

GENERAL WATER MAIN NOTES

THE EXISTING WATER MAINS AND UTILITIES WERE LOCATED IN THE FIELD AND FROM EXISTING PLAN SHEETS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES.

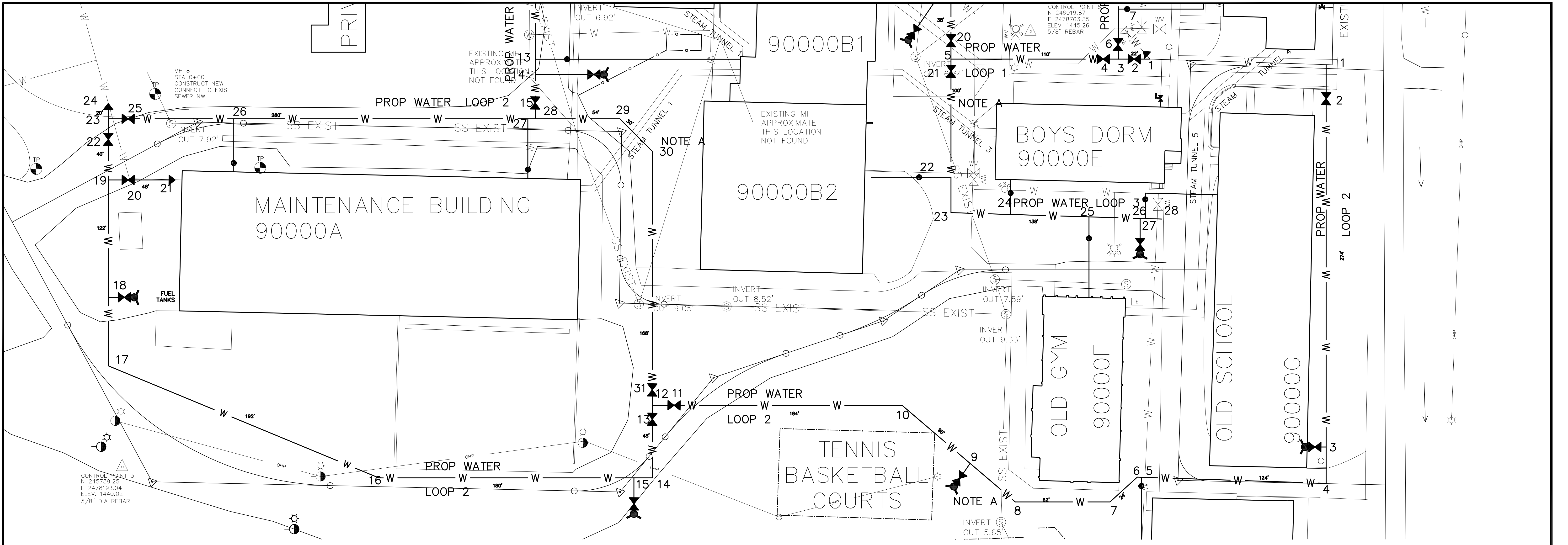
THE CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS AND/OR BYPASSES AS REQUIRED TO COMPLETE THE WATER MAIN REPLACEMENTS WITHOUT INTERRUPTION TO THE SCHOOL.

WATER SERVICES SHALL BE 2" COPPER MINIMUM, OR AS SHOWN OR LARGER TO MATCH EXISTING. INSTALL ALL SERVICES ENCOUNTERED WHETHER SHOWN OR NOT.

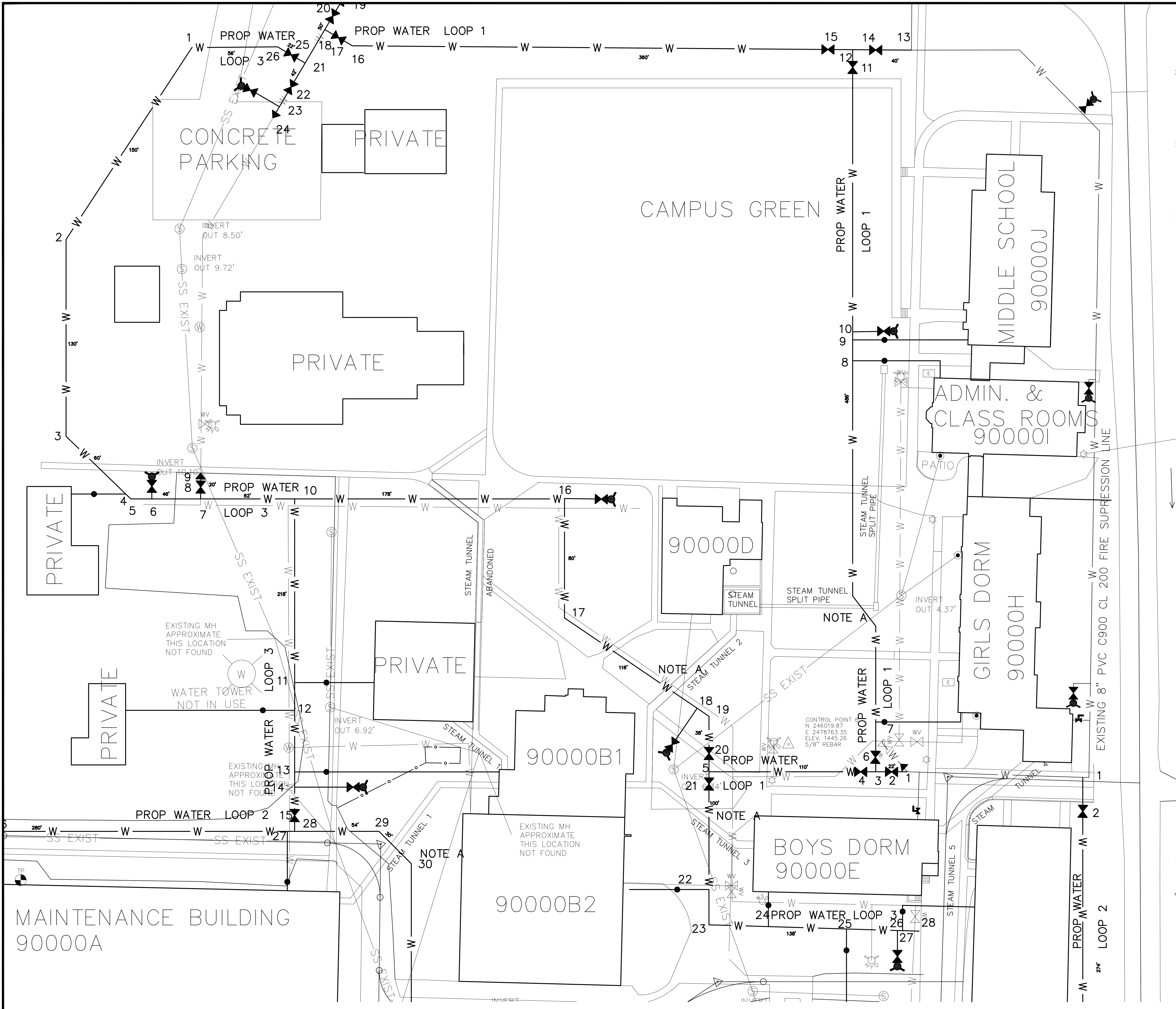
NOTE A: AT SEWER AND TUNNEL CROSSINGS INSTALL HORIZONTAL AND VERTICAL BENDS AS REQUIRED TO LOWER WATER MAIN, INSTALL WATER MAIN IN CARRIER PIPE.

THE WATER DISTRIBUTION SYSTEM IMPROVEMENTS COMPLETE IS A LUMP SUM ITEM INCLUDED IN THE BID. QUANTITIES SHOWN IN THE PLANS ARE FOR INFORMATION ONLY AND ARE NOT THE ONLY ITEMS REQUIRED FOR THE COMPLETE SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING HIS OWN QUANTITIES.

- WATER DISTRIBUTION LOOP 1**
- WATER LINE 1 TO 5
 INSTALL 110' X 8" PVC C900 CL 200 WATERMAIN
 1 CONNECT TO EXISTING FIRE SUPPRESSION LINE
 2 INSTALL 8" GATE VALVE AND BOX
 3 INSTALL 8" TEE
 4 INSTALL 8" GATE VALVE AND BOX
 5 INSTALL 8" TEE
- WATER LINE 3 TO 12
 INSTALL 486' X 8" PVC C900 CL 200 WATERMAIN
 6 INSTALL 8" GATE VALVE AND BOX
 7 INSTALL 2" COPPER SERVICE
 NOTE A
 8 INSTALL 2" COPPER SERVICE
 9 INSTALL 2" COPPER SERVICE
 10 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 11 INSTALL 8" GATE VALVE AND BOX
 12 INSTALL 8" TEE
- WATER LINE 13 TO 12
 INSTALL 40' X 8" PVC C900 CL 200 WATERMAIN
 13 INSTALL 8" TEE ON EXISTING FIRE SUPPRESSION LINE
 14 INSTALL 8" GATE VALVE AND BOX
 12 TEE (ABOVE)
- WATER LINE 12 TO 18
 INSTALL 360' X 8" PVC C900 CL 200 WATERMAIN
 12 TEE (ABOVE)
 15 INSTALL 8" GATE VALVE AND BOX
 16 INSTALL 8" X 22 1/2" AND 11 1/4" BENDS
 17 INSTALL 8" GATE VALVE AND BOX
 18 INSTALL 8" TEE
- WATER LINE 19 TO 21
 INSTALL 50' X 8" PVC C900 CL 200 WATERMAIN
 19 CONNECT TO EXISTING WATERMAIN, INSTALL 6" X 8" REDUCER
 20 INSTALL 8" GATE VALVE AND BOX
 18 TEE (ABOVE)
 21 INSTALL 8" TEE
- WATER LINE 21 TO 24
 INSTALL 42' X 8" PVC C900 CL 200 WATERMAIN
 21 TEE (ABOVE)
 22 INSTALL 8" GATE VALVE AND BOX
 23 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 24 CONNECT TO EXISTING WATERMAIN, INSTALL 6" X 8" REDUCER
- WATER LINE 21 TO 26
 INSTALL 22' X 8" PVC C900 CL 200 WATERMAIN
 21 TEE (ABOVE)
 25 INSTALL 8" GATE VALVE AND BOX
 26 INSTALL 8" X 22 1/2" AND 11 1/4" BENDS
 CONNECT TO WATER DISTRIBUTION LOOP 3



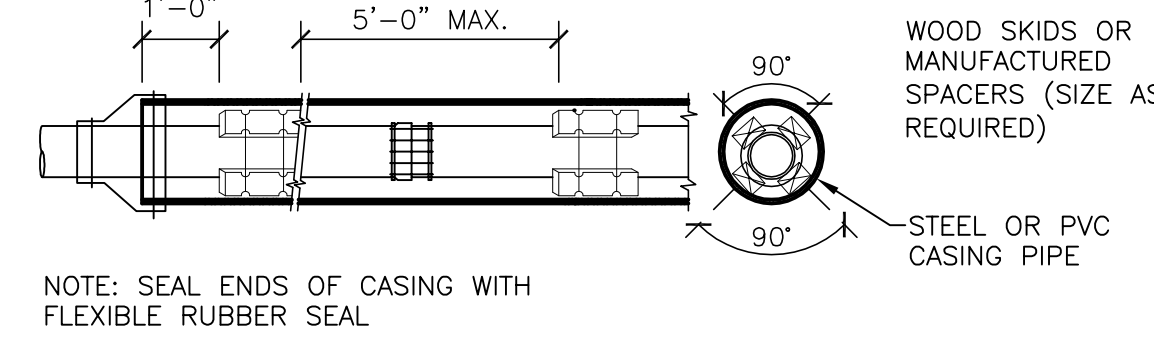
- WATER DISTRIBUTION LOOP 2
- WATER LINE 1 TO 12
 INSTALL 746' X 8" PVC C900 CL 200 WATERMAIN
 1 INSTALL TEE CONNECT TO EXISTING FIRE SUPPRESSION LINE
 2 INSTALL 8" GATE VALVE AND BOX
 3 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 4 INSTALL 8" X 90° BEND
 5 INSTALL 2" COPPER SERVICE
 6 INSTALL 8" X 45° BEND
 7 INSTALL 8" X 45° BEND
 8 INSTALL 8" X 45° BEND
 NOTE A
 9 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 10 INSTALL 8" X 45° BEND
 11 INSTALL 8" GATE VALVE AND BOX
 12 INSTALL 8" TEE
- WATER LINE 12 TO 19
 INSTALL 542' X 8" PVC C900 CL 200 WATERMAIN
 12 TEE (ABOVE)
 13 INSTALL 8" GATE VALVE AND BOX
 14 INSTALL 8" X 90° BEND
 15 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 16 INSTALL 8" X 22 1/2" BEND
 17 INSTALL 8" X 45° AND 22 1/2" BENDS
 18 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 19 INSTALL 8" TEE
- WATER LINE 19 TO 21
 INSTALL 48' X 8" PVC C900 CL 200 WATERMAIN
 19 TEE (ABOVE)
 20 INSTALL 8" GATE VALVE AND BOX
 21 INSTALL 8" X ? REDUCER, CONNECT TO EXISTING LINE
- WATER LINE 19 TO 23
 INSTALL 40' X 8" PVC C900 CL 200 WATERMAIN
 19 TEE (ABOVE)
 22 INSTALL 8" GATE VALVE AND BOX
 23 INSTALL 8" TEE
- WATER LINE 23 TO 24
 INSTALL 20' X 8" PVC C900 CL 200 WATERMAIN
 23 TEE (ABOVE)
 24 INSTALL 8" X ? REDUCER, CONNECT TO EXISTING LINE
- WATER LINE 23 TO 28
 INSTALL 280' X 8" PVC C900 CL 200 WATERMAIN
 23 TEE (ABOVE)
 25 INSTALL 8" GATE VALVE AND BOX
 26 INSTALL 2" COPPER SERVICE
 27 INSTALL 2" COPPER SERVICE
 28 INSTALL 8" TEE (LOOP 3)
- WATER LINE 28 TO 12
 INSTALL 252' X 8" PVC C900 CL 200 WATERMAIN
 28 TEE (ABOVE)
 29 INSTALL 8" X 45° BEND
 NOTE A
 30 INSTALL 8" X 45° BEND
 31 INSTALL 8" GATE VALVE AND BOX
 12 TEE (ABOVE)



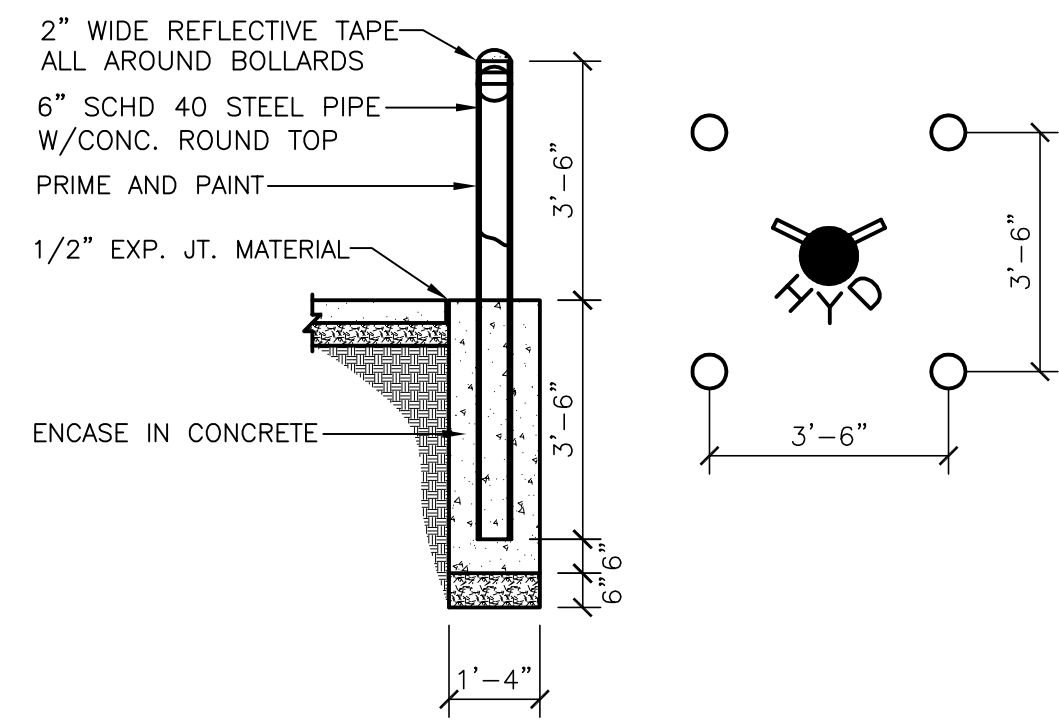
- WATER DISTRIBUTION LOOP 3
- WATER LINE (26 LOOP 1) TO 9
 INSTALL 462' X 8" PVC C900 CL 200 WATERMAIN
 26 CONNECT TO LOOP 1
 1 INSTALL 8" X 45' BEND
 2 INSTALL 8" X 45' BEND
 3 INSTALL 8" X 45' BEND
 4 INSTALL 1" COPPER SERVICE
 5 INSTALL 8" X 45' BEND
 6 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 7 INSTALL 8" TEE
 8 INSTALL 8" GATE VALVE AND BOX
 9 INSTALL 8" X 6" REDUCER, CONNECT TO EXISTING WATER MAIN
- WATER LINE 7 TO (28 LOOP 2)
 INSTALL 462' X 8" PVC C900 CL 200 WATERMAIN
 7 TEE (ABOVE)
 10 INSTALL 8" TEE
 11 INSTALL 1" COPPER SERVICE
 12 INSTALL 1" COPPER SERVICE
 13 INSTALL 1" COPPER SERVICE
 14 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 15 INSTALL 8" GATE VALVE AND BOX
 28 CONNECT TO LOOP 2
- WATER LINE 10 TO (5 LOOP 1)
 INSTALL 412' X 8" PVC C900 CL 200 WATERMAIN
 10 TEE (ABOVE)
 16 INSTALL 8" X 6" X 8" TEE, FIRE HYDRANT ASSEMBLY
 17 INSTALL 8" X 45' BEND
 NOTE A
 18 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 19 INSTALL 8" X 45' BEND
 20 INSTALL 8" GATE VALVE AND BOX
 5 TEE LOOP 1
- WATER LINE (5 LOOP 1) TO 28
 INSTALL 238' X 8" PVC C900 CL 200 WATERMAIN
 5 TEE LOOP 1
 21 INSTALL 8" GATE VALVE AND BOX
 NOTE A
 22 INSTALL 2" COPPER SERVICE
 23 INSTALL 8" X 90° BEND
 24 INSTALL 2" COPPER SERVICE
 25 INSTALL 2" COPPER SERVICE
 26 INSTALL 8" X 6" TEE, FIRE HYDRANT ASSEMBLY
 27 INSTALL 2" COPPER SERVICE
 28 INSTALL 8" CAP



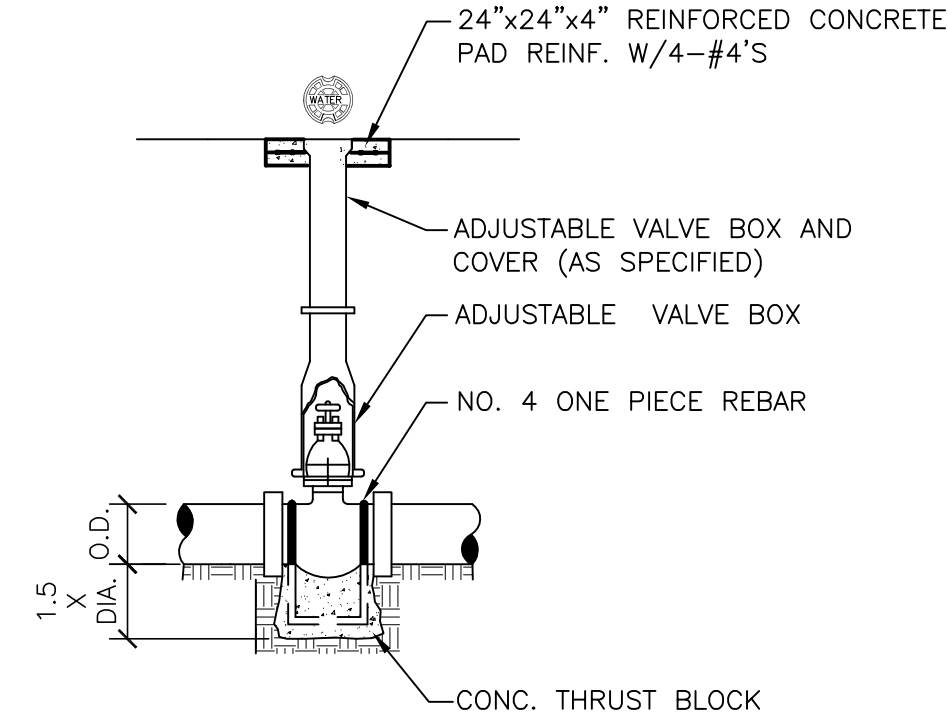
CASING SCHEDULE / PIPE SIZE	PIPE SIZE	CASING SIZE (MIN)
6	8	14
8	10	16
10	12	18
12	14	20
14	16	22
16		24



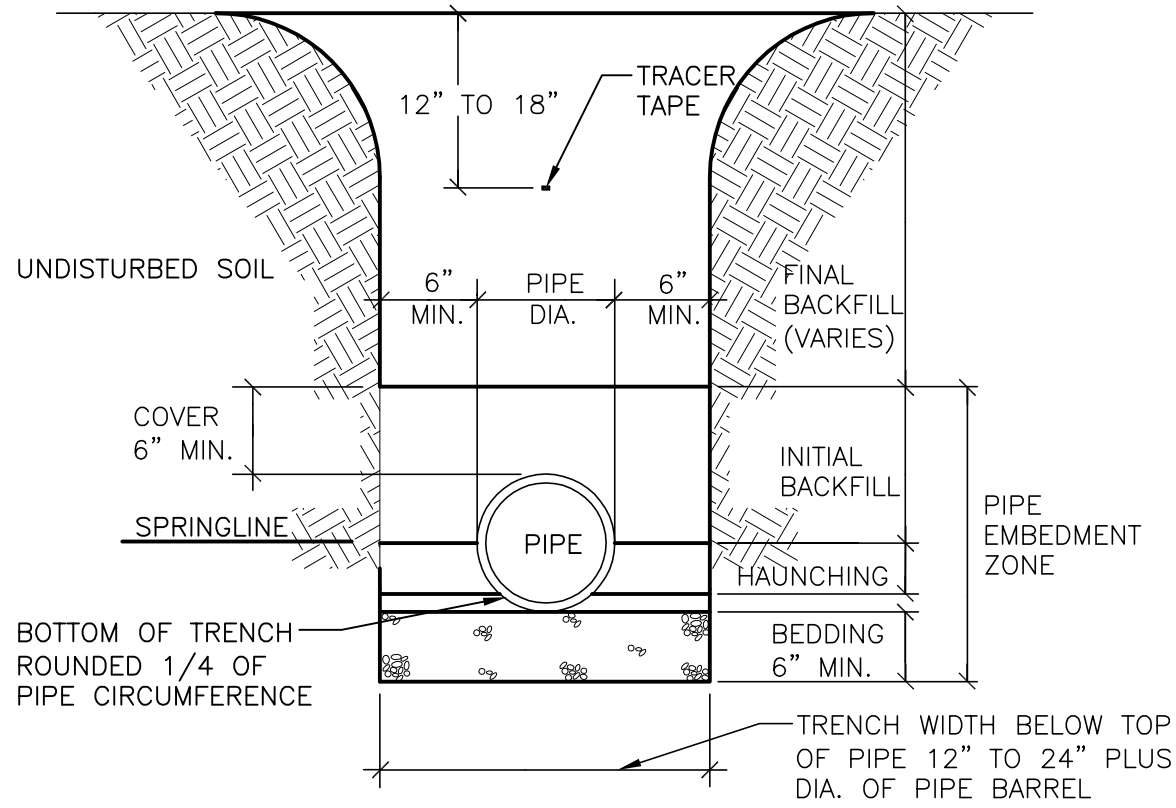
1 CASING FOR PVC PIPE
C4.4 N.T.S.



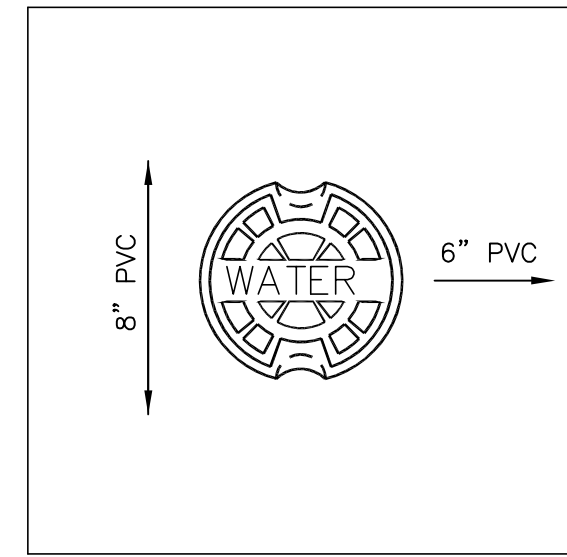
2 BOLLARD DETAIL AND INSTALLATION
C4.4 N.T.S.



3 GATE VALVE AND BOX
C4.4 N.T.S.

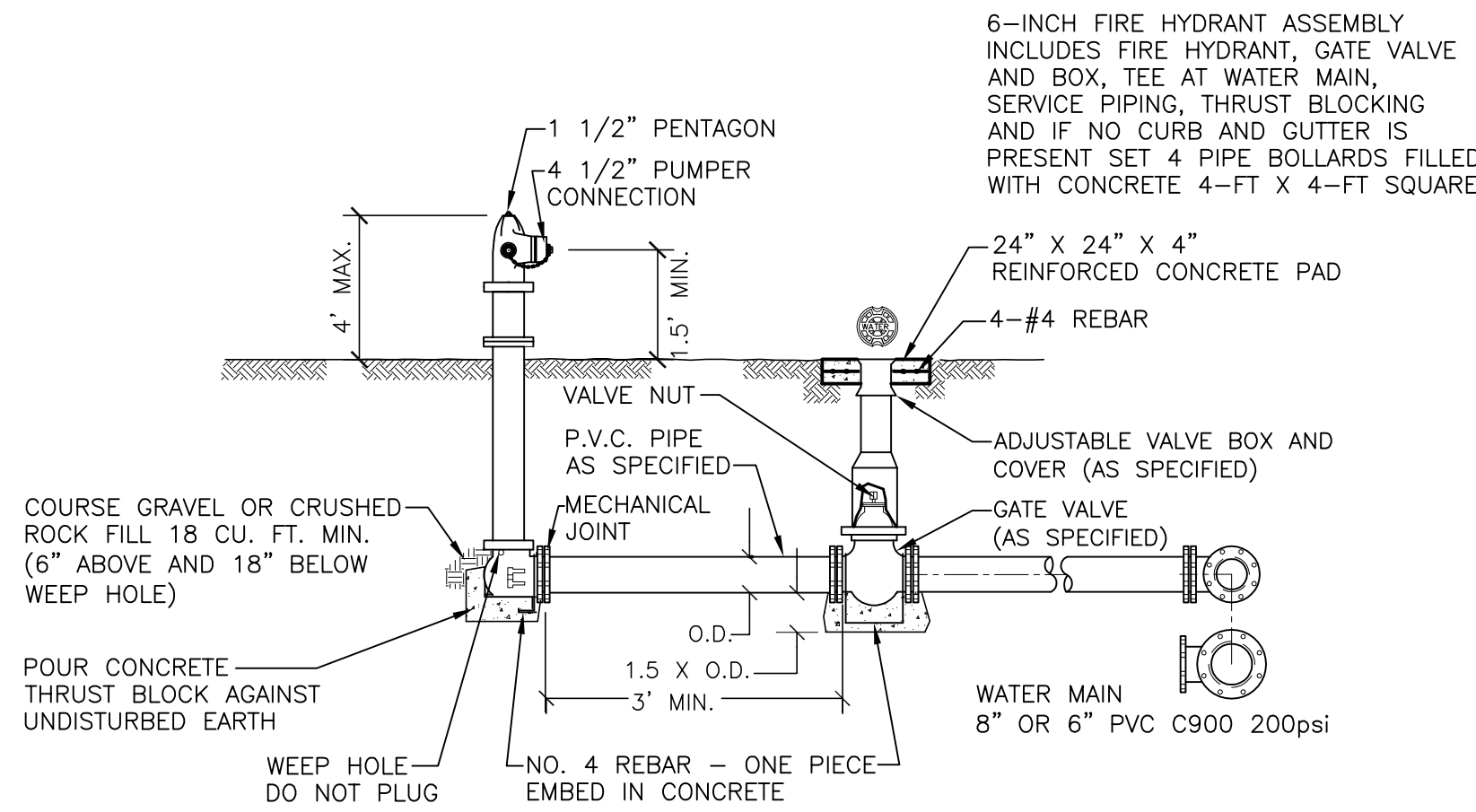


4 TRENCH DETAIL
C4.4 N.T.S.

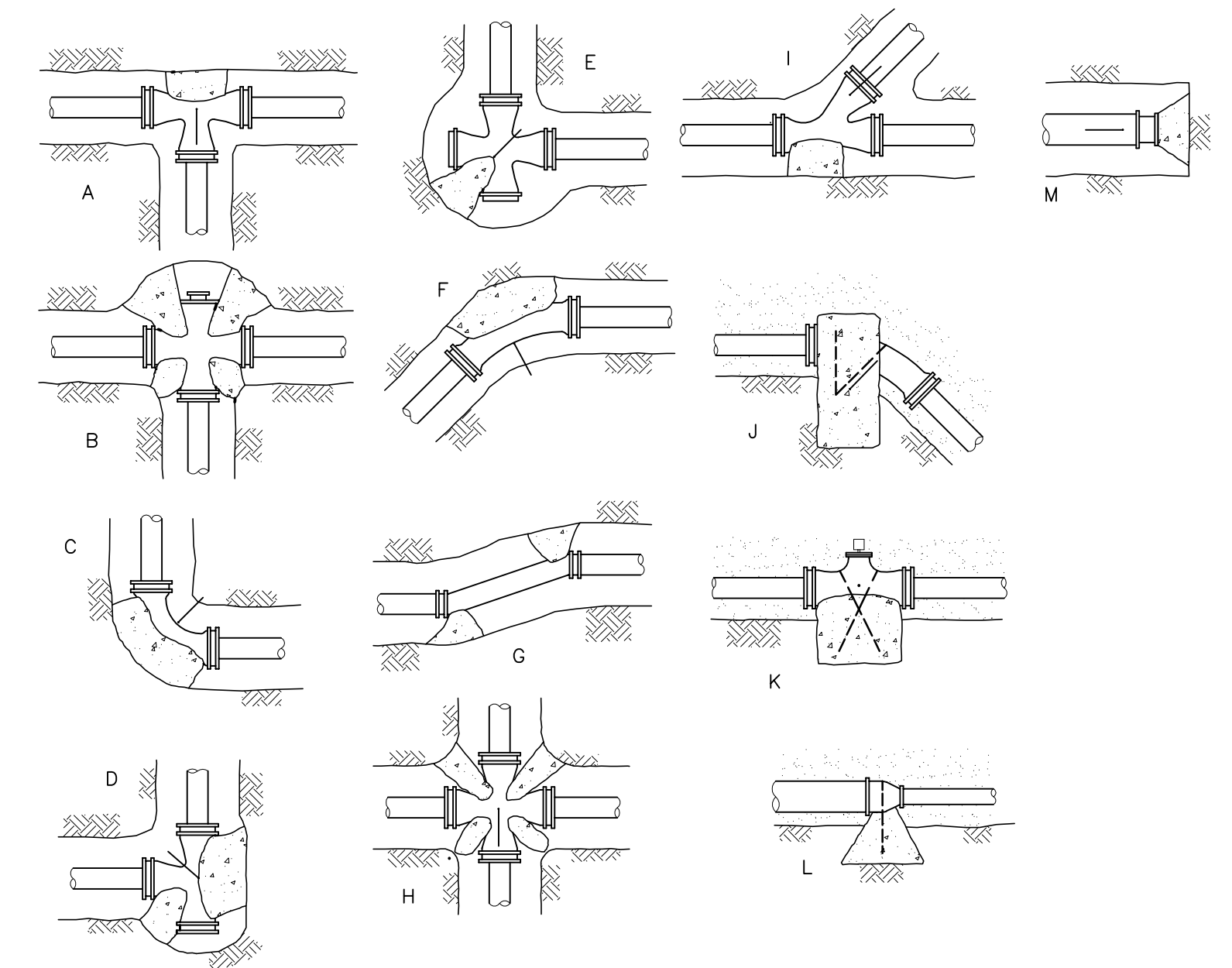


NOTE REGARDING WATER MAIN LOCATION INDICATORS:
WATER MAINS SHALL BE MARKED WITH TRACE WIRE, AN INDICATING TAPE. A 3/8" REBAR W/ CAP LABELED "WATERMAIN" SHALL BE SET ON LINE AT A DISTANCE OF 3'-0" OFFSET EACH SIDE OF ALL APPURTENANCES. 2'X2'X4" REIN (4-#4's) CONC SLAB AT ALL ABOVE GROUND APPURTENANCES. INSCRIBE CONCRETE WITH SIZE, TYPE AND DIRECTION OF WATER LINES. LEAVE VALVE BOXES FLUSH WITH SURFACE.

5 WATER LINE MARKER
C4.4 N.T.S.



6 FIRE HYDRANT ASSEMBLY
C4.4 N.T.S.



NOTE:
SEE CHART BELOW FOR THRUST BLOCK AREA

DEADENDS, PLUGS AND CAPS SHALL BE SIZED IN ACCORDANCE WITH COLUMN 'A'

PIPE DIA.	BASE DIMENSION (INCHES)					
	A	B (EA.)	C	D (EA.)	E	F & G
2"	8.1 x 8.1	6.8 x 6.8	9.6 x 9.6	8.1 x 8.1	9.6 x 9.6	7.1 x 7.1
3"	11.9x11.9	10.0x10.0	14.2x14.2	11.9x11.9	14.2x14.2	10.4x10.4
4"	13.7x13.7	11.5x11.5	16.1x16.1	13.5x13.5	16.1x16.1	12.6x12.6
6"	20.4x20.4	17.2x17.2	24.0x24.0	20.2x20.2	24.0x24.0	18.2x18.2
8"	27.1x27.1	22.8x22.8	32.2x32.2	27.1x27.1	32.2x32.2	24.3x24.3
10"	33.7x33.7	28.4x28.4	40.2x40.2	33.8x33.8	40.2x40.2	30.1x30.1
12"	40.3x40.3	33.9x33.9	48.0x48.0	40.4x40.4	48.0x48.0	33.2x33.2

PIPE DIA.	THRUST BLOCK AREA = BASE DIMENSION x SOIL MULTIPLICATION FACTOR					
	F & G	F & G	H (EA.)	I	K	X
2"	5.1 x 5.1	3.6 x 3.6	4.8 x 4.8	6.8 x 6.8	8.1 x 8.1	X
3"	7.4 x 7.4	5.3 x 5.3	7.1 x 7.1	10.0x10.0	11.9x11.9	EX
4"	9.5 x 9.5	6.8 x 6.8	8.1 x 8.1	11.5x11.5	13.7x13.7	X
6"	14.0x14.0	9.9 x 9.9	12.2x12.2	17.2x17.2	20.4x20.4	X
8"	18.2x18.2	12.9x12.9	16.1x16.1	22.8x22.8	27.1x27.1	X
10"	22.7x22.7	16.1x16.1	20.1x20.1	28.4x28.4	33.7x33.7	X
12"	26.9x26.9	19.1x19.1	24.0x24.0	33.9x33.9	40.3x40.3	X

NOTE:
IF SOIL TESTS HAVE BEEN TAKEN, REFER TO M-23 FOR THRUST BLOCK SIZING.
GATE VALVE AND REDUCERS SHALL BE ANCHORED DOWN.
CONCRETE SHALL NOT COME IN CONTACT WITH BELLS OR PIPE.

PIPE RATING	SOIL MULTIPLICATION FACTOR					
	SOFT CLAY	SAND	SAND GRAVEL	SAND-GRAVEL CLAY	SAND-GRAVEL CEMENTED CLAY	HARD PAD
160 psi	2.2	1.6	1.3	1.1	0.8	0.7
200 psi	2.5	1.7	1.4	1.2	0.9	0.8

7 THRUST BLOCK DETAILS
C4.4 N.T.S.

NOTE REGARDING WATER MAIN AND WATER SERVICES.

WATER MAIN SHALL BE MIN. 8" PVC C900 CLASS 200 PVC MIN 6' BURY. WATER SERVICES SHALL BE A MINIMUM OF 2" COPPER OR SIZED TO MATCH EXISTING IF LARGER THAN 2". LOWER AS REQUIRED TO CLEAR SANITARY SEWER, CENTER FULL SECTION OF PIPE UNDER CROSSING TO INSURE NO JOINTS OCCUR WITHIN 10' OF CROSSING. WATER MAINS SHALL MAINTAIN A MINIMUM OF TEN FEET OF SEPARATION FROM SANITARY SEWERS IN ACCORDANCE WITH REGULATIONS.

LOWER AS REQUIRED TO CLEAR STEAM TUNNELS, PROVIDE CASING UNDER STEAM TUNNELS. CASING MAY BE PUSHED OR JACKED UNDER TUNNELS. IF EXCAVATED, BACKFILL WITH FLOWABLE-FILL.

PIPE SHALL BE BEDDED AS PER MANUFACTURES RECOMMENDATIONS.

FIRE HYDRANTS SHALL HAVE PUMPER CONNECTION, THREAD PATTERN AND SPECIFICATIONS SHALL MEET THE LOCAL FIRE DEPARTMENT REQUIREMENTS.

FIRE HYDRANTS ADJACENT TO ROADWAYS OR PARKING SHALL BE PROTECTED BY BOLLARDS.

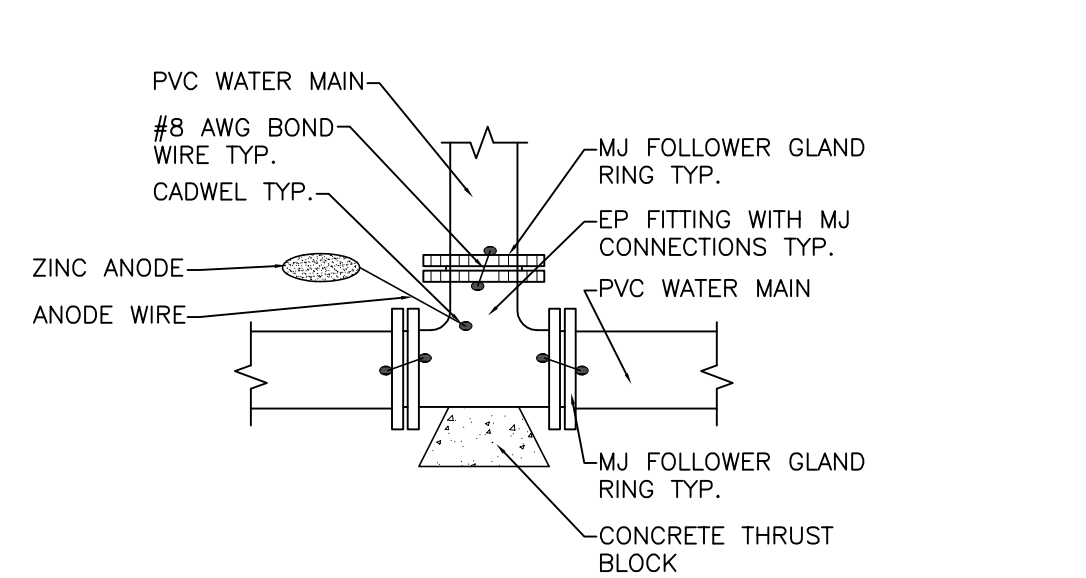
TRENCH BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM PROCTOR AND A MOISTURE CONTENT +/- 2% OPTIMUM.

THRUST BLOCKS SHALL BE INSTALLED AT ALL BENDS, TEES, ENDS, FIRE HYDRANTS. APPROVED MECHANICAL RESTRAINTS MAY BE SUBSTITUTED FOR THRUST BLOCKING.

THE WATER MAIN INSTALLATION SHALL BE DISINFECTED AND PRESSURE/LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARDS. THE HIGHLY CHLORINATED WATER USED FOR DISINFECTION SHALL NOT BE DISCHARGED TO A STREAM, RIVER OR OTHER WATERWAY WHERE DANGER TO AQUATIC LIFE MAY OCCUR. DECHLORINATION MAY BE NECESSARY PRIOR TO DISCHARGE.

WATER MAIN ALIGNMENT SHOWN IS APPROXIMATE, PLACE WATER MAIN TO DISTURB THE LEAST TREES AND VEGETATION, RESTORE ALL ROADWAYS AND SIDEWALKS TO A MINIMUM OF THE TYPICAL SECTIONS SHOWN IN THE ROADWAY SECTION OF THE PLANS.

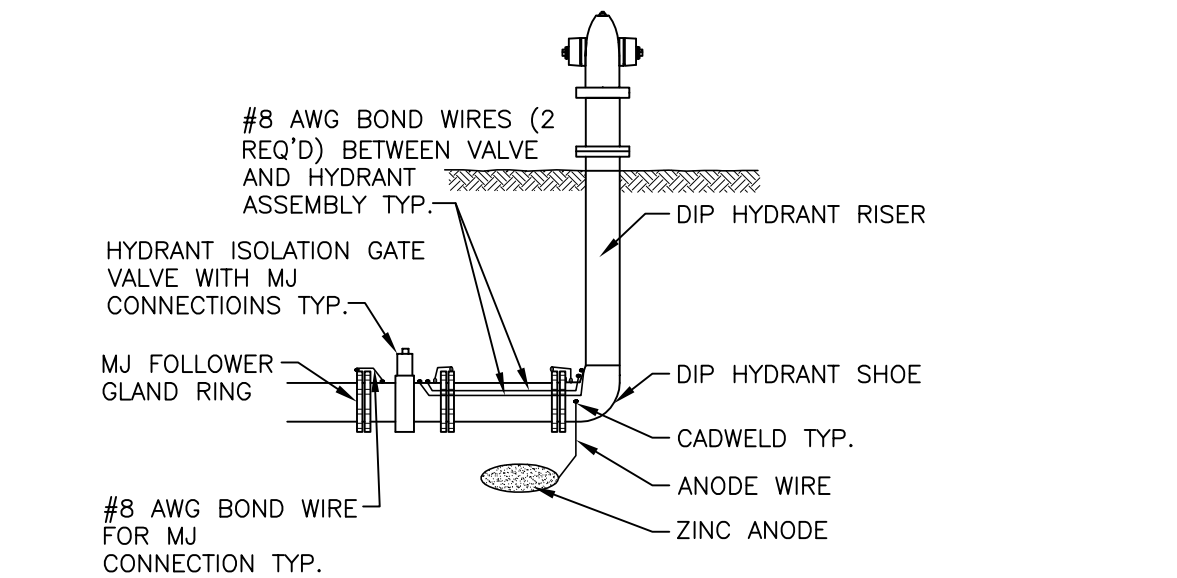
WATER MAINS SHALL BE MARKED WITH TRACE WIRE, AN INDICATING TAPE. A 3/8" REBAR W/ CAP LABELED "WATER MAIN" SHALL BE SET ON LINE AT A DISTANCE OF 3'-0" OFFSET EACH SIDE OF ALL APPURTENANCES. 2'X2'X4" REIN (4-#4's) CONC SLAB AT ALL ABOVE GROUND APPURTENANCES, INSCRIBE CONCRETE WITH SIZE, TYPE AND DIRECTION OF WATER LINES. LEAVE VALVE BOXES 1/2" ABOVE SURFACE.



1 SINGLE DIP FITTING WITH ANODE
A4.5 N.T.S.

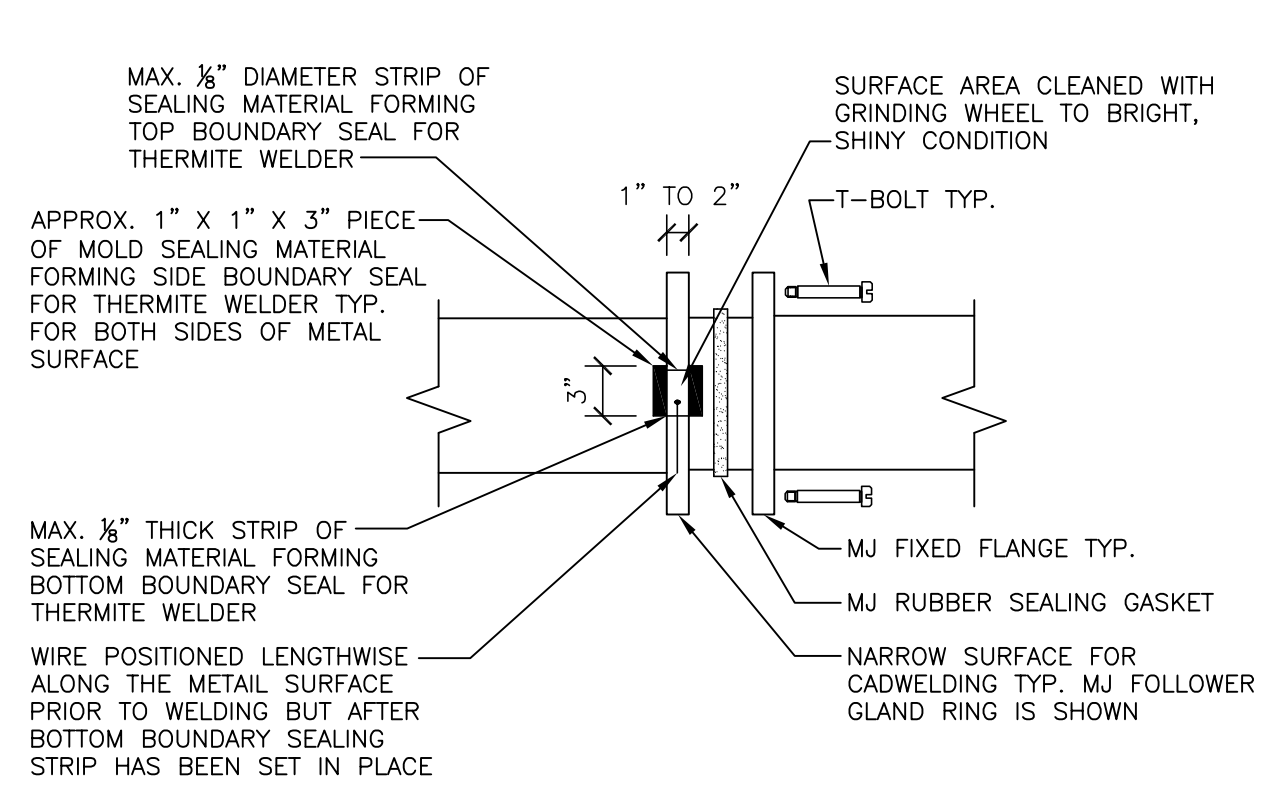
- NOTES:**
1. A MINIMUM OF SIX INCHES OF SLACK SHALL BE PROVIDED AT EACH END OF THE ANODE WIRE.
 2. ONE PACKAGED ZINC ANODE SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY A MINIMUM OF THREE FEET OFFSET FROM THE PIPE FITTING AT A DEPTH EQUAL TO PIPE SPRINGLINE OR BELOW.
 3. ANODE SHALL BE PLACED IN NATIVE SOILS NOT IN ANY IMPORTED BACKFILL MATERIAL SUCH AS SQUEEGEE, SAND OR GRAVEL.
 4. ANODE WIRE=#12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 5. BOND WIRES FOR THE MJ FOLLOWER GLAND RINGS (NOT SHOWN) SHALL BE INSTALLED AND THEIR CONNECTIONS COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 6. THE ANODE AND ITS WIRE MUST NOT BE COVERED WITH ANY CONCRETE THAT MAY BE PLACED BENEATH OR ADJACENT TO THE FITTING.
 7. THIS DETAIL IS APPLICABLE FOR ALL SINGLE BURIED DIP FITTINGS (BENDS, TEES, COUPLINGS, ETC.)
 8. THE MJ T-BOLTS ARE NOT SHOWN.

- NOTES:**
1. A HYDRANT ASSEMBLY IS DEFINED AS THE METALLIC RISER PIPE WITH SHOE COMBINED WITH AN ADJACENT AUXILIARY ISOLATION VALVE.
 2. A HYDRANT LEAD IS DEFINED AS THE METALLIC TEE OR ELL FITTING ON THE WATER MAINLINE FROM WHICH THE HYDRANT LINE IS RUN.



2 HYDRANT ASSEMBLY WITH ANODE
A4.5 N.T.S.

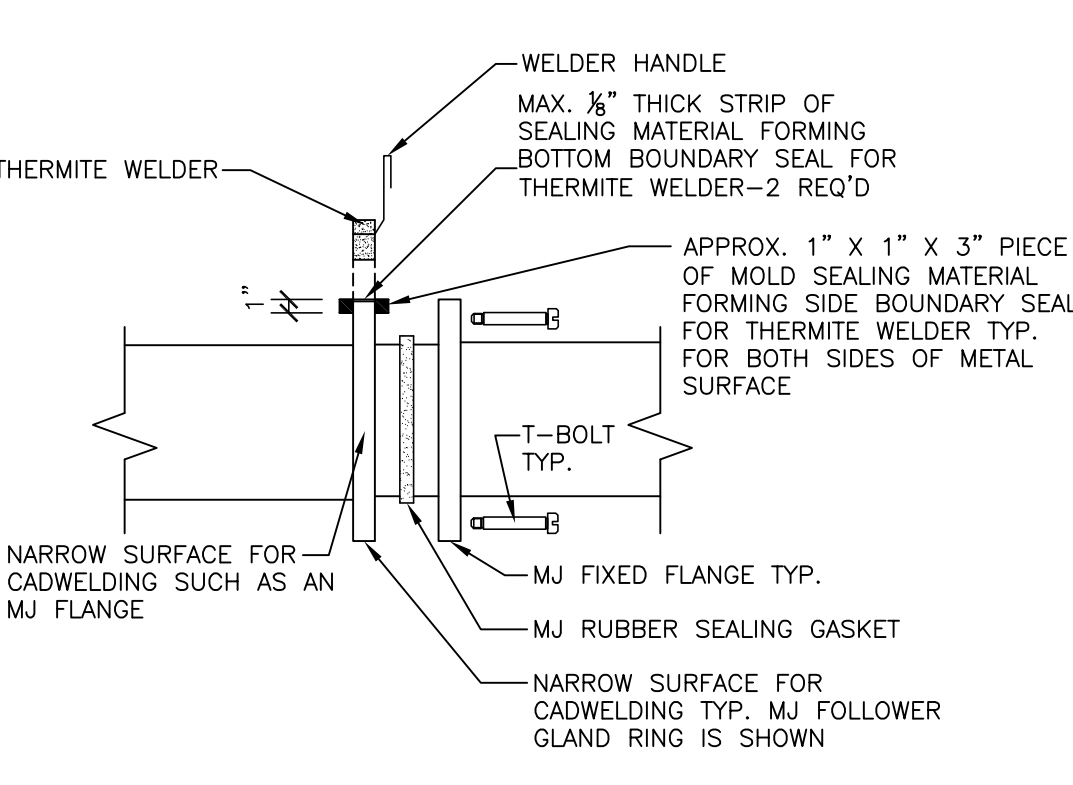
- NOTES:**
1. A MINIMUM OF SIX INCHES OF SLACK SHALL BE PROVIDED AT EACH END OF THE ANODE WIRE.
 2. ONE PACKAGED ZINC ANODE SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY A MINIMUM OF THREE FEET OFFSET FROM THE PIPE FITTING AT A DEPTH EQUAL TO PIPE SPRINGLINE OR BELOW.
 3. ANODE SHALL BE PLACED IN NATIVE SOILS NOT IN ANY IMPORTED BACKFILL MATERIAL SUCH AS SQUEEGEE, SAND OR GRAVEL.
 4. ANODE WIRE=#12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 5. BOND WIRES SHALL BE INSTALLED AS SHOWN TO THE TOP CENTERLINE OF THE FITTINGS AND THEIR CADWELD CONNECTIONS COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 6. THE ANODE AND ITS WIRE MUST NOT BE COVERED WITH ANY CONCRETE (NOT SHOWN) THAT HAS BEEN PLACED BENEATH THE HYDRANT SHOE FOR HYDRANT SUPPORT.
 7. VALVE BOX BONNET AND RISER SHALL BE ENCASED IN A DOUBLE WRAP OF 8 MIL THICK POLYETHYLENE. VALVE BOX BONNET AND RISER MUST NOT PHYSICALLY CONTACT THE VALVE BOX OR OPERATOR. ONLY THE NON-METALLIC VALVE BOX ADAPTOR MAY TOUCH ANY PORTION OF THE VALVE ITSELF.



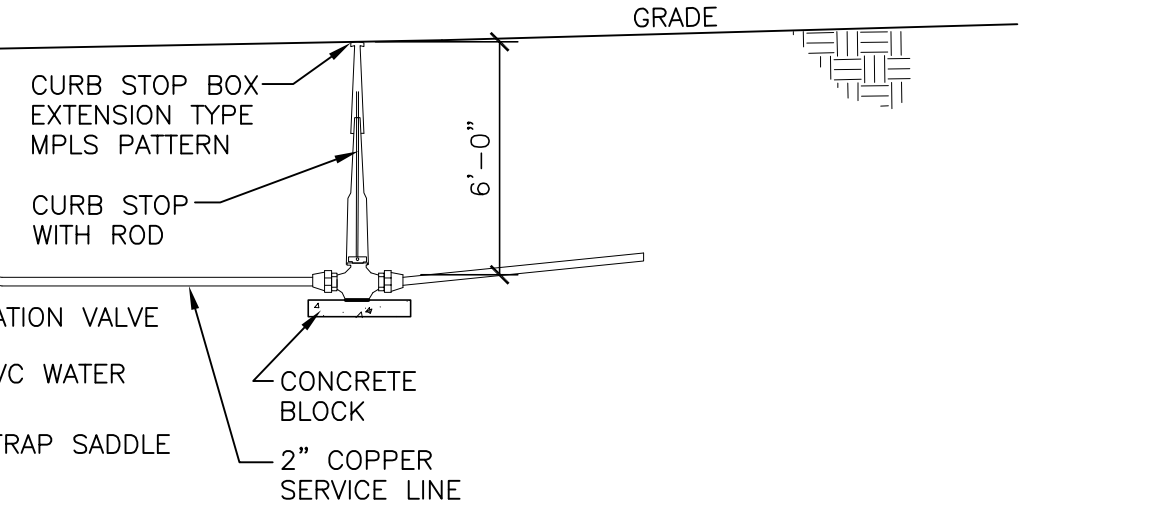
3 THERMITE WELD TO NARROW METAL SURFACE
A4.5 N.T.S.

4 ANODE SCHEDULE
A4.5 N.T.S.

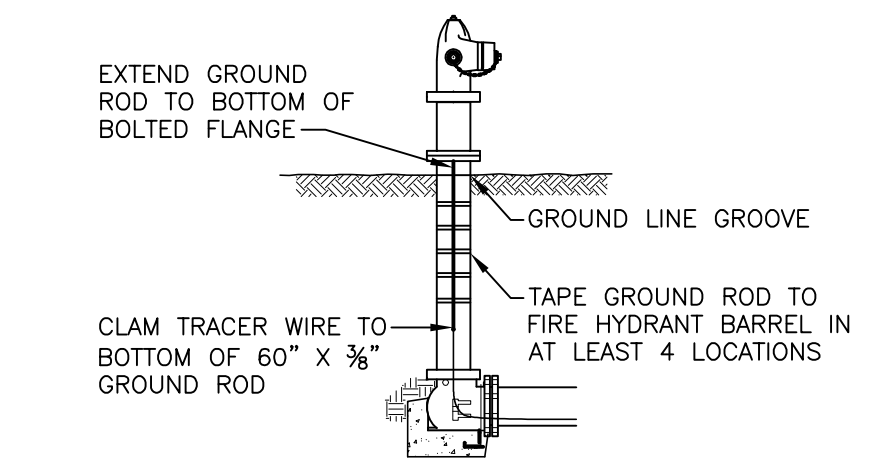
ANODE LOCATION	# OF ANODES REQ'D	ZINC ANODE SIZE		
		BASE WEIGHT	APPROX. PACKAGED WEIGHT	DIMENSIONS
SINGLE DIP FITTING (ELL, TEE, TAPPING VALVE, POST INDICATOR VALVE, COUPLING ETC.)	1	18 LB.	70 LB.	1.4" X 1.4" X 36"
TWO DIP FITTINGS (BONDED TOGETHER)	1	30 LB.	95 LB.	1.4" X 1.4" X 60"
HYDRANT ASSEMBLY	1	45 LB.	110 LB.	2.0" X 2.0" X 45"



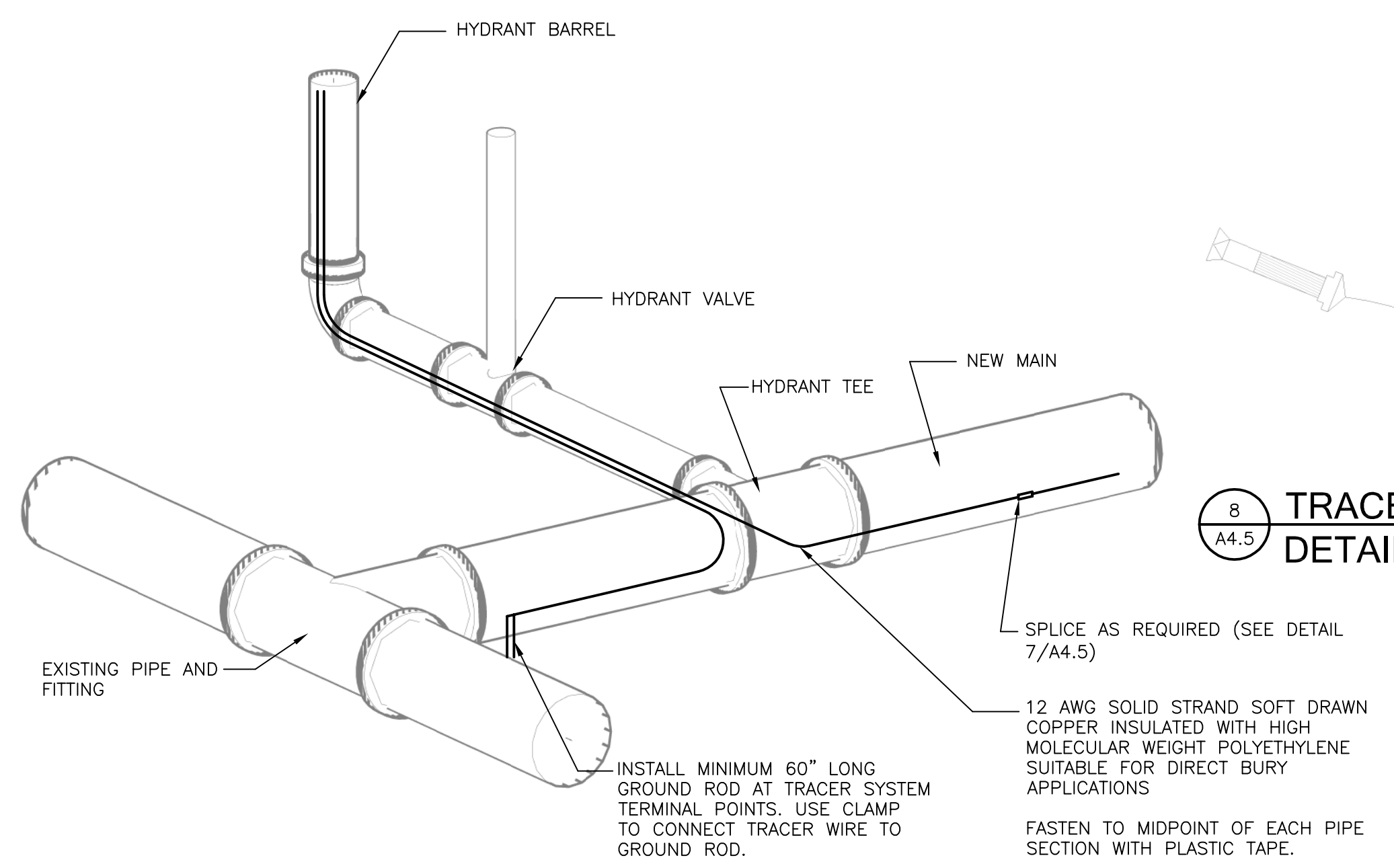
- NOTES:**
1. THE NARROW METAL SURFACE REQUIRES THE USE OF SEALING MATERIAL TO PREVENT MOLTEN WELD METAL FROM LEAKING DOWN THE SIDE OF THE METAL RING AND DAMAGING THE RUBBER GASKET OF AN MJ FITTING OR THE PIPE ITSELF IF PVC IS BEING INSTALLED. REFER TO THE PROJECT TECHNICAL SPECIFICATIONS FOR A DETAILED DESCRIPTION OF THE USE OF MOLD SEALING MATERIAL FOR COMPLETING EXOTHERMIC (THERMITE) WELDS.
 2. THE TOP AND BOTTOM BOUNDARY SEALING STRIPS LAID ACROSS THE METAL SURFACE MUST BE A MAXIMUM OF ONLY 1/8" DIAMETER IN THICKNESS. THESE STRIPS MUST BE POSITIONED PRIOR TO PLACING THE WELDER ONTO THE METAL SURFACE AS THE WELDER MUST BE FIRMLY PUSHED DOWN INTO THE STRIPS TO FORM A TIGHT SEAL.
 3. THE TWO 1" X 1" X 3" SIDE SEALS OF SEALING MATERIAL MUST BE POSITIONED AFTER THE WELDER IS PLACED ONTO THE METAL SURFACE. THIS MATERIAL MUST BE PACKED TIGHTLY IN POSITION BENEATH THE WELDER TO PREVENT LEAKAGE.
 4. TO SIMPLIFY THE INSTALLATION ON MJ FITTINGS, IT IS RECOMMENDED THAT THE WIRE BE CADWELDED TO THE MJ FOLLOWER GLAND RING PRIOR TO BOLTING THE GLAND RING TO THE MJ FLANGE. CADWELD THE OTHER END OF THE BOND WIRE TO THE BODY OF THE DIP FITTING AFTER THE MJ CONNECTION HAS BEEN BOLTED TOGETHER AND TIGHTENED. THIS ATTACHMENT OF THE WIRE PRIOR TO FITTING ASSEMBLY IS NOT NECESSARY FOR JOINT RESTRAINT RINGS.
 5. CLEAN AND COAT CADWELDS AND BOLT HARDWARE AS DETAILED IN THE PROJECT SPECIFICATIONS AFTER THE FITTING HAS BEEN FULLY INSTALLED AND AFTER ALL CADWELDING IS COMPLETE.
 6. THIS DETAIL IS APPLICABLE TO ANY NARROW SURFACE INCLUDING MJ FOLLOWER GLAND RINGS (SHOWN), PIPE FLANGES, AND "MEGALUG" TYPE JOINT RESTRAINT RINGS.



5 WATER SERVICE DETAIL
A4.5 N.T.S.



6 TRACER WIRE DETAIL AT FIRE HYDRANT
A4.5 N.T.S.



7 ANODE SCHEDULE
A4.5 N.T.S.

8 TRACER WIRE SPLICE DETAIL
A4.5 N.T.S.