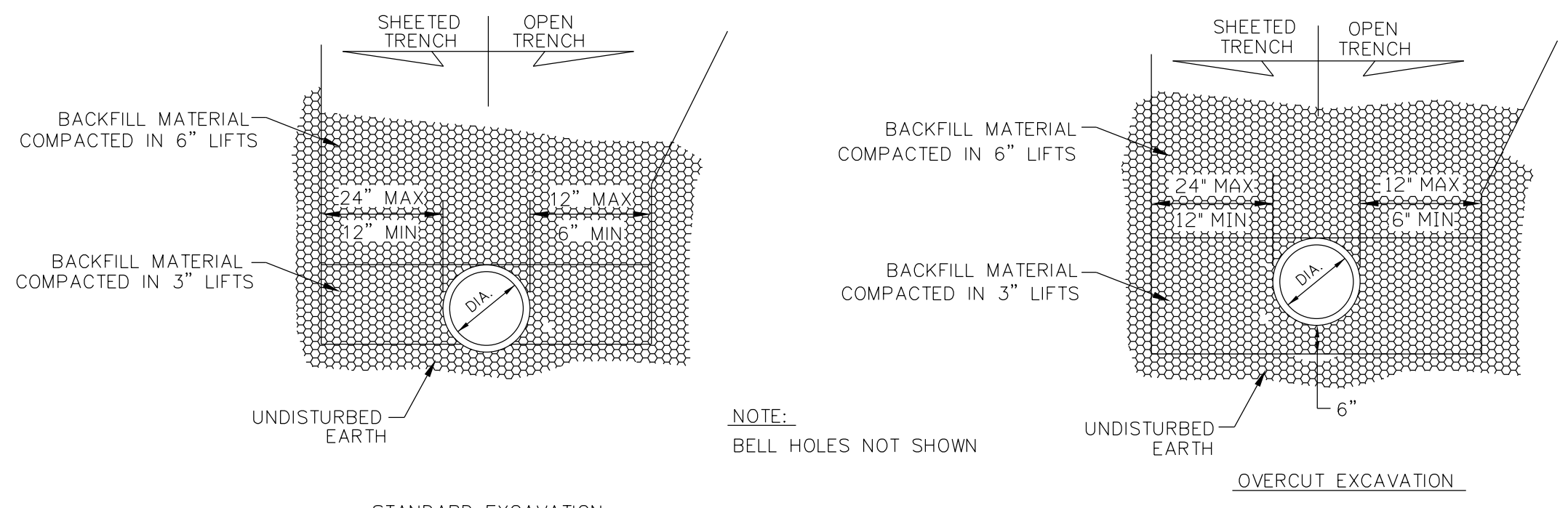


# PROJECT TYPICAL DETAILS

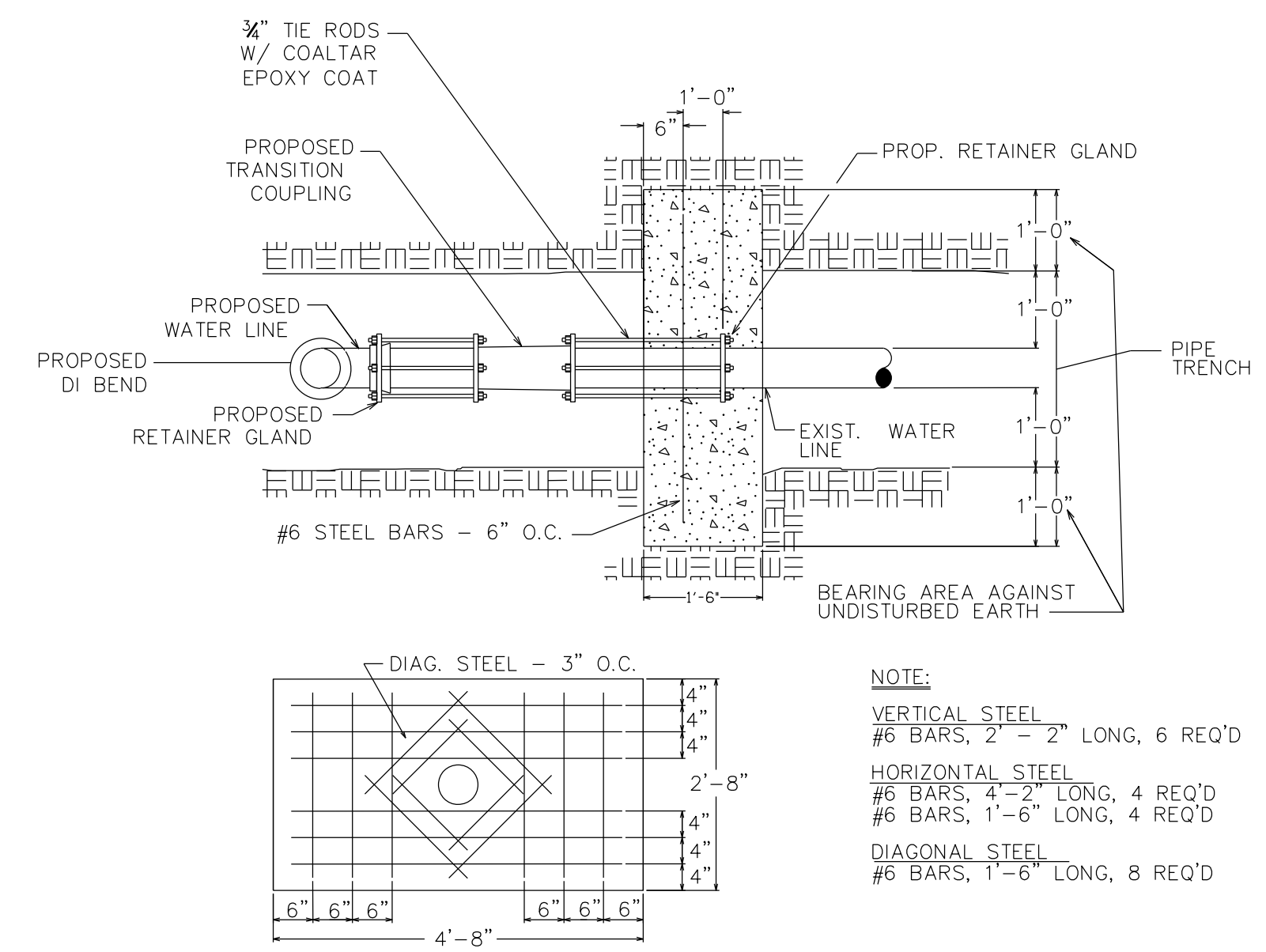
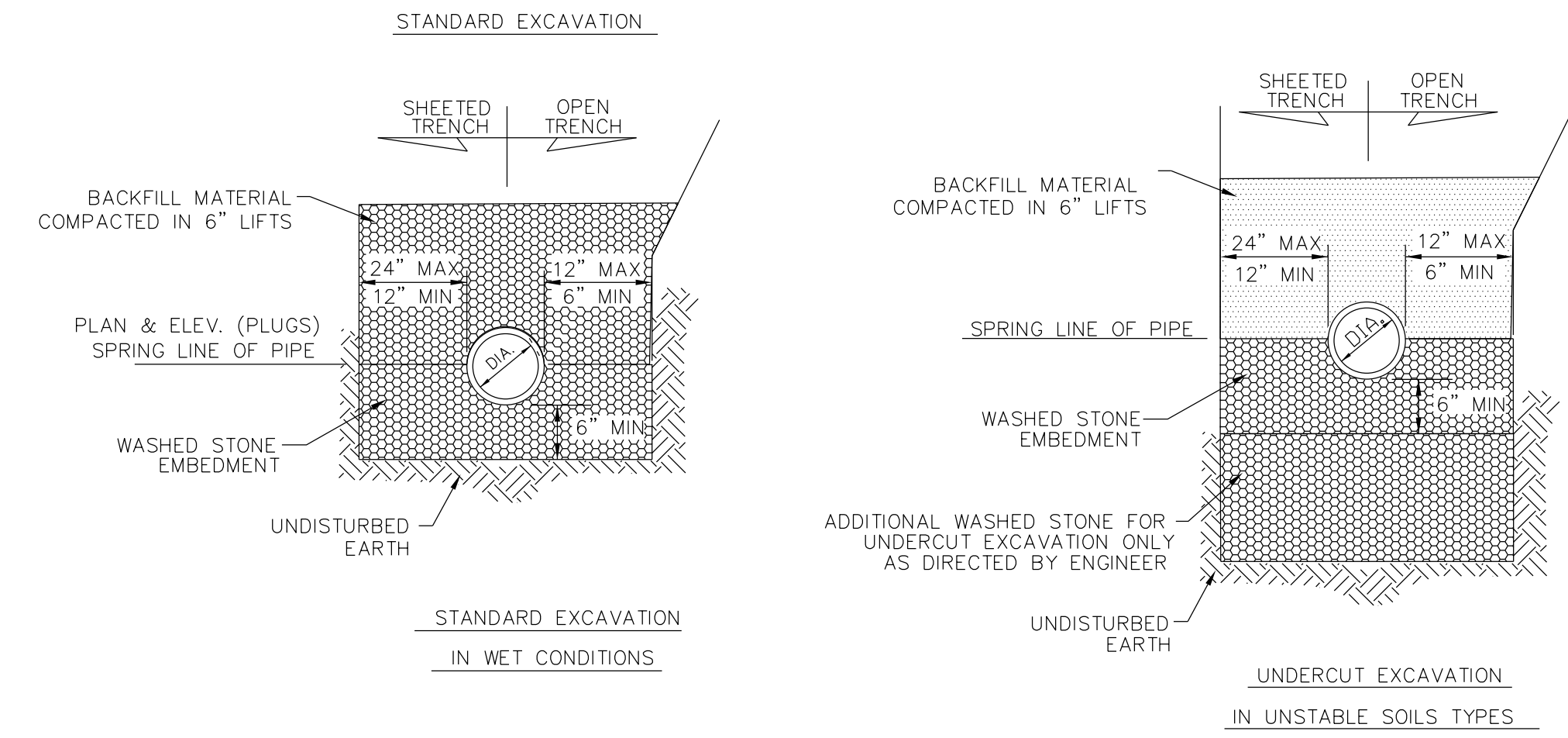
PROJECT REFERENCE NO.	SHEET NO.
R-2603	UC-3B
DESIGNED BY: B. DIXON	
DRAWN BY: R. MOSS	
CHECKED BY: B. DIXON	
APPROVED BY:	
REVISED:	04/13/2015
MUNICIPAL ENGINEERING SERVICES COMPANY, P.A.	UTILITY CONSTRUCTION PLANS ONLY
P.O. BOX 97 GARNER, NC 27529 (919) 772-5393	

## UTILITY CONSTRUCTION



NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
6	30	24	48
10	34	36	60
16	40	54	78

NOTES:  
CONSTRUCTION OF TRENCHES SHALL BE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE REGULATIONS.  
NO BOULDERS OR STONES IN EXCESS OF 4" IN SIZE SHALL BE USED AS PART OF THE INITIAL BACKFILL.  
PIPE BEDDING MATERIAL SHALL BE # 57 WASHED STONE.



NOTE:  
VERTICAL STEEL  
#6 BARS, 2' - 2" LONG, 6 REQ'D  
HORIZONTAL STEEL  
#6 BARS, 4' - 2" LONG, 4 REQ'D  
#6 BARS, 1' - 6" LONG, 4 REQ'D  
DIAGONAL STEEL  
#6 BARS, 1' - 6" LONG, 8 REQ'D

### TYPICAL TRENCH DETAIL

### THRUST RESTRAINT WITH RETAINER GLANDS FOR PROP. PIPE TO EXIST. PIPE

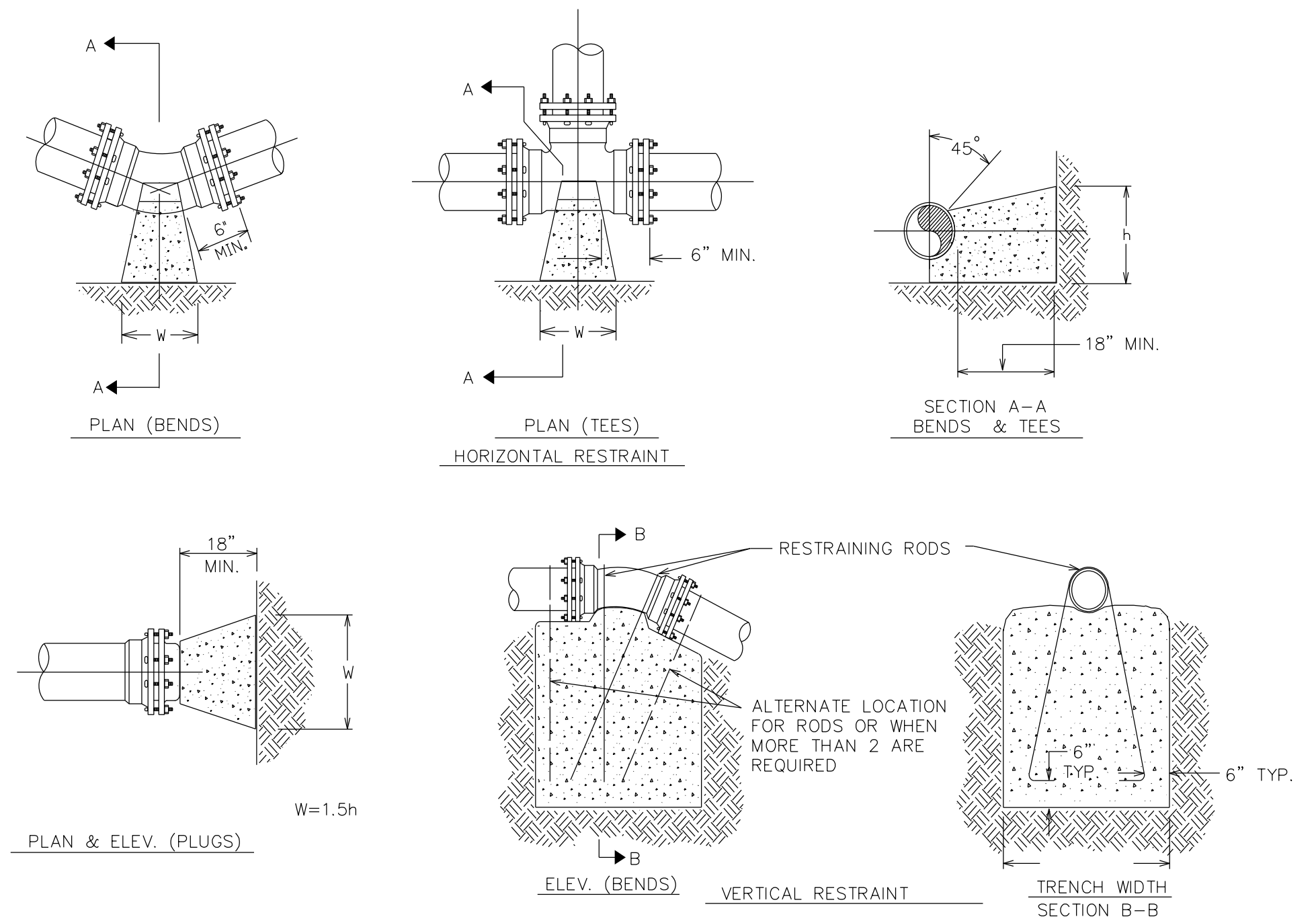
BASED ON TEST PRESSURE OF 200 P.S.I.

PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	HORIZONTAL RESTRAINT (ALL AREAS GIVEN ARE IN SQUARE FEET)								VERTICAL RESTRAINT (ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**								
			ALLOWABLE SOIL BEARING (PSF)								PIPE SIZE	RESTRAINING RODS NO. REQ'D	DIA.	DEGREE OF BEND					
			1000	2000	3000	4000	5000	6000	7000	8000				11 1/4°	22 1/2°	45°			
6"	11 1/4°	1,385	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2°	2,758	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	45°	5,409	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	90°	9,999	10	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	TEE/PLUG	7,068	7	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10"	11 1/4°	3,846	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2°	7,661	8	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	45°	15,028	15	8	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3
	90°	27,768	28	14	9	7	6	5	4	4	4	4	4	4	4	4	4	4	4
	TEE/PLUG	19,635	20	10	7	5	4	3	3	3	3	3	3	3	3	3	3	3	3
16"	11 1/4°	9,854	10	5	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	22 1/2°	19,612	20	10	7	5	4	3	3	3	3	3	3	3	3	3	3	3	3
	45°	38,471	38	17	13	10	8	6	5	5	5	5	5	5	5	5	5	5	5
	90°	71,085	71	36	24	18	14	12	10	9	9	9	9	9	9	9	9	9	9
	TEE/PLUG	50,265	50	25	17	13	10	8	7	6	6	6	6	6	6	6	6	6	6

\* INCLUDES 1.25 SAFETY FACTOR

GENERAL NOTES:  
1. CONCRETE SHALL BE CLASS "B"  
2. CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS.  
3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES. (FOR VERTICAL & HORIZONTAL BENDS)  
4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

### THRUST RESTRAINT FOR WATER MAINS



### THRUST RESTRAINT FOR PIPE LINES