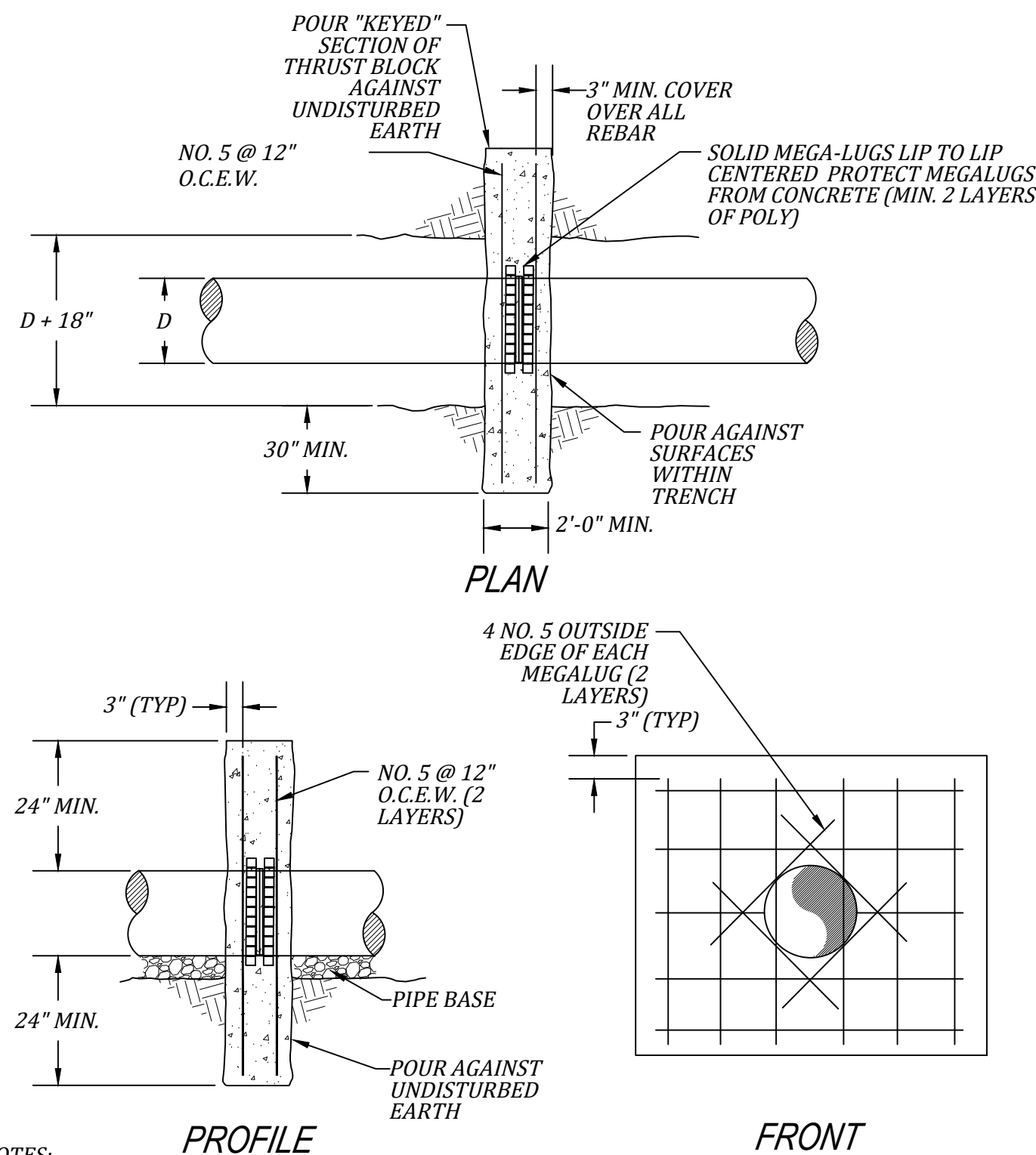


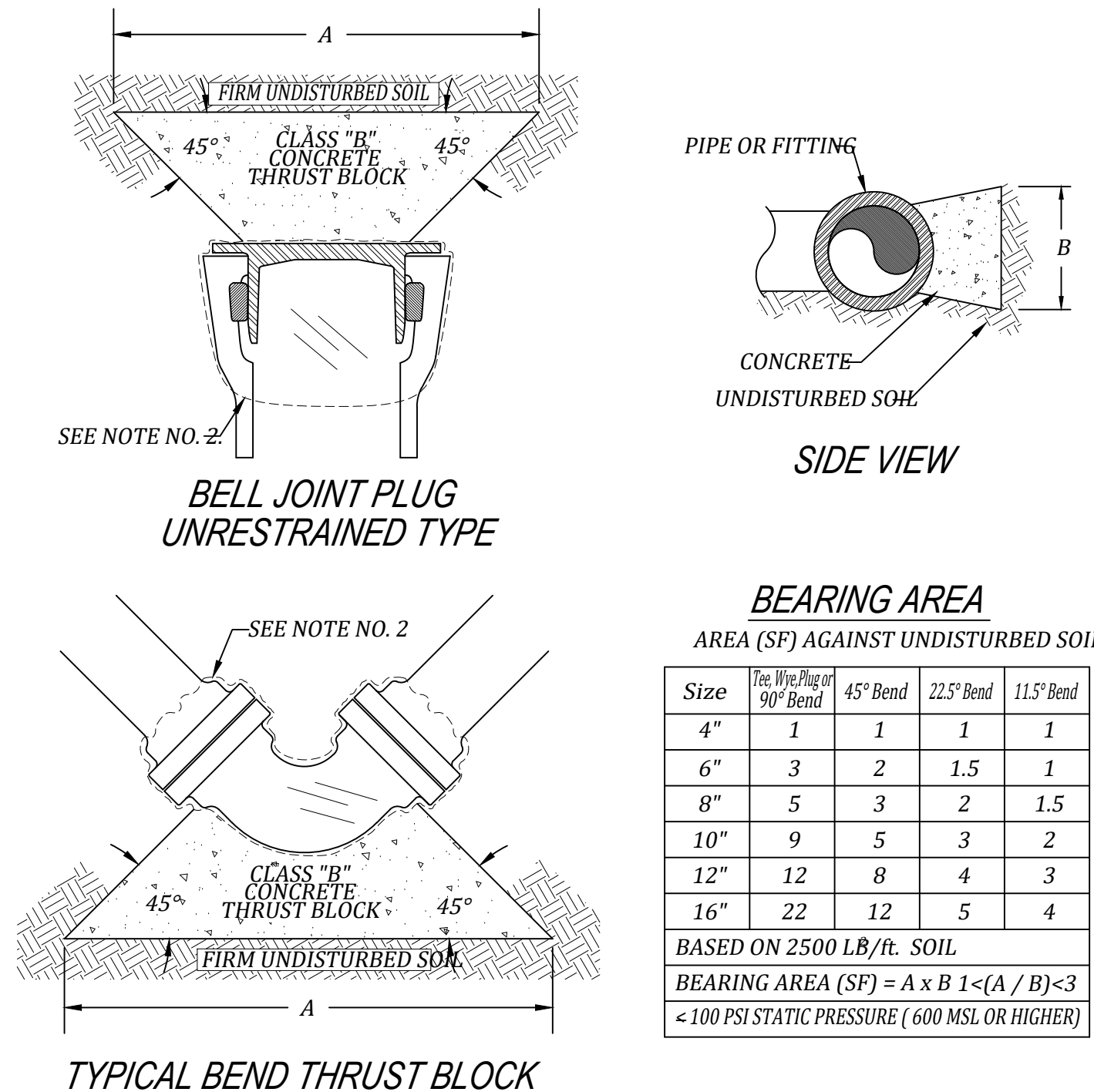
**TYPICAL DEADMAN THRUST RESTRAINT**



- NOTES:
1. DEADMAN TO BE CENTERED ON FULL JOINT OF PIPE
  2. ALL CONCRETE SHALL BE CLASS "A" (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.

200

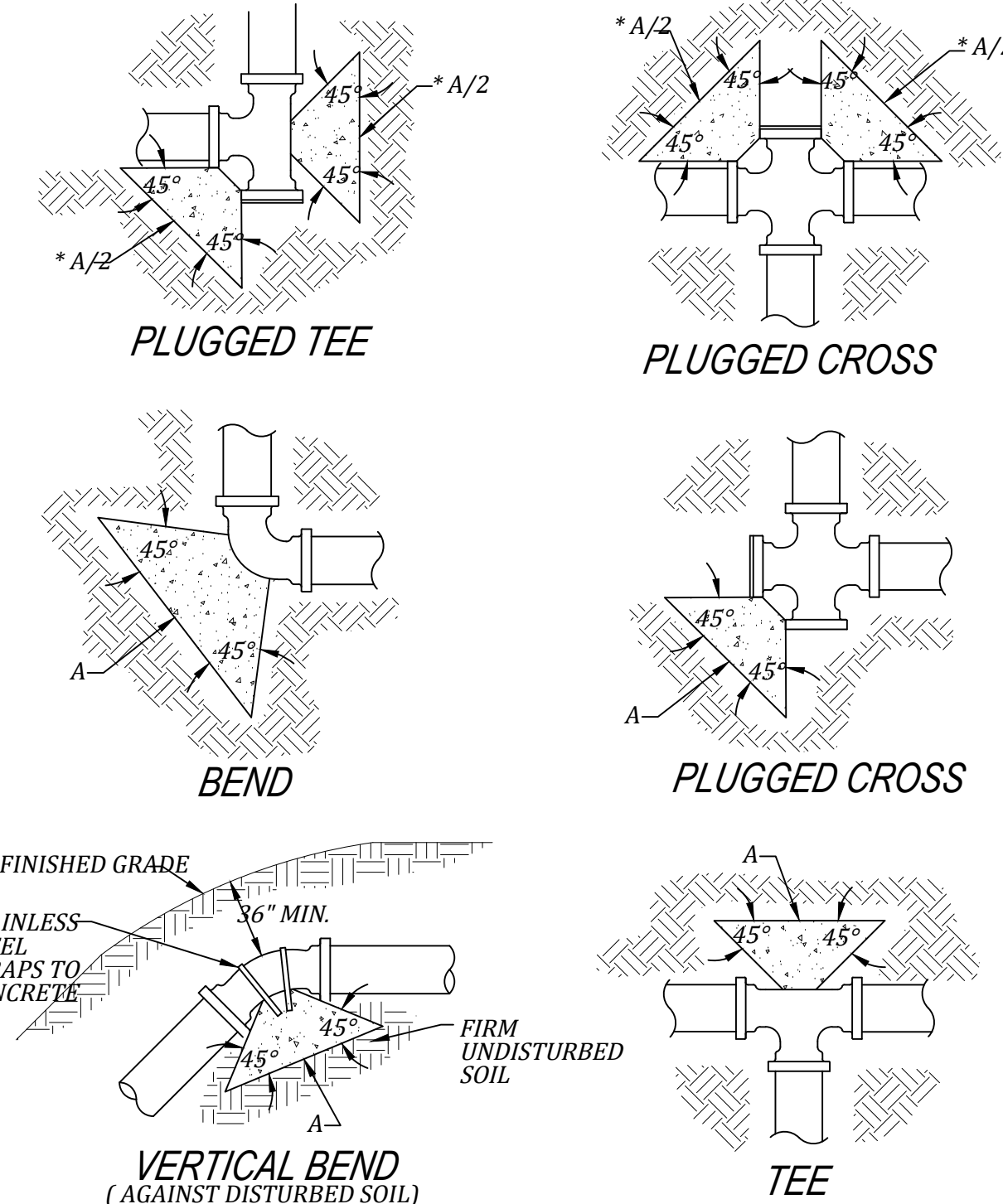
**TYPICAL CONCRETE THRUST BLOCK DESIGN**



- 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.

202

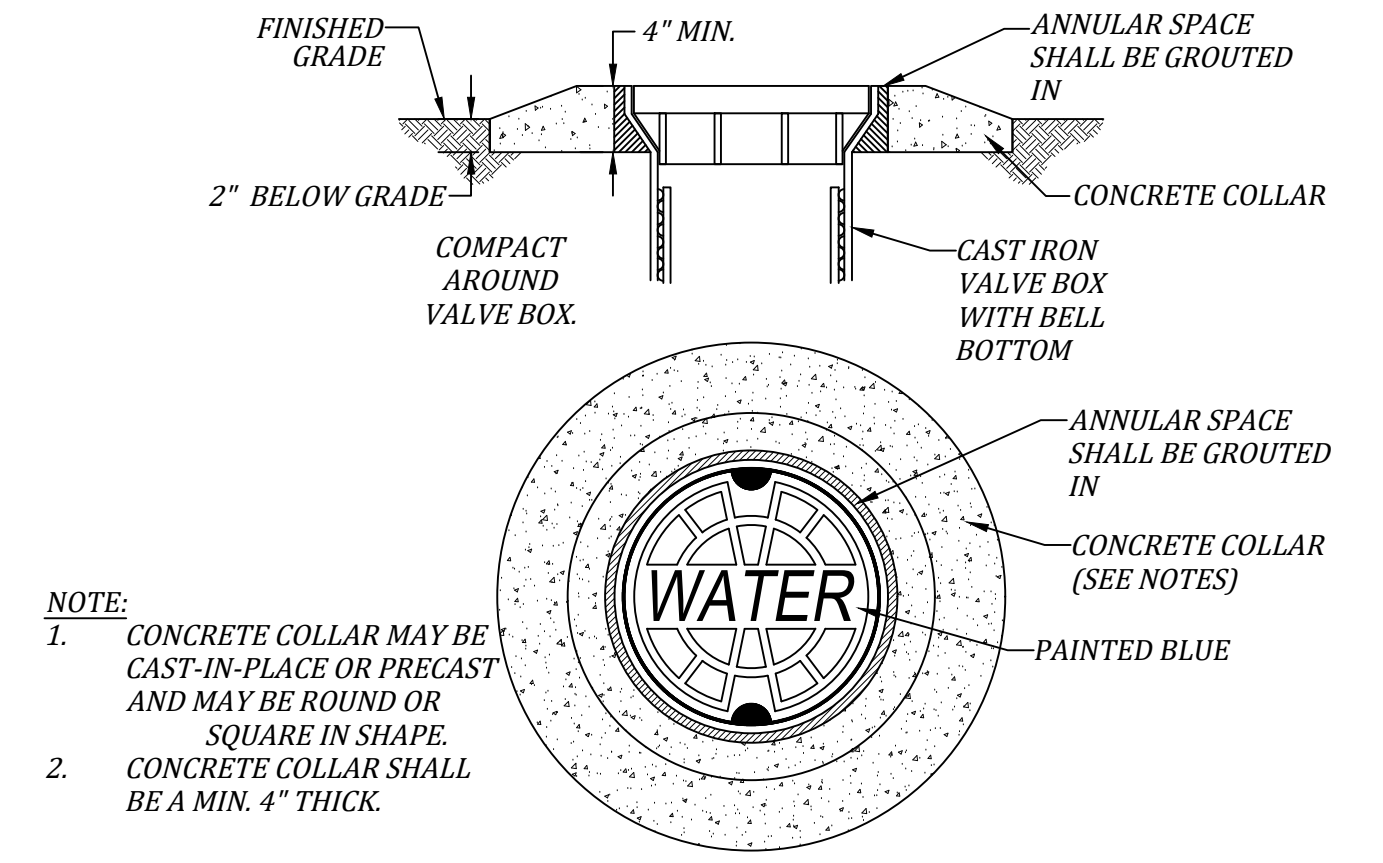
**TYPICAL CONCRETE THRUST BLOCK LAYOUT**



- 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.

204

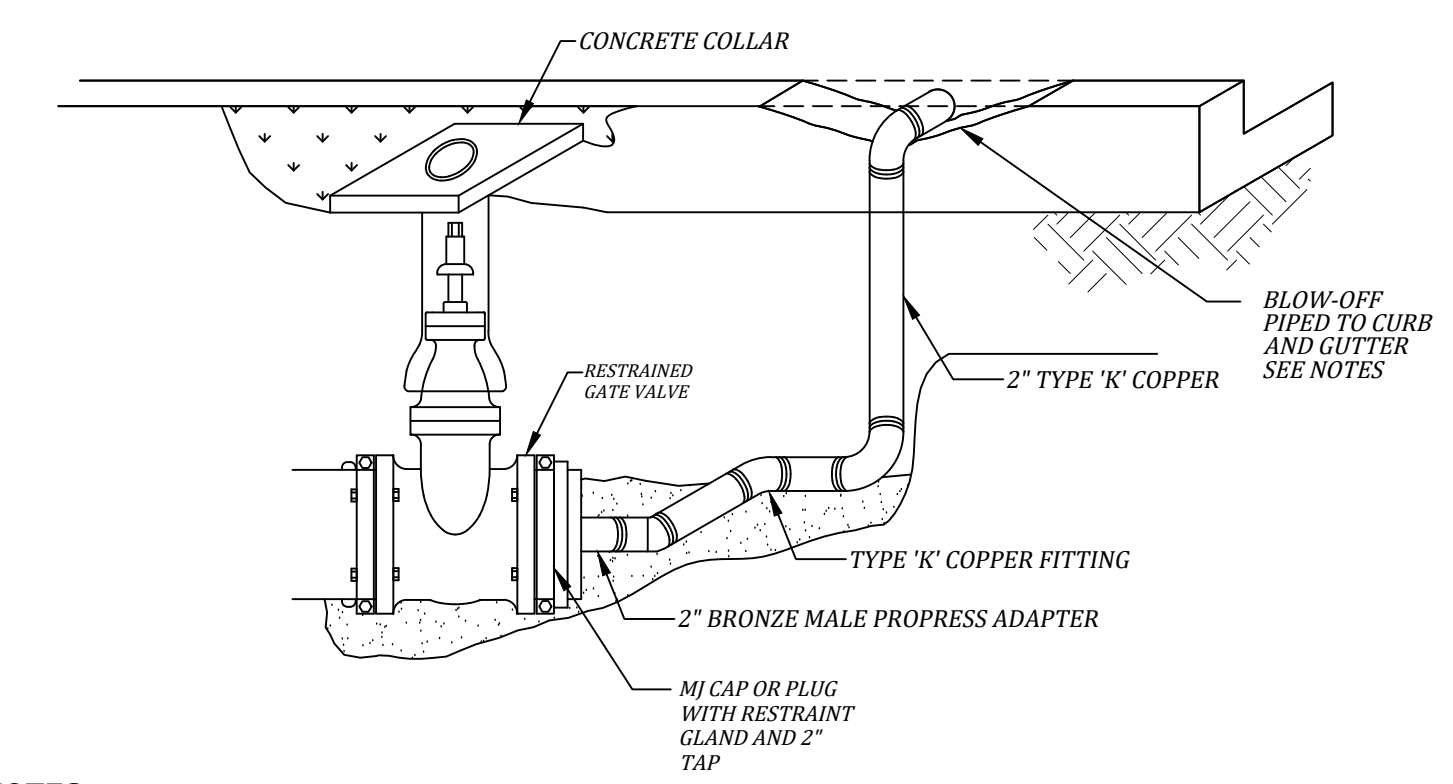
**TYPICAL VALVE BOX INSTALLATION**



- 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.

216

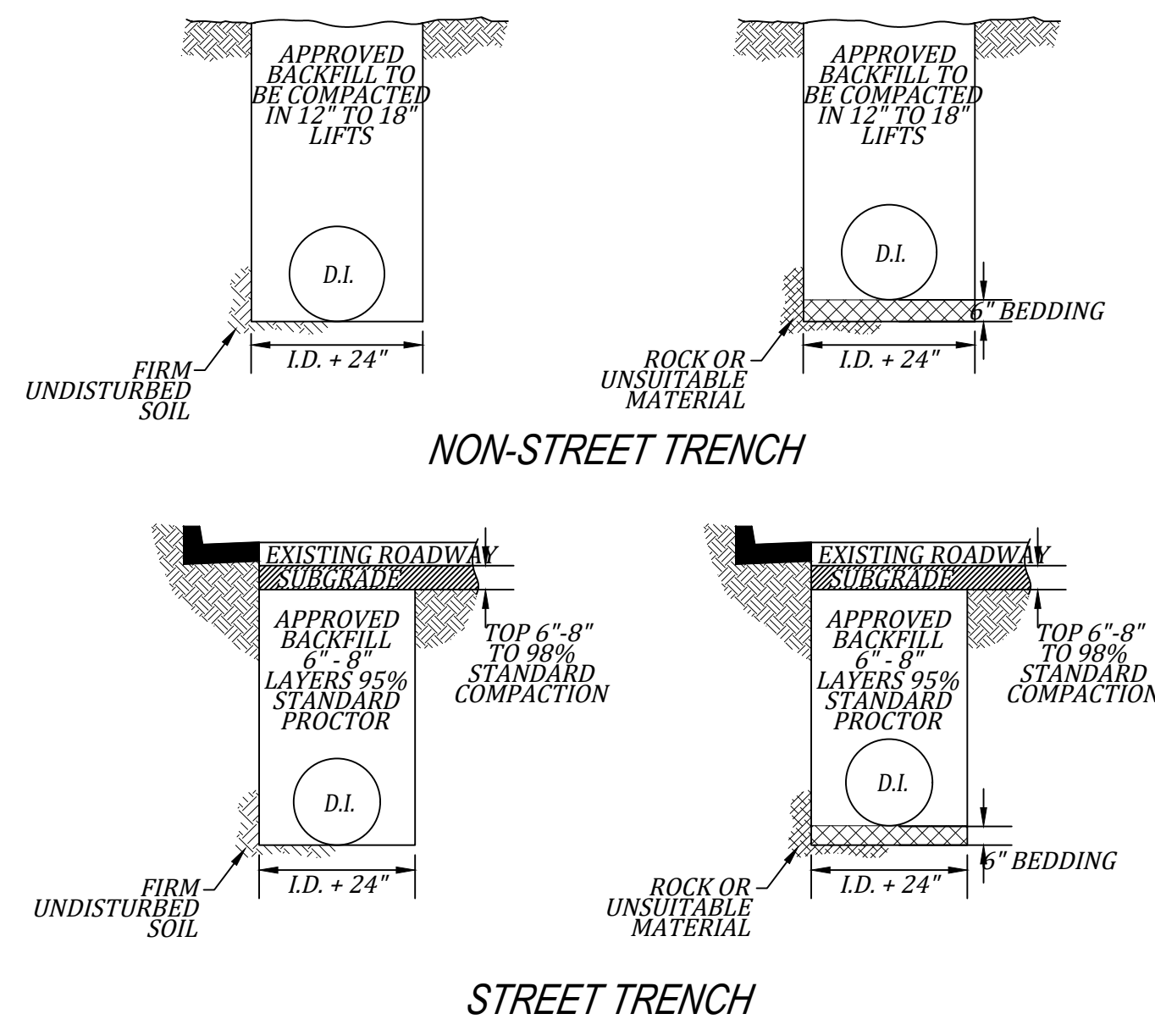
**TYPICAL END OF MAIN BLOWOFF ASSEMBLY**



- 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 ANGLED TO PERFECT FLOW AWAY FROM BLOW-OFF AND VALVE, WHERE POSSIBLE
  3. VALVE SHALL BE LOCATED WITHIN 24" OF THE BACK OF CURB, MAY BE PLACED IN PAVEMENT.
  4. THE BLOW-OFF SHALL BE PLACED WITH AT LEAST 1" CLEARANCE BETWEEN GUTTER AND BOTTOM PIPE AND SHOULD BE POINTED SLIGHTLY UPWARD

206

**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 PIPE 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.

210

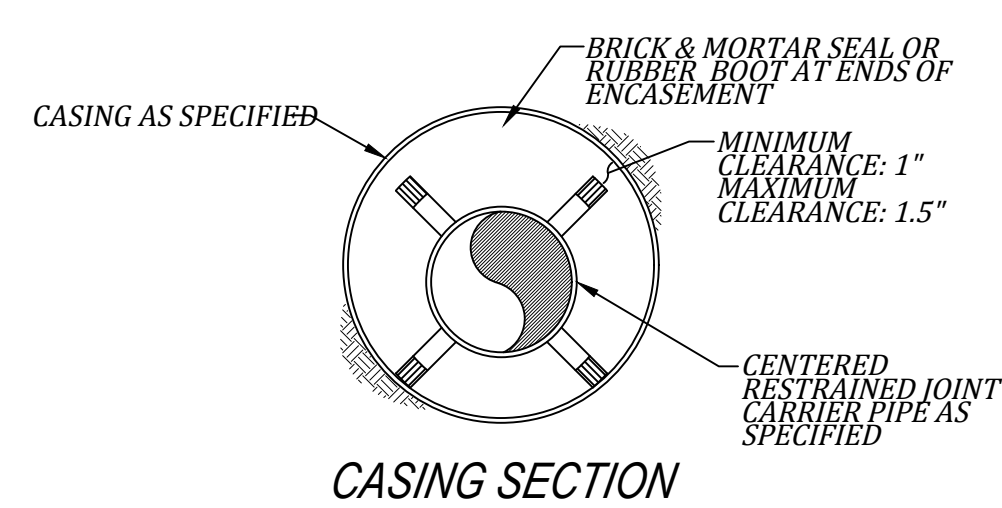
**TYPICAL BORE ENCASEMENT**

NOMINAL PIPE DIAMETER	STANDARD PIPE BELL O.D.*	SPACER CASING BAND WIDTH	STEEL ENCASEMENT	
			MINIMUM 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.

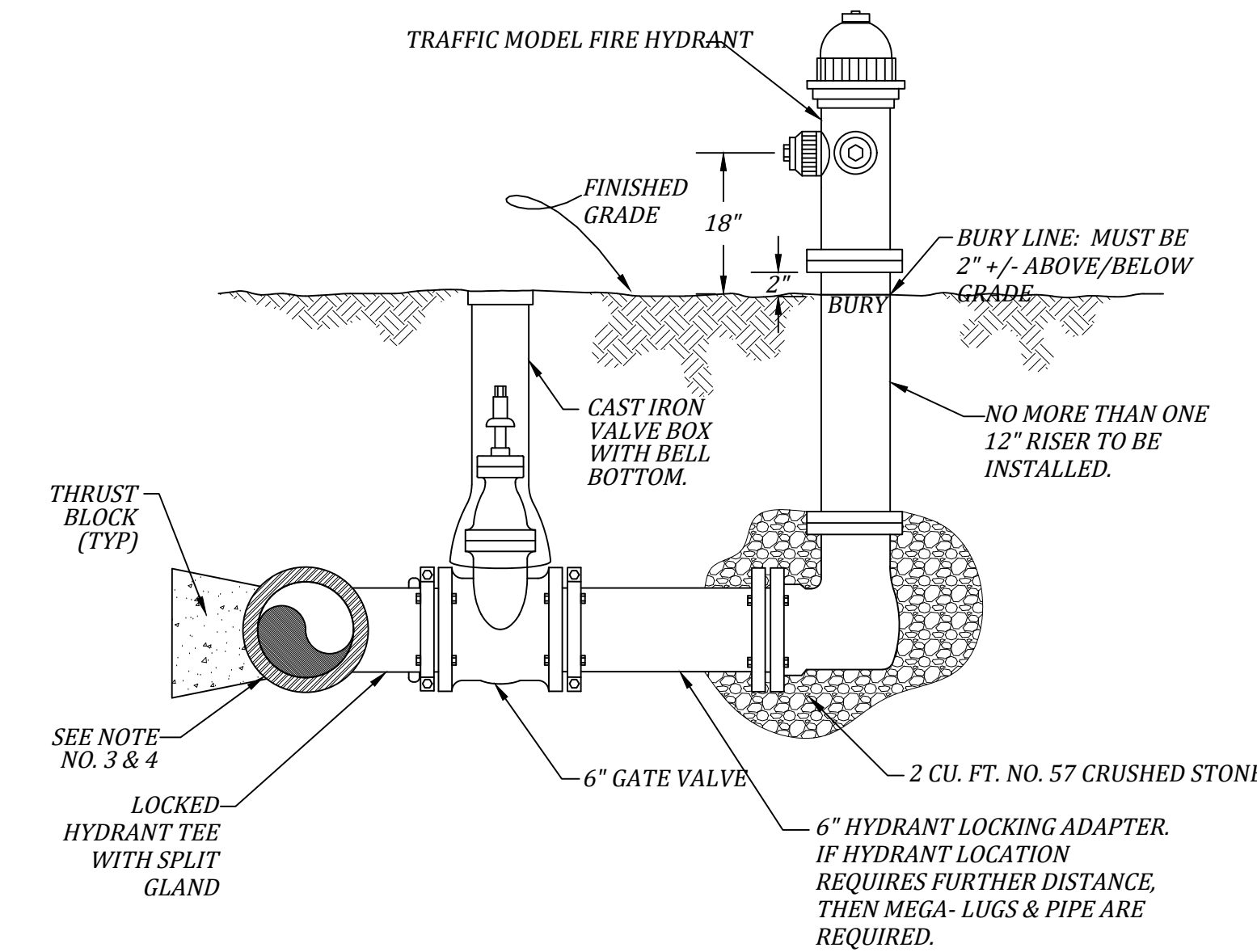
\*\*CASING DIAMETERS BASED ON BEING A MINIMUM OF 6 INCHES GREATER THAN THE OUTER DIAMETER OF THE JOINT BELL, TO THE NEAREST EVEN SIZE.



- 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 APART WITH A MINIMUM OF TWO SPACERS PER JOINT OF PIPE. TEN FEET

212

**TYPICAL FIRE HYDRANT INSTALLATION**



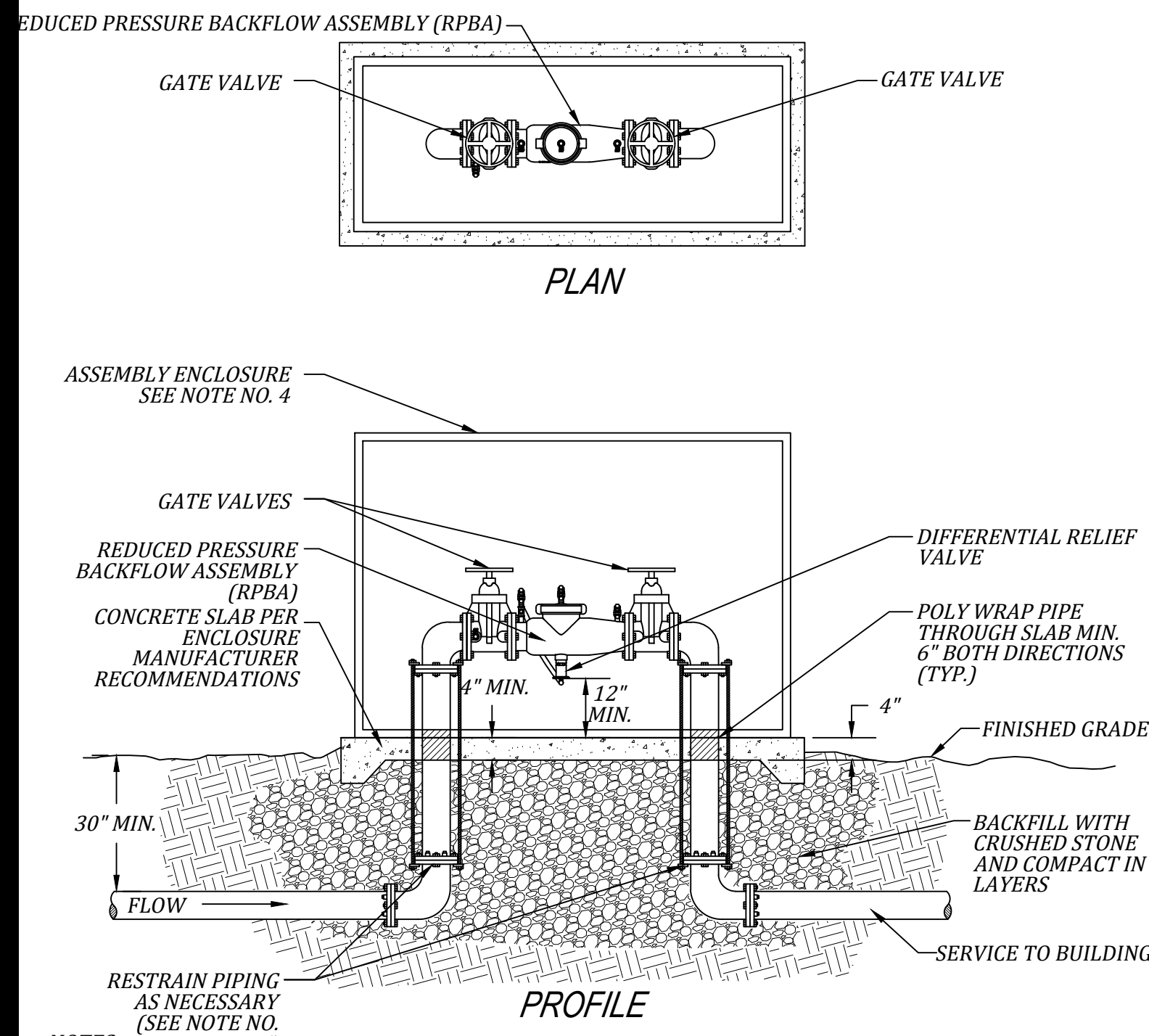
- NOTES:
1. ALL FIRE HYDRANTS SHALL HAVE NATIONAL STANDARD THREADS, 4 1/2-INCH STEAMER & 2 1/2-INCH HOSE NOZZLE, AND SHALL BE MUELLER CENTURION, OR AMERICAN DARLING B-84-B, OR APPROVED EQUAL. BRONZE TO BRONZE SEATED. EPOXY COATED SHOES. WEATHER CAPS SHALL NOT BE MADE OF RUBBER.
  2. ALL FIRE HYDRANTS 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 MJ, TEE ON ALL FIRE HYDRANT CONNECTIONS.

214

**STANDARD DETAILS: WATER - SHEET 1 OF 4**

PROJECT TITLE:	DEPARTMENT:	WBM	REVISIONS:	BS-10-25-07
			N.T.S.	DCM 2010
			GM	JC-10-2011
			JC	JC-12-2012
			EC	MW-12-2020
				MW-12-2021

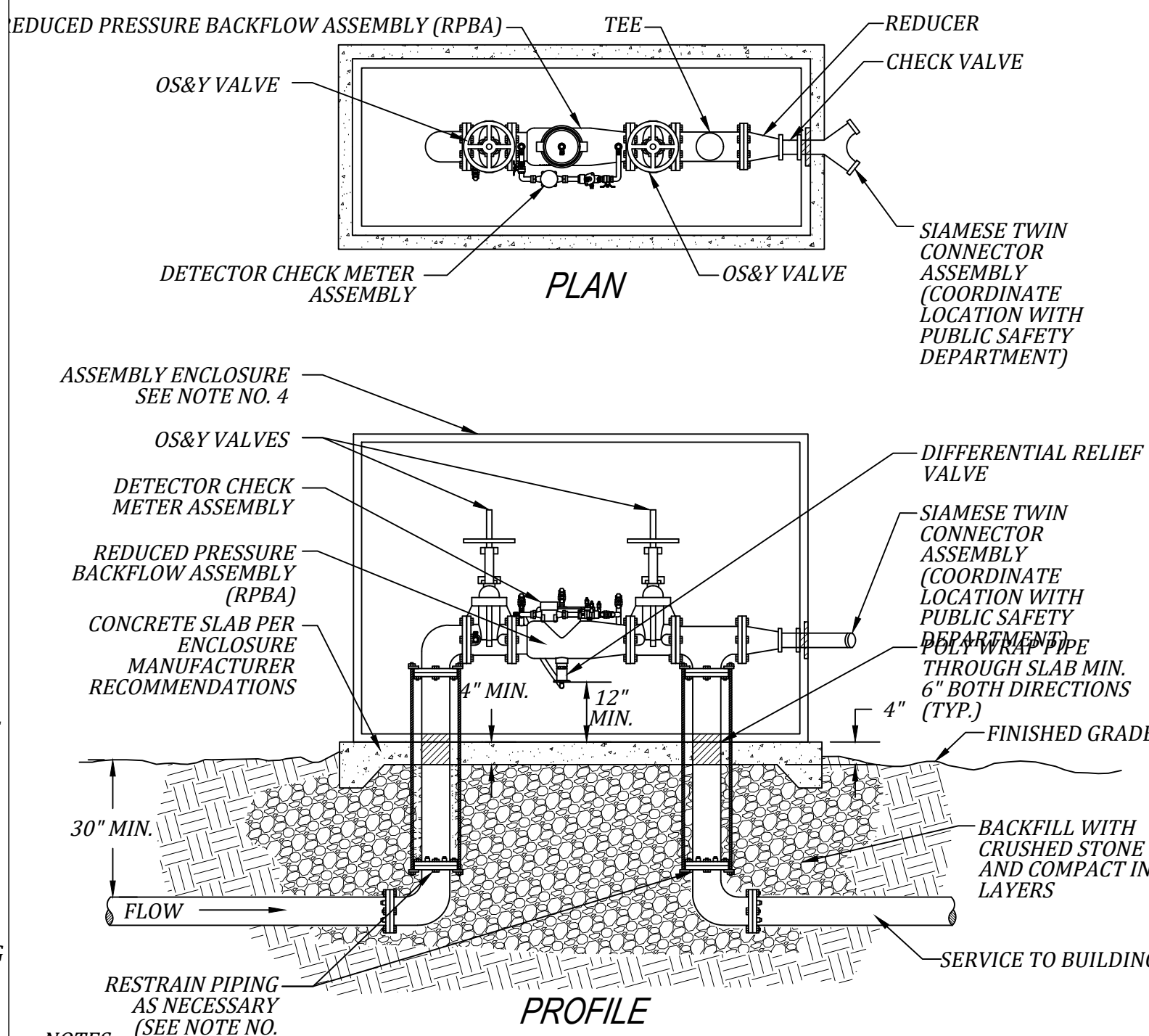
**TYPICAL REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)**



- 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.

218

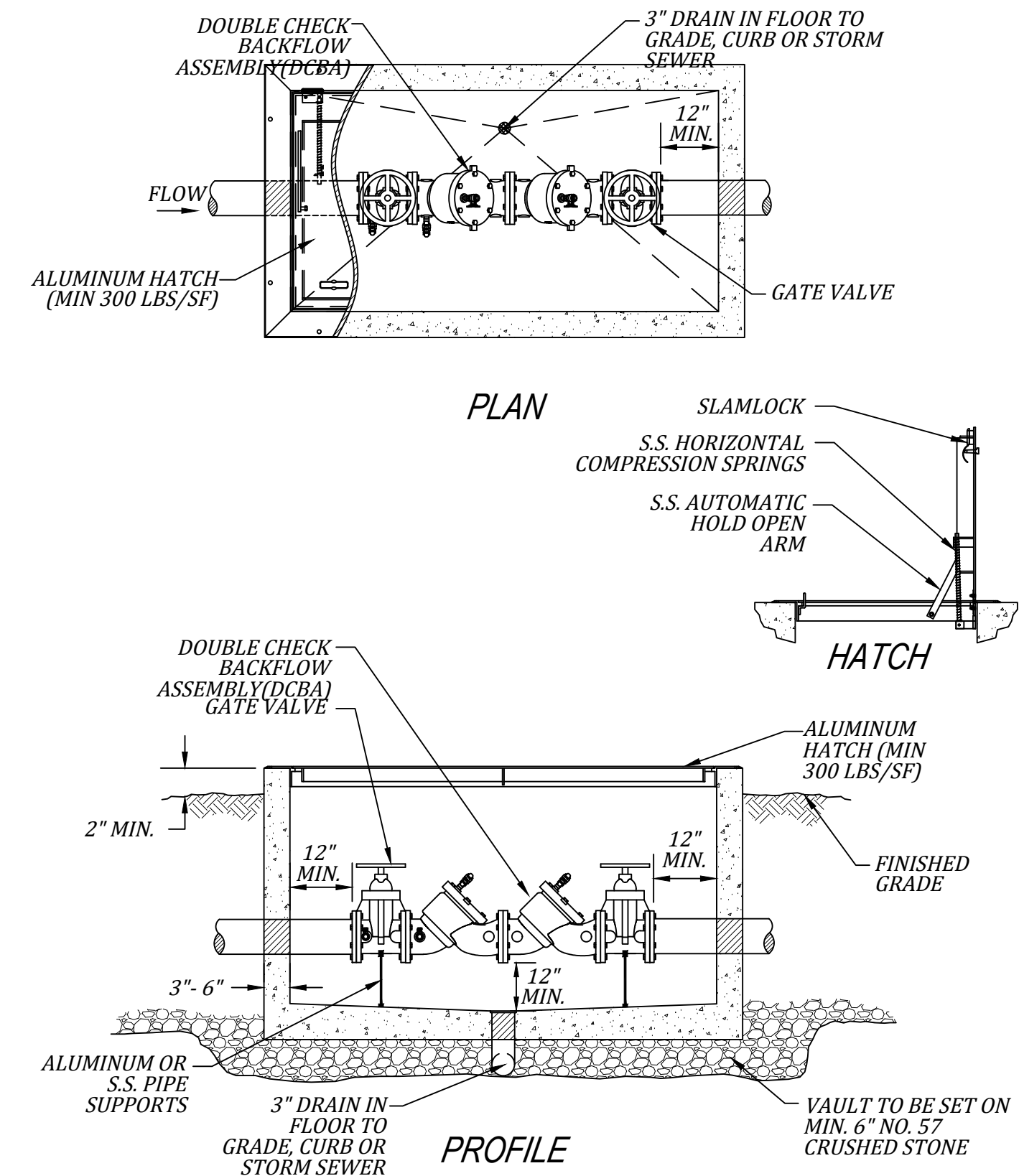
**TYPICAL FIRE PROTECTION SYSTEM RPBA**



- 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.

219

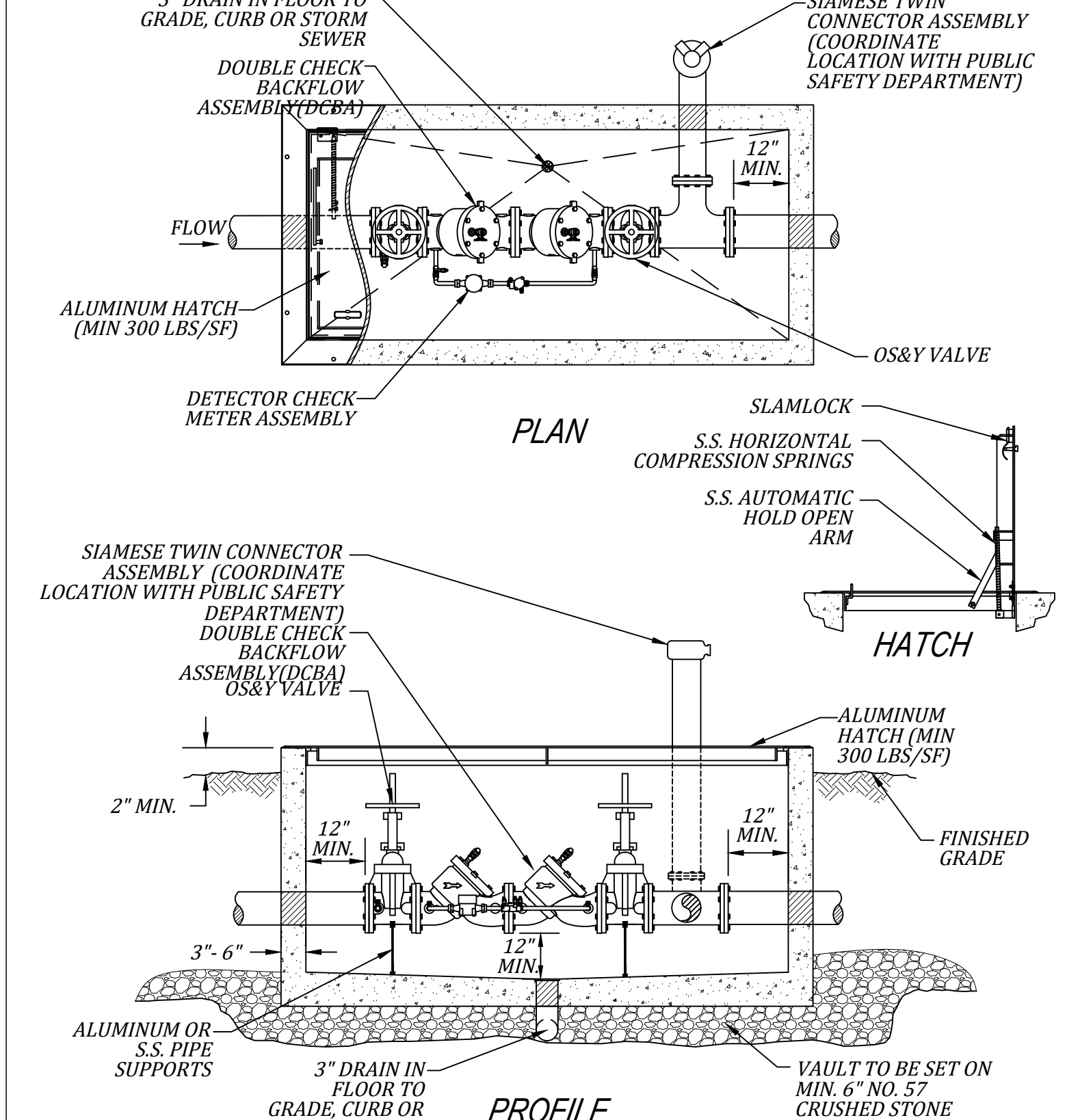
**TYPICAL DOUBLE CHECK BACKFLOW ASSEMBLY (DCBA)**



- 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.

220

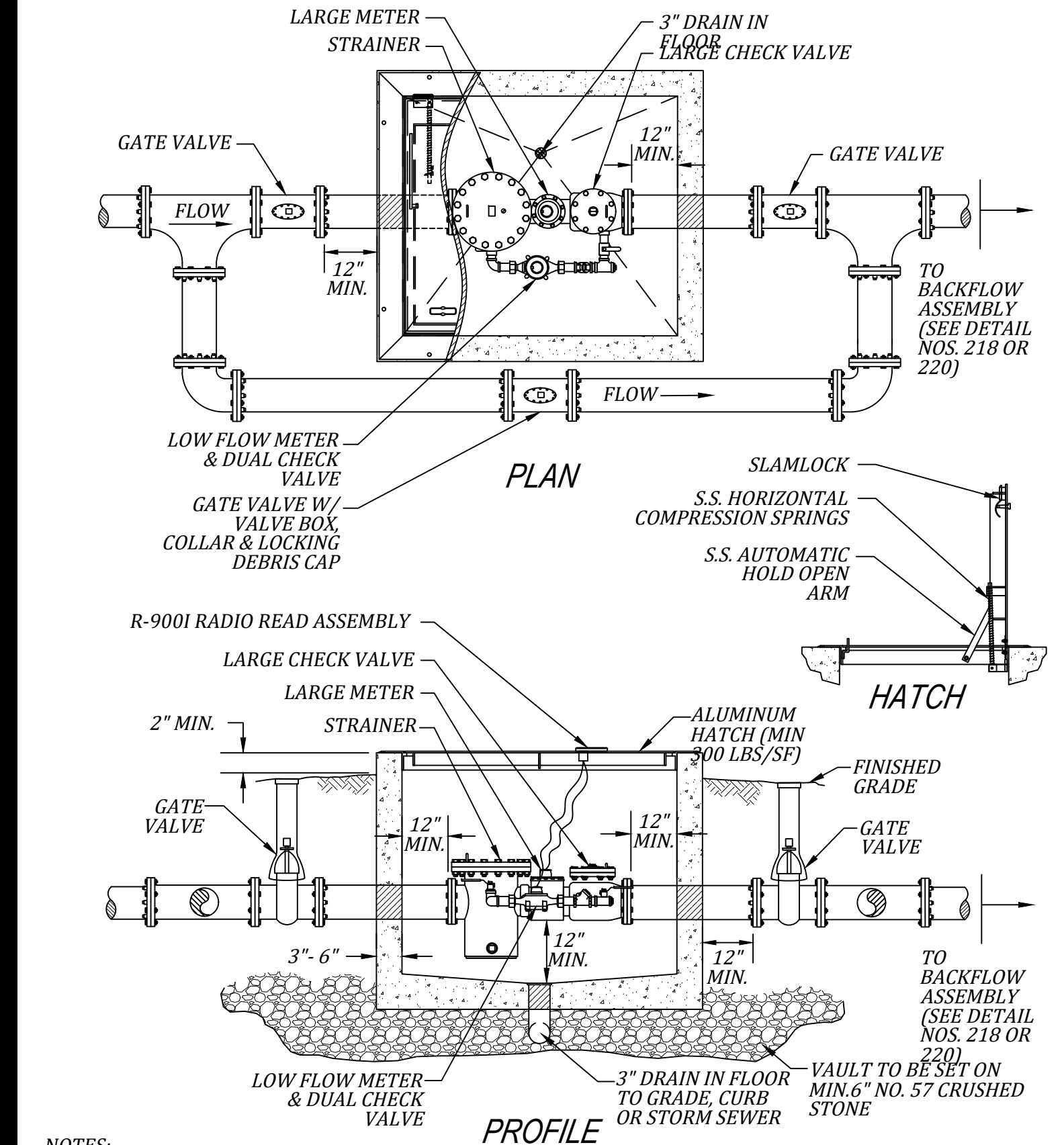
**TYPICAL FIRE PROTECTION SYSTEM DCBA**



- 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.

221

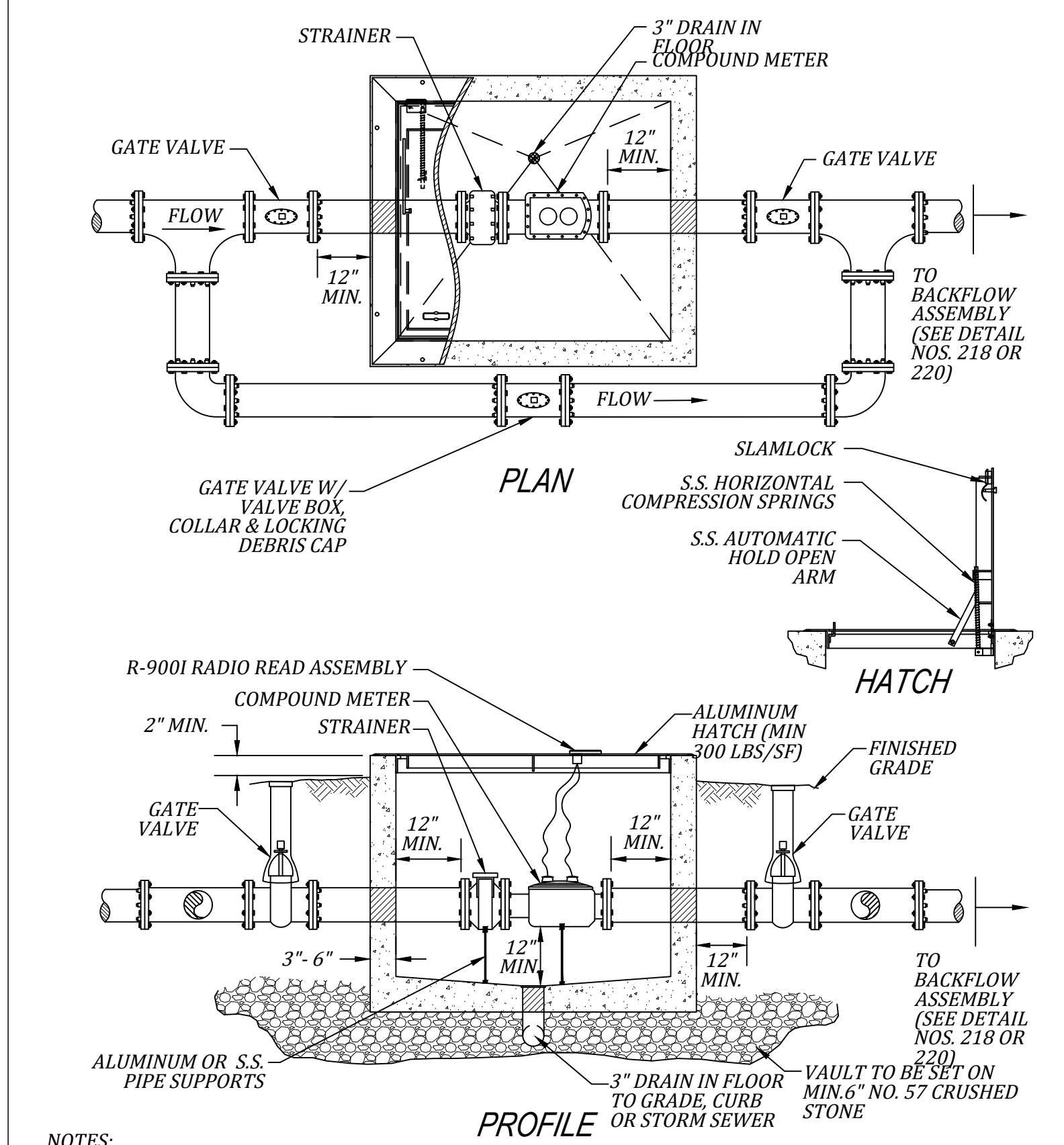
**TYPICAL FIRE / DOMESTIC METER VAULT (4\"/>**



- 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.

222

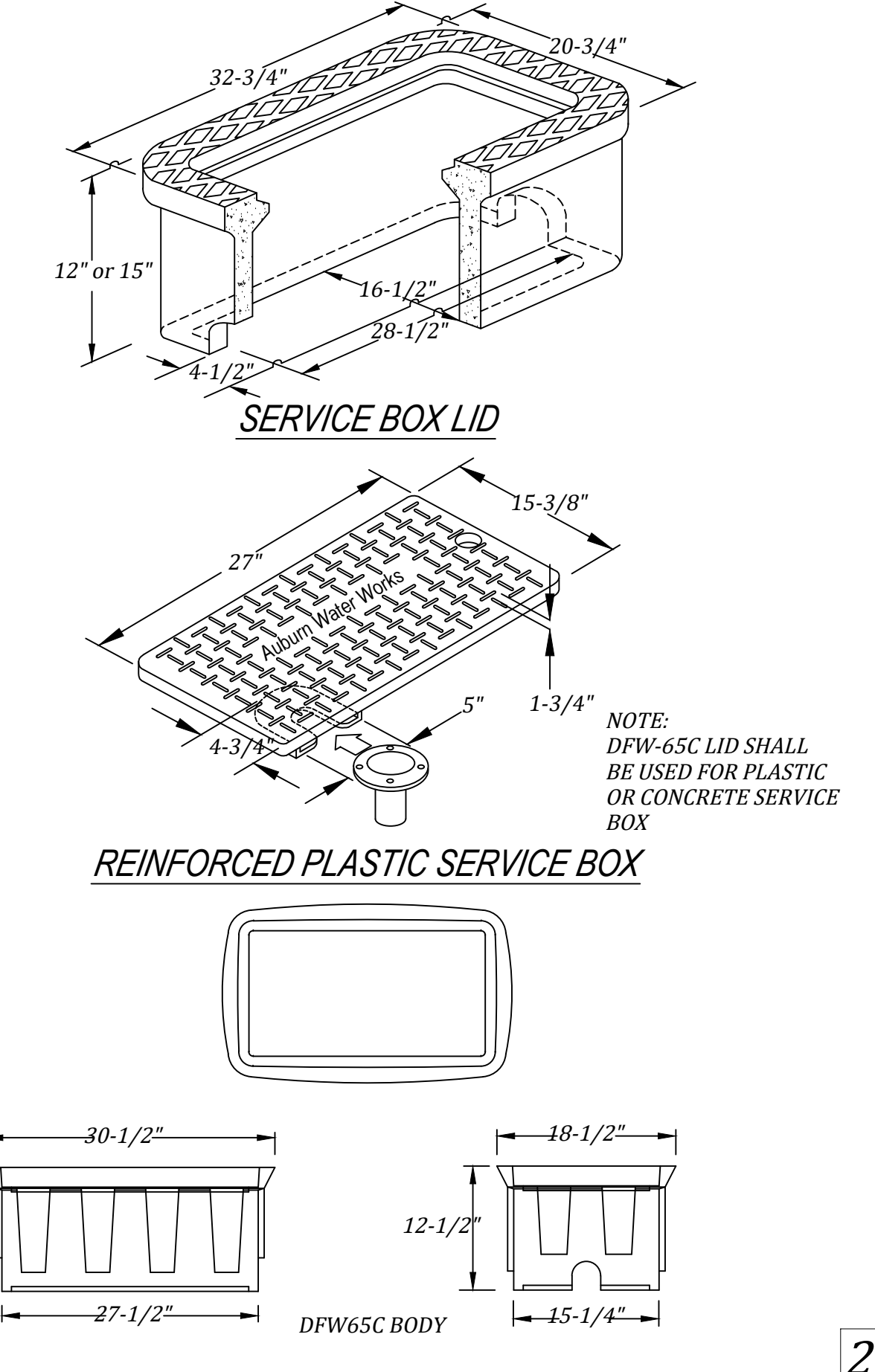
**TYPICAL LARGE DOMESTIC METER VAULT (3\"/>**



- 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.

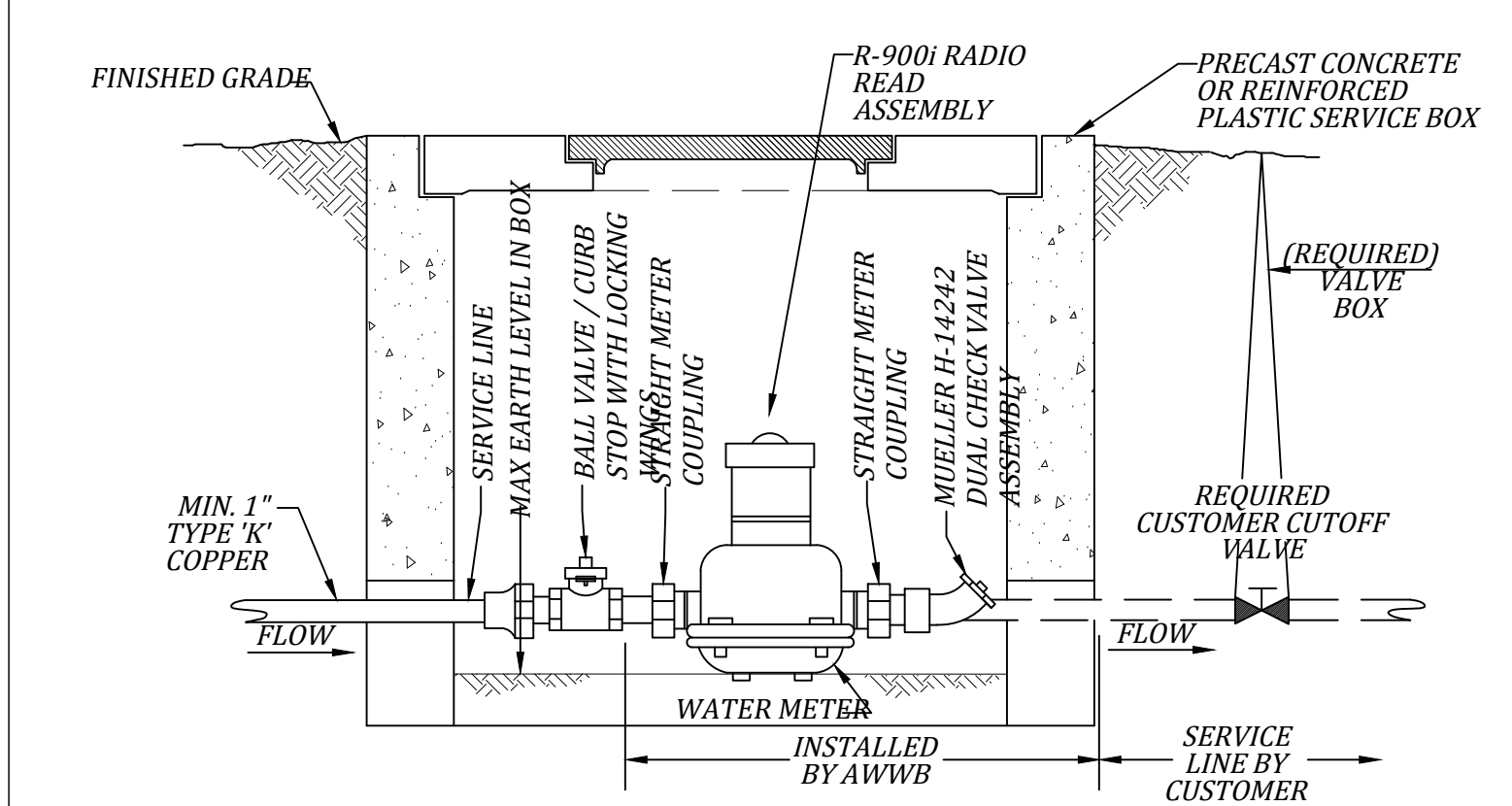
224

**CONCRETE SERVICE BOX**



230

**TYPICAL 3/4\"/>**



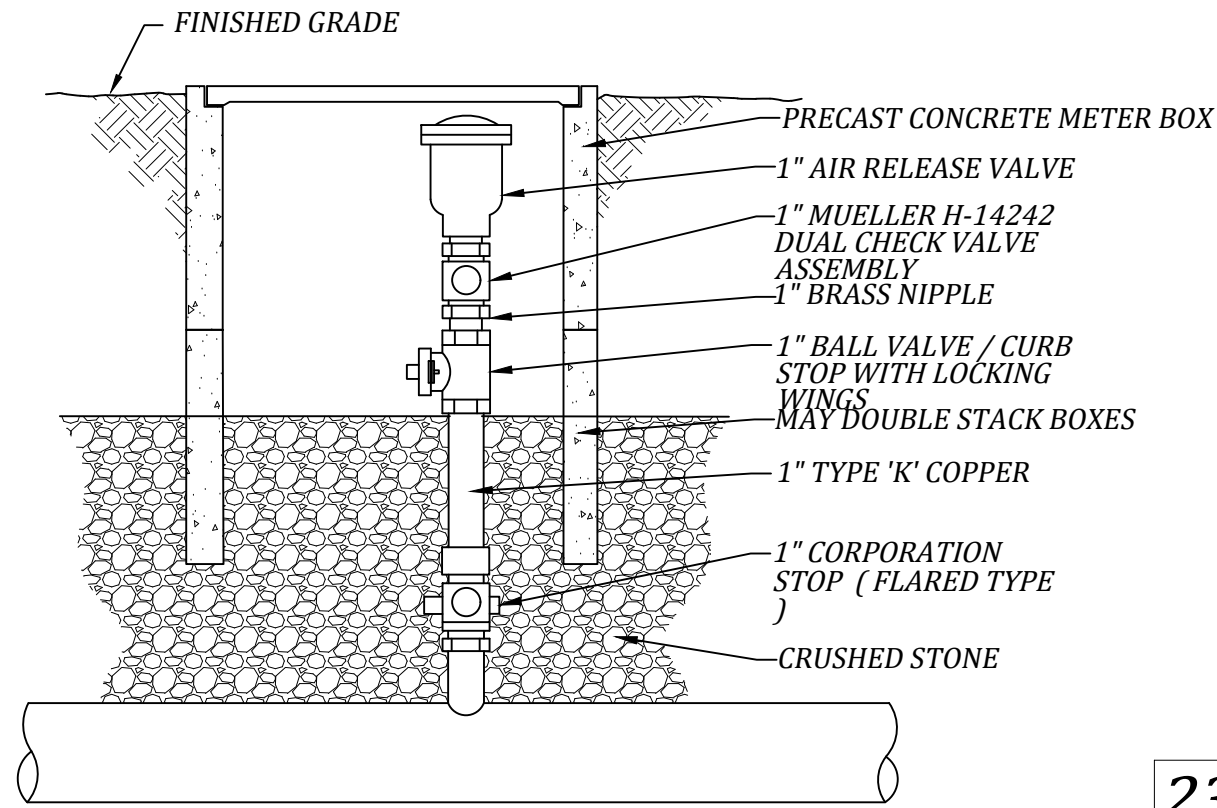
- NOTES:**
1. METER SHALL BE NEPTUNE T-10 METER.
  2. CURB STOP SHALL BE LOCATED JUST INSIDE THE METER BOX TO ALLOW SUFFICIENT SPACE FOR THE WATER METER AND CHECK VALVE ASSEMBLY.

232

**STANDARD DETAILS: WATER - SHEET 2 OF 4**

PROJECT TITLE:	DEPARTMENT:	WBM REVISIONS:	GM-04/2004
	SCALE:	N.T.S.	BS-10-25-0
	DRAWN BY:	GM	DCM 2010
	REVIEWED BY:	JC	JC-10-2011
	APPROVED BY:	EC	JC-12-2012
	IMPLEMENTED:	JANUARY 2008	MW-12-200

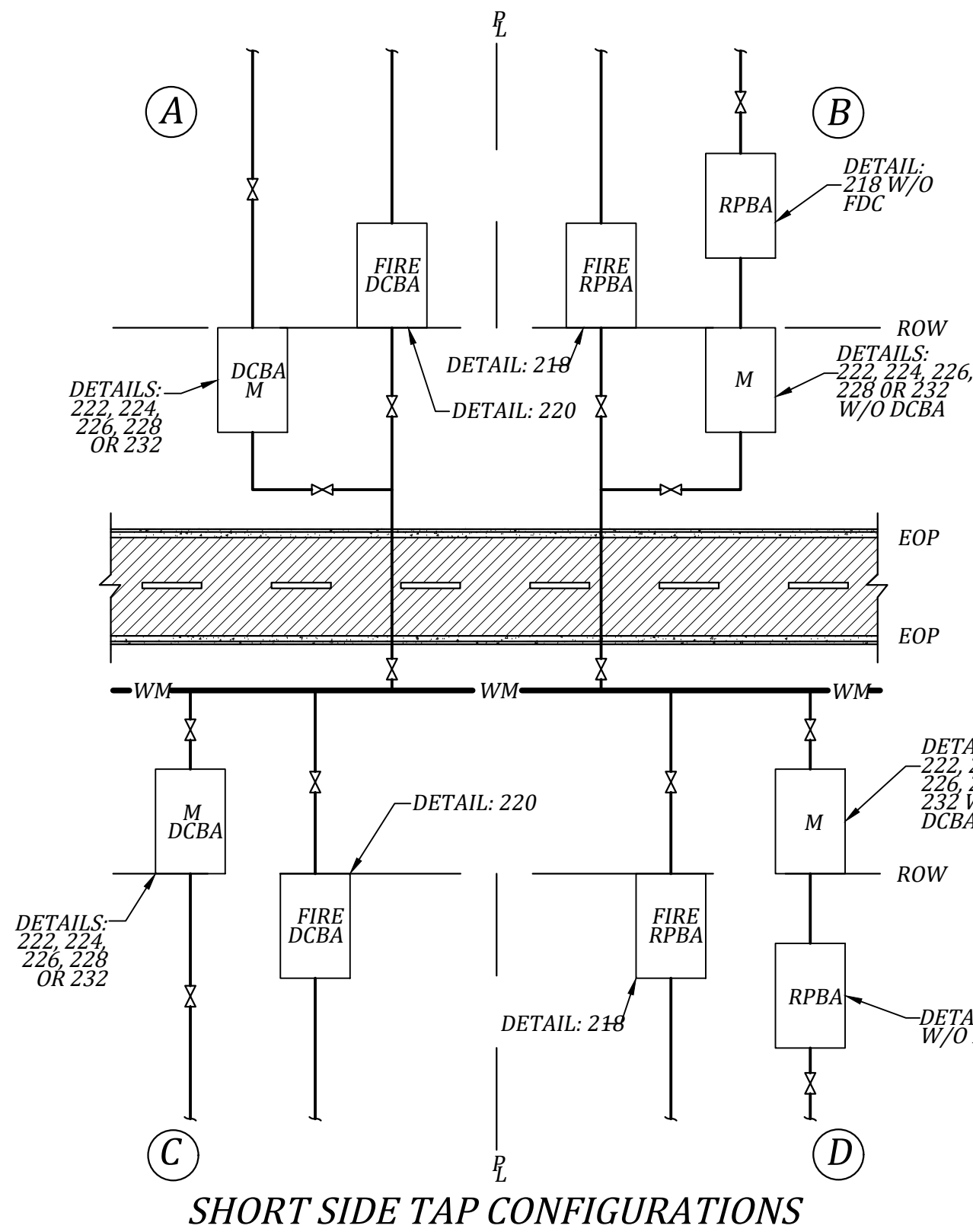
**TYPICAL AUTOMATIC AIR RELEASE VALVE**



234

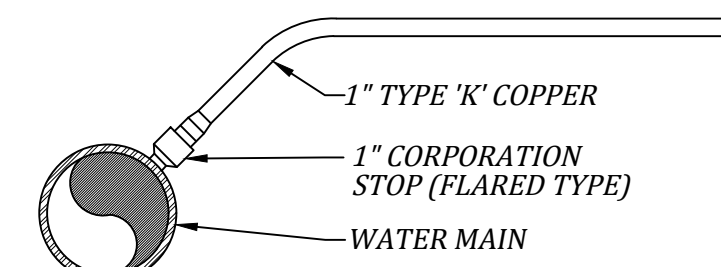
**GENERAL SERVICE CONNECTION CONFIGURATIONS**

**LONG SIDE TAP CONFIGURATIONS**



246

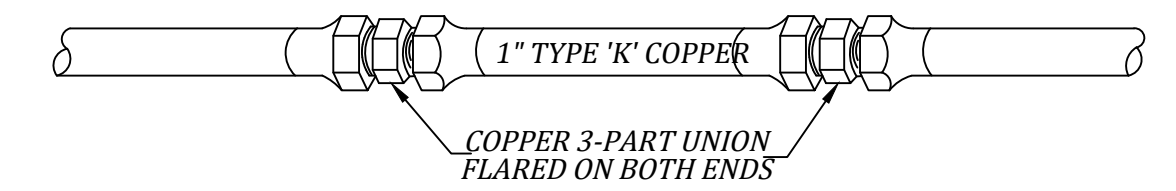
**TYPICAL 1" SERVICE CONNECTION**



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

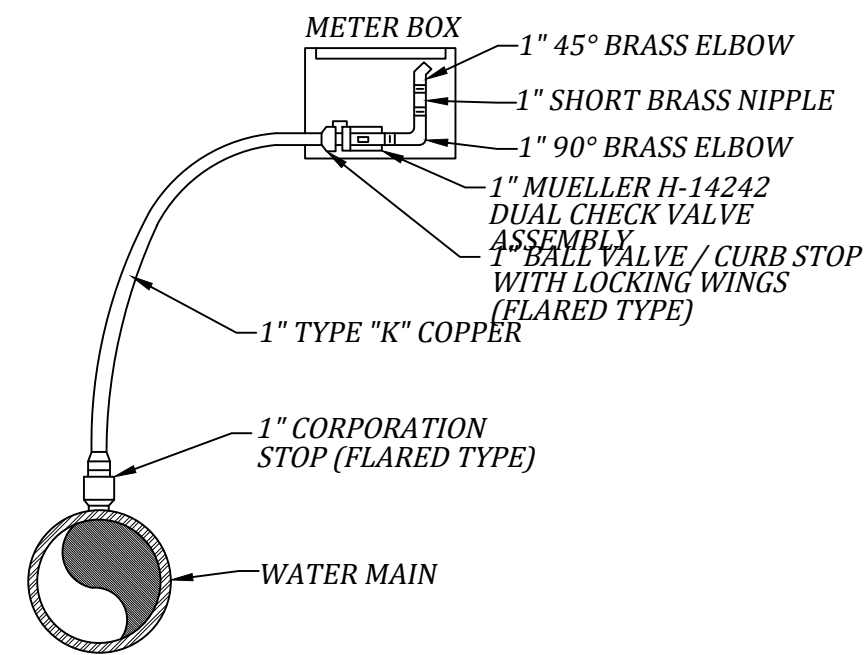
238

**TYPICAL COPPER REPAIR (1" ONLY)**



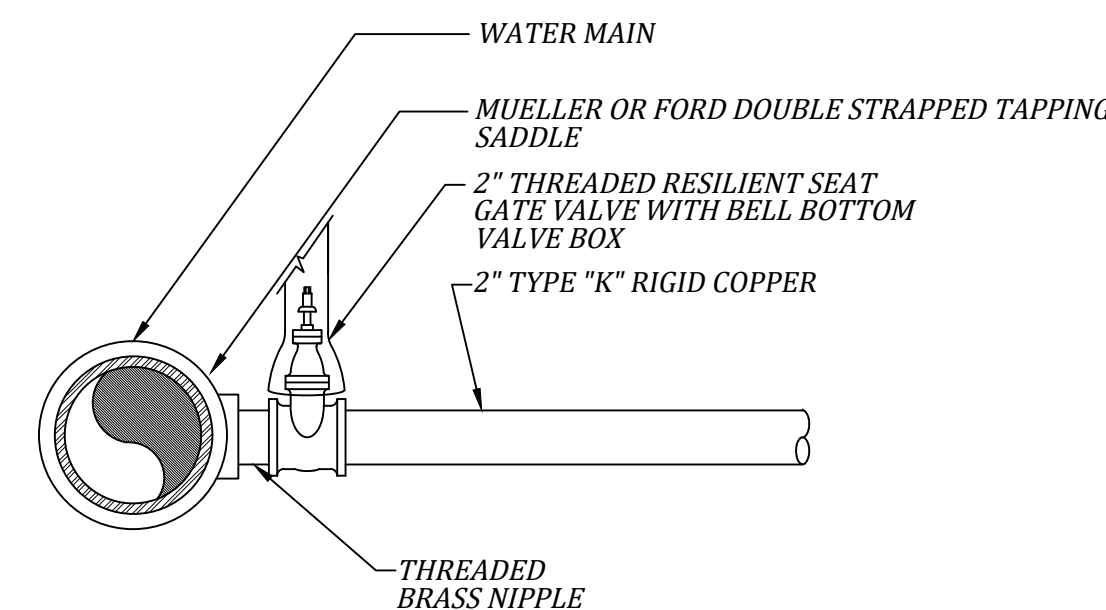
242

**TYPICAL MANUAL AIR RELEASE VALVE**



236

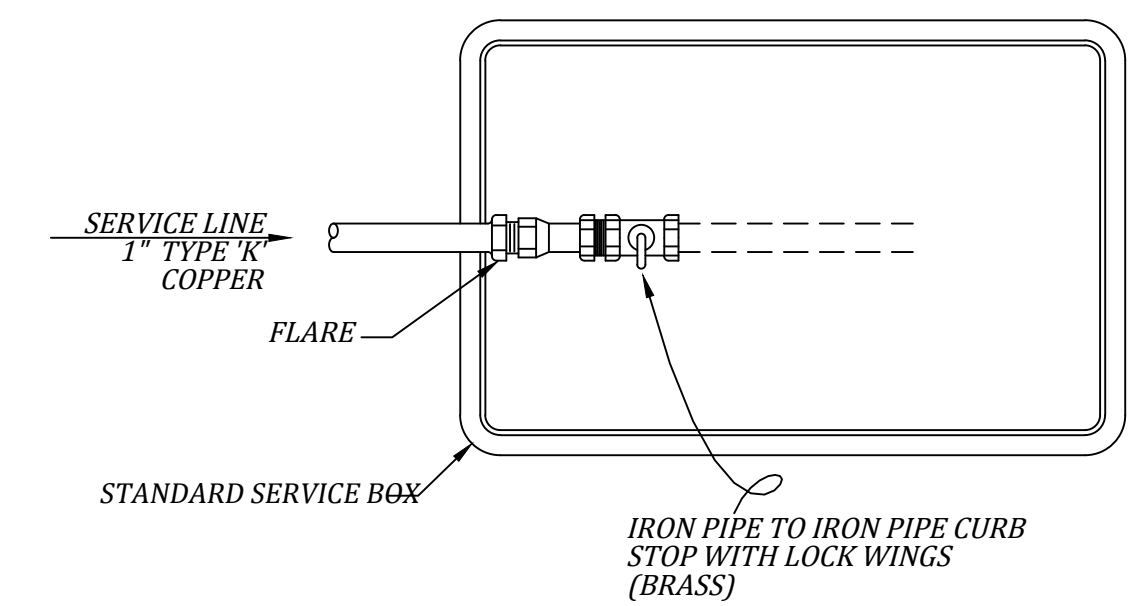
**TYPICAL 2" SERVICE CONNECTION**



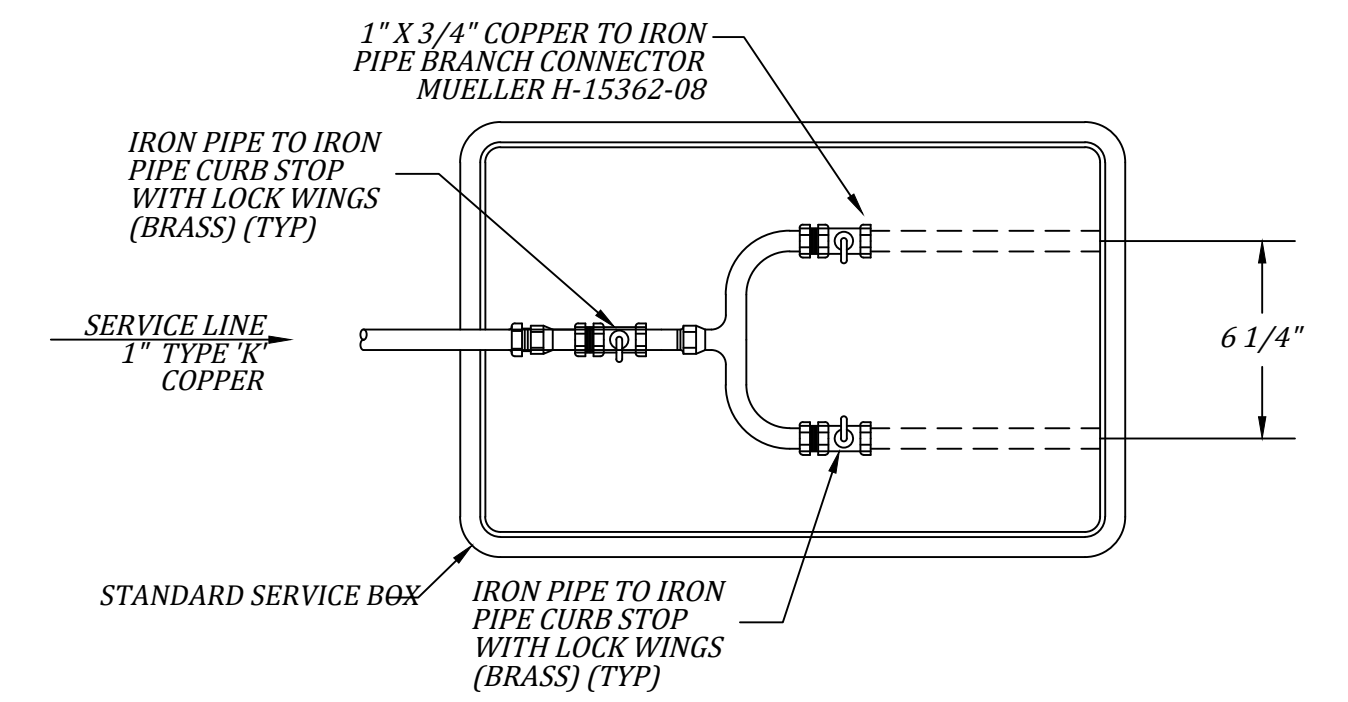
NOTES:  
1. TYPICAL 2" SERVICE CONNECTION SHALL BE USED AT A MINIMUM FOR ALL 1-1/2" AND 2" METER INSTALLATIONS.

240

**TYPICAL SINGLE SERVICE CONNECTION**



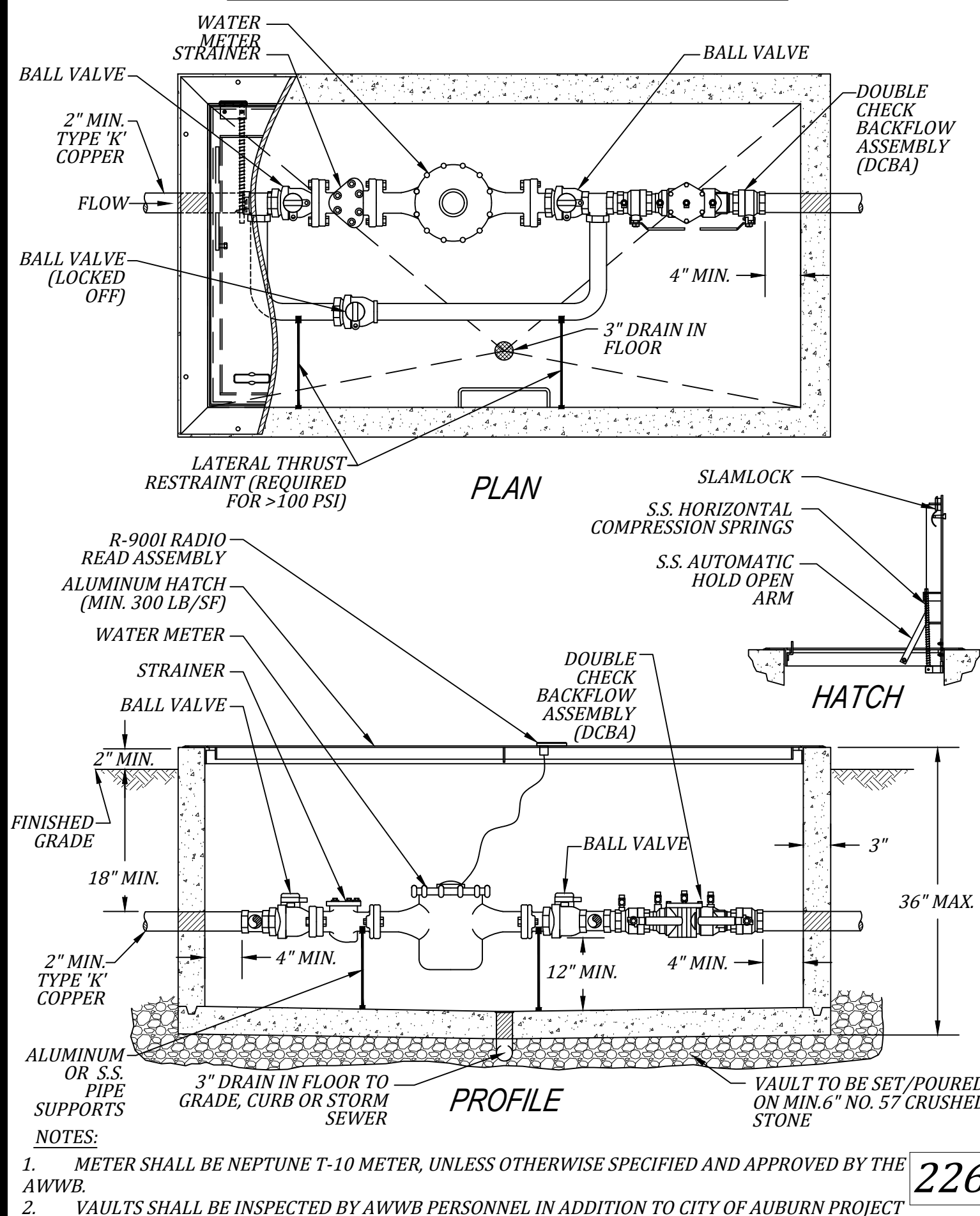
**TYPICAL DOUBLE SERVICE CONNECTION**



NOTES:  
1. IN A SINGLE FAMILY DEVELOPMENT, BRANCH CONNECTORS WILL BE SET BY AWWB ONLY WHEN TWO (2) METERS HAVE BEEN REQUESTED (ONE DOMESTIC AND ONE IRRIGATION) FOR A SINGLE LOT AND ALL APPLICABLE FEES HAVE BEEN PAID  
2. THE DOMESTIC METERS WILL NOT BE ALLOWED IN A SERVICE BOX.

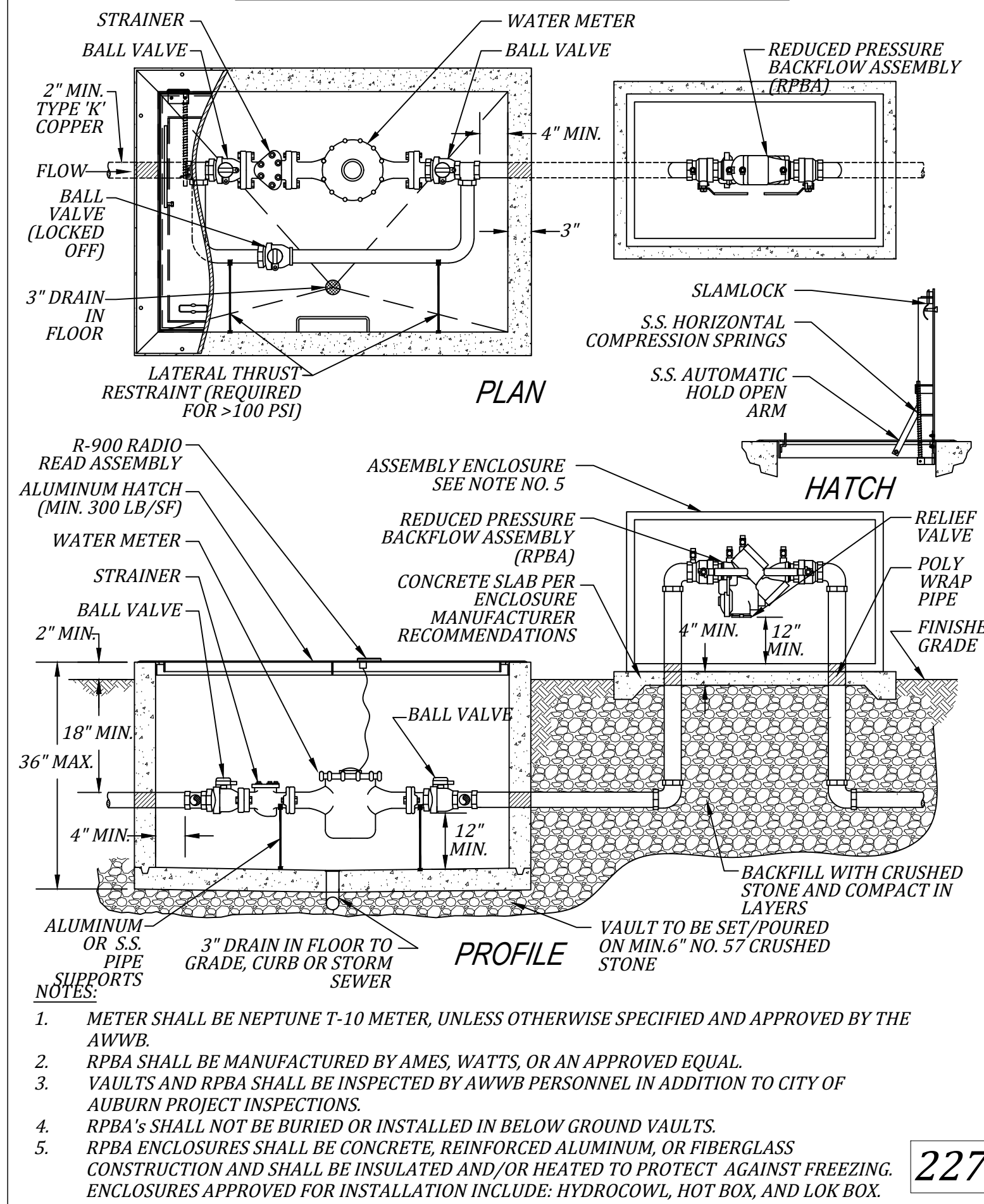
244

**TYPICAL 1.5" TO 2.0" METER VAULT W/ DCBA**



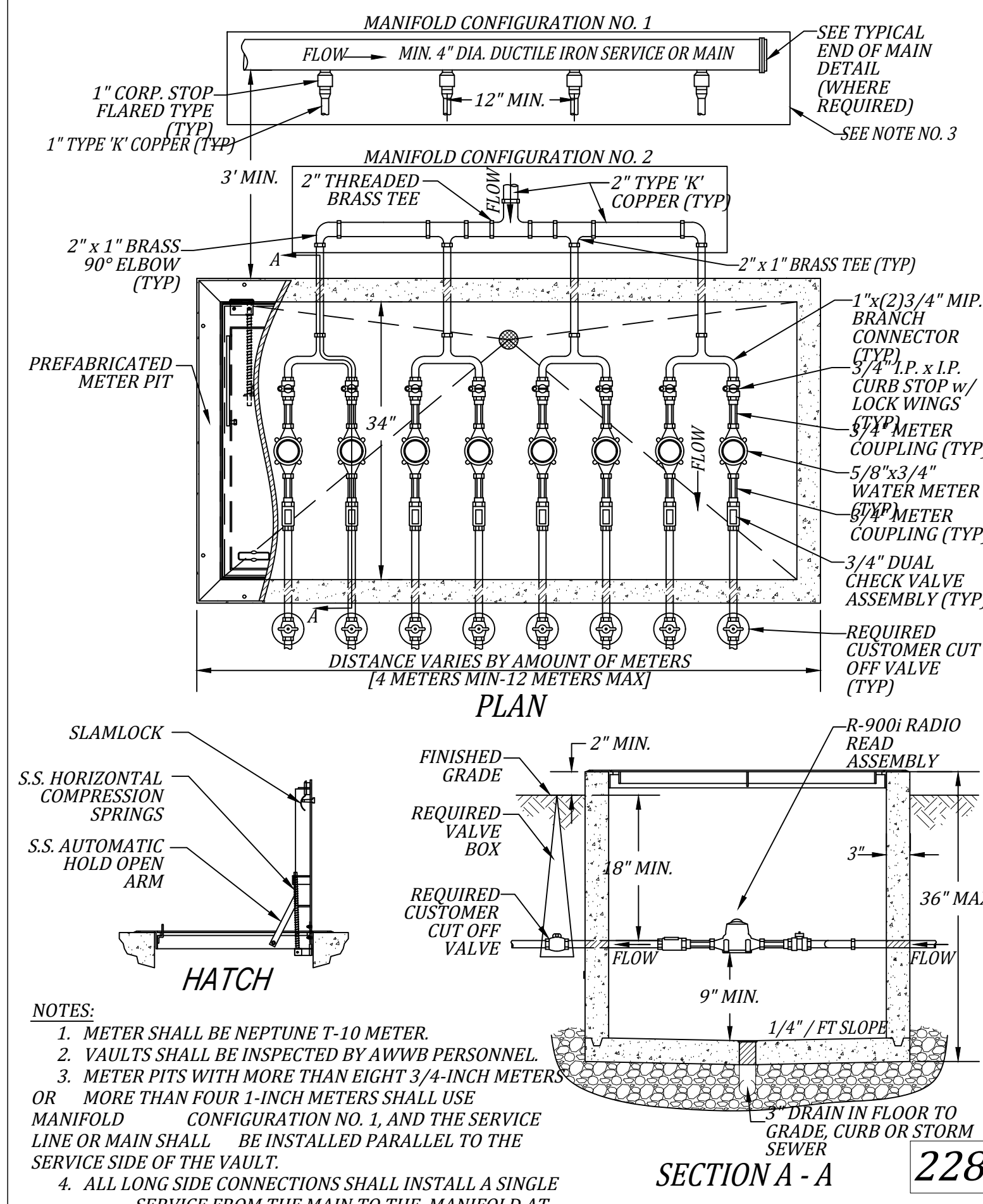
226

**TYPICAL 1.5" TO 2.0" METER VAULT W/ RPBA**



227

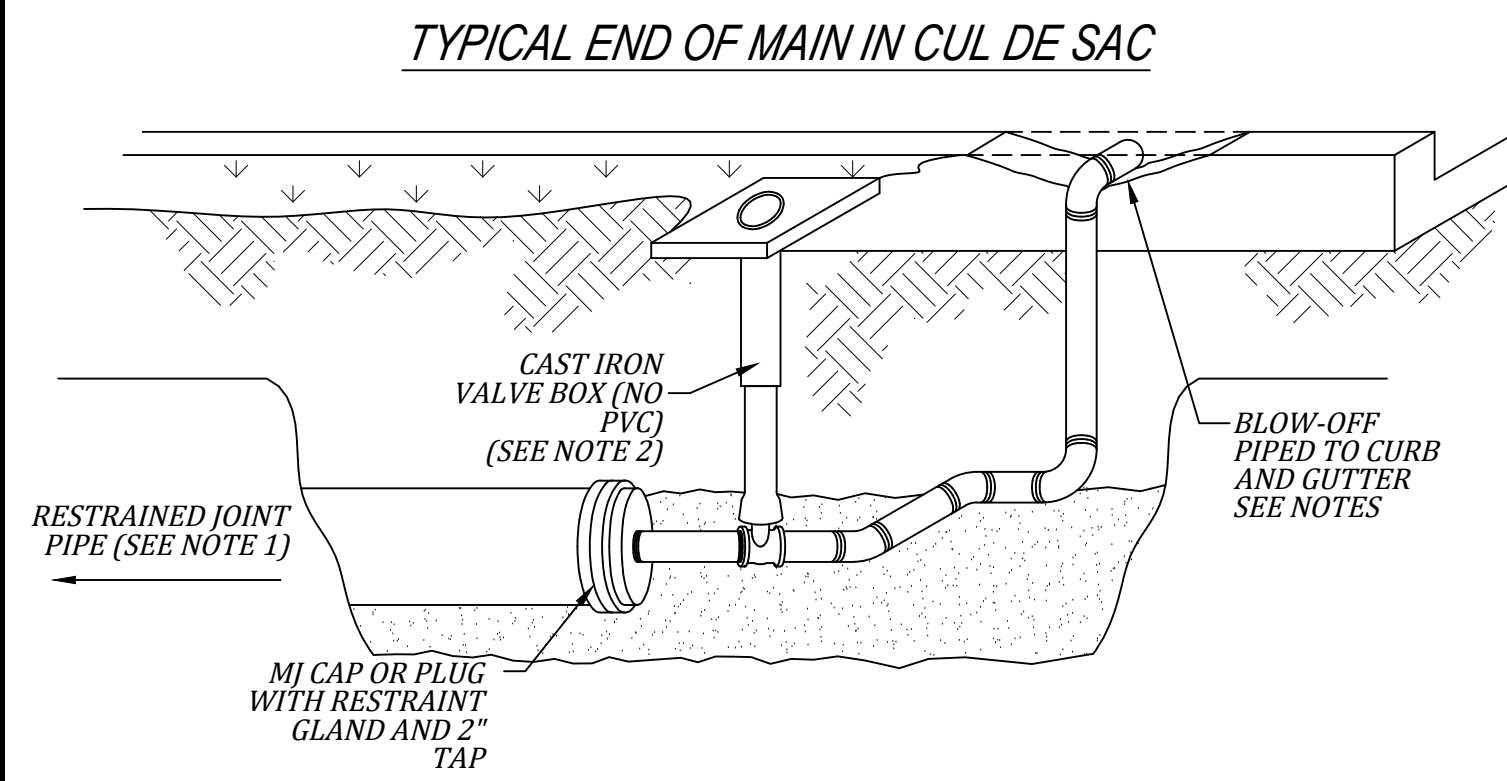
**TYPICAL MULTIPLE METER VAULT**



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**STANDARD DETAILS: WATER - SHEET 3 OF 4**

PROJECT TITLE:	DEPARTMENT:	WBM	REVISIONS:	GM-04/2012
SCALE:	N.T.S.			BS-10-25-0
DRAWN BY:	GM			DCM 2010
REVIEWED BY:	JC			JC-10-2011
APPROVED BY:	EC			JC-12-2012
IMPLEMENTED:	JANUARY 2008			MW-12-202

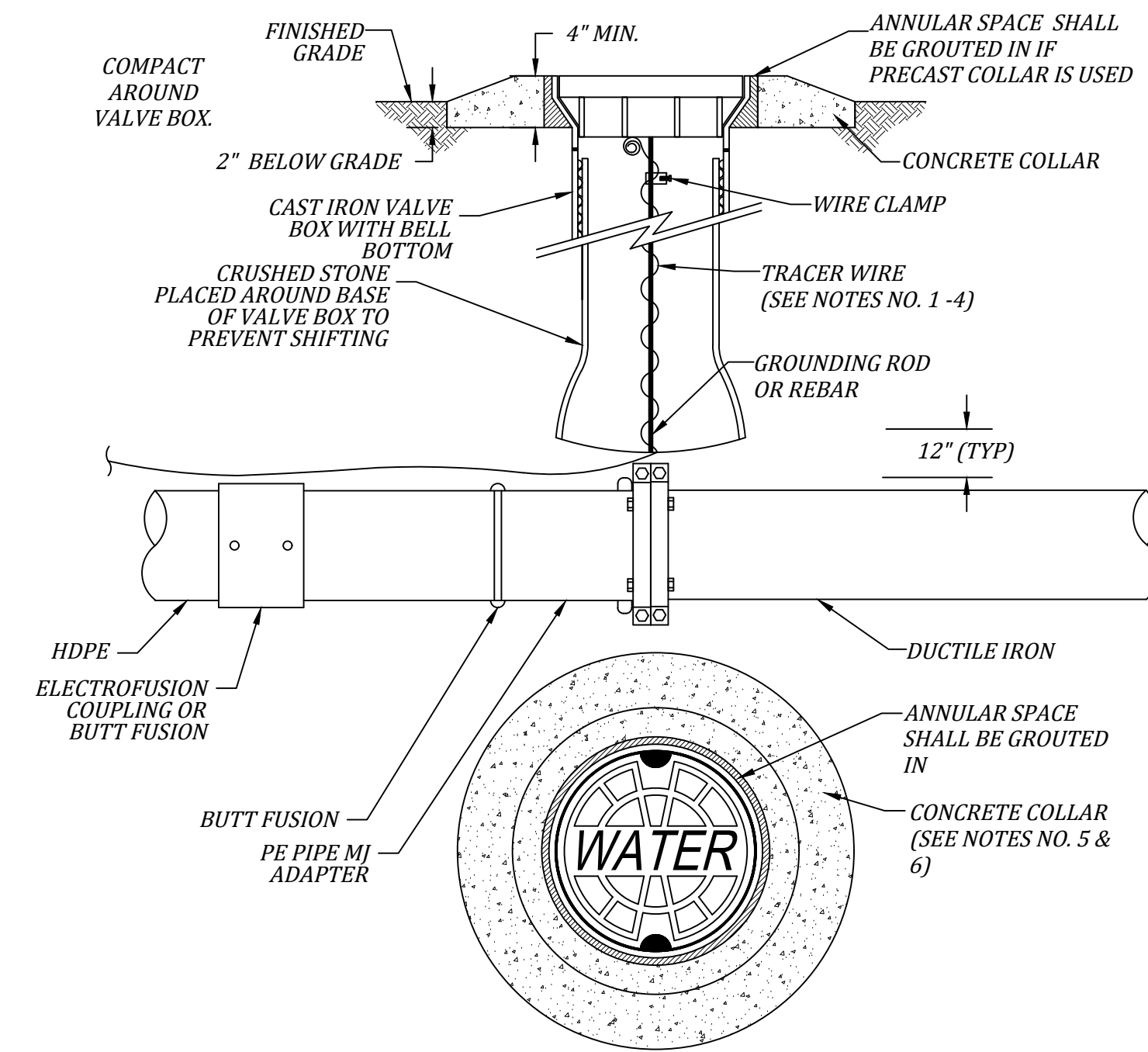


**NOTES:**

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. VALVE SHALL BE LOCATED WITHIN 24" OF THE BACK OF CURB, MAY BE PLACED IN PAVEMENT.
3. THE BLOW-OFF SHALL BE PLACED WITH AT LEAST 1" CLEARANCE BETWEEN GUTTER AND BOTTOM OF PIPE AND SHOULD BE POINTED SLIGHTLY UPWARD.
4. THE BLOW-OFF SHALL BE LOCATED WITHIN 18" OF A PROPERTY LINE AND BE ANGLED TO DIRECT FLOW AWAY FROM THE BLOW-OFF AND VALVE, AND TOWARDS A STORM DRAIN INLET.

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**TYPICAL HDPE TO DUCTILE IRON MAIN TRANSITION**



**NOTES:**

1. TRACER WIRE SHALL BE BROUGHT TO GRADE AT A MINIMUM OF EVERY 500 FEET IN A VALVE BOX.
2. TRACER WIRE SHALL WRAP AROUND GROUNDING ROD/ REBAR INSIDE VALVE BOX.
3. A MINIMUM OF 12 INCHES OF EXCESS WIRE SHALL BE COILED AND LEFT IN THE VALVE BOX.
4. TRACER WIRE SHALL BE NO. 14 A.W.G. COPPER CLAD STEEL W/ POLYETHYLENE INSULATION.
5. CONCRETE COLLAR MAY BE CAST-IN-PLACE OR PRECAST AND MAY BE ROUND OR SQUARE IN SHAPE.
6. CONCRETE COLLAR SHALL BE A MIN. 4" THICK.

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**STANDARD DETAILS: WATER - SHEET 4 OF 4**

PROJECT TITLE:			
DEPARTMENT:	WBM	REVISIONS:	BS-10-25-07
SCALE:	N.T.S.		DCM 2010
DRAWN BY:	GM		JC-10-2011
REVIEWED BY:	JC		JC-12-2012
APPROVED BY:	EC		MW-12-2020
IMPLEMENTED:	JANUARY 2008		MW-12-2021

