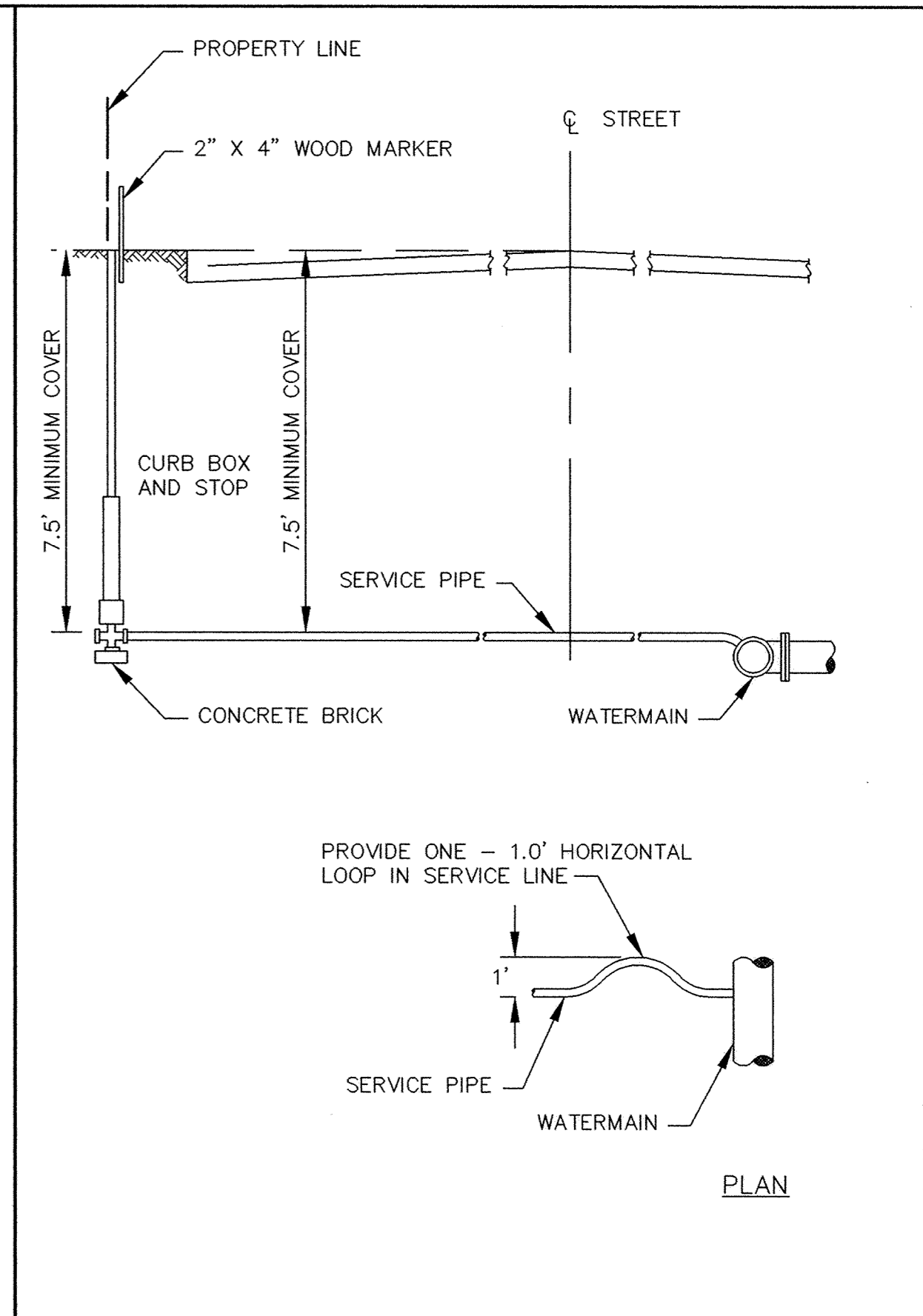
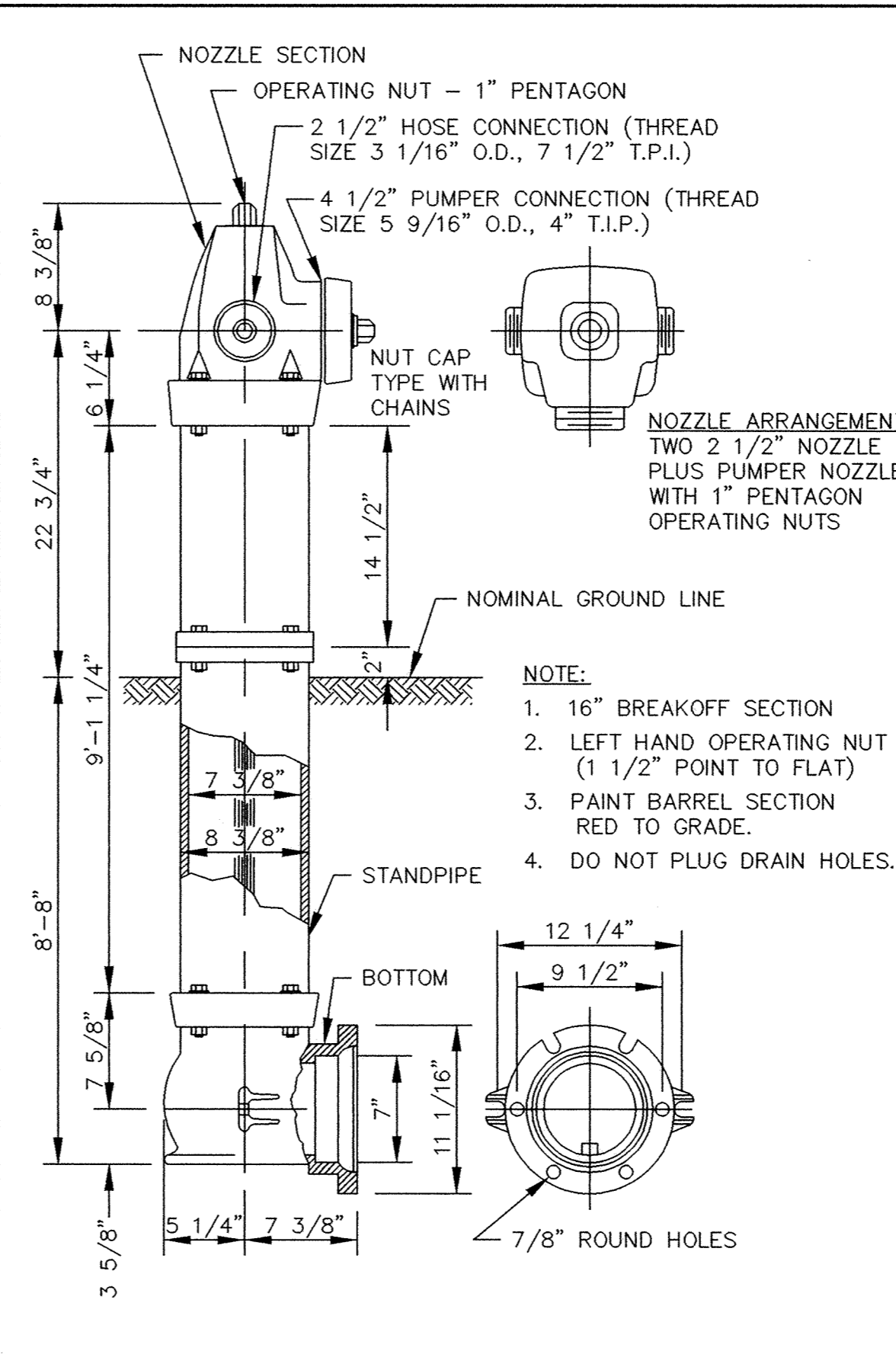


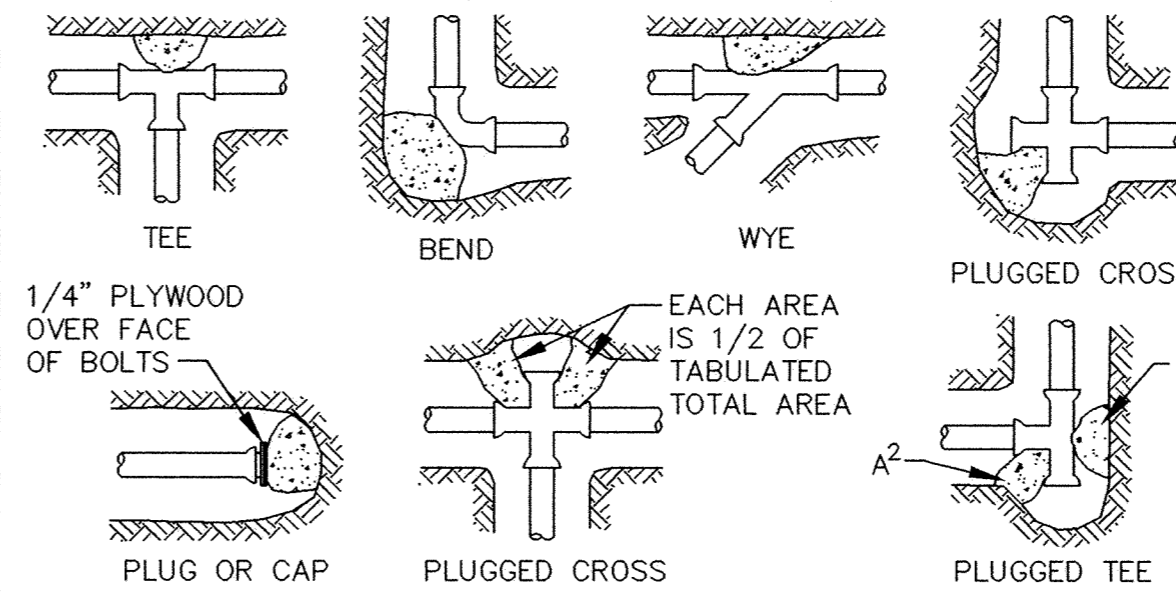
S&CO PRODUCTS • NEW HOPE, MINNESOTA
REPRODUCED BY PART NUMBER 8502
S&CO PRODUCTS • NEW HOPE, MINNESOTA
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TYPICAL SERVICE DETAIL



PACER HYDRANT DETAIL



NOMINAL FITTING SIZE (INCHES)	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22 1/2° BEND	11 1/4° BEND
			A ¹	A ²			
4	1.0	1.4	1.9	1.4	1.0	---	---
6	2.1	3.0	4.3	3.0	1.6	1.0	---
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.6	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

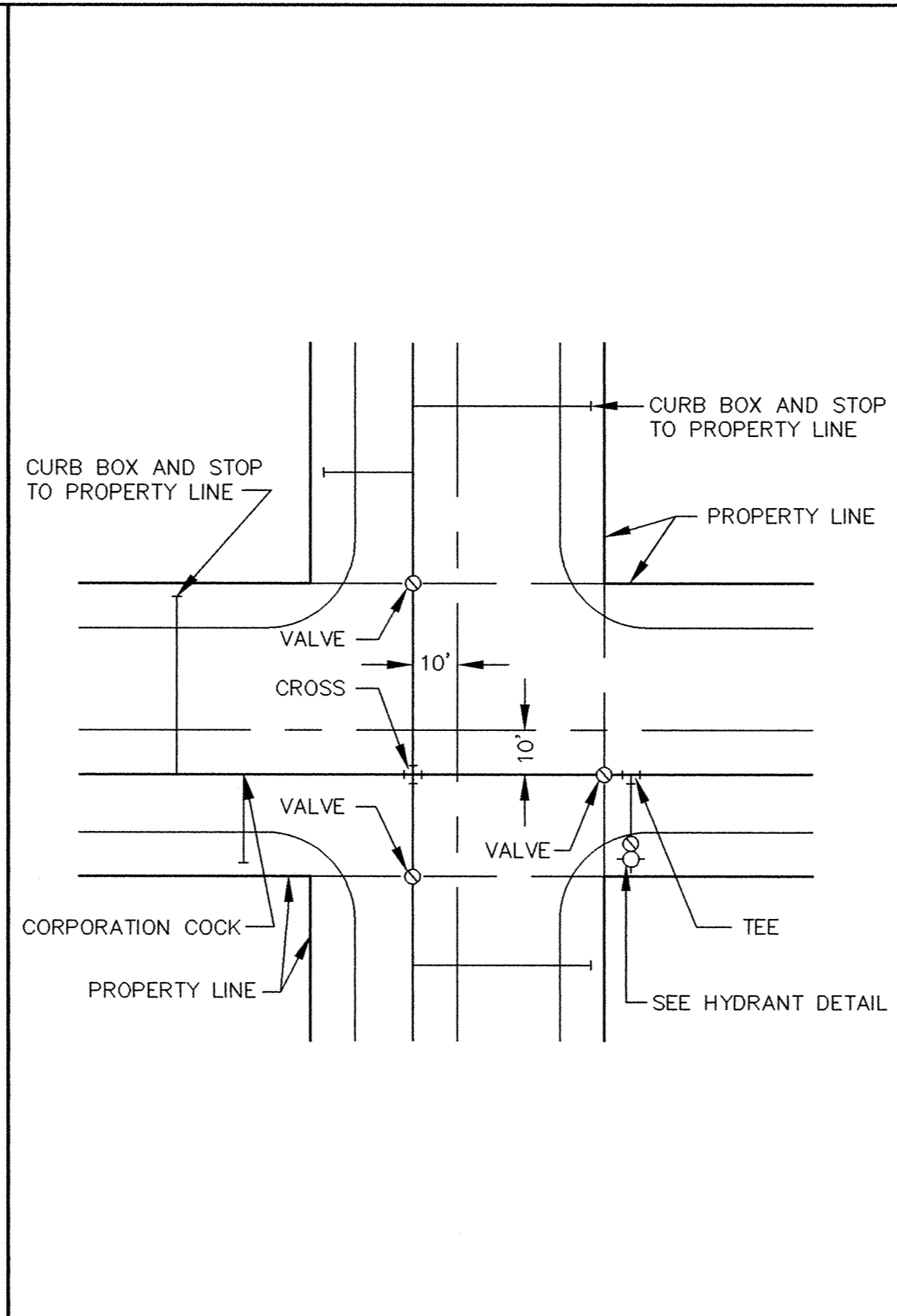
- NOTE**
- CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
 - KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
 - IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUSTED IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES).
 - BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN IN THIS STANDARD DETAIL.
 - ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION: BEARING AREA = (TEST PRESSURE/150) X (2000/SOIL BEARING STRESS) X (TABLE VALUE).

**RECORD PLAN
MARCH 1998**

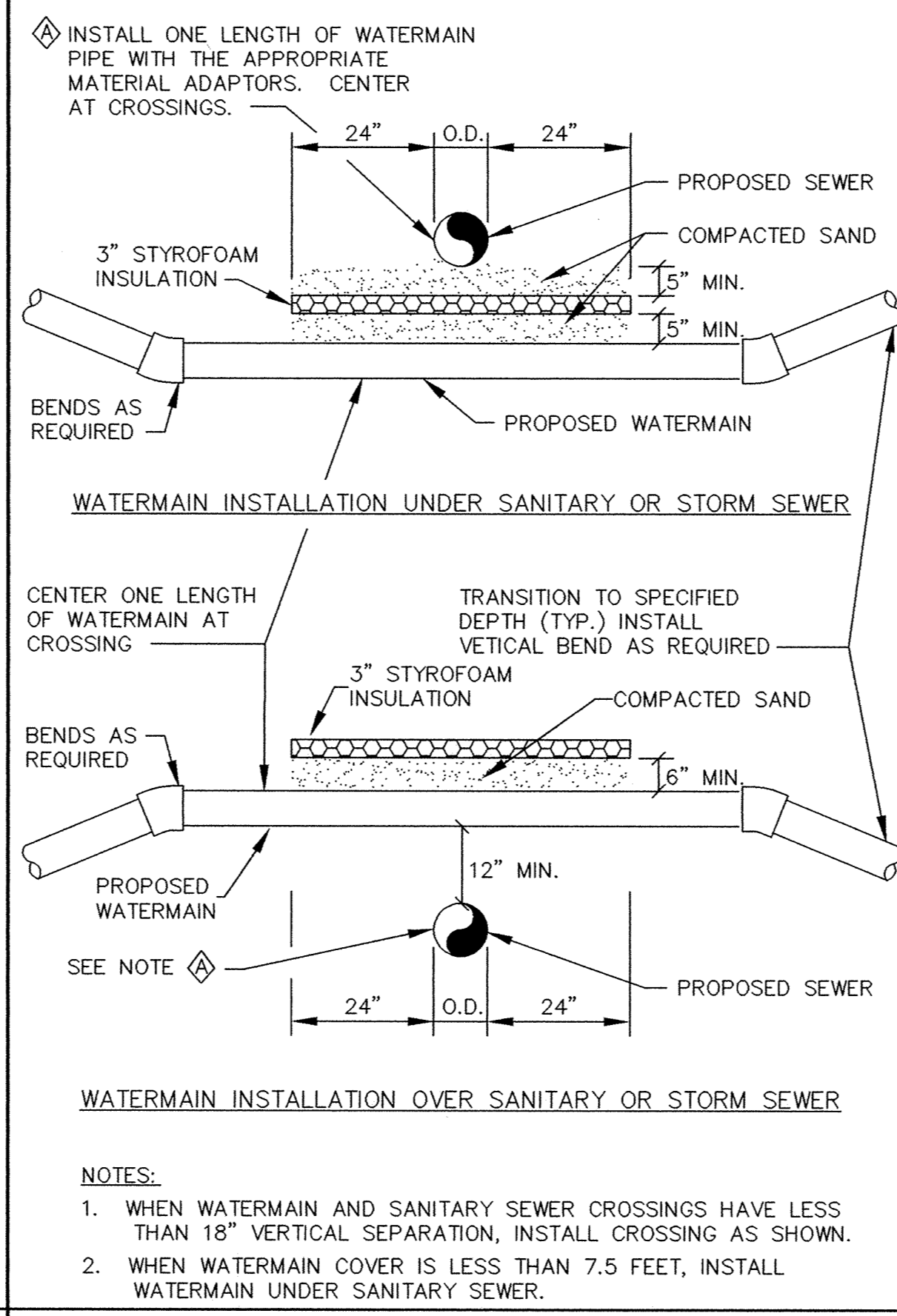
RODDING DETAIL

ELK RIVER MUNICIPAL UTILITIES
HIGHLAND ROAD TRUNK WATERMAIN
WATERMAIN DETAILS

DATE APR. 1997 SHEET 16 OF 16 SHEETS PROJECT NO. 235-013



TYPICAL WATER LAYOUT



WATERMAIN CROSSING

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

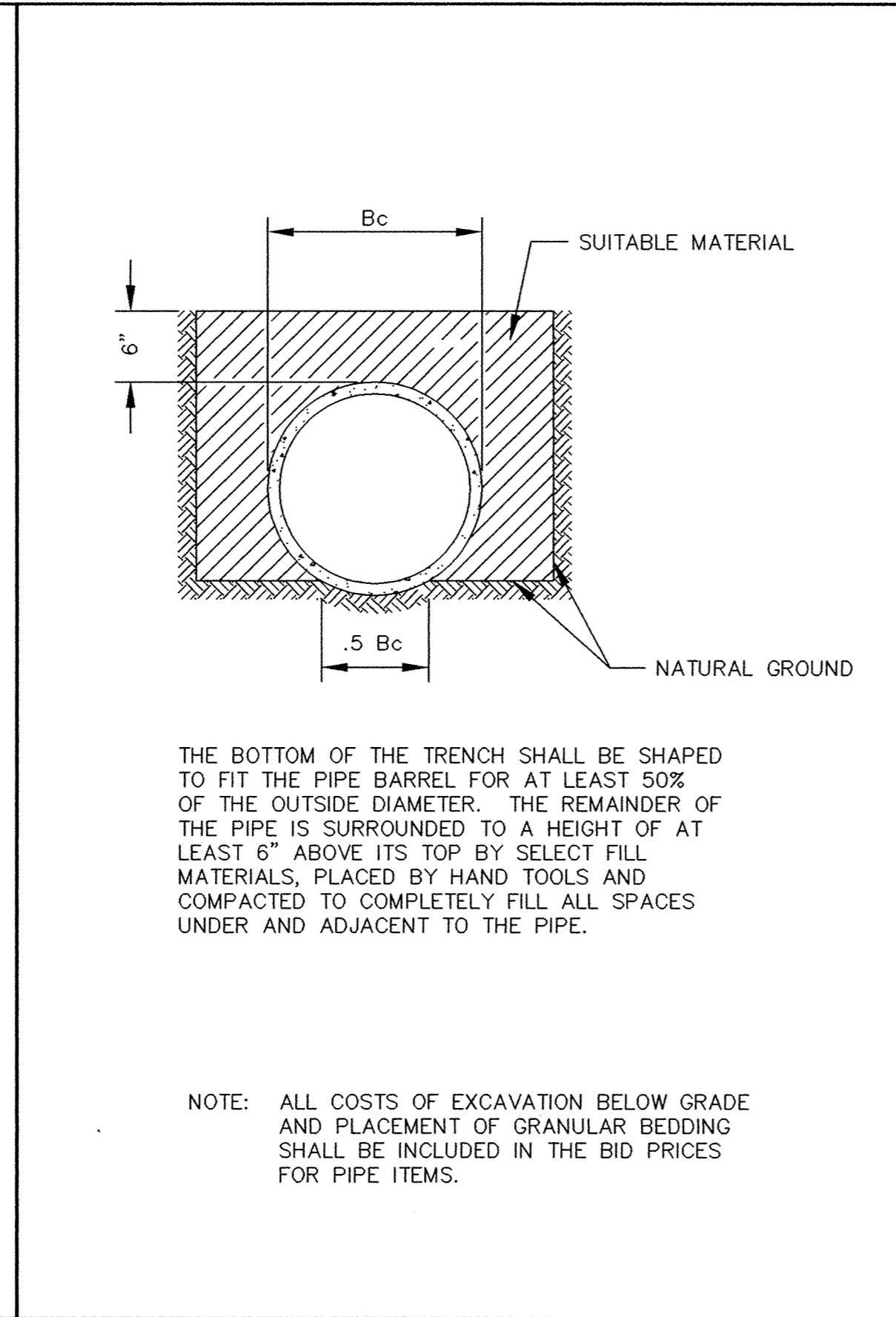
John J. Mann
DATE 7/6/97 REG. NO. 15316

MSA
CONSULTING ENGINEERS

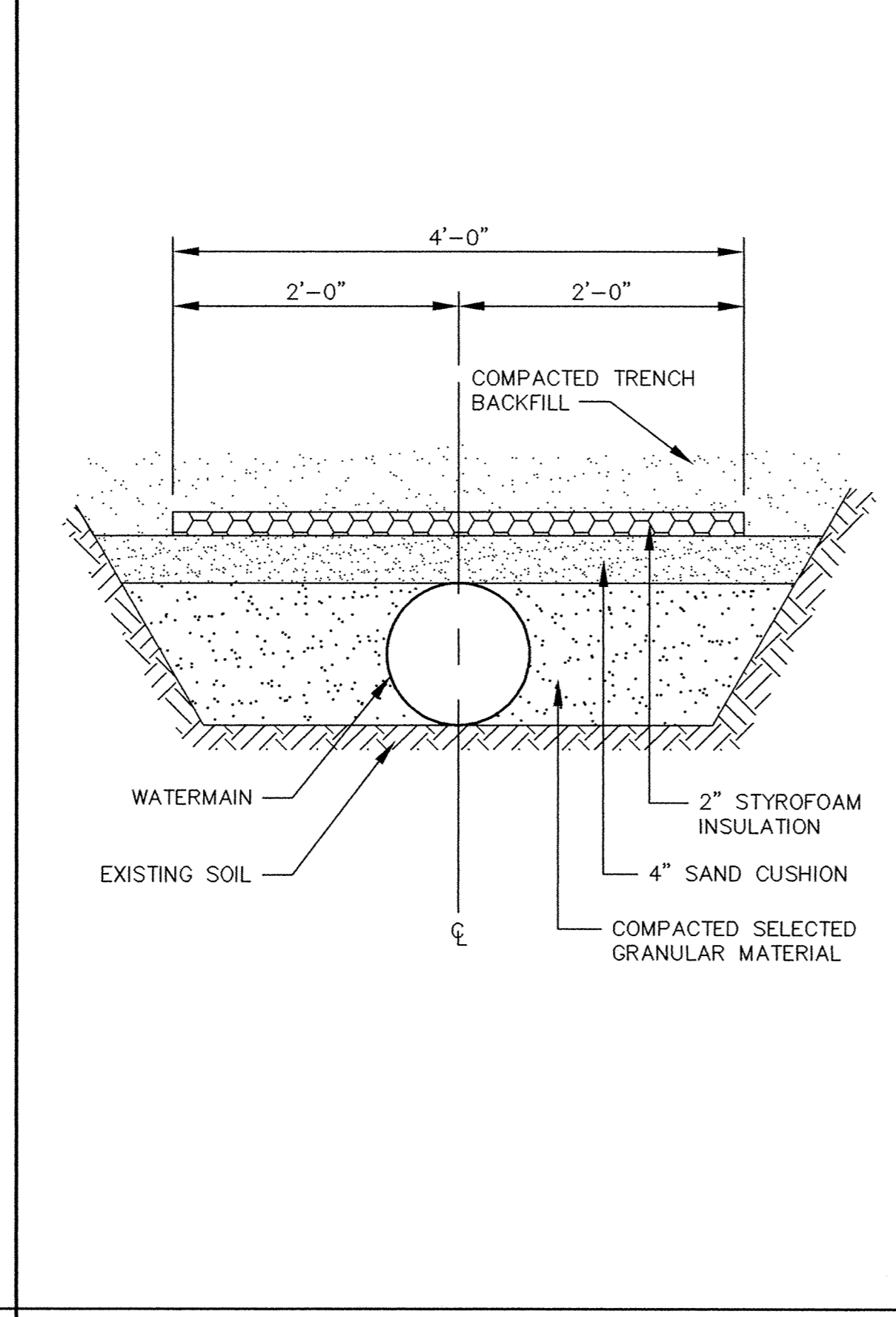
1326 ENERGY PARK DRIVE
ST. PAUL, MINNESOTA 55108
(612) 644-4389

REVISIONS	DATE	DESCRIPTION	DESIGNED

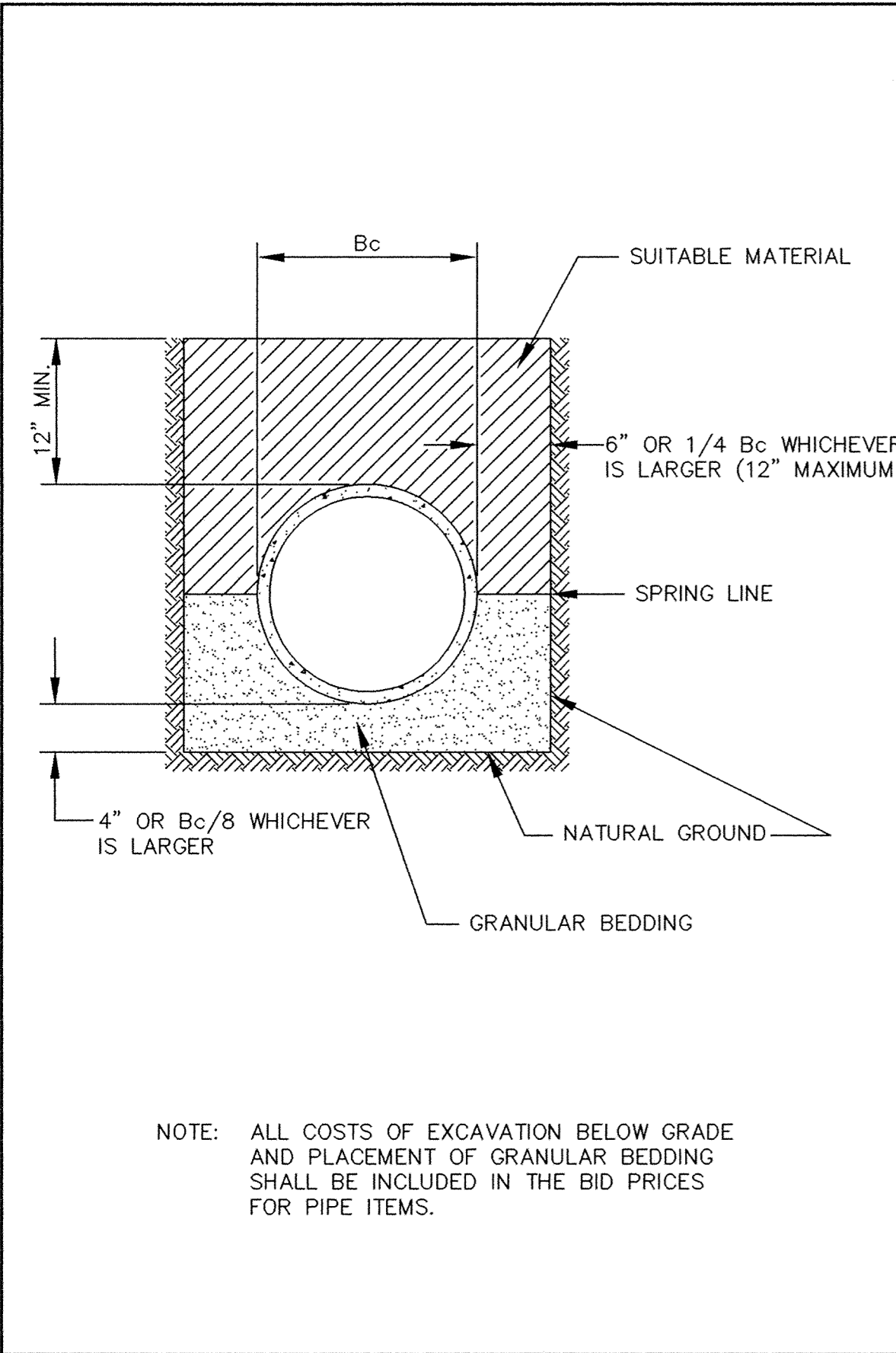
GRAPHIC SCALE
0 HORIZ. N/A
0 VERT. 5



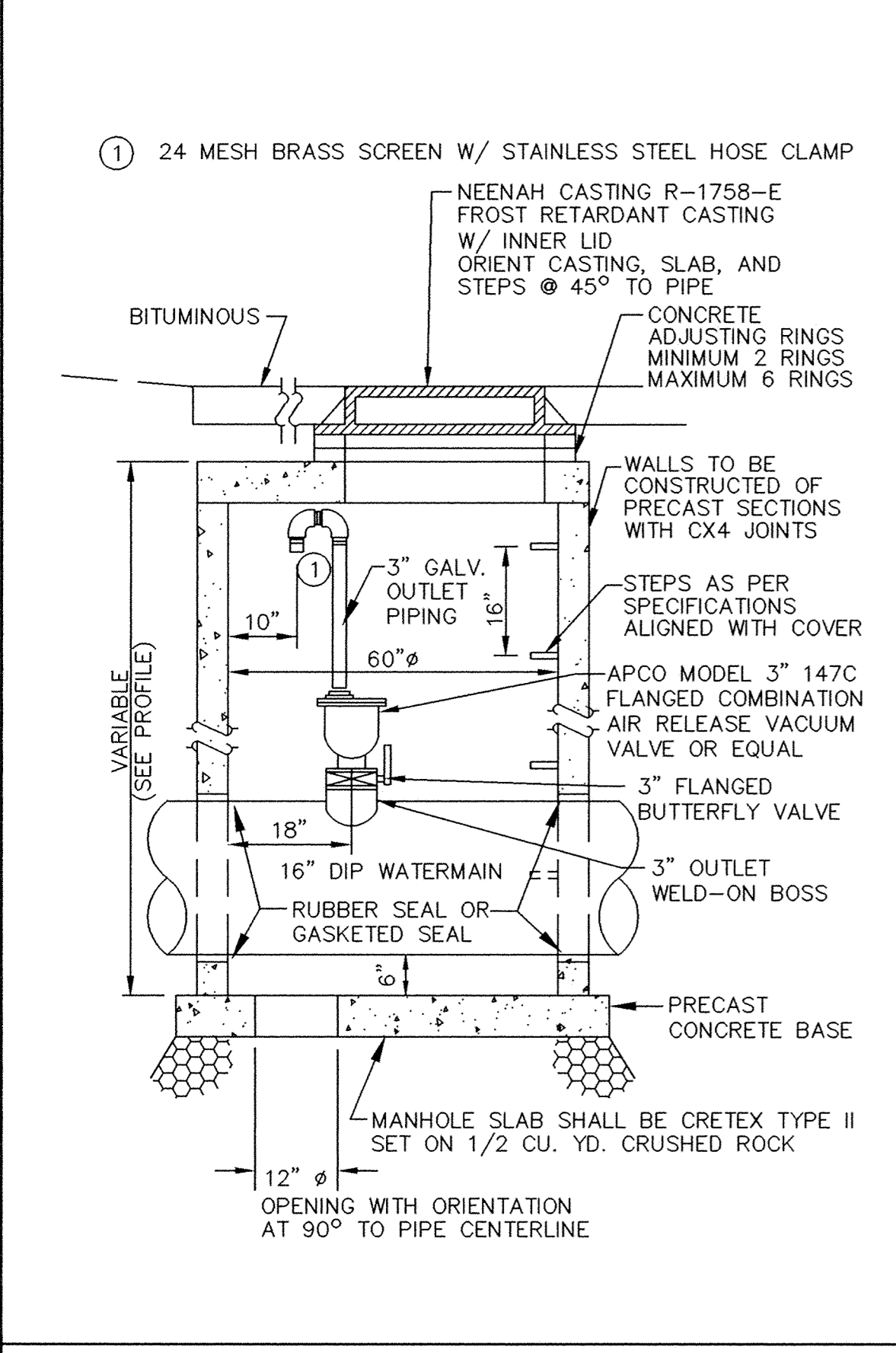
CLASS C PIPE BEDDING



PIPE INSULATION DETAIL



CLASS B PIPE BEDDING



AIR RELIEF/VACUUM BREAKER MANHOLE

ERU13-W

C:\AD\Mea Arch\iver\ERU13\ERU13-w.dwg Sun Mar 29 13:06:45 1998