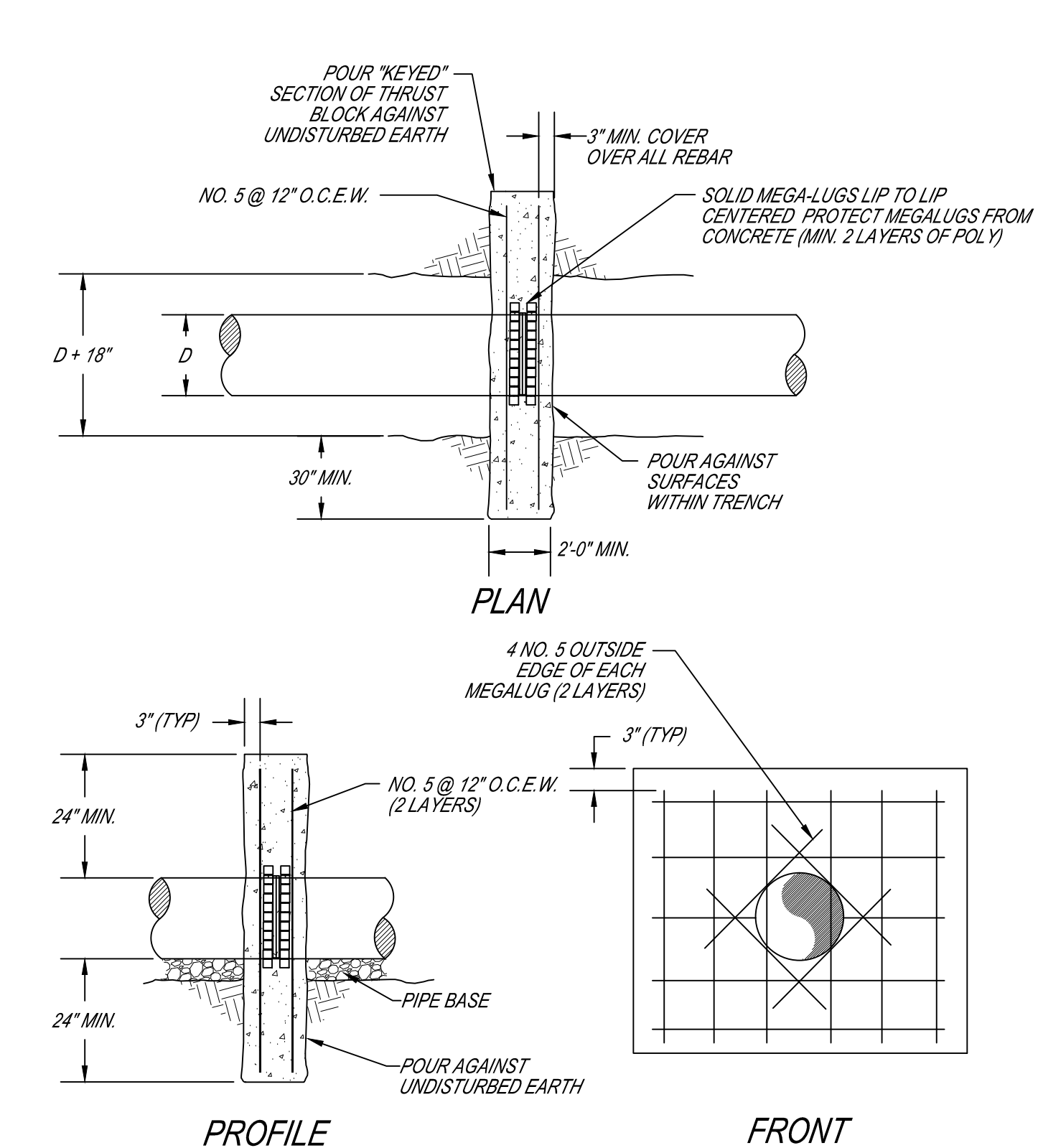
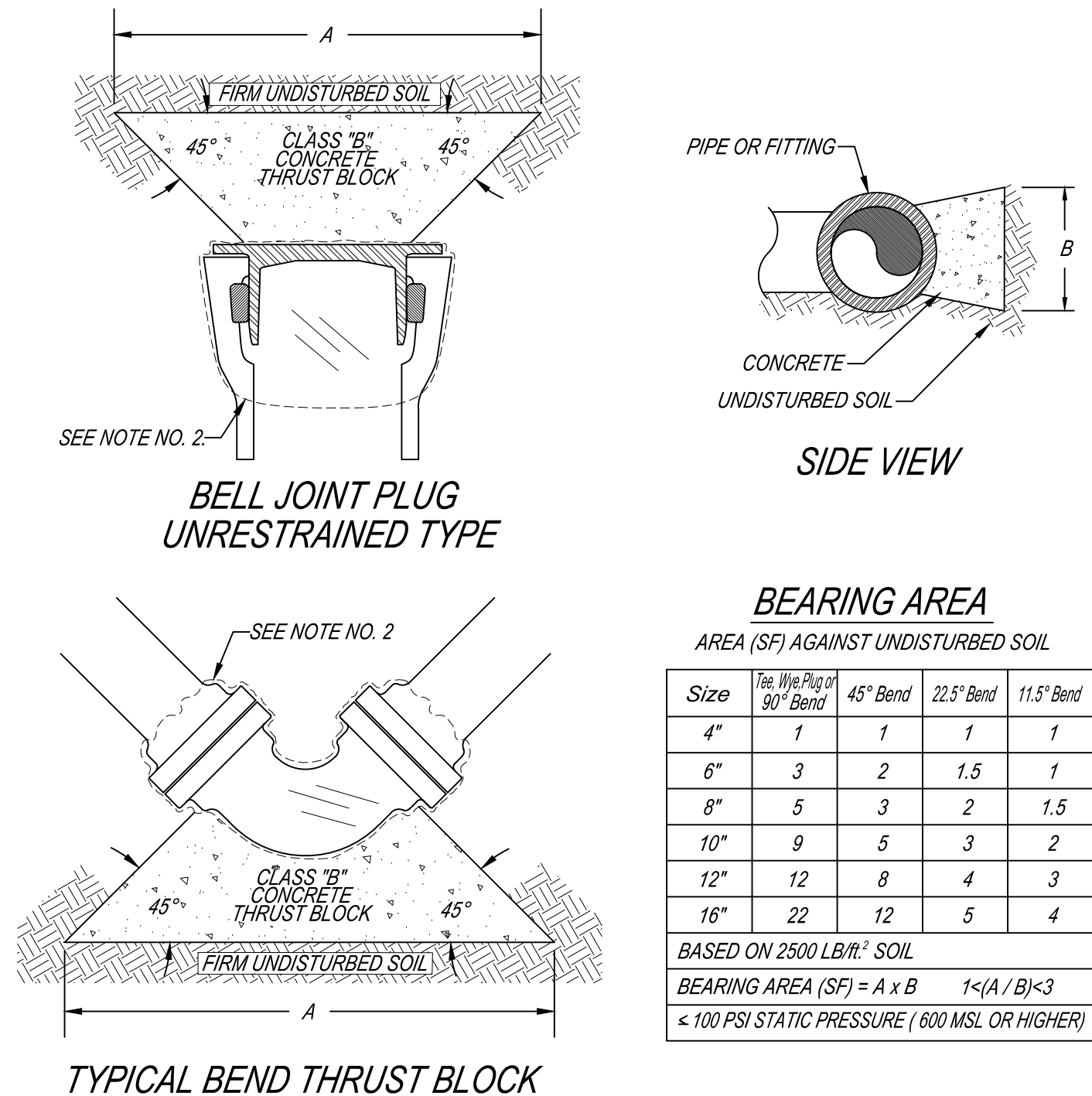


TYPICAL DEADMAN THRUST RESTRAINT



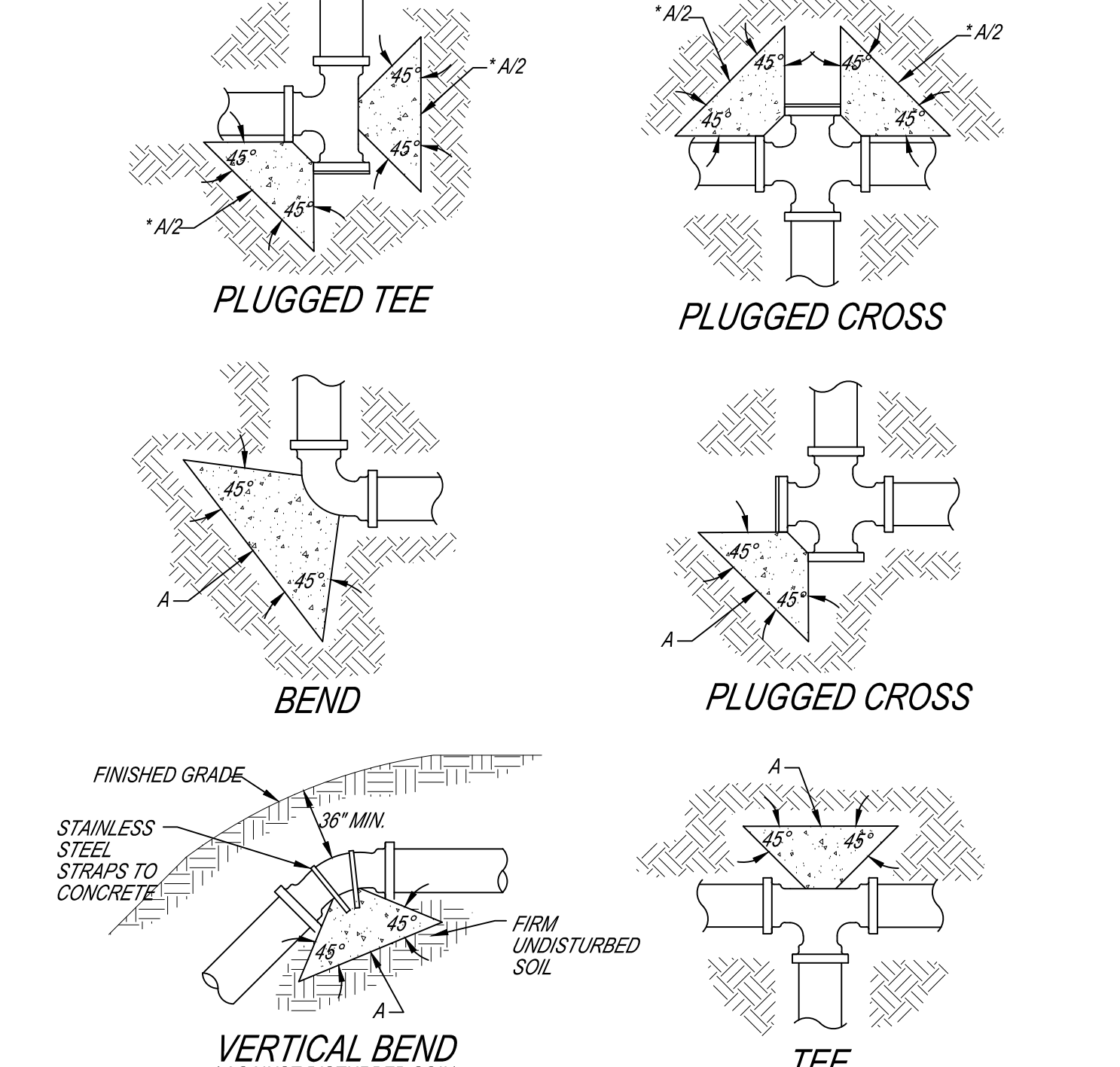
- NOTES:
1. DEADMAN TO BE CENTERED ON FULL JOINT OF PIPE
 2. ALL CONCRETE SHALL BE CLASS "B" (4000 PSI) IN ACCORDANCE WITH THE CITY OF AUBURN STANDARD SPECIFICATIONS
 3. NO CALCIUM CHLORIDE CURING ACCELERATOR ALLOWED
 4. APPLICABLE FOR UP TO AND INCLUDING 12" DIAMETER PIPE. MAY BE USED FOR PIPES ABOVE 12" DIAMETER ON A CASE BY CASE BASIS.
 5. TO BE USED ON EXISTING DUCTILE IRON OR CAST IRON PIPE IN GOOD CONDITION.

TYPICAL CONCRETE THRUST BLOCK DESIGN



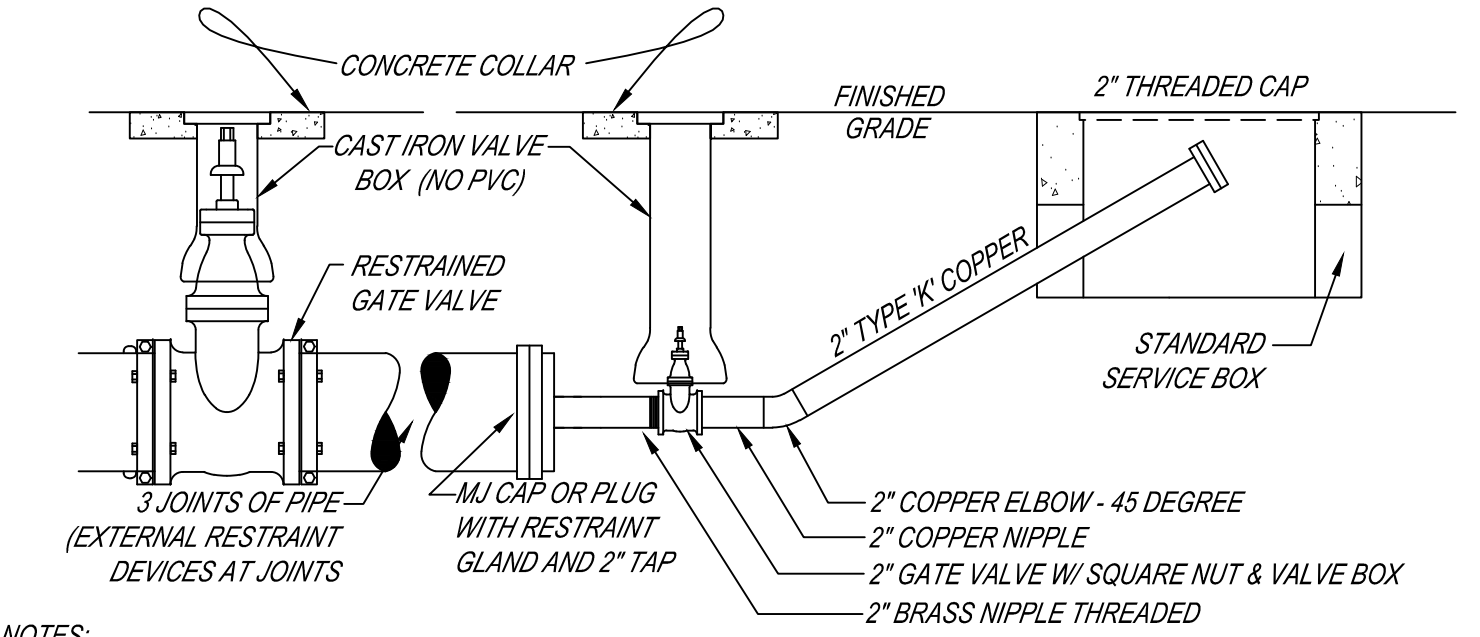
- NOTES:
1. 45 DEGREE ANGLES REQUIRED FOR ALL THRUST BLOCKS.
 2. NON STANDARD THRUST BLOCKING WILL REQUIRE SPECIAL DETAILING PROVIDED BY A LICENSED ENGINEER AND APPROVED BY THE CITY OF AUBURN.
 3. ALL MECHANICAL JOINT FITTINGS THAT REQUIRE THRUST BLOCKS SHALL BE WRAPPED IN PLASTIC. CONCRETE SHALL NOT BE POURED OVER JOINTS.
 4. CLASS "B" CONCRETE SHALL BE AS DEFINED IN THE CITY OF AUBURN STANDARD SPECIFICATIONS SECTION II.
 5. THE PREFERRED METHOD OF THRUST RESTRAINT SHALL BE THROUGH THE USE OF EXTERNALLY RESTRAINED JOINT DEVICES SUCH AS MEGA-LUGS IN LIEU OF CONCRETE BLOCKING. CONCRETE BLOCKING SHALL ONLY BE PERMITTED WHERE APPROVED BY THE AWWB AND SHALL NOT BE USED IN CONJUNCTION WITH MEGA-LUG RESTRAINTS. THE APPROPRIATE LENGTH OF RESTRAINT SHALL BE CALCULATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

TYPICAL CONCRETE THRUST BLOCK LAYOUT



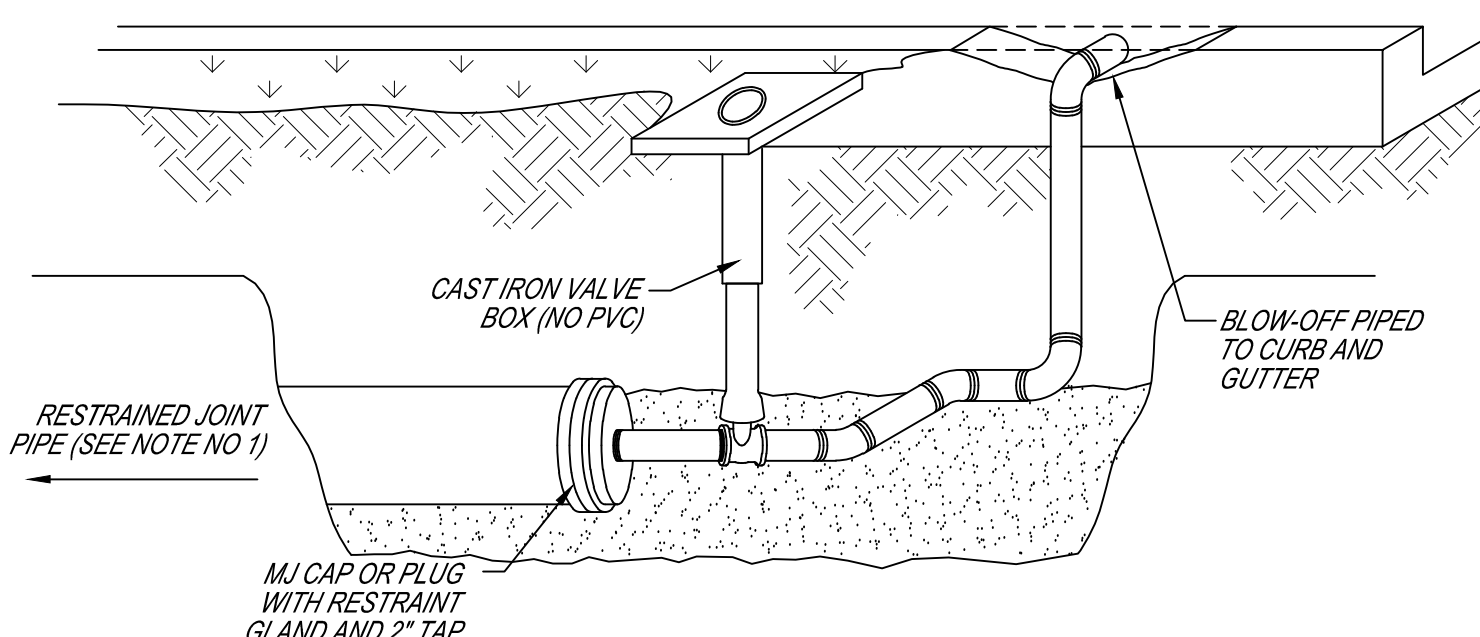
- NOTES:
1. 45 DEGREE ANGLES REQUIRED FOR ALL THRUST BLOCKS.
 2. NON STANDARD THRUST BLOCKING WILL REQUIRE SPECIAL DETAILING PROVIDED BY A LICENSED ENGINEER AND APPROVED BY THE CITY OF AUBURN.
 3. ALL MECHANICAL JOINT FITTINGS THAT REQUIRE THRUST BLOCKS SHALL BE WRAPPED IN PLASTIC. CONCRETE SHALL NOT BE POURED OVER JOINTS.
 4. CLASS "B" CONCRETE SHALL BE AS DEFINED IN THE CITY OF AUBURN STANDARD SPECIFICATIONS SECTION II.
 5. THE PREFERRED METHOD OF THRUST RESTRAINT SHALL BE THROUGH THE USE OF EXTERNALLY RESTRAINED JOINT DEVICES SUCH AS MEGA-LUGS IN LIEU OF CONCRETE BLOCKING. CONCRETE BLOCKING SHALL ONLY BE PERMITTED WHERE APPROVED BY THE AWWB AND SHALL NOT BE USED IN CONJUNCTION WITH MEGA-LUG RESTRAINTS. THE APPROPRIATE LENGTH OF RESTRAINT SHALL BE CALCULATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

TYPICAL END OF MAIN FOR FUTURE EXTENSION



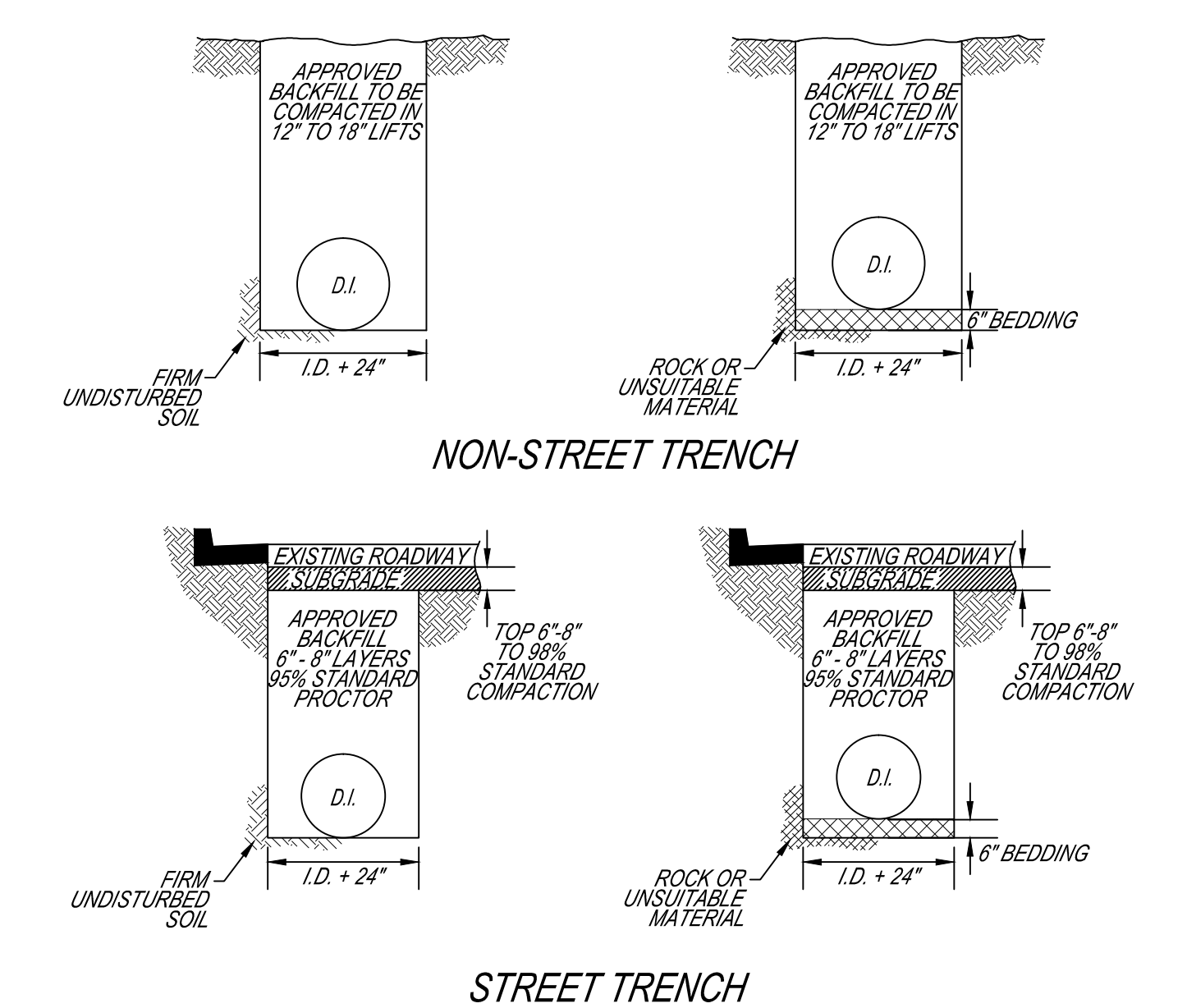
- NOTES:
1. THE PREFERRED METHOD OF THRUST RESTRAINT SHALL BE THROUGH THE USE OF EXTERNALLY RESTRAINED JOINT DEVICES SUCH AS MEGA-LUGS IN LIEU OF CONCRETE BLOCKING. CONCRETE BLOCKING SHALL ONLY BE PERMITTED WHERE APPROVED BY THE AWWB AND SHALL NOT BE USED IN CONJUNCTION WITH MEGA-LUG RESTRAINTS. THE APPROPRIATE LENGTH OF RESTRAINT SHALL BE CALCULATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
 2. BLOW OFF SHALL BE PIPED TO CURB AND GUTTER IN ACCORDANCE WITH STANDARD DETAIL NO. 208, WHERE POSSIBLE.

TYPICAL END OF MAIN IN CUL DE SAC



- NOTES:
1. THE PREFERRED METHOD OF THRUST RESTRAINT SHALL BE THROUGH THE USE OF EXTERNALLY RESTRAINED JOINT DEVICES SUCH AS MEGA-LUGS IN LIEU OF CONCRETE BLOCKING. CONCRETE BLOCKING SHALL ONLY BE PERMITTED WHERE APPROVED BY THE AWWB AND SHALL NOT BE USED IN CONJUNCTION WITH MEGA-LUG RESTRAINTS. THE APPROPRIATE LENGTH OF RESTRAINT SHALL BE CALCULATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

BEDDING REQUIREMENTS FOR TRENCHES

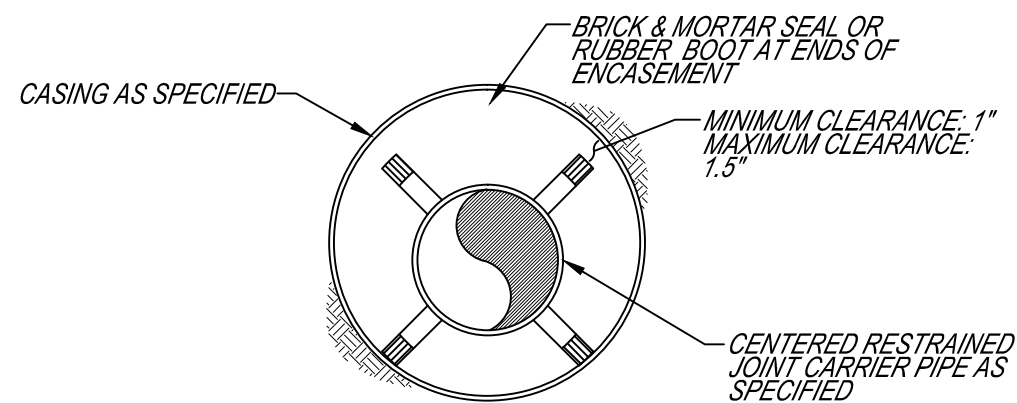


- NOTES:
1. BEDDING MATERIALS SHALL BE 1/4" TO 1 1/2" GRADED CRUSHED STONE SUCH AS: 56,57,6,67,68,7, OR 78, STONE PER ALDOT STANDARD SPECS
 2. WIDTH VARIES BASED ON WALL STABILITY. STABLE WALLS WIDTH AS NEEDED TO JOIN PIPES AND COMPACT HAUNCHING AND INITIAL BACKFILL. UNSTABLE WALLS: WIDTH TO BE A MINIMUM OF FIVE TIMES PIPE DIAMETER.
 3. FLOWABLE FILL CAN BE USED AS BACKFILL, BUT MUST HAVE PRIOR APPROVAL AND MUST BE ALLOWED TO SET FOR 24 HOURS PRIOR TO TOPPING.
 4. APPROVED BACKFILL MATERIAL INCLUDES 825 B, FLOWABLE FILL AND APPROVED DIRT. ALTERNATIVE MATERIAL MUST BE APPROVED BY PROJECT MANAGER PRIOR TO USE.

TYPICAL BORE ENCASEMENT

CARRIER PIPE NOMINAL PIPE DIAMETER	SPACER		STEEL ENCASEMENT	
	STANDARD PIPE BELL O.D.*	CASING SPACER BAND WIDTH	MINIMUM CASING THICKNESS	MINIMUM CASING DIAMETER**
4	6.40	8	0.25	14
6	8.60	8	0.25	16
8	11.16	8	0.25	18
10	13.25	8	0.25	20
12	15.22	8	0.25	22
14	17.73	12	0.25	24
16	19.86	12	0.3125	26
18	22.16	12	0.3125	30
20	24.28	12	0.3125	32
24	28.50	12	0.3125	36
30	34.95	12	0.5	42
36	41.37	12	0.5	48

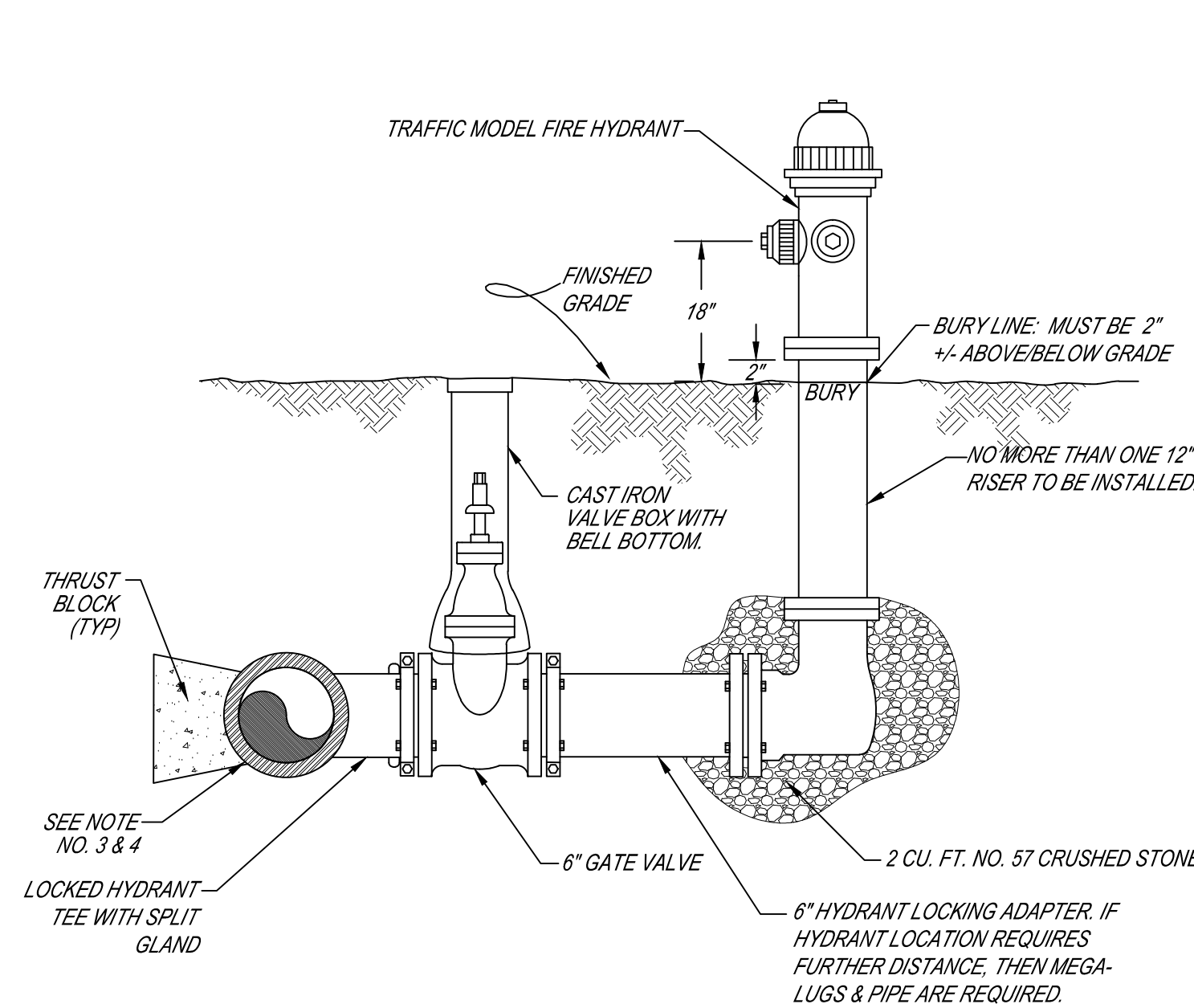
ALL SIZES INDICATED ARE IN INCHES
*PIPE BELL OUTSIDE DIAMETER BASED ON PRESSURE CLASS 350 DUCTILE IRON PIPE.
**CASING DIAMETERS BASED ON BEING A MINIMUM OF 6 INCHES GREATER THAN THE OUTER DIAMETER OF THE JOINT BELL, TO THE NEAREST EVEN SIZE.



CASING SECTION

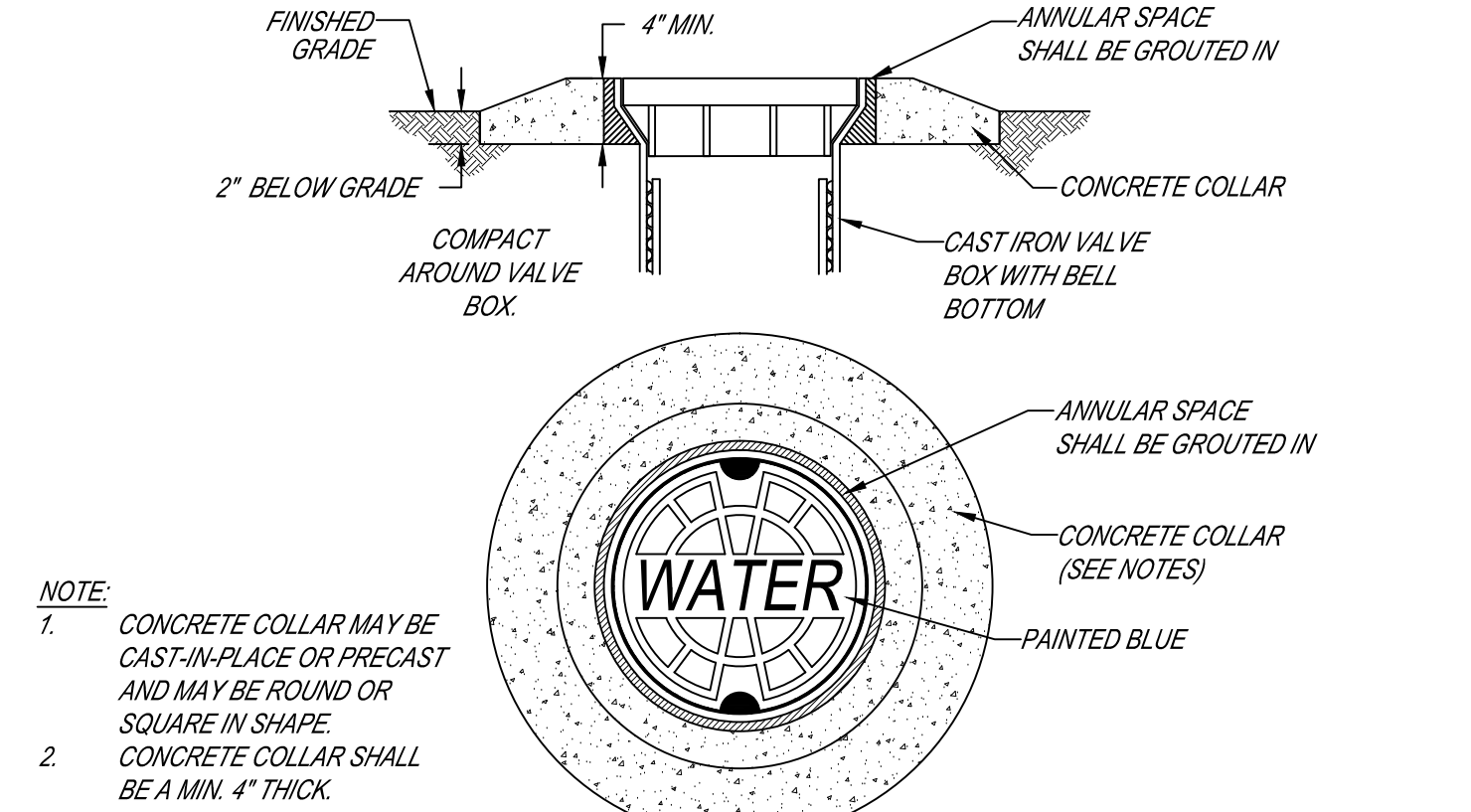
- NOTES:
1. ALL SPACER BANDS SHALL BE MADE FROM T-304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS.
 2. ALL SPACERS SHALL HAVE A SYNTHETIC RUBBER OR PVC LINER TO INSULATE THE PIPELINE FROM THE SPACER.
 3. ALL SPACERS SHALL HAVE 1.5" WIDE GLASS REINFORCED PLASTIC OR UHMW POLYMER RUNNERS TO INSULATE THE SPACER.
 4. SPACERS TO BE MANUFACTURED BY CASCADE WATERWORKS MFG. CO. (PSI) PIPELINE SEAL AND INSULATOR, INC. OR EQUAL.
 5. 6" THRU 12" DIAMETER PIPELINE SHALL USE 8" WIDE BANDS. GREATER THAN 12" DIAMETER PIPELINES SHALL USE 12" WIDE BANDS.
 6. CENTERED RESTRAINED CASING SPACERS SHALL BE SPACED AT A MAXIMUM OF TEN FEET APART WITH A MINIMUM OF TWO SPACERS PER JOINT OF PIPE.

TYPICAL FIRE HYDRANT INSTALLATION



- NOTES:
1. ALL FIRE HYDRANTS SHALL HAVE NATIONAL STANDARD THREADS, 4 1/2-INCH STEAMER & 2 1/2-INCH HOSE NOZZLE, AND SHALL BE MUELLER CENTURION, OR AMERICAN DARLING B-84-B, OR APPROVED EQUAL. BRONZE TO BRONZE SEATED, EPOXY COATED SHOES. WEATHER CAPS SHALL NOT BE MADE OF RUBBER.
 2. ALL FIRE HYDRANTS SHALL BE LEVELED AND PLUMBED DURING INSTALLATION.
 3. ALL MECHANICAL JOINT FITTINGS THAT REQUIRE THRUST BLOCKS SHALL BE WRAPPED IN PLASTIC. CONCRETE SHALL NOT BE POURED OVER JOINTS.
 4. THE PREFERRED METHOD OF THRUST RESTRAINT SHALL BE THROUGH THE USE OF EXTERNALLY RESTRAINED JOINT DEVICES SUCH AS MEGA-LUGS IN LIEU OF CONCRETE BLOCKING. CONCRETE BLOCKING SHALL ONLY BE PERMITTED WHERE APPROVED BY THE AWWB AND SHALL NOT BE USED IN CONJUNCTION WITH MEGA-LUG RESTRAINTS. THE APPROPRIATE LENGTH OF RESTRAINT SHALL BE CALCULATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
 5. USE MEGA-LUGS BETWEEN HYDRANT AND GATE VALVE.
 6. HYDRANT LOCKING TEE TO BE USED IN LIEU OF STANDARD M.J. TEE ON ALL FIRE HYDRANT CONNECTIONS.

TYPICAL VALVE BOX INSTALLATION

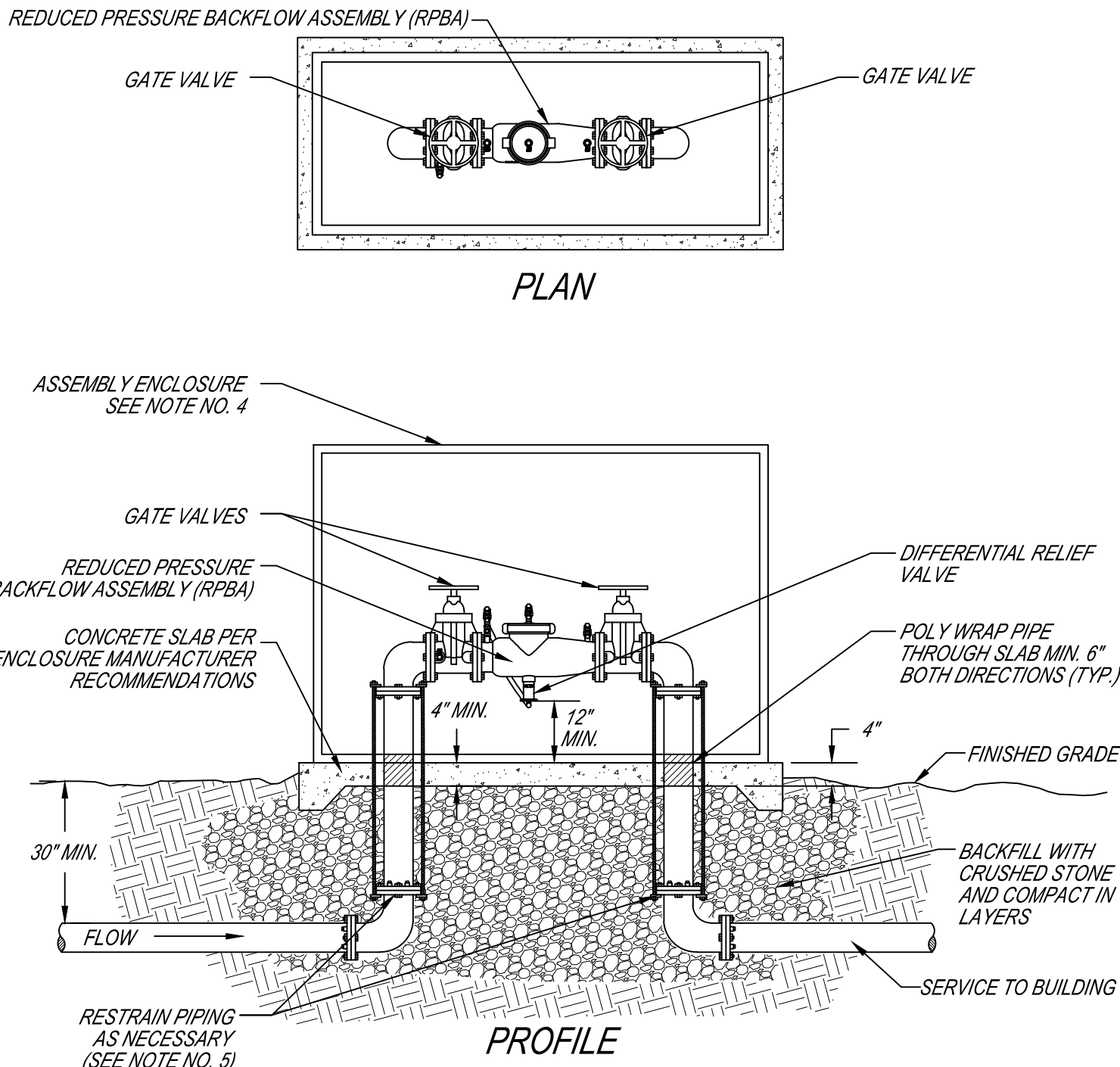


- NOTE:
1. CONCRETE COLLAR MAY BE CAST-IN-PLACE OR PRECAST AND MAY BE ROUND OR SQUARE IN SHAPE.
 2. CONCRETE COLLAR SHALL BE A MIN. 4" THICK.

STANDARD DETAILS: WATER - SHEET 1 OF 3

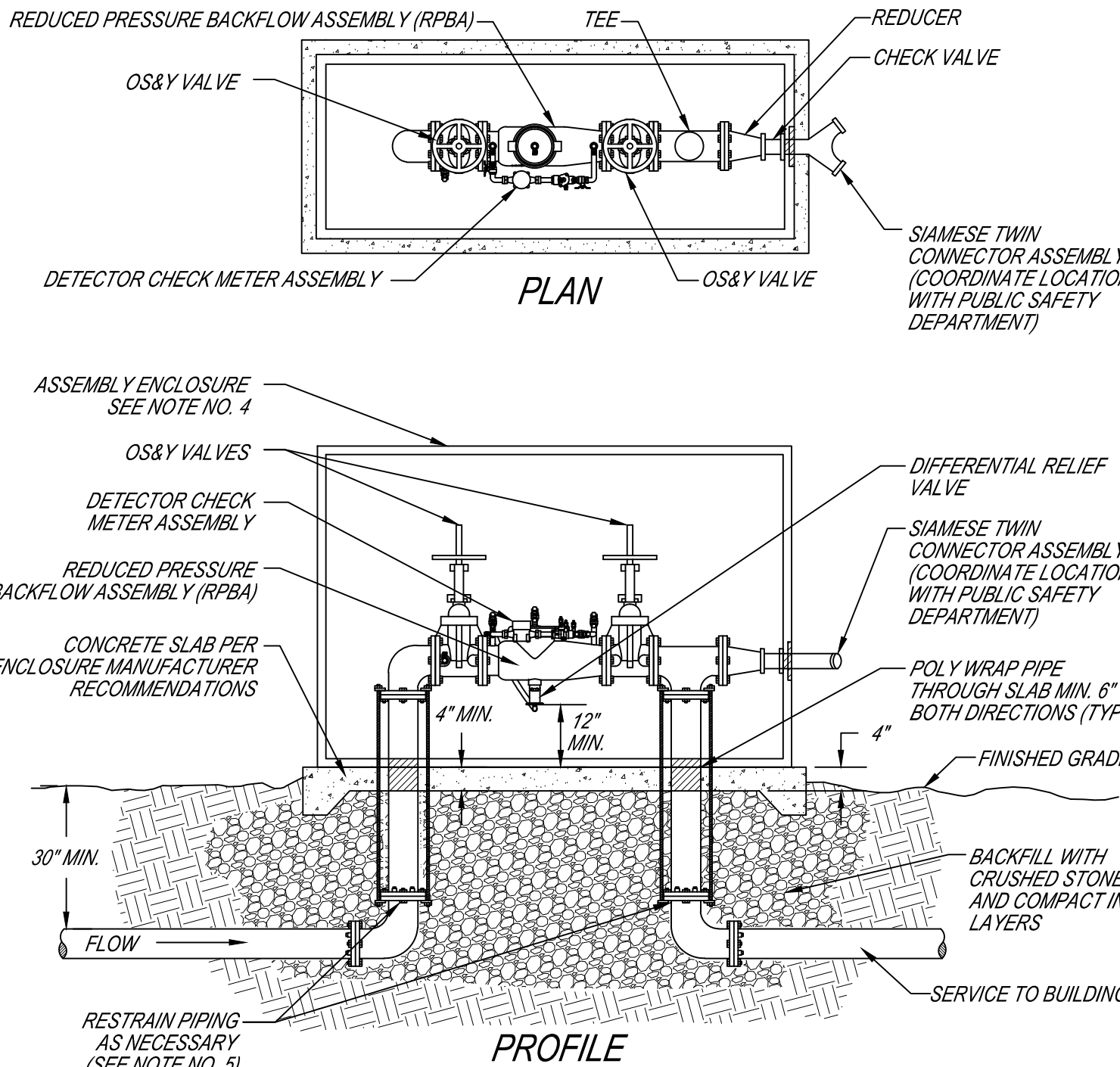
PROJECT TITLE:	DEPARTMENT:	WRM	REVISIONS:	GM-04/2004
SCALE:	N.T.S.			BS-10-25-07
DRAWN BY:	GM			DCM 2010
REVIEWED BY:	JC			JC-10-2011
APPROVED BY:	EC			JC-10-2012
IMPLEMENTED:	JANUARY 2008			

TYPICAL REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)



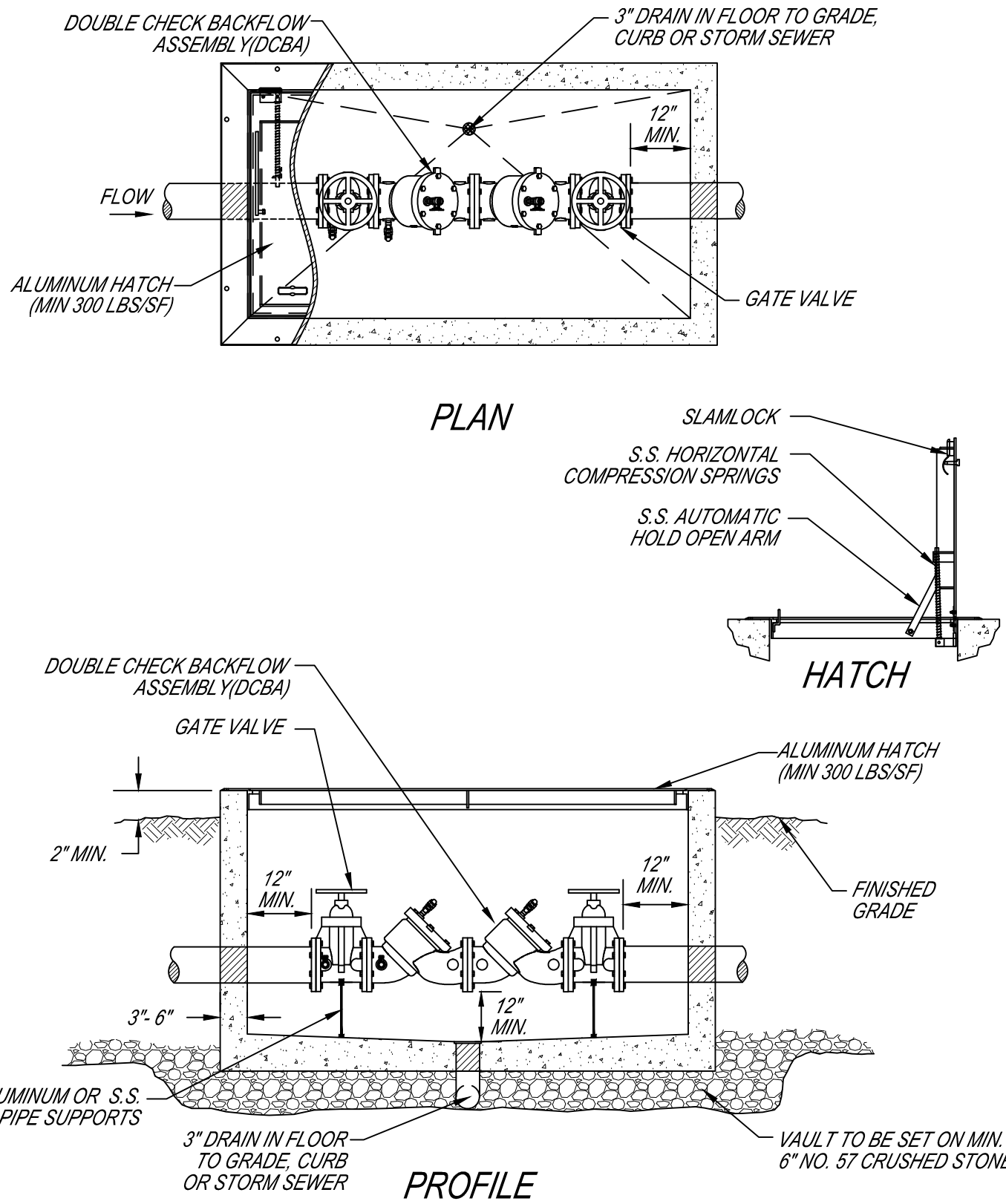
- NOTES:
1. RPBA SHALL BE MANUFACTURED BY AMES, WATTS, OR AN APPROVED EQUAL.
 2. RPBA TO BE INSPECTED BY AWWB PERSONNEL IN ADDITION TO CITY OF AUBURN PROJECT INSPECTIONS.
 3. RPBA'S SHALL NOT BE BURIED OR INSTALLED IN BELOW GROUND VAULTS.
 4. RPBA ENCLOSURES SHALL BE CONCRETE, REINFORCED ALUMINUM, OR FIBERGLASS CONSTRUCTION AND SHALL BE INSULATED AND/OR HEATED SO AS TO ENSURE AGAINST FREEZING. ENCLOSURES APPROVED FOR INSTALLATION INCLUDE: HYDROCOWL, HOT BOX, AND LOK BOX.
 5. RESTRAINT SYSTEM SHALL BE DESIGNED FOR SPECIFIC INSTALLATION CONDITIONS. WHERE STATIC PRESSURES EXCEED 100 PSI, MEGA-LUG RESTRAINTS USED ON VERTICAL BENDS SHALL BE REINFORCED WITH S.S. RODS.

TYPICAL FIRE PROTECTION SYSTEM RPBA



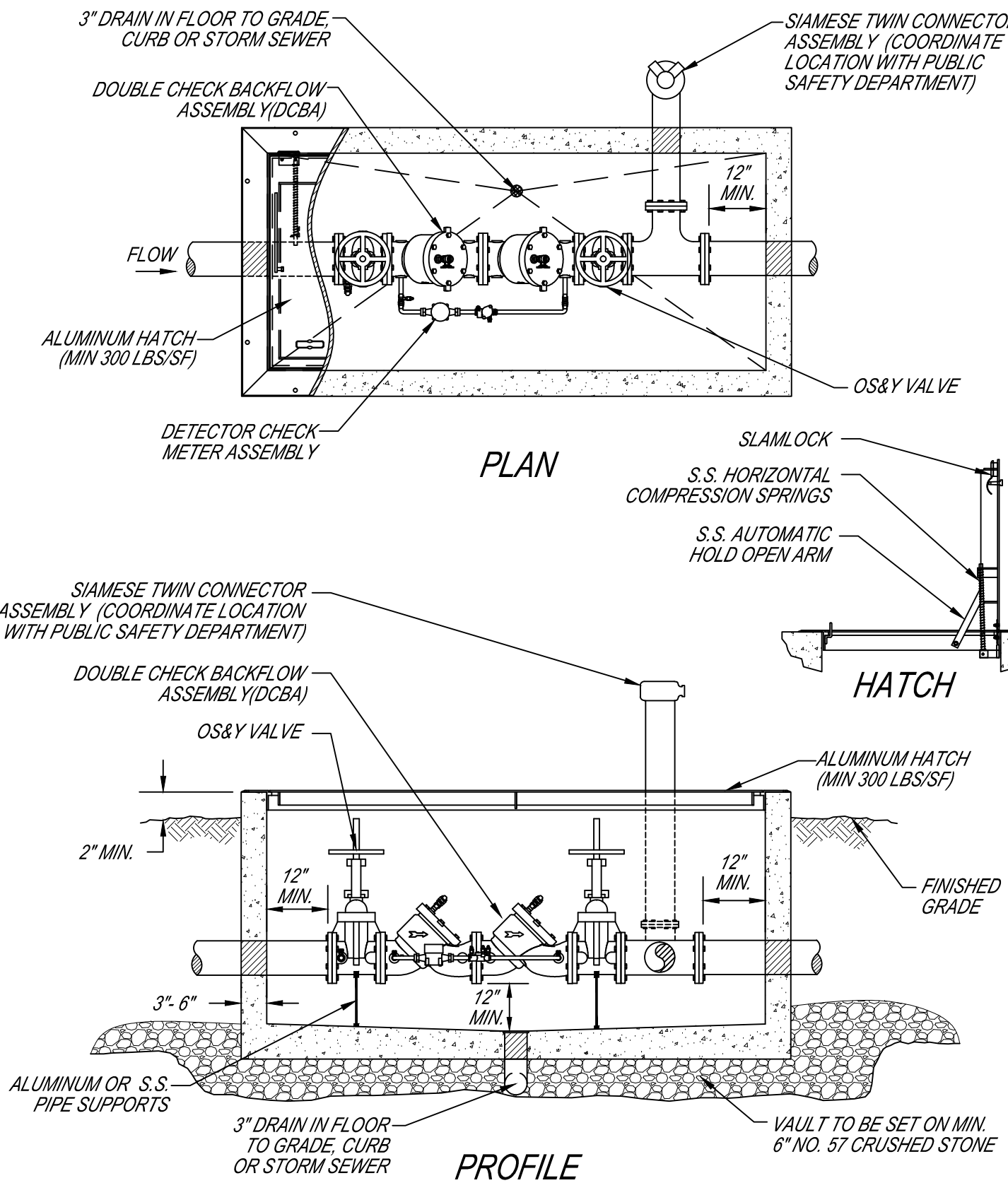
- NOTES:
1. RPBA SHALL BE MANUFACTURED BY AMES, WATTS, OR AN APPROVED EQUAL.
 2. RPBA TO BE INSPECTED BY AWWB PERSONNEL IN ADDITION TO CITY OF AUBURN PROJECT INSPECTIONS.
 3. RPBA'S SHALL NOT BE BURIED OR INSTALLED IN BELOW GROUND VAULTS.
 4. RPBA ENCLOSURES SHALL BE CONCRETE, REINFORCED ALUMINUM, OR FIBERGLASS CONSTRUCTION AND SHALL BE INSULATED AND/OR HEATED TO PROTECT AGAINST FREEZING. ENCLOSURES APPROVED FOR INSTALLATION INCLUDE: HYDROCOWL, HOT BOX, AND LOK BOX.
 5. RESTRAINT SYSTEM SHALL BE DESIGNED FOR SPECIFIC INSTALLATION CONDITIONS. WHERE STATIC PRESSURES EXCEED 100 PSI, MEGA-LUG RESTRAINTS USED ON VERTICAL BENDS SHALL BE REINFORCED WITH S.S. RODS.

TYPICAL DOUBLE CHECK BACKFLOW ASSEMBLY (DCBA)



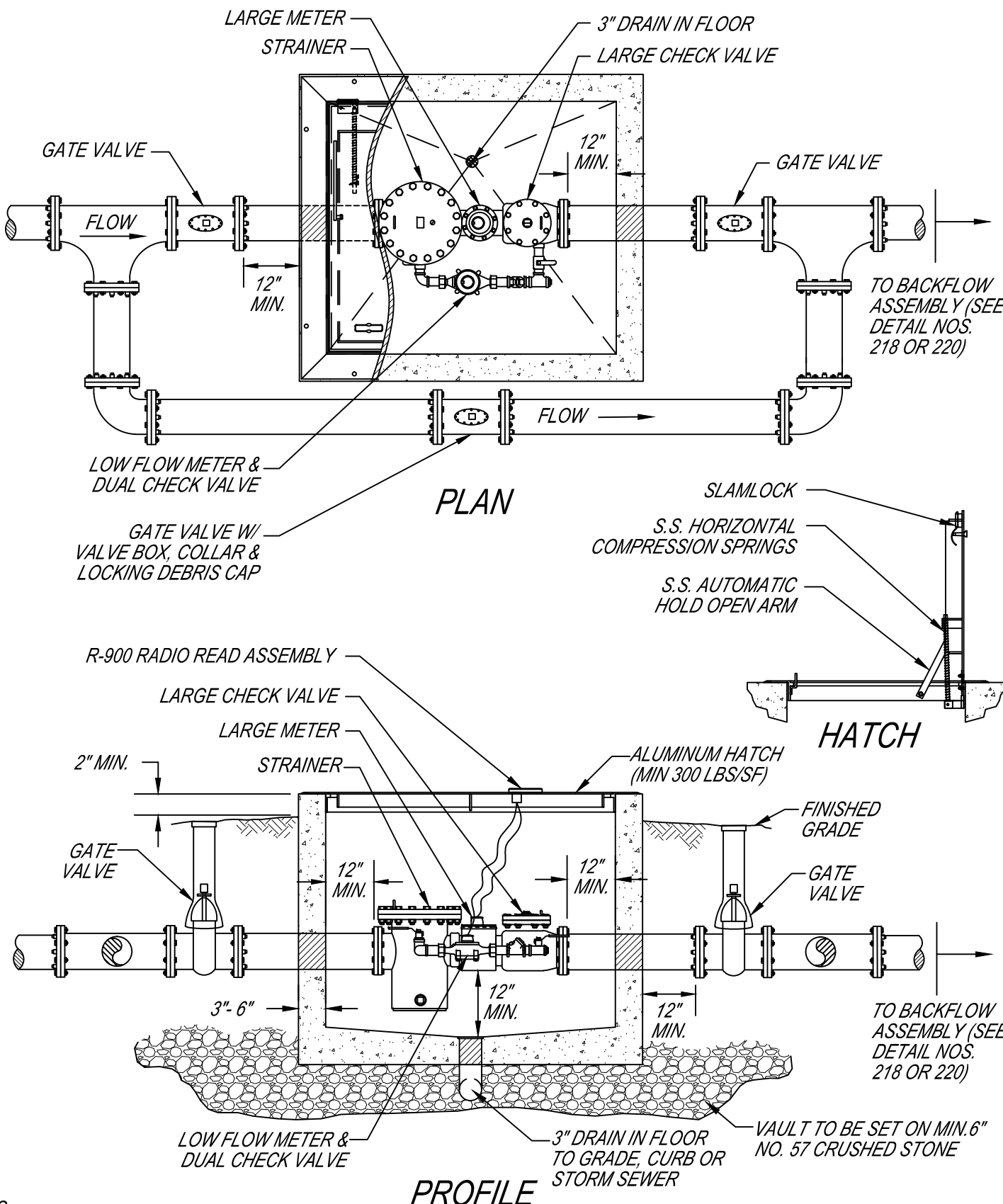
- NOTES:
1. DOUBLE CHECK BACKFLOW ASSEMBLY SHALL BE MANUFACTURED BY AMES, WATTS, OR AN APPROVED EQUAL.
 2. VAULTS SHALL BE INSPECTED BY AWWB PERSONNEL IN ADDITION TO CITY OF AUBURN PROJECT INSPECTIONS.

TYPICAL FIRE PROTECTION SYSTEM DCBA



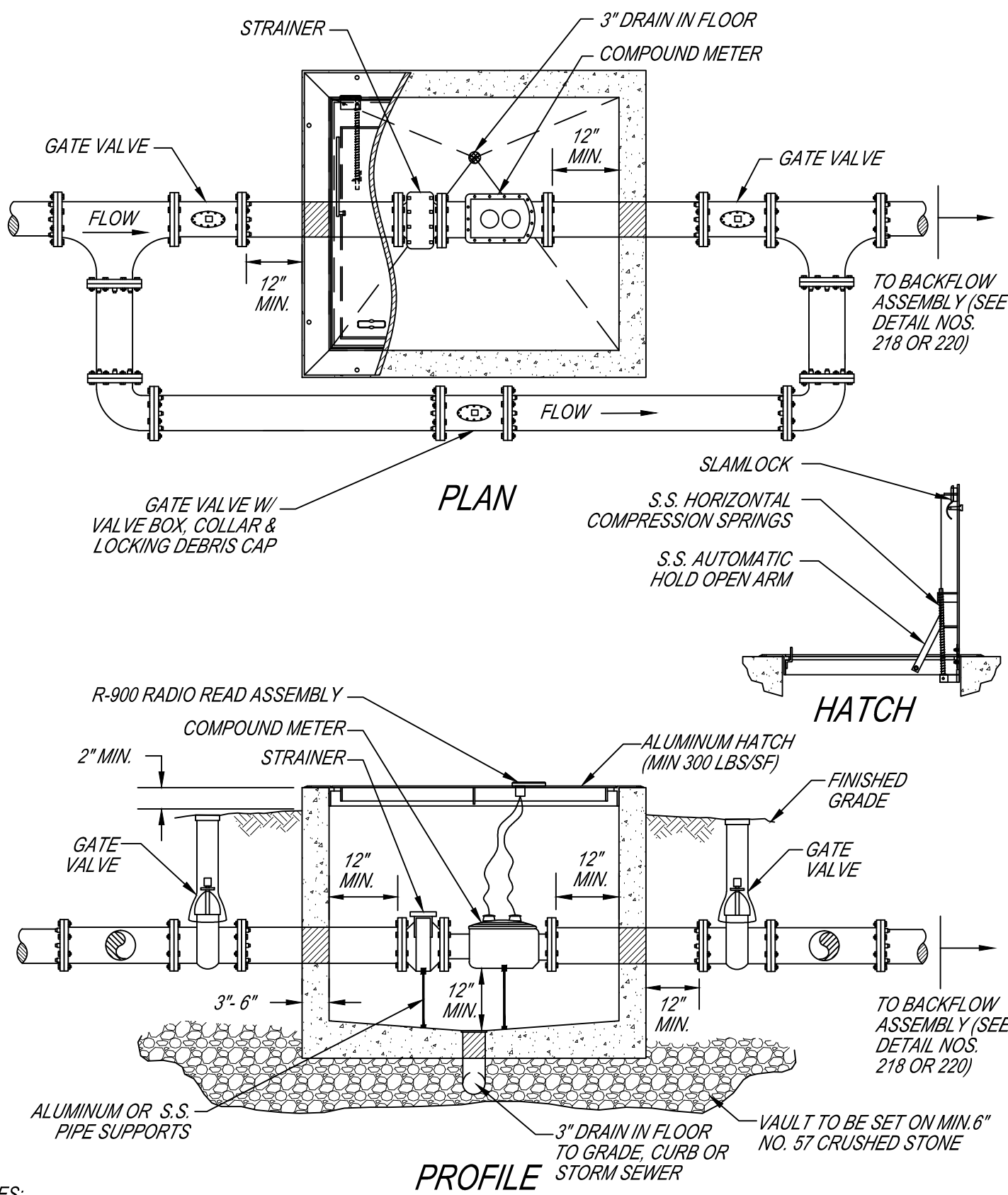
- NOTES:
1. DOUBLE CHECK BACKFLOW ASSEMBLY SHALL BE MANUFACTURED BY AMES, WATTS, OR AN APPROVED EQUAL.
 2. VAULTS SHALL BE INSPECTED BY AWWB PERSONNEL IN ADDITION TO CITY OF AUBURN PROJECT INSPECTIONS.

TYPICAL FIRE / DOMESTIC METER VAULT (4\"/>



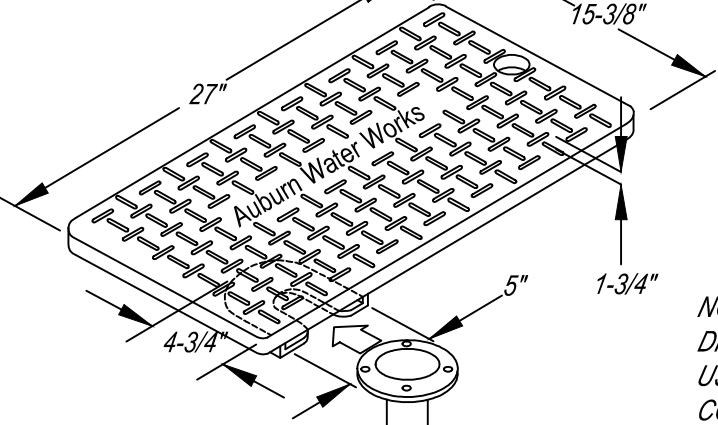
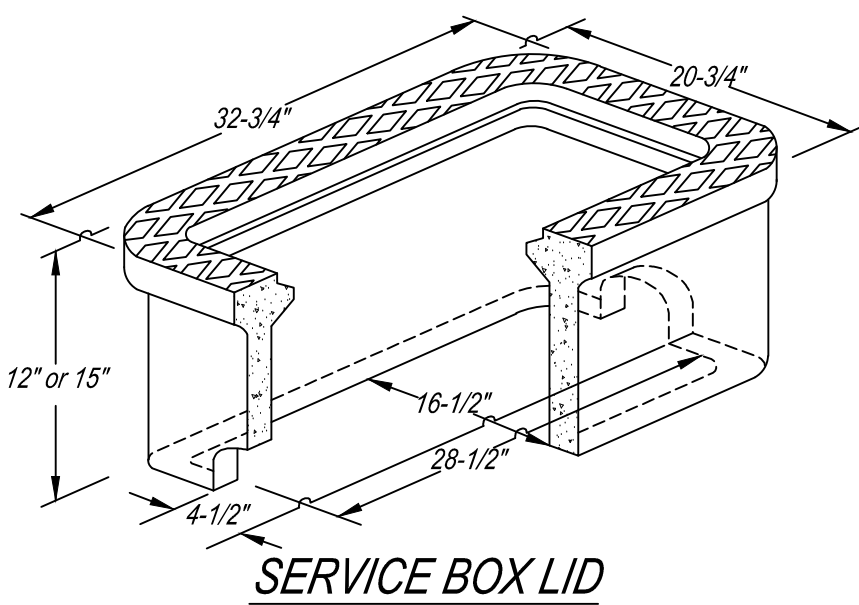
- NOTES:
1. COMBINATION FIRE / DOMESTIC METER SHALL BE NEPTUNE PROTECTUS III.
 2. VAULTS SHALL BE INSPECTED BY AWWB PERSONNEL IN ADDITION TO CITY OF AUBURN PROJECT INSPECTIONS.
 3. THE APPROPRIATE BACKFLOW ASSEMBLY IN ACCORDANCE WITH STANDARD DETAIL NOS. 218 OR 220 SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE METER ASSEMBLY.

TYPICAL LARGE DOMESTIC METER VAULT (3\"/>

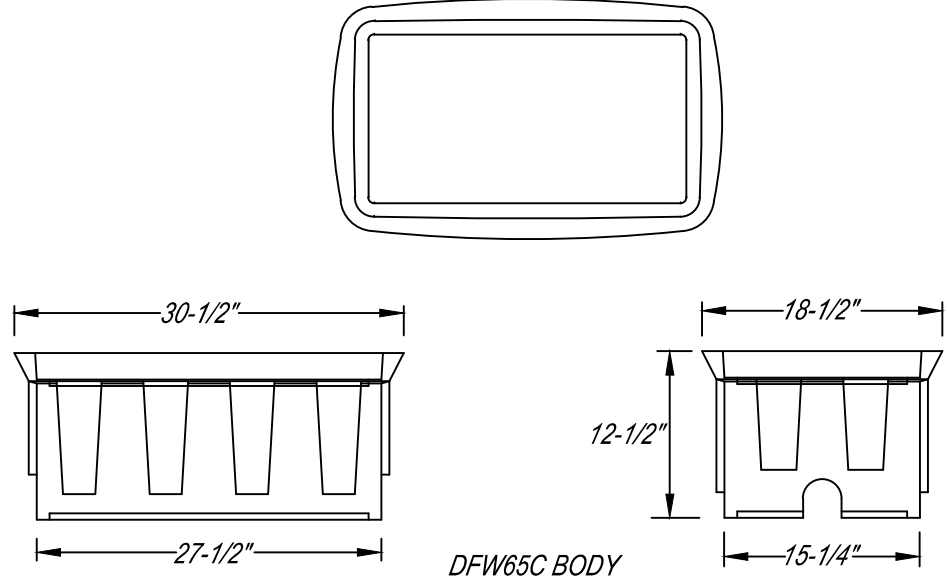


- NOTES:
1. LARGE METER SHALL BE NEPTUNE TRU-FLOW COMPOUND METER.
 2. VAULTS SHALL BE INSPECTED BY AWWB PERSONNEL IN ADDITION TO CITY OF AUBURN PROJECT INSPECTIONS.
 3. THE APPROPRIATE BACKFLOW ASSEMBLY IN ACCORDANCE WITH STANDARD DETAIL NOS. 218 OR 220 SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE METER ASSEMBLY.

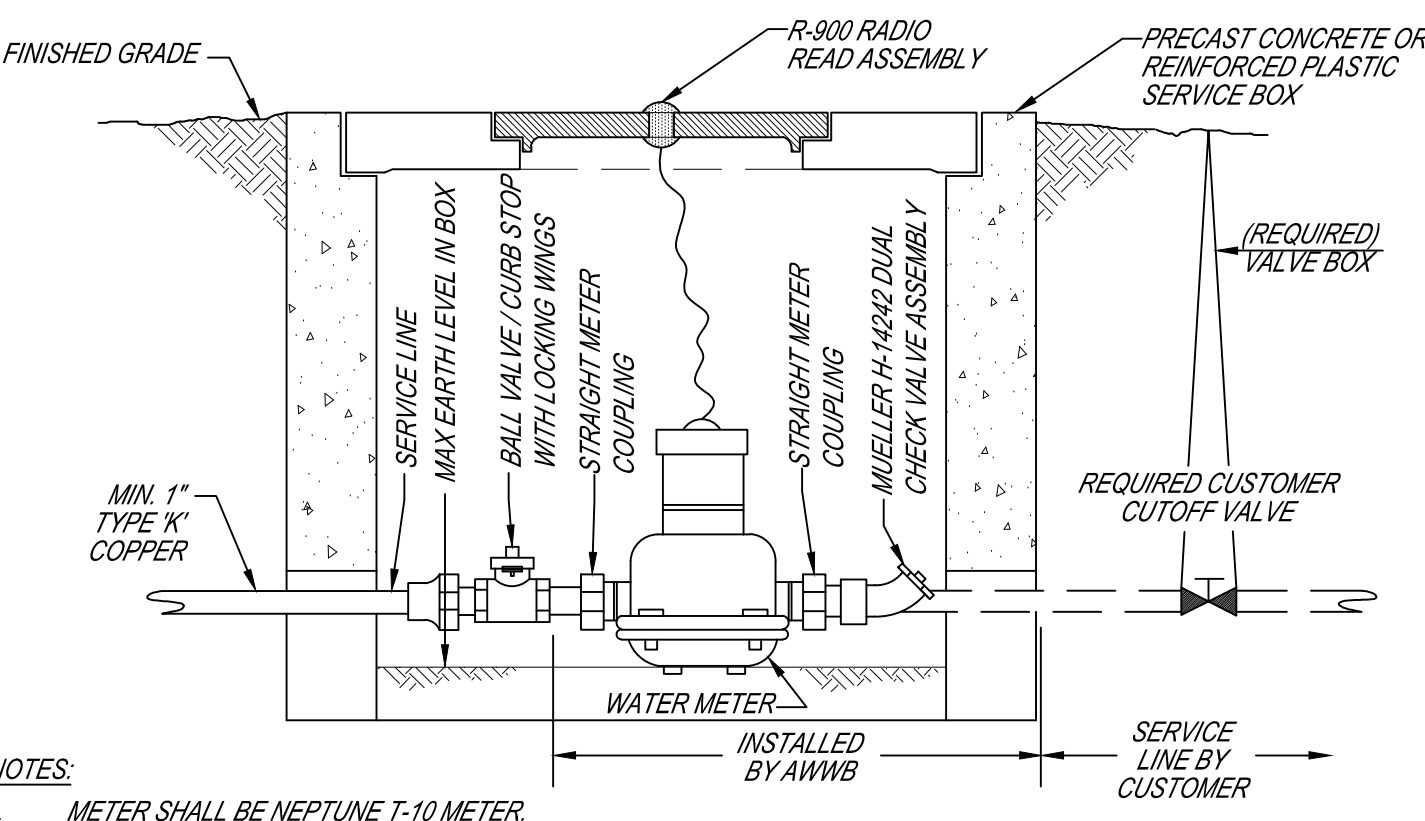
CONCRETE SERVICE BOX



REINFORCED PLASTIC SERVICE BOX



TYPICAL 3/4\"/>

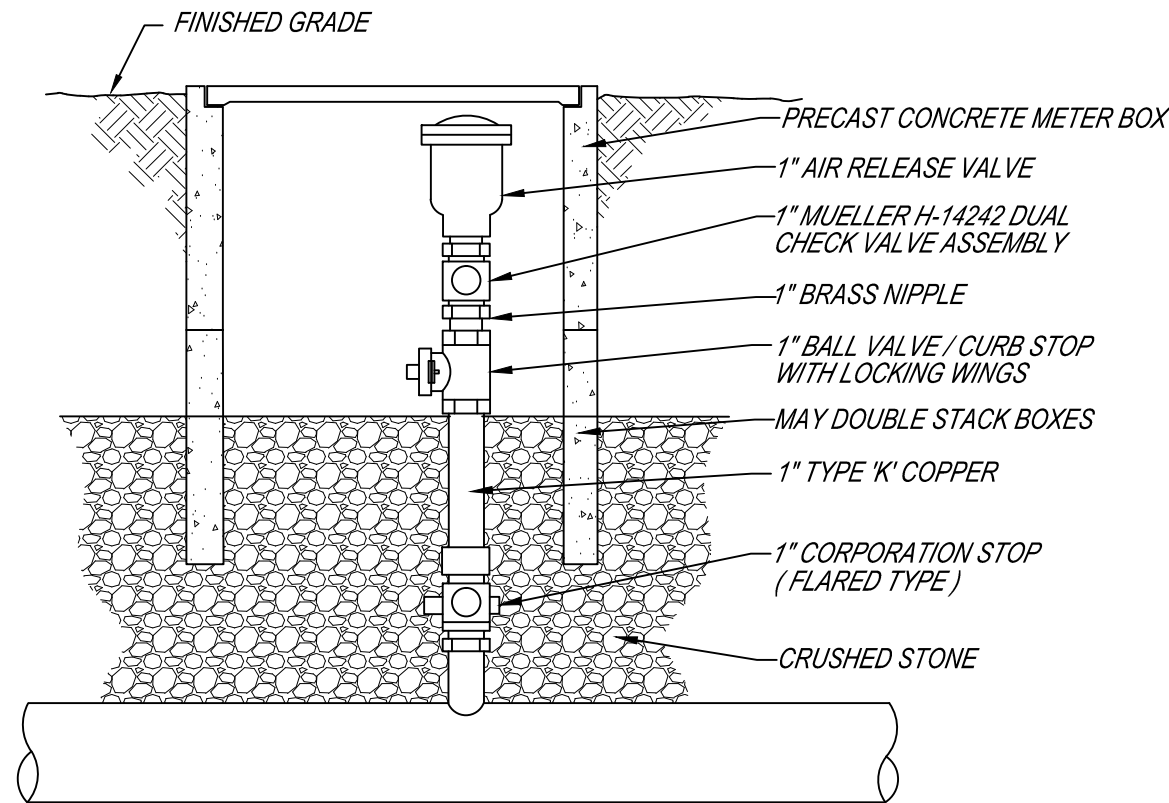


- NOTES:
1. METER SHALL BE NEPTUNE T-10 METER.

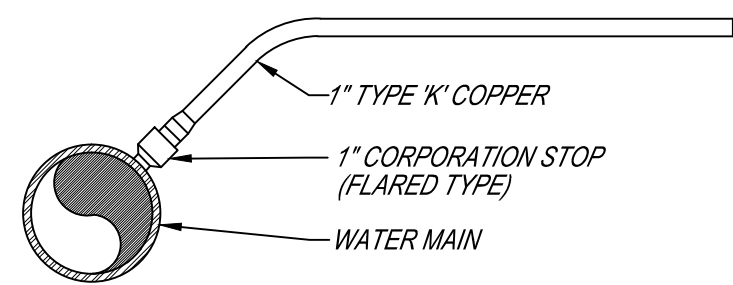
STANDARD DETAILS: WATER - SHEET 2 OF 3

PROJECT TITLE:	DEPARTMENT:	WRM	REVISIONS:	GM-04/2014
	SCALE:	N.T.S.		BS-10-25-07
	DRAWN BY:	GM		DCM-2010
	REVIEWED BY:	JC		JC-10-2011
	APPROVED BY:	EC		JC-10-2012
	IMPLEMENTED:		JANUARY 2008	

TYPICAL AUTOMATIC AIR RELEASE VALVE

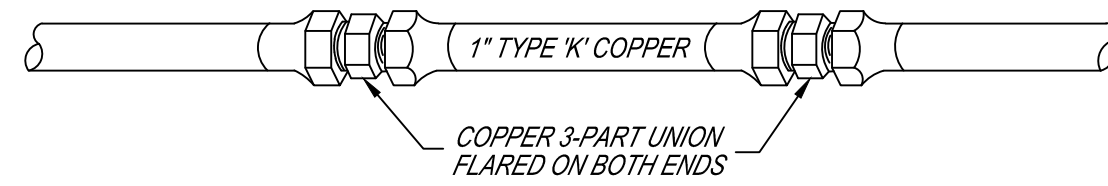


TYPICAL 1" SERVICE CONNECTION

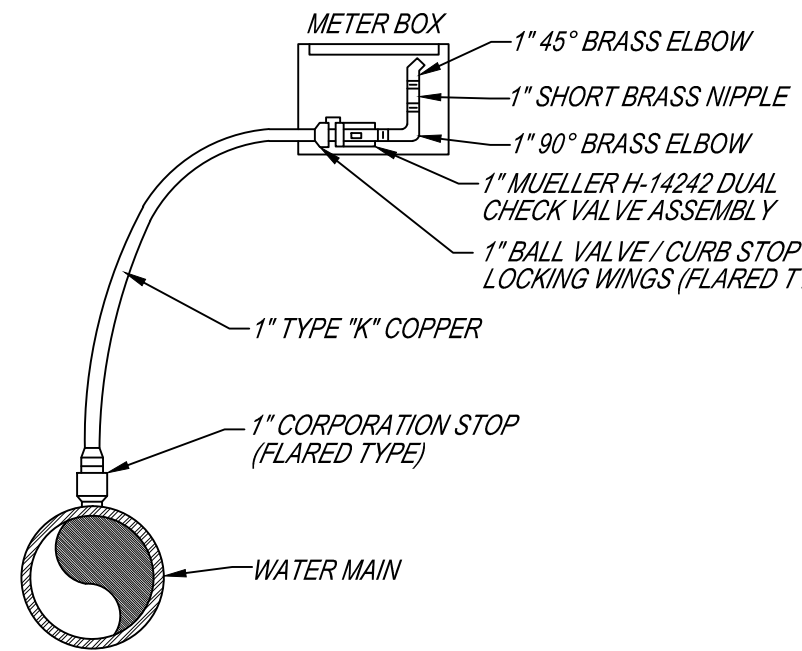


NOTES:
1. TYPICAL 1" SERVICE CONNECTION SHALL BE USED AT A MINIMUM FOR ALL 3/4" AND 1" METER INSTALLATIONS.

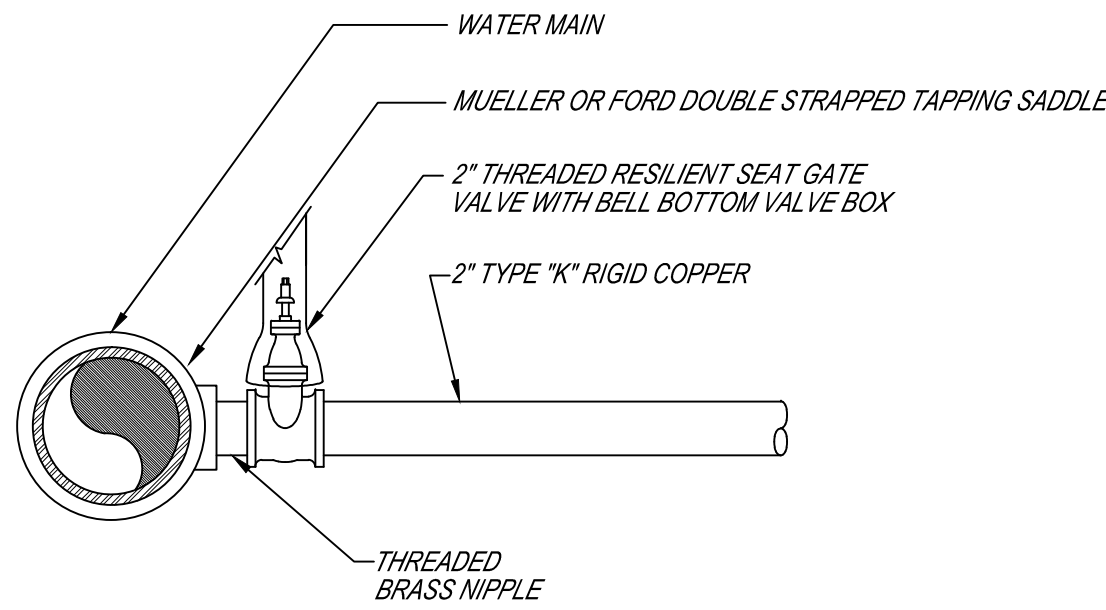
TYPICAL COPPER REPAIR (1" ONLY)



TYPICAL MANUAL AIR RELEASE VALVE

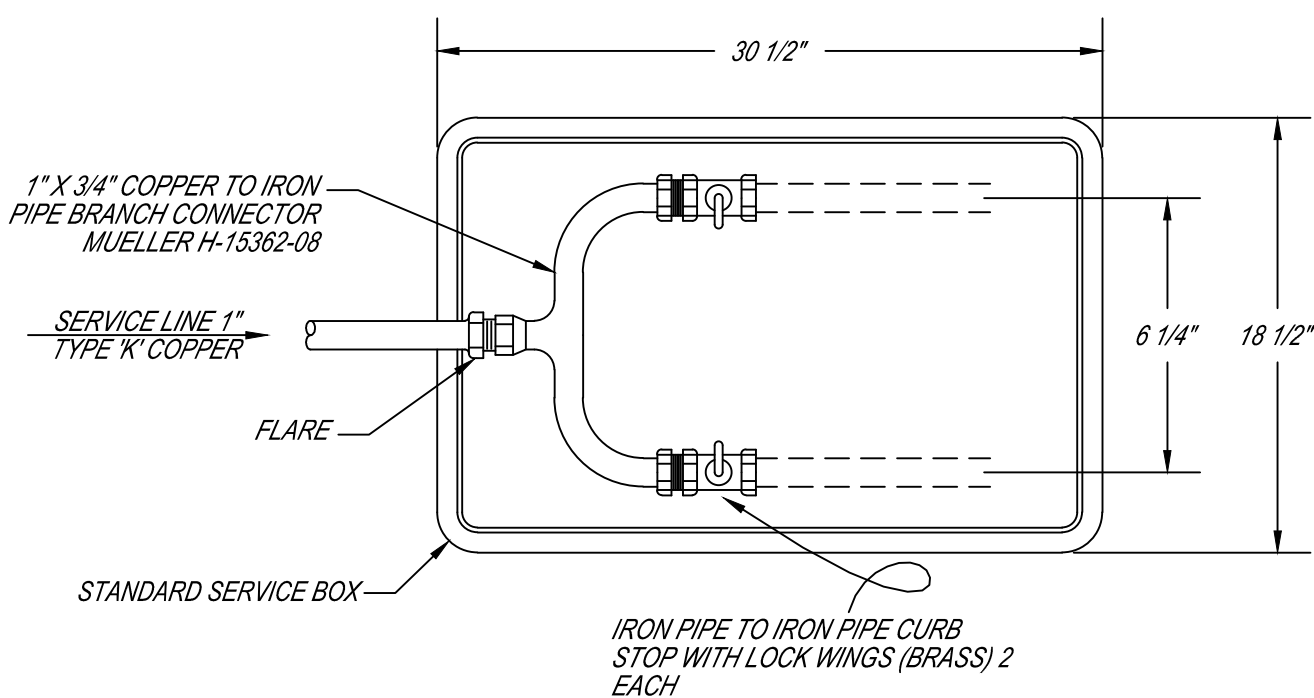


TYPICAL 2" SERVICE CONNECTION

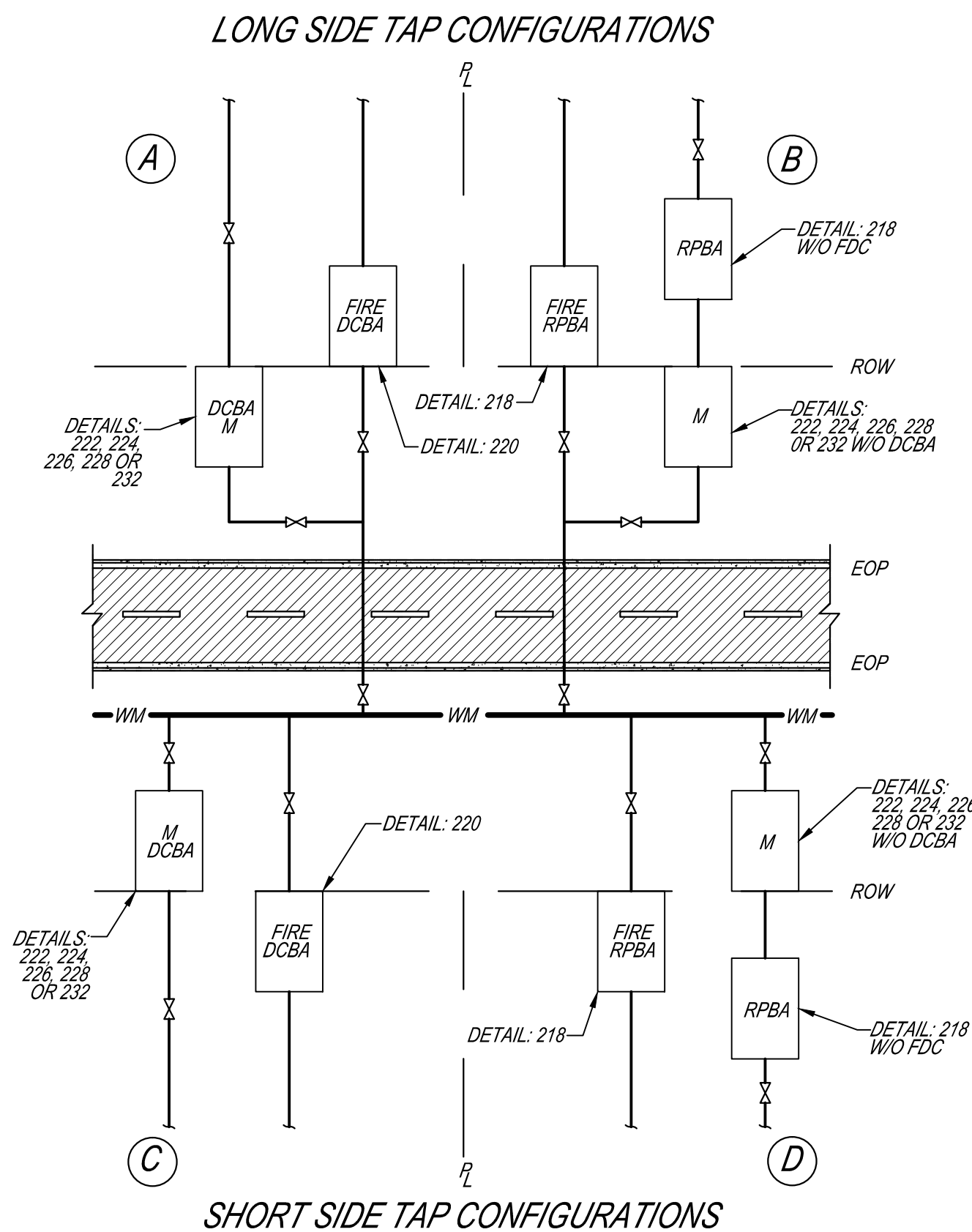


NOTES:
1. TYPICAL 2" SERVICE CONNECTION SHALL BE USED AT A MINIMUM FOR ALL 1-1/2" AND 2" METER INSTALLATIONS.

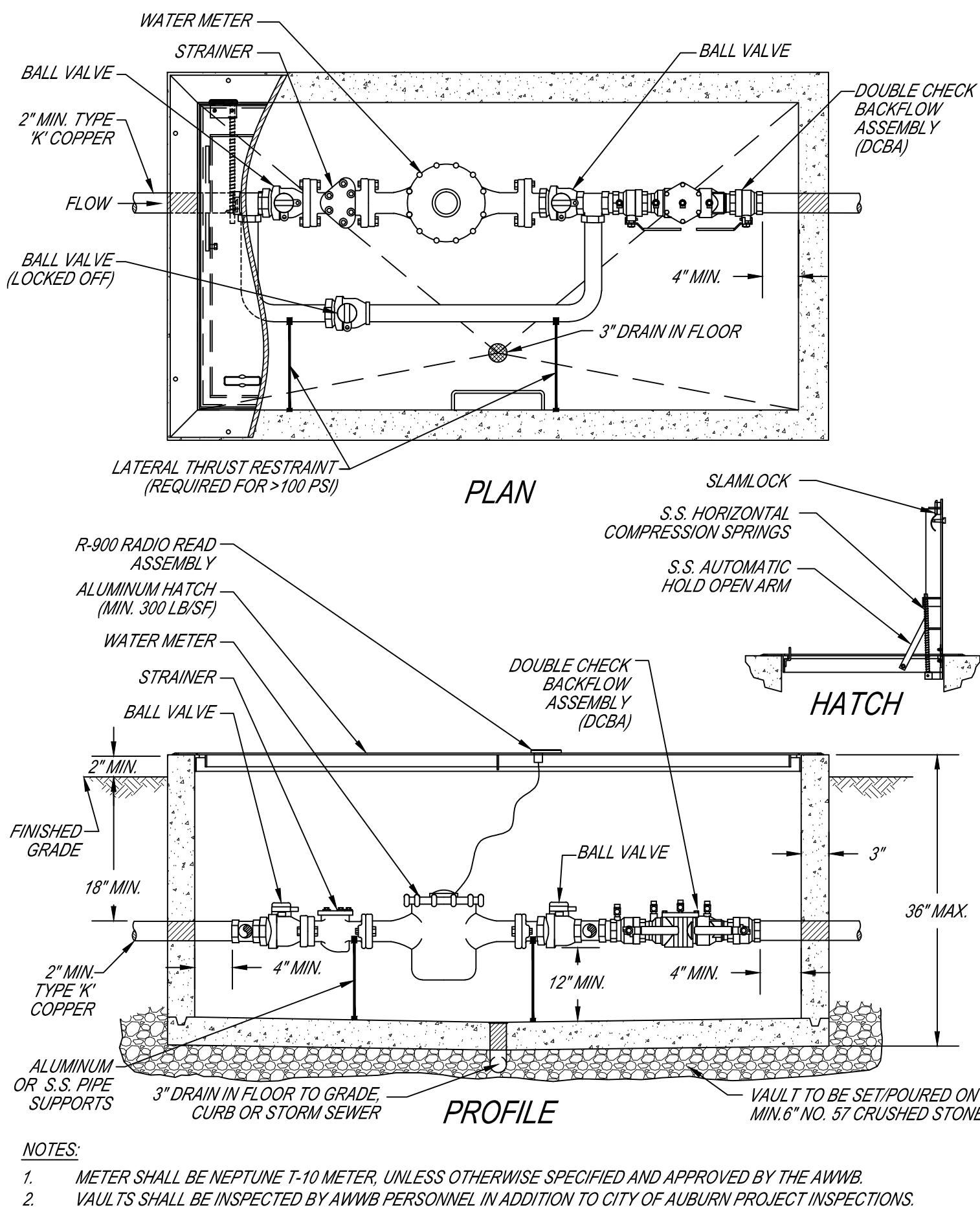
TYPICAL DOUBLE SERVICE CONNECTION



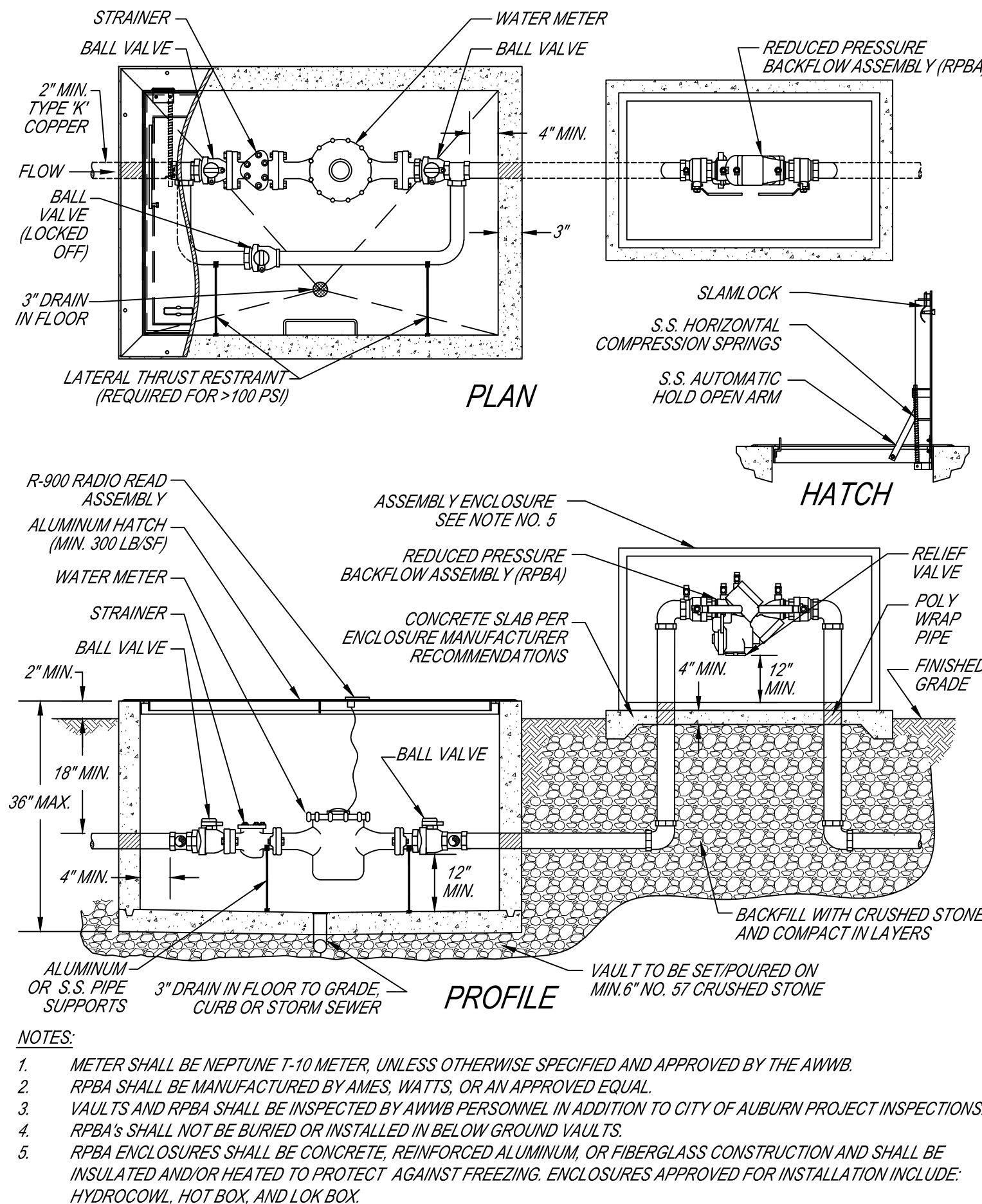
GENERAL SERVICE CONNECTION CONFIGURATIONS



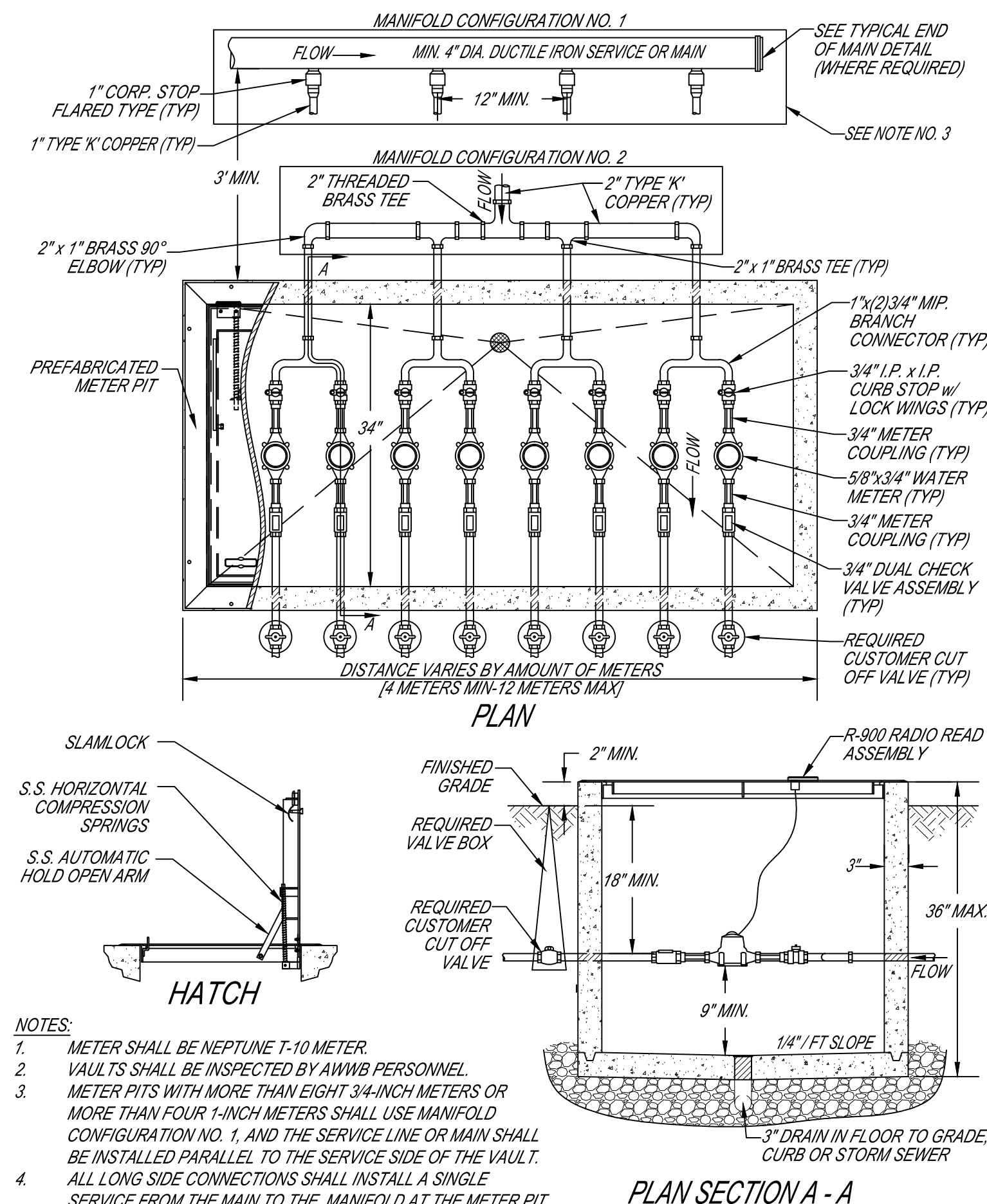
TYPICAL 1.5" TO 2.0" METER VAULT W/ DCBA



TYPICAL 1.5" TO 2.0" METER VAULT W/ RPBA



TYPICAL MULTIPLE METER VAULT



STANDARD DETAILS: WATER - SHEET 3 OF 3

PROJECT TITLE:	DEPARTMENT:	WRM	REVISIONS:	GM-04/2014
SCALE:	N.T.S.			BS-10-25-07
DRAWN BY:	GM			DCM-2010
REVIEWED BY:	JC			JC-10-2011
APPROVED BY:	EC			JC-10-2012
IMPLEMENTED:				JANUARY 2008