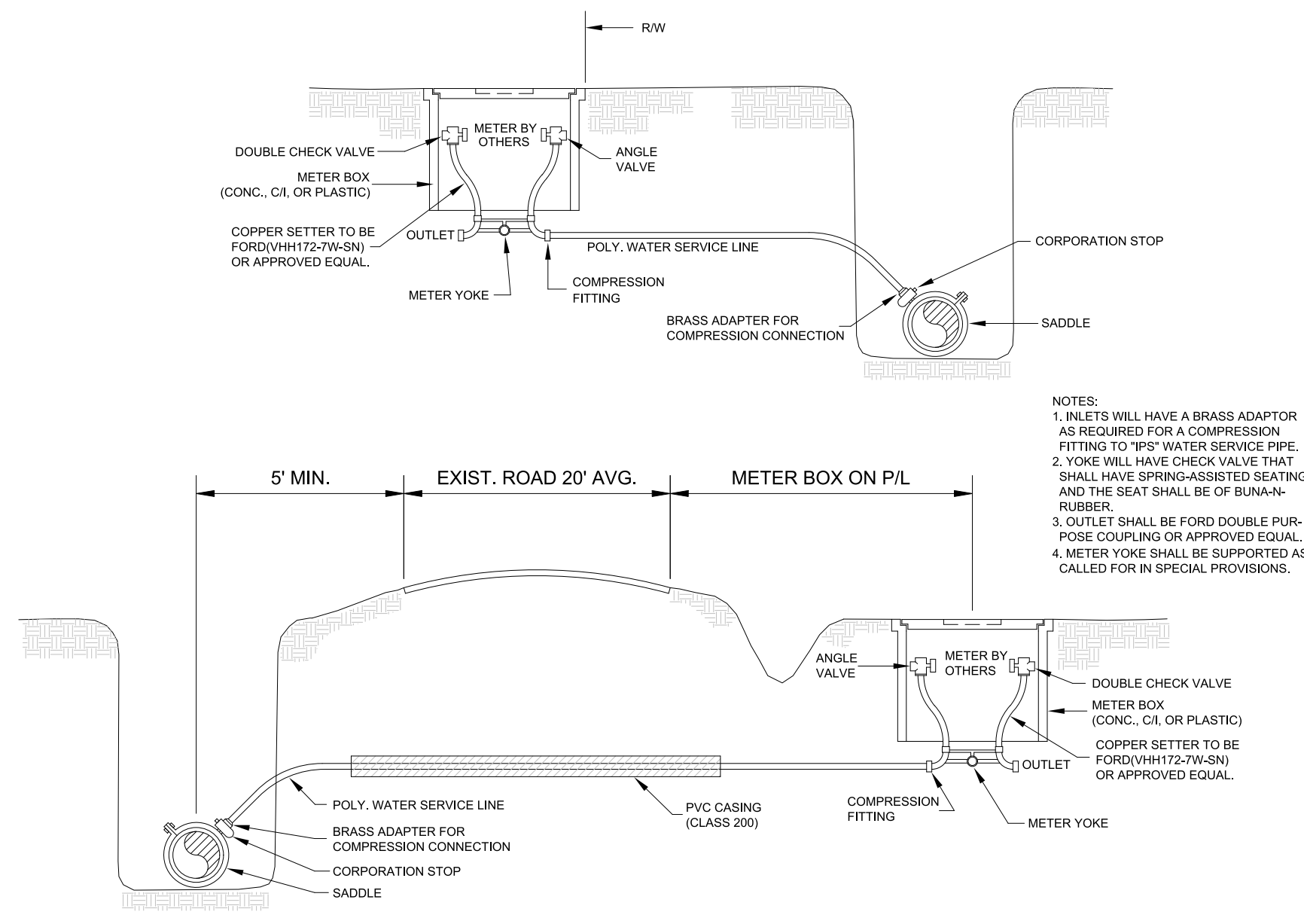


UTILITY CONSTRUCTION

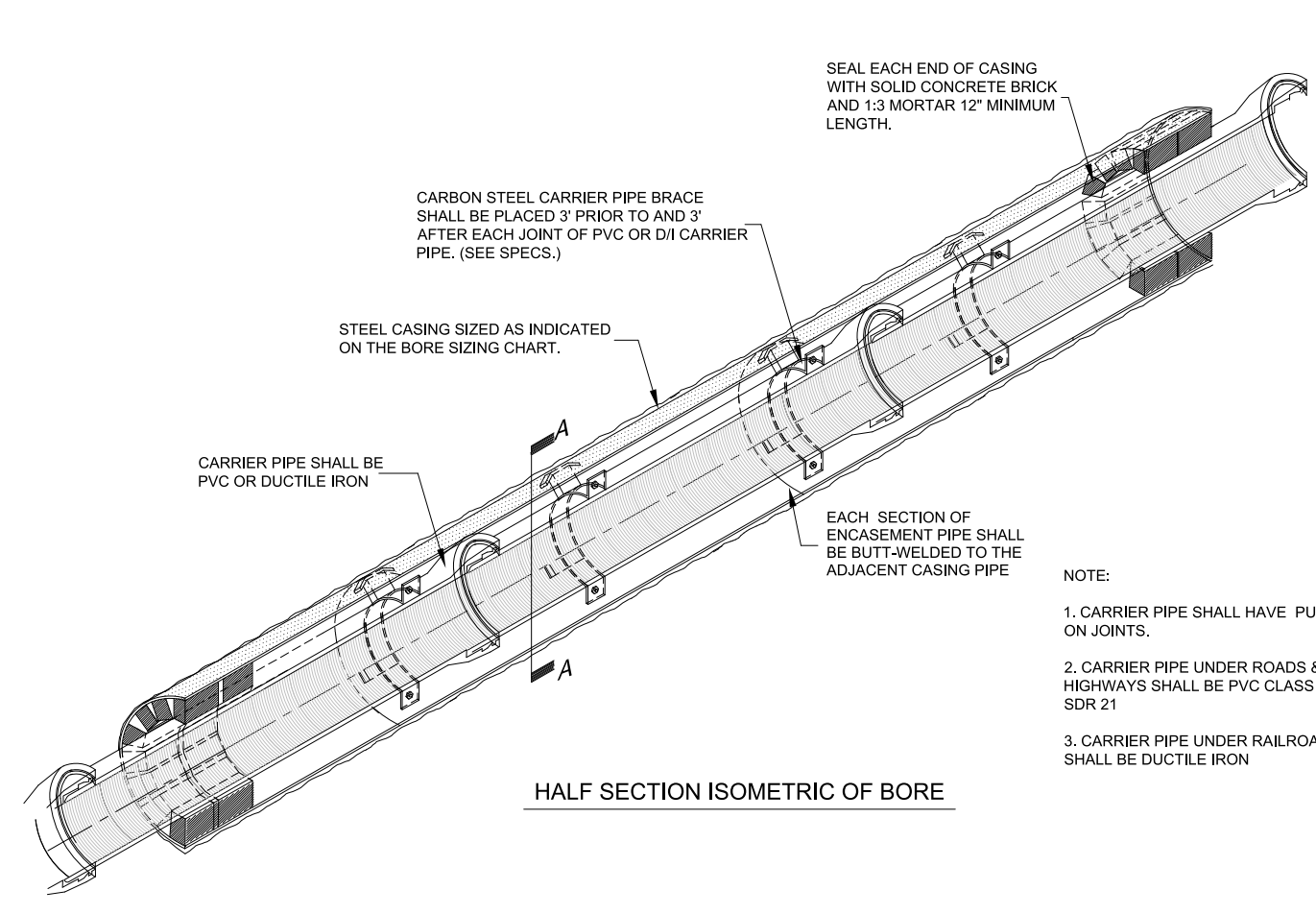
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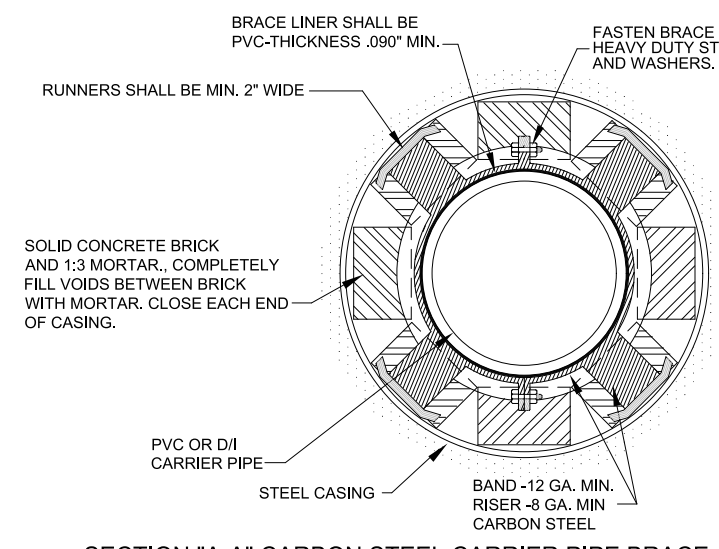
Typical House Service Detail
NTS



HALF SECTION ISOMETRIC OF BORE

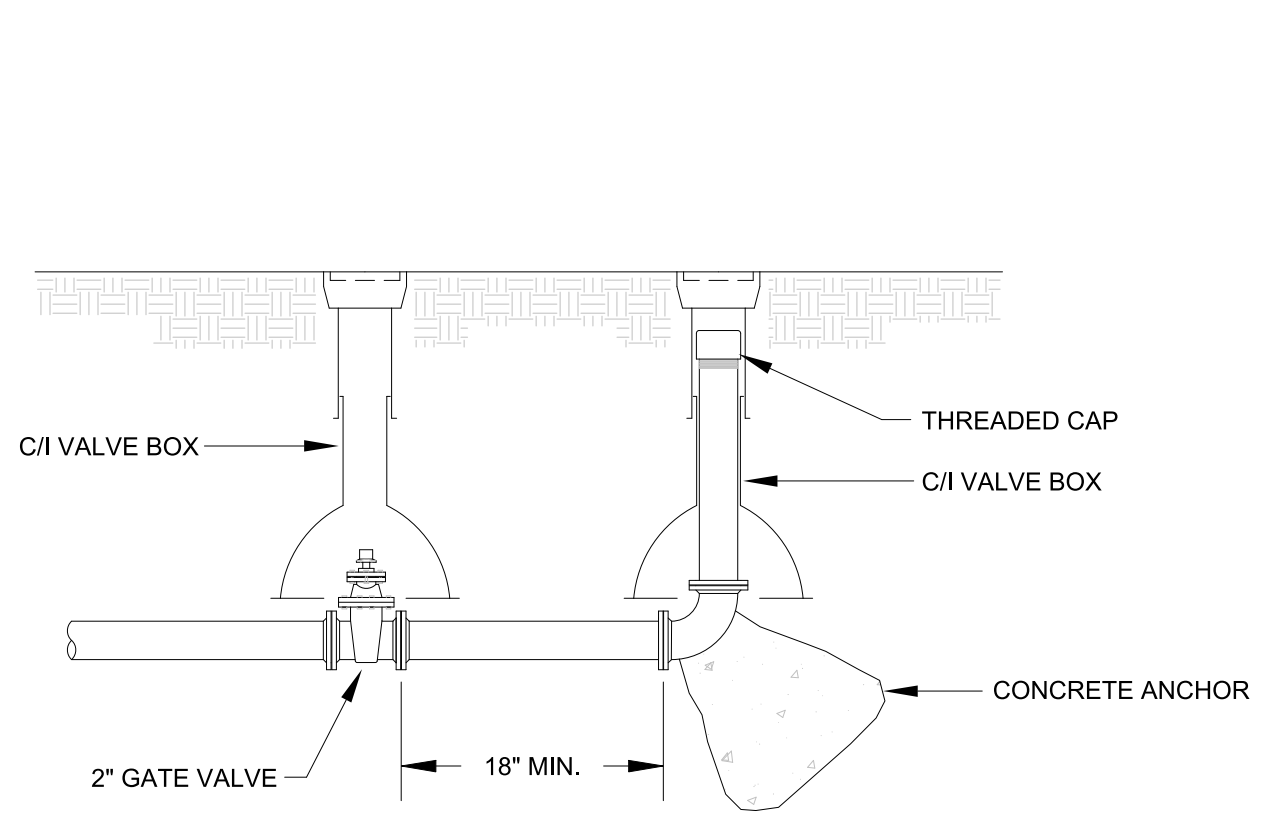
CARRIER PIPE SIZE	ROADWAYS		RAILROADS	
	MIN. CASING SIZE	MIN. WALL THICKNESS	MIN. WALL THICKNESS	MIN. WALL THICKNESS
8"	12"	0.188"	0.188"	0.188"
12"	24"	0.250"	0.250"	0.250"
18"	30"	0.250"	0.281"	0.281"
24"	36"	0.250"	0.312"	0.312"
30"	42"	0.312"	0.469"	0.469"
36"	48"	0.375"	0.632"	0.632"

* CONTRACTOR MAY SUBSTITUTE A LARGER SIZE CASING PIPE HAVING THE MIN. WALL THICKNESS SHOWN FOR SEWER MAINS. ALL ADDITIONAL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR BORING AND JACKING.

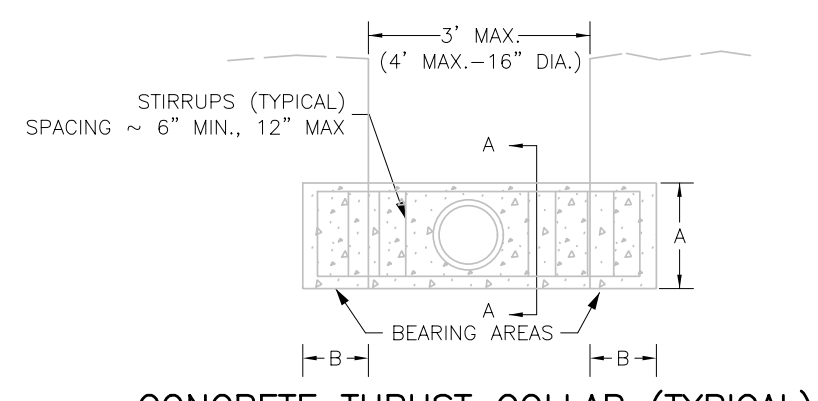


SECTION "A-A" CARBON STEEL CARRIER PIPE BRACE

Boring Detail for Highways and Railroads
NTS



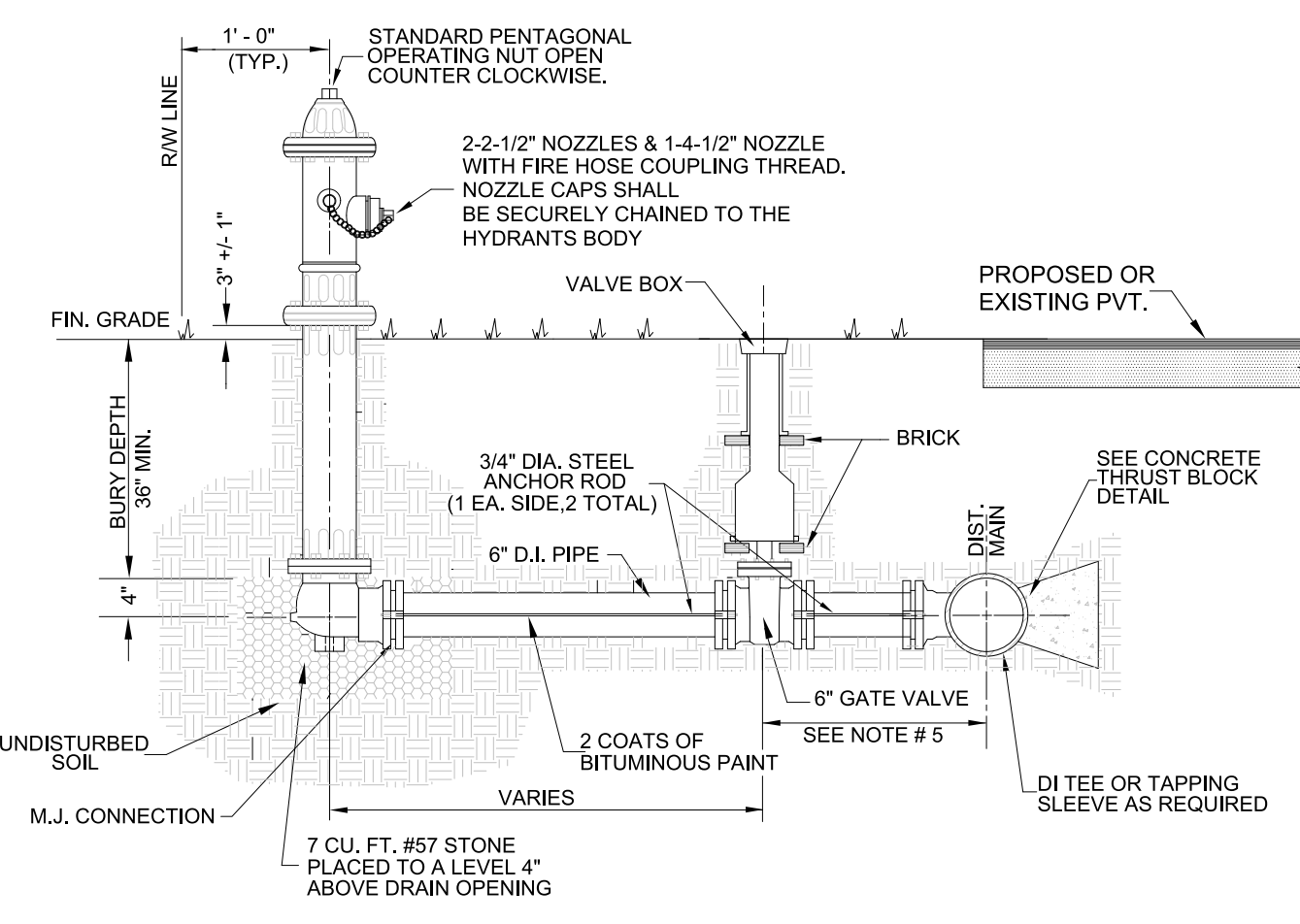
Typical Blowoff Assembly
NTS



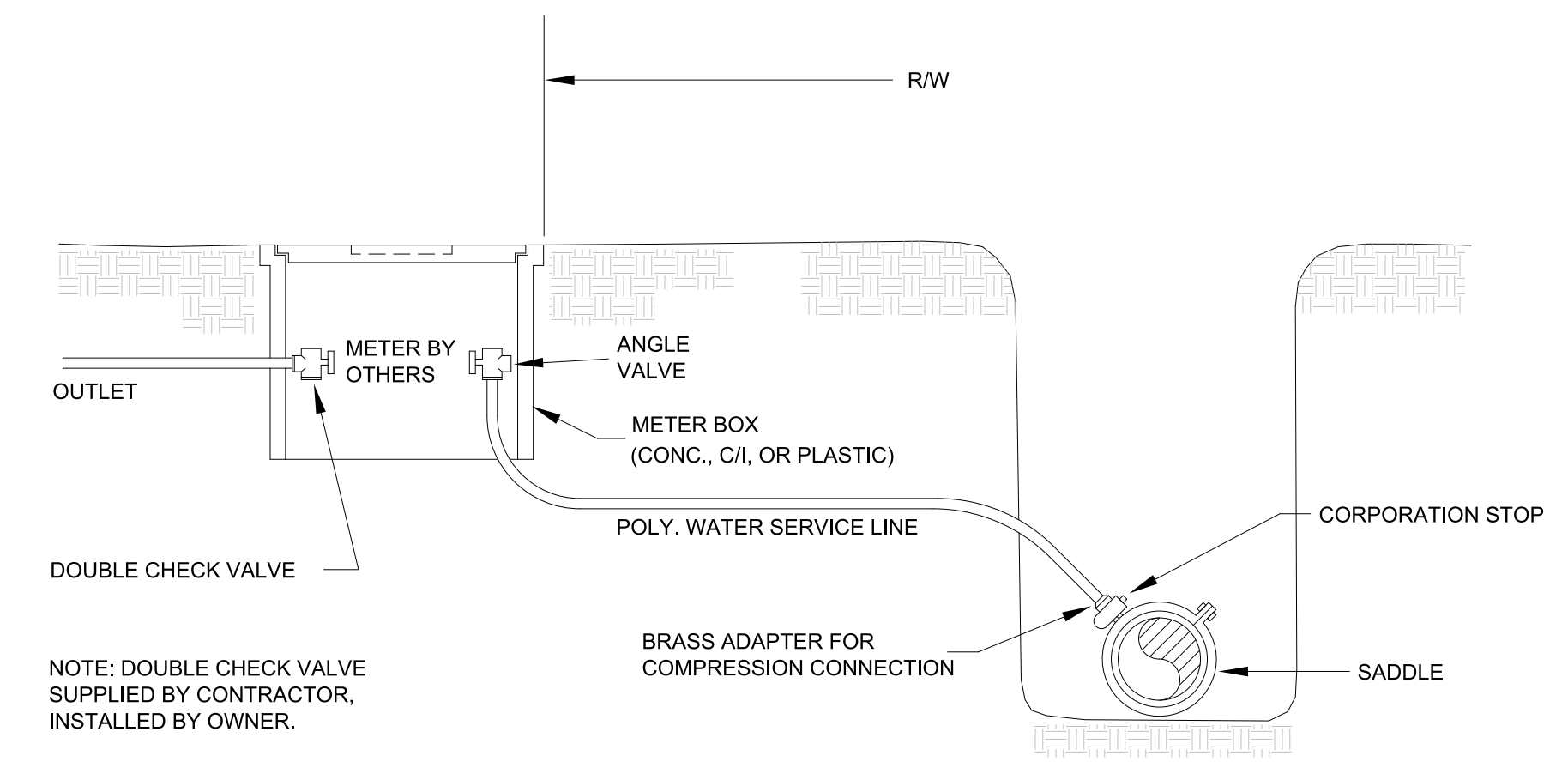
CONCRETE THRUST COLLAR (TYPICAL)
NOT TO SCALE

SIZE	"A"	"B"
4"	36"	24"
6"	36"	24"
8"	36"	30"
10"	36"	48"
12"	48"	48"
16"	36"	60"

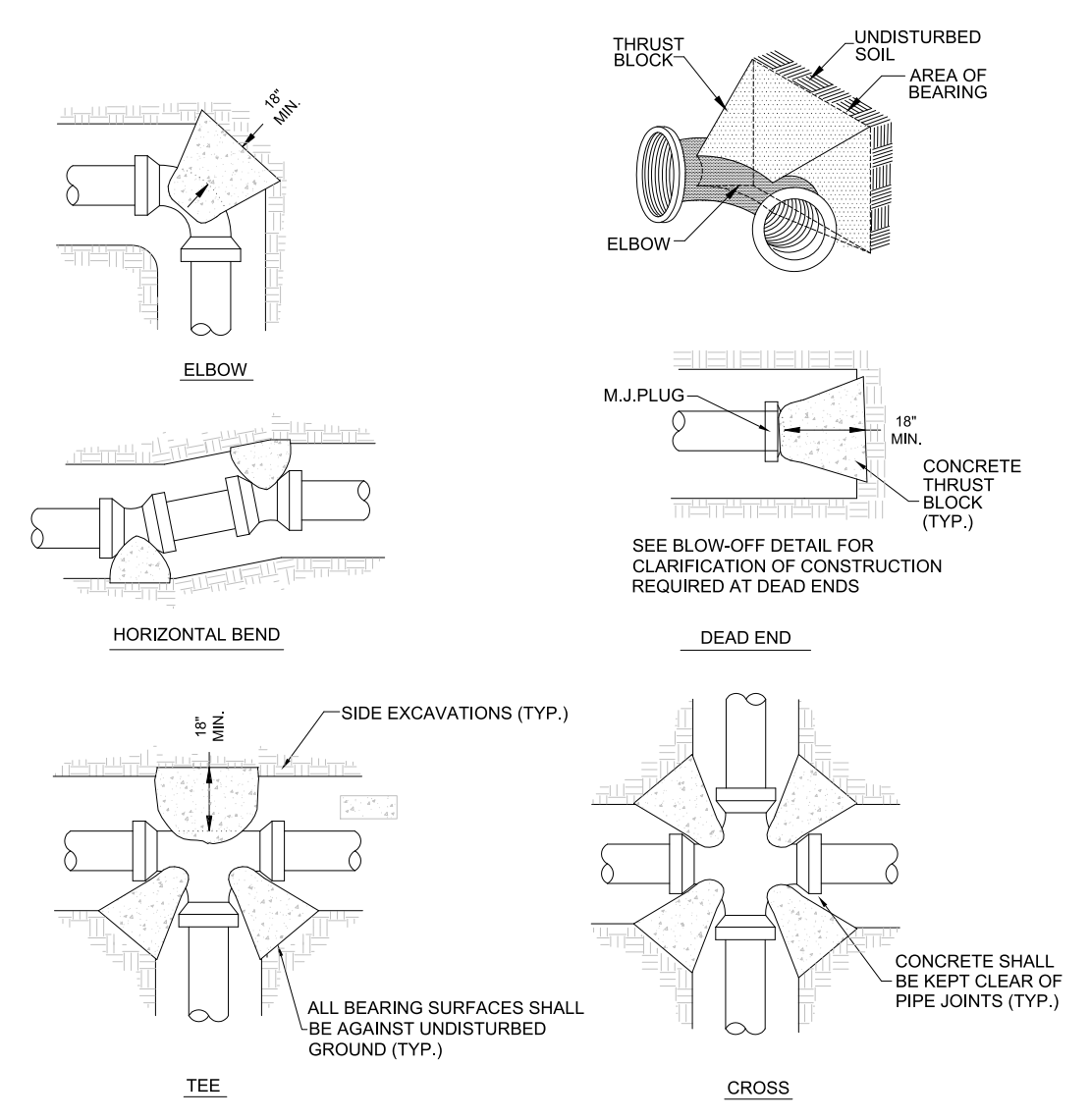
- NOTES:
1. ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT OR ANCHOR LUGS AND 3/4" DIA. STEEL ANCHOR RODS.
 2. 3/4" DIA. STEEL RODS AND ALL BURIED SURFACES SHALL BE PAINTED WITH 2 COATS OF BITUMINOUS PAINT. MARRED OR SCRATCHED SURFACES SHALL BE REPAINTED. PAINT SHALL CURE PRIOR TO BACK FILLING TRENCH.
 3. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
 4. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY ENGINEER.
 5. HYDRANT EXTENSIONS SHALL BE APPROVED BY ENGINEER.



HYDRANT DETAIL
NTS



2" SERVICE CONNECTION DETAIL
NTS



CONCRETE THRUST BLOCK DETAIL
NTS

FITTING SIZE (IN.)	THRUST BLOCKING SCHEDULE					
	11 1/4"	22 1/2"	45"	90"	TEE	PLUG
2		0.23 (0.11)	0.38 (0.11)	0.30 (0.11)	0.30 (0.11)	0.30 (0.11)
4		0.83 (0.18)	1.35 (0.18)	0.98 (0.18)	0.98 (0.18)	0.98 (0.18)
6	0.40 (0.01)	0.80 (0.02)	1.73 (0.20)	3.00 (0.33)	2.17 (0.25)	2.17 (0.25)
8	0.80 (0.02)	1.50 (0.04)	3.08 (0.34)	5.40 (0.60)	3.83 (0.42)	3.83 (0.42)
10	1.20 (0.03)	2.30 (0.07)	4.72 (0.52)	8.40 (0.94)	5.92 (0.66)	5.92 (0.66)
12	1.70 (0.05)	3.30 (0.12)	6.82 (0.75)	12.00 (1.33)	8.48 (0.94)	8.48 (0.94)
16	3.00 (0.33)	5.90 (0.65)	11.60 (0.86)	21.30 (1.57)	15.00 (0.97)	15.00 (0.97)
20	4.60 (0.52)	9.20 (0.78)	18.00 (1.32)	33.30 (3.60)	23.30 (1.87)	23.30 (1.87)
24	6.70 (0.75)	13.20 (0.97)	26.00 (2.28)	48.00 (5.29)	33.60 (3.24)	33.60 (3.24)
30	10.40 (0.77)	20.70 (1.80)	40.80 (4.45)	75.00 (10.30)	52.50 (6.32)	52.50 (6.32)
36	15.00 (1.28)	29.80 (3.11)	58.40 (7.87)	108.00 (17.90)	75.60 (10.90)	75.60 (10.90)

NOTE: Values given are based on 150 psi water pressure and 2000 lb/cf soil bearing capacity. Soils with less bearing capacity such as muck, peat or soft clay will require greater blocking areas and volumes.
The thrust blocking shown above is based on the use of mechanical joint as shown on plans.