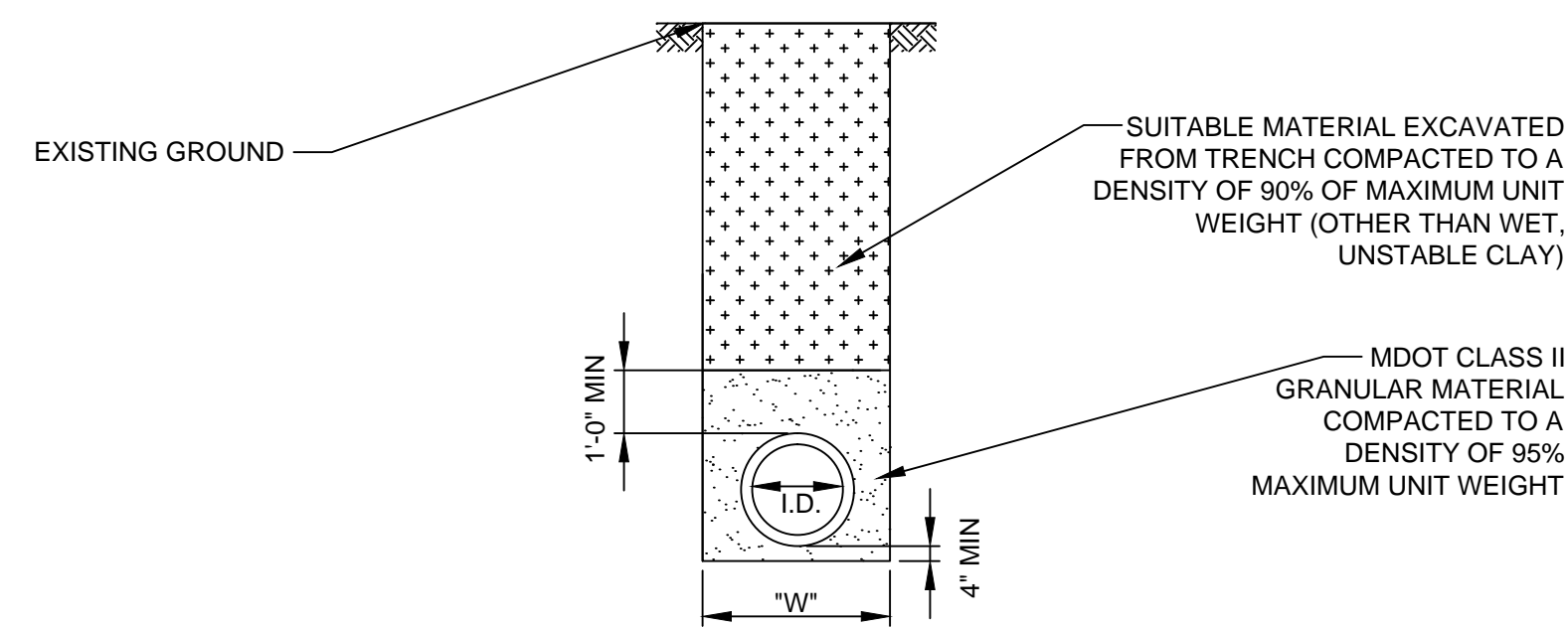


**NOTES:**  
1. WHEN WATER MAIN IS PLACED IN PROPOSED ROADBED AREA, IT SHALL BE BACKFILLED WITH SELECTED EXCAVATION MATERIAL ABOVE FUTURE SUBGRADE TO EXISTING GROUND LINE.

EDGE OF TRENCH WITHIN 3 FEET OF PAVED SURFACE



TRENCH NOT WITHIN INFLUENCE OF PAVED AREA

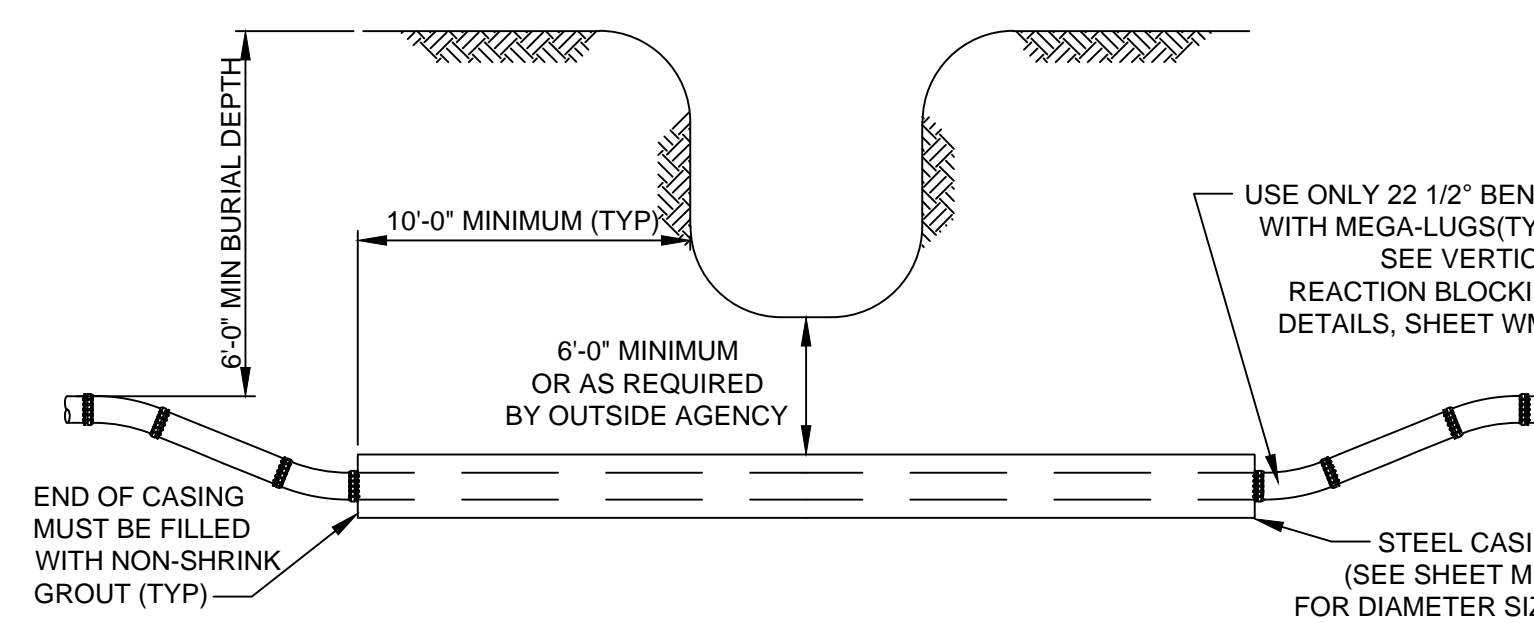
**WATER MAIN TRENCH CROSS-SECTIONS**

SEE "PIPE CONSTRUCTION" NOTE #10

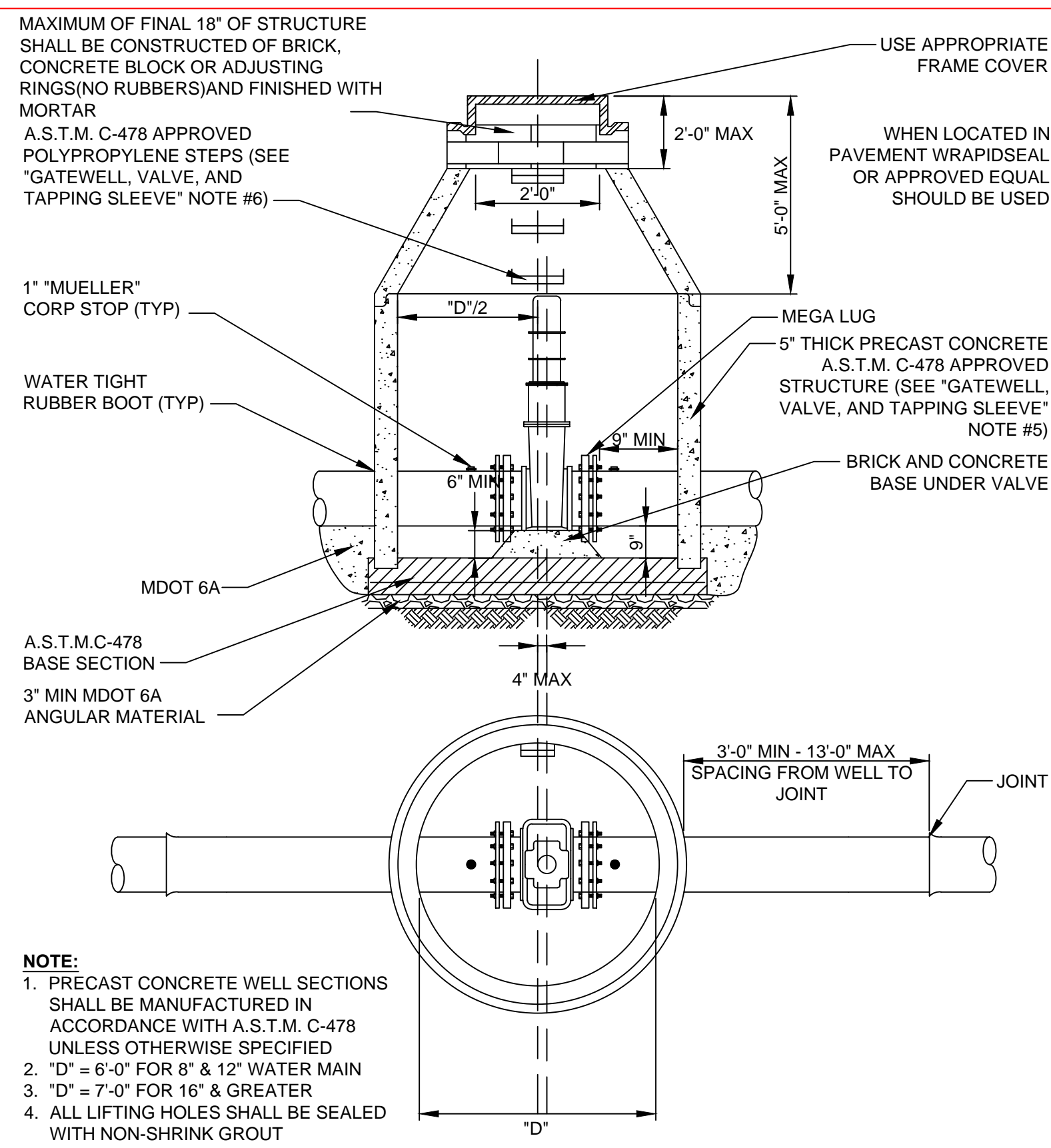
I.D. PIPE SIZE (IN)	<18	21	24	30	36	
"W" TRENCH WIDTH (FT)	3.0	3.5	4.0	5.0	6.0	
I.D. PIPE SIZE (IN)	42	48	54	60	66	72
"W" TRENCH WIDTH (FT)	7.0	8.0	9.5	10.0	10.5	11.0
I.D. PIPE SIZE (IN)	78	84	90	96	102	108
"W" TRENCH WIDTH (FT)	11.5	12.0	12.5	13.0	13.5	14.0

**NOTE:**  
1. ESTIMATED PAVEMENT REMOVAL WIDTH IS TO BE TRENCH WIDTH "W" PLUS 1'-0" EACH SIDE OF THE TRENCH (6'-0" MINIMUM).

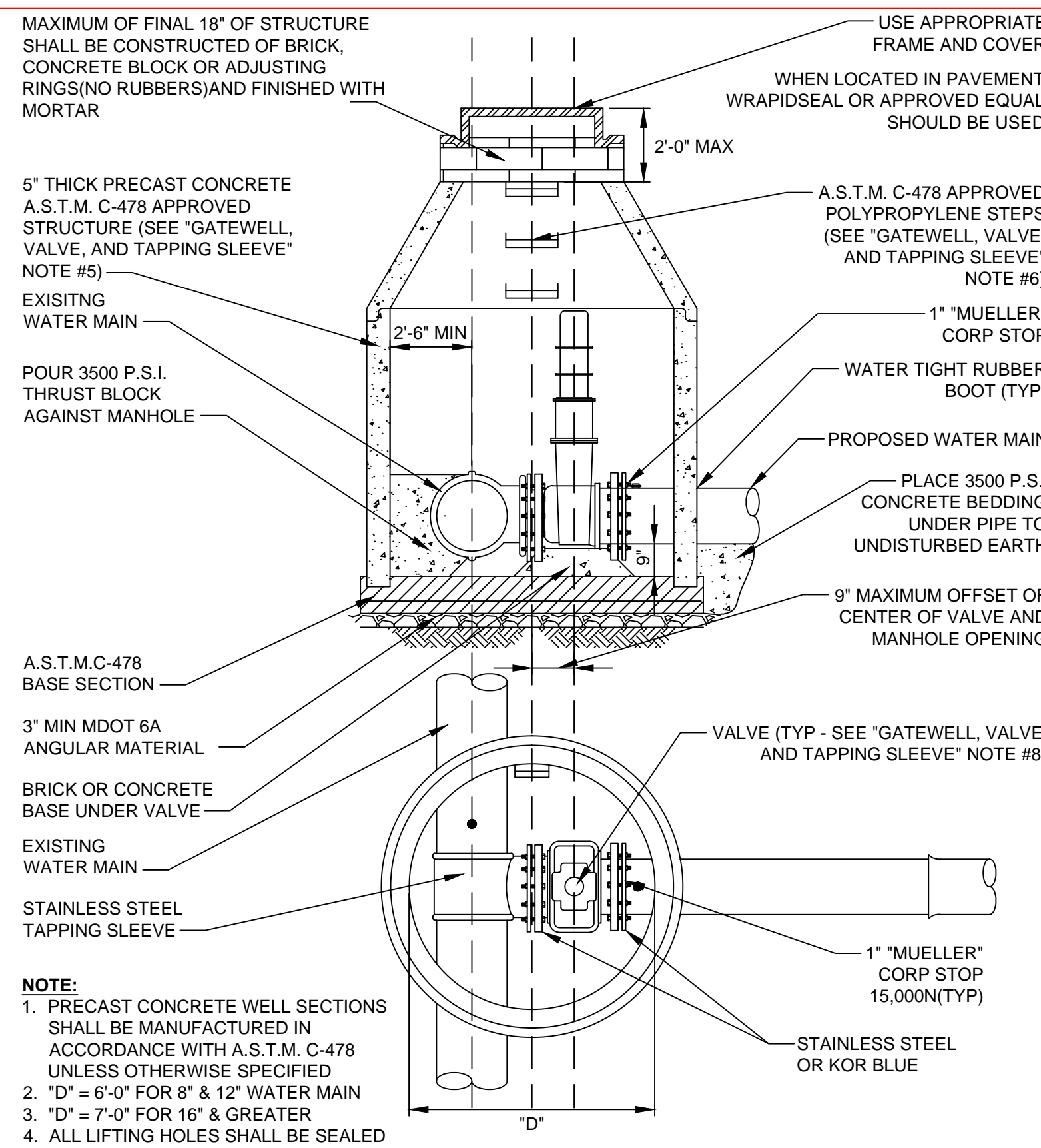
**MINIMUM UTILITY TRENCH WIDTHS**



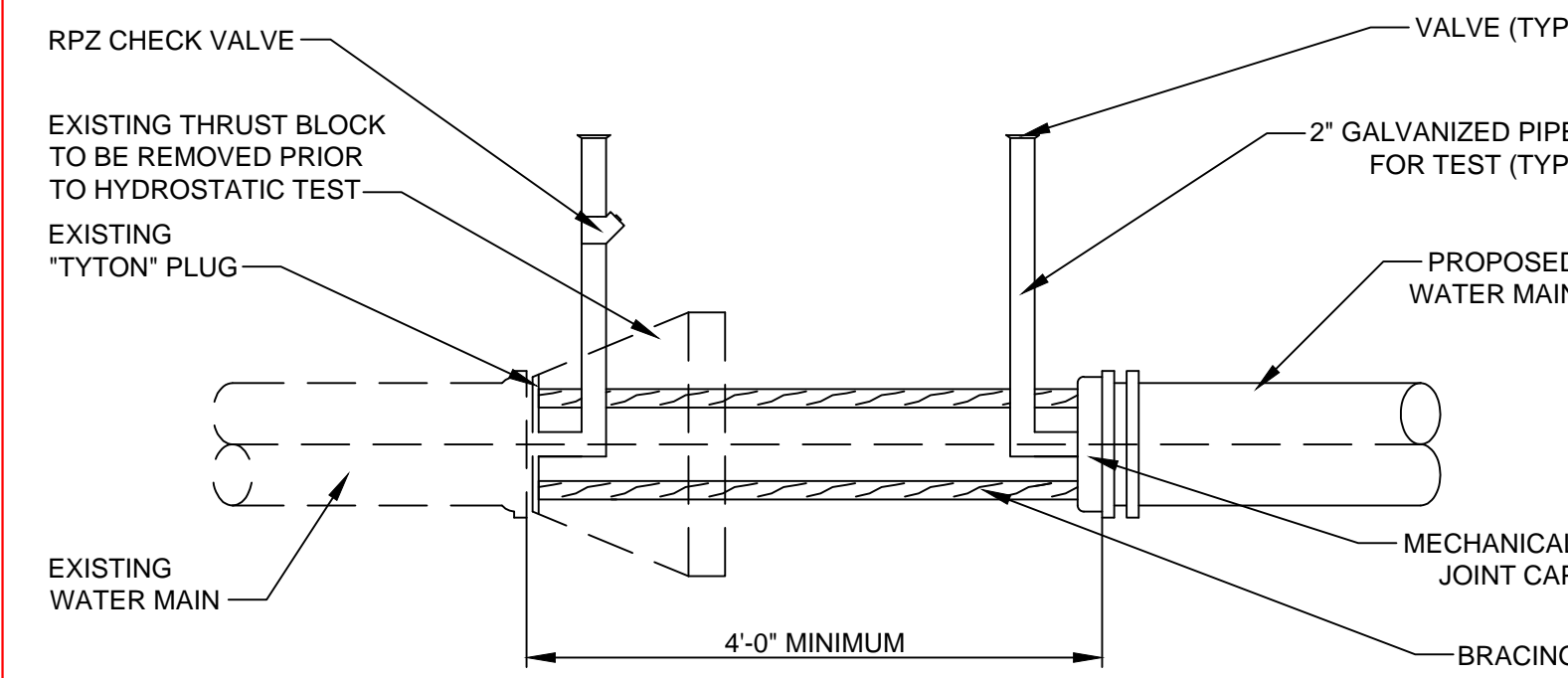
**DITCH OR STREAM CROSSING**



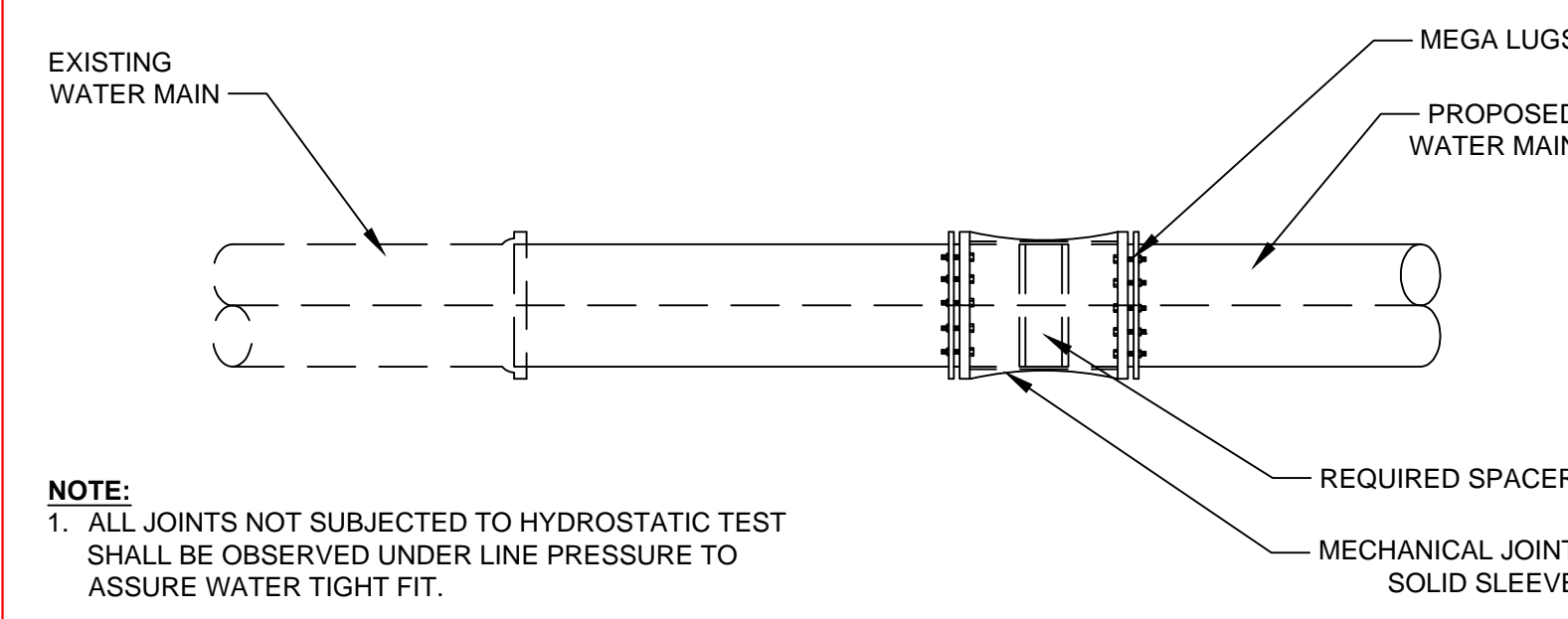
**PRECAST GATE WELL**



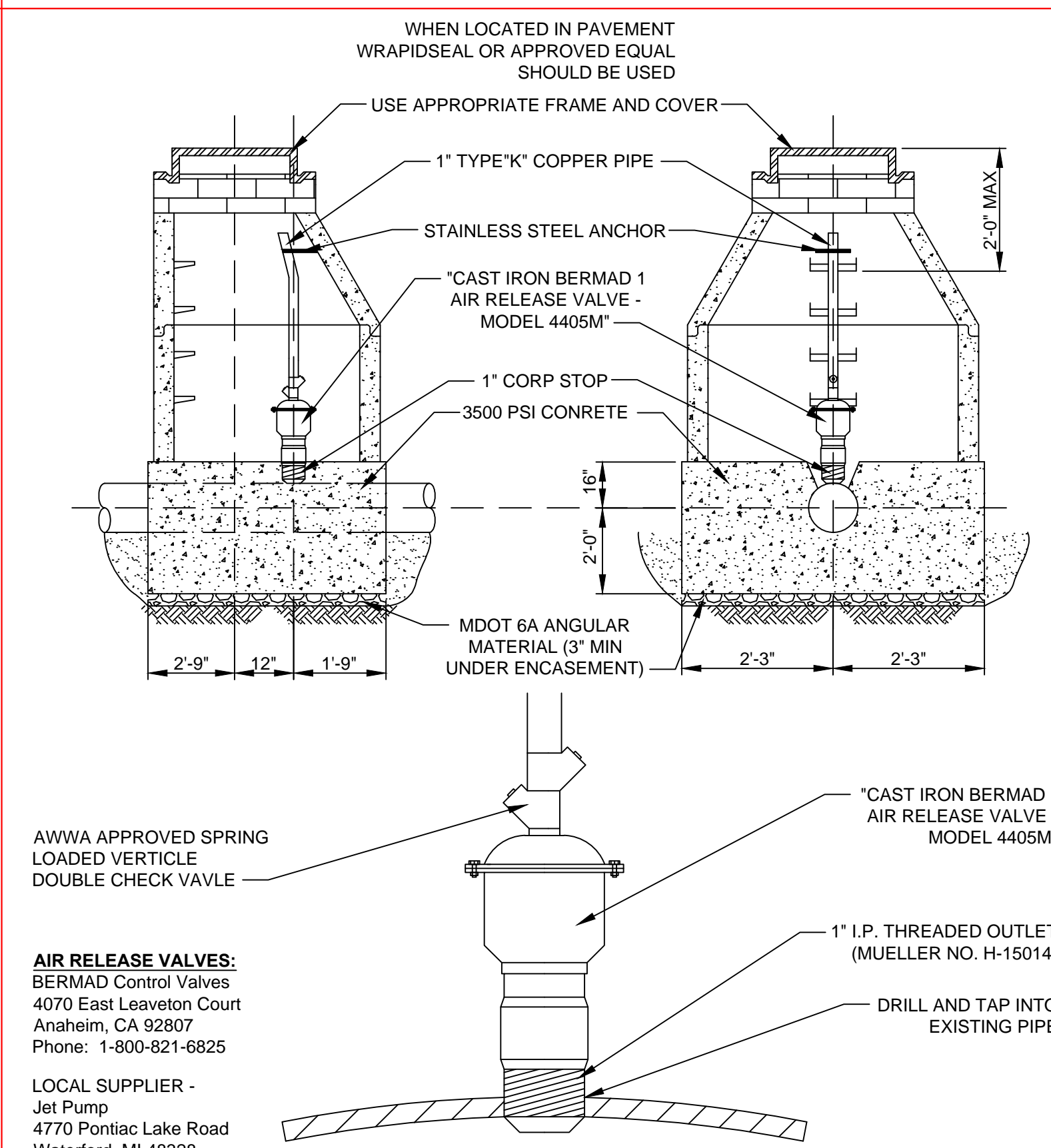
**CONNECTION TO EXISTING MAIN**



**TEMPORARY ARRANGEMENT FOR HYDROSTATIC PRESSURE TEST**



**COMPLETED CONNECTION TO EXISTING WATER MAIN**



**AIR RELEASE VALVE & WELL FOR 12" OR GREATER WATER MAIN**

**WATER MAIN NOTES:**

- GENERAL**
1. ALL WATER CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND GENERAL SPECIFICATIONS OF THE CANTON TOWNSHIP ENGINEER.
  2. ALL WORK WITHIN THE WAYNE COUNTY ROAD RIGHT-OF-WAY SHALL CONFORM TO WAYNE COUNTY GENERAL NOTES GN-1.
  3. ONLY CANTON TOWNSHIP WATER DEPARTMENT PERSONNEL ARE AUTHORIZED TO OPERATE VALVES ON THE MAIN LINE.
  4. A 6-FOOT MINIMUM AND 10-FOOT MAXIMUM COVER WILL BE REQUIRED AT ALL LOCATIONS UNLESS APPROVED BY THE CANTON TOWNSHIP ENGINEER.
  5. SPECIAL CARE MUST BE TAKEN WHEN EXPOSING EXISTING WATER MAINS. WHEN EXCAVATING UNDER EXISTING WATER LINE, THE EXISTING LINE MUST BE SUPPORTED AS DIRECTED BY THE CANTON TOWNSHIP ENGINEER. SPECIAL SUPPORT OR SHORING WILL BE REQUIRED FOR TRANSIT/A.C. PIPE (SEE "EXISTING UTILITY CROSSING" DETAIL ON SHEET MD-1).
  6. ALL PROPOSED 8-INCH OR LARGER DIAMETER MAINS THAT EXCEED 50 LINEAL FEET MUST BE CLEANED BY INSERTING A FOAM CLEANING SWAB DEVICE (NEW ACSS AQUA SWAB CRISS-CROSS OR APPROVED EQUAL). A PIGGING LAYOUT PLAN AND A SCHEDULE TO PIG MUST BE PROVIDED PRIOR TO COMPLETION OF WATER MAIN INSTALLATION. ALLOW 2 WORKING DAYS TO REVIEW AND APPROVE THE PLAN.
  7. WATER MAIN WILL BE DISINFECTED AND SAMPLED IN ACCORDANCE WITH AWWA C651, AND WITNESSED BY THE CHARTER TOWNSHIP OF CANTO PERSONNEL. TESTING MUST BE COMPLETED BY MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY CERTIFIED LAB.

**GATE WELL, VALVE, AND TAPPING SLEEVE**

1. ALL NEW AND EXISTING WATER MAIN STRUCTURES MUST BE WATER TIGHT. IF WORK IS TO BE DONE ON AN EXISTING STRUCTURE, THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE STRUCTURE IS WATER TIGHT UPON COMPLETION OF THE WORK.
2. GATE WELLS AND OTHER WATER MAIN STRUCTURES SHALL NOT BE CONSTRUCTED UNDER DRIVEWAYS, PAVEMENT, DRIVE APPROACHES OR SIDEWALKS.
3. ALL SURFACE STRUCTURES, SUCH AS HYDRANTS, GATE WELLS, AND VALVE BOXES MUST BE SET TO GRADE OR AS INDICATED ON THE PLANS.
4. PLACE SAND BACKFILL WITHIN THREE FEET OF ALL STRUCTURES INCLUDING VALVE WELLS AND FIRE HYDRANTS.
5. ALL STRUCTURES MUST BE 5-INCH THICK PRE-CAST CONCRETE. A.S.T.M. C-478 APPROVED, WITH 1/2-INCH CEMENT PLASTER ON JOINTS INSIDE AND OUT. UNDER TOWNSHIP ENGINEER APPROVAL, STRUCTURES MAY BE 5-INCH THICK CONCRETE BLOCK STRUCTURE CONSTRUCTED IN THE FIELD WITH 1/2-INCH CEMENT PLASTER COAT INSIDE AND OUT.
6. MANHOLE STEPS ARE TO BE INSTALLED AT THE PLANT BY THE MANUFACTURER OF THE STRUCTURE. THE STEPS ARE TO BE 16 INCHES ON CENTER, MADE OF POLYPROPYLENE, AND A.S.T.M. C-478 APPROVED. STEPS ARE TO BE LOCATED AT 90 DEGREES TO THE CENTERLINE OF THE MAIN WATER LINE. THE BOTTOM STEP SHOULD BE LOCATED A MAXIMUM OF 24 INCHES ABOVE THE FLOOR.
7. ALL 6-INCH VALVES OR GREATER MUST BE LOCATED IN A GATE WELL. FIRE SERVICE LINES MAY BE IN A "D-BOX."
8. ALL VALVES ARE TO ROTATE CLOCKWISE TO OPEN, HAVE A MECHANICAL JOINT, AND HAVE A RED OPERATING NUT. 6-INCH THROUGH 12-INCH DIAMETER GATE VALVES SHALL BE MUELLER A-2360 OR E-J.I.W. FLOWMASTER 27031, OPEN RIGHT RESILIENT WEDGE TYPE VALVES. ALL VALVE ASSEMBLY BOLTS MUST BE STAINLESS STEEL OR KOR BLUE.
9. ANY NEW WATER MAIN TAPPING AN EXISTING LINE SHALL BE DONE BY USING A STAINLESS STEEL TAPPING SLEEVE AND A CUTTER THAT IS ONE COMMONLY PRODUCED DIAMETER SMALLER THAN THE NEW MAIN.

**PIPE CONSTRUCTION**

1. THE TYPE OF PIPE FOR WATER MAIN 3 INCHES IN DIAMETER AND LARGER IS TO BE CLASS 54 DUCTILE IRON MEETING AWWA C151 STANDARDS. 1-INCH AND 2-INCH SERVICE LEADS SHALL BE TYPE "K" COPPER. HDPE MAY BE USED IN EITHER SITUATION UNDER APPROVAL OF THE CANTON TOWNSHIP ENGINEER.
2. DUCTILE IRON INSTALLATION SHALL FOLLOW AWWA C600 STANDARDS.
3. SELF LOCKING JOINTS ARE NOT ACCEPTABLE.
4. ALL HORIZONTAL AND VERTICAL FITTINGS REQUIRE THE USE OF "MEGA-LUG" RESTRAINTS AND THRUST BLOCKING.
5. WHEN SPECIFIED, VERTICAL FITTINGS ARE TO BE MECHANICALLY FASTENED.
6. ALL PIPES MUST BE CLEAN INSIDE PRIOR TO INSTALLATION.
7. ALL BOLTS MUST BE "COR-BLUE" T-BOLT TYPE.
8. ALL FITTINGS SHALL BE DUCTILE IRON, PRESSURE RATING 250 PSI CONFORMING TO ANSI A21.10 (AWWA C110). HDPE MAYBE USED WITH APPROVAL FROM THE CANTON TOWNSHIP ENGINEER
9. WATER MAINS ARE TO BE PLACED LEVEL THROUGH ALL STRUCTURES AND VALVES.
10. TRENCH CROSS-SECTIONS SHOWN ON WM-1 AND WM-2 APPLY TO THOSE UTILITIES OUTSIDE MDOT AND WAYNE COUNTY RIGHTS-OF-WAY. THOSE UTILITIES THAT FALL WITHIN MDOT AND WAYNE COUNTY RIGHTS-OF-WAY MUST MEET THEIR BEDDING AND BACKFILL REQUIREMENTS.
11. FOR WATER SERVICE LEADS, NO JOINTS OR UNIONS WILL BE PERMITTED UNDER EXISTING OR PROPOSED PAVEMENT.
12. DURING CONSTRUCTION, ANY ANGLE POINTS OR BENDS ARE TO BE MARKED AT GRADE LEVEL WITH 2-INCH BY 2-INCH BOARD FOR LOCATION PURPOSES.
13. WHEN BORING AND JACKING THE CONTRACTOR MUST EXPOSE THE EXISTING LINES TO VERIFY ELEVATIONS FOR TAPPING.
14. APPROVED BACK FLOW PREVENTION MUST BE USED WHEN MAKING TEMPORARY CONNECTIONS TO THE EXISTING SYSTEM.
15. ALL WATER MAIN PIPE AND FITTINGS SHALL MEET ANSISF STANDARD 61.

DATE:	REVISIONS:	BY:
5/16/2007	SUBMITTED FOR DEQ REVIEW	CJL
5/31/2007	PUBLIC RELEASE	CJL