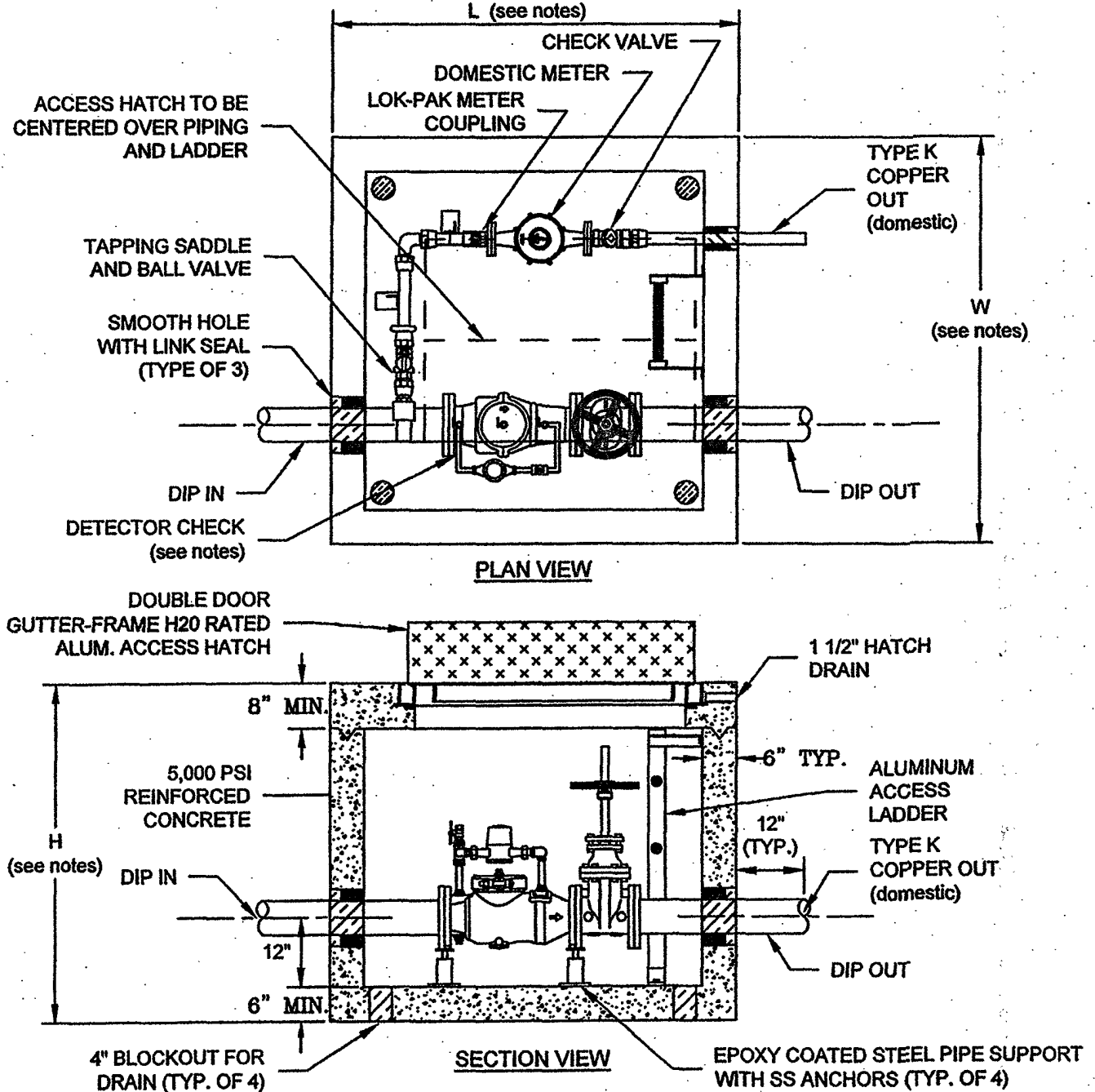


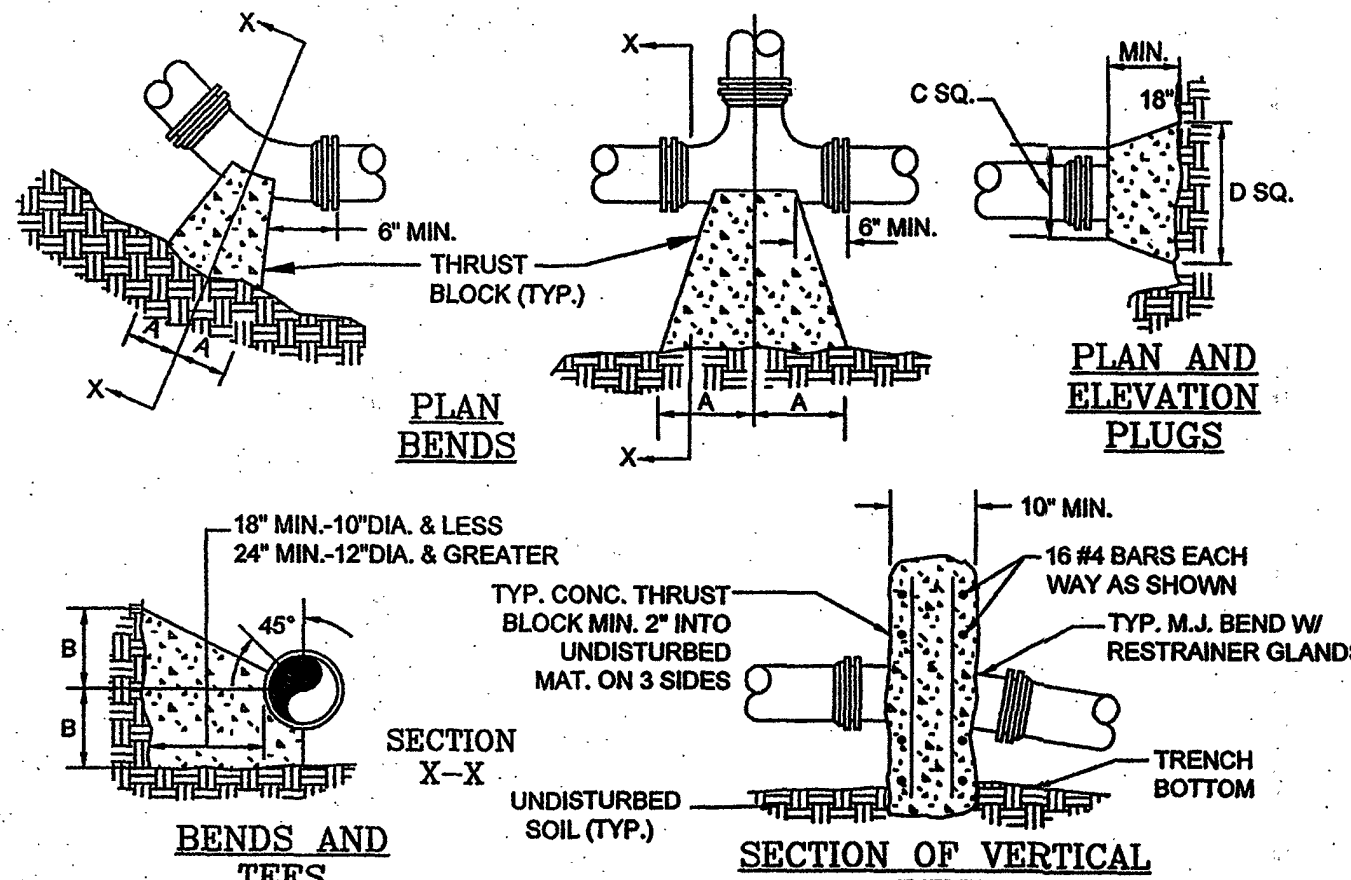
- FOR 6" FIRE LINE, EXTERIOR VAULT DIMENSIONS SHALL BE (L x W x H) 6' 6" x 6' 6" x 5' WITH DOMESTIC TAP MADE INSIDE VAULT AS SHOWN BELOW.
- FOR 8" FIRE LINE EXTERIOR VAULT DIMENSIONS SHALL BE (L x W x H) 6' 6" x 6' 6" x 5' WITH DOMESTIC TAP MADE OUTSIDE VAULT. BALL VALVE WITH LOCKING TABS SHALL BE PROVIDED INSIDE VAULT TO ALLOW FOR ISOLATION OF DOMESTIC METER.
- SINGLE DETECTOR CHECK VALVE SHALL BE WILKINS 310 DLM, WATTS ES-S807F, BP, OR APPROVED EQUAL WITH FLANGED END CONNECTIONS, BYPASS ASSEMBLY, AND ONE OS&Y GATE VALVE.
- DOMESTIC SHALL BE TYPE K COPPER WITH GRIP JOINT FITTINGS, BALL VALVE AT TAPPING SADDLE (WITH LOCKING TABS) AND CHECK VALVE ON OUTLET.
- DOMESTIC METER TO BE SUPPLIED BY OWNER AND INSTALLED BY VENDOR.
- "UNI FLANGE" ADAPTOR FLANGE, OR APPROVED EQUAL, OR FLANGED - PLAIN END PIPING REQUIRED FOR INLET AND OUTLET PIPING.
- VAULT TO BE INSTALLED ON MIN. 6" COMPACTED VDOT #57 STONE WITH FILTER FABRIC PLACED BETWEEN BOTTOM OF VAULT AND STONE BEDDING. FILTER FABRIC TO EXTEND VERTICALLY A MINIMUM OF 6" ON ALL FOUR SIDES OF VAULT.



WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

COMMERCIAL METER VAULT

W-7



- NOTES**
- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4\"/>

PRESSURE = 200psi
BEARING = 2000psi
FACTOR OF SAFETY = 1.5

PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE	PLUG
4"	8"	12"	8"	8"	8"	8"
6"	12"	18"	12"	12"	12"	12"
8"	18"	24"	18"	18"	18"	18"
10"	24"	30"	24"	24"	24"	24"
12"	30"	36"	30"	30"	30"	30"
14"	36"	42"	36"	36"	36"	36"
16"	42"	48"	42"	42"	42"	42"
18"	48"	54"	48"	48"	48"	48"
20"	54"	60"	54"	54"	54"	54"
24"	60"	72"	60"	60"	60"	60"
30"	72"	84"	72"	72"	72"	72"

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

THRUST BLOCK REQUIREMENTS

W-18

FACTOR OF SAFETY = 1.5

PIPE SIZE	PIPE MATL.	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE /PLUG	TEE BRANCH	REDUCER (NOTE 2)	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°
6"	D.I.	28'	12'	6'	3'	38'	34'	20'	23'	11'	5'
8"	D.I.	37'	15'	7'	4'	51'	47'	21'	30'	15'	7'
10"	D.I.	45'	19'	9'	4'	61'	57'	20'	37'	18'	9'
12"	D.I.	53'	22'	11'	5'	73'	69'	38'	43'	21'	10'
6"	PVC	30'	12'	6'	3'	56'	38'	29'	35'	17'	8'
8"	PVC	40'	16'	8'	4'	74'	56'	31'	46'	22'	11'
10"	PVC	47'	20'	9'	5'	89'	82'	30'	56'	27'	13'
12"	PVC	56'	23'	11'	6'	106'	88'	59'	66'	32'	16'

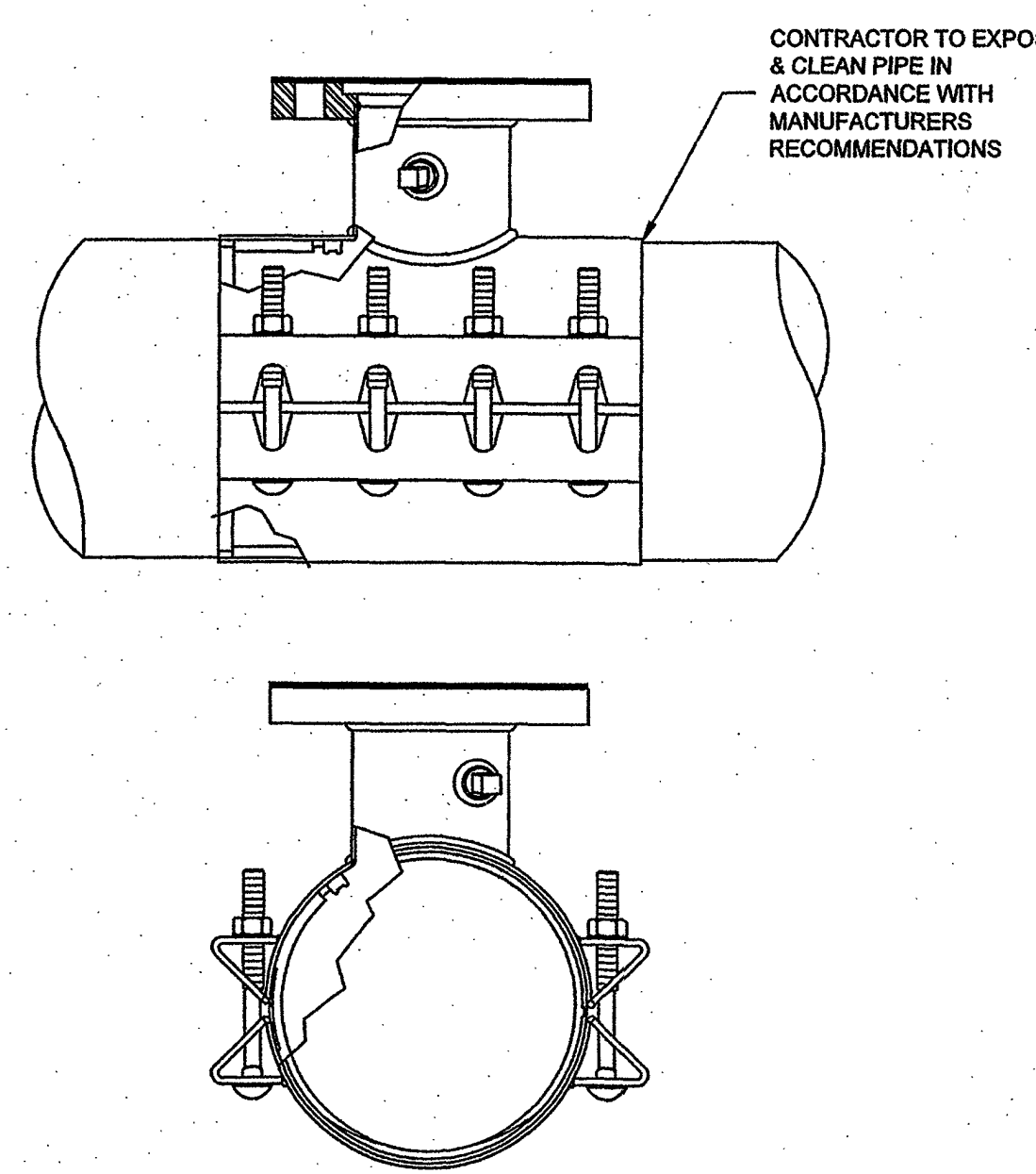
- ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING AND DOCUMENTED BY THE INSPECTOR FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
- REDUCER IS ONE SIZE SMALLER THAN PIPE LISTED. RESTRAINED LENGTH IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.
- IF UNDER 100 PSI WORKING PRESSURE, RESTRAINED JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 100 PSI WORKING PRESSURE, BOTH THRUST BLOCK AND RESTRAINED JOINTS SHALL BE USED.
- FOR RESTRAINED JOINT PIPING REQUIREMENTS AT FITTING R.J. PVC AND R.J. DIP MAY BE USED INTERCHANGEABLY.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS

W-19

- TAPPING SLEEVE SHALL BE POWERSEAL MODEL 3480 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.
- 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.
- TAPPING SLEEVE AND VALVE SHALL BE FULL PORT TO ACCEPT FULL SIZE SHELL CUTTER.
- STEEL FLANGE SHALL MEET AWWA C207.
- SIZE-ON-SIZE TAPPING NOT ALLOWED UNLESS APPROVED BY PARTICIPATING UTILITY.



WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

TAPPING SLEEVE AND VALVE

W-21

INSTALLATION OF DUCTILE IRON WATER MAINS
TABLE 3 AWWA C900-05
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" Produced by Succession of Joints	
		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 C900-05
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" Produced by Succession of Joints	
		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.

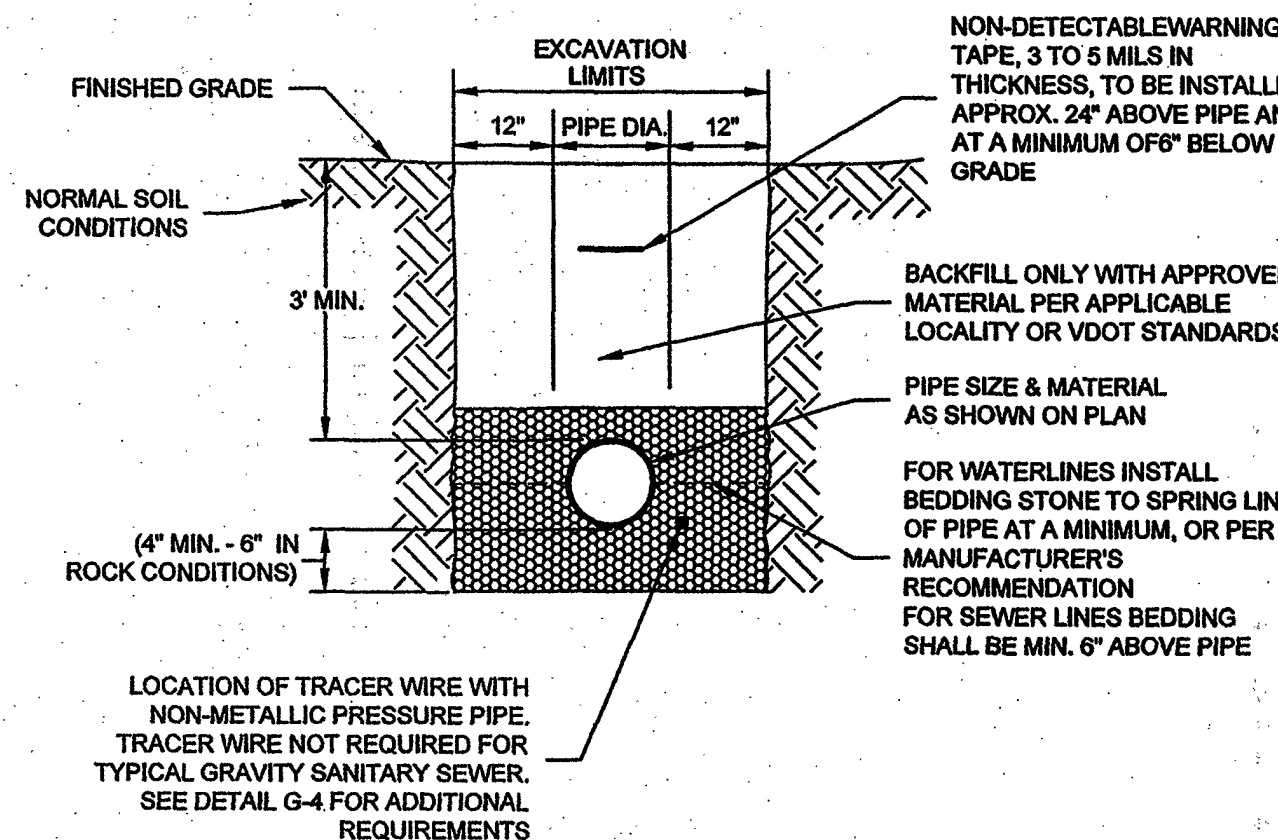
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

DUCTILE IRON PIPE DEFLECTION ALLOWANCE TABLES

01/01/14

W-22

- BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THIS DETAIL AND MANUFACTURER'S RECOMMENDATION.
- ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #57 OR #58 STONE, OR CRUSHER RUN.
- IN AREAS SUBJECT TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS FROM BOTTOM OF TRENCH TO 1" ABOVE THE PIPE AND THE REMAINING SHALL BE PLACED IN 10" LIFTS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
- BEDDING REQUIREMENTS FOR DUCTILE IRON WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.
- ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."
- THE TRACER WIRE SHALL BE PLACED ALONG THE LOWER QUADRANT OF THE PIPE. THE WIRE SHALL NOT TOUCH THE PIPE, BUT SHALL BE A MAXIMUM OF 6" FROM THE PIPE. NON-METALLIC SPACERS MAY BE USED TO MAINTAIN A SET DISTANCE FROM THE UTILITY.



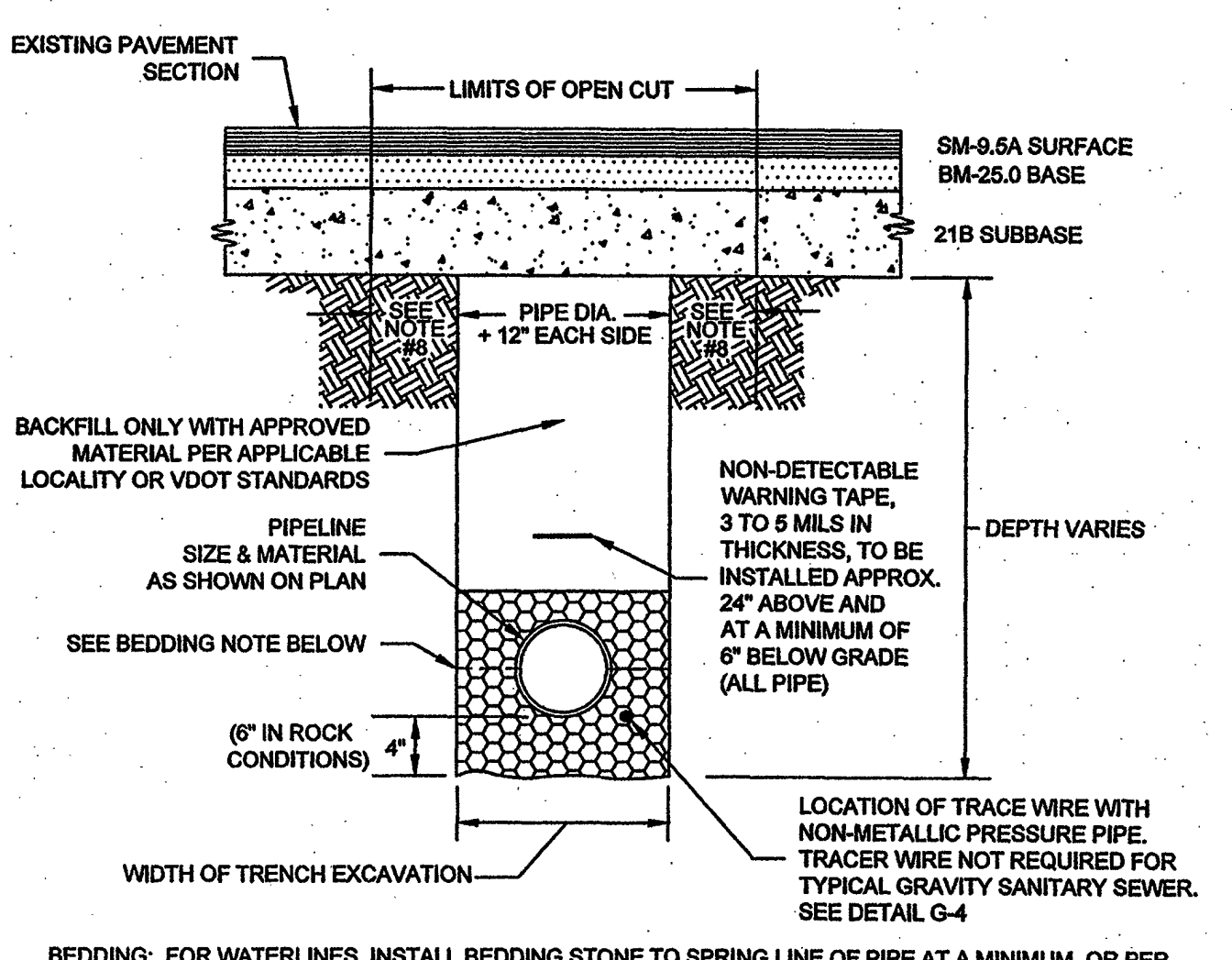
WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS

01/01/14

G-11

- BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THIS DETAIL AND MANUFACTURER'S RECOMMENDATION.
- ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #57 OR #58 STONE.
- IN VDOT ROW, THE CONTRACTOR SHALL REPLACE THE OPEN CUT WITH A MINIMUM TOP COURSE OF 15" (MINIMUM) VDOT SM-9.5A, BASE COURSE OF 6" VDOT BM-25.0, AND SUBBASE OF 10" VDOT 21B, OR AS REQUIRED BY VDOT. IN ROANOKE CITY, CONTRACTOR SHALL REPLACE PAVEMENT AS REQUIRED BY CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS, LATEST EDITION.
- ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED BY VDOT OR APPLICABLE LOCALITY.
- PRIOR TO CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM VDOT AND/OR APPLICABLE LOCALITY.
- IN AREAS SUBJECT TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN 6" LIFTS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 698.
- ALL SEWER LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING REQUIREMENTS FOR DUCTILE SEWER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA. BENCH CUT ON EACH SIDE OF PAVEMENT: CITY OF ROANOKE = 12"; VDOT RIGHT-OF-WAY = 6".
- ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."
- THE TRACER WIRE SHALL BE PLACED ALONG THE LOWER QUADRANT OF THE PIPE. THE WIRE SHALL NOT TOUCH THE PIPE, BUT SHALL BE A MAXIMUM OF 6" FROM THE PIPE. NON-METALLIC SPACERS MAY BE USED TO MAINTAIN A SET DISTANCE FROM THE UTILITY.

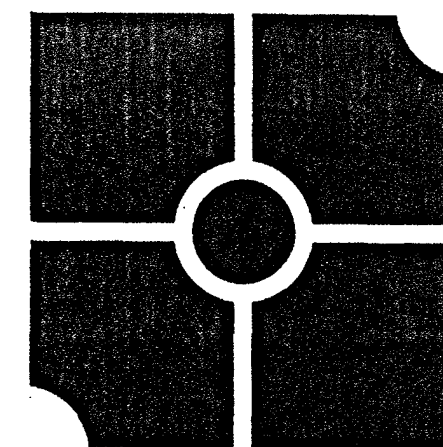


WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL

BEDDING AND BACKFILL UNDER PAVEMENT AND IN RIGHT-OF-WAY

01/01/14

G-12



parker
DESIGN GROUP

ENGINEERS • SURVEYORS • PLANNERS • LANDSCAPE ARCHITECTS

816 Boulevard 1915 W. Cary Street
Salem, VA 24153 Richmond, VA 23220
Ph: 540-387-1152 Phone: 804-358-2947
Fax: 540-389-5747 Fax: 804-359-9645

www.parkerdug.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 the sole risk of the individual or entity utilizing said documents.



CrossPointe Church
Prepared for FHBC
Tax #0280013500
Franklin County, VA

REVISIONS:
08 September 2014
Per County & VDOT Comments
13 October 2014

DESIGNED BY: SLR

DRAWN BY: SLR

CHECKED BY: SLR

SCALE: 1"=40'

DATE: 23 June 2014

SHEET TITLE:

Water Details

C10

10 OF 13

PROJECT NUMBER:

14-0053-03