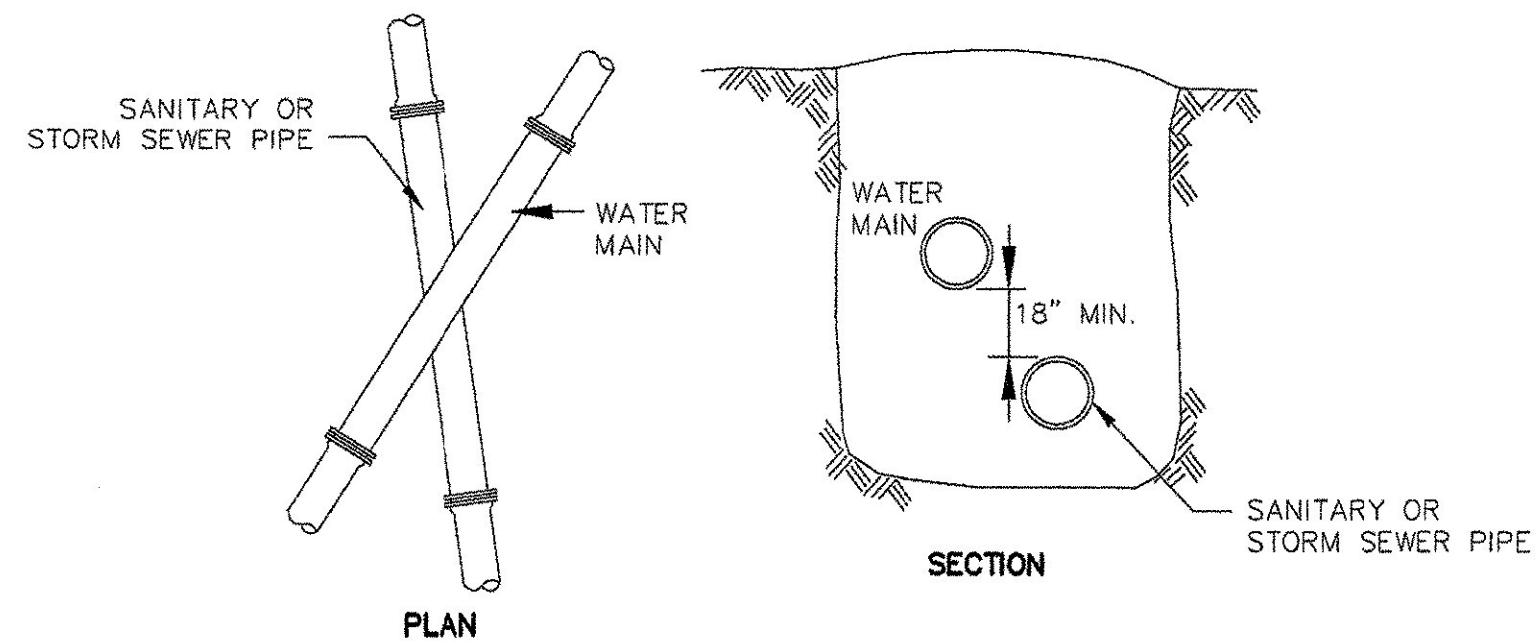


THRUST BLOCK SCHEDULE		SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL													
REACTION TYPE	PIPE SIZE	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	48"	
		①	1.71	2.49	4.29	6.45	9.12	12.26	15.85	19.91	24.43	34.85	53.62	76.81	135.12
②	1.21	3.53	6.06	9.12	12.70	17.33	22.42	28.16	34.55	49.29	75.83	108.62	191.09		
③	0.92	0.95	3.28	4.94	6.98	9.38	12.13	15.24	18.70	26.68	41.04	58.78	103.42		
④	0.47	0.97	1.67	2.52	3.56	4.78	6.19	7.77	9.53	13.60	20.92	29.97	52.72		
⑤	0.24	0.49	0.84	1.26	1.79	2.40	3.41	3.90	4.79	6.83	10.51	15.06	26.49		

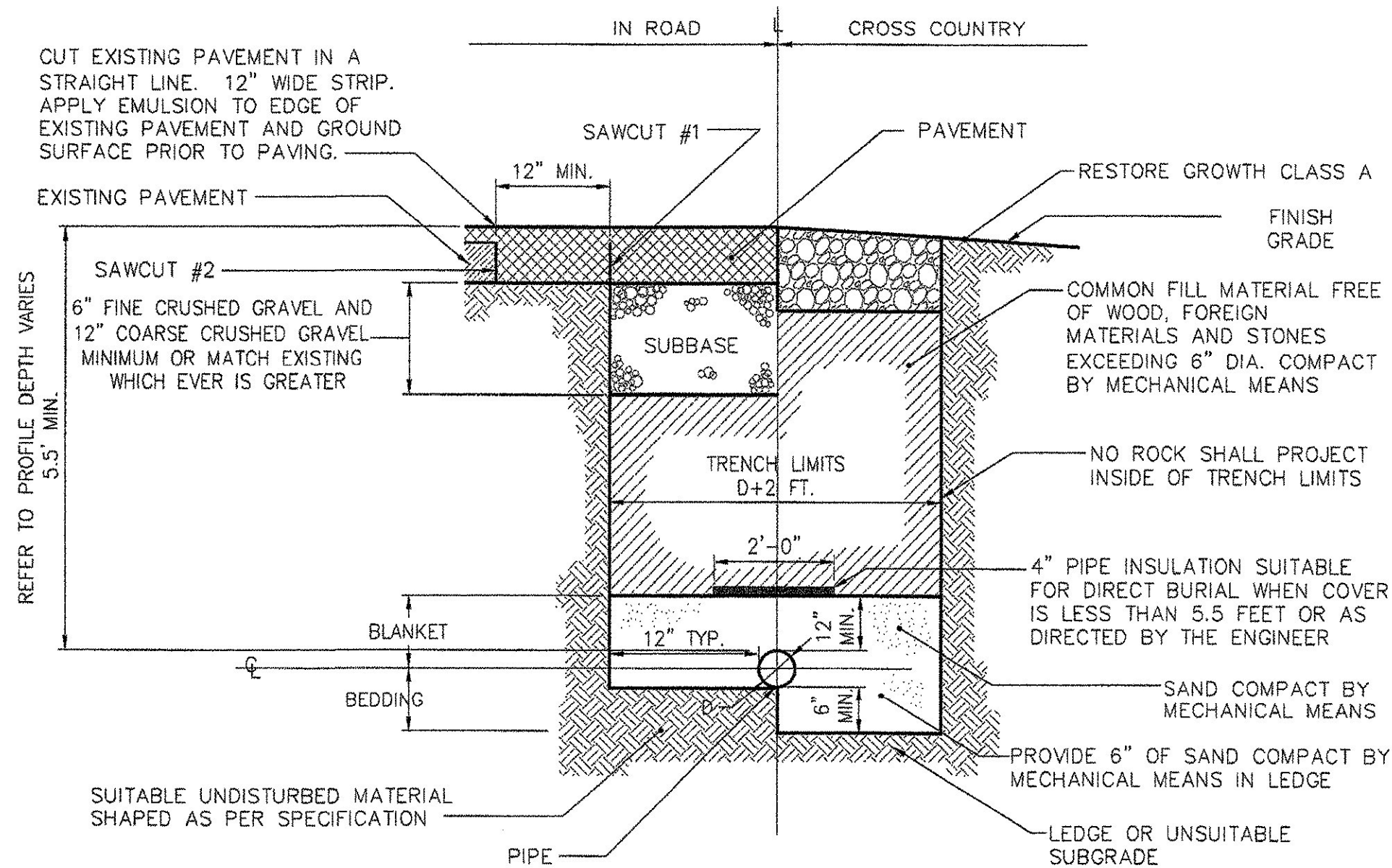
- NOTES:**
- POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
 - ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
 - PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.
 - 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.
 - MEGA-LUG RETAINER GLANDS, WITH MEGA-BOND COATING SYSTEM, ARE REQUIRED FOR ALL MECHANICAL JOINTS. THESE GLANDS DO NOT REDUCE THE REQUIREMENTS FOR THRUST RESTRAINT.
 - ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
 - THREADED ROD SHALL BE ANSI A242 F550 PIPE RESTRAINT NUTS TO MATCH AWWA C111. THREADED RODS AND NUTS TO BE FIELD COATED WITH BITUMINOUS PAINT.
 - THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.
 - INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.
 - THRUST BLOCK AREA IS BASED ON SILT SOILS WITH A BEARING STRENGTH OF 1500 LBS/SF AND A SAFETY FACTOR OF 1.5.
 - PRE-FORMED OR PRE-POURED THRUST BLOCKS ARE UNACCEPTABLE.

THRUST BLOCK DETAILS
NOT TO SCALE



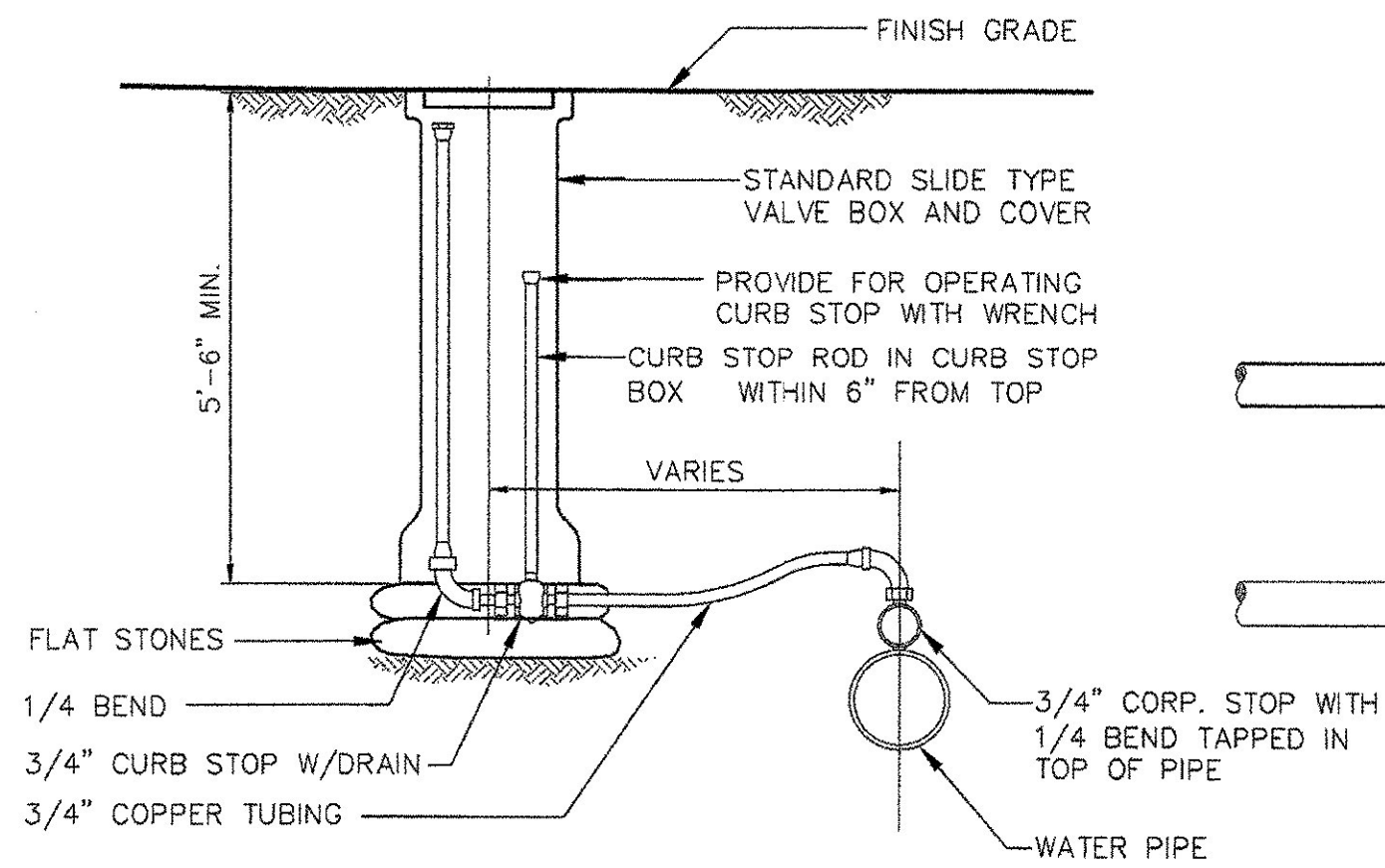
- NOTES:**
- PARALLEL INSTALLATION:** WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED MANHOLE OR SANITARY SEWER. THIS DISTANCE CAN BE REDUCED TO 5 FEET FOR STORM SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
 - CROSSINGS:** WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SANITARY OR STORM SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. 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. WATER MAINS SHALL NOT PASS THROUGH SEWER MANHOLES OR BE SUBMERGED IN BASINS CONTAINING SEWAGE OR OTHER GROSSLY CONTAMINATED OR HAZARDOUS MATERIAL.
 - EXCEPTION:** THE ENGINEER MUST SPECIFICALLY APPROVE ANY VARIANCE FROM THESE REQUIREMENTS WHEN IT IS IMPOSSIBLE TO OBTAIN THE SPECIFIED SEPARATION DISTANCES.

SANITARY AND/OR STORM SEWER PIPE AND WATER MAIN CROSSING DETAIL
NOT TO SCALE

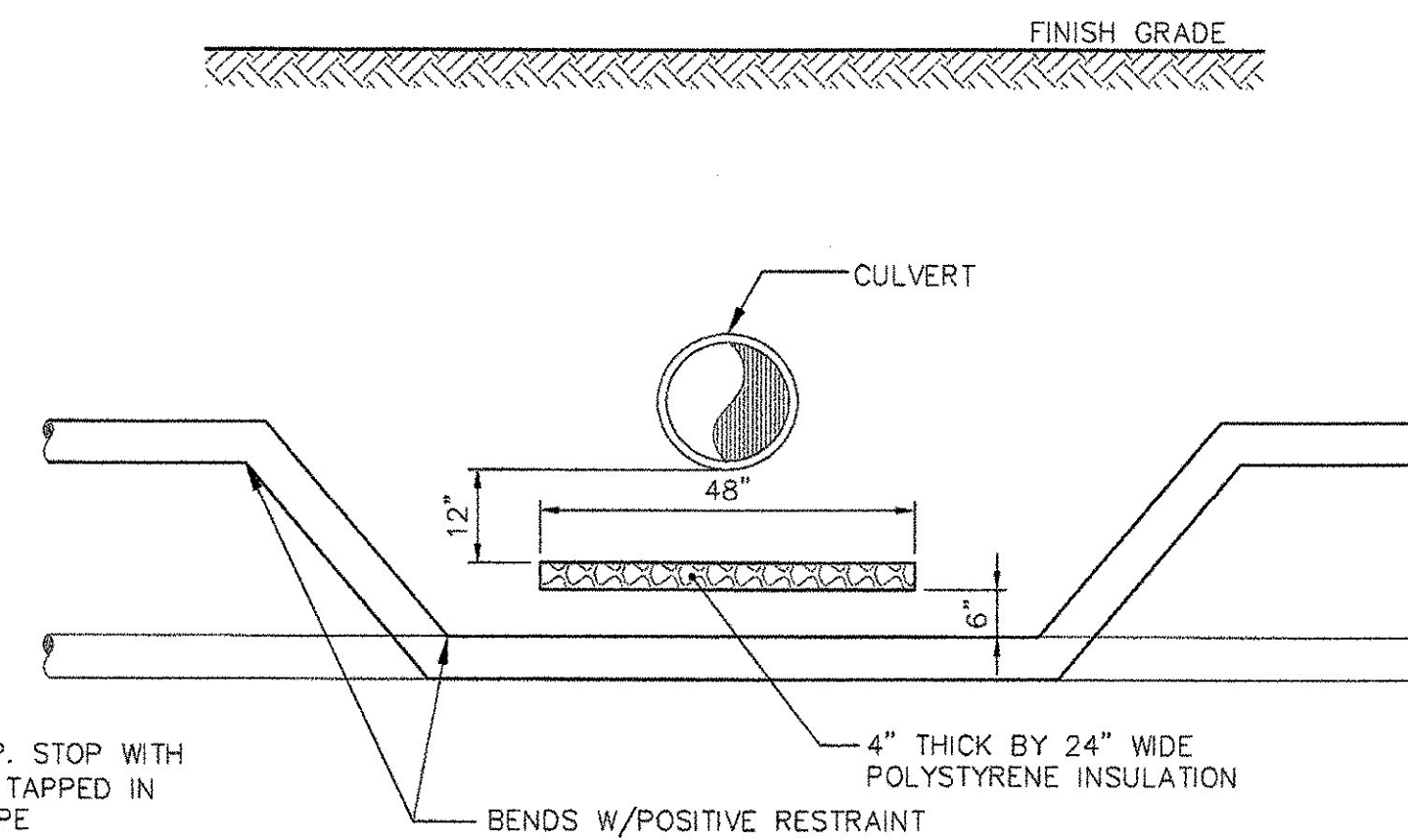


TYPICAL WATER MAIN TRENCH SECTION
NOT TO SCALE

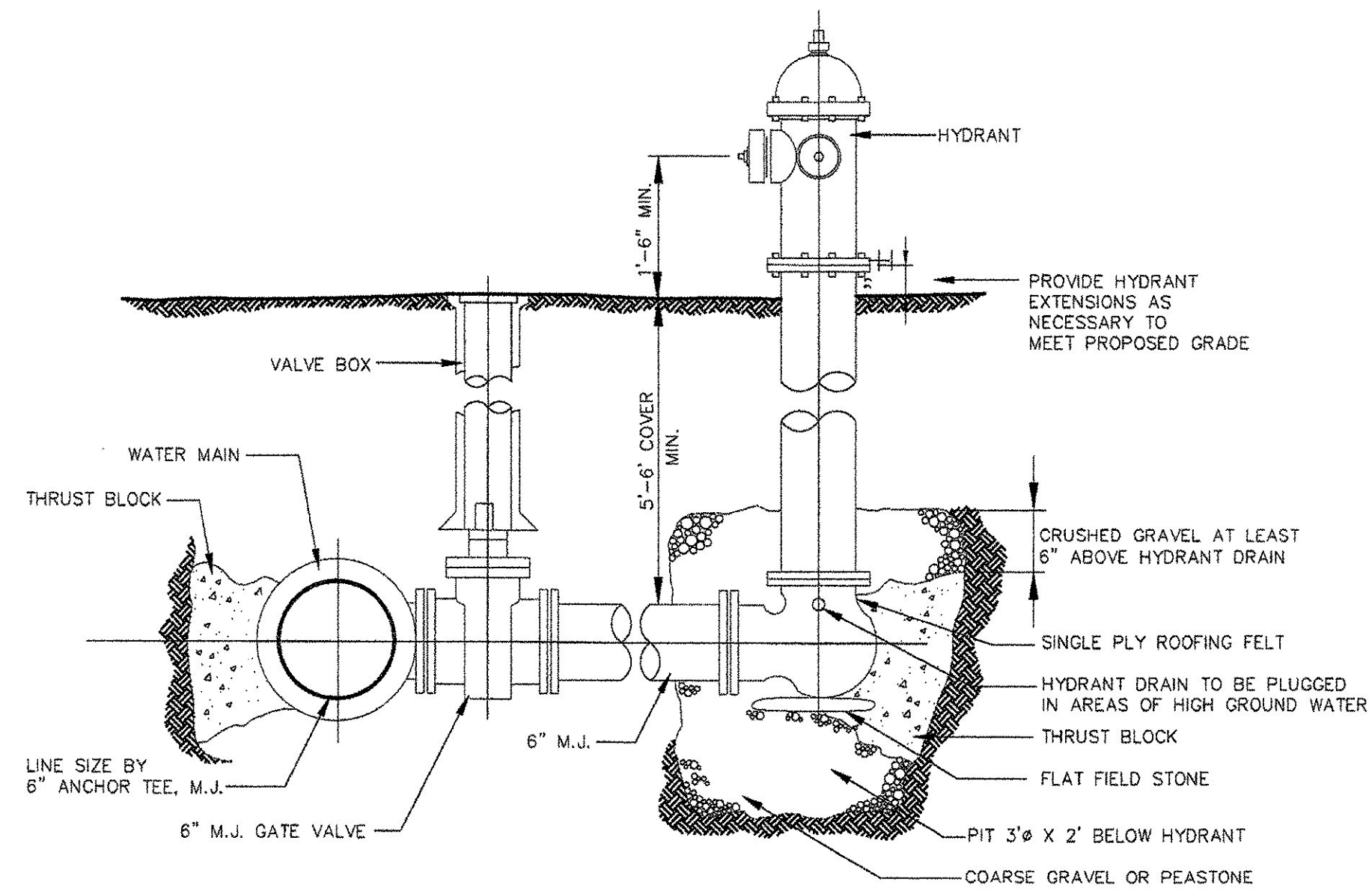
- NOTES:**
- WHERE PIPE IS INSTALLED IN GRAVEL SHOULDER OR IN GRAVELED ROAD, TRENCH SHALL BE RESTORED WITH 18" OF CRUSHED GRAVEL AS SHOWN ABOVE WITH 4" OF SURE-PAK TOP.
 - REFER TO SPECIFICATION FOR PAVEMENT THICKNESS REQUIRED.



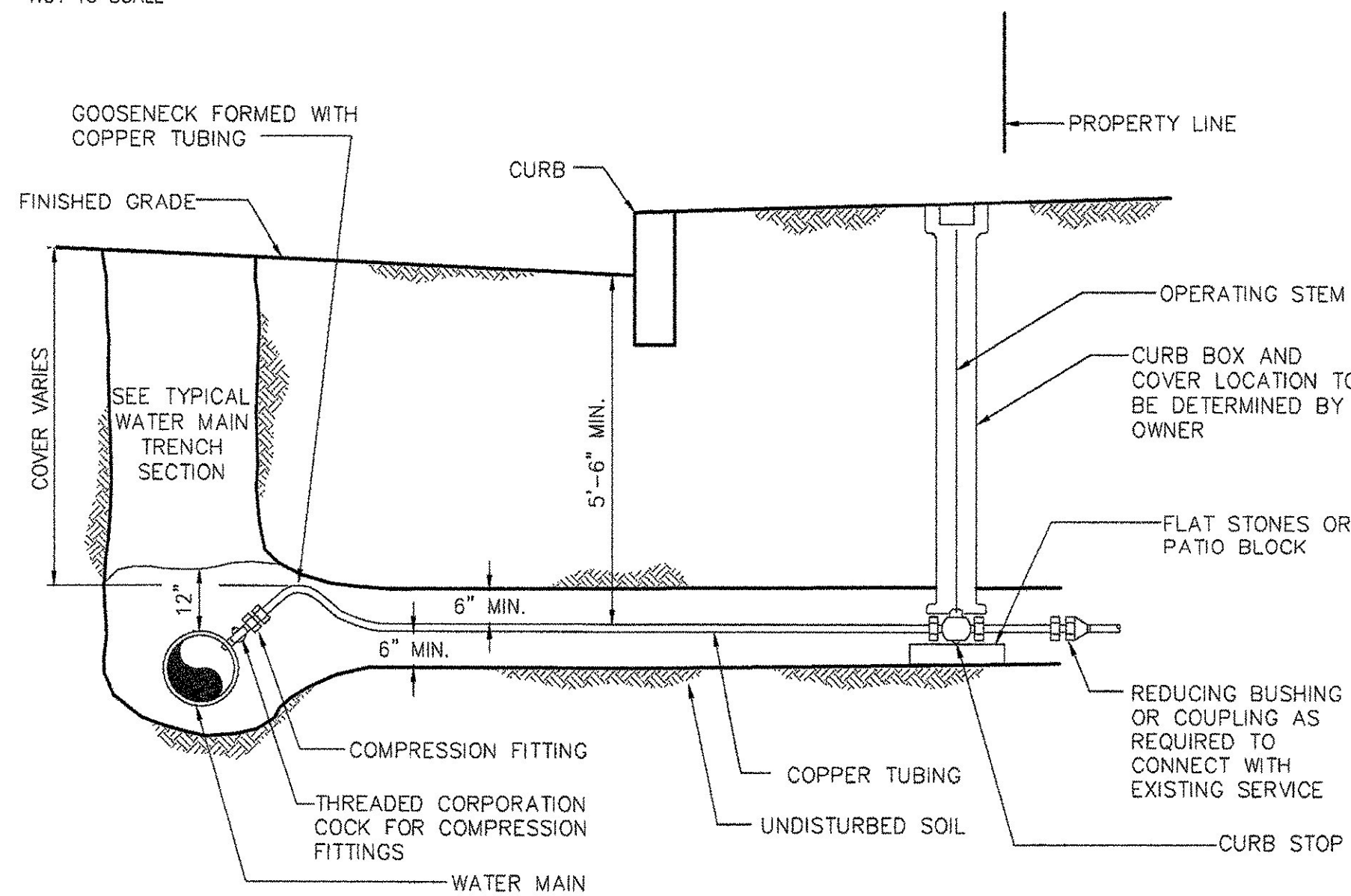
TYPICAL INSTALLATION-TRAVEL WAY FOR MANUAL AIR RELEASE OR CHLORINATION INJECTION
NOT TO SCALE



WATERLINE/CULVERT CROSSING
NOT TO SCALE



HYDRANT ASSEMBLY DETAIL
NOT TO SCALE



TYPICAL SERVICE CONNECTION DETAIL
NOT TO SCALE

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STATE OF VERMONT
REGISTERED PROFESSIONAL CIVIL ENGINEER
1-29-09

DATE	COMMENTS	BY	BLB
1/29/09	FINAL REVIEW COMMENTS		

PROSPECT STREET OVER STEVENS BRANCH
WATER MAIN DETAIL SHEET
BARRE, VERMONT

Project #	416008
Project Mgr.	R.N. GOODWIN
Design by	R.N. GOODWIN
Drawn by	GLW
Reviewed by	R.E. DUFRESNE
Approved by	R.E. DUFRESNE
Date	JANUARY 29, 2009
Scale	AS SHOWN