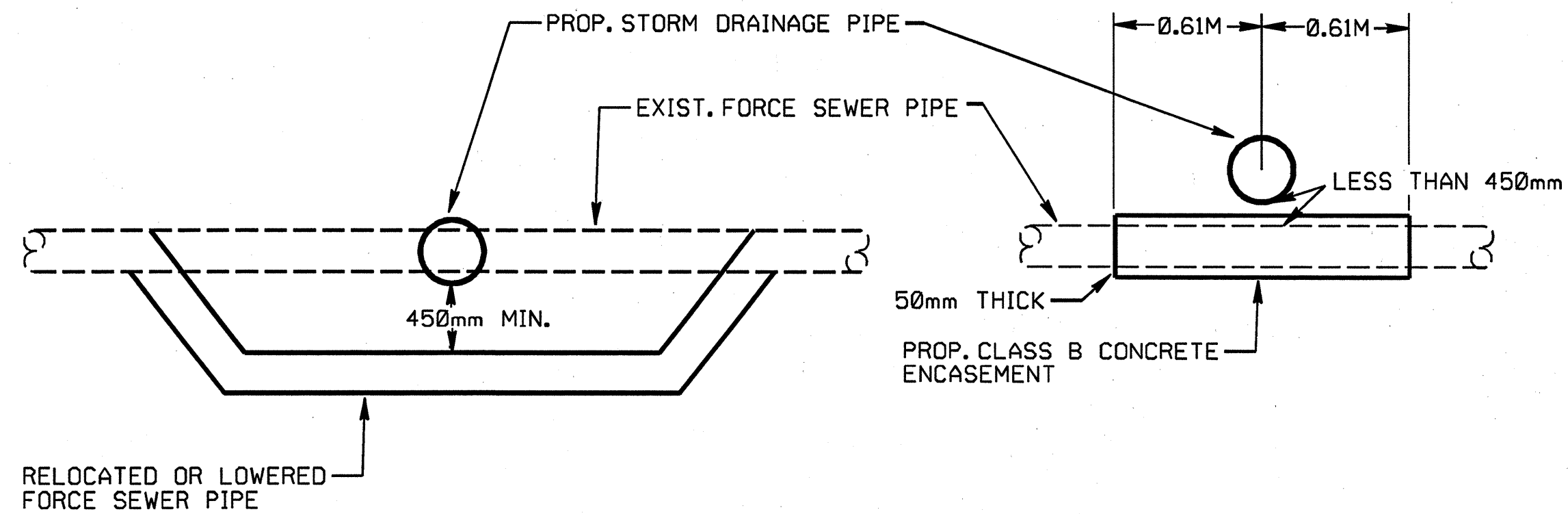
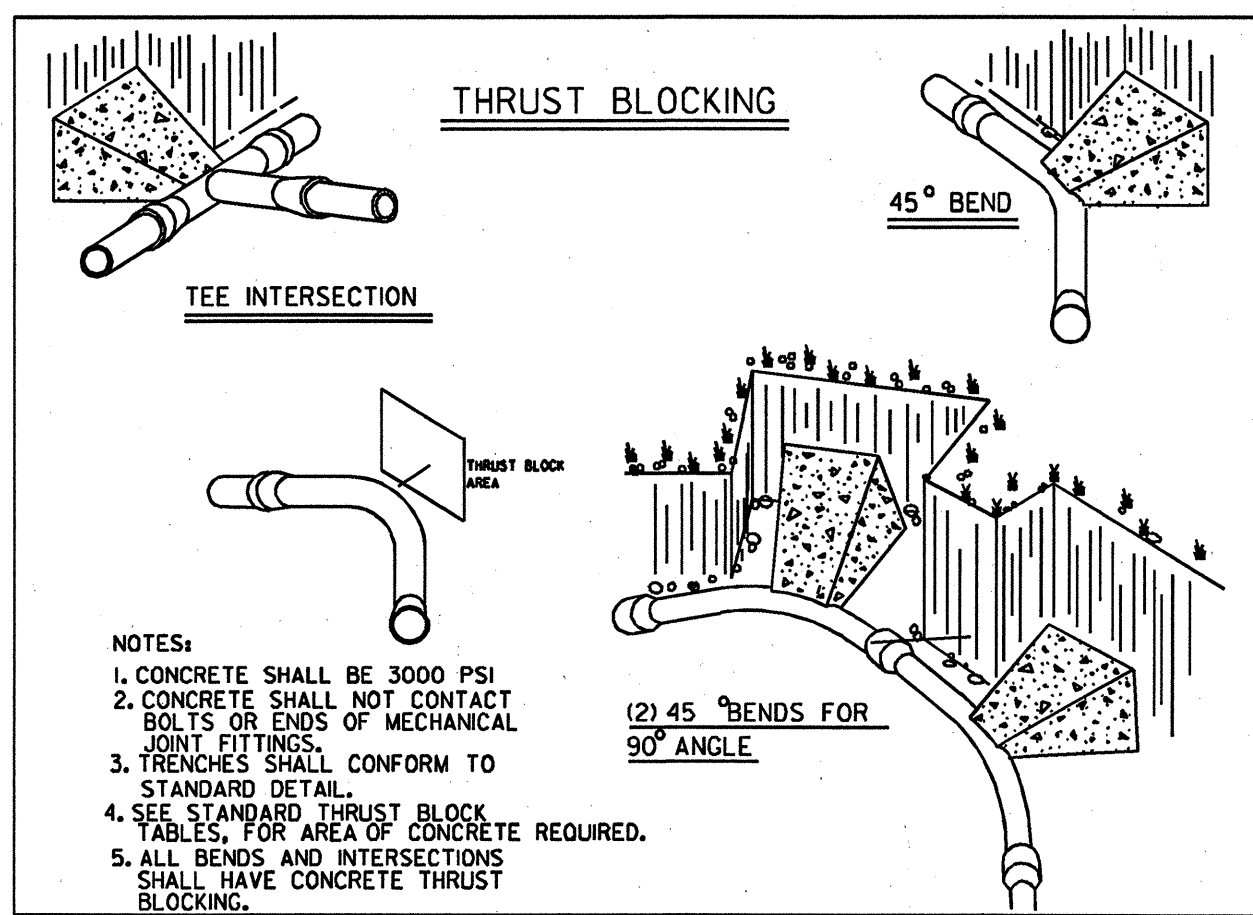


REVISIONS

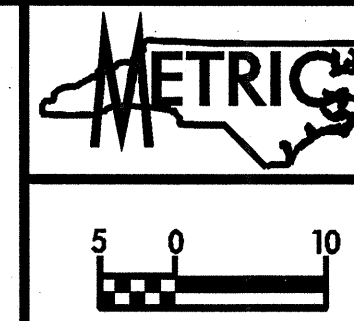
1. REVISED PER BMRSD COMMENTS 2/2/05.



PROPOSED DRAINAGE CONFLICT DETAILS



THRUST BLOCKING DETAIL



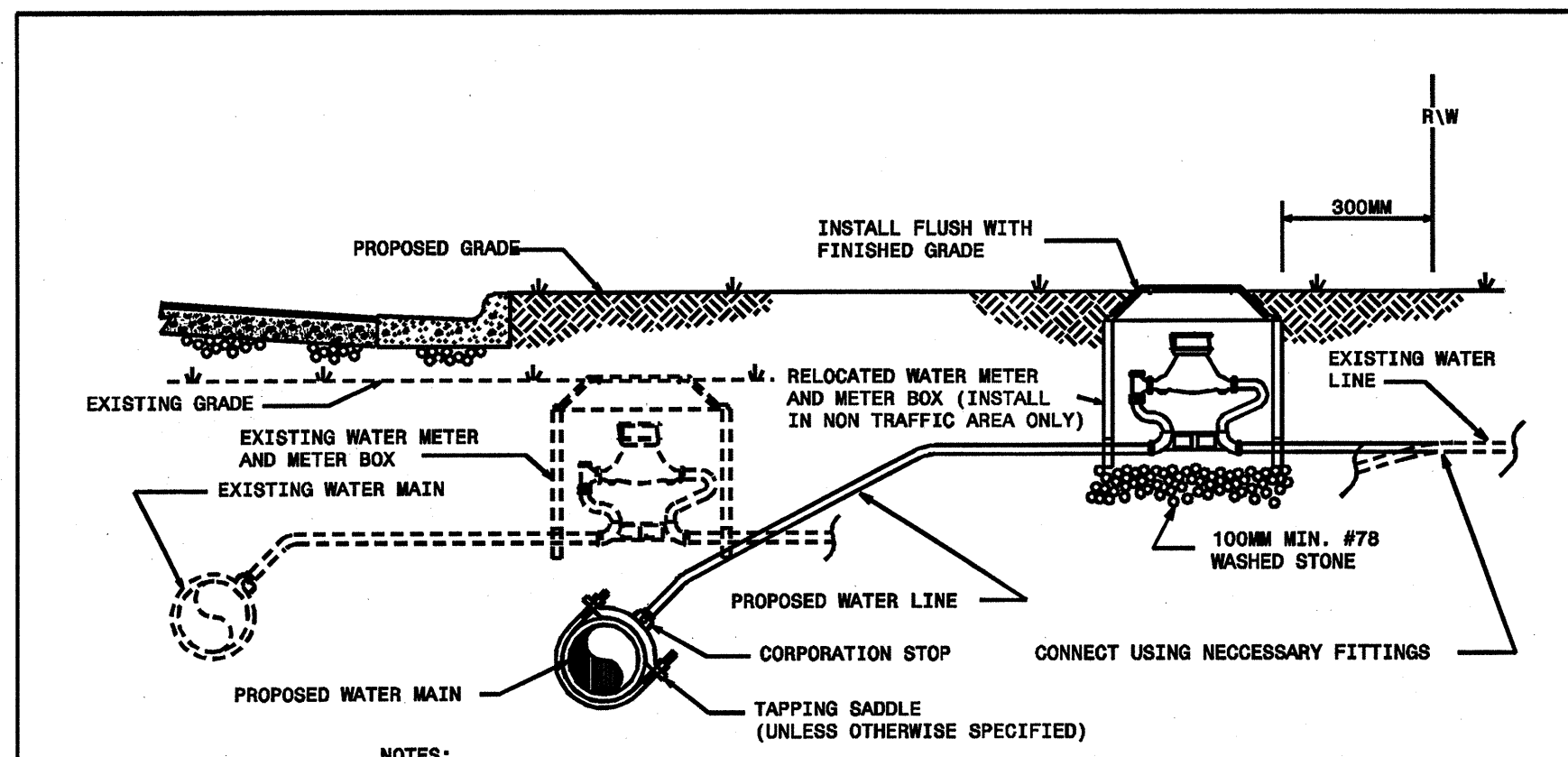
CONST. REV.
R / W REV.

PROJECT REFERENCE NO. **R-2539C** SHEET NO. **UC-28**
R/W SHEET NO.

Municipal Engineering Services Company, P.A.
P.O. BOX 319 GARDNER, N.C. 27527
P.O. BOX 278 MOREHEAD CITY, N.C. 28557
(919) 779-3300 (919) 362-1167

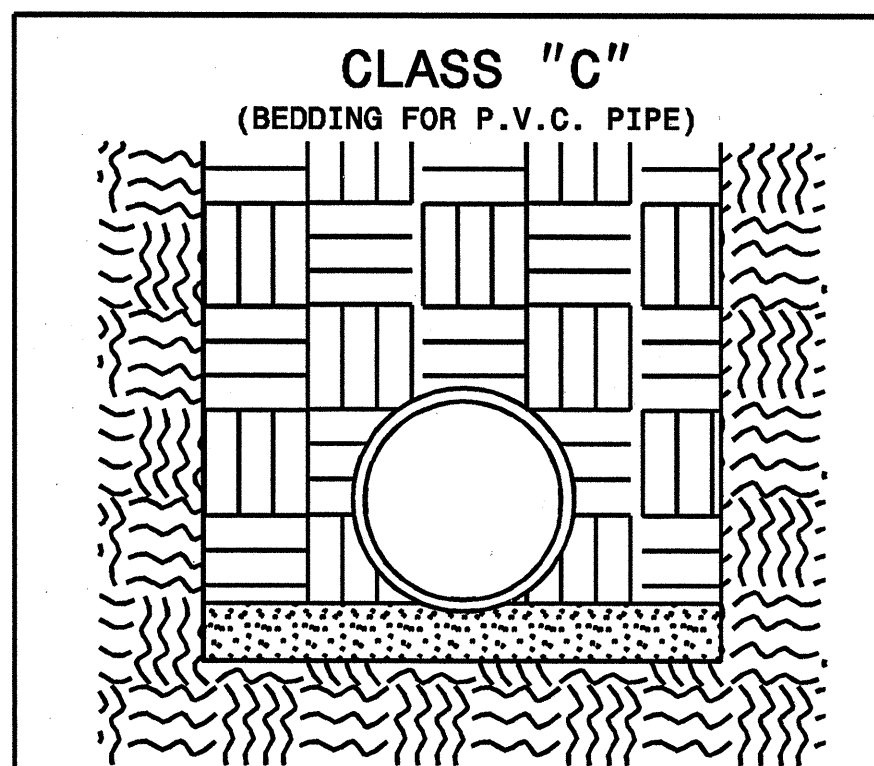
SEAL
JIMMY D. WOODIE
3/16/05

UTILITY CONSTRUCTION DRAWINGS



- NOTES:
1. RELOCATION SHALL INCLUDE THE REMOVAL AND INSTALLATION AT THE APPROPRIATE LOCATION OF THE WATER METER, METER SETTER AND YOKE, METER VALVES, AND METER BOX WITH LID.
 2. THE NEW WATER SERVICE LINE SHALL BE OF THE SAME TYPE AND GRADE AS THE EXISTING WATER SERVICE LINE UNLESS OTHERWISE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.
 3. THE NEW WATER SERVICE LINE SHALL BE INSTALLED WITH A MINIMUM OF 900MM COVER BELOW FINISHED GRADE.

WATER METER RELOCATION DETAIL



PIPE BEDDED IN LOOSE MATERIAL, LIGHTLY TAMPED WITH A MINIMUM OF 150 mm UNDER PIPE. TRENCH BACKFILLED IN LOOSE 150 mm LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

TRENCH DETAIL

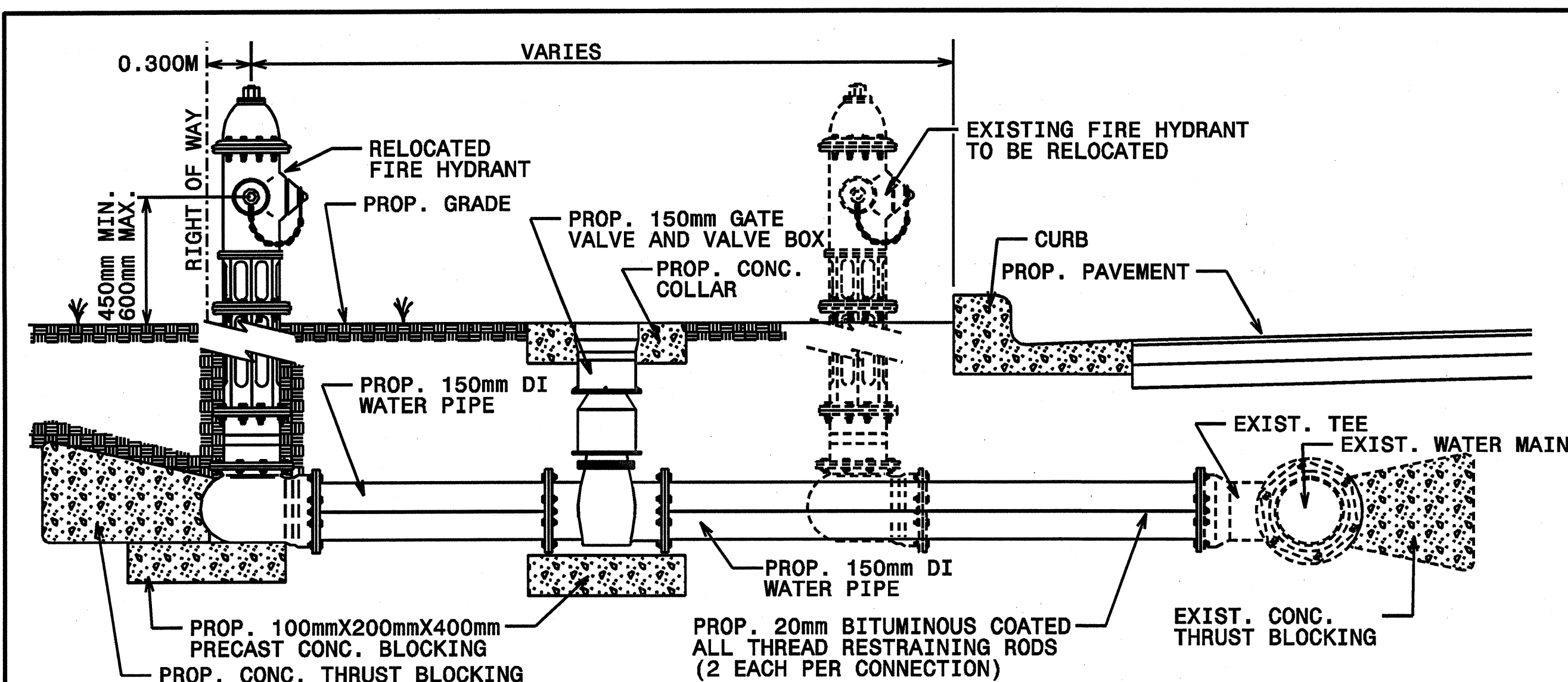
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 1,38MPa

ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4000 LBS/FT ³	SOFT CLAY 2000 LBS/FT ³	GRAVEL / COARSE SAND 1600 LBS/FT ³	BRK. CLAY ALWAYS DRY 8000 LBS/FT ³	SAND COMPACT FIRM 1000 LBS/FT ³	SAND CLEAN DRY 1000 LBS/FT ³	QUICKSAND - VERY POOR SOIL 1000 LBS/FT ³	ROCK - POOR 10,000 LBS/FT ³
150mm									
11 1/4°	1,108	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	3	1	
45°	4,328	2	3	3	1	1	5	1	
90°	7,996	2	4	5	1	1	8	1	
PLUG	5,655	2	3	4	1	1	6	1	
200mm									
11 1/4°	1,970	1	1	2	1	1	2	1	
22 1/2°	3,922	1	2	3	1	1	4	1	
45°	7,694	2	4	5	1	1	8	1	
90°	14,215	4	8	9	2	2	15	2	
PLUG	10,053	3	5	6	2	2	10	1	
250mm									
11 1/4°	3,791	2	6	4	1	1	6	1	
22 1/2°	7,546	4	11	7	2	2	11	1	
45°	14,802	7	22	14	4	3	22	2	
90°	27,351	10	41	26	7	4	41	4	
PLUG	19,340	19	29	18	5	3	29	3	
300mm									
11 1/4°	4,433	2	3	3	1	1	5	1	
22 1/2°	8,826	3	5	6	2	2	9	1	
45°	17,312	5	9	11	3	3	18	2	
90°	31,983	8	16	19	4	4	32	4	
PLUG	22,619	6	12	14	3	3	23	3	

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
USE 150mm - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

THRUST BLOCKING TABLE



FIRE HYDRANT RELOCATION DETAIL

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (mm)	TRENCH WIDTH (mm)	NOMINAL PIPE SIZE (mm)	TRENCH WIDTH (mm)
100	700	500	1100
150	750	600	1200
200	800	750	1350
250	850	900	1500
300	900	1050	1650
350	950	1200	1800
400	1000	1350	1950
450	1050		

TRENCH WIDTH DETAIL