

DESIGN FOR 150 PSI WITH 1.5 SAFETY FACTOR = 225 PSI

5/8" RODS – THRU BOLT HOLES, DUCTILE IRON LUGS, STARR TIE BOLTS, STEEL PLATES.

3/4" RODS – THRU BOLT HOLES, STARR TIE BOLTS, STEEL PLATES.

1" RODS – CONNECT TO STEEL PLATE, STRAPS OR "EARS".

NOTE: TIE RODS SHALL BE SINGLE SPAN BETWEEN THE STRADDLE BLOCK AND THE OBJECT TO BE TIED. NO JOINING OF TIE RODS.

PIPE SIZE	AREA, SQ. IN.	THRUST AT:		NO. OF FULL DIA. BARS WELDED TO PLATES			NO. OF THREADED BARS		
		150 PSI	225 PSI	5/8 IN.	3/4 IN.	1 IN.	5/8 IN.	3/4 IN.	1 IN.
2	3.1416	300	450	2	WARNING: DUC-LUGS WILL NOT HOLD.		2	WARNING: NO DUC-LUGS	
4	12.566	1,885	2,827	2			2		
6	28.274	4,241	6,362	2			3	2	2
8	50.265	7,540	11,310	3	2	2	4	3	2
10	78.540	11,781	17,672	5	3	2	6	4	2
12	113.10	16,965	25,448	6	5	3	8	6	3
14	153.94	23,091	34,636	9	6	4	11	8	4
16	201.06	30,159	45,238	11	8	5	15	10	6
18	254.47	38,170	57,256	14	10	6	19	13	7
20	314.16	47,124	70,686	17	12	7	23	16	9
24	452.39	67,858	101,788	24	17	10	33	22	12
30	706.86	106,029	159,044	38	26	15	51	34	19
36	1017.9	152,685	229,028	54	38	21	73	49	27

A307 BOLT STOCK

@14,000 PSI

FULL DIAMETER BARS

SIZE	AREA	STRENGTH
5/8	.3068	4,295 LBS.
3/4	.4414	6,185 LBS.
1	.7854	10,996 LBS.

THREADED BARS

SIZE	TENSILE AREA	STRENGTH
5/8	.2256	3,158 LBS.
3/4	.3340	4,676 LBS.
1	.6051	8,471 LBS.



Public Works Standard Drawings

TIE ROD REQUIREMENTS

SCALE NTS

DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 412