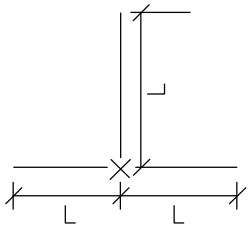
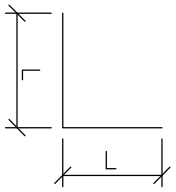
# ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

| PIPE SIZE | 4" | | | 6" | | | 8" | | | 12" | | | 16" | | | 20" | | | 24" | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FITTING | D | L | G | D | L | G | D | L | G | D | L | G | D | L | G | D | L | G | D | L | G |
| 90° BEND TEE, PLUG | 3/4" | 30' | M.S. | 3/4" | 45' | M.S. | 3/4" | 60' | M.S. | 3/4" | 86' | H.S. | 1" | 108' | H.S. | 1 1/4" | 132' | H.S. | — | 155' | — |
| VALVE | 3/4" | 30' | M.S. | 3/4" | 45' | M.S. | 3/4" | 60' | M.S. | 3/4" | 86' | H.S. | 1" | 108' | H.S. | 1 1/4" | 132' | H.S. | — | 155' | — |
| 45° BEND | 3/4" | 9' | M.S. | 3/4" | 13' | M.S. | 3/4" | 18' | M.S. | 3/4" | 25' | M.S. | 1" | 32' | M.S. | 3/4" | 39' | H.S. | — | 45' | — |
| 22 1/2° BEND | 3/4" | 1' | M.S. | 3/4" | 4' | M.S. | 3/4" | 5' | M.S. | 3/4" | 7' | M.S. | 3/4" | 8' | M.S. | 3/4" | 10' | M.S. | — | 12' | — |
| 11 1/4° BEND | 3/4" | 1' | M.S. | 3/4" | 1' | M.S. | 3/4" | 1' | M.S. | 3/4" | 2' | M.S. | 3/4" | 2' | M.S. | 3/4" | 3' | M.S. | — | 3' | — |

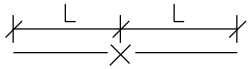
PLUG



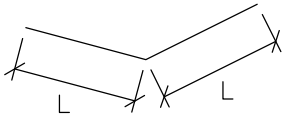

TEE




90° BEND




VALVE




BENDS

NOTES:

1.) LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2.) CLAMPS, RODS & MEGALUGS NOT ALLOWED FOR 24" & LARGER PIPES.
3.) D=DIAMETER, L=LENGTH, G=GRADE
M.S.=MILD STEEL, H.S.=HIGH STRENGTH.
4.) MINIMUM 4.5' GROUND COVER REQUIRED.
5.) BASED ON 150 PSI INTERNAL PRESSURE
6.) M.S. = MILD STEEL ROD ASTM A36.
7.) H.S. = HIGH STRENGTH ROD ASTM A193 GRADE B7.
8.) NUTS SHALL BE ASTM A307 GRADE A OR B HEXAGON HEAVY SERIES.
HIGH STRENGTH NUTS SHALL BE ASTM A 194, GRADE 2H.
9.) SEE TIE ROD DETAIL DRAWING. ALSO, TIE ROD COUPLING DETAILS,
CLAMP DETAILS AND SET CLAMP DETAILS.
10.) LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED
TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
11.) LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT
RESTRAINT FOR EBBA IRON MEGALUGS OR UNIFLANGE PIPE RESTRAINT DEVICES.
12.) CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
13.) 12" AND SMALLER IN LINE VALVES AND TEES SHALL HAVE A MECHANICAL JOINT RESTRAINT DEVICE
ON EACH SIDE OF THE FITTING OR VALVE. MECHANICAL JOINT RESTRAINT DEVICE SHALL BE: DIP –
EBAA 1100 SERIES, UNI–FLANGE SERIES 1400, OR EQUIVALENT; PVC – EBAA MEGALUG 2000 PV SERIES,
UNI–FLANGE SERIES 1500, OR EQUIVALENT.
14.) A SECOND VALVE WILL BE REQUIRED TO BE CLOSED WHEN EXCAVATING NEXT TO AN EXISTING VALVE.

DATE:

STANDARDS & SPECIFICATIONS

REVISED:

DRAWING NO. 200–33

RESTRAINED PIPE