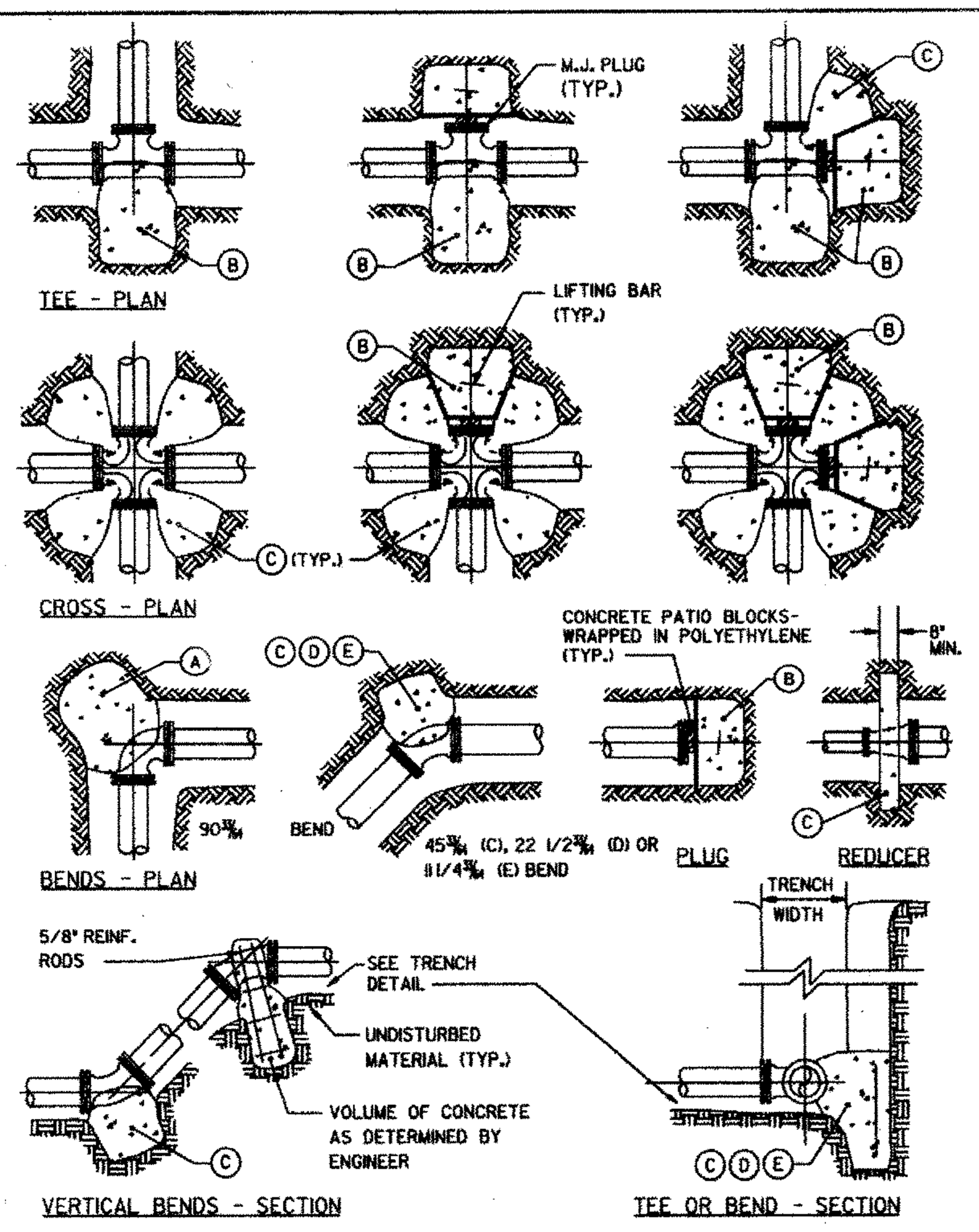


THRUST BLOCK DETAILS

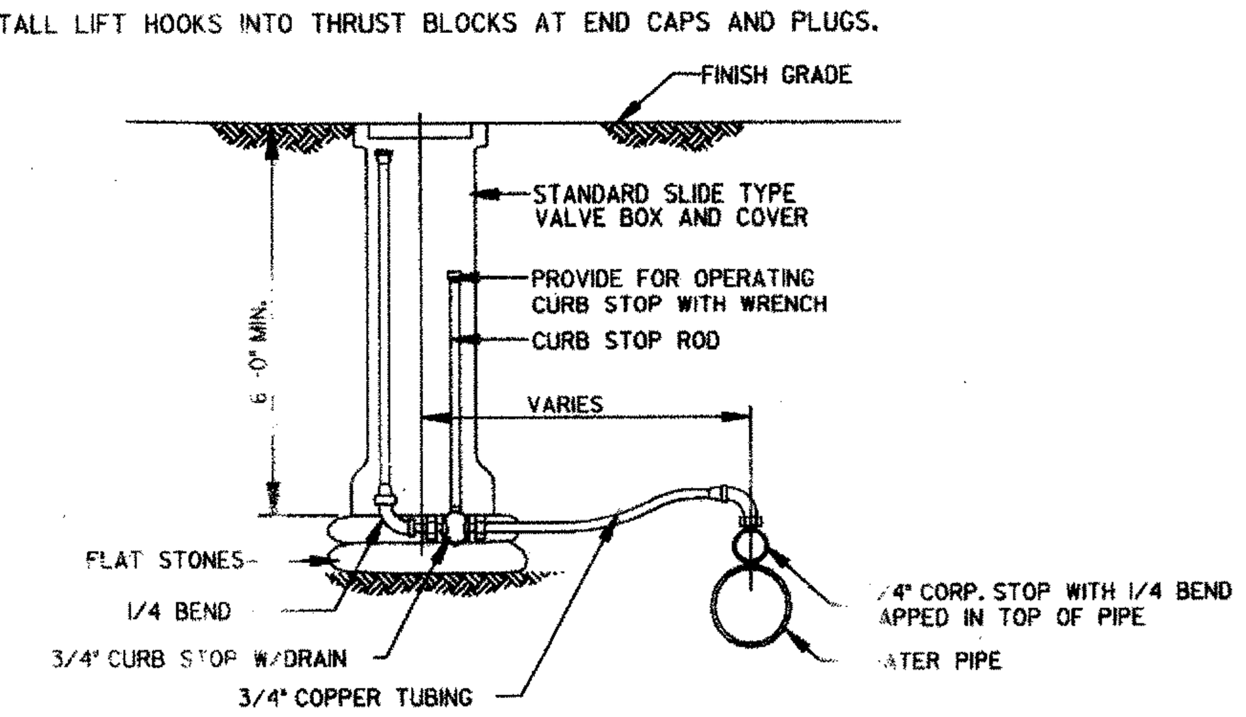
NOT TO SCALE

THRUST BLOCK SCHEDULE
SQUARE FEET OF CONCRETE THRUST
BLOCKING BEARING ON UNDISTURBED MATERIAL

REACTION TYPE		PIPE SIZE											
		4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"
TEST PRESSURE = 100 PSIG	Ⓐ	0.89	2.19	3.92	5.57	8.62	10.91	15.41	18.02	24.06	34.64	53.83	77.39
	Ⓑ	0.65	1.55	2.76	4.19	6.09	8.37	10.89	13.87	17.01	24.49	38.06	54.72
	Ⓒ	0.48	1.19	2.12	3.01	4.66	5.91	8.34	9.71	13.02	18.75	29.13	41.88
	Ⓓ	0.25	0.60	1.08	1.54	2.37	3.01	4.25	4.97	6.64	9.56	14.85	21.35
	Ⓔ	0.13	0.30	0.54	0.77	1.19	1.52	2.12	2.51	3.33	4.79	7.45	10.71
Other test pressures for the above reactions		TEST PRESSURE TO BE 200 PSI MIN. AT LOW END OF THE TEST SECTION. SQUARE FEET OF CONCRETE THRUST BLOCKING FOR OTHER TEST PRESSURES IS DIRECTLY PROPORTIONAL TO THE ABOVE TABLE. FOR INSTANCE, AT 200 PSI TEST PRESSURE FOR ABOVE NUMBERS DOUBLE.											

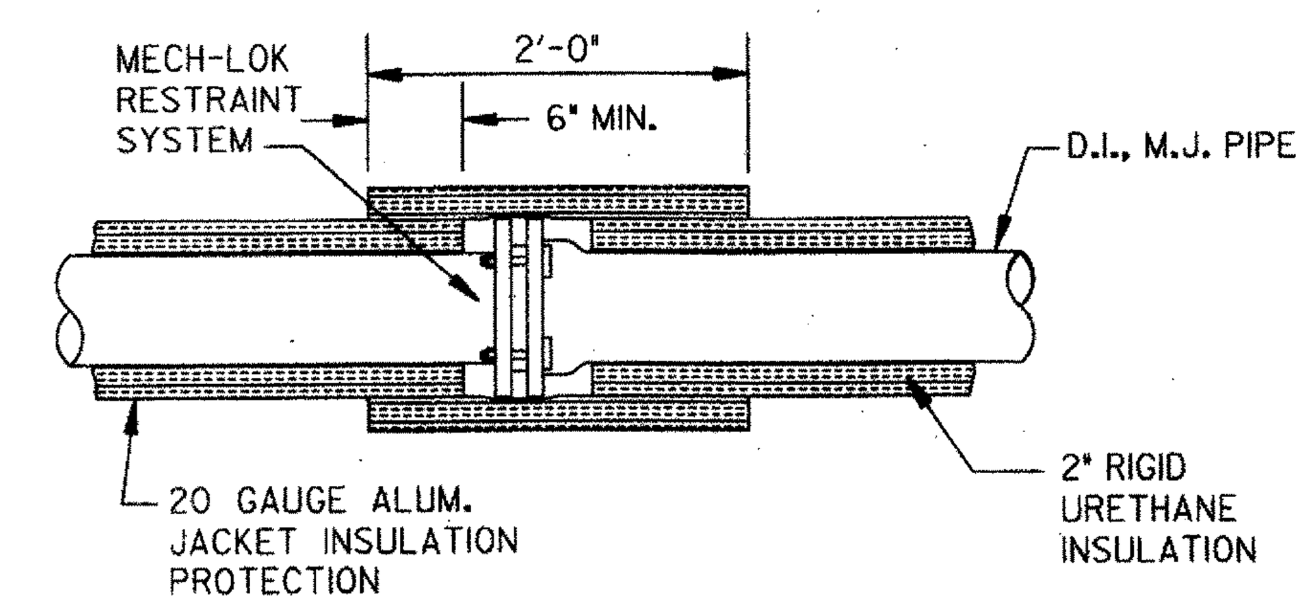
NOTES:

1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.
4. REQUIREMENTS OF THE ABOVE TABLE PRESUME MINIMUM SOIL BEARING OF 1 TON PER SQUARE FOOT, AND MAY BE VARIED BY THE ENGINEER TO MEET OTHER CONDITIONS ENCOUNTERED.
5. MEGA-LUG RETAINER GLANDS ARE REQUIRED FOR ALL MECHANICAL JOINTS. THESE GLANDS DO NOT REDUCE THE REQUIREMENTS FOR THRUST RESTRAINT.
6. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
7. THREADED ROD SHALL BE ANSI A242 FY50 PIPE RESTRAINT NUTS TO MATCH AWWA C111. THREADED RODS AND NUTS TO BE FIELD COATED WITH BITUMINOUS PAINT.
8. THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.
9. INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.



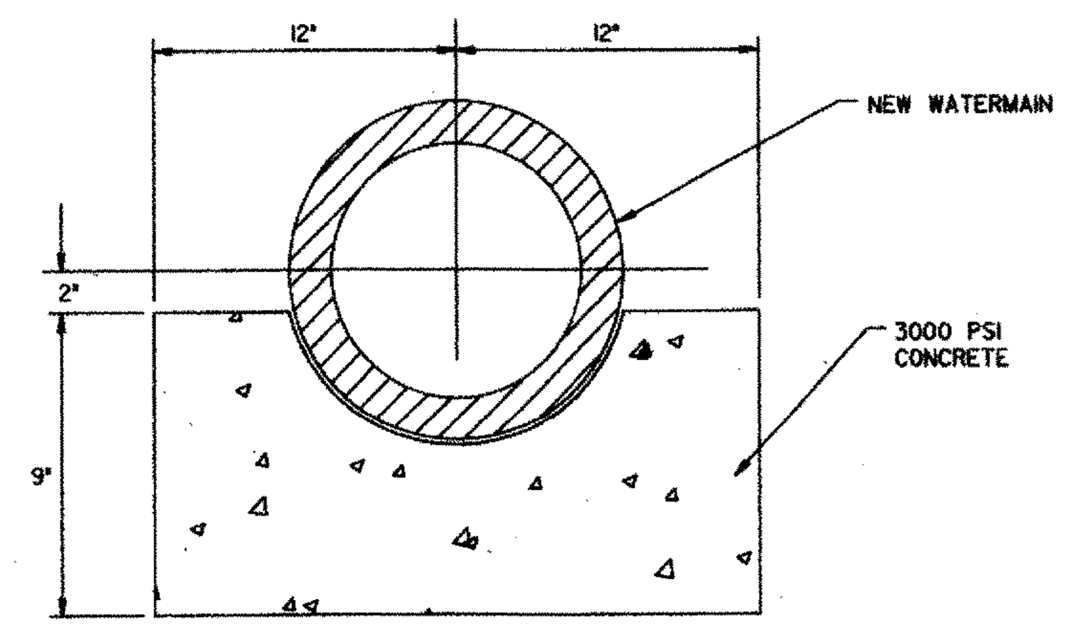
TYPICAL INSTALLATION-TRAVEL WAY FOR AIR VENT OR CHLORINATION INJECTION

NOT TO SCALE



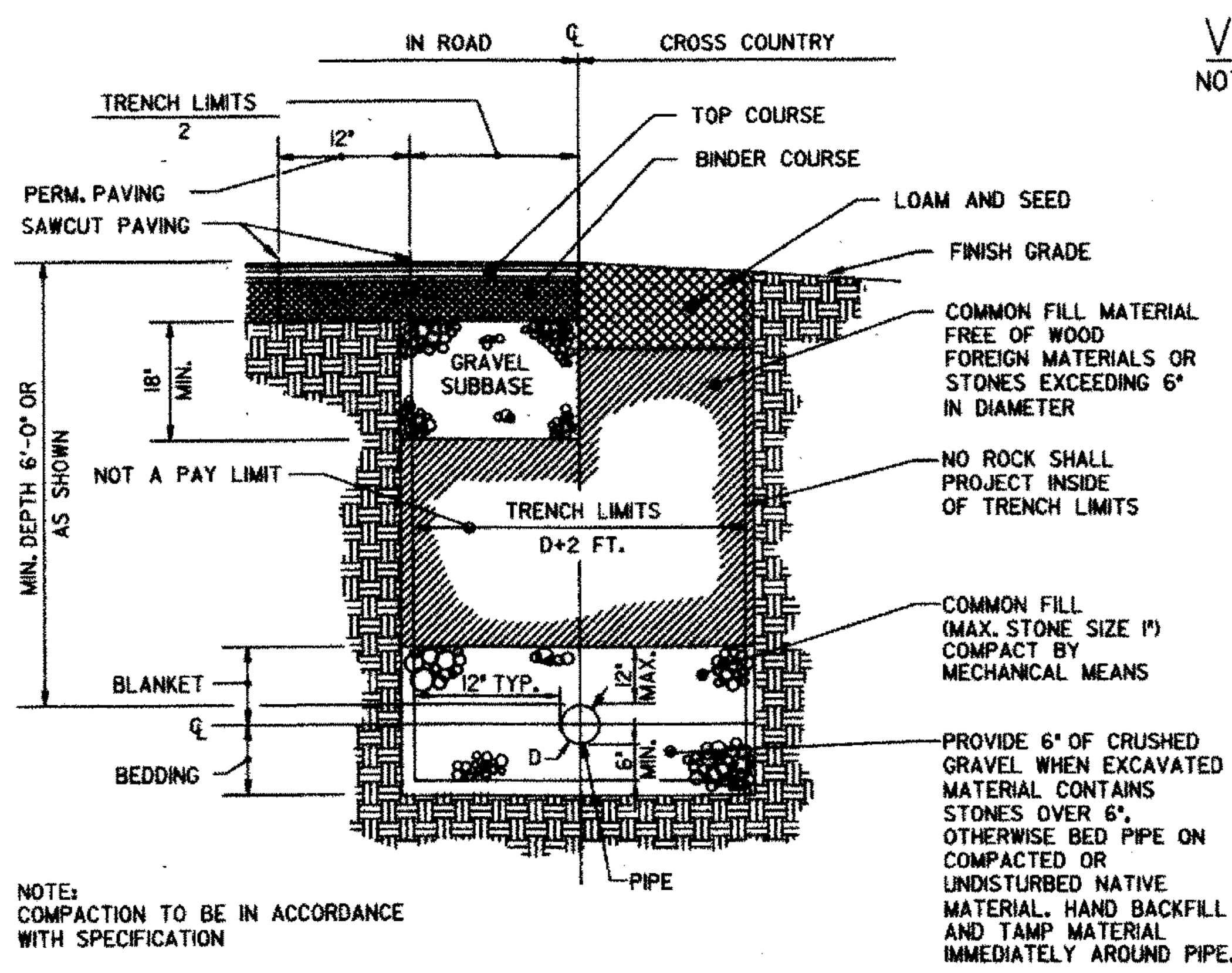
DETAIL OF INSULATION AT JOINT FOR RESTRAINED PIPE

NOT TO SCALE



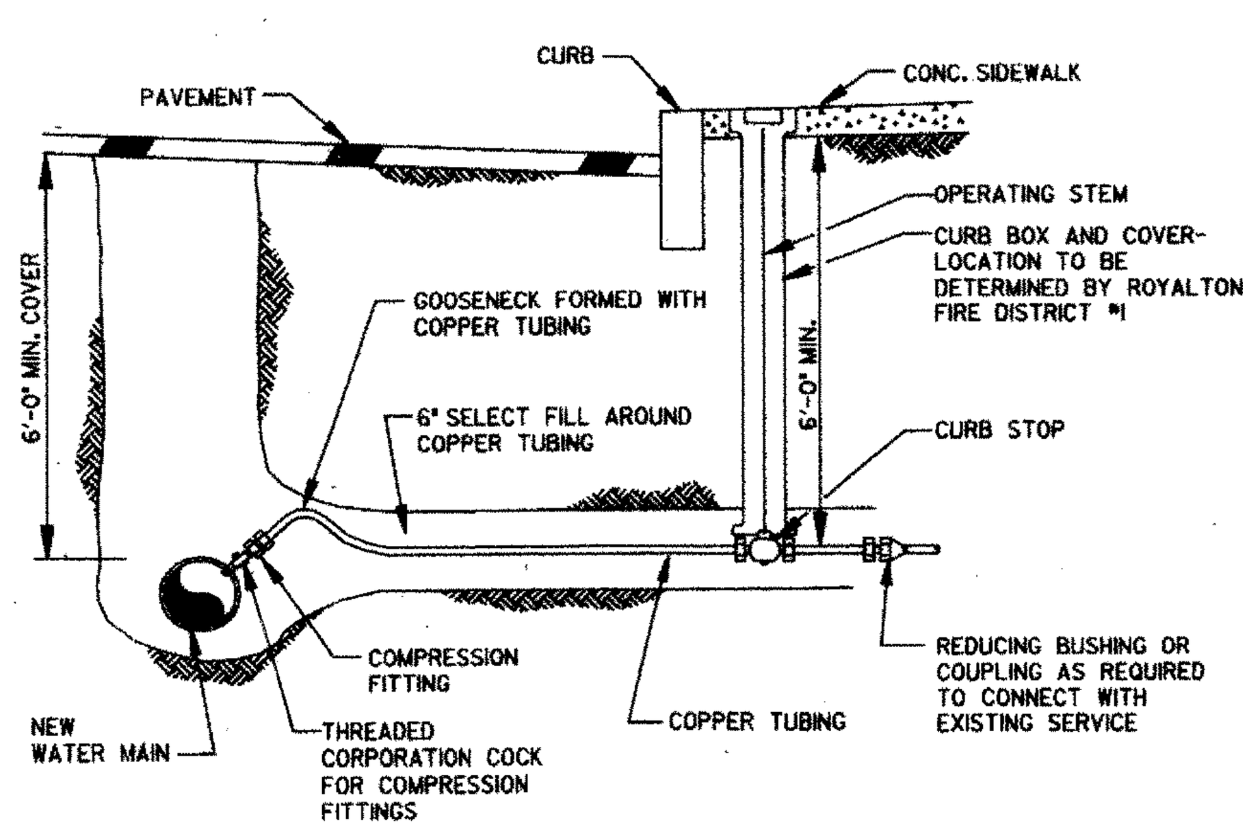
CONCRETE CRADLE DETAIL

NOT TO SCALE



TYPICAL DUCTILE IRON TRENCH DETAIL

NOT TO SCALE



TYPICAL SERVICE CONNECTION DETAIL

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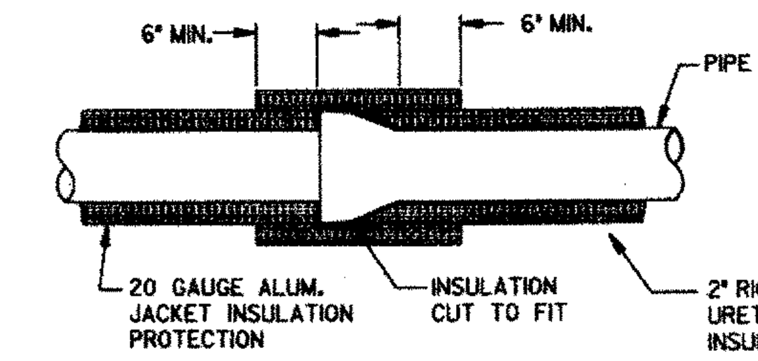
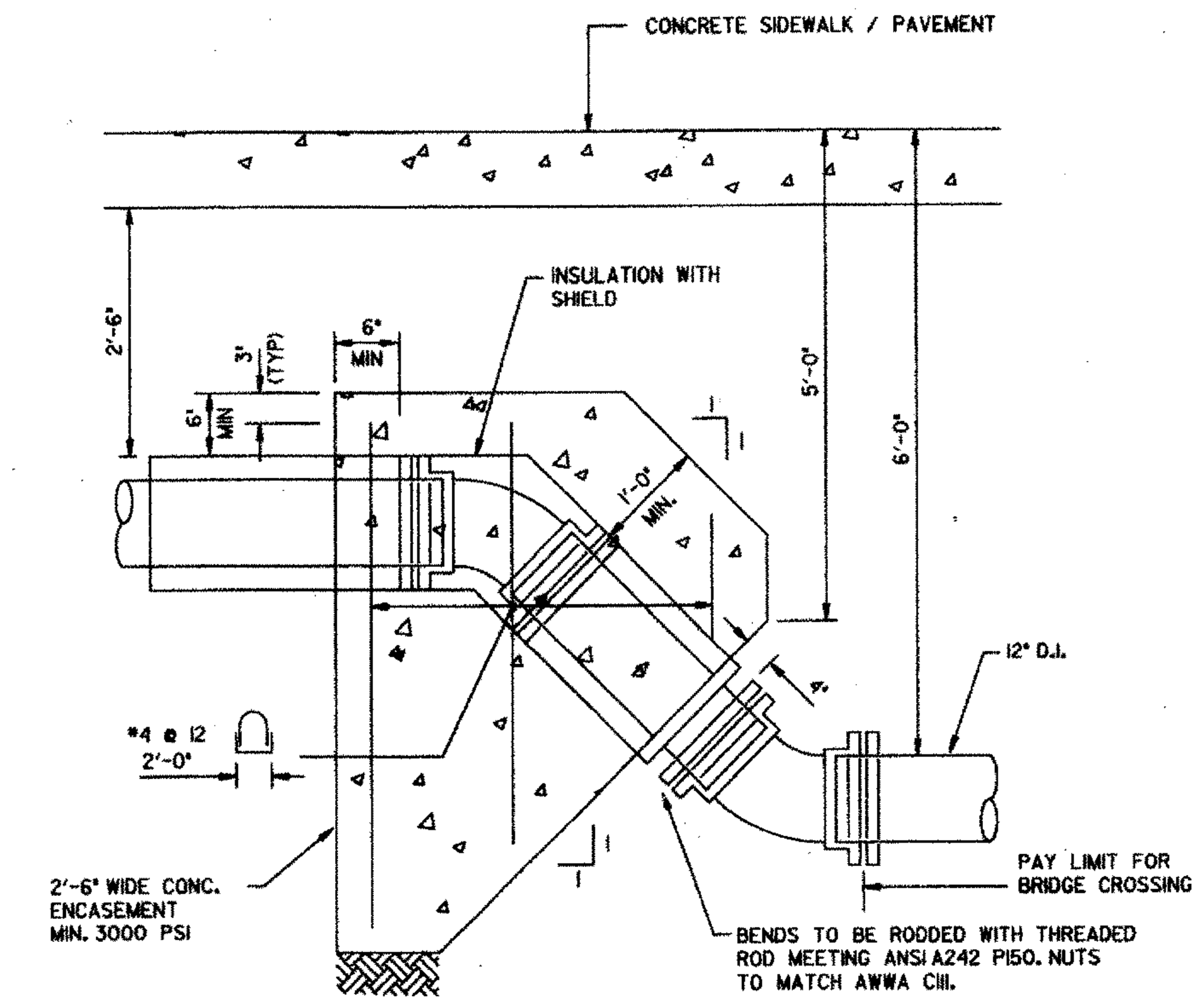


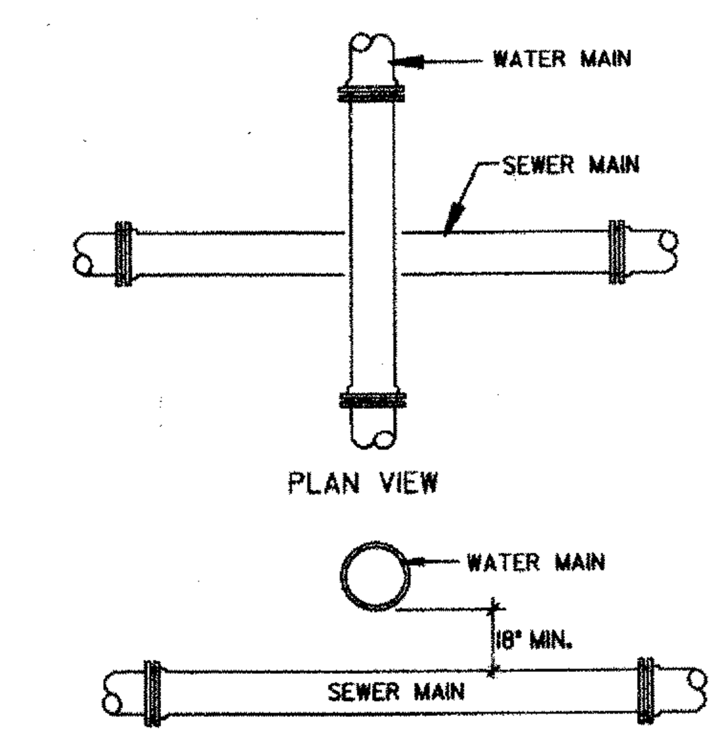
DETAIL OF INSULATION FOR BURIED PIPE

NOT TO SCALE



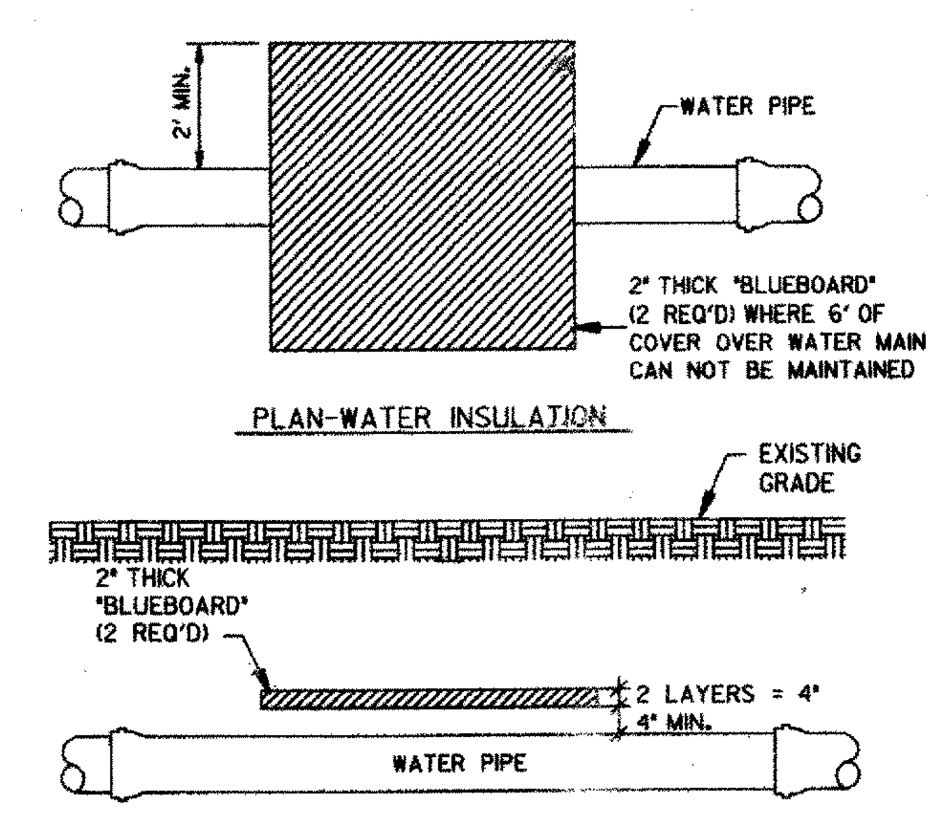
VERTICAL BEND CONCRETE ENCASEMENT DETAIL

NOT TO SCALE



WATER AND SEWER CROSSING DETAIL

NOT TO SCALE



RIGID BOARD INSULATION DETAIL

NOT TO SCALE

NOTE:
INFORMATION ON THIS SHEET SHOULD ONLY BE CONSTRUED TO REPRESENT WATER MAIN AND APPURTENANCES. OTHER INFORMATION SHOWING STRUCTURAL ITEMS, STORM SEWER AND SANITARY SEWER IS SHOWN FOR RELATIVE RELATIONSHIPS ONLY. THIS INFORMATION SHOULD BE OBTAINED FROM OTHER DRAWINGS.

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR MUST ESTABLISH TEMPORARY WATER SERVICE FOR ALL AFFECTED USERS IN THE PROJECT AREA. THIS TEMPORARY WATER SERVICE MUST BE ESTABLISHED, DISINFECTED, AND TESTED AS PER THE SPECIFICATIONS. POTABLE WATER MUST BE PROVIDED FOR ALL USERS.
2. EXPLORATORY EXCAVATION IS REQUIRED TO LOCATE UNDERGROUND UTILITES. CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT DAMAGE TO EXISTING UTILITIES.
3. LOCATION OF PROPOSED WATER MAIN IS INTENDED NOT TO DISTURB ROOT SYSTEMS OF EXISTING TREES OR SHRUBS. CONTRACTOR SHALL EXERCISE DUE CARE TO PREVENT DAMAGE THERETO. ALL GRASS AREAS DISTURBED SHALL BE RESTORED TO CLASS A RESTORATION. CONTRACTOR IS RESPONSIBLE FOR REMOVAL, CARE & REPLANTING OF ALL PLANTINGS AND SHRUBS DISTURBED DURING CONSTRUCTION.
4. ALL WORK TO BE DONE SHALL BE WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT AREAS.
5. MATERIAL MAY BE REQUIRED. SOLID SLEEVE COUPLINGS WILL BE REQUIRED.
6. MINIMUM VERTICAL CLEARANCE BETWEEN NEW WATER MAINS AND ALL EXISTING UTILITIES, EXCEPT SEWERS TO BE SIX (6) INCHES AT CROSSING LOCATIONS. FOR SEWERS SEE NOTE BELOW.
7. ALTHOUGH NOT SHOWN EXISTING SEWER SERVICES WILL BE REPAIRED OR RELOCATED AS NECESSARY IN ORDER TO MAINTAIN FLOW. THE TOWN OF ROYALTON WILL ASSIST IN LOCATING SERVICES.
8. ALL BURIED FITTINGS MUST INCLUDE CONCRETE THRUST BLOCKS. REFER TO THRUST BLOCK, HYDRANT BRANCH, AND TRENCH DETAILS SHOWN ON THIS SHEET.
9. MECHANICAL JOINT RESTRAINTS SHALL BE USED WHERE VALVES WILL BE SUBJECTED TO SERVICE PRESSURES ON ONE SIDE BEFORE BEING FULLY INCORPORATED INTO THE DISTRIBUTION SYSTEM.
10. WATER MAINS TO HAVE 6.0 FEET MIN. COVER UNLESS OTHERWISE STATED OR SHOWN ON THE PROFILES. WHEN 6.0 FEET OF COVER CANNOT BE MAINTAINED 4" RIGID BOARD INSULATION SHALL BE USED. DEPTH OF COVER SHALL NOT BE LESS THAN 4 FEET EVEN WITH INSULATION.
11. ALL MECHANICAL JOINT FITTINGS, VALVES, AND HYDRANTS SHALL INCORPORATE A MEGALUG RETAINER GLAND INSTEAD OF THE COMMON FOLLOWER GLAND.
12. ALL EXISTING UNDERGROUND UTILITES WERE LOCATED USING THE BEST AVALABLE INFORMATION. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL UTILITES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. ALL REPAIRS TO DAMAGED UTILITIES SHALL BE MADE BY THE CONTRACTOR USING MATERIALS APPROVED BY THE ENGINEER AT NO ADDITIONAL EXPENSE OF THE STATE OR THE ROYALTON FIRE DISTRICT #1.
13. CONTRACTOR IS RESPONSIBLE FOR FLUSHING, PRESSURE TESTING AND DISINFECTING ALL NEW WATER MAIN. CHLORINE INJECTION POINTS SHALL BE INSTALLED WHERE REQUIRED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION AND REMOVED UPON COMPLETION OF TESTING.
14. CONTRACTOR SHALL VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND ELECTRIC AND TELEPHONE LINES AND TAKE NECESSARY PRECAUTIONS IN STRICT ACCORDANCE WITH OSHA STANDARDS DURING CONSTRUCTION. CONTRACTOR SHALL CONTACT LOCAL POWER AND TELEPHONE COMPANIES REGARDING ANY NECESSARY SUPPORT OF ANY UTILITY POLES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR THE SUPPORT OR TEMPORARY RELOCATION OF ALL UTILITY POLES AFFECTED BY THE CONSTRUCTION.
15. WHERE THE WATERMAIN CROSSES OVER OR UNDER A STORM DRAIN, A FULL LENGTH OF D.I. WATER PIPE SHALL BE PLACED WITH THE MID-LENGTH CENTERED UNDER THE STORM DRAIN.
16. CONTRACTOR TO PROVIDE CAPS FOR ALL ABANDONED PIPING AS REQUIRED. ALL TYPES OF PIPE CAPPING TO BE PAID FOR UNDER MISCELLANEOUS WORK AND CLEAN-UP. ALL PIPE TO BE ABANDONED SHALL BE DRAINED OF WATER AND CAPPED.

LOCAL VALVE OPERATION

1. EXISTING AND PROPOSED MAIN LINE BUTTERFLY VALVES AND GATE VALVES OPEN LEFT OR COUNTER-CLOCKWISE. OPERATION OF GATE VALVES WILL BE PERFORMED BY THE ROYALTON FIRE DISTRICT #1 STAFF ONLY.
2. GATE VALVES SHALL BE RESILIENT WEDGE GATE VALVES AND SHALL MEET OF EXCEED THE REQUIREMENTS AWWA C515. BONNET, BODY, AND STUFFING BOX BOLTS AND NUTS SHALL BE STAINLESS STEEL. VALVES SHALL BE AMERICAN FLOW CONTROL SERIES 2500, OR EQUAL.
3. BUTTERFLY VALVES SHALL BE THE RUBBER-SEALED TIGHT-CLOSING TYPE AND SHALL MEET OR EXCEED THE REQUIREMENTS OF AWWA C-504, VALVE SHALL BE MUELLER LINESEAL XP OR M&H 450 AWWA C-504 BUTTERFLY VALVE, OR EQUAL.
4. ALL INTERCONNECTIONS TO THE EXISTING SYSTEM CAN ONLY BE MADE WITH THE WRITTEN PERMISSION OF THE FIELD ENGINEER.

WATER AND SEWER SEPARATION

1. PARALLEL INSTALLATION: MAINTAIN 5' MINIMUM LATERAL DISTANCE BETWEEN STORM DRAIN AND WATERLINES. MAINTAIN 10' MINIMUM LATERAL DISTANCE BETWEEN SEWER AND WATER LINES. THESE DISTANCES SHALL BE MEASURED EDGE TO EDGE. IN CASES WHERE IT IS NOT PRACTICAL TO MAINTAIN THESE SEPARATIONS, THE REVIEWING AUTHORITY MAY ALLOW DEVIATION ON A CASE BY CASE BASIS.

2. WATER MAIN CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18" BETWEEN OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. IF THE SEWER MAIN IS OVER THE WATER MAIN, THE FIRST SEWER PIPE JOINTS ON EACH SIDE OF THE WATER MAIN MUST BE CONCRETE ENCASED. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED.

3. IF IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS DESCRIBED ABOVE, BOTH WATER MAIN AND SEWER MUST BE CONSTRUCTED OF PRESSURE TYPE PIPE AND BE PRESSURE TESTED TO 200 PSI TO ASSURE WATERTIGHTNESS BEFORE BACKFILLING. REFER TO WATER/SEWER CROSSING DETAIL.

PROJECT: ROYALTON	PROJECT NO. BRZ (22)
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SURVEYED BY: R. GILMAN	SURVEY DATE: 9/91
SQUAD LEADER: C.P. WILLIAMS	DRAWN BY:
WATER DETAILS	SHEET: 82 OF 118

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REV.	DESCRIPTION	BY	DATE
3	CORRECTED SCALE	BLB	6-8-00
2	VT AOT COMMENTS	EET	5-26-00
1	DELETE SEWER	BLB	5-2-00

TOWN OF ROYALTON AND ROYALTON FIRE DISTRICT No. 1
WHITE RIVER BRIDGE UTILITY CROSSINGS

WATER DETAILS

SOUTH ROYALTON — VERMONT

Project No.	6170051
Proj. Manager	A. T. RICE
Proj. Designer	R. N. GOODWIN
Drawn By	M. A. MOYER
Checked By	A. T. RICE
Scale	AS SHOWN
Approved	
Date	APRIL 2000

C6

Sheet 6 of 6

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