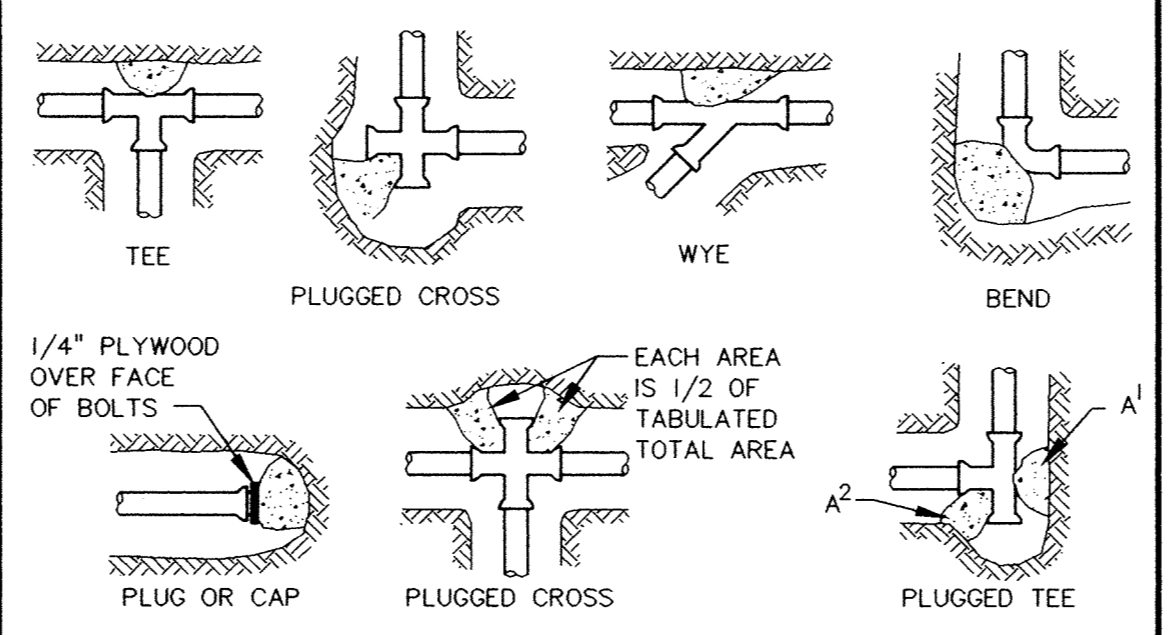
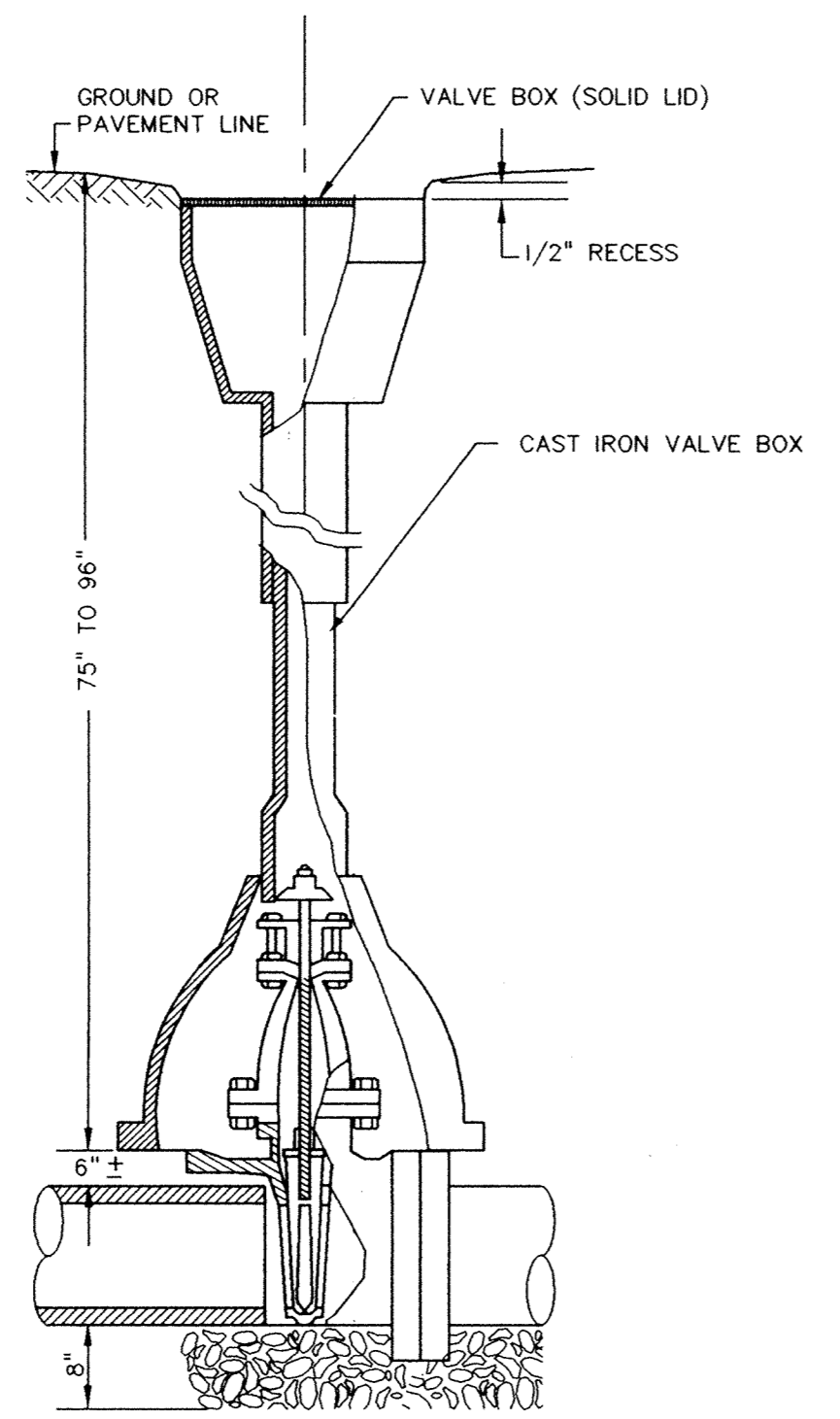


RECORD DRAWINGS

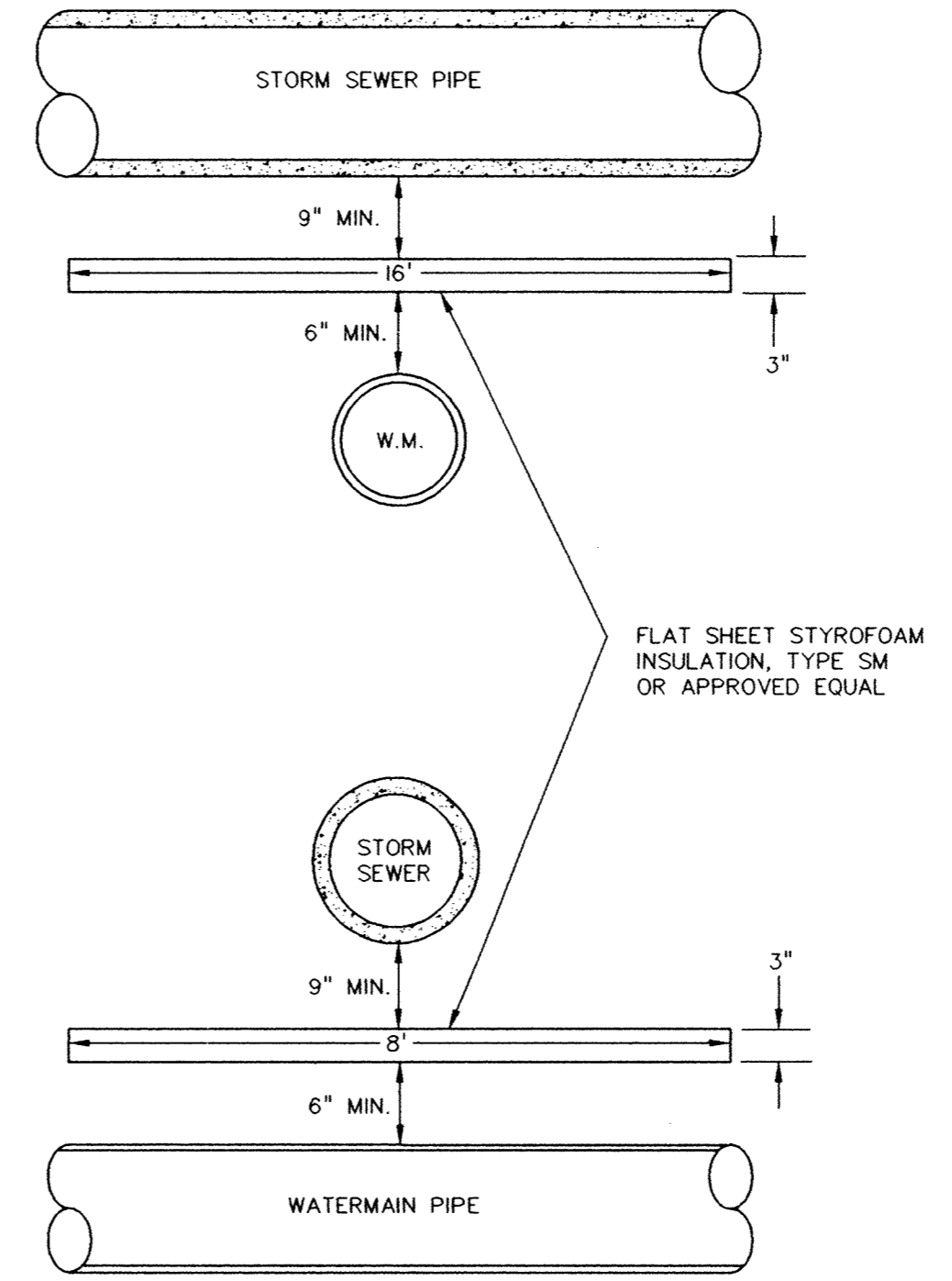


NOMINAL FITTING SIZE (INCHES)	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22 1/2° BEND	11 1/4° BEND
			A1	A2			
4	1.0	1.4	1.9	1.4	1.0	---	---
6	2.1	3.0	4.3	3.0	1.6	1.0	---
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.6	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	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

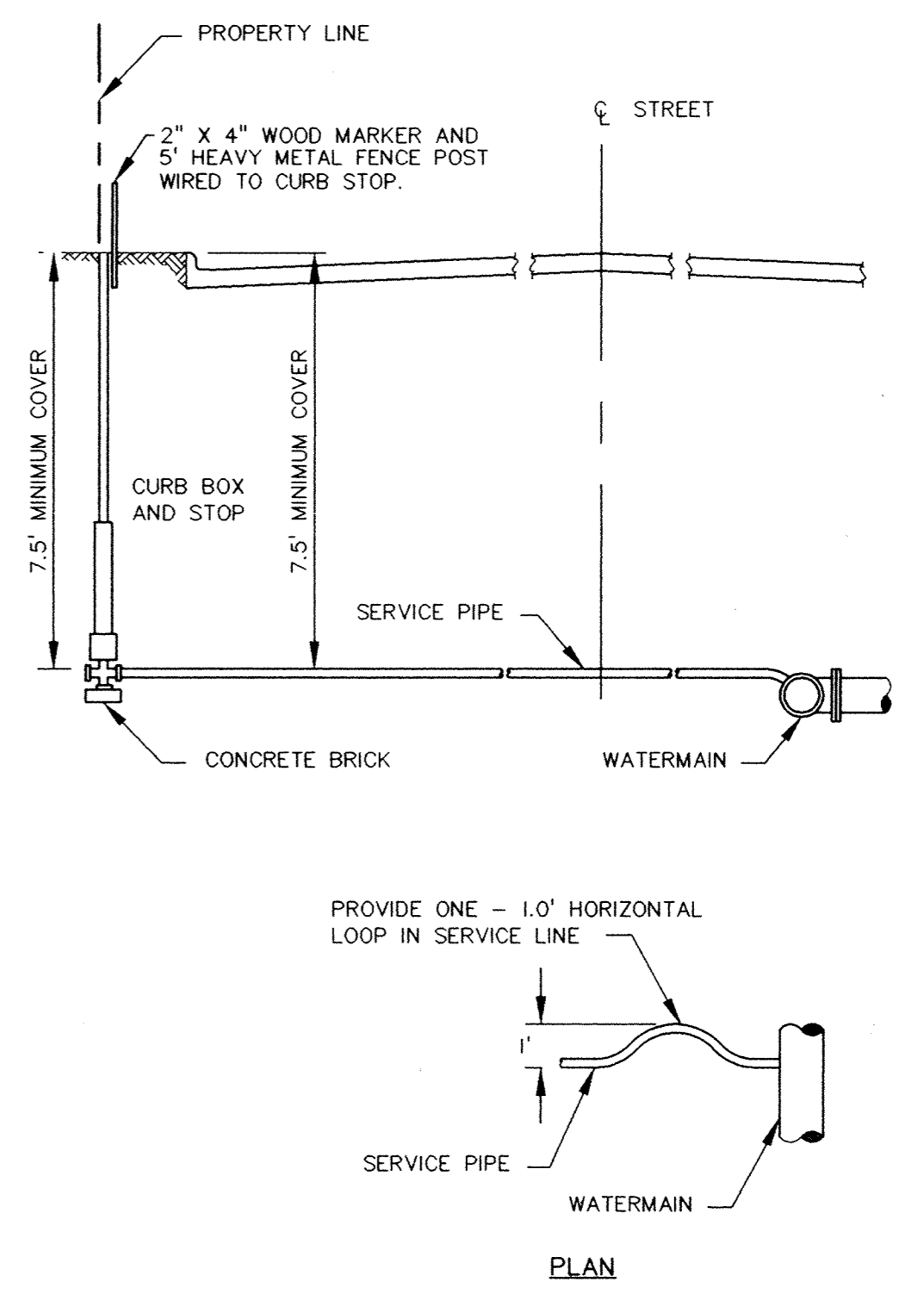
- NOTES:**
- CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
 - KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
 - IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUSTED IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING 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).



GATE VALVE AND BOX INSTALLATION (W-SP-06)



TYPICAL WATERMAIN INSULATION (W-06)

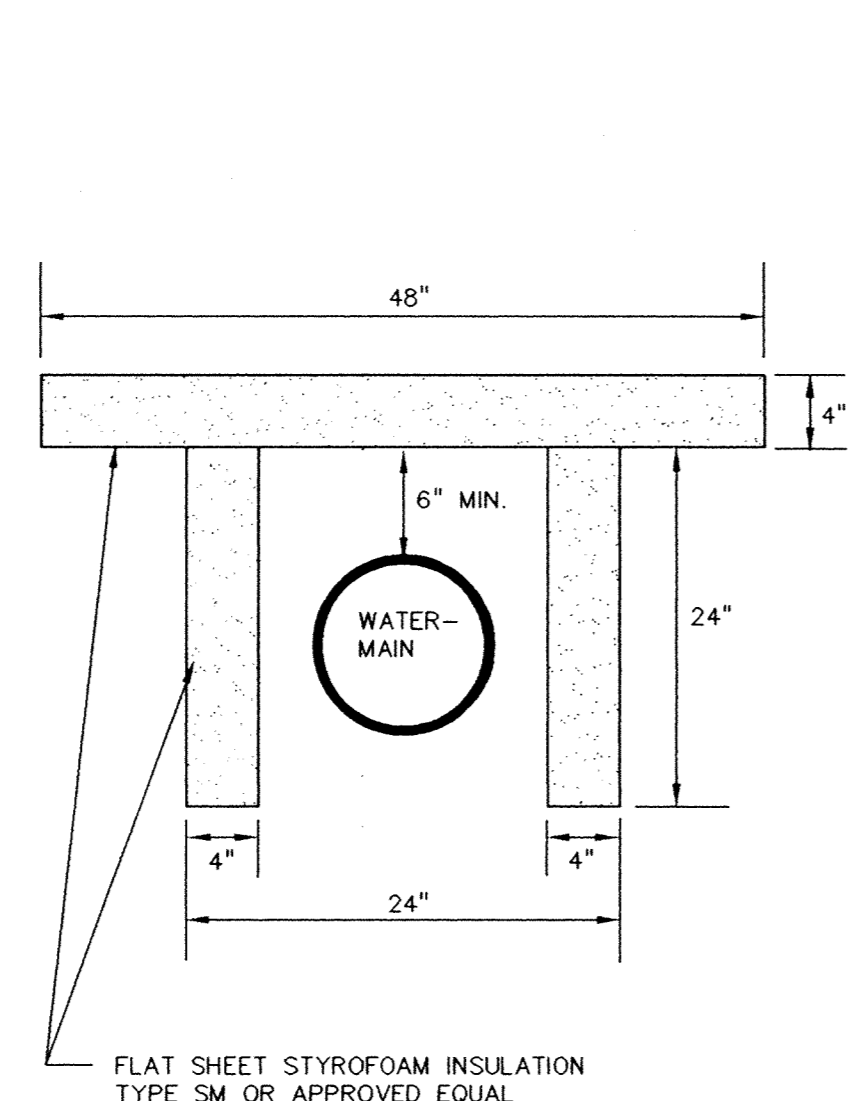


TYPICAL SERVICE DETAIL

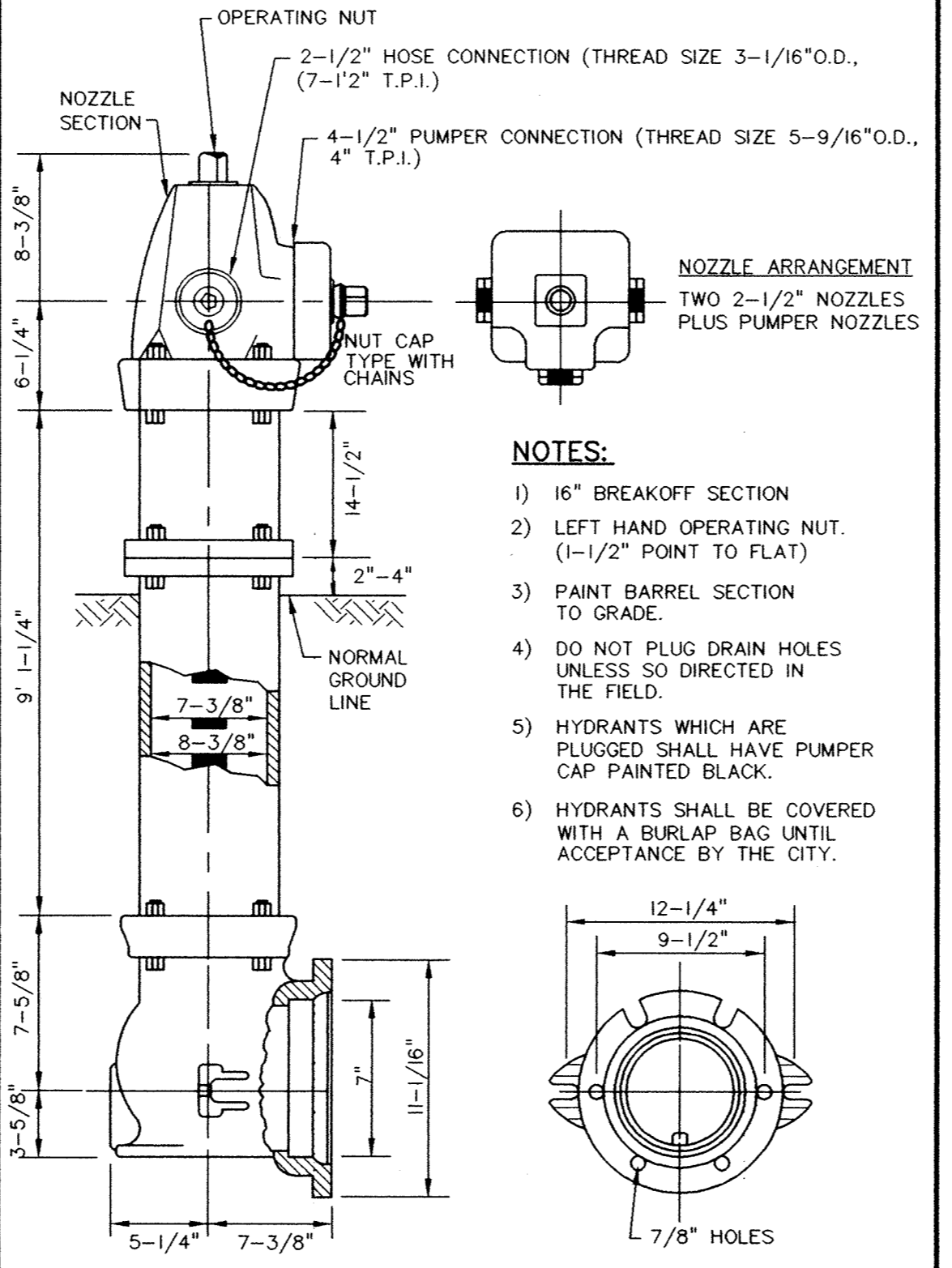
REV. NO.	DATE	DESCRIPTION
1	7/31/97	PER ENGINEER REVIEW LETTER DATED 7/29/97
2	10/01/97	REVISE BIDDING DETAIL
3	2/12/98	RECORD DRAWINGS

DATE: 7/09/97
 DESIGN BY: JR
 DRAWN BY: BG
 CHECKED BY: JB
 DWG FILE: 8-PPDET.
 TEXT FILE: NONE
 FILE NO.: 7024.20-03

I hereby certify that this plan was prepared by me or under my direct supervision by a duly Licensed Professional Engineer under the laws of the State of Minnesota.
 Signed: *John Oliver*
 Date: 7/09/97 Reg. No. 14960

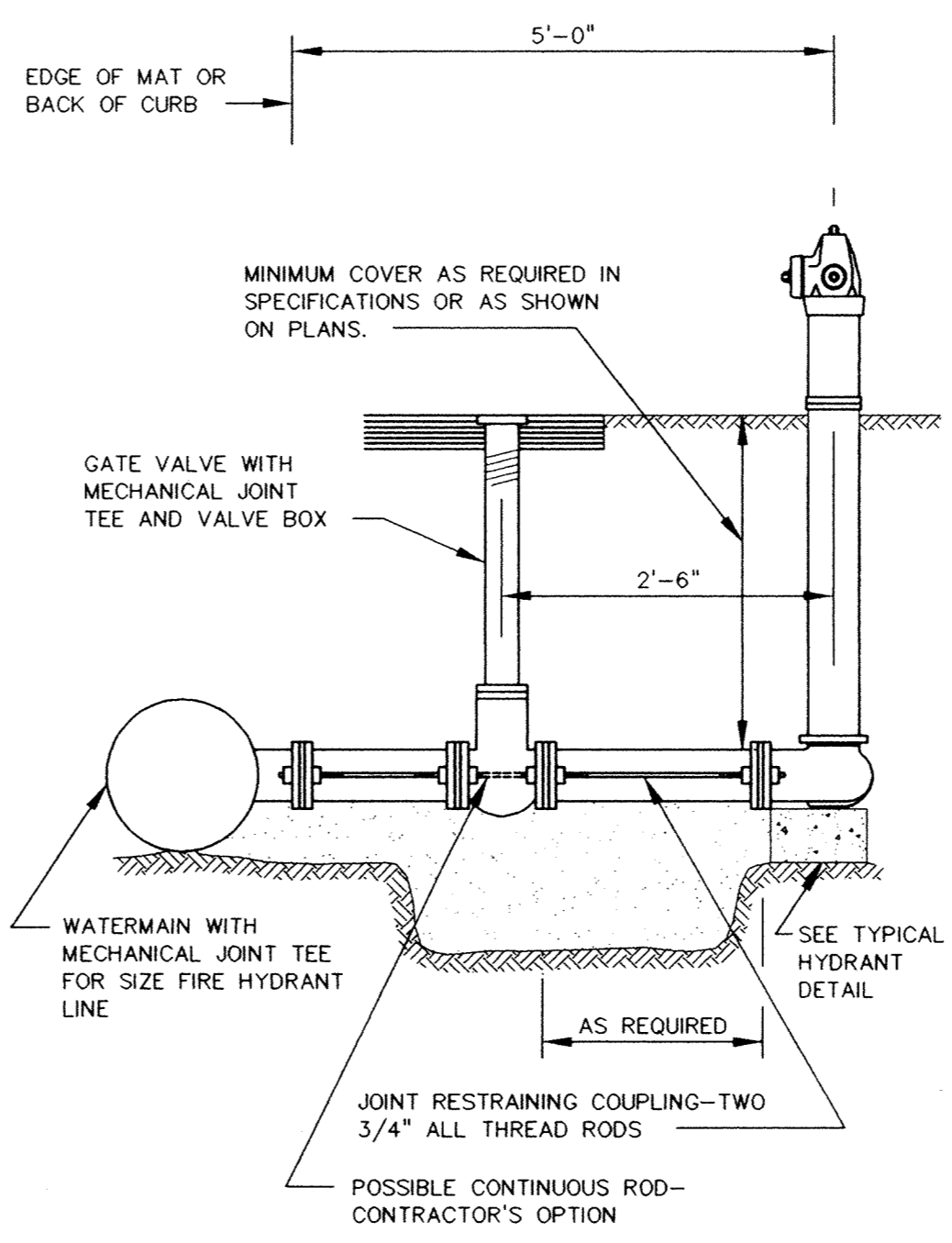


TYPICAL SHALLOW WATERMAIN INSULATION (W-SP-03)



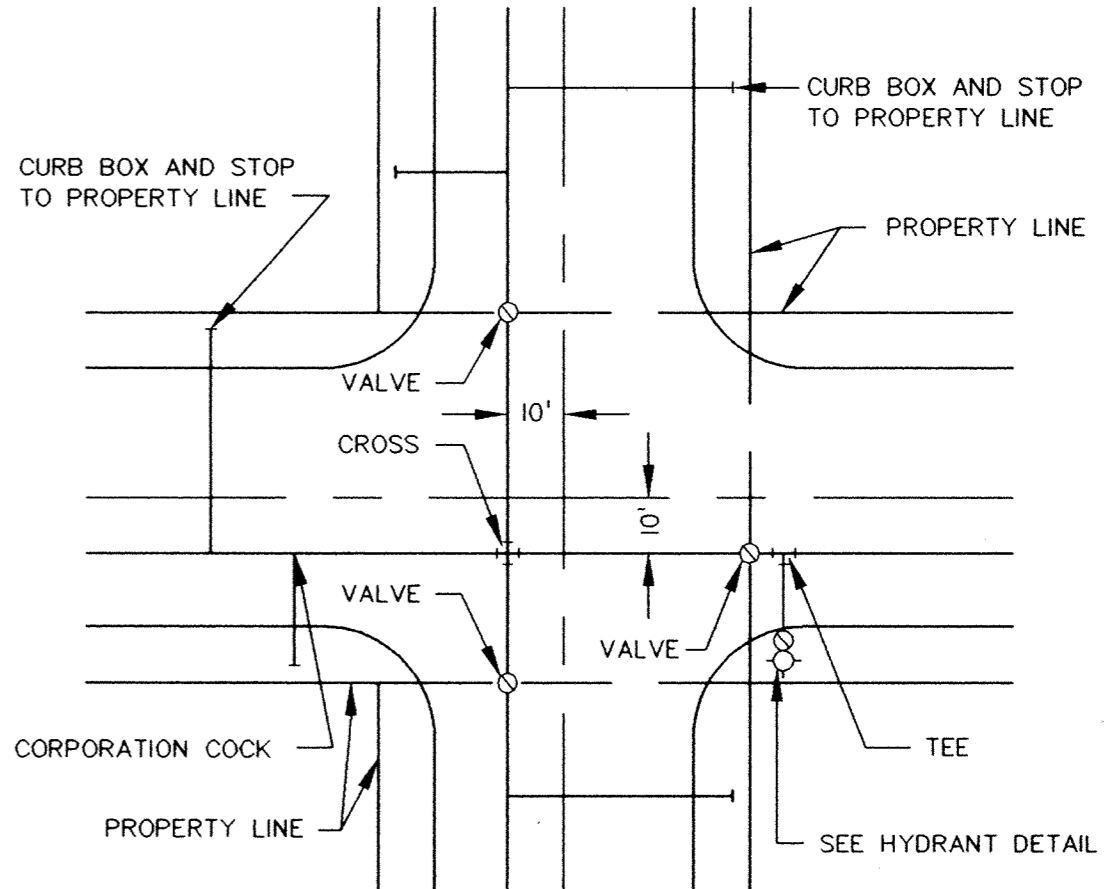
- NOTES:**
- 16" BREAKOFF SECTION
 - LEFT HAND OPERATING NUT. (1-1/2" POINT TO FLAT)
 - PAINT BARREL SECTION TO GRADE.
 - DO NOT PLUG DRAIN HOLES UNLESS SO DIRECTED IN THE FIELD.
 - HYDRANTS WHICH ARE PLUGGED SHALL HAVE PUMPER CAP PAINTED BLACK.
 - HYDRANTS SHALL BE COVERED WITH A BURLAP BAG UNTIL ACCEPTANCE BY THE CITY.

PACER TRAFFIC FLANGE HYDRANT (W-01)



RODDING DETAIL

PRIME CONTRACTOR/UTILITIES: C.W. HOULE, INC.
 CURB & GUTTER: HALVORSON CONCRETE, INC.
 STREETS: BAUERLY BROS., INC.
 INSPECTION: RALPH BADER, HOWARD R. GREEN CO.
 SURVEY: JOHN OLIVER & ASSOCIATES, INC.
 EARTHWORK: SOIL-CON, INC.
 RECORD DRAWINGS: FRED FRITSCHER, JOA
 CONSTRUCTED: 1997



TYPICAL WATER LAYOUT

John Oliver & Associates, Inc.
 Civil Engineering, Land Surveying, Land Planning
 580 Dodge Avenue
 Elk River, Minnesota
 (612)441-2072 (FAX)441-5665
 201 W. Traverlers Trail, Suite 200
 Elk River, MN 55018
 (612)884-0045 (FAX)884-3049

LAFAYETTE WOODS SECOND ADDITION
 ELK RIVER, MN
WINDSOR DEVELOPMENT L.L.P.
 DETAILS

SHEET NO. 8 OF 9