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

		Maximum Offset – S* (Inches)		Approximate Radius of Curve – R* Produced by Succession of Joints	
Nominal Pipe Size (inches)	Deflection Angle – θ (degree)	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

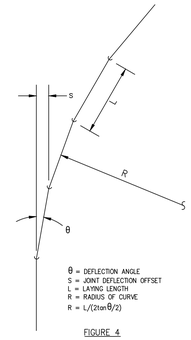
* SEE FIGURE 4.

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

		Maximum Offset – S* (Inches)		Approximate Radius of Curve – R* Produced by Succession of Joints	
Nominal Pipe Size (inches)	Deflection Angle – θ (degree)	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.



θ = DEFLECTION ANGLE
S = JOINT DEFLECTION OFFSET
L = LAYING LENGTH
R = RADIUS OF CURVE
R = L/(2tanθ/2)

FIGURE 4

WESTERN VIRGINIA REGIONAL – CONSTRUCTION DETAIL

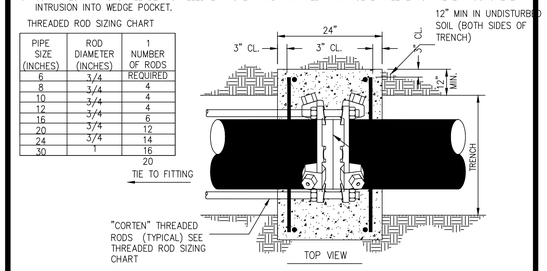
DUCTILE IRON PIPE
DEFLECTION ALLOWANCE TABLES

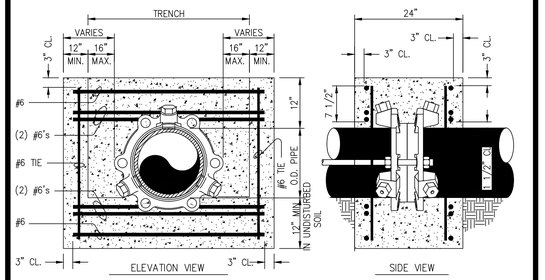
01/01/14 W–22

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.

THREADED ROD SIZING CHART

PIPE SIZE (INCHES)	ROD DIAMETER (INCHES)	NUMBER OF RODS REQUIRED
6	3/4	1
8	3/4	4
10	3/4	4
12	3/4	4
16	3/4	6
20	3/4	12
24	3/4	14
30	1	16
		20





WESTERN VIRGINIA REGIONAL – CONSTRUCTION DETAIL

THRUST COLLAR DETAIL

01/01/14 W–23

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR A SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 PIPE DIAMETER (IN)	2 MINIMUM TIME (MIN:SEC)	3 LENGTH FOR MINIMUM TIME (FT)	4 TIME FOR LONGER LENGTH (SEC)	SPECIFICATION TIME FOR LENGTH (L) SHOWN (MIN:SEC)							
				100 FT	150 FT	200 FT	250 FT	300 FT	350 FT	400FT	450 FT
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19;50	114	10.470 L	19;50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28.51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28;20	80	21.366 L	35.37	53:25	71:13	89:02	106:50	124:38	142:26	160.15
33	31:10	72	25.852 L	43.05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00	66	30.768 L	51.17	76:55	102:34	128:12	153:50	179:29	205:07	230:46
42	39:48	57	41.883 L	69.48	104:42	139:37	174:30	209:24	244:19	279:13	314:07
48	45:34	50	54.705 L	91.10	136:45	182:21	227:55	273:31	319:06	364:42	410:17
54	51:02	44	69.236 L	115.24	173:05	230:47	288:29	346:11	403:53	461:34	519:16
60	56:40	40	85.476 L	142.28	213:41	284:55	356:09	427:23	498:37	569:50	641:04

UNI–B–6–98

NOTE: IF THERE HAS BEEN NO LEAKAGE (ZERO PSIG DROP) AFTER ONE HOUR OF TESTING, THE TEST SHALL BE ACCEPTED AND THE TEST COMPLETE.

WESTERN VIRGINIA REGIONAL – CONSTRUCTION DETAIL

LOW–PRESSURE AIR TESTING TABLE

01/01/14 S–18

CONTINENTAL OF VIRGINIA
WM. THOMAS AUSTIN
Lic. No. 030907
3/2/21
PROFESSIONAL ENGINEER

Revisions	Date

Issue Date: MARCH 2, 2021
Drawn By: ARB
Designed By: ARB
Checked By: WTA
Date: 3/2/21

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MELROSE AVE. STREETSCAPE IMPROVEMENTS – 22ND TO 24TH ST.

SANITARY SEWER AND WATER DETAILS

ROANOKE, VIRGINIA

Vertical Scale: N/A
Horizontal Scale: N/A
Commission Number: 4049
Sheet No.: C4.10

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