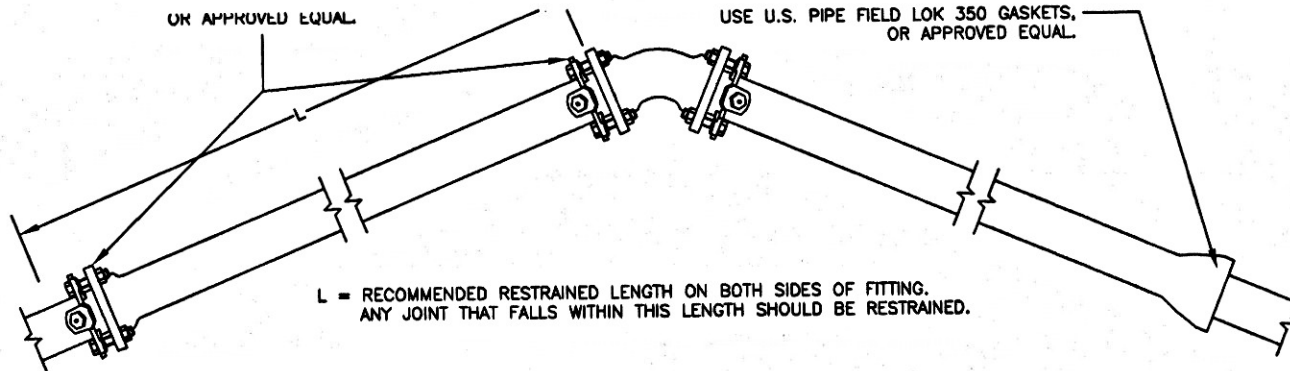


Figure 19. Restrained Joint Detail for Ductile Iron Pipe



NOM. PIPE SIZE (in)	RECOMMENDED RESTRAINED LENGTH - L (ft)					
	ELBOWS (deg)				DEAD ENDS	VALVE TEE BRANCH
	11.25	22.5	45	90		
3	1	3	6	15	39	7
4	2	4	8	18	47	15
6	3	5	11	26	66	34
8	3	7	14	34	86	55
10	4	8	17	40	102	72
12	5	10	20	48	121	90
14	5	11	23	55	137	107
16	6	12	26	62	154	124
18	7	14	28	69	170	140
20	7	15	31	75	186	157
24	9	18	37	88	217	187

NOTE: VALUES WERE CALCULATED USING EBAA'S RESTRAINED LENGTH CALCULATION PROGRAM. INSTALLATION CONDITIONS WERE SET AS FOLLOWS: ST=MIL(iron.), TI=5, TP=200, SF=2, & DOB=3". FOR VALVE & TEE BRANCH, BRANCH SIZE WAS SET EQUAL TO NOM. PIPE SIZE AND THE MINIMUM RUN SIDE LENGTH (L<sub>r</sub>) WAS SET AT A MINIMUM OF 5'. CHECK PLANS OR CONTACT ENGINEER TO VERIFY VALUES FOR TEES WITH BRANCH SIZE < NOM. PIPE SIZE.

**NOTES:**

- ALL FITTINGS FOUR (4) INCHES AND LARGER SHALL BE RESTRAINED IN ALL APPLICATIONS. THIS INCLUDES:
  - A. HORIZONTAL BENDS
  - B. VERTICAL OFFSETS
  - C. TEES
  - D. DEAD ENDS (CAPS/PLUGS)
  - E. REDUCERS
  - F. VALVES
  - G. HYDRANTS
  - H. THRU LINE CONNECTIONS (SLEEVES)
- IF ANY PIPE TERMINATES AT A DEAD END, TAPPING SLEEVE, OR ENTERS CASING WHILE STILL WITHIN THE RECOMMENDED RESTRAINED LENGTH (L), THREADED THREE-QUARTER (3/4) INCH STAINLESS STEEL RODS ARE TO BE FASTENED TO THE CAP/PLUG, TAPPING SLEEVE, OR CASING AND RUN TO THE NEAREST RESTRAINED JOINT. FOR CASING, THE RODS CAN EITHER BE FASTENED TO APPROPRIATELY SIZED EYE-BOLTS WELDED TO THE CASING OR CAN BE WELDED DIRECTLY TO THE CASING. SEE PLAN VIEW SHEETS OF CONSTRUCTION DRAWINGS FOR THE REQUIRED NUMBER OF RODS.

# ROCKBRIDGE COUNTY PSA

## RESTRAINED JOINT FOR DUCTILE IRON PIPE DETAIL