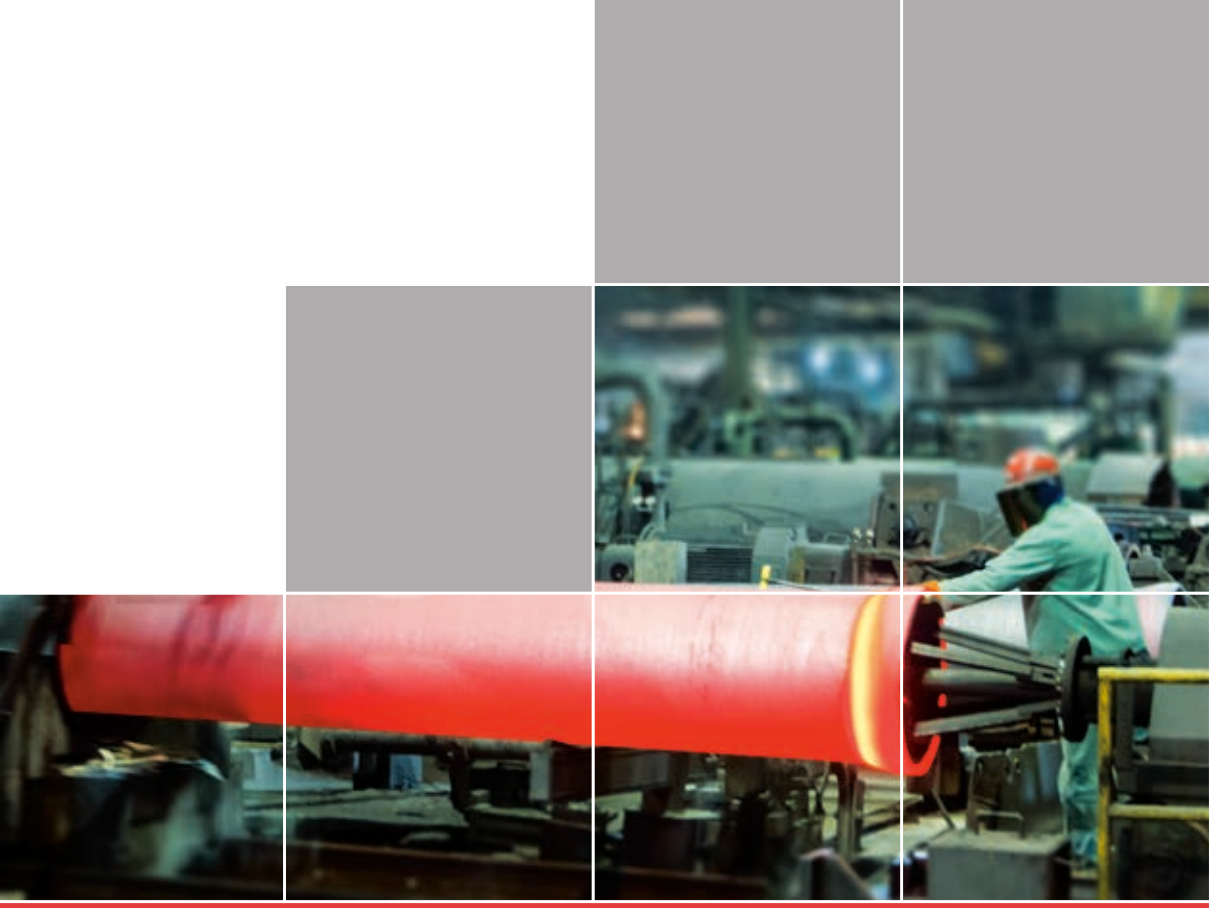
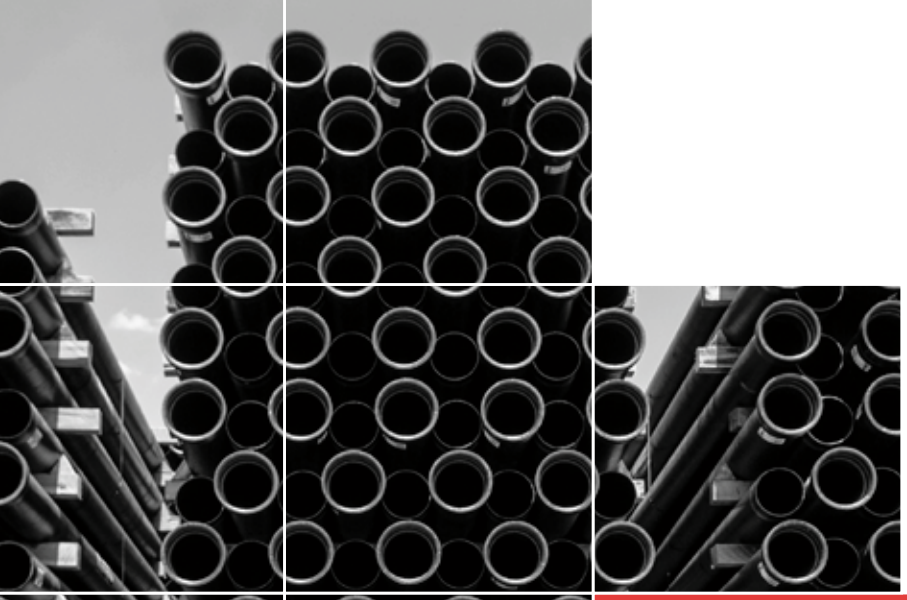


TYTON JOINT® Pipe

DUCTILE IRON

U.S. PIPE



CONTENTS

ANSI/AWWA STANDARDS

ANSI/AWWA C151/A21.5, Ductile Iron Pipe, Centrifugally Cast for Water.
Ductile Iron Tyton Joint Pipe is centrifugally cast in metal molds in accordance with ANSI/ AWWA C151/A21.5.

The asphaltic outside coating is in accordance with ANSI/AWWA C151/A21.51.

As specified in ANSI/AWWA C151/A21.51, pipe weights have been calculated using standard barrel weights and weights of bells being produced.

ANSI/AWWA C104/A21.4, Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
The cement-mortar lining and inside coating are in accordance with ANSI/AWWA C104/ A21.4. Special linings and/or coatings can be furnished for specific conditions.

ANSI/AWWA C111/A21.11, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
Tyton Gaskets are furnished in accordance with ANSI/AWWA C111/A21.11.

ANSI/AWWA C105/A21.5, Polyethylene Encasement for Ductile Iron Pipe Systems.
If specifiers and users believe that corrosive soils will be encountered where our products are to be installed, please refer to ANSI/AWWA C105/A21.5, for proper external protection procedures.

ASTM A746-03 "Standard specification for Ductile Iron Gravity Sewer Pipe."
ASTM A716-08 "Standard Specification for Ductile Iron Culvert Pipe."
ASTM A536 "Standard Specification for Ductile Iron Castings."

Tyton Joint is U.S. Pipe's trademark for pipe with a push-on type connection. Simplicity, sturdiness and watertightness are built into the system by design. Convincing proof of its worldwide acceptance is shown by the fact that more than 95% of the pipe now sold by U.S. Pipe is Tyton Joint.

Tyton Joint Pipe is available in sizes 3" through 64". Sizes 3" through 42" are available in nominal 18-foot laying lengths. 4" through 30" sizes, along with sizes 48" through 64", are available in nominal 20-foot laying lengths.

Tyton Joint Pipe in sizes 4" through 36" are UL listed, and sizes 4" through 16" are FM Approved.

When Tyton Joint Pipe is used for bridge crossings or other above-ground installations, each length of pipe must be supported in a manner to restrict both vertical and horizontal movement.

A Tyton Gasket is the only accessory required when installing Tyton Joint Pipe. It is a circular rubber gasket that has a modified bulb shape in cross section. Gaskets are furnished in accordance with ANSI/AWWA C111/ A21.1. Composition and dimensions of the gasket have been carefully engineered to ensure a watertight and lasting seal. The standard Tyton Gasket is manufactured of SBR — styrene butadiene rubber. Gaskets of special elastomers may be ordered for special applications. The gasket contour and bell socket contour ensure that the gasket will remain seated during proper assembly of the pipe. When joint restraint is required for push-on joint pipe, two options are available from U.S. Pipe. For joint restraint of 4" through 24", Field Lok 350 Gaskets may be used. Field Lok 350 Gaskets are rated for 350 psi in sizes 4" through 24". In addition, for 4" through 36" sizes, TR Flex Pipe and Fittings may be used, and for 30" through 64" sizes, HP Lok Pipe and Fittings may be used. TR Flex Pipe and Fittings are rated for working pressures for 350 psi in 4" through 24" sizes, 250 psi in sizes 30" through 36". For HP Lok Pipe and Fittings, the working pressure is 350 psi for 30" through 64". For higher pressure applications contact your U.S. Pipe representative. Complete details on Field Lok 350 Gaskets, TR Flex Pipe and Fittings, and HP Lok Pipe and Fittings can be found on our website, www.uspipe.com.

Tyton joint pipe is NSF/ANSI 61 Certified for drinking water system components.

NOTE: U.S. Pipe qualifies for Federal Procurement under Public Law No. 94-580, Section 6002, known as the Resource Recovery Act of 1976, since, due to modern technology, recycled iron and steel scrap are used to a large degree in our Ductile Iron Pipe production.

The plain end of the pipe is furnished beveled or with a quarter ellipse on the edge to allow assembly. More than 40 years of successful experience have proved its sealing capabilities. Hydrostatic tests have shown that the system will withstand pressures far in excess of rated pressures.

NOTE: Each of the following is a nationally recognized standards organization: American National Standards Institute (ANSI), American Water Works Association (AWWA), American Society for Testing and Materials (ASTM), Underwriters Laboratories (UL), National Fire Protection Association (NFPA), National Sanitation Foundation (NSF), Factory Mutual (FM)

INSERTION OF GASKET *(Figure 1)*

All foreign matter in the socket must be removed, i.e., mud, sand, cinders, gravel, pebbles, trash, frozen material, etc. The gasket seat should be thoroughly inspected to be certain it is clean. Foreign matter in the gasket seat may cause a leak. The gasket must be wiped clean with a clean cloth, flexed, and then placed into the socket with the rounded bulb end entering first. Looping the gasket in the initial insertion will facilitate seating the gasket heel evenly around the retainer seat. 3" through 12" sizes require only one loop. For larger sizes, additional loops may be required: 14" through 36", two to three loops; 42" through 54", four to six loops; 60" and 64", six or more loops. Evenly space the loops around the socket with each loop raised 4"–5" inches. After loops are established, push each loop down to finish installation of the gasket. When installing Tyton Joint Pipe in sub-freezing weather, the gaskets, prior to their use, must be kept at a temperature of at least 40°F by suitable means, such as storing in a heated area or keeping them immersed in a tank of warm water. If the gaskets are kept in warm water, they should be dried before placing in the pipe socket.

APPLICATION OF LUBRICANT *(Figure 2)*

A thin film of Tyton Joint Lubricant should be applied to the inside surface of the gasket, which will come in contact with the plain end of the pipe. In warm, dry weather conditions, the lubricant can dry out, especially when applied to warm or hot pipe. It will be necessary to add a small amount of water to hydrate the lubricant. Only Tyton Joint Lubricant should be used. Spray-on lubricants should not be used, as they may not provide sufficient lubricity. The plain end of the pipe must be cleaned of all foreign matter on the outside from the end to the stripes. Frozen materials may cling to the pipe in cold weather and must be removed. A thin film of lubricant is applied to the outside of the plain end for about 3" back from the end. Do not allow the plain end to touch the ground or trench side after lubricating since foreign matter may adhere to the plain end and cause a leak.

INITIAL ENTRY OF PLAIN END IN SOCKET *(Figure 3)*

The plain end of the pipe should be aligned and carefully entered into the socket until it just makes contact with the gasket. This is the starting position for the final assembly of the joint. Note the two painted stripes on the plain end.

COMPLETELY ASSEMBLED JOINT *(Figure 4)*

Joint assembly should be completed by forcing the plain end of the entering pipe past the gasket *(which is thereby compressed)* until the plain end makes contact with the bottom of the socket. Note that the first painted stripe will have disappeared into the socket and the front edge of the second stripe will be approximately flush with the bell face. Joint deflection may be achieved after the pipe is fully inserted. If assembly is not accomplished with the application of reasonable force by the methods indicated, the plain end of the pipe should be removed to check for the proper positioning of the gasket, adequate lubrication, and removal of foreign matter in the joint.

ASSEMBLY GUIDE

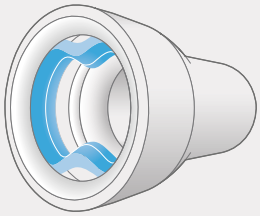


Figure 1

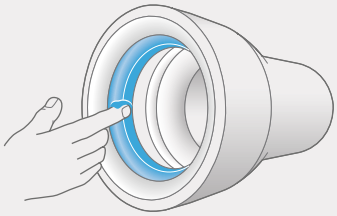


Figure 2

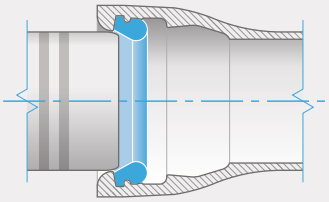


Figure 3

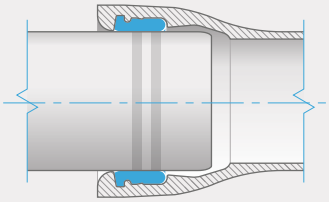


Figure 4

NOTE: When using Field Lok 350 Gaskets or pipe with special linings, assemble the joint until the inside edge of the first painted stripe (or the assembly mark) is flush with the bell face and to prevent damaging the cement lining or other special sewer linings.

CAUTION: *The inside of the socket, the gasket, and the plain end to be inserted must be kept clean throughout the assembly. Joints are only as watertight as they are clean. If the joint is somewhat difficult to assemble, inspect for proper gasket positioning, adequate lubrication, and foreign matter in the joint.*

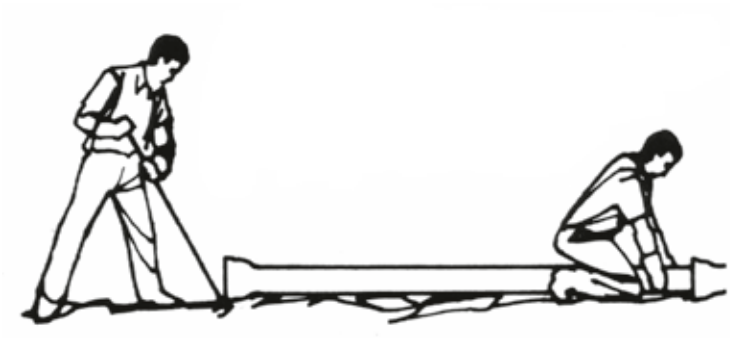
NOTE: Procedures outlined in figures 1–4 on page 4, showing the assembly of Tyton Joint Pipe, should be followed before proceeding with the methods shown below.

A feeler gage may be inserted between the bell and the plain end of the assembled joint to verify the position of the gasket. When the gage encounters the gasket, increased resistance will be felt. Note the depth of insertion of the gage. Continue probing around the periphery of the joint, noting the depth to resistance each time. If the depth of insertion is uniform, the gasket has remained in place. If, at any point, the depth of insertion increases significantly, this indicates a dislodged gasket. The joint should be disassembled, thoroughly cleaned with water, and examined for any condition that might have caused the gasket to become dislodged before attempting to reassemble the joint.
Backhoe Method of Assembly *(8"–64" Pipe)*

A backhoe may be used to assemble pipe of intermediate and larger sizes. The plain end of the pipe should be carefully guided by hand into the bell of the previously assembled pipe. The bucket of the backhoe may then be used to carefully push the pipe until fully seated. A timber header should be used between the pipe and the backhoe bucket to avoid damage to the pipe. Caution: Avoid "slamming" the pipe home to prevent damage to lining material inside the bell at the back of the socket.

CROWBAR METHOD OF ASSEMBLY *(3"–6" Pipe)*

Smaller sizes of pipe may be assembled using a crowbar as a lever and pushing against the face of the bell. See figure 5 below.

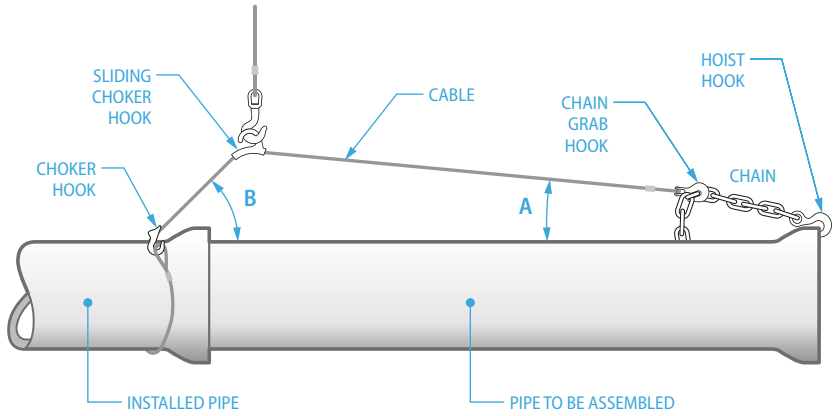


COME-A-LONG METHOD OF ASSEMBLY *(3"–64" Pipe)*

Installers may prefer to use come-a-longs to assemble pipe of all sizes. This method is especially useful in tight or hard to reach locations. Two *(2)* 3/4–2 ton chain hoists, 24 feet of chain and two *(2)* bell choker slings for 3"–24" or two *(2)* 2–4 ton *(minimum)* chain hoists for 30"–64" sizes.

SIDE ASSEMBLY

The most common field method of assembling larger diameter Tyton Joint Pipe is to use a backhoe to push against the face of the bell end of the pipe to be assembled. Occasionally, there are installations where a backhoe cannot be located in line with the pipe and it is, therefore, difficult to develop enough axial force to assemble the pipe. In such cases, it may be possible to use the method described below to assemble the pipe from the side of the trench. With this method, the weight of the pipe is used to provide the axial force required for assembly. In general, a choker chain or cable is hooked around the bell of the previously laid pipe. The spigot end of the pipe to be assembled is first inserted as far as possible into the bell end of the previously laid pipe. The end of the choker is then hooked into the bell end of the pipe to be laid.



One such rigging is made from a long cable with a choker on one end and a chain grab hook on the other end, with a sliding choker hook between the two other hooks. A second section of the rigging is a shorter chain with a wide throat hoisting hook on one end. The cable is first "choked" around the bell of the previously laid pipe using the fixed choker hook. The chain is hooked into the bell end of the pipe to be laid. The cable is hooked to the chain with the grab hook. The connected length of the rigging can thus be adjusted with the connection between the cable grab hook and the chain. The pipe assembly is made by lifting up on the sliding choker hook.

A FEW RULES OF THUMB:

- Angle *(A)* should be no greater than 15 degrees.
- Angle *(B)* should be from 45 to 60 degrees.
- The sliding choker hook should be located from 2 to 8 feet from the bell of the previously laid pipe.
- Trial assembly may be made to get a "feel" for the correct amount of slack to be left in the rigging and the proper location of the sliding choker hook.

A FEW PRECAUTIONS:

- The smaller the angle *(A)*, the larger will be the assembly force and the tension in the rigging. The assembly force and the tension will generally range from 2 to 10 times the weight of the pipe being assembled. These forces are at a maximum when the assembly is bottomed out and lift is still being applied to the rigging. To minimize the loads on the rigging, it is recommended that the assembly be made slowly and the assembly stopped as soon as the joint is bottomed out.
- The rigging should be properly designed to accommodate the diameter, length, and weight of the pipe on the job and the loads previously described.
- This method should not be employed when installing Field Lok 350 Gaskets since alignment of the joint cannot be assured. For the proper installation practice, refer to U.S. Pipe brochure Field Lok 350 Gasket Joint Restraint for 4"–24" Ductile Iron Pipe for Water, Wastewater, Fire Protection and Industrial Applications.

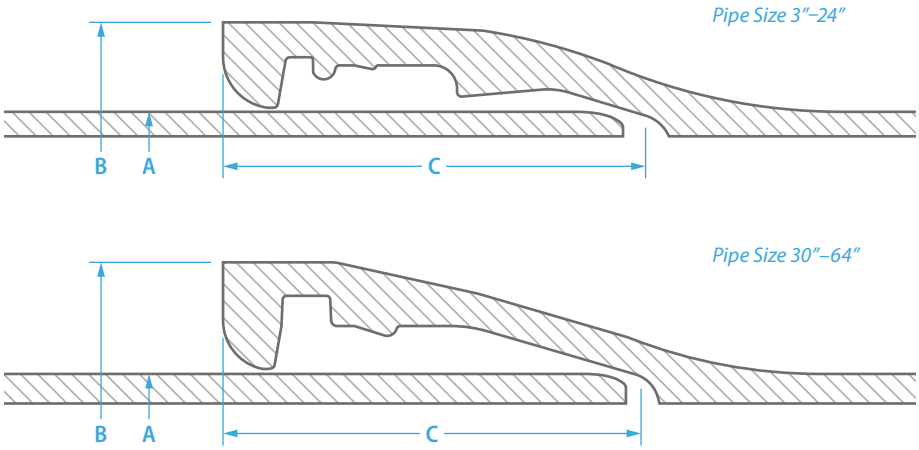
NOTE: When necessary, pipe may be rounded in accordance with U.S. Pipe's brochure, recommended methods for rounding the cut ends of out-of-round 14" and larger diameter ductile iron pipe.

When field cutting pipe up to 12" to within approximately 2 feet of the bell chime or closer, the pipe diameter should be measured with a diameter tape graduated in 100th's before cutting. Abrasive saws are commonly used to cut pipe in the field, the cut end may be readily conditioned so that it can be used to make up the next joint. The outside of the cut end should be beveled with a portable grinder or disk grinder, refer to a shop manufactured bevel as a guide for proper shape.

Additional grinding may be required to further bevel the pipe if difficulty in assembly of the joint is encountered. This operation removes any sharp, rough edges that otherwise might damage the gasket. The pipe must be cut as square as is practical. A field cut end that is not square may leak, especially if the joint is fully deflected. Measure from the factory manufactured spigot end to the desired cut location. Mark the measured distance around the diameter of the pipe at sufficient intervals to determine a square cut-line *(a line perpendicular to the axis of the pipe)*. Scribe the square cut-line around the O.D. of the pipe. When ductile iron pipe 14" and larger is to be cut in the field, the material should be ordered as "Gauged Pipe." A Gauged Pipe is a pipe whose barrel circumference is within the spigot dimensional specifications as determined by diameter tape measurements over the pipe's length to within approximately 2 feet of the bell chime. Pipe that is "gauged" is specially marked to avoid confusion with green paint on the bell face. ANSI/AWWA C151/A21.5 Standard for Ductile Iron pipe requires factory gauging of the spigot end. Accordingly, pipe selected for field cutting should also be field gauged in the location of the cut and ensured to be within the tolerances shown in Table 2. In the field a mechanical joint gland can be used as a gauging device, however, for accuracy it is recommended that a diameter tape graduated in 100th's be used.

INCH		
SIZE	PIPE DIAMETER	
	Minimum	Maximum
3	3.90	4.02
4	4.74	4.86
6	6.84	6.96
8	8.99	9.11
10	11.04	11.16
12	13.14	13.26
14	15.22	15.35
16	17.32	17.45
18	19.42	19.55
20	21.52	21.65
24	25.72	25.85
30	31.94	32.08
36	38.24	38.38
42	44.44	44.58
48	50.74	50.88
54	57.46	57.60
60	61.51	61.65

NOTE: For accuracy, a diameter tape graduated in 100th's must be used. Above table based on ANSI/AWWA C151/A21.51 guidelines for push-on joints.



INCHES			
SIZE	PIPE OUTER DIAMETER	BELL OUTER DIAMETER	SOCKET DEPTH
	A	B	C
3	3.96	5.56	3.00
4	4.80	6.52	3.15
6	6.90	8.66	3.38
8	9.05	10.82	3.69
10	11.10	12.91	3.75
12	13.20	15.05	3.75
14	15.30	17.67	5.00
16	17.40	19.79	5.00
18	19.50	21.91	5.00
20	21.60	24.03	5.50
24	25.80	28.21	5.95
30	32.00	35.40	6.55
36	38.30	41.84	7.00
42	44.50	49.36	7.90
48	50.80	55.94	8.60
54	57.56	63.38	9.40
60	61.61	67.38	10.10
64	65.67	71.56	10.65

NOTE: Actual bell configuration may vary from illustration shown. Subject to manufacturing tolerances.

INCHES							
SIZE	OUTSIDE DIAMETER	NOMINAL THICKNESS					CASTING TOLERANCES
		Pressure Class[a]					
		150	200	250	300	350	
3	3.96	—	—	—	—	—	[c]
4	4.80	—	—	—	—	0.25[b]	0.05
6	6.90	—	—	—	—	0.25[b]	0.05
8	9.05	—	—	—	—	0.25[b]	0.05
10	11.10	—	—	—	—	0.26	0.06
12	13.20	—	—	—	—	0.28	0.06
14	15.30	—	—	0.28	0.30	0.31	0.07
16	17.40	—	—	0.30	0.32	0.34	0.07
18	19.50	—	—	0.31	0.34	0.36	0.07
20	21.60	—	—	0.33	0.36	0.38	0.07
24	25.80	—	0.33	0.37	0.40	0.43	0.07
30	32.00	0.34	0.38	0.42	0.45	0.49	0.07
36	38.30	0.38	0.42	0.47	0.51	0.56	0.07
42	44.50	0.41	0.47	0.52	0.57	0.63	0.07
48	50.80	0.46	0.52	0.58	0.64	0.70	0.08
54	57.56	0.51	0.58	0.65	0.72	0.79	0.09
60	61.61	0.54	0.61	0.68	0.76	0.83	0.09
64	65.67	0.56	0.64	0.72	0.80	0.87	0.09

NOTE: Per ANSI/AWWA C150/A21.50 the thickness in the above table includes the 0.08" service allowance and the casting tolerance by size ranges. Dimensions and weights of Special Classes (Thickness Classes) are found on pages 13, 14, 15 and 16.

[a]Pressure Classes are defined as the rated water pressure of the pipe in psi. The thickness shown is adequate for the rated water working pressure plus a surge allowance of 100 psi. Calculations are based on a minimum yield strength of 42,000 and a 2.0 safety factor times the sum of the working pressure and 100 psi surge allowance.

[b]Presently these are the lowest nominal thickness available in these sizes.

[c]See thickness class for 3".

INCHES	PSI	INCHES		POUNDS		
SIZE	PRESSURE CLASS	THICKNESS	OUTSIDE DIAMETER[a]	BARREL WEIGHT PER FOOT	WEIGHT PER LAYING LENGTH[b]	
					18-FOOT	20-FOOT
3	—	—	—	—	—	—
4	350	0.25	4.80	10.9	205	230
6	350	0.25	6.90	16.0	305	335
8	350	0.25	9.05	21.1	400	445
10	350	0.26	11.10	27.1	515	570
12	350	0.28	13.20	34.8	660	730
14	250	0.28	15.30	40.4	780	865
14	300	0.30	15.30	43.3	920	1010
14	350	0.31	15.30	44.7	860	945
16	250	0.30	17.40	49.3	950	1050
16	300	0.32	17.40	52.5	1010	1115
16	350	0.34	17.40	55.8	1065	1175
18	250	0.31	19.50	57.2	1095	1210
18	300	0.34	19.50	62.6	1195	1320
18	350	0.36	19.50	66.2	1260	1390
20	250	0.33	21.60	67.5	1285	1420
20	300	0.36	21.60	73.5	1395	1540
20	350	0.38	21.60	77.5	1465	1620
24	200	0.33	25.80	80.8	1550	1710
24	250	0.37	25.80	90.5	1725	1905
24	300	0.40	25.80	97.7	1855	2050
24	350	0.43	25.80	104.9	1985	2195
30	150	0.34	32.00	103.5	2005	2210
30	200	0.38	32.00	115.5	2220	2450
30	250	0.42	32.00	127.5	2595	2690
30	300	0.45	32.00	136.5	2810	2870
30	350	0.49	32.00	148.4	2685	3110
36	150	0.38	38.30	138.5	2945	—
36	200	0.42	38.30	152.9	2940	—
36	250	0.47	38.30	170.9	3265	—
36	300	0.51	38.30	185.3	3525	—
36	350	0.56	38.30	203.2	3845	—

Table continued on next page. ▶

NOTE: Thicknesses and dimensions of 3" through 64" ductile iron pipe conform to ANSI/AWWA C151/A21.51. Weights may vary from the standard because of differences in bell weights.

[a]Tolerance of O.D. of spigot end: 3–12 in., ±0.06 in.; 14–24 in., +0.05 in., -0.08 in.; 30–48 in., +0.08 in., -0.06 in.; 54–64 in., +0.04 in., -0.10 in.

[b]Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

[c]See thickness class for 3".

INCHES	PSI	INCHES		POUNDS		
SIZE	PRESSURE CLASS	THICKNESS	OUTSIDE DIAMETER[a]	BARREL WEIGHT PER FOOT	WEIGHT PER LAYING LENGTH[b]	
					18-FOOT	20-FOOT
42	150	0.41	44.50	173.8	3505	—
42	200	0.47	44.50	198.9	3960	—
42	250	0.52	44.50	219.9	4335	—
42	300	0.57	44.50	240.7	4710	—
42	350	0.63	44.50	265.7	5160	—
48	150	0.46	50.80	—	—	4950
48	200	0.52	50.80	—	—	5525
48	250	0.58	50.80	—	—	6095
48	300	0.64	50.80	—	—	6670
48	350	0.70	50.80	—	—	7240
54	150	0.51	57.56	—	—	6430
54	200	0.58	57.56	—	—	7190
54	250	0.65	57.56	—	—	7945
54	300	0.72	57.56	—	—	8700
54	350	0.79	57.56	—	—	9455
60	150	0.54	61.61	—	—	7305
60	200	0.61	61.61	—	—	8120
60	250	0.68	61.61	—	—	8935
60	300	0.76	61.61	—	—	9860
60	350	0.83	61.61	—	—	10665
64	150	0.56	65.67	—	—	8100
64	200	0.64	65.67	—	—	9090
64	250	0.72	65.67	—	—	10080
64	300	0.80	65.67	—	—	11065
64	350	0.87	65.67	—	—	11925

NOTE: Thicknesses and dimensions of 3" through 64" ductile iron pipe conform to ANSI/AWWA C151/A21.51. Weights may vary from the standard because of differences in bell weights.

[a]Tolerance of O.D. of spigot end: 3–12 in., ±0.06 in.; 14–24 in., +0.05 in., -0.08 in.; 30–48 in., +0.08 in., -0.06 in.; 54–64 in., +0.04 in., -0.10 in.

[b]Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

INCHES		INCHES		POUNDS		
SIZE	THICKNESS CLASS	THICKNESS	OUTSIDE DIAMETER	BARREL WEIGHT PER FOOT	WEIGHT PER LENGTH	WEIGHT PER LENGTH
					18-FOOT LAYING LENGTH	20-FOOT LAYING LENGTH
3	54	0.34	3.96	11.8	220	—
3	55	0.37	3.96	12.8	240	—
3	56	0.40	3.96	13.7	255	—
4	51	0.26	4.80	11.3	215	235
4	52	0.29	4.80	12.6	235	260
4	53	0.32	4.80	13.8	260	285
4	54	0.35	4.80	15.0	280	310
4	55	0.38	4.80	16.1	300	330
4	56	0.41	4.80	17.3	320	355
6	50	0.25	6.90	16.0	305	335
6	51	0.28	6.90	17.8	335	370
6	52	0.31	6.90	19.6	370	410
6	53	0.34	6.90	21.4	400	445
6	54	0.37	6.90	23.2	435	480
6	55	0.40	6.90	25.0	465	515
6	56	0.43	6.90	26.7	495	550
8	50	0.27	9.05	22.8	430	475
8	51	0.30	9.05	25.2	475	525
8	52	0.33	9.05	27.7	520	575
8	53	0.36	9.05	30.1	560	620
8	54	0.39	9.05	32.5	605	670
8	55	0.42	9.05	34.8	650	720
8	56	0.45	9.05	37.2	690	765
10	50	0.29	11.10	30.1	570	630
10	51	0.32	11.10	33.2	625	690
10	52	0.35	11.10	36.2	680	750
10	53	0.38	11.10	39.2	730	810
10	54	0.41	11.10	42.1	785	870
10	55	0.44	11.10	45.1	840	930
10	56	0.47	11.10	48.0	890	990

Table continued on next page. ▶

NOTE: Thicknesses and dimensions of 3" through 64" ductile iron pipe conform to ANSI/AWWA C151/A21.51. Weights may vary from the standard because of differences in bell weights.

[a]Tolerance of O.D. of spigot end: 3–12 in., ±0.06 in.; 14–24 in., +0.05 in., -0.08 in.; 30–48 in., +0.08 in., -0.06 in.; 54–64 in., +0.04 in., -0.10 in.

[b]Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

INCHES		INCHES		POUNDS		
SIZE	THICKNESS CLASS	THICKNESS	OUTSIDE DIAMETER	BARREL WEIGHT PER FOOT	WEIGHT PER LENGTH	WEIGHT PER LENGTH
					18-FOOT LAYING LENGTH	20-FOOT LAYING LENGTH
12	50	0.31	13.20	38.4	725	800
12	51	0.34	13.20	42.0	790	875
12	52	0.37	13.20	45.6	855	945
12	53	0.40	13.20	49.2	920	1015
12	54	0.43	13.20	52.8	985	1090
12	55	0.46	13.20	56.3	1045	1160
12	56	0.49	13.20	59.9	1110	1230
14	50	0.33	15.30	47.5	910	1005
14	51	0.36	15.30	51.7	985	1090
14	52	0.39	15.30	55.9	1060	1170
14	53	0.42	15.30	60.1	1135	1255
14	54	0.45	15.30	64.2	1210	1340
14	55	0.48	15.30	68.4	1285	1420
14	56	0.51	15.30	72.5	1360	1505
16	50	0.34	17.40	55.8	1065	1175
16	51	0.37	17.40	60.6	1150	1275
16	52	0.40	17.40	65.4	1240	1370
16	53	0.43	17.40	70.1	1325	1465
16	54	0.46	17.40	74.9	1410	1560
16	55	0.49	17.40	79.7	1495	1655
16	56	0.52	17.40	84.4	1580	1750
18	50	0.35	19.50	64.4	1225	1355
18	51	0.38	19.50	69.8	1325	1465
18	52	0.41	19.50	75.2	1420	1570
18	53	0.44	19.50	80.6	1520	1680
18	54	0.47	19.50	86.0	1615	1785
18	55	0.50	19.50	91.3	1710	1895
18	56	0.53	19.50	96.7	1805	2000

Table continued on next page. ▶

NOTE: Thicknesses and dimensions of 3" through 64" ductile iron pipe conform to ANSI/AWWA C151/A21.51. Weights may vary from the standard because of differences in bell weights.

[a]Tolerance of O.D. of spigot end: 3–12 in., ±0.06 in.; 14–24 in., +0.05 in., -0.08 in.; 30–48 in., +0.08 in., -0.06 in.; 54–64 in., +0.04 in., -0.10 in.

[b]Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

INCHES		INCHES		POUNDS		
SIZE	THICKNESS CLASS	THICKNESS	OUTSIDE DIAMETER	BARREL WEIGHT PER FOOT	WEIGHT PER LENGTH	WEIGHT PER LENGTH
					18-FOOT LAYING LENGTH	20-FOOT LAYING LENGTH
20	50	0.36	21.60	73.5	1395	1540
20	51	0.39	21.60	79.5	1505	1660
20	52	0.42	21.60	85.5	1610	1780
20	53	0.45	21.60	91.5	1720	1900
20	54	0.48	21.60	97.5	1825	2020
20	55	0.51	21.60	103.4	1935	2140
20	56	0.54	21.60	109.3	2040	2260
24	50	0.38	25.80	92.9	1765	1955
24	51	0.41	25.80	100.1	1895	2095
24	52	0.44	25.80	107.3	2025	2240
24	53	0.47	25.80	114.4	2155	2385
24	54	0.50	25.80	121.6	2285	2530
24	55	0.53	25.80	128.8	2415	2670
24	56	0.56	25.80	135.9	2540	2815
30	50	0.39	32.00	118.5	2275	2510
30	51	0.43	32.00	130.5	2490	2750
30	52	0.47	32.00	142.5	2705	2990
30	53	0.51	32.00	154.4	2920	3228
30	54	0.55	32.00	166.3	3135	3466
30	55	0.59	32.00	178.2	3350	3704
30	56	0.63	32.00	190.0	3560	3940
36	50	0.43	38.30	156.5	3010	—
36	51	0.48	38.30	174.5	3330	—
36	52	0.53	38.30	192.4	3655	—
36	53	0.58	38.30	210.3	3975	—
36	54	0.63	38.30	228.1	4295	—
36	55	0.68	38.30	245.9	4615	—
36	56	0.73	38.30	263.7	4935	—

Table continued on next page. ▶

NOTE: Thicknesses and dimensions of 3" through 64" ductile iron pipe conform to ANSI/AWWA C151/A21.51. Weights may vary from the standard because of differences in bell weights.

[a]Tolerance of O.D. of spigot end: 3–12 in., ±0.06 in.; 14–24 in., +0.05 in., -0.08 in.; 30–48 in., +0.08 in., -0.06 in.; 54–64 in., +0.04 in., -0.10 in.

[b]Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

INCHES		INCHES		POUNDS		
SIZE	THICKNESS CLASS	THICKNESS	OUTSIDE DIAMETER	BARREL WEIGHT PER FOOT	WEIGHT PER LENGTH	WEIGHT PER LENGTH
					18-FOOT LAYING LENGTH	20-FOOT LAYING LENGTH
42	50	0.47	44.50	198.9	3960	—
42	51	0.53	44.50	224.0	4410	—
42	52	0.59	44.50	249.1	4860	—
42	53	0.65	44.50	274.0	5310	—
42	54	0.71	44.50	298.9	5760	—
42	55	0.77	44.50	323.7	6205	—
42	56	0.83	44.50	348.4	6650	—
48	50	0.51	50.80	—	—	5430
48	51	0.58	50.80	—	—	6095
48	52	0.65	50.80	—	—	6765
48	53	0.72	50.80	—	—	7430
48	54	0.79	50.80	—	—	8095
48	55	0.86	50.80	—	—	8755
48	56	0.93	50.80	—	—	9415
54	50	0.57	57.56	—	—	7080
54	51	0.65	57.56	—	—	7945
54	52	0.73	57.56	—	—	8810
54	53	0.81	57.56	—	—	9670
54	54	0.89	57.56	—	—	10530
54	55	0.97	57.56	—	—	11390
54	56	1.05	57.56	—	—	12240

NOTE: Thicknesses and dimensions of 3" through 64" ductile iron pipe conform to ANSI/AWWA C151/A21.51. 60" and 64" classified as pressure class only. Weights may vary from the standard because of differences in bell weights.

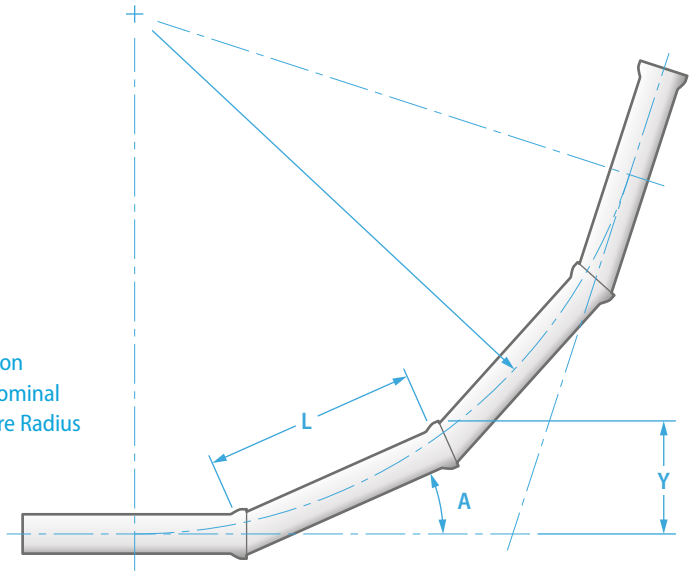
[a]Tolerance of O.D. of spigot end: 3–12 in., ±0.06 in.; 14–24 in., +0.05 in., -0.08 in.; 30–48 in., +0.08 in., -0.06 in.; 54–64 in., +0.04 in., -0.10 in.

[b]Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

$$R = \frac{L}{2 \times Tangent\left(\frac{A}{2}\right)}$$

Where

A = Angle of Deflection
L = Laying Length Nominal
R = Pipeline Curvature Radius



INCHES	DEGREES	INCHES		FEET	
SIZE	MAXIMUM JOINT DEFLECTION	DEFLECTION/OFFSET - "Y"	RADIUS PRODUCED BY SUCCESSION OF JOINTS		
		18 FT. LENGTH	20 FT. LENGTH	18 FT. LENGTH	20 FT. LENGTH
3	5	19	21	206	229
4	5	19	21	206	229
6	5	19	21	206	229
8	5	19	21	206	229
10	5	19	21	206	229
12	5	19	21	206	229
14	5	19	21	206	229
16	5	19	21	206	229
18	5	19	21	206	229
20	5	19	21	206	229
24	5	19	21	206	229
30	5	19	21	206	229
36	5	19	—	206	—
42	4	15	—	258	—
48	4	—	17	—	287
54	4	—	17	—	287
60	4	—	17	—	287
64	4	—	17	—	287

NOTE: Illustration above not to scale. Angles have been exaggerated for display purposes.

GRID SPACING 0.25"








U.S. Pipe, a Forterra Company, is the leading manufacturer and a principal supplier of highly engineered ductile iron pipe and fabrication in the United States and Canada. Providing custom solutions to owners, engineers and contractors for even the most demanding applications, including water transmission and distribution lines, plant piping, intake and outfall lines, and other diverse applications.









Headquarters

U.S. Pipe
Two Chase Corporate Drive
Suite 200
Birmingham, AL 35244

866-347-7473
info@uspipe.com
www.uspipe.com

U.S. PIPE

A Forterra Company