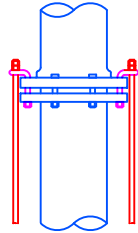
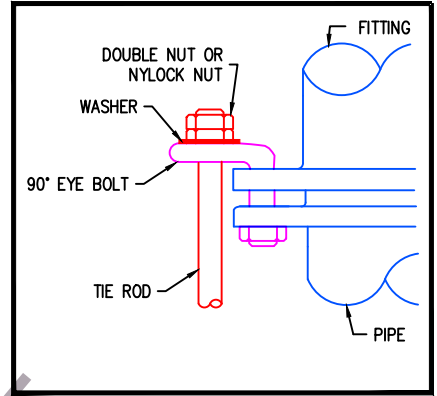


TIE ROD TABLE

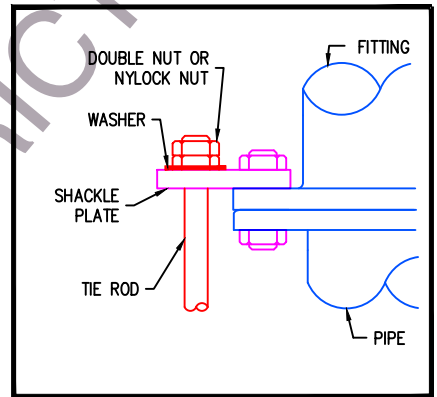
ASTM A242 (COR-TEN® OR EQUAL) STEEL (46 kpsi yield)								
PIPE DIAMETER (INCH)	No. OF 1/4" BOLT HOLES AVAILABLE	No. OF FLANGE BOLT HOLES AVAILABLE	MIN. NUMBER OF TIE RODS.				ROD DIAMETER: 5/8" OR (3/4")	
			TEE DEAD END VALVE 90° BEND	45° BEND	22.5° BEND	11.25° BEND		
4	4	8	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	
6	6	8	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	
8	6	8	3 (2)	2 (2)	2 (2)	2 (2)	2 (2)	
10	8	12	5 (3)	3 (2)	2 (2)	2 (2)	2 (2)	
12	8	12	6 (4)	5 (3)	3 (2)	2 (2)	2 (2)	
14	10	12	8 (6)	6 (4)	4 (3)	2 (2)	2 (2)	
16	12	16	11 (7)	8 (5)	5 (3)	3 (2)	3 (2)	
18	12	16	13 (9)	9 (7)	6 (4)	3 (2)	3 (2)	
304SS OR OTHER STEELS (30 kpsi yield)								
4	4	8	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	
6	6	8	3 (2)	2 (2)	2 (2)	2 (2)	2 (2)	
8	6	8	5 (3)	3 (2)	2 (2)	2 (2)	2 (2)	
10	8	12	7 (5)	5 (3)	3 (2)	2 (2)	2 (2)	
12	8	12	9 (7)	7 (5)	4 (3)	2 (2)	2 (2)	
14	10	12	12 (9)	9 (6)	5 (4)	3 (2)	3 (2)	
16	12	16	16 (12)	11 (8)	7 (5)	4 (3)	4 (3)	
18	12	16	- (14)	14 (10)	8 (6)	5 (3)	5 (3)	



TIE BOLT DETAIL



SHACKLE PLATE DETAIL



GENERAL NOTES

- SIZES IN THE TIE ROD TABLE ARE BASED ON 300 PSI MAXIMUM PRESSURE AND 150% FACTOR OF SAFETY.
- TIE RODS AND FASTENERS SHALL BE "ALL THREAD" ROD OF ONE OF THE APPROVED MATERIALS:
 - ASTM A242 (COR-TEN)
 - 304 STAINLESS STEEL
 - ASTM F3125, A325 TYPE 3
 - ASTM A588
 - ASTM A709 GR 50W
 - MILD STEEL WILL NOT BE ALLOWED. ASTM A307 GRADE A OR B ARE ALLOWED, BUT MUST BE FIELD COATED AFTER ASSEMBLY WITH EPOXY, COAL-TAR, OR RUBBER.
- PROVIDE MANUFACTURER'S DOCUMENTATION OF TYPE OF ROD MATERIAL. THE DISTRICT HAS THE RIGHT TO REJECT MATERIALS THAT ARE NOT ACCOMPANIED WITH DOCUMENTATION ACCEPTABLE TO THE DISTRICT.
- TIE RODS SHALL BE "NATIONAL-COARSE" THREAD WITH A WASHER AND EITHER TWO NUTS OR ONE NYLOCK NUT AT EACH END.
- 30 FOOT MAXIMUM TIE ROD LENGTH. LONGER RUNS MUST BE APPROVED BY THE DISTRICT AND MAY REQUIRE LARGER OR ADDITIONAL RODS.
- TIE RODS SHALL BE ASSEMBLED AS SYMMETRICALLY AS POSSIBLE AROUND EACH JOINT.
- TIE ROD NUTS SHALL BE TIGHTENED UNIFORMLY AT EACH JOINT AND IN AN ALTERNATING PATTERN.
- TIE ROD COUPLINGS SHALL BE THE SAME MATERIAL AND STRENGTH AS THE TIE RODS, UNLESS APPROVED OTHERWISE BY THE DISTRICT.
- ATTACH TIE RODS TO JOINTS WITH 90° EYE BOLTS OR SHACKLE PLATES. "DUC-LUGS" ARE NOT ALLOWED.
- 20" FITTINGS AND LARGER SHALL HAVE TIE ROD DESIGN INCLUDED ON DESIGN PLANS.



East Wenatchee Water District
WATER SYSTEM STANDARD DETAIL

COPYRIGHT 2025 EAST WENATCHEE WATER DISTRICT. MAY BE REPRODUCED UNMODIFIED FOR DISTRICT PROJECTS. OTHER REPRODUCTION OR USE WITHOUT THE DISTRICT'S WRITTEN CONSENT IS PROHIBITED.

TIE RODS

FILENAME: EWD TW7

REVISED: JUN 26, 2024

DRAWING No. W-07

SHEET No. 8