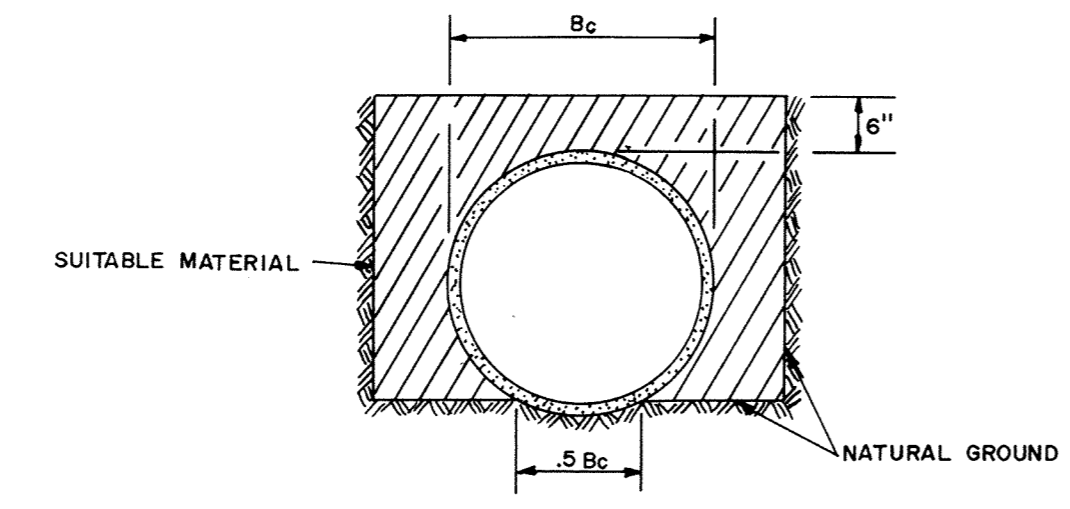
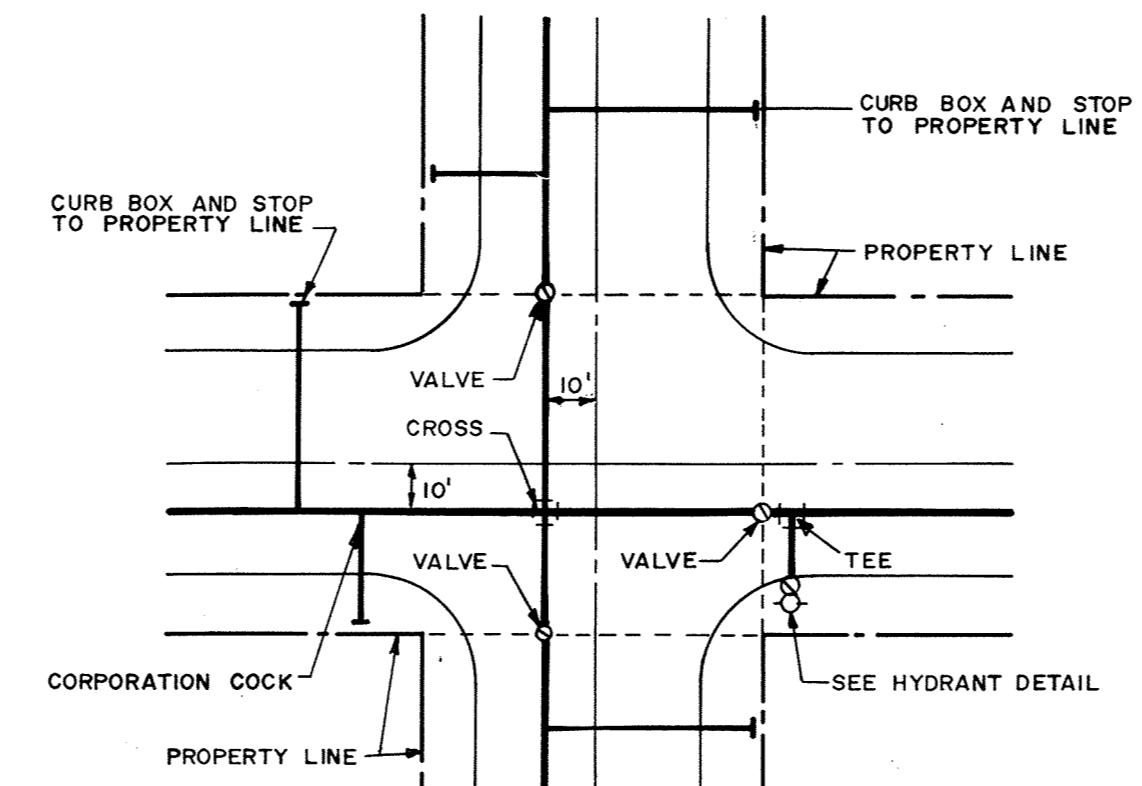
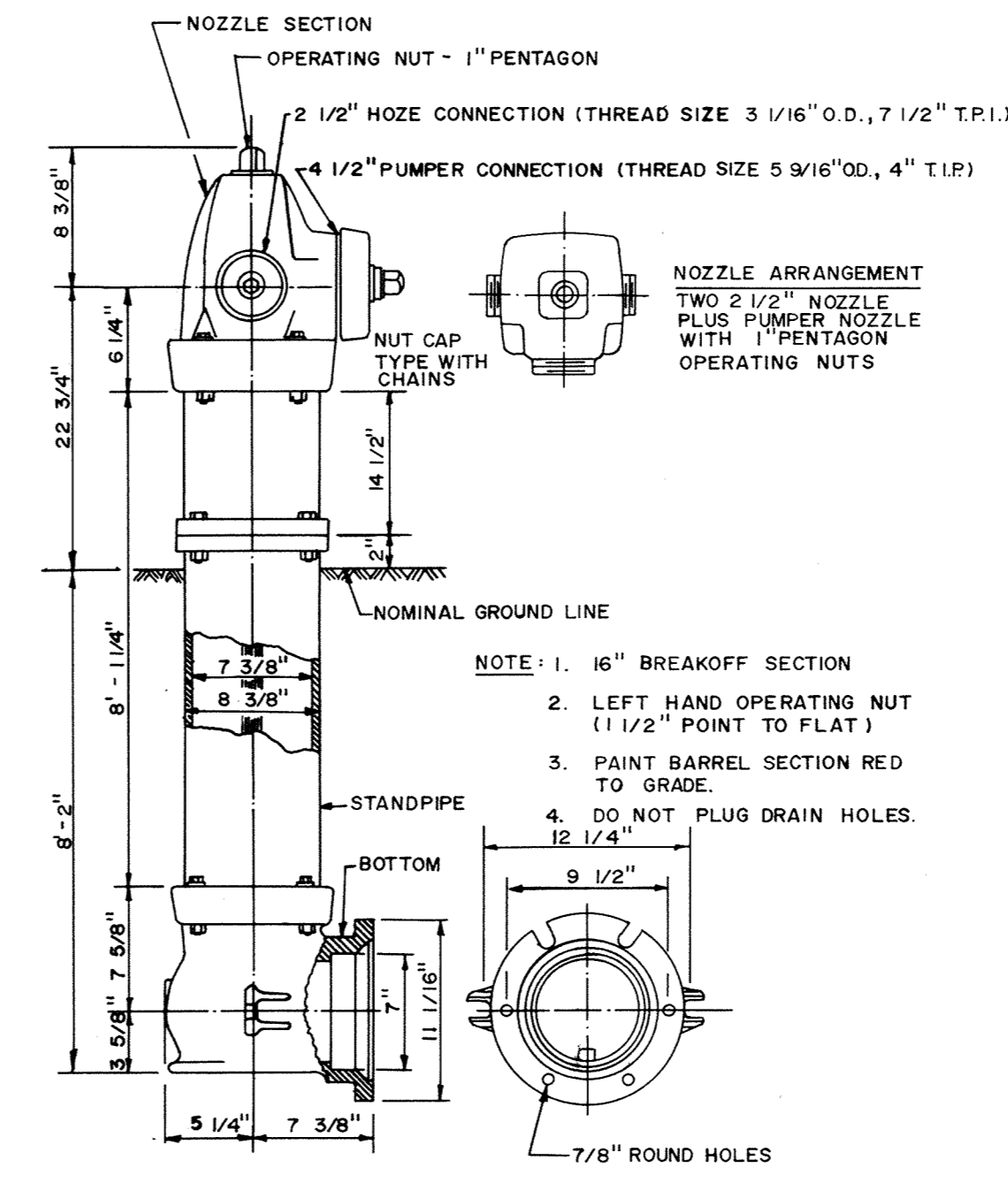
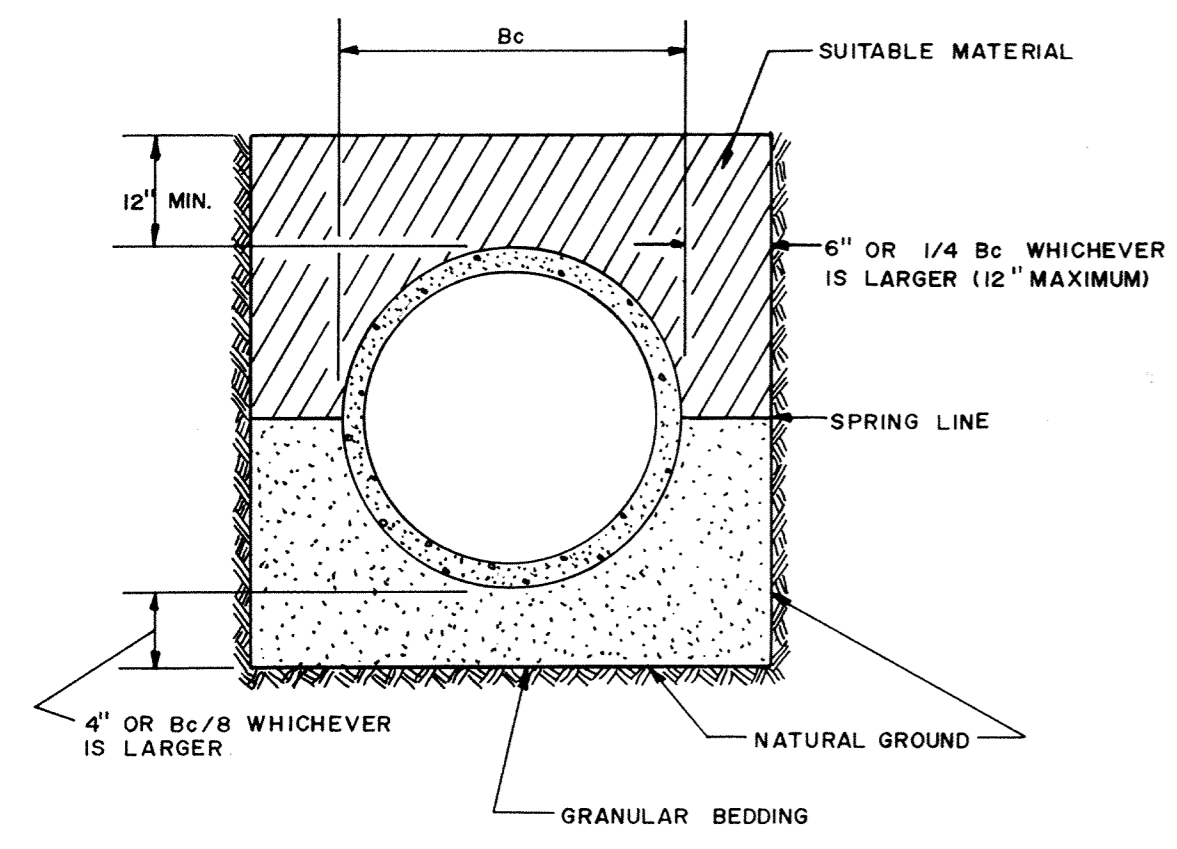


NOMINAL FITTING SIZE, INCHES	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS		TEE PLUGGED ON RUN		45° BEND	22 1/2° BEND	11 1/4° BEND
		A ¹	A ²	A ¹	A ²			
4	1.0	1.4	1.9	1.4	1.0	—	—	—
6	2.1	3.0	4.3	3.0	1.6	1.0	—	—
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0	—
10	5.9	8.4	11.8	8.4	4.6	2.6	1.2	—
12	8.5	12.0	17.0	12.0	6.6	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:
1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
 2. KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
 3. 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 (S).
 4. BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN THIS STANDARD DETAIL.
 5. 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)

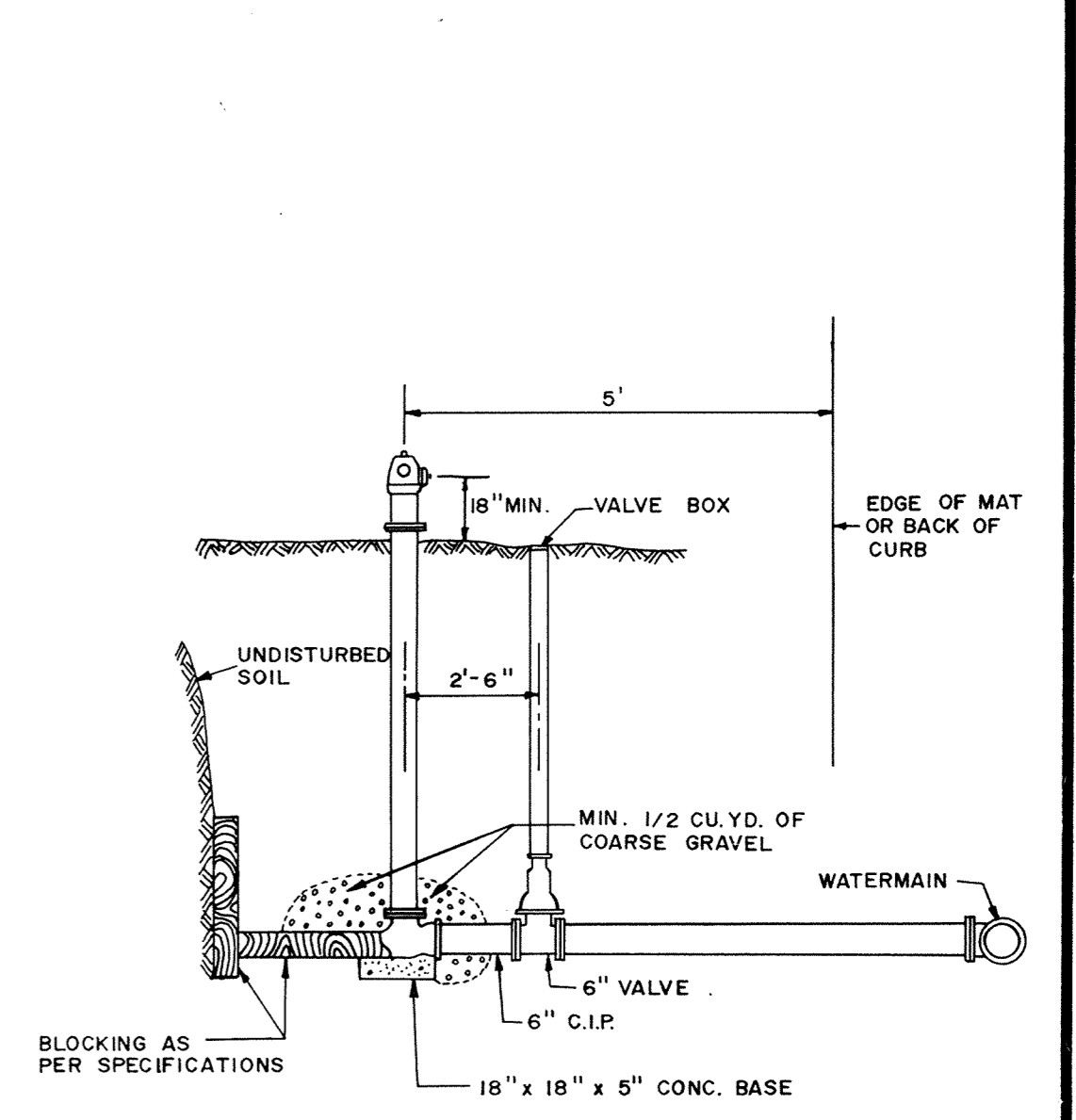


NOTE: ALL COSTS OF EXCAVATION BELOW GRADE AND PLACEMENT OF GRANULAR BEDDING SHALL BE INCLUDED IN THE BID PRICES FOR PIPE ITEMS.



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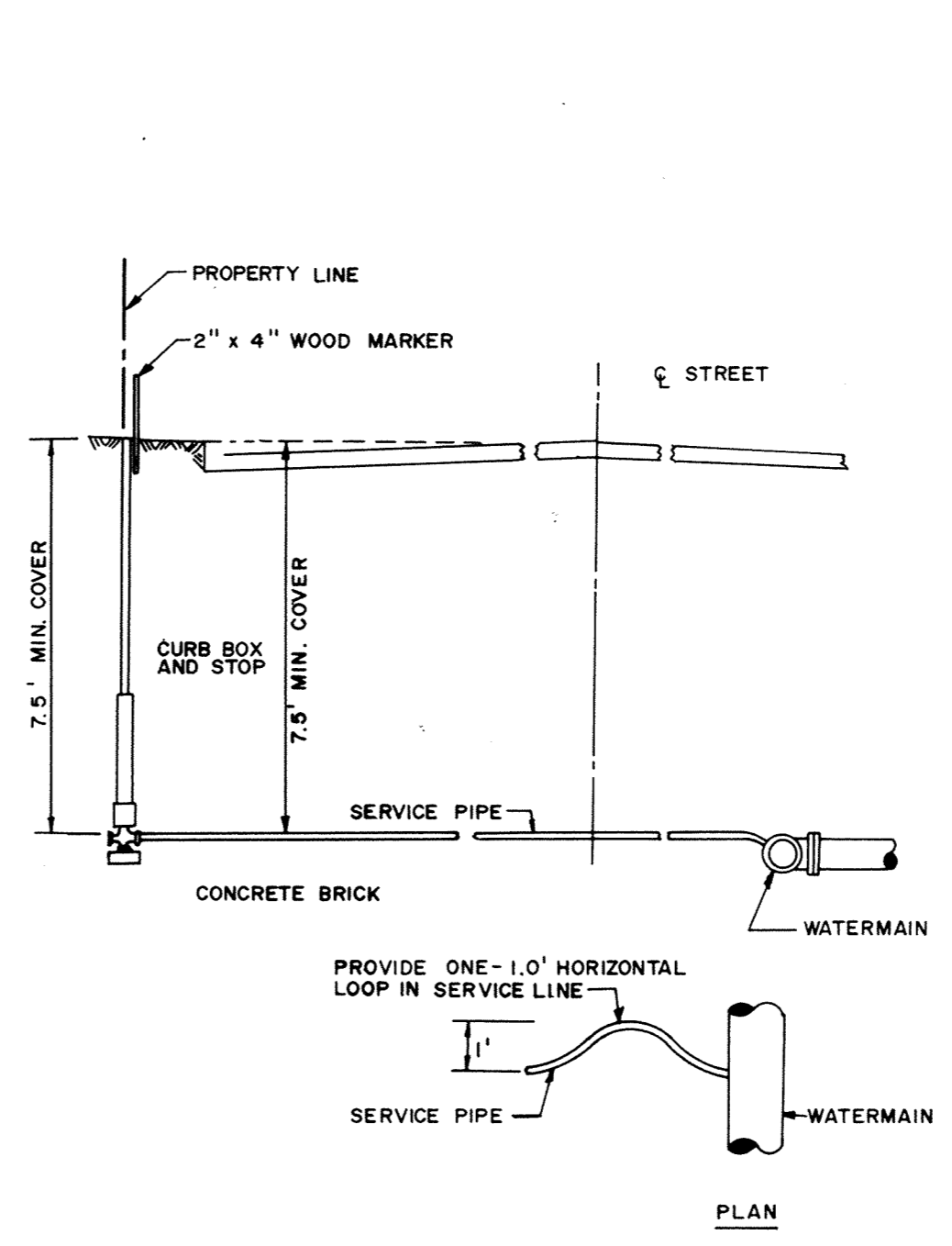
THRUST BLOCKING DETAIL



RECORD PLAN OCT. 1986

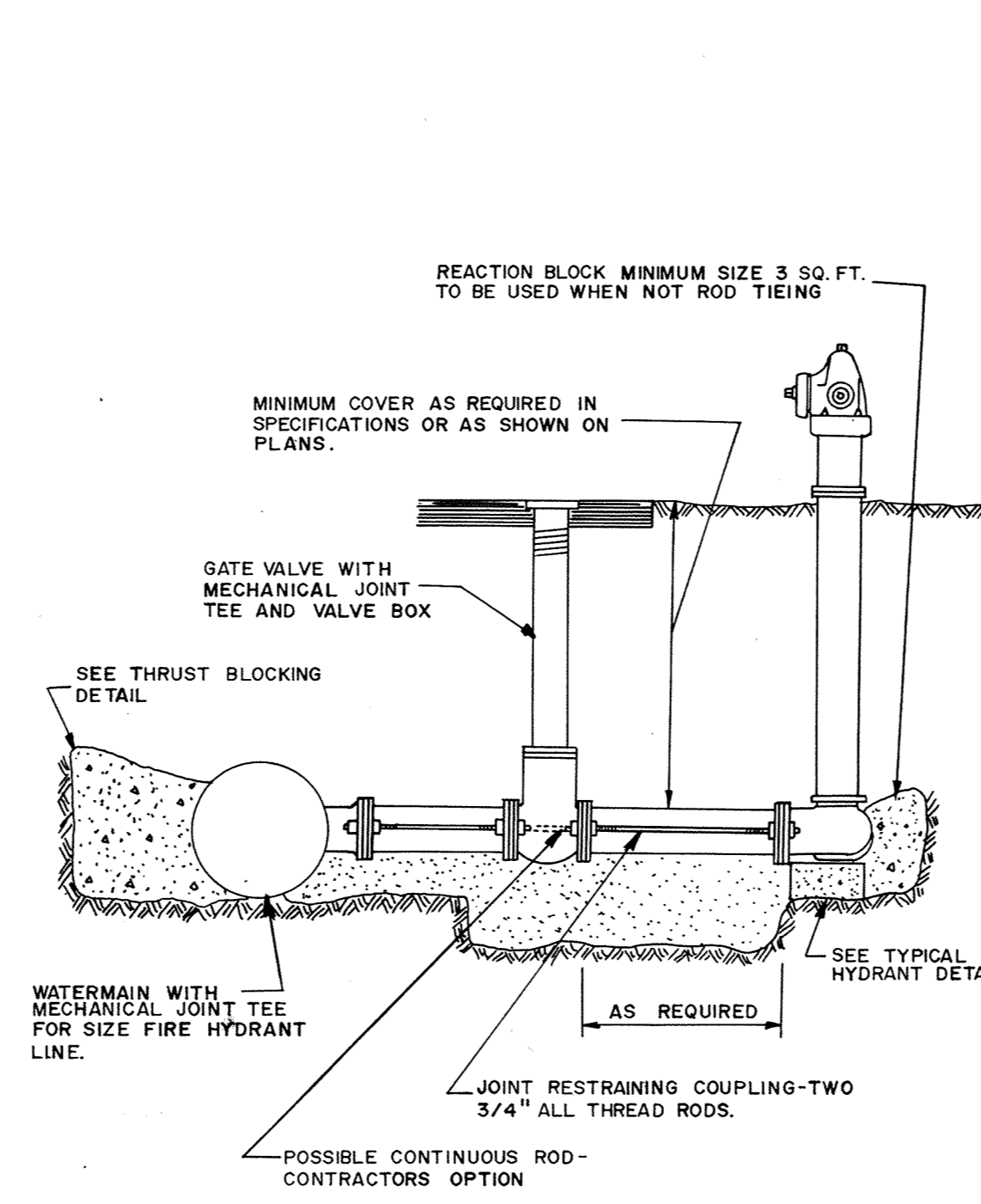
CITY OF ELK RIVER
WATERMAIN DETAILS

PACER HYDRANT DETAIL



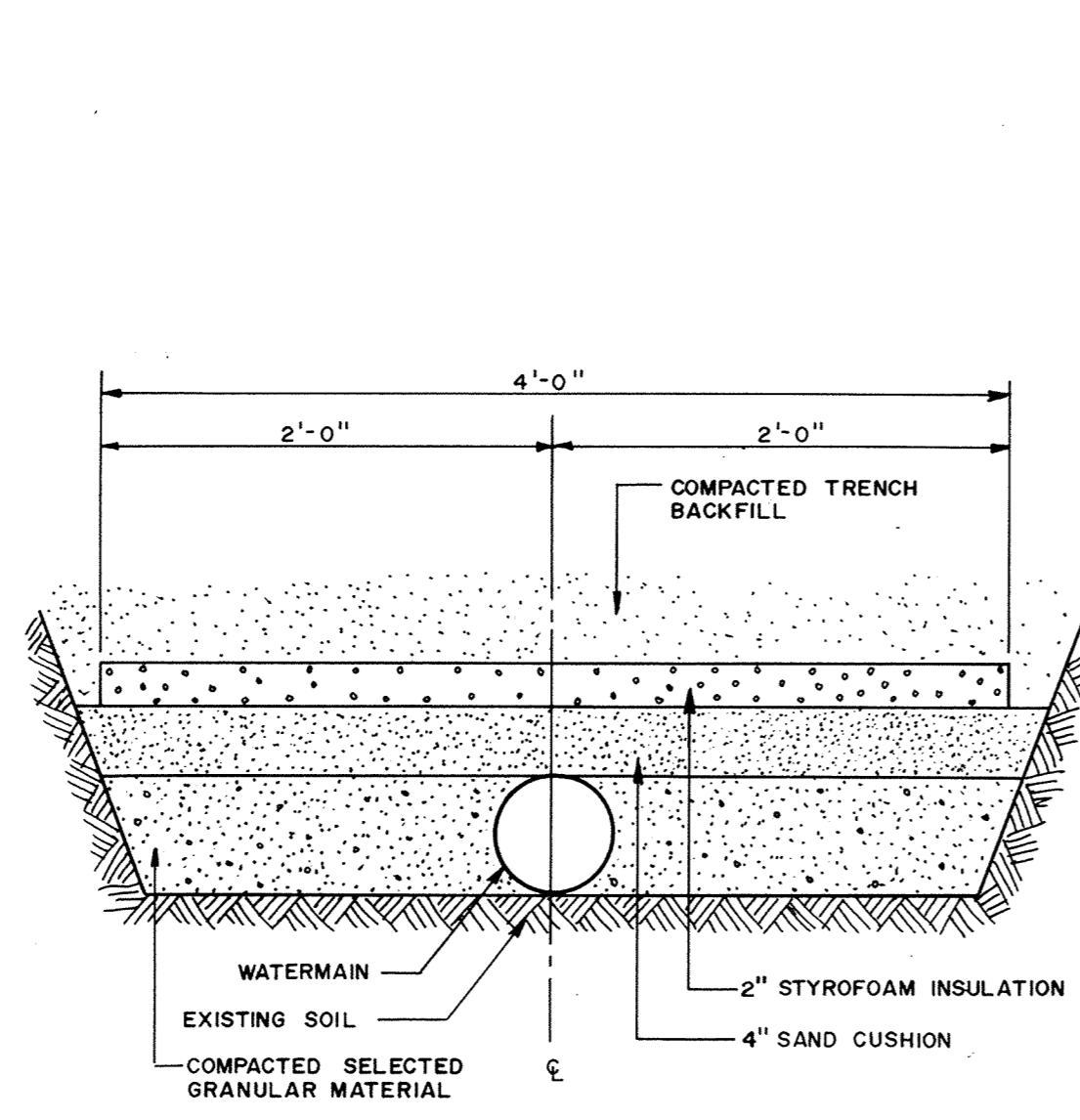
TYPICAL SERVICE DETAIL

TYPICAL WATER LAYOUT



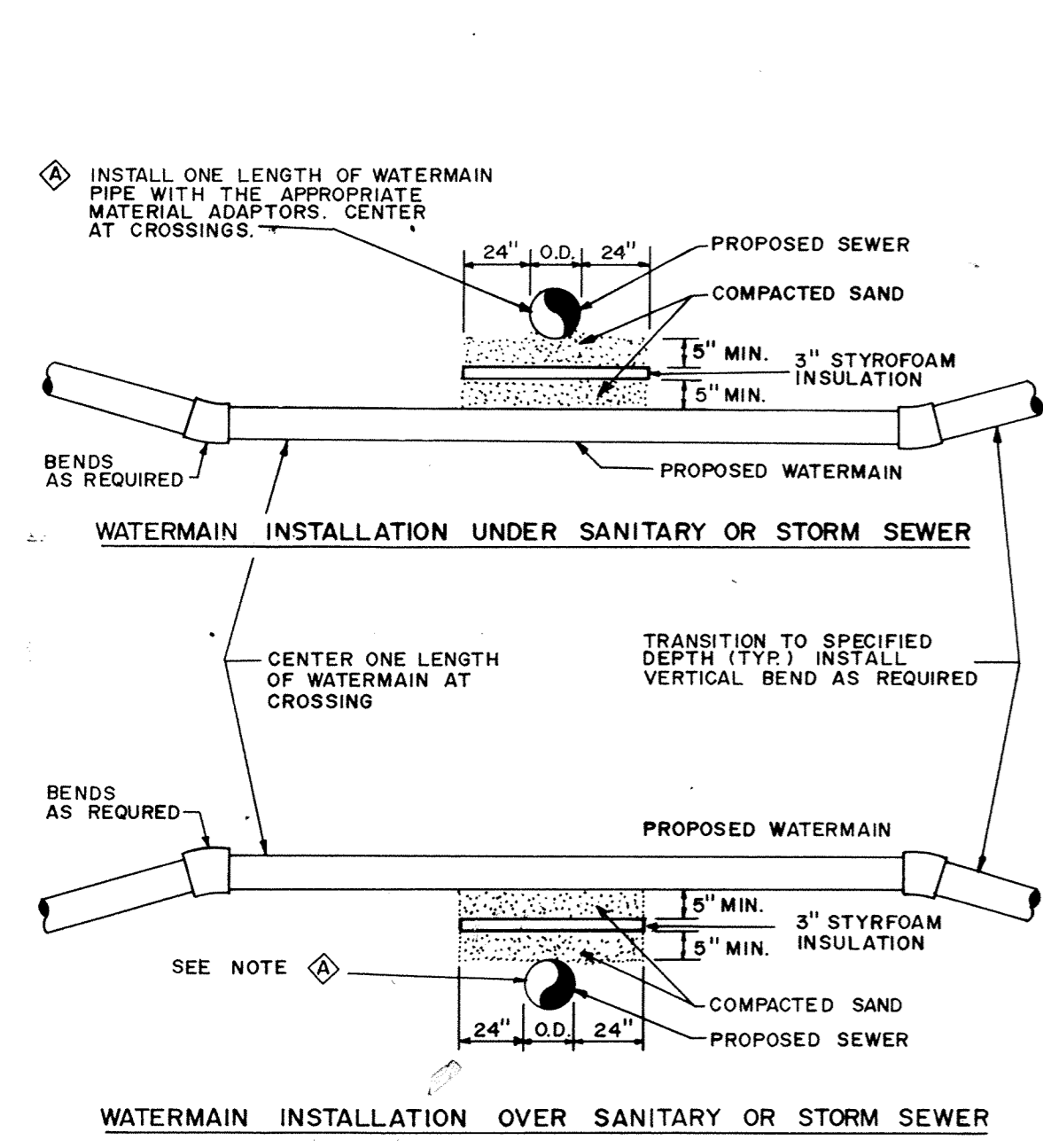
RODDING DETAIL

CLASS C PIPE BEDDING



PIPE INSULATION DETAIL

CLASS B PIPE BEDDING



WATERMAIN CROSSING

- NOTES:
1. WHEN WATERMAIN AND SANITARY SEWER CROSSINGS HAVE LESS THAN 18" VERTICAL SEPARATION, INSTALL CROSSING AS SHOWN.
 2. WHEN WATERMAIN COVER IS LESS THAN 7.5 FEET, INSTALL WATERMAIN UNDER SANITARY SEWER.

MSA CONSULTING ENGINEERS
Maier Stewart & Associates Inc.
 480 CEDAR STREET (612)227-9475 ST. PAUL, MINNESOTA 55101

DATE	DESCRIPTION	DESIGNED
		CHECKED
		DRAWN
		GRAPHIC SCALE
		0 HORIZ. NONE
		0 VERT.