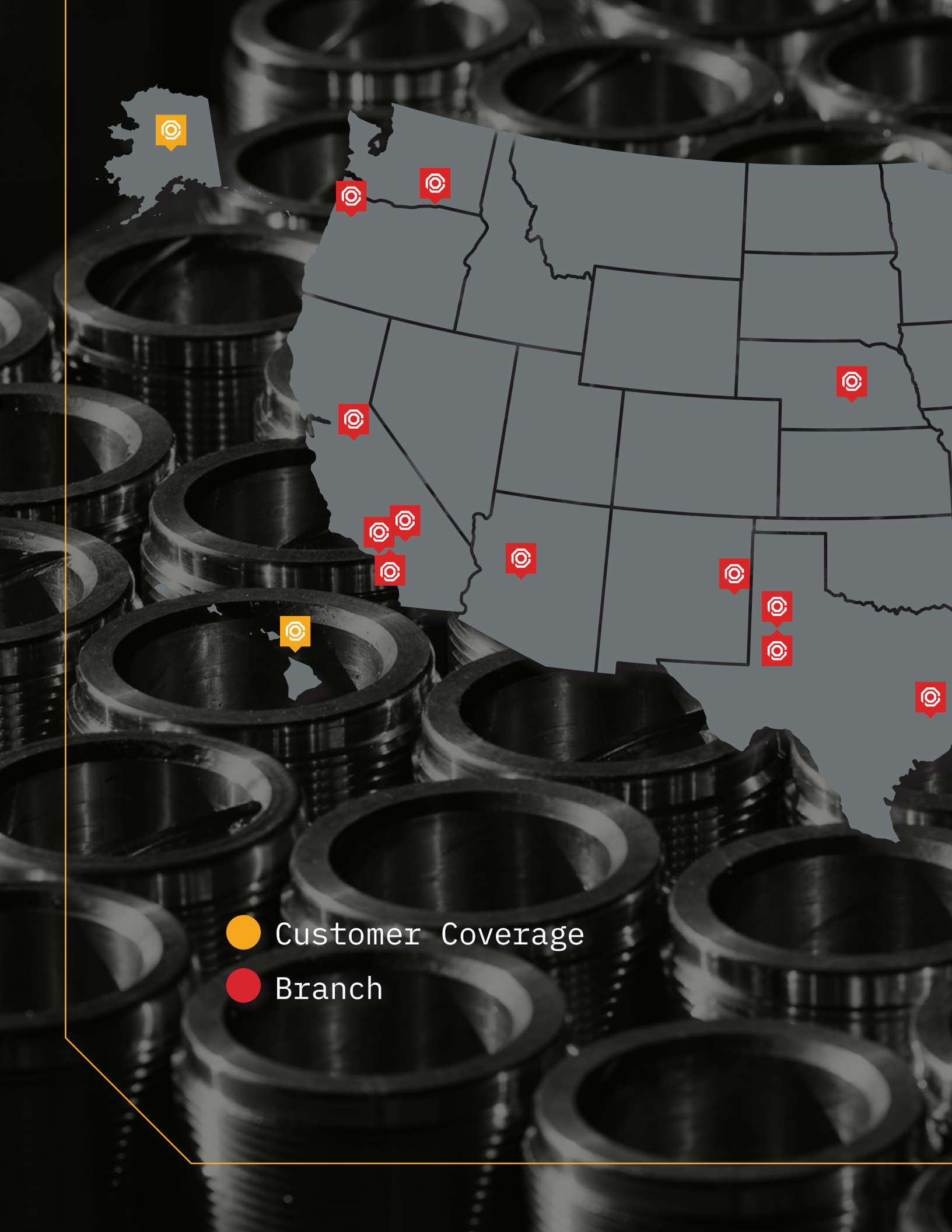




CUSTOM PIPE
+ FABRICATION

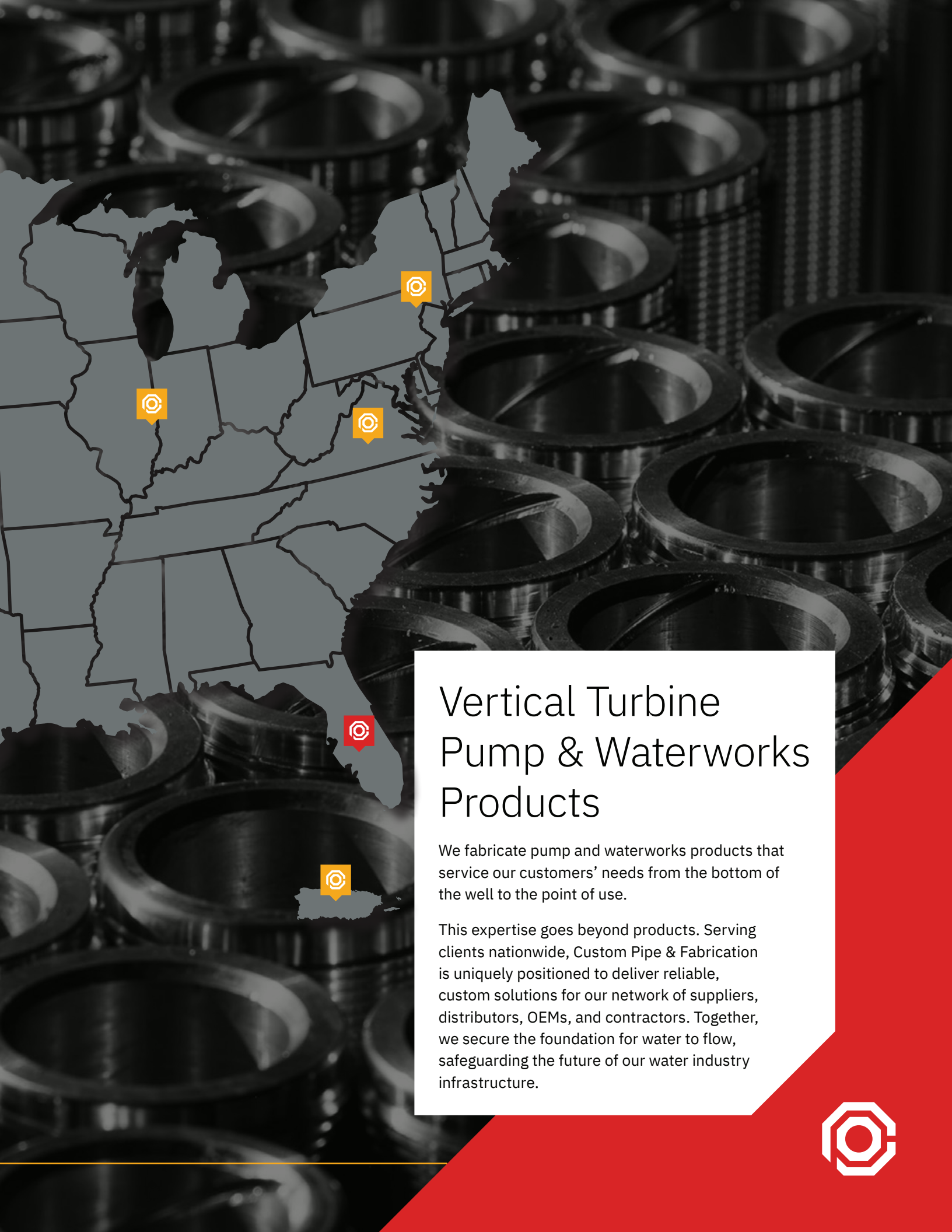
Technical Product Guide





● Customer Coverage

● Branch



Vertical Turbine Pump & Waterworks Products

We fabricate pump and waterworks products that service our customers' needs from the bottom of the well to the point of use.

This expertise goes beyond products. Serving clients nationwide, Custom Pipe & Fabrication is uniquely positioned to deliver reliable, custom solutions for our network of suppliers, distributors, OEMs, and contractors. Together, we secure the foundation for water to flow, safeguarding the future of our water industry infrastructure.



Vertical Turbine Pump Overview

Column Pipe + Inner Column

Threaded Column Pipe

- + Turbine Column Pipe and Submersible Drop Pipe
- + Size: 2.50" – 14"
- + Material: A53 Grade B, 316SS, 304SS, and Galvanized Pipe
- + Oil Lube and Water Lube

Inner Column

- + Enclosing Tubes: A53 Grade B, 316SS, 304SS, Galvanized, and 416SS
- + All OEM Specifications
- + Oil Lube, Water Lube, and Water Flush
- + Shafting: C-1045, 416SS, 316SS, and 17-4
- + Bearings: Alloy 844 and Vesconite
- + Shaft Couplings: 1215, 1141, 416SS, 316SS, and 304SS

Pump Fabrication

- + Flange Column: 4" – 36"
- + Fabricated Discharge Heads
- + Fabricated Pump Cans and Barrels
- + Sole Plates, Motor Stands, Etc. (Can Be Manufactured)
- + Material: A53 Grade B, 316SS, and 304SS
- + In-House Coating: Epoxy and 3M™ Scotchkote™

Water Well Casing

- + Sizes: 4" – 36"
- + Casing: Beveled and Threaded
- + Slotted Casing
- + Johnson Well Screen: Industrial, Municipal, and Agricultural
- + Material: A53 Grade B, 316SS, 304SS, and Galvanized

Pump Parts

- + Bowl Bushings
- + Casing Alignment Clamps
- + Collet Knockers
- + Column Couplings
- + Column Reducing Bushings
- + Custom Coatings
- + Head Nuts
- + Impeller Collets
- + Line Shaft Bearings
- + Sand Collars
- + Shaft and Shaft Couplings
- + Stuffing Box Bushings
- + Tension Assemblies
- + Tension Bearings
- + Tube Adapters
- + Wear Rings

HSLA Column Pipe

Vertical and Submersible Turbine Pumps

Contact us to learn more about our NSF Certified Products.

Vertical Turbine Pumps

Vertical turbine pumps are available in multiple configurations to fit different application needs including:

- + Open or Enclosed Line Shaft
- + Various Materials of Construction
- + Threaded or Flanged Column Assembly
- + Above or Below Ground Discharge
- + Packed or Mechanically Sealed



Submersible Turbine Pumps

Submersible turbine pumps are available in different materials of construction. Our one-stop-shop can supply accessories like submersible discharge head, drop pipe, cable wire and submersible motor so you can get your job done on time.



Material Options

Shafting: **416SS, 316SS, or 17-4 HH**

Impellers: **Bronze or Stainless Steel**

Bushings: **Bronze, Rubber, Vesconite, or Marine**

Spiders: **Lead-Free Bronze or Stainless Steel**

Threaded or Flanged Column Pipe: **Steel or Fiberglass**



Threading Specifications

Manufacturer	Tube and Thread Bearing OD						Shaft Pitch and Coupling Length												
	1 ¼	1 ½	2	2 ½	3	3 ½	¾	7⁄8	1	1 ⅛	1 ¼	1 ½	1 ⅝	1 ¾	1 ⅞	2	2 ⅛	2 ¼	
American-Marsh	12RH 12LH 1.373	12RH 12LH 1.623	12RH 12LH 2.062	12RH 12LH 2.494	12RH 12LH 3.062	12RH 12LH 3.495	16 2 ½		12 2 ¼	12 2 ½		12 3 ⅝	12 3 ⅝	12 4 ⅝		12 4 ⅝		12 5 ½	8 7
American Turbine	12LH 1.395	12LH 1.610	12LH 2.049	12LH 2.437	12LH 3.016	12LH 3.500	16 2 ½		14 2 ½	10 3 ½	10 3 ¼		10 3 ½	10 4	10	10 5	10	10 5 ½	8 5 ½
Berkeley	12LH 1.408	12LH 1.640	12LH 2.090	12LH 2.457	12LH 3.033		16 2 ½		10 2 ½	10 3 ½		8 3 ¾		8 4 ¾		8 5 ½		8 5 ½	8 6
Byron Jackson	12LH 1.420	12LH 1.625	10LH 2.090	8LH 2.531	8LH 3.109	8LH 3.562	10 2		10 2 ½	8 2 ¾		8 3 ¾		8 4 ¾		8 5 ½		8 5 ½	8 6
	12RH 1.633	12RH 1.633	10RH 2.098	8RH 2.545	8RH 3.115	8RH 3.573													
Fairbanks	14LH 1.38	14LH 1.62	12LH 2.078	12LH 2.522	12LH 3.108	12LH 3.522	16 2 ½		14 2 ½	12 3 ½	10 3 ¼	12 4	10 3 ½	10 4 ½		10 5		10 5 ½	10 6
Floway	12LH 1.395	12LH 1.610	12LH 2.049	12LH 2.437	12LH 3.016	12LH 3.500	16 2 ½		14 2 ½	10 3 ½	10 3 ¼	12 4	10 3 ½	10 4	10	10 5	10	10 5 ½	8 5 ½
Flowserve		12LH 1.600 12RH 1.575	12LH 2.080 12RH 2.075	12LH 2.524 12RH 12.575	12RH 3.125	12RH 3.5751 2LH 3.576			14 2 ¾		12 3 ½		12 4	10 4		10 5		10	
Hydroflo	14LH 1.475	14LH 1.633	14 2.057	12LH 2.524 10RH 2.619	10LH 3.130	10LH 3.560	16 2 ½		12 3	12 3	12 3 ½		10 3 ½	10 4		10 5		10 5 ½	10 6
Jacuzzi	12RH 1.373	12RH 1.623	12RH 2.062	12RH 2.494	12RH 3.062	12RH 3.495	16 2 ½		12 2 ¼	12 2 ½		12 3 ⅝	12 3 ⅝	12 3 ⅝	12 4 ⅝	12 4 ⅝		12 5 ½	8 7
Johnston	14LH 1.475	14LH 1.633	14LH 2.057	12LH 2.534 10LH 2.619 (OLD)	10LH 3.130	10LH 3.560	16 2 ½		12 3	12 3	12 3 ¼	10 3 ½	10 3 ½	10 4		10 5		10 5 ½	10 6
Layne & Bowler	16RH 1.406	12RH 1.675	10RH 2.090	10RH 2.500	10RH 3.062	10RH 3.562	16 2 ½		10 3	10 3 ½			10 3 ½	10 4 ½		10 5 ½		8 5 ½	8 6
Layne of Memphis		12RH	10RH	10RH	10RH	10RH 3.562	16	12	12	8		8	8		8		8	8	8
		1.685 12RH	2.096 10RH	8RH 2.518	8RH 3.118	8RH 3.623	3	3	3	4		4	5		6		6	7	7
Peerless	12RH 1.403	14RH 1.654	12RH 2.090	10RH 2.482	10RH 3.050	10RH 3.554	16 2 ½	14 2 ¼	14 2 ½	10 3 ½		10 3 ½	10 4		10 5		10 5 ½	8 6	8
Robbco		14LH	14LH	10LH	10LH	10LH			12 3	12 3		10 3 ½	10 4		10 5		10 5 ½	10 6	10
Xylem/Goulds	14H 1.480	14LH 1.638	14LH 2.062	10LH 2.625	10LH 3.136	10LH 3.562	16 2 ½		12 3	12 3		10 3 ½	10 4		10 5		10 5 ½	10 6	10
WD Worthington	12LH 1.401	12LH 1.623	12LH 2.125	12LH 2.494	12LH 3.119	12LH 3.562	12 2 ½		12 3		8 3 ½	12	8 4	10 4 ½	8	10 5 ½	8	10 5 ½	8 6
Western Land Roller		12LH 1.600 12RH 1.575	12LH 2.080 2.075	12LH 2.524 2.575	12LH 3.125				14 2 ¾		12 3 ½		12 4	12 4		10 5		10	

Pipe Weight Chart

Size	PE lbs / ft	5'		10'		20'		CPLG.
		TBE	T&C	TBE	T&C	TBE	T&C	
4" .237W	10.80	54	59	108	113	216	221	5
5" .258W	14.63	74	83	148	157	296	305	9
6" .250W	17.04	85	93	170	181	340	351	11
6" .280W	18.99	95	106	190	201	380	391	11
6" .423W	28.60	143	154	286	297	572	583	11
8" .219W	19.68	98	116	196	214	392	410	18
8" .250W	22.38	112	130	224	242	448	466	18
8" .277W	24.72	124	142	248	266	496	514	18
8" .322W	28.58	143	161	286	304	572	590	18
8" .500W	43.43	217	235	434	452	868	886	18
10" .250W	28.06	140	173	280	313	560	593	33
10" .279W	31.23	156	189	312	345	624	657	33
10" .365W	40.52	203	236	406	439	812	845	33
10" .500W	54.79	274	307	548	581	1096	1129	33
12" .330W	43.81	219	231	438	480	876	918	42
12" .375W	49.61	248	290	496	538	992	1034	42
14" .375W	54.52	273	328	546	601	1092	1147	55

Tube & Shaft Weight Chart (Nominal Weights)			
Size	10'	20'	
1" x 1 ½"	67	134	
1 ⅜" x 2"	95	178	
1 ¼" x 2"	99	198	
1 ⅞" x 2 ½"	142	283	
1 ½" x 2 ½"	146	285	
1 ⅜" x 2 ½"	162	322	
1 ⅜" x 3"	189	376	
1 ⅝" x 3"	222	444	
2 ⅜" x 3 ½"	275	595	
2 ⅞" x 3 ½"	356	700	

Shaft Weight Chart			
Size	10' T&C	20' T&C	CPLG.
¾"	16	32	0.5
1"	27	54	0.5
1 ⅜"	39	78	1.5
1 ¼"	44	88	1.75
1 ⅞"	57	114	2
1 ½"	62	124	2
1 ⅜" x 1 ½"	78	156	2.25
1 ⅝" x 1 ½"	104	208	4
2 ⅜"	133	266	5
2 ⅞"	165	330	6

HSLA Steel Column Pipe

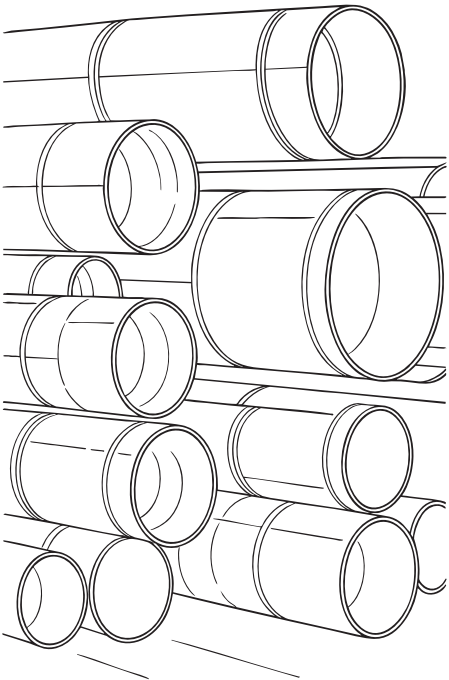
HSLA Steel

Technical Data

- + Steel adhering to ASTM A606 Type 4 is commonly referred to as High-Strength, Low-Alloy (HSLA).
- + Developed by U.S. steel mills in the 1940s for use in the water well industry.
- + Minimum yield strength of 50,000 PSI compared to 35,000 PSI for mild steel.
- + 9x more corrosion resistant than mild steel based on field and laboratory analysis.

Key Advantages

- + Higher Strength
- + Corrosion Resistance
- + NSF 61 Independently Certified*
- + AIS Domestic
- + Eliminates Need for Epoxy Coating



The Evolution of Pipe

Not Your Grandfather’s Pipe

Typical % Composition By Weight (Strength in PSI)									
Time Period	Steel Type	CU	CR	NI	SI	P	G101 Corrosion Index	Yield	Tensile
1900 - 1940	Hard Red	0.20	0.00	0.00	0.00	0.01	4.11	55,000	70,000
1940-1980	COR-TEN	0.41	0.84	0.28	0.48	0.09	8.35	50,000	70,000
	Kai-Well	0.27	0.00	0.09	0.09	0.04	5.36	55,000	70,000
	USS Well Casing	0.26	0.00	0.00	0.08	0.03	5.06	50,000	70,000
1980 -Present	HSLA ASTM A606 Type 4	0.31	0.72	0.26	0.29	0.02	6.87	55,000	75,000
	Copper Bearing	0.20	0.02	0.01	0.00	0.03	3.91	44,000	68,000
	Mild Steel	0.00	0.00	0.00	0.00	0.00	0.00	35,000	50,000

*Contact us to learn more about our NSF Certified Products.

HSLA Steel Column Pipe

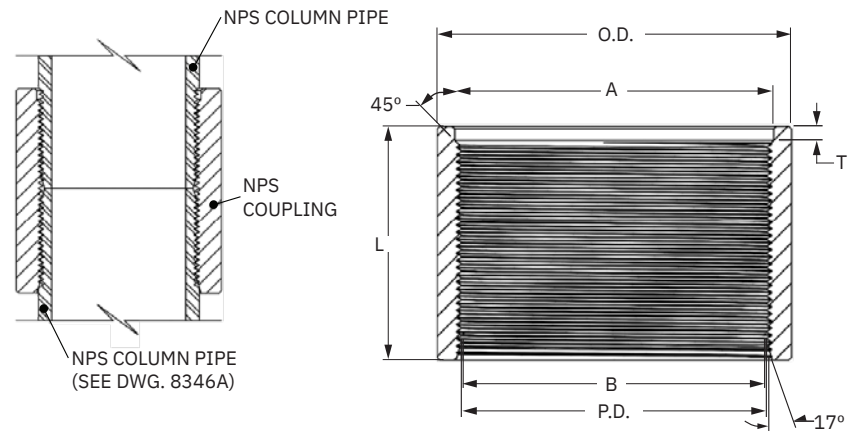
Straight Butt Thread				
Pipe Diameter	Wall Thickness	Threads Per Inch	A	Minor Diameter B
6.625	0.250	8	6.700	6.454–6.440
	0.312			
8.625	0.312	8	8.700	8.454–8.440
	0.375			
10.750	0.312	8	10.812	10.580–10.566
	0.375			
12.750	0.375	8	12.812	12.554–12.542

Coupling OD	Length (L)	Pitch Diameter	T
7.312	4.125	6.527–6.517	0.250
9.625	4.624	8.529–8.517	0.250
11.750	6.125	10.652–10.642	0.250
13.937	6.125	12.652–12.642	0.250

Values listed in inches. Additional Wall Thicknesses available.

Tapered Thread (NPT)			
Pipe Diameter	Wall Thickness	Length L ₁	Diameter E ₁
6.625	0.250	0.958	6.505
	0.312		
8.625	0.312	1.063	8.500
	0.375		
10.750	0.312	1.210	10.620
	0.375		
12.750	0.375	1.360	12.617

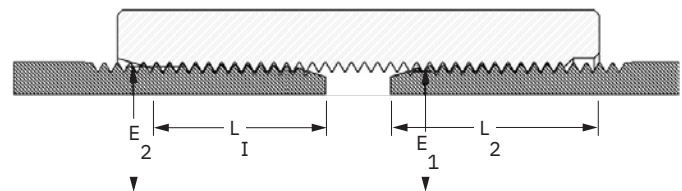
Effective Thread Diameter E ₂	Wrench Make Up	Thread Overall Length L ₂
6.625	6.540	1.946
8.625	8.540	2.146
10.750	10.665	2.358
12.750	12.665	2.558



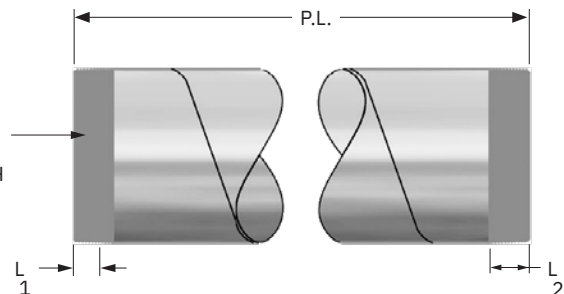
Load Values

Load values calculated for Straight Butt-Threaded, Oil Lubed joints. For NPT and Water-Lubed joints, load values could be slightly less.

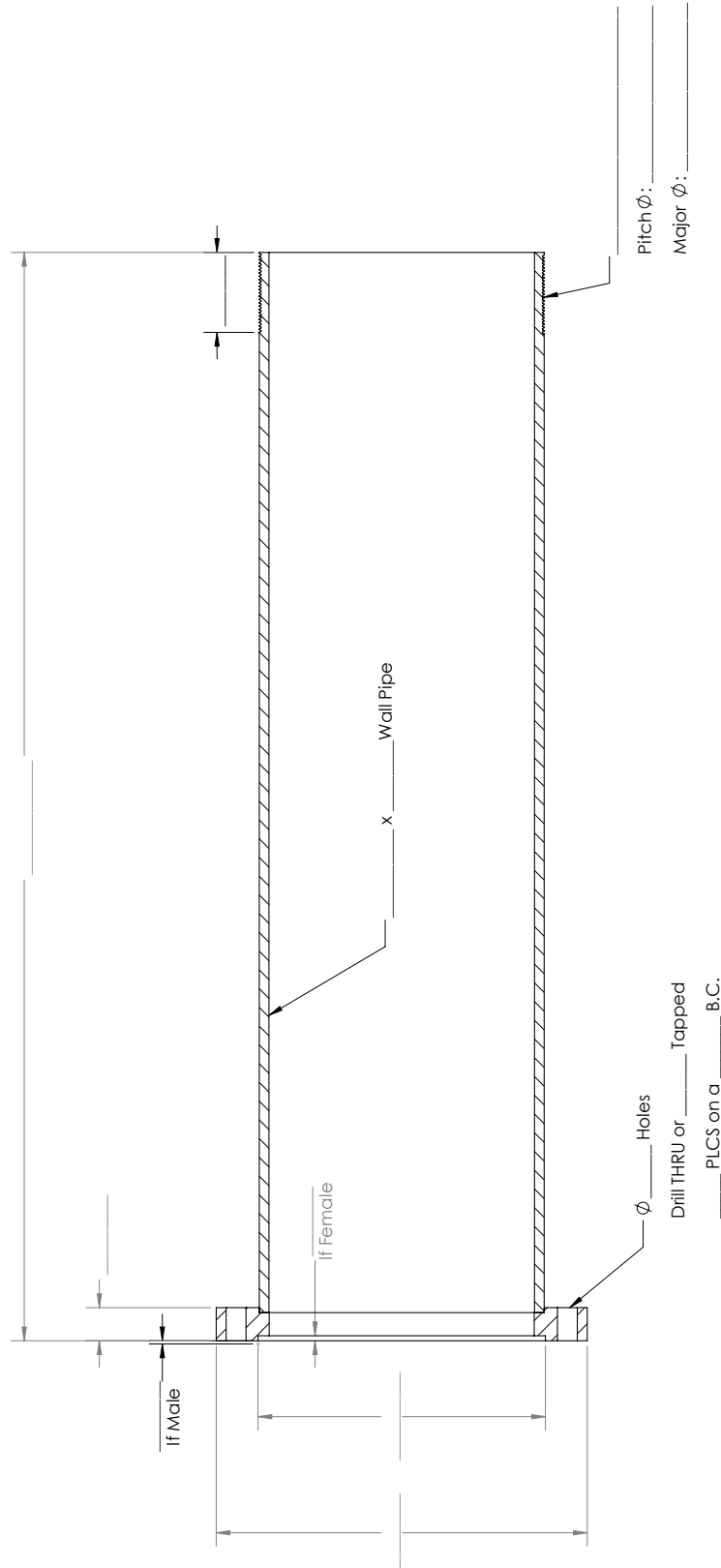
NPS	Load Capacity (lbs)
6	80,000
8	140,000
10	160,000
12	160,000



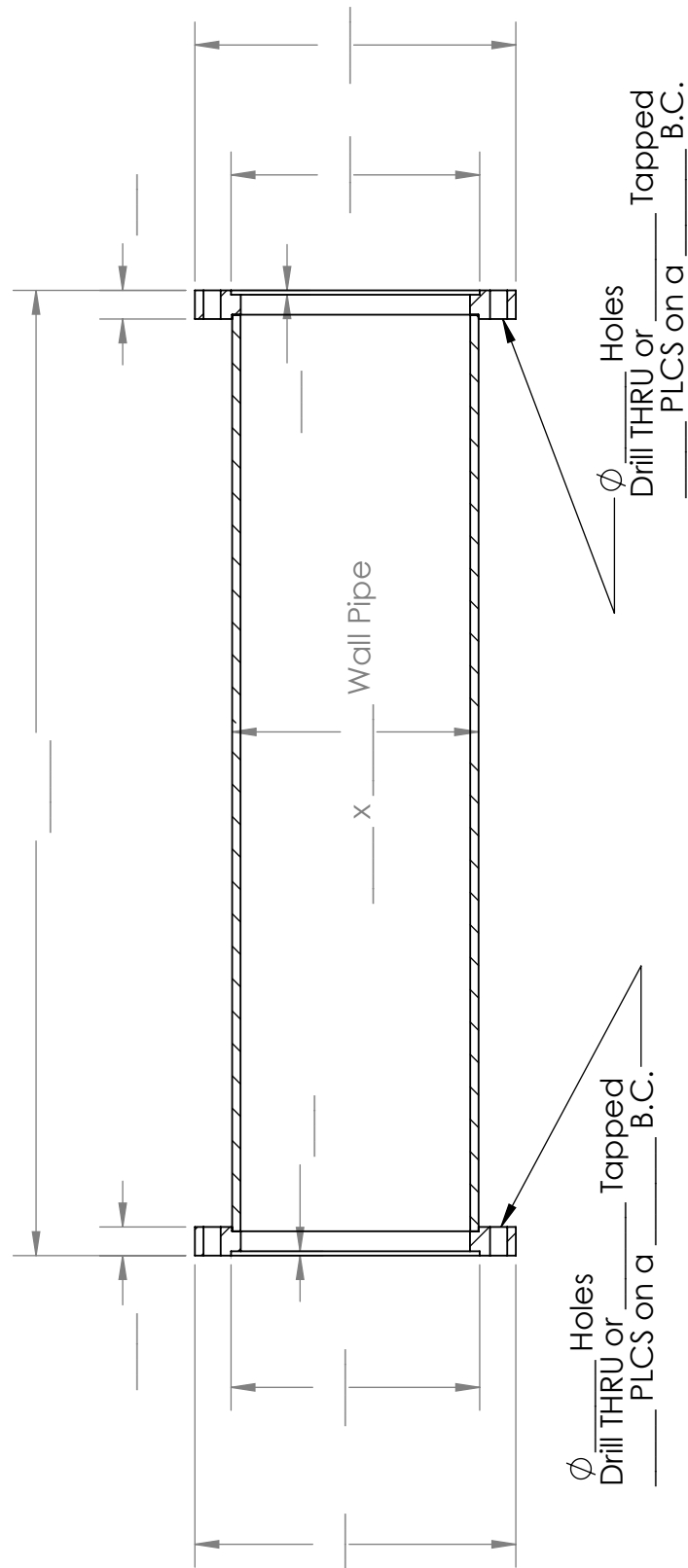
TAPER OF THREAD, ON DIAMETER, IS 3/4-INCH PER FOOT. ANGLE OF TAPER WITH CENTER LINE IS 1° 47' 24"



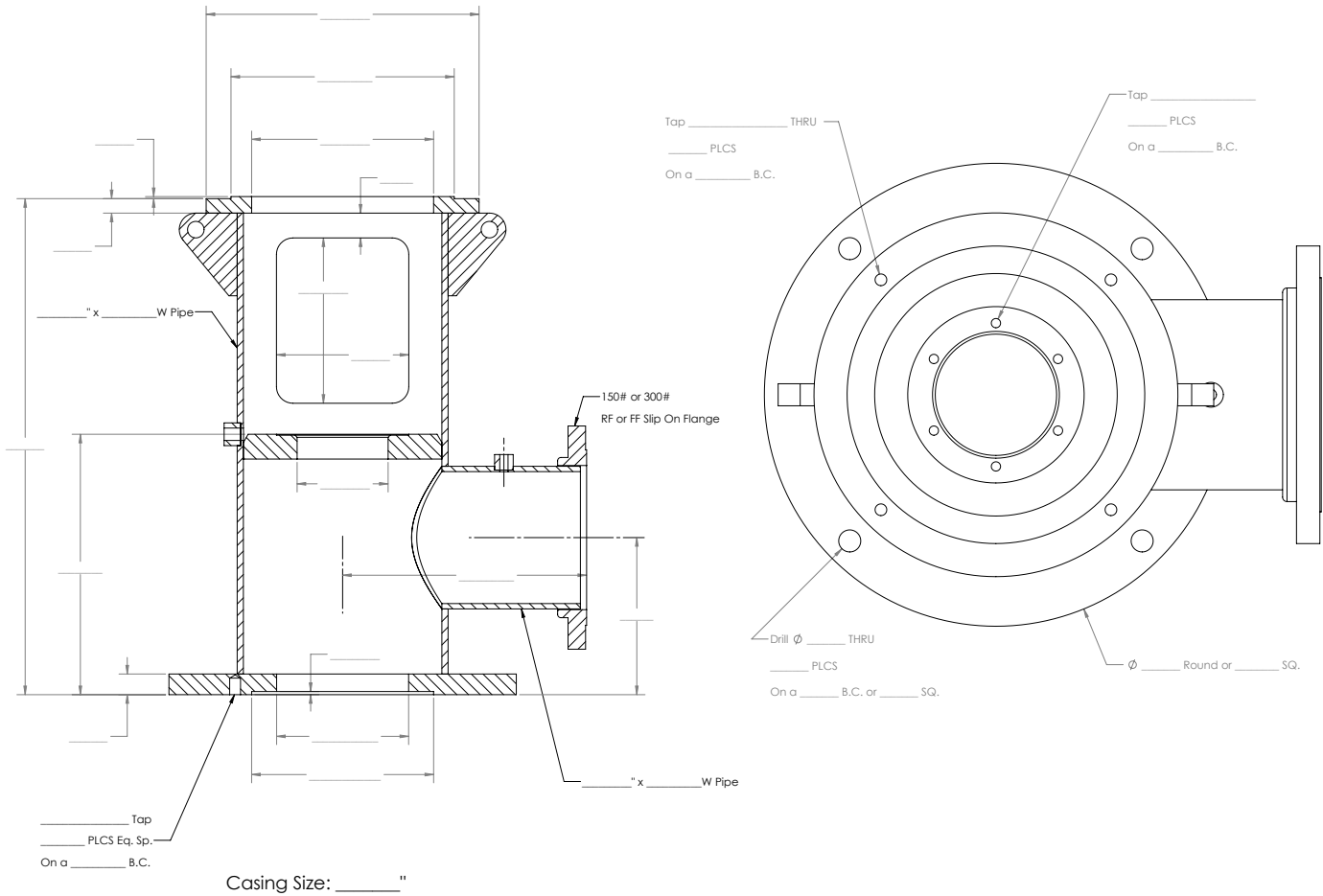
Column Pipe FXT



Column Pipe Female-Male

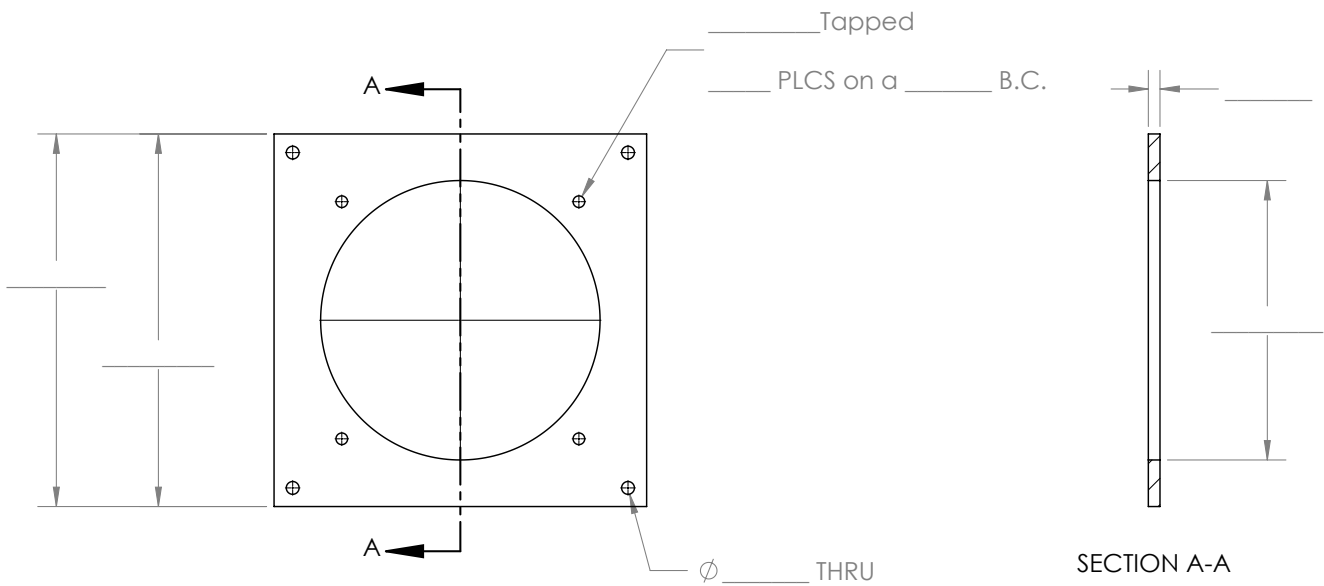


Pump Head

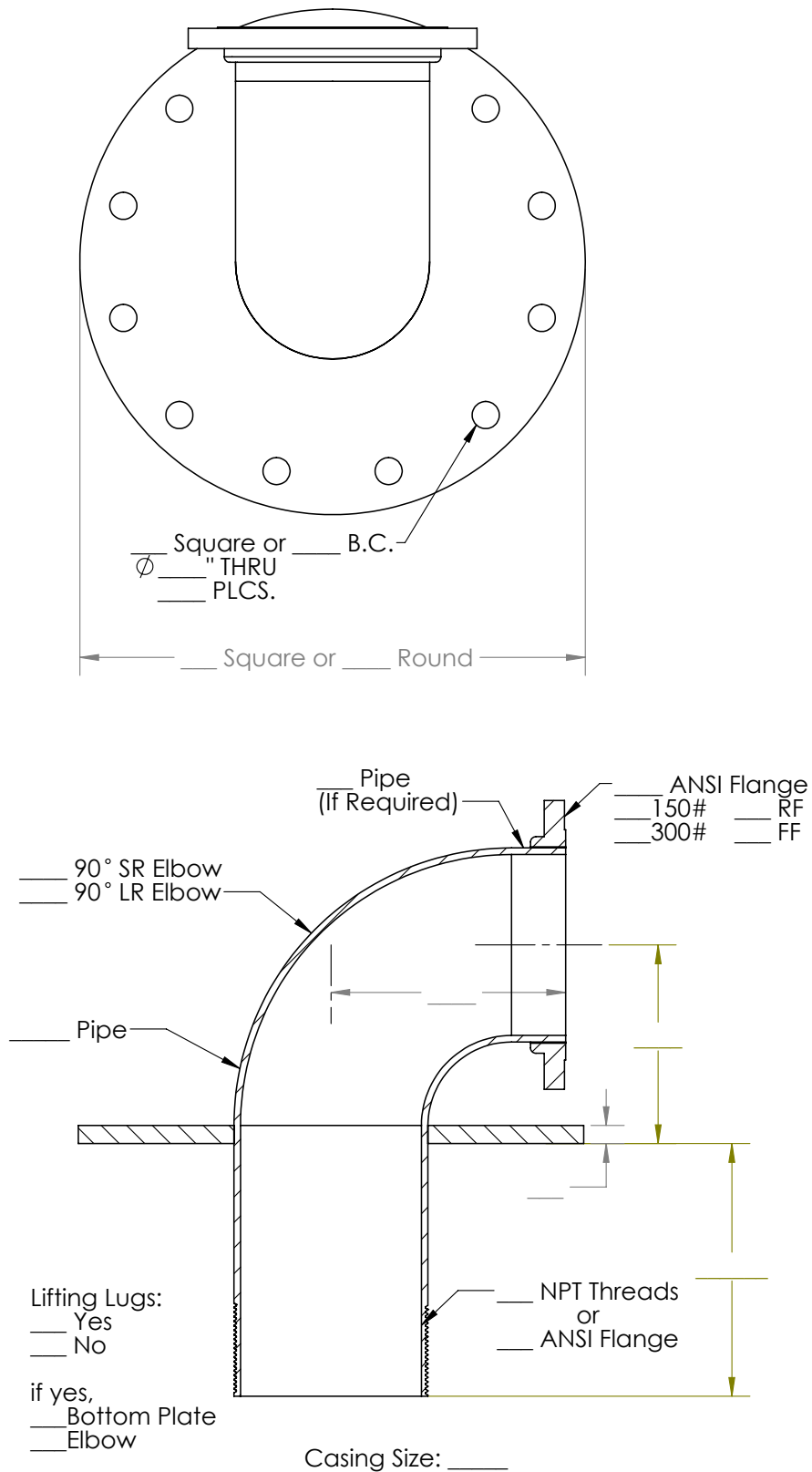




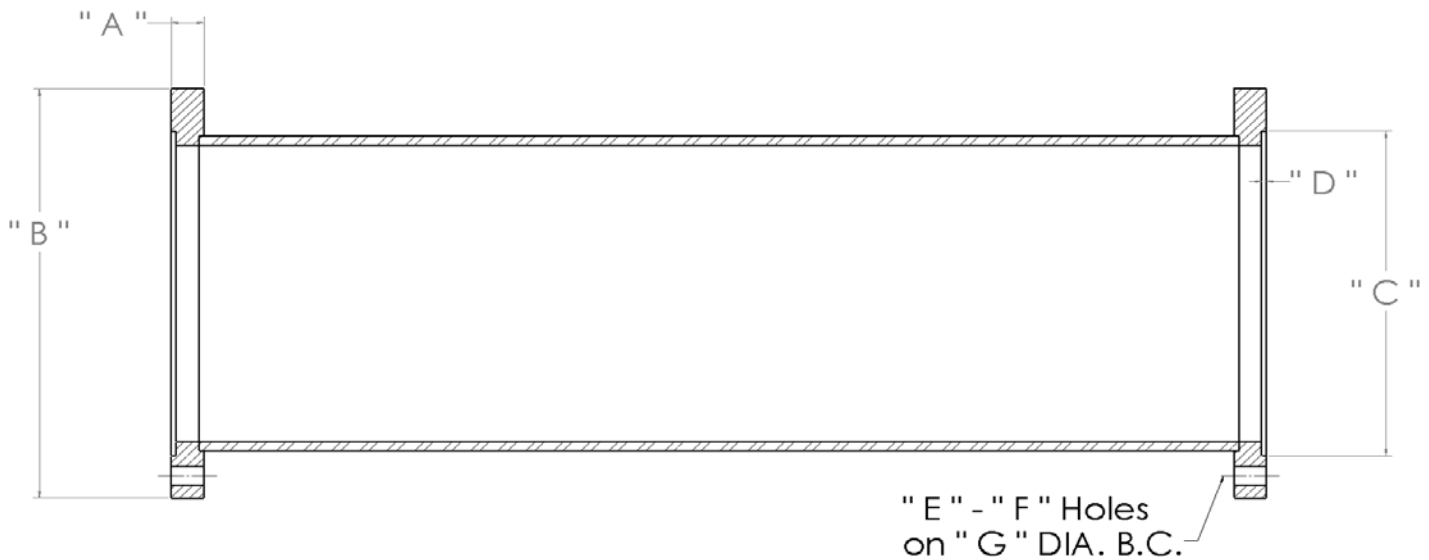
Sole Plate



Submersible Elbow



Flanged Column Pipe Dimension Chart



Pipe Size	A	B	C	D	E	F	G	Bolts Size & Length
3	3/4"	5 5/8"	3.310 / 3.315	0.240 / 0.245	6	9/16"	4 3/4"	1/2" - N.C. x 2 3/4"
4	3/4"	7 1/2"	4.312 / 4.315	0.240 / 0.245	8	3/4"	6 1/4"	5/8" - N.C. x 2 3/4"
5	7/8"	8 1/4"	5.375 / 5.378	0.365 / 0.370	8	3/4"	7 1/8"	5/8" - N.C. x 3"
6	1"	10"	6.435 / 6.443	0.365 / 0.370	8	7/8"	8 5/8"	3/4" - N.C. x 3 1/2"
8	1"	12"	8.435 / 8.443	0.365 / 0.370	8	7/8"	10 5/8"	3/4" - N.C. x 3 1/2"
10	1 1/8"	14 5/8"	10.561 / 10.569	0.365 / 0.370	12	1"	13"	7/8" - N.C. x 3 3/4"
12	1 1/4"	16 5/8"	12.537 / 12.545	0.365 / 0.370	12	1"	15"	7/8" - N.C. x 4"
14	1 3/8"	18 1/2"	13.787 / 13.795	0.365 / 0.370	12	1"	16 3/4"	7/8" - N.C. x 4"
16	1 3/8"	21 1/2"	15.787 / 15.795	0.365 / 0.370	12	1 1/4"	18 3/4"	1 1/8" - N.C. x 4 1/2"
18	1 5/8"	23"	17.787 / 17.790	0.19	12	1 1/4"	21"	1 1/8" - N.C. x 5"
20	1 5/8"	25"	19.787 / 19.790	0.19	16	1 1/4"	23"	1 1/8" - N.C. x 5"





Waterworks Overview

Ductile Iron Pipe Fabrication

- + Flanged Pipe
- + Grooved Pipe
- + Welded Outlets
- + Anchor Pipe
- + Restrained Joints
- + Wall Pipe
- + Thrust Collars
- + Mechanical Joints
- + Filler Flanges
- + Victaulic® Specialty Ends

Fittings

- + AWWA C110 and C153
- + Victaulic® Groove
- + Flange
- + MJ

Linings

- + Cement
- + Unlined
- + Protecto 401
- + Ceramapure PL90
- + Tnemec
- + Fusion Bonded Epoxy
- + Sherwin Williams® DURA-PLATE® 6000

Coatings

- + Bituminous
- + Ceramawrap
- + Tnemec
- + Fusion Bonded Epoxy

Steel Fabrication

- + Stainless Steel Pipe 304SS and 316SS
- + Carbon Steel Pipe
- + Galvanized Steel Pipe
- + Pipe Supports and Hangers
- + Valve Stem Extensions, Keys, and Wrenches
- + Pipe Vents

Services

- + Special Machining Services
- + Specialty Linings and Coatings
- + Certified In-House Welding
- + NSF 61 Independently Certified*

**Tapping through 6"
NPT for caps, plugs,
and blind flanges**

CC taps 3/4" through 2"

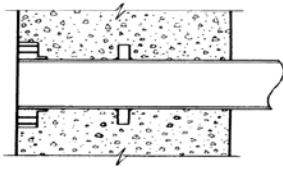
*Contact us to learn more about our NSF Certified Products.

Waterworks Pipe Chart

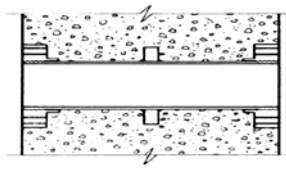
FLANGE / PIPE DIMENSTIONS

NOM. PIPE SIZE	FLANGE OD	FLANGE THICKNESS	BOLT CIRCLE	PIPE OD	PIPE THICKNESS	BOLT HOLE DIAMETER	BOLT SIZE	NUMBER OF BOLTS
3"	7.5	0.75	6	3.96	0.31	0.75	0.625 X 2.5	4
4"	9	0.94	7.5	4.80	0.32	0.75	0.625 X 3	8
6"	11	1	9.5	6.90	0.34	0.875	0.75 X 3.5	8
8"	13.5	1.12	11.75	9.05	0.36	0.875	0.75 X 3.5	8
10"	16	1.19	14.25	11.10	0.38	1	0.875 X 4	12
12"	19	1.25	17	13.20	0.4	1	0.875 X 4	12
14"	21	1.38	18.75	15.30	0.42	1.125	1 X 4.5	12
16"	23.5	1.44	21.25	17.40	0.43	1.125	1 X 4.5	16
18"	25	1.56	22.75	19.50	0.44	1.25	1.125 X 5	16
20"	27.5	1.69	25	21.60	0.45	1.25	1.125 X 5	20
24"	32	1.88	29.5	25.80	0.47	1.375	1.25 X 5.5	20
30"	38.75	2.12	36	32.00	0.51	1.375	1.25 X 6.5	28
36"	46.00	2.38	42.75	38.30	0.58	1.625	1.5 X 7	32
42"	53.00	2.62	49.5	44.50	0.65	1.625	1.5 X 7.5	36
48"	59.50	2.75	56	50.80	0.72	1.625	1.5 X 8	44
54"	66.25	3.00	62.75	57.56	0.81	2.00	1.75 X 8.5	44
60"	73.00	3.12	69.25	61.61	0.83	2.00	1.75 X 9	52
64"	80.00	3.38	76	65.67	0.87	2.00	1.75 X 9	52

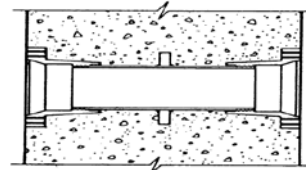




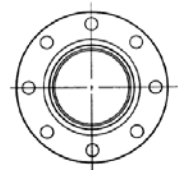
FLG X PLN



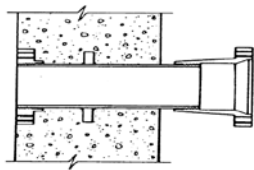
FLG X FLG



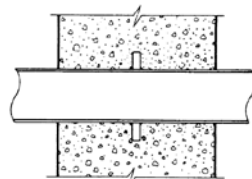
MJ X MJ



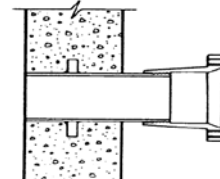
125# DUCTILE
IRON FLANGE



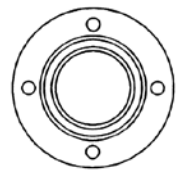
FLG X MJ



PLN X PLN



MJ X PLN



MJ ADAPTER BELL

FABRICATION SPECIFICATIONS—NOTES

FLANGED

PER AWWA C115 / A21.15 FLANGS SHALL HAVE A TAPER PIPE THREAD
IN ACCORDANCE WITH ANSI B1-20.1 / 250 PSI WORKING

PIPE

PER AWWA C151 / CLASS 53-56 DUCTILE IRON

THREADED MECHANICAL JOINT ADAPTERS

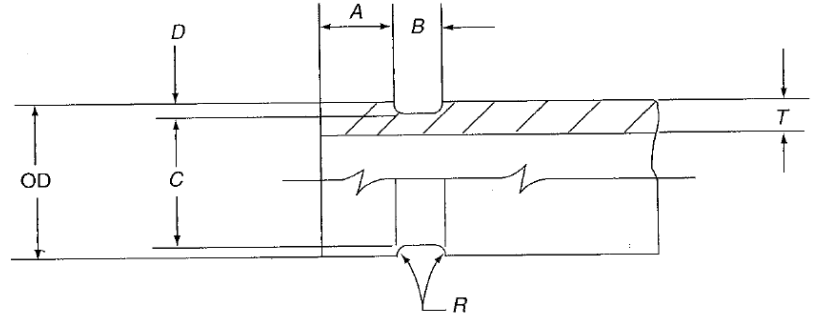
PRODUCED FROM DIMENSIONS PROVIDED BY ANSI / AWWA C111 / A21.11 AND
ARE THREADED IN ACCORDANCE WITH AWWA C115 / A21.15

WALL RING

WALL RINGS SHALL BE CONTINUOUSLY WELDED 360° AROUND ON ONE SIDE, EXCEPT
ON FABRICATED SPOOL PIECES WITH HEAT-SENSITIVE SPECIALTY LININGS. FOR THESE
APPLICATIONS, WELDING SHALL BE MINIMIZED TO PREVENT THERMAL DAMAGE, AND
WALL RINGS SHALL INSTEAD BE INSTALLED USING *THE PRECISION SEATING METHOD*, A
CONTROLLED INSTALLATION PROCESS DESIGNED TO MAINTAIN LINING INTEGRITY AND
ENSURE PROPER SEALING.

Cut Grooving Dimensions for Flexible Joints

DUCTILE IRON PIPE
AWWA C606-22



NOTE: Grooving dimensions are the same for any one pipe outside diameter, regardless of pipe class and pressure

Nominal Pipe Size	Pipe OD	Gasket Seat +0.016 -0.047 (A**)	Grove Width +0.031 -0.016 (B)	Groove Diameter (C†)	Radius (R)	(T‡)	Grove Depth (D)	
							Minimum	Maximum
4	4.80 ±0.06	0.750	0.375	4.563 +0 -0.020	0.120	0.32	0.096	0.151
6	6.90 ±0.06	0.750	0.375	6.656 +0 -0.020	0.120	0.34	0.100	0.154
8	9.05 ±0.06	0.875	0.500	8.781 +0 -0.025	0.145	0.36	0.104	0.177
10	11.10 ±0.06	0.938	0.500	10.813 +0 -0.025	0.145	0.38	0.114	0.186
12	13.20 ±0.06	0.938	0.500	12.906 +0 -0.030	0.145	0.40	0.117	0.192
14	15.30 +0.05 -0.08	0.938	0.625	14.969 +0 -0.030	0.165	0.42	0.126	0.206
16	17.40 +0.05 -0.08	1.188	0.625	17.063 +0 -0.030	0.165	0.43	0.128	0.208
18	19.50 +0.05 -0.08	1.188	0.625	19.125 +0 -0.030	0.185	0.44	0.148	0.228
20	21.60 +0.05 -0.08	1.188	0.625	21.219 +0 -0.030	0.185	0.45	0.150	0.230
24	25.80 +0.05 -0.08	1.188	0.625	25.406 +0 -0.030	0.185	0.47	0.157	0.237
30	32.00 +0.08 -0.06	1.375	0.750	31.550 +0 -0.035	0.215	0.51	0.195	0.282
36	38.30 +0.08 -0.06	1.375	0.750	37.850 +0 -0.035	0.215	0.58	0.195	0.282

Dimensions are in inches where applicable. To convert inches to millimeters, multiply by 25.4.

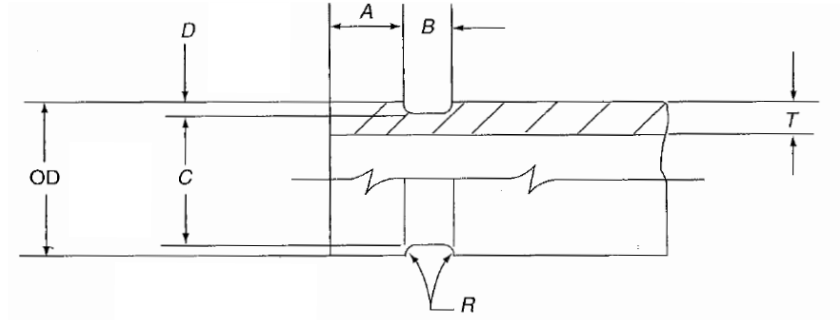
* A is the gasket seating surface (see Sec. 4.3.4).

† C diameters are average values.

‡ T is the minimum standard wall thickness (Class 53-56 for 4 in. [100 mm] through 36 in. [900 mm]) that should be grooved; tolerances referenced in ANSI/AWWA C151/A21.51 shall apply.

Cut Grooving Dimensions for Rigid Joints

DUCTILE IRON PIPE
AWWA C606-22



NOTE: Grooving dimensions are the same for any one pipe outside diameter, regardless of pipe class and pressure

Nominal Pipe Size	Pipe OD	Gasket Seat +0.016 -0.047 (A**)	Grove Width +0.031 -0.016 (B)	Groove Diameter (C†)	Radius (R)	(T‡)	Grove Depth (D)	
							Minimum	Maximum
4	4.80 ±0.06	0.840	0.375	4.563 ⁺⁰ / _{-0.020}	0.120	0.32	0.096	0.151
6	6.90 ±0.06	0.840	0.375	6.656 ⁺⁰ / _{-0.020}	0.120	0.34	0.100	0.154
8	9.05 ±0.06	0.950	0.500	8.781 ⁺⁰ / _{-0.025}	0.145	0.36	0.104	0.177
10	11.10 ±0.06	1.015	0.500	10.813 ⁺⁰ / _{-0.025}	0.145	0.38	0.114	0.186
12	13.20 ±0.06	1.015	0.500	12.906 ⁺⁰ / _{-0.030}	0.145	0.40	0.117	0.192
14	15.30 ^{+0.05} / _{-0.08}	1.015	0.625	14.969 ⁺⁰ / _{-0.030}	0.165	0.42	0.126	0.206
16	17.40 ^{+0.05} / _{-0.08}	1.340	0.625	17.063 ⁺⁰ / _{-0.030}	0.165	0.43	0.128	0.208
18	19.50 ^{+0.05} / _{-0.08}	1.340	0.625	19.125 ⁺⁰ / _{-0.030}	0.185	0.44	0.148	0.228
20	21.60 ^{+0.05} / _{-0.08}	1.340	0.625	21.219 ⁺⁰ / _{-0.030}	0.185	0.45	0.150	0.230
24	25.80 ^{+0.05} / _{-0.08}	1.340	0.625	25.406 ⁺⁰ / _{-0.030}	0.185	0.47	0.157	0.237
30	32.00 ^{+0.08} / _{-0.06}	1.625	0.750	31.550 ⁺⁰ / _{-0.035}	0.215	0.51	0.195	0.282
36	38.30 ^{+0.08} / _{-0.06}	1.625	0.750	37.850 ⁺⁰ / _{-0.035}	0.215	0.58	0.195	0.282

Dimensions are in inches where applicable. To convert inches to millimeters, multiply by 25.4.

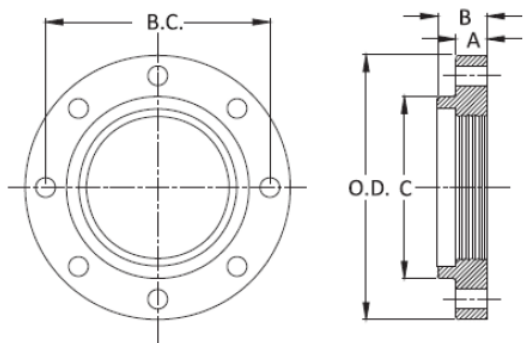
* A is the gasket seating surface (see Sec. 4.3.4).

† C diameters are average values.

‡ T is the nominal wall thickness corresponding to the minimum standard pipe classes (special thickness Class 53-56 for 4 in. [100 mm] through 36 in. [900 mm]) that should be grooved; tolerances referenced in ANSI/AWWA C151/A21.51 shall apply.



High Hub DI 125 LB. Threaded Flanges

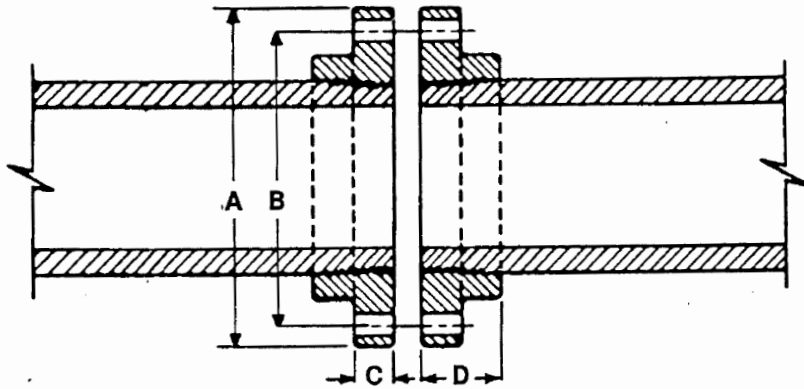


FOR DUCTILE IRON PIPE
ANSI/AWWA C115/121.15

Nom Pipe Size	Pipe OD	Flange THK (A)	Total THK (B)	Thread Length	Flange OD (O.D.)	Hub Dia (C)	Bolt Circle (B.C.)	Bolt Hole Dia	Bolt Size (Dia x Length)	# Bolt Holes	WT (Lbs.)
2	2.50	0.62	1.25	1.00	6.00	3.06	4.75	3/4	5/8 x 2 1/4	4	4
3	3.96	0.75	1.69	1.25	7.50	4.25	6.00	3/4	5/8 x 2 1/2	4	7
4	4.80	0.94	1.81	1.37	9.00	5.32	7.50	3/4	5/8 x 3	8	12
6	6.90	1.00	2.00	1.53	11.00	7.56	9.50	7/8	3/4 x 3 1/2	8	17
8	9.05	1.12	2.25	1.75	13.50	9.69	11.75	7/8	3/4 x 3 1/2	8	26
10	11.10	1.19	2.44	1.88	16.00	12.00	14.25	1	7/8 x 4	12	37
12	13.20	1.25	2.56	2.12	19.00	14.06	17.00	1	7/8 x 4	12	55
14	15.30	1.38	2.62	2.12	21.00	16.25	18.75	1 1/8	1 x 4 1/2	12	70
16	17.40	1.44	2.75	2.12	23.50	18.44	21.25	1 1/8	1 x 4 1/2	16	80
18	19.50	1.56	3.00	2.25	25.00	20.53	22.75	1 1/4	1 1/8 x 5	16	85
20	21.60	1.69	3.25	2.44	27.50	22.673	25.00	1 1/4	1 1/8 x 5	20	106
24	25.80	1.88	3.50	2.75	32.00	26.82	29.50	1 3/8	1 1/4 x 5 1/2	20	147
30	32.00	2.12	3.75	3.37	38.75	32.75	36.00	1 3/8	1 1/4 x 6 1/2	28	224
36	38.30	3.38	5.00	4.00	46.00	39.12	42.75	1 5/8	1 1/2 x 7	32	337
42	44.50	2.62	5.12	4.50	53.00	46.00	49.50	1 5/8	1 1/2 x 7 1/2	36	495
48	50.80	2.75	5.50	4.75	59.50	52.25	56.00	1 5/8	1 1/2 x 8	44	622
54	57.56	3.00	6.45	5.12	66.25	58.75	62.75	2	1 3/4 x 8 1/2	44	711
60	61.61	3.12	6.75	5.00	73.00	63.00	69.25	2	1 3/4 x 9	52	1084
64	65.67	3.38	7.06	5.25	80.00	67.18	76.00	2	1 3/4 x 9	52	1575

- Dimensions are in inches where applicable; To convert inches to millimeters, multiply by 25.4.
- Ductile Iron ASTM A536
- Machined, Drilled, and Faced in accordance with ANSI/AWWA C110/21.10, ASME B16.1 Class 125 and ASME B16.42 Class 150
- Rated for maximum working pressure 250 psi
- Threaded in accordance with ASME B1.20.1 adapted to ductile iron pipe O.D.

Threaded X-Heavy Flanges for Ductile Iron Flanged Pipe

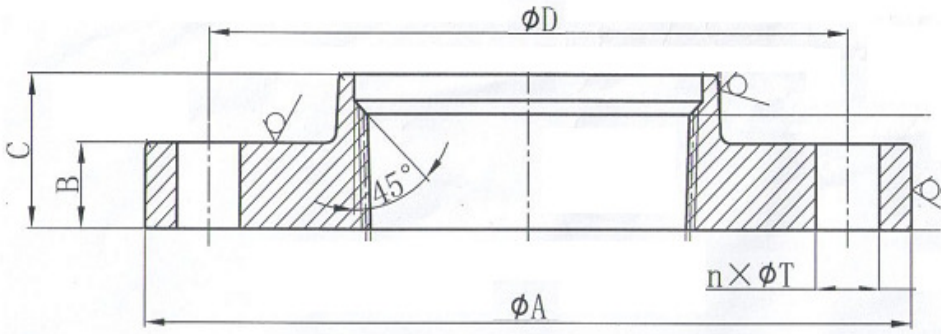


FOR DUCTILE IRON PIPE
ANSI/AWWA C115/A21.15

Nominal Pipe Size	Flange OD (A)	Bolt Circle (B)	Bolt Hole Diameter	Flange Thickness (C)	Length Thru Hub (D)	Number of Holes	Weight (lbs.)
3	8.25	6.62	0.875	1.06	1.56	8	12
4	10.00	7.88	0.875	1.19	1.69	8	20
6	12.50	10.62	0.875	1.38	1.94	12	32
8	15.00	13.00	1.00	1.56	2.18	12	51
10	17.50	15.25	1.125	1.87	2.44	16	77
12	20.50	17.75	1.25	1.93	2.56	16	103
14	23.00	20.25	1.25	2.12	2.68	20	148
16	25.50	22.50	1.375	2.19	2.87	20	171
18	28.00	24.75	1.375	2.31	3.00	24	255
20	30.50	27.00	1.375	2.44	3.31	24	270
24	36.00	32.00	1.625	2.75	3.75	24	310
30	41.00	36.00	1.75	3.00	4.25	28	450
36	48.00	42.75	1.875	3.25	4.75	32	650
42	54.00	48.75	2.00	3.50	5.00	36	900
48	63.00	56.75	2.25	4.00	5.50	44	1,450

- Dimensions are in inches where applicable; To convert inches to millimeters, multiply by 25.4.
- Sizes 3"-24" Ductile Iron (C115/A21.15)
- Machined, Drilled, and Faced in accordance with ANSI B16.1 – Class 250
- Bolt holes in accordance with ANSI A21.10
- Flanges have 0.06" raised face
- Threaded in accordance with ANSI B2.1

6-Hole Ductile Iron Threaded Flange Specifications



6" Ductile Iron Threaded Flanges
with 6 Holes for Ductile Iron Pipe
Ref: DPF066H

UV Item Number	Nom Pipe Size	Flange Outer Diameter (A)	Bolt Circle (D)	B. Hole Diameter (T)	No. of Holes (n)	Flange Thickness (B)	Length Through Hub (C)	Weight (lbs)
DPF066H	6"	11.00	9.50	0.88	6	1.00	2.00	25

- Dimensions are in inches where applicable; To convert inches to millimeters, multiply by 25.4.
- Ductile Iron ASTM A536 (65-45-12)
- Machined, Drilled and Faced in accordance ANSI B16.1 - Class 125 (only change is No of Bolt Holes 6 instead of 8)
- Rated for a maximum working pressure 250 psi
- Coating : Bare
- Threaded in accordance with ANSI /ASME B 1.20.1

Field Guide for Installation of Flanged Ductile Iron Pipe

1. Thoroughly check all flanged ductile iron spools when they are received at the job site to ensure there has been no damage to the lining, coating, or the ends of the pipe as a result of shipping. If there has been any damage take pictures and send immediately to your supplier.
 - a. All flanged pipe should be lifted by use of a pallet or sling and not the flanged end as this could potentially result in breaking the watertight thread seal of the flanged joint. Proper and safe handling is critical as any impact such as dropping may damage this seal as well.
 - b. Inserting or lifting the flanged pipe by using the forks of a forklift is not acceptable and will damage the lining. If the lining is damaged or compromised, then it must be properly repaired before the flanged pipe is installed and placed into service.
 - c. The flanged face must be checked before installation to make sure it is clean and free of debris. The rust preventative coating the flange face should be removed with solvent or wire brush.
2. The accepted industry protocol on gasket use for flanged ductile iron pipe, as written in the ANSA/ AWWA C115/A21.15, Appendix A states “Unless otherwise specified by the purchaser, gaskets shall be synthetic rubber, either ring or full face, and 1/8” (3.18 mm) thick. Gaskets should conform to the dimension shown in Table A.1/AWWA C115. When considering the use of gaskets thinner than 1/8” (3.18mm) and/or gaskets of materials other than synthetic rubber, the purchaser should contact the pipe manufacturer or fabricator concerning such gaskets’ suitability for a particular application. Also available in most sizes are the specially designed gaskets, either ring or full faced employing one or more annular rings molded into the gasket to improve joint performance. By the use of these or other special gaskets it may be possible to obtain a pressure rating greater than 250 psi (1,720kPA). Contact the pipe manufacturer or fabricator for details.”
3. Recommendations for the bolts to be used for installation of flanged ductile iron pipe have also been made by the AWWA. The recommended size, length, and number of bolts are shown in Table 2 and 3 of ANSI/AWWA C115/A21.15. Bolts are to conform to ANSI/ASME B18.2.1, Square and Hex bolts and Screws Inch Series including Hex Cap Screws and Lag Screws. Nuts are to conform to ANSI/ASME B18.2.2, Square and Hex Nuts Inch Series. Bolts and nuts used with gray-iron flanges should have standard square or heavy hex bolts and heavy hex nuts. Bolts and nuts are threaded in accordance with ASME/ANSI B1.1, Unified inch screw threads (UN and UNR thread form), class 2A, external and class 2B, internal. Bolts and nuts of low carbon steel conforming to the chemical and mechanical requirements so ASTM A307, standard specification for the carbon steel bolts and studs, 60,000 psi Tensile Strength are suitable for use with the flanges described in ANSI/AWWA C115/A21.15 when used with the rubber gaskets described. Higher strength (Grade A) bolts and higher torque values should not be used with gray-iron flanges.

4. The AWWA also states, “The purchaser is responsible for the design, assembly and installation of flanged piping system.” The following suggestion are for general guidance:
 - a. The use of flanged joints underground is generally not recommended because of the rigidity of the joint. It should be noted that because of the extremely limited availability and long lead times associated with MJ Bell pipe, MJ threaded adapt-a-bell can be an alternative. However, these are not recommended for underground service. It is strongly recommended to use restrained joint pipe, or push-on pipe with field locking gaskets as an alternative for underground applications.
 - b. Due to the nature of aerial crossings, it is strongly recommended to use flex joint pipe and a properly engineered support system.
 - c. Flanged faces should bear uniformly on the gasket, and the bolts should be tightened in a progressively crisscrossed pattern. (See the attached Bolt Torque Procedure).
 - d. The use of a torque wrench is critical when bolting flanged ductile iron pipe. (See attached Torque Values table).

Suggested Torque Values (Ft. Lbs.)

Standard Ductile Iron 150# Flange, Grade 2 Nut and Bolt with Flat Washer, Dry Assembly

Pipe Size (inches)	Bolt Diameter (inches)	Full Face (RR or Neo.) Minimum (Per IFI 100/107-1987)	Toruseal Minimum (Per ACIPCO)	Flange-Type Minimum (Per U.S. Pipe)
3	$\frac{5}{8}$	100		
4	$\frac{5}{8}$	100	100	90
6	$\frac{3}{4}$	175	150	90
8	$\frac{3}{4}$	175	150	90
10	$\frac{7}{8}$	200	200	90
12	$\frac{7}{8}$	200	200	90
14	1	250	250	110
16	1	250	250	110
18	$1\frac{1}{8}$	350	300	120
20	$1\frac{1}{8}$	350	300	120
24	$1\frac{1}{4}$	500	400	130
30	$1\frac{1}{4}$	500	400	140
36	$1\frac{1}{2}$	870	500	160
42	$1\frac{1}{2}$	870	500	585
48	$1\frac{1}{2}$	870	500	625
54	$1\frac{3}{4}$		600	550*
60	$1\frac{3}{4}$		600	600*
64	$1\frac{3}{4}$		600	600*

* 150 PSI working

It is recommended that torque be applied in increments of one fifth ($\frac{1}{5}$) of the total torque required.

This information has been compiled from various technical references



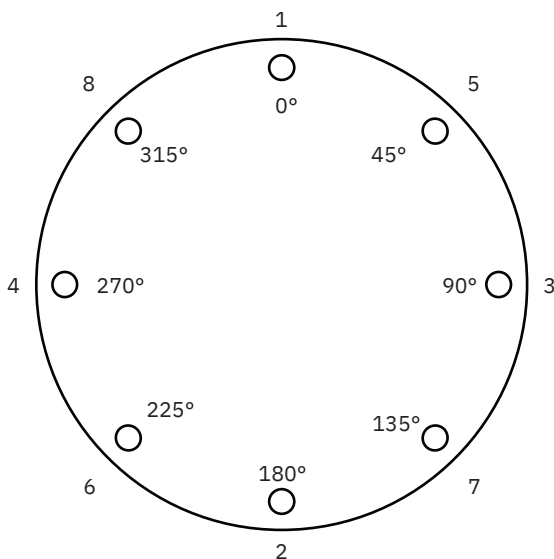
Field Guide for Installation of Flanged Ductile Iron Pipe (cont'd)

Bolt Torque Procedure

Procedure for Application

Bolt Torque on Flanged Joints

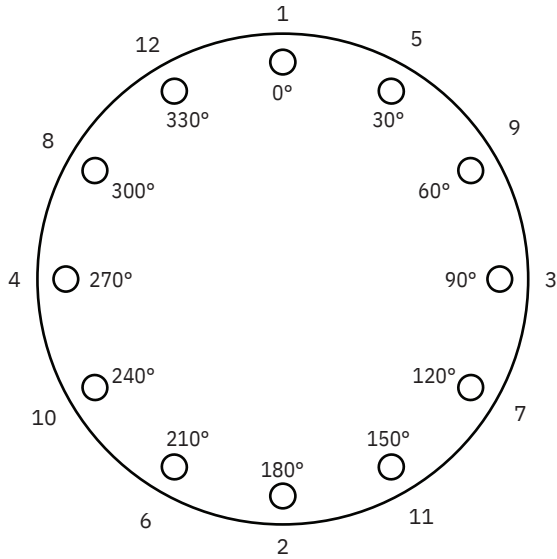
1. Align component part and clamp together with hold down.
2. Lubricate stud (or bolt) threads in area of nut (or forged ring) engagement, also lubricate face of nuts (or bolt head) using a suitable lubricant.
3. Install all bolts and nuts finger tight.
4. Number bolts so that torquing requirements can be followed.
5. Apply torque in 20% (1/5) steps of required final torque, loading all bolts at each step before proceeding to next step.
6. Tighten bolts in sequential order 0-180°, 90°-270°, 45°-225°, 135°-315°, at each step until final torque is reached.
7. Use rotational tightening until all bolts are stable at final torque level (two complete times around is usually required).



8-Bolts

Sequential Order	Rotational Order
1-2	1
3-4	5
5-6	3
7-8	7
	2
	6
	4
	8

Field Guide for Installation of Flanged Ductile Iron Pipe (cont'd)



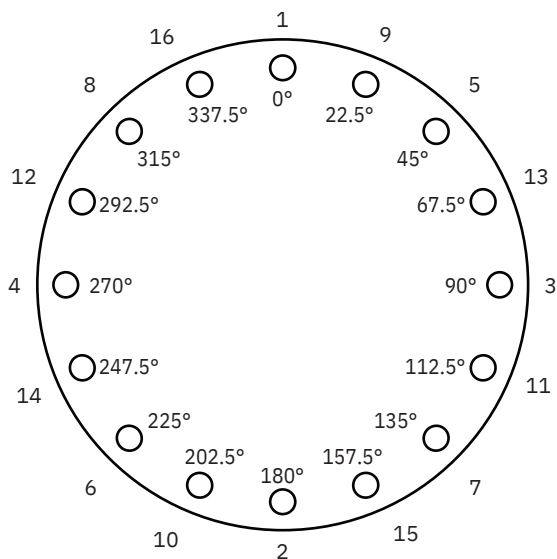
12-Bolts

Sequential Order

1-2
3-4
5-6
7-8
9-10
11-12

Rotational Order

1 2
5 6
9 10
3 4
7 8
11 12



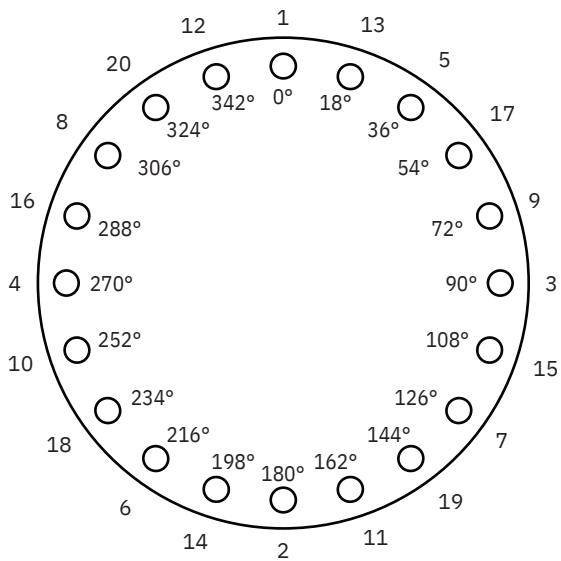
16-Bolts

Sequential Order

1-2
3-4
5-6
7-8
9-10
11-12
13-14
15-16

Rotational Order

1 2
9 10
5 6
13 14
3 4
11 12
7 8
15 16



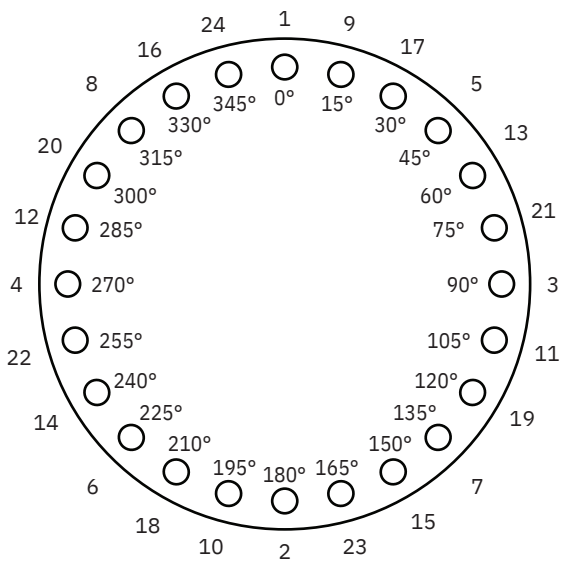
20-Bolts

Sequential Order

1-2
3-4
5-6
7-8
9-10
11-12
13-14
15-16
17-18
19-20

Rotational Order

1 2
13 14
5 6
17 18
9 10
3 4
15 16
7 8
19 20
11 12



24-Bolts

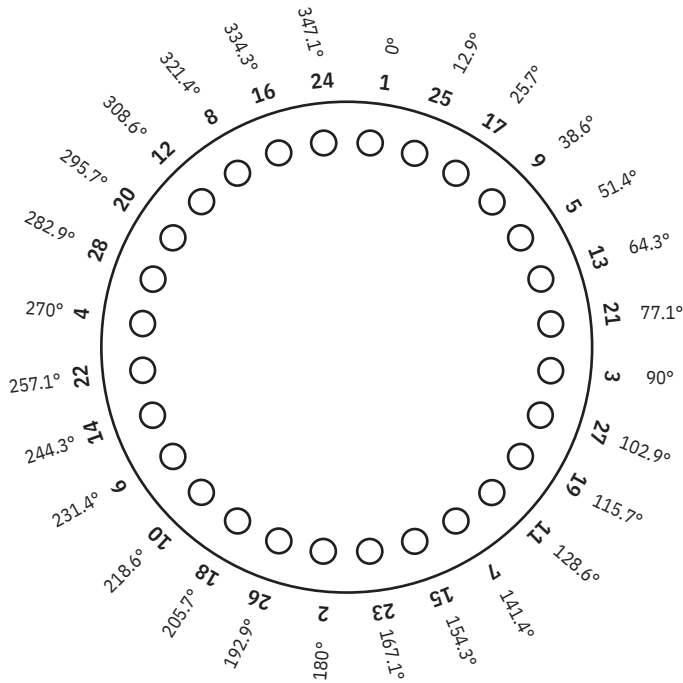
Sequential Order

1-2
3-4
5-6
7-8
9-10
11-12
13-14
15-16
17-18
19-20
21-22
23-24

Rotational Order

1 2
9 10
17 18
5 6
13 14
21 22
3 4
11 12
19 20
7 8
15 16
23 24

Field Guide for Installation of Flanged Ductile Iron Pipe (cont'd)



28-Bolts

Sequential Order

1-2	15-16
3-4	17-18
5-6	19-20
7-8	21-22
9-10	23-24
11-12	25-26
13-14	27-28

Rotational Order

1	2
25	26
17	18
9	10
5	6
13	14
21	22
3	4
27	28
19	20
11	12
7	8
15	16
23	24

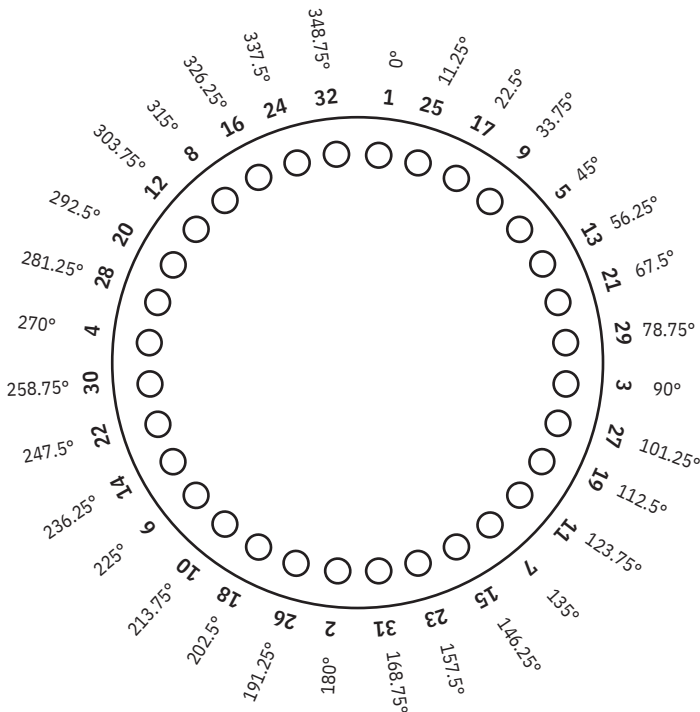
32-Bolts

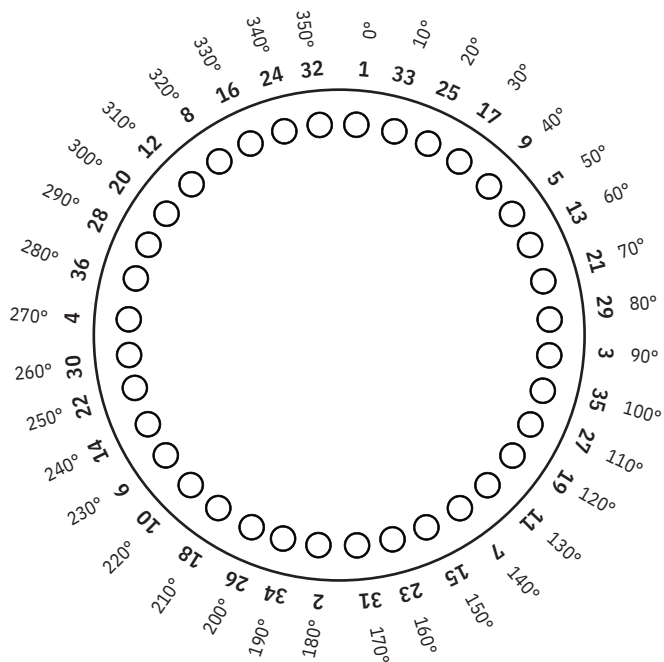
Sequential Order

1-2	17-18
3-4	19-20
5-6	21-22
7-8	23-24
9-10	25-26
11-12	27-28
13-14	29-30
15-16	31-32

Rotational Order

1	2
25	26
17	18
9	10
5	6
13	14
21	22
29	30
3	4
27	28
19	20
11	12
7	8
15	16
23	24
31	32





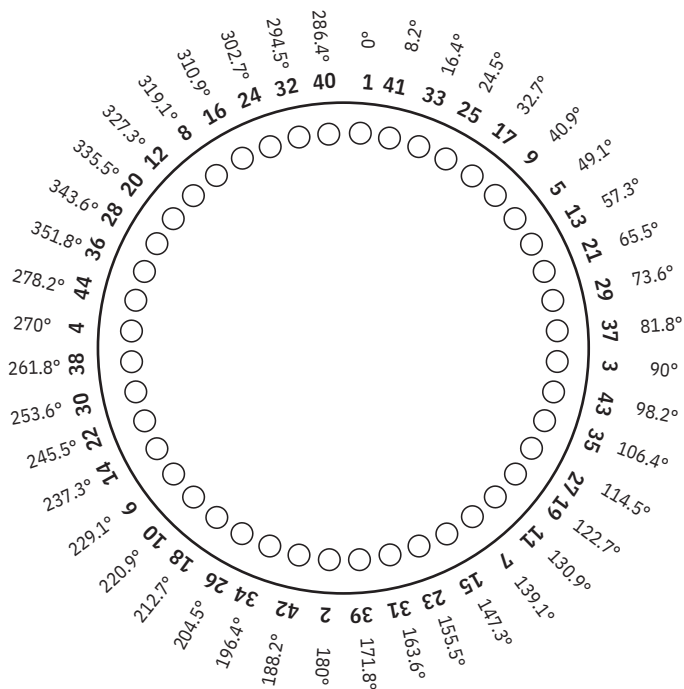
36-Bolts

Sequential Order

1-2	19-20
3-4	21-22
5-6	23-24
7-8	25-26
9-10	27-28
11-12	29-30
13-14	31-32
15-16	33-34
17-18	35-36

Rotational Order

1	19	14
33	11	22
25	7	30
17	15	4
9	23	36
5	31	28
13	2	20
21	34	12
29	26	8
3	18	16
35	10	24
27	6	32



44-Bolts

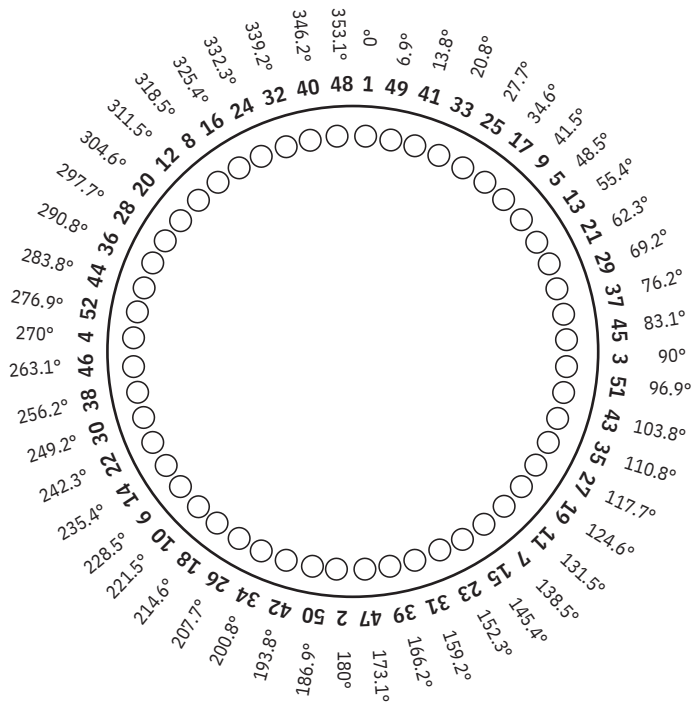
Sequential Order

1-2	23-24
3-4	25-26
5-6	27-28
7-8	29-30
9-10	31-32
11-12	33-34
13-14	35-36
15-16	37-38
17-18	39-40
19-20	41-42
21-22	43-44

Rotational Order

1	19	22
41	11	30
33	7	38
25	15	4
17	23	44
9	31	36
5	39	28
13	2	20
21	42	12
29	34	8
37	26	16
3	18	24
43	10	32
35	6	40
27	14	

Field Guide for Installation of Flanged Ductile Iron Pipe (cont'd)



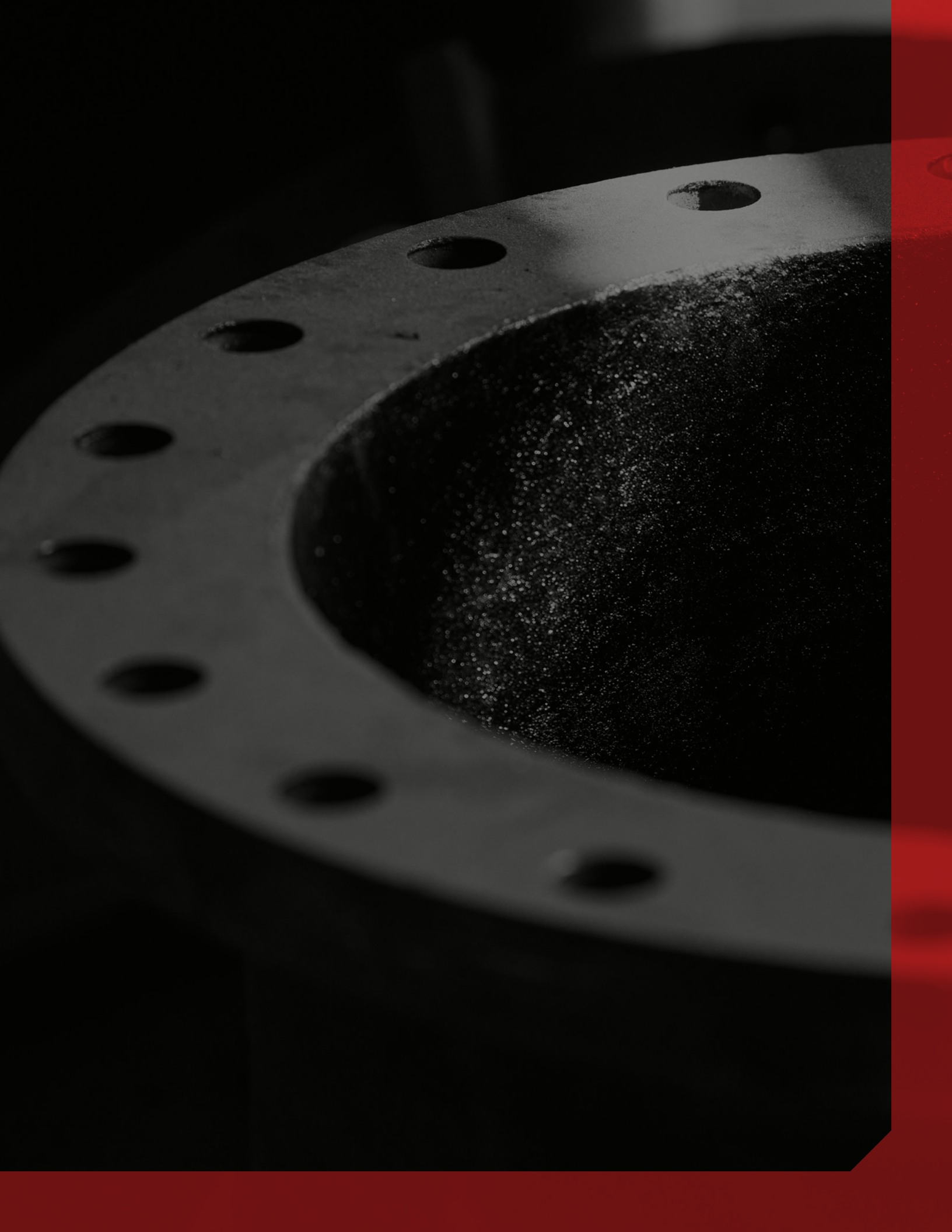
52-Bolts

Sequential Order

1-2	27-28
3-4	29-30
5-6	31-32
7-8	33-34
9-10	35-36
11-12	37-38
13-14	39-40
15-16	41-42
17-18	43-44
19-20	45-46
21-22	47-48
23-24	49-50
25-26	51-52

Rotational Order

1	2
49	50
41	42
33	34
25	26
17	18
9	10
5	6
13	14
21	22
29	30
37	38
45	46
3	4
51	52
43	44
35	36
27	28
19	20
11	12
7	8
15	16
23	24
31	32
39	40
47	



Ductile Spools Minimum Lengths

Diameter	125# FLG x 125# FLG	125# FLG x 250# FLG	250# FLG x 250# FLG	125# FLG x MJ	250# FLG x MJ	MJ x MJ	FLG x G	G x G
3"	4"	3 $\frac{1}{16}$ "	3 $\frac{5}{8}$ "	6 $\frac{1}{4}$ "	6 $\frac{3}{16}$ "	8 $\frac{3}{4}$ "	4"	3 $\frac{1}{2}$ "
4"	4"	3 $\frac{7}{8}$ "	3 $\frac{7}{8}$ "	6 $\frac{7}{16}$ "	6 $\frac{7}{16}$ "	9"	4"	3 $\frac{1}{2}$ "
6"	4"	4 $\frac{3}{8}$ "	4 $\frac{3}{8}$ "	6 $\frac{7}{8}$ "	6 $\frac{7}{8}$ "	9 $\frac{3}{8}$ "	4 $\frac{1}{4}$ "	3 $\frac{1}{2}$ "
8"	5"	4 $\frac{15}{16}$ "	4 $\frac{7}{8}$ "	7 $\frac{1}{2}$ "	7 $\frac{1}{16}$ "	10"	4 $\frac{3}{4}$ "	3 $\frac{3}{4}$ "
10"	5 $\frac{3}{8}$ "	4 $\frac{7}{8}$ "	5 $\frac{3}{8}$ "	7 $\frac{3}{4}$ "	7 $\frac{1}{16}$ "	10 $\frac{1}{4}$ "	5"	3 $\frac{3}{4}$ "
12"	5 $\frac{5}{8}$ "	5 $\frac{9}{16}$ "	5 $\frac{5}{8}$ "	8 $\frac{1}{8}$ "	8 $\frac{3}{16}$ "	10 $\frac{3}{4}$ "	5 $\frac{1}{4}$ "	3 $\frac{3}{4}$ "
14"	5 $\frac{3}{4}$ "	5 $\frac{13}{16}$ "	5 $\frac{7}{8}$ "	9 $\frac{5}{8}$ "	9 $\frac{11}{16}$ "	13 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	3 $\frac{3}{4}$ "
16"	5 $\frac{3}{4}$ "	6"	6 $\frac{1}{4}$ "	9 $\frac{7}{8}$ "	10 $\frac{1}{8}$ "	14"	6"	4 $\frac{1}{2}$ "
18"	6"	6 $\frac{3}{8}$ "	6 $\frac{1}{2}$ "	10 $\frac{3}{8}$ "	10 $\frac{1}{2}$ "	14 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "	4 $\frac{1}{2}$ "
20"	6 $\frac{1}{2}$ "	6 $\frac{13}{16}$ "	7 $\frac{1}{8}$ "	10 $\frac{3}{4}$ "	11 $\frac{1}{16}$ "	15"	6 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
24"	7"	7 $\frac{1}{2}$ "	8"	11 $\frac{1}{4}$ "	11 $\frac{3}{4}$ "	15 $\frac{1}{2}$ "	7"	4 $\frac{1}{2}$ "
30"	8 $\frac{1}{2}$ "	9"	9 $\frac{7}{16}$ "	13 $\frac{5}{8}$ "	14 $\frac{1}{8}$ "	18 $\frac{3}{4}$ "	7 $\frac{3}{4}$ "	5"
36"	9 $\frac{1}{2}$ "	10 $\frac{1}{8}$ "	10 $\frac{5}{16}$ "	15"	15 $\frac{1}{8}$ "	20"	8 $\frac{1}{2}$ "	5"

**Note: Lengths void if piece requires a wall collar or thrust ring.*



ANSI / AWWA Standards

Custom Pipe & Fabrication meets or exceeds the latest revision of the following ANSI/AWWA standards:

C104/A21.4 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings

C115/A21.15 Flanged Ductile-Iron Pipe With Ductile-Iron or Gray-Iron Threaded Flanges

C200 Steel Water Pipe, 6 In. (150 mm) and Larger

C207 Steel Pipe Flanges for Waterworks Service Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm)

C210 Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines

C213 Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines

C606 Grooved and Shouldered Joints



For more information,
please contact your
sales representative or
visit our website

+ custompipe.com



CUSTOM PIPE & FABRICATION IS A PROUD MEMBER OF

