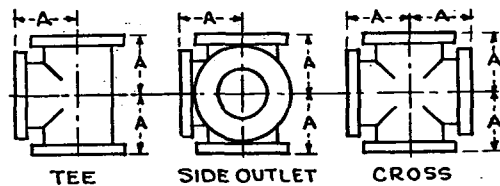


the use of the welding process. These Codes prohibit individual practices contrary to their specified procedure and rules of control, and this is predicated upon the sound requirement that the employer must assume full responsibility for the deposited weld.

It is advisable that this management responsibility be included in all welding specifications and that authoritative standards of workmanship also be specified. The standards of workmanship for this industry are as set forth in the *Standard Manual on Pipe Welding* of the *Heating, Piping and Air Conditioning Contractors National Association*.

A complete line of manufactured steel welding fittings is now available

TABLE 8. AMERICAN STANDARD DIMENSIONS OF TEES AND CROSSES (STRAIGHT SIZES) FOR 125 LB CAST-IRON FLANGED FITTINGS



NOMINAL PIPE SIZE a-b	A CENTER TO FACE TEES AND CROSSES b-c	AA FACE TO FACE TEES AND CROSSES b-c	DIAMETER OF FLANGE	THICKNESS OF FLANGE, MIN.	METAL THICKNESS OF BODY, MIN.
1	3 1/2	7	4 1/4	7/16	7/16
1 1/4	3 3/4	7 1/2	4 5/8	7/16	7/16
1 1/2	4	8	5	9/16	7/16
2	4 1/2	9	5 5/8	5/8	7/16
2 1/2	5	10	7	11/16	7/16
3	5 1/2	11	7 1/2	3/4	7/16
3 1/2	6	12	8 1/2	13/16	7/16
4	6 1/2	13	9	15/16	7/16
5	7 1/2	15	10	1 1/2	7/16
6	8	16	11	1 1/8	9/16
8	9	18	13 1/2	1 1/8	5/8
10	11	22	16	1 3/16	3/4
12	12	24	19	1 1/4	13/16
14 O.D.	14	28	21	1 3/8	7/8
16 O.D.	15	30	23 1/2	1 1/2	1
18 O.D.	16 1/2	33	25	1 5/8	1 1/16
20 O.D.	18	36	27 1/2	1 7/8	1 1/8
24 O.D.	22	44	32	1 7/8	1 1/4
30 O.D.	25	50	38 3/4	2 1/8	1 3/8
36 O.D.	28	56	46	2 3/8	1 5/8
42 O.D.	31	62	53	2 5/8	1 3/4
48 O.D.	34	68	59 1/2	2 3/4	2

All dimensions given in inches.

aSize of all fittings listed indicates nominal inside diameter of port.

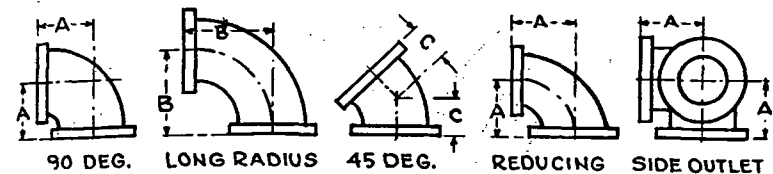
bTees, side outlet tees, and crosses, 18 in. and smaller, reducing on the outlet, have the same dimensions center to face, and face to face as straight size fittings corresponding to the size of the larger opening. Sizes 18 in. and larger, reducing on the outlet, are made in two lengths, depending on the size of the outlet.

cTees and crosses, reducing on run only, carry same dimensions center to face and face to face as a straight size fitting of the larger opening.

with plain ends machine beveled for welding and with radii similar to short and long radius flanged fittings. Some typical types of these fittings are shown in Fig. 3. They are made in pipe sizes 3/4 to 24 in., standard and extra heavy, in steel, wrought iron, brass, copper, and special alloys.

Socket welding fittings of forged steel are also commercially available. These fittings have a machined recess into which the pipe slips. A fillet weld between the pipe and socket edge provides a pressure-tight joint. A proposed American Standard containing dimensions of steel welding-neck flanges for pressures up to 1500 lb per sq in. has been developed in A.S.A.

TABLE 9. AMERICAN STANDARD DIMENSIONS OF ELBOWS FOR 125 LB CAST-IRON FLANGED FITTINGS



NOMINAL PIPE SIZE a	A CENTER TO FACE ELBOW b-c-d	B CENTER TO FACE LONG RADIUS ELBOW b-c-d	C CENTER TO FACE 45 DEG ELBOW c	DIAMETER OF FLANGE	THICKNESS OF FLANGE, MIN.	METAL THICKNESS OF BODY, MIN.
1	3 1/2	5	1 3/4	4 1/4	7/16	7/16
1 1/4	3 3/4	5 1/2	2	4 5/8	7/16	7/16
1 1/2	4	6	2 1/4	5	9/16	7/16
2	4 1/2	6 1/2	2 1/2	6	5/8	7/16
2 1/2	5	7	3	7	11/16	7/16
3	5 1/2	7 3/4	3 1/2	7 1/2	3/4	7/16
3 1/2	6	8 1/2	3 3/4	8 1/2	13/16	7/16
4	6 1/2	9	4	9	15/16	7/16
5	7 1/2	10 1/4	4 1/2	10	1 1/2	7/16
6	8	11 1/2	5	11	1 1/8	9/16
8	9	14	5 1/2	13 1/2	1 1/8	5/8
10	11	16 1/2	6 1/2	16	1 3/16	3/4
12	12	19	7 1/2	19	1 1/4	13/16
14 O.D.	14	21 1/2	7 3/4	21	1 3/8	7/8
16 O.D.	15	24	8	23 1/2	1 1/2	1
18 O.D.	16 1/2	26 1/2	8 1/2	25	1 5/8	1 1/8
20 O.D.	18	29	9 1/2	27 1/2	1 7/8	1 1/4
24 O.D.	22	34	11	32	1 7/8	1 1/2
30 O.D.	25	41 1/2	15	38 3/4	2 1/8	1 3/4
36 O.D.	28	49	18	46	2 3/8	1 5/8
42 O.D.	31	56 1/2	21	53	2 5/8	1 3/4
48 O.D.	34	64	24	59 1/2	2 3/4	2

All dimensions given in inches.

aSize of all fittings listed indicates nominal inside diameter of port.

bReducing elbows and side outlet elbows carry same dimensions center to face as straight size elbows corresponding to the size of the larger opening.

cSpecial degree elbows, ranging from 1 to 45 deg, inclusive, have the same center to face dimensions as given for 45 deg elbows and those over 45 deg and up to 90 deg, inclusive, shall have the same center to face dimensions as given for 90 deg elbows. The angle designation of an elbow is its deflection from straight line flow and is the angle between the flange faces.

dSide outlet elbows shall have all openings on intersection center-lines.