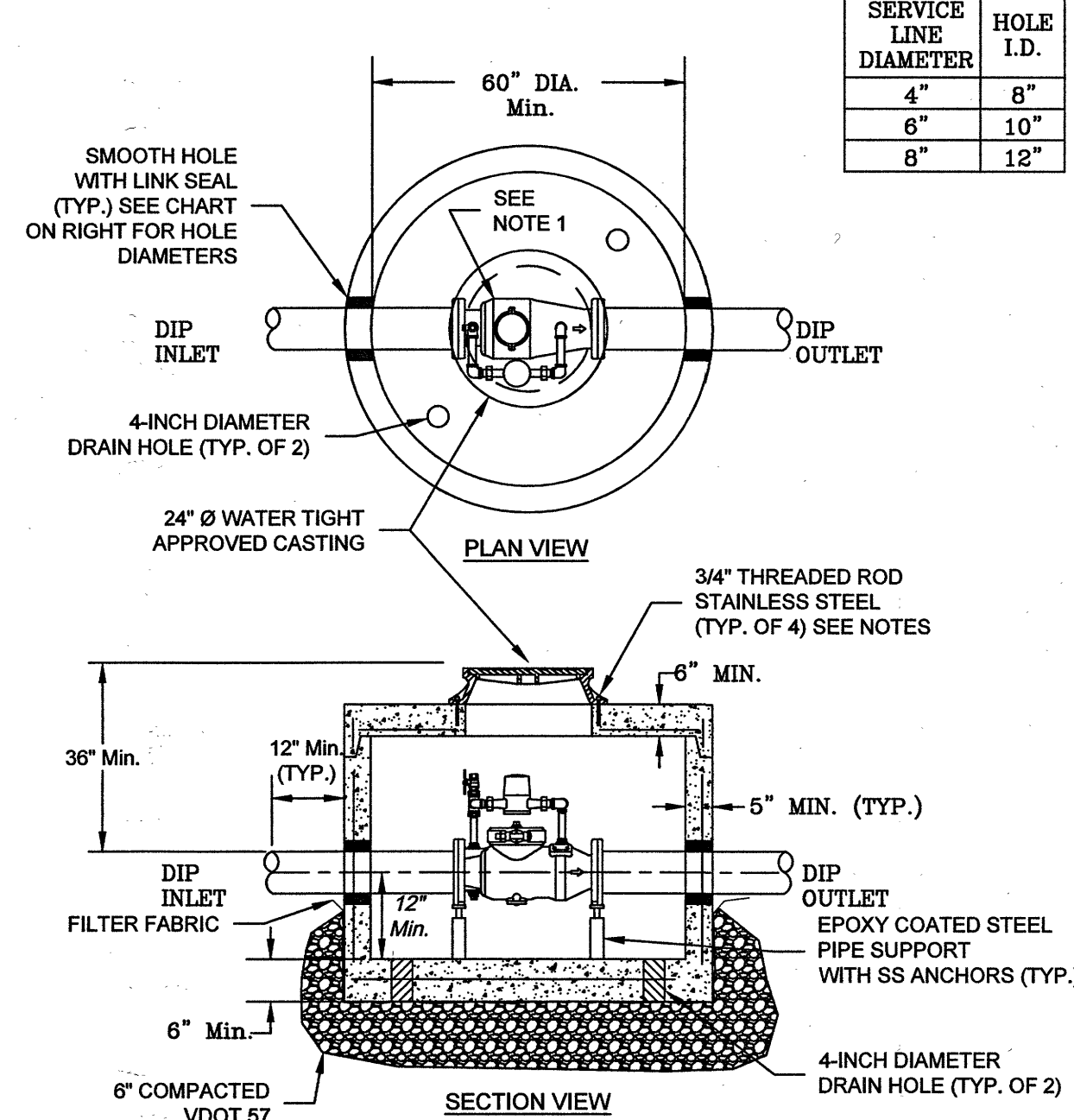


1. SINGLE DETECTOR CHECK VALVE SHALL BE WILKINS MODEL 310 DALM, WATTS ES-SS07F-BP, OR APPROVED EQUAL WITH FLANGED END CONNECTIONS AND BYPASS ASSEMBLY.
2. BYPASS ASSEMBLY SHALL INCLUDE 2 CORPORATION STOPS TO ISOLATE METER.
3. BYPASS METER TO BE SUPPLIED BY OWNER AND INSTALLED BY VENDOR.
4. MANHOLE SECTIONS MUST MEET ASTM C478, AASHTO M-199 REQUIREMENTS.
5. "UNI FLANGE" ADAPTOR FLANGE, OR APPROVED EQUAL, OR FLANGED - PLAIN END PIPING REQUIRED FOR INLET AND OUTLET PIPING.
6. 3/4" THREADED ROD TO BE EMBEDDED A MINIMUM OF 4" INTO CONCRETE AND TO BE FIRMLY SECURED WITH EPOXY.



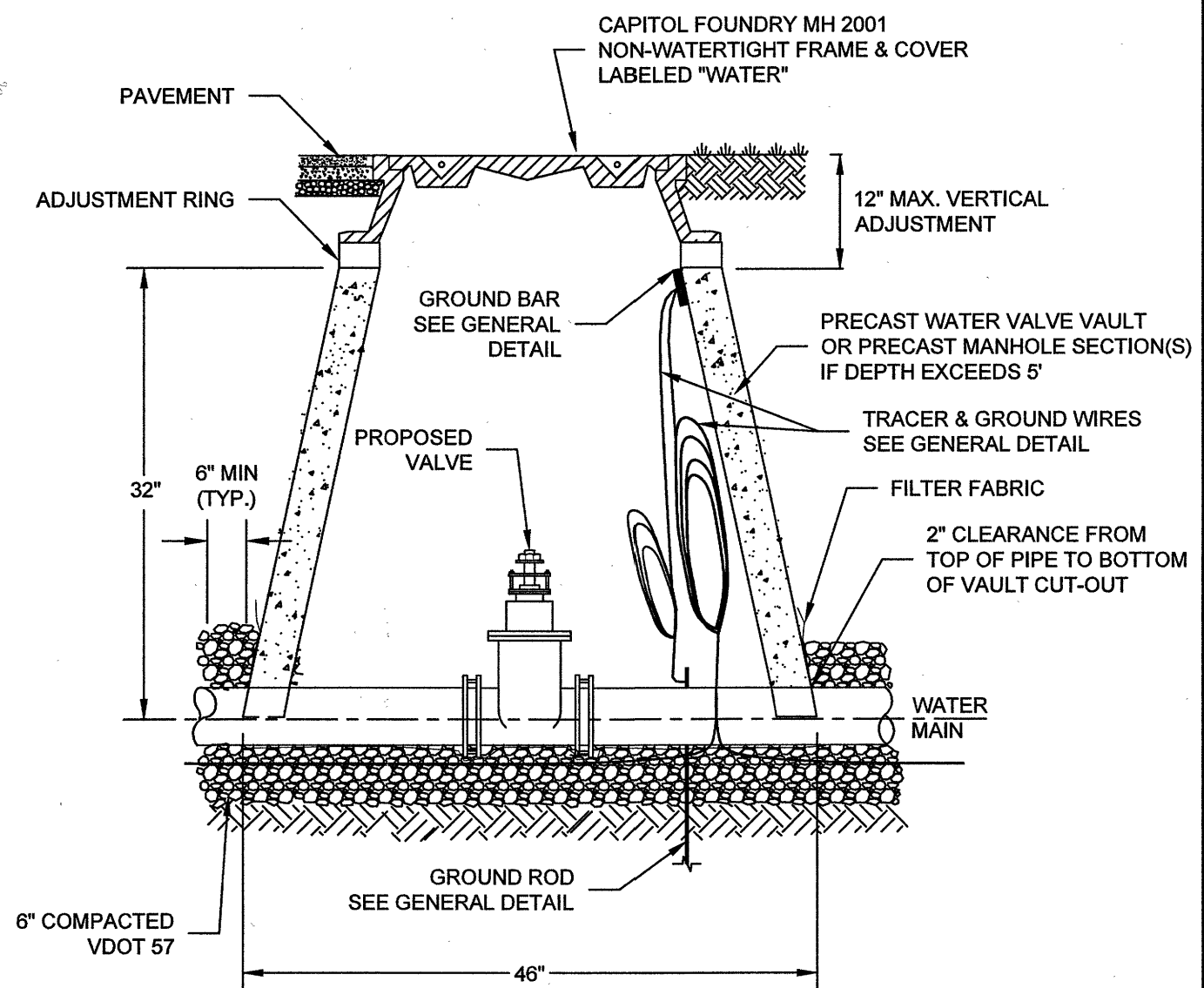
NOTE: CONTRACTOR TO SUBMIT SHOP DRAWINGS OF VAULT TO WWA FOR APPROVAL PRIOR TO CONSTRUCTION.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

FIRE SERVICE VAULT FOR PRIVATE HYDRANT

W-8
 01/01/14

1. FILTER FABRIC TO BE INSTALLED BETWEEN BOTTOM OF PIPE AND STONE BEDDING. FABRIC TO EXTEND VERTICALLY A MINIMUM OF 6" FROM BOTTOM OF VAULT (FULL CIRCUMFERENCE).

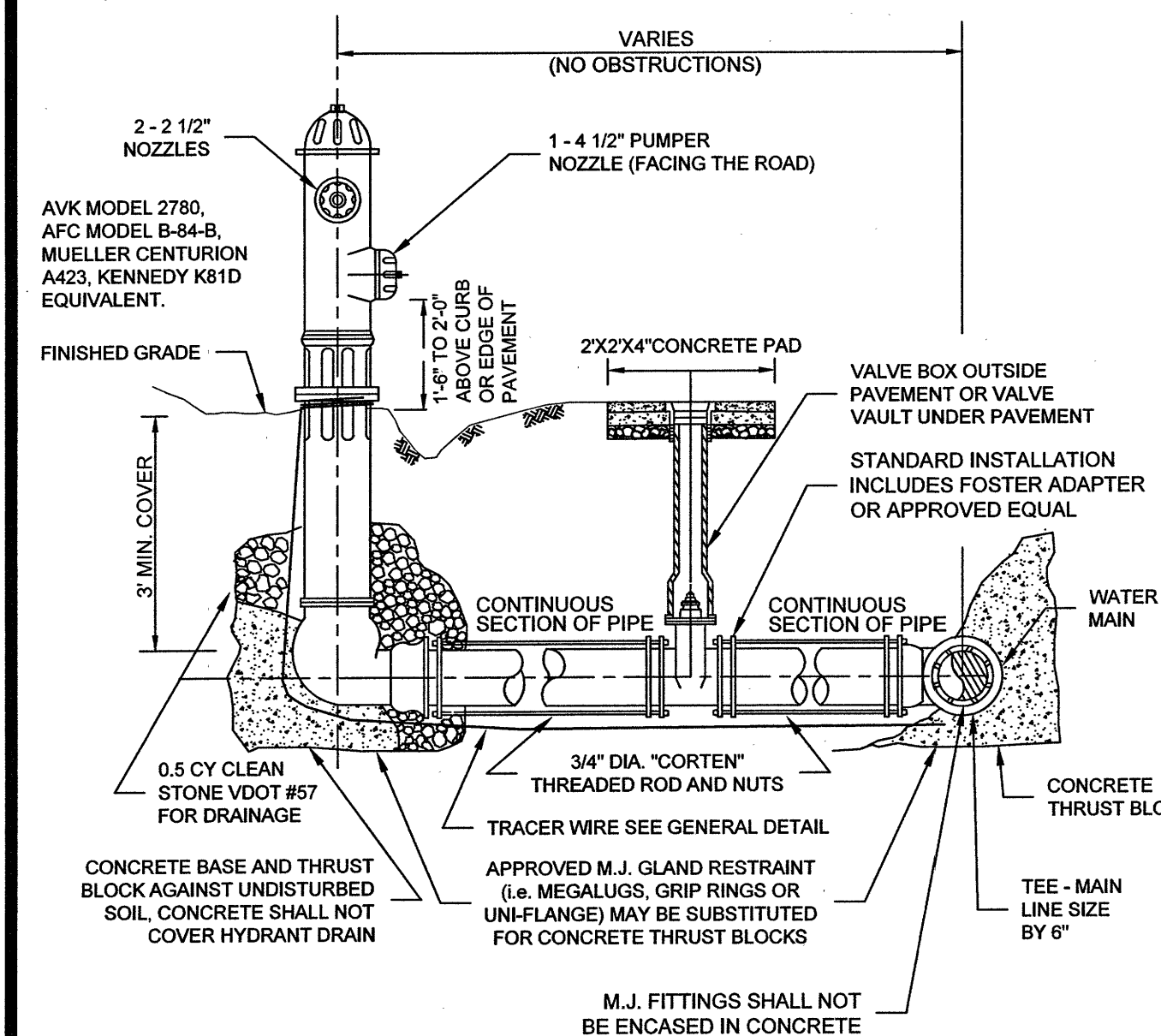


WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

WATER LINE VALVE & VAULT

W-9
 01/01/14

1. PUBLIC HYDRANTS SHALL BE PAINTED SILVER WITH AN OIL-BASED PAINT AND PRIVATE HYDRANTS SHALL BE PAINTED WHITE WITH AN OIL-BASED PAINT.
2. FIRE HYDRANT SHALL BE INSTALLED 2' MIN. AND 4' MAX. FROM BACK OF CURB OR 6' MIN. AND 12' MAX. FROM EDGE OF PAVEMENT WHEN CURB IS NOT PRESENT. FIRE HYDRANT TO BE INSTALLED WITHIN RIGHT-OF-WAY OR EASEMENT LINE.
3. AREA AROUND HYDRANT AT A RADIUS OF 4' TO BE LEVEL AND UNOBSTRUCTED.
4. WATERPROOF BAGS OR OUT OF SERVICE RINGS SHALL BE PLACED OVER ALL NEWLY INSTALLED FIRE HYDRANTS.
5. HIGH PRESSURE (OVER 120 PSI) REQUIRES THE USE OF ALL 3 RESTRAINTS.
6. IF DURING CONSTRUCTION THE SEASONAL WATER LEVEL IS NOTED TO BE ABOVE THE DRAIN OUTLETS OF THE PROPOSED HYDRANT, THE PARTICIPATING UTILITY WILL BE NOTIFIED IMMEDIATELY SO THAT THE HYDRANT CAN BE RELOCATED TO A SUITABLE LOCATION, OMITTED, OR THE DRAIN HOLE PLUGGED.
7. TWO WRAPS OF TRACER WIRE SHALL BE WRAPPED AROUND BASE OF HYDRANT.
8. APPROVED MODELS - AVK MODEL 2780, AFC MODEL B-84-B, MUELLER CENTURION A423, KENNEDY K81D EQUIVALENT.

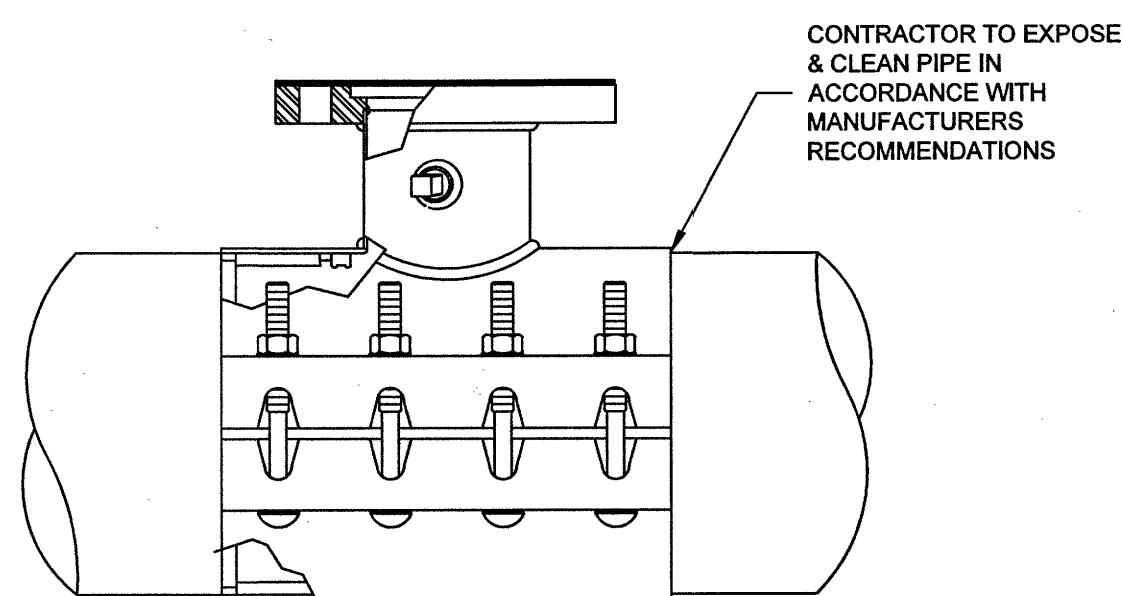


WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

FIRE HYDRANT ASSEMBLY

01/01/14

1. TAPPING SLEEVE SHALL BE POWERSEAL MODEL 3490 TYPE 304 STAINLESS STEEL WITH CARBON STEEL FLANGE, ROMAC'S MODEL SST III, FORD MODEL FTSS WITH CARBON STEEL FLANGE OR APPROVED EQUIVALENT. SLEEVE SHALL BE RATED AT 100 PSI OVER WORKING PRESSURE AND MUST HAVE A TEST PLUG.
2. TAPPING VALVE SHALL BE AVK RESILIENT SEATED GATE VALVE SERIES 25 MJFL OR MUELLER T-2360 RESILIENT WEDGE TAPPING VALVE WITH MJFL. VALVE SHALL BE RATED AT 250 PSI.
3. TAPPING SLEEVE AND VALVE SHALL BE FULL PORT TO ACCEPT FULL SIZE SHELL CUTTER.
4. STEEL FLANGE SHALL MEET AWWA C207.
5. SIZE-ON-SIZE TAPPING NOT ALLOWED UNLESS APPROVED BY PARTICIPATING UTILITY.



WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

TAPPING SLEEVE AND VALVE

01/01/14

INSTALLATION OF DUCTILE IRON WATER MAINS
 TABLE 3 AWWA C600-05
 Maximum Joint Deflection Full Length of Pipe - Push on Type Joint

Nominal Pipe Size (inches)	Deflection Angle - θ (degree)	Maximum Offset - S* (Inches)		Approximate Radius of Curve - R* (Feet)	
		Joint Length 18-Feet	Joint Length 20-Feet	Joint Length 18-Feet	Joint Length 20-Feet
3	5°	19	21	205	230
4	5°	19	21	205	230
6	5°	19	21	205	230
8	5°	19	21	205	230
10	5°	19	21	205	230
12	5°	19	21	205	230
14	3°	11	12	340	380
16	3°	11	12	340	380
18	3°	11	12	340	380
20	3°	11	12	340	380
24	3°	11	12	340	380
30	3°	11	12	340	380

* SEE FIGURE 4.
 For 14-inch and larger push-on joints, maximum deflection angle may be larger than shown above. Consult the manufacturer.

INSTALLATION OF DUCTILE IRON WATER MAINS
 TABLE 4 AWWA C600-05
 Maximum Joint Deflection Full Length of Pipe - Mechanical Joint Pipe

Nominal Pipe Size (inches)	Deflection Angle - θ (degree)	Maximum Offset - S* (Inches)		Approximate Radius of Curve - R* (Feet)	
		Joint Length 18-Feet	Joint Length 20-Feet	Joint Length 18-Feet	Joint Length 20-Feet
3	8°-18"	31	35	125	140
4	8°-18"	31	35	125	140
6	7°-07"	27	30	145	160
8	5°-21"	20	22	195	220
10	5°-21"	20	22	195	220
12	5°-21"	20	22	195	220
14	3°-35"	13.5	15	285	320
16	3°-35"	13.5	15	285	320
18	3°-00"	11	12	340	380
20	3°-00"	11	12	340	380
24	2°-23"	9	10	450	500

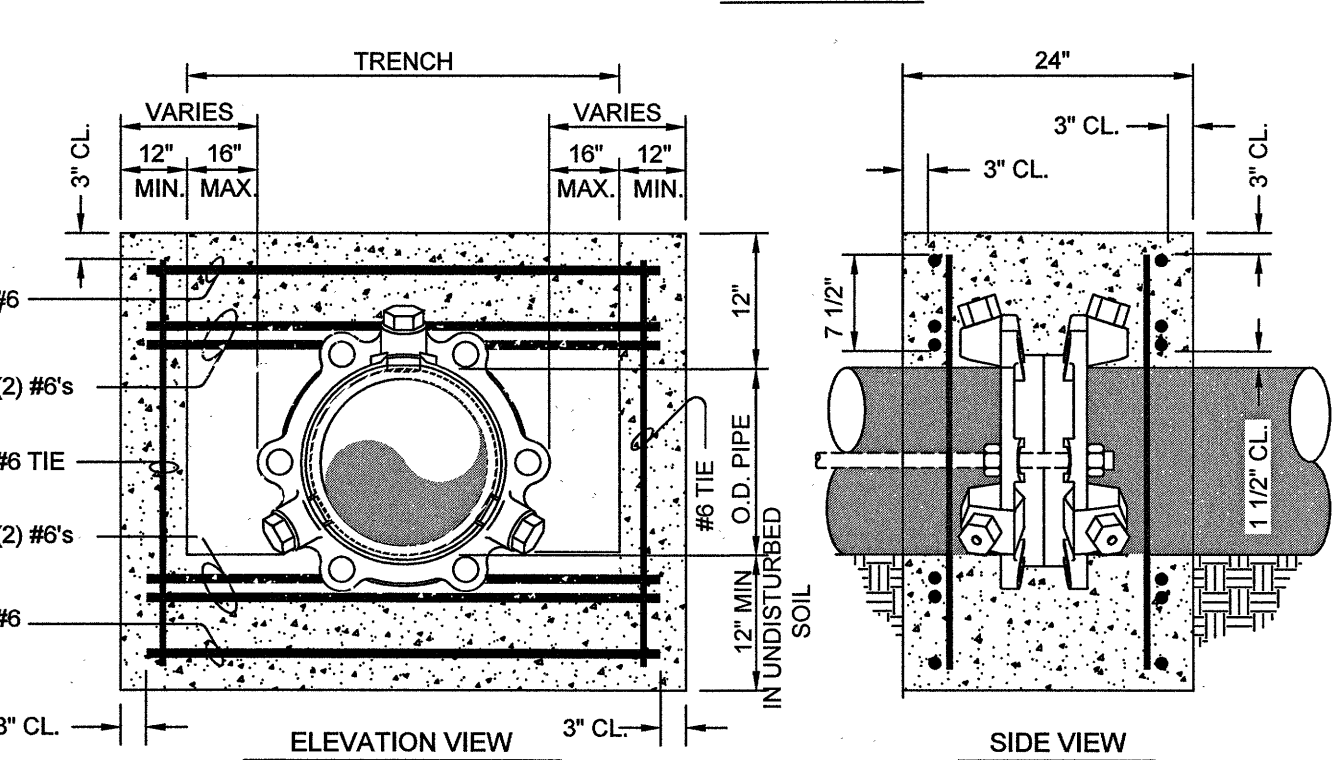
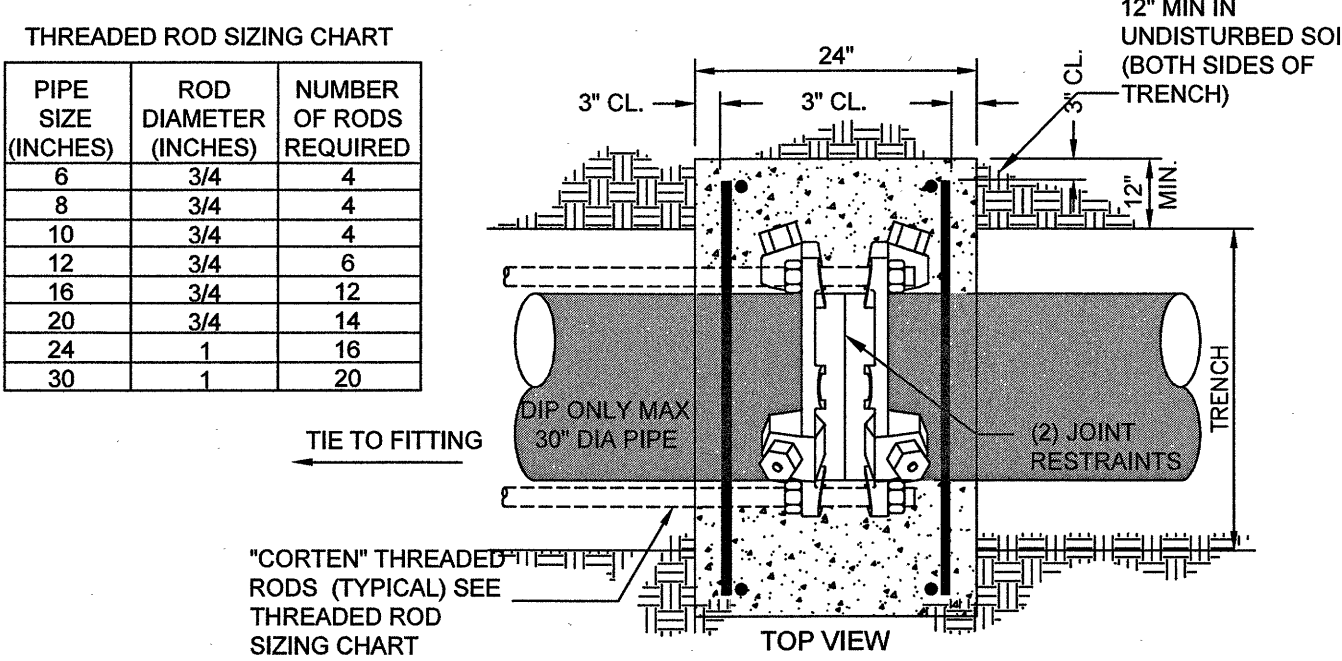
* SEE FIGURE 4.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

DUCTILE IRON WATER MAINS

01/01/14

1. CONCRETE SHALL BE 3000 P.S.I. READY MIX CONCRETE.
2. REINFORCING BARS SHALL BE DEFORMED, AND TIED TOGETHER.
3. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST COLLAR INSTALLATION SHALL BE THE MINIMUM WIDTH.
4. BACKFILL AND COMPACT IN 6" LAYERS.
5. PLACE THRUST COLLAR ON ONE FULL JOINT OF PIPE.
6. LAST JOINT OF PIPE WITH THRUST COLLAR TO BE MECHANICAL JOINT PIPE.
7. PLACE RESTRAINED JOINT THRUST RING 4' FROM FITTING END OF PIPE.
8. FORMS SHALL BE USED WHEN PLACING CONCRETE TO PREVENT CONCRETE FROM INFILTRATING JOINTS.
9. ALLOW MINIMUM OF 3 DAYS FOR CONCRETE TO OBTAIN STRENGTH BEFORE WATERLINE BECOMES ACTIVE.
10. JOINT RESTRAINTS SHALL BE INSTALLED LIP TO LIP AND WRAPPED WITH POLYETHYLENE TO PREVENT CONCRETE INTRUSION INTO WEDGE POCKET.



WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

THRUST COLLAR DETAIL

SEP 09 2014

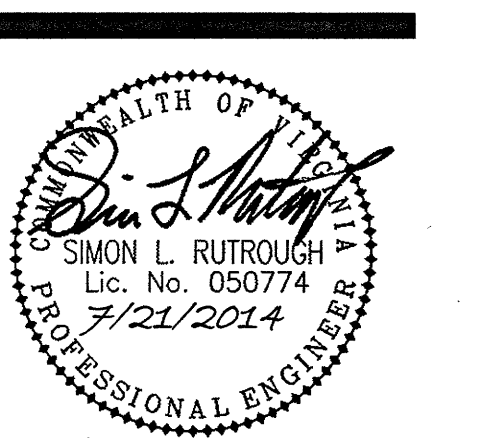
01/01/14

parker
 DESIGN GROUP

816 Boulevard
 Salem, VA 24153
 PH: 540-387-1153
 1915 W. Cary Street
 Richmond, VA 23220
 PH: 804-358-2947
 FAX: 804-359-5767

www.parkerdg.com

These documents are the property of Parker Design Group (PDG) and may not be reproduced or used without the express permission of PDG. Any reuse of these documents without authorization of PDG will be at the sole risk of the individual or entity utilizing said documents.



Berkley Self Storage Expansions Prepared for
Front Street Investments, LLC
 City of Roanoke, VA

REVISIONS:

NO.	DATE	DESCRIPTION
1	21 July 2014	Per City Comments

DESIGNED BY: SRB/SLR

DRAWN BY: SRB/SLR

CHECKED BY: SLR

SCALE: As Shown

DATE: May 20, 2014

SHEET TITLE:

Waterline Profiles and Details

C08
 08 OF 09
 PROJECT NUMBER:
 10-0041-01