

1. ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING AND DOCUMENTED BY THE INSPECTOR FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
2. RESTRAINED LENGTH SHOWN REFERS TO ANY DESIGNED OR POTENTIAL LINE STOP, INCLUDING ALL GRADE VALVES.
3. RESTRAINED LENGTH SHOWN REFERS TO THE BRANCH LINE ONLY. THE CONTINUOUS PIPE LENGTH OF THE MAIN RUN SHALL BE A MINIMUM OF 10' ON EACH SIDE OF THE TEE.
4. RESTRAINED LENGTH SHOWN IS BASED ON REDUCING PIPE DIAMETER TO ONE SIZE SMALLER THAN PIPE LISTED (ANY OTHER DIAMETER REDUCTION WILL REQUIRE ADDITIONAL CALCULATIONS BEFORE INSTALLATION). RESTRAINED LENGTH SHOWN IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.
5. **12" AND SMALLER DIAMETER:** IF UNDER 150 PSI WORKING PRESSURE, RESTRAINED JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 150 PSI WORKING PRESSURE, BOTH THRUST BLOCK(S) AND RESTRAINED JOINT(S) SHALL BE USED.
6. **LARGER THAN 12" DIAMETER:** IF UNDER 100 PSI WORKING PRESSURE, RESTRAINED JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 100 PSI WORKING PRESSURE, BOTH THRUST BLOCK(S) AND RESTRAINED JOINT(S) SHALL BE USED (UNLESS OTHERWISE APPROVED BY THE PARTICIPATING UTILITY).
7. FOR RESTRAINED JOINT PIPING REQUIREMENTS AT FITTING R.J. AND R.J. DIAPY MAY BE USED INTERCHANGEABLY WITH APPROVAL FROM PARTICIPATING UTILITY. CONTRACTOR MUST PLAN ACCORDINGLY FOR THE DIFFERENCE IN P.V. AND DIP BELL AND SPIGOT DIMENSIONS.

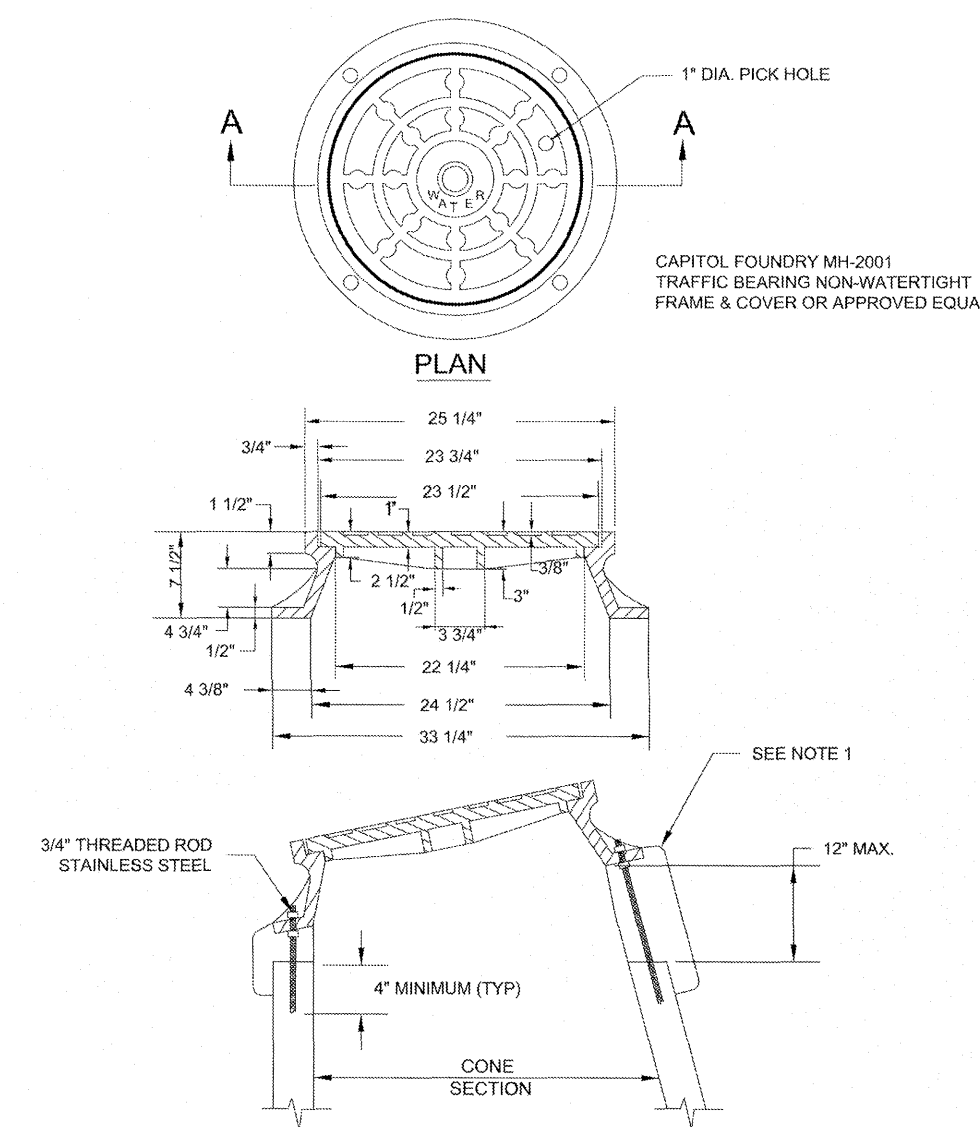
MINIMUM THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS

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TYPICAL WATER
PRESSURE TEST RIG

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VAULT FRAME
AND COVER

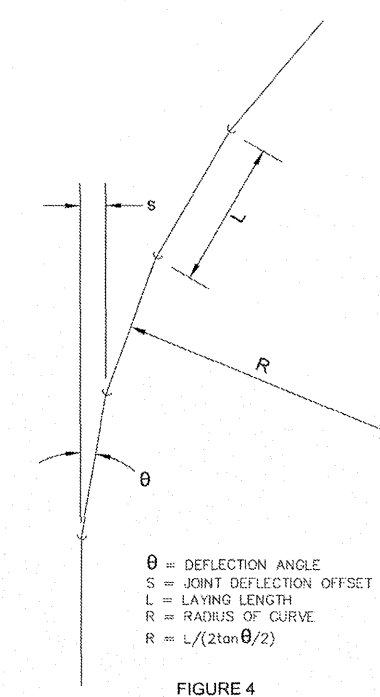
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* SEE FIGURE 4.
For 14-inch and larger push-on joints, maximum deflection angle may be larger than shown above. Consult the manufacturer.

Nominal Pipe Size (inches)	Deflection Angle - θ (degrees)	Maximum Offset - S* (inches)		Approximate Ratio of Curve - R* Produced by Succession of Joints	
		Joint Length 18'-6"	Joint Length 20'-0"	Joint Length 18'-6"	Joint Length 20'-0"
3	8°-18"	31	35	125	140
4	8°-18"	31	35	125	140
6	7°-07"	27	30	145	166
8	5°-21"	20	22	195	220
10	5°-21"	20	22	195	220
12	5°-21"	20	22	195	220
14	3°-35"	13.5	15	285	320
16	3°-35"	13.5	15	285	320
18	3°-00"	11	12	340	380
20	3°-00"	11	12	340	380
24	2°-23"	9	10	450	500

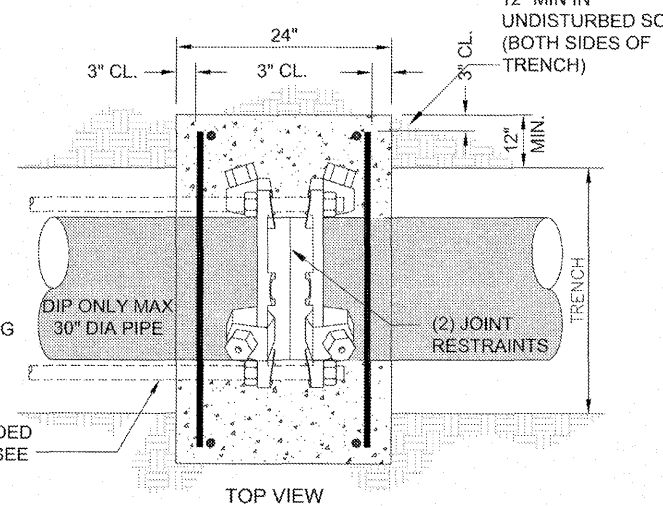
DUCTILE IRON PIPE DEFLECTION ALLOWANCE TABLES

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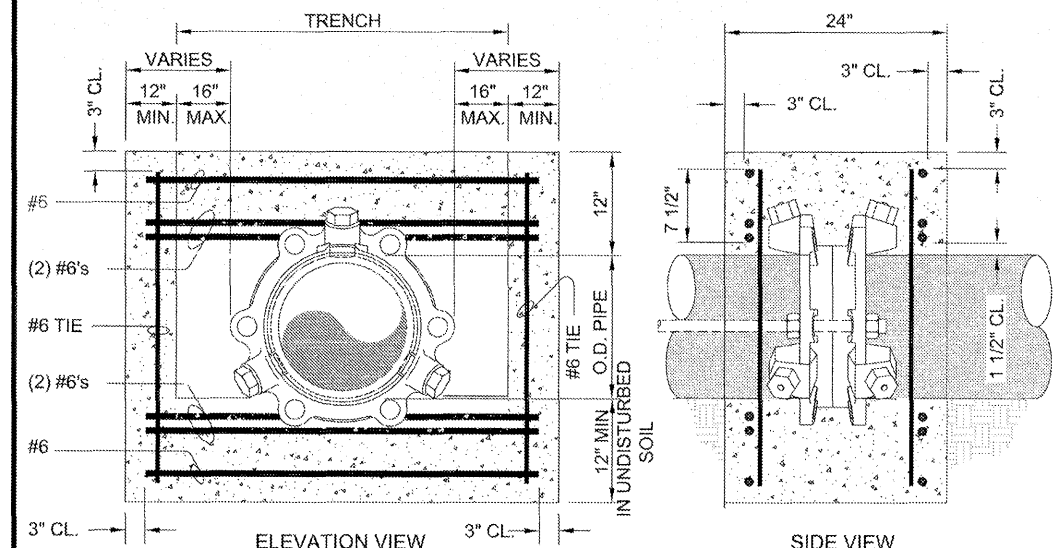


FIGURE

- | PIPE SIZE (INCHES) | ROD DIAMETER (INCHES) | NUMBER OF RODS REQUIRED |
|--------------------|-----------------------|-------------------------|
| 6 | 3/4 | 4 |
| 8 | 3/4 | 4 |
| 10 | 3/4 | 4 |
| 12 | 3/4 | 6 |
| 16 | 3/4 | 12 |
| 20 | 3/4 | 14 |
| 24 | 1 | 16 |
| 30 | 1 | 20 |



"CORTEN" THREADED
RODS (TYPICAL) SEE -
THREADED ROD
SIZING CHART



THRUST COLLAR DETAIL

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TEMPORARY END OF LINE
BLOW-OFF ASSEMBLY

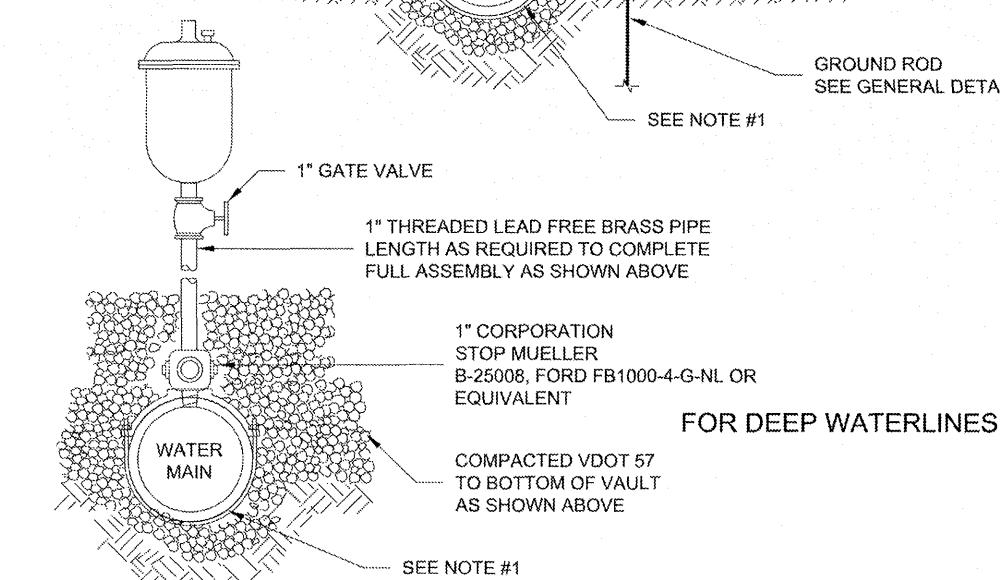
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- CAPITOL FOUNDRY MH 2001
 NON-WATERTIGHT FRAME & COVER
 LABELED "WATER"
- FINISHED GRADE
 12" MAX. VERTICAL
- PAVEMENT
 12"-18"
- ADJUSTMENT RING
 (WHEN REQUIRED)
- 2" THREADED
 NIPPLE WITH
 FINGER TIGHT CAP
 DRILL 1/4" Ø
 HOLE IN CAP
 2" GATE VALVE
 WITH 2" SQUARE
 HEAD
- 2" CORPORATION
 STOP MUELLER
 B-25008, FORD
 B1000-4-G-NL OR
 EQUIVALENT
- 6" MIN.
- GROUND BAR
 SEE GENERAL DETAIL
- PRECAST WATER VALVE
 VAULT OR PRECAST
 MANHOLE SECTION(S)
 WHEN DEPTH EXCEEDS 5'
- TRADER & GROUND
 WIRES SEE GENERAL
 DETAIL
- 6" MINIMUM
 VDOT 57
- GROUND ROD
 SEE GENERAL DETAIL

IN-LINE BLOW-OFF ASSEMBLY

02/10/15

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COMBINATION AIR VALVE ASSEMBLY

03/10/16