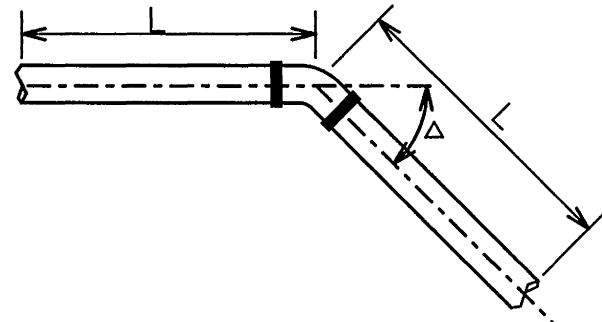


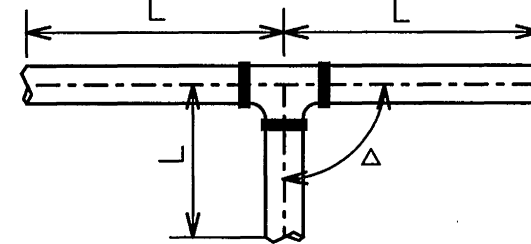
# WATER - STANDARD DETAILS

## CONSTRUCTION DATA

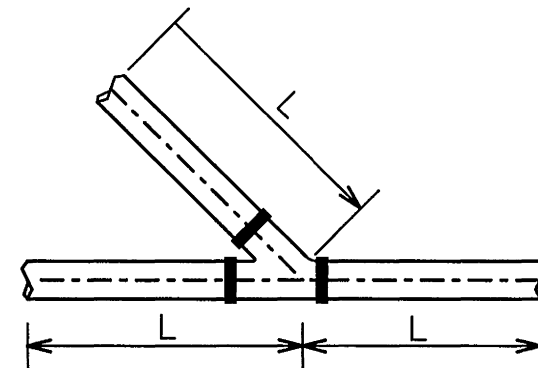
PIPE SIZE (IN.)	L = MINIMUM LENGTH OF RESTRAINED PIPE (FT)											
	$\Delta = 90^\circ$			$\Delta = 45^\circ$			$\Delta = 22.5^\circ$			$\Delta = 11.25^\circ$		
	HORIZ.	VERT. UP	VERT. DOWN	HORIZ.	VERT. UP	VERT. DOWN	HORIZ.	VERT. UP	VERT. DOWN	HORIZ.	VERT. UP	VERT. DOWN
4	45	45	78	19	19	32	9	9	15	4	4	8
6	64	64	110	26	26	45	13	13	22	6	6	11
8	82	82	142	34	34	59	16	16	28	8	8	14
10	99	99	171	41	41	71	20	20	34	10	10	17
12	115	115	200	48	48	83	23	23	40	11	11	20
16	146	146	255	60	60	106	29	29	51	14	14	25
20	160	160	282	66	66	117	32	32	56	16	16	28
24	201	201	358	83	83	148	40	40	71	20	20	35
36	271	271	490	112	112	203	54	54	97	27	27	48



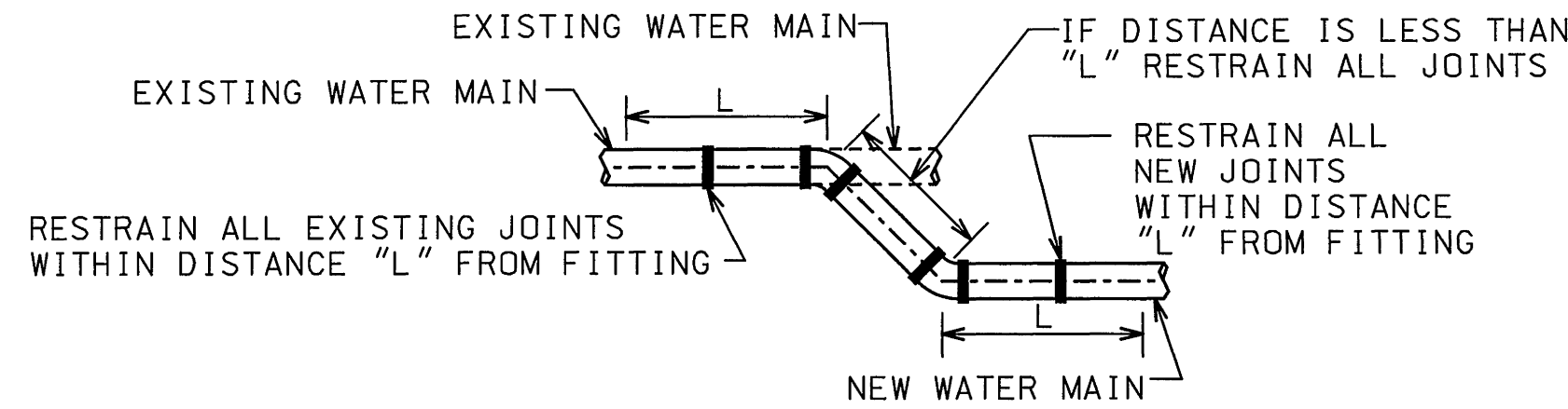
VERTICAL OR HORIZONTAL BENDS



VERTICAL OR HORIZONTAL TEES



VERTICAL OR HORIZONTAL WYES



CONNECTION TO EXISTING WATER MAIN

## TYPICAL DETAILS AND CONSTRUCTION DATA - MECHANICAL JOINT RESTRAINING DEVICES

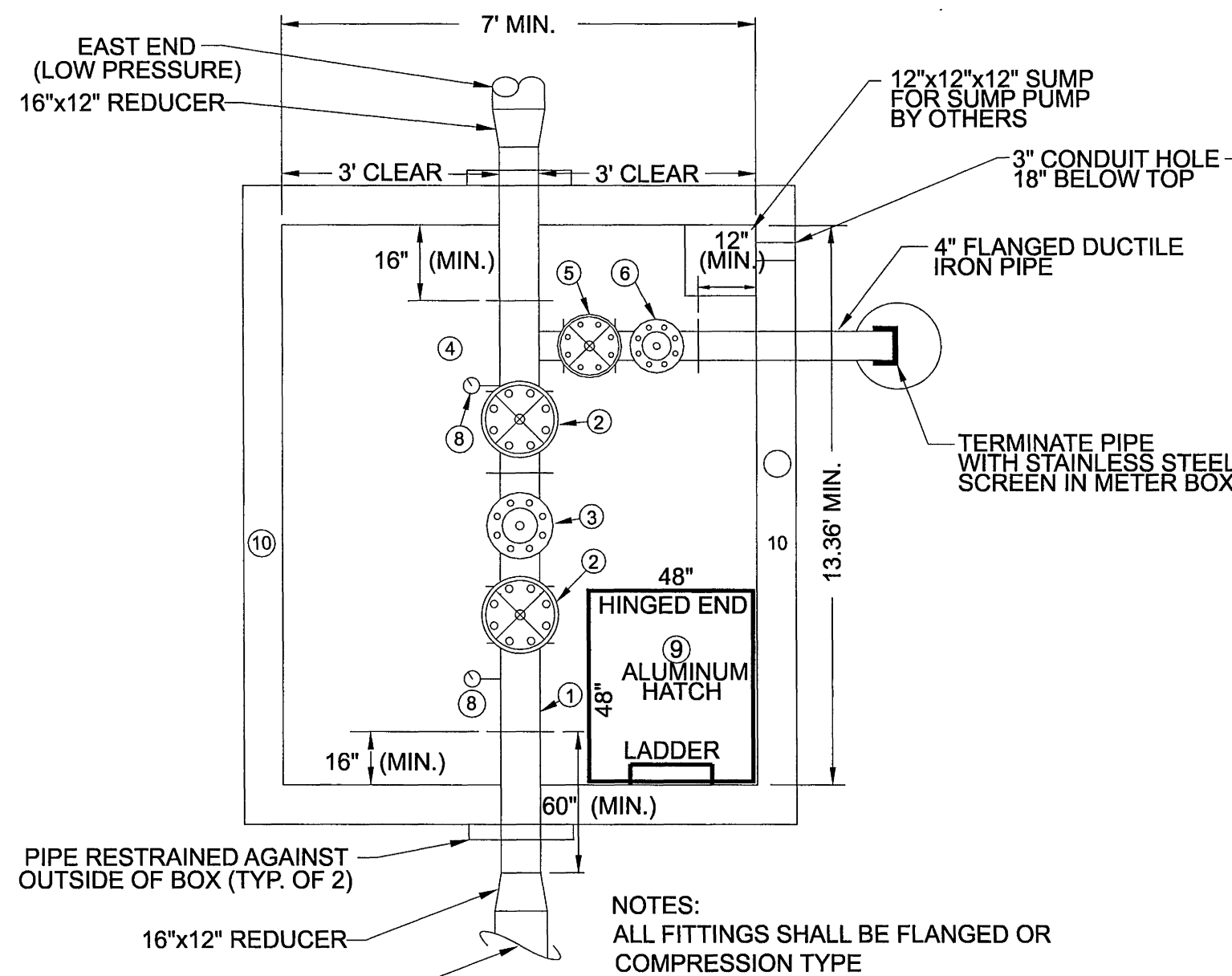
NOT TO SCALE

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

REVISED	FHWA REGION	STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
	3	VA.		11	0011-080-108,C501	2(19)

### NOTE:

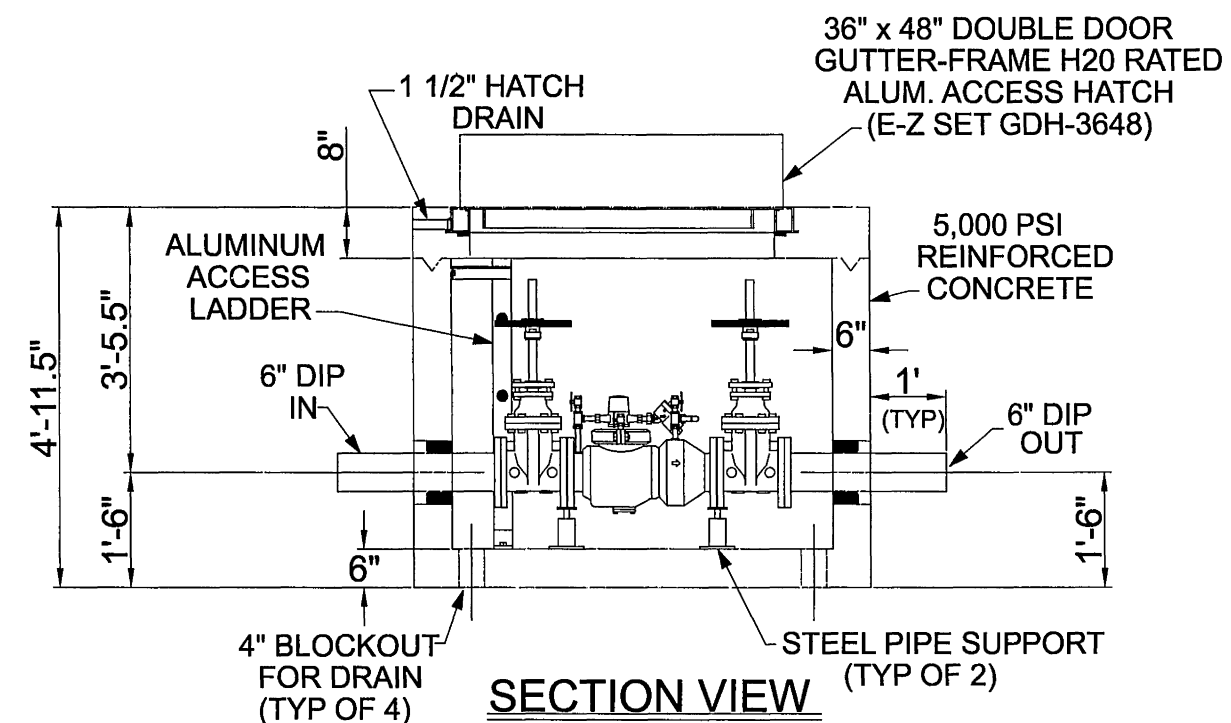
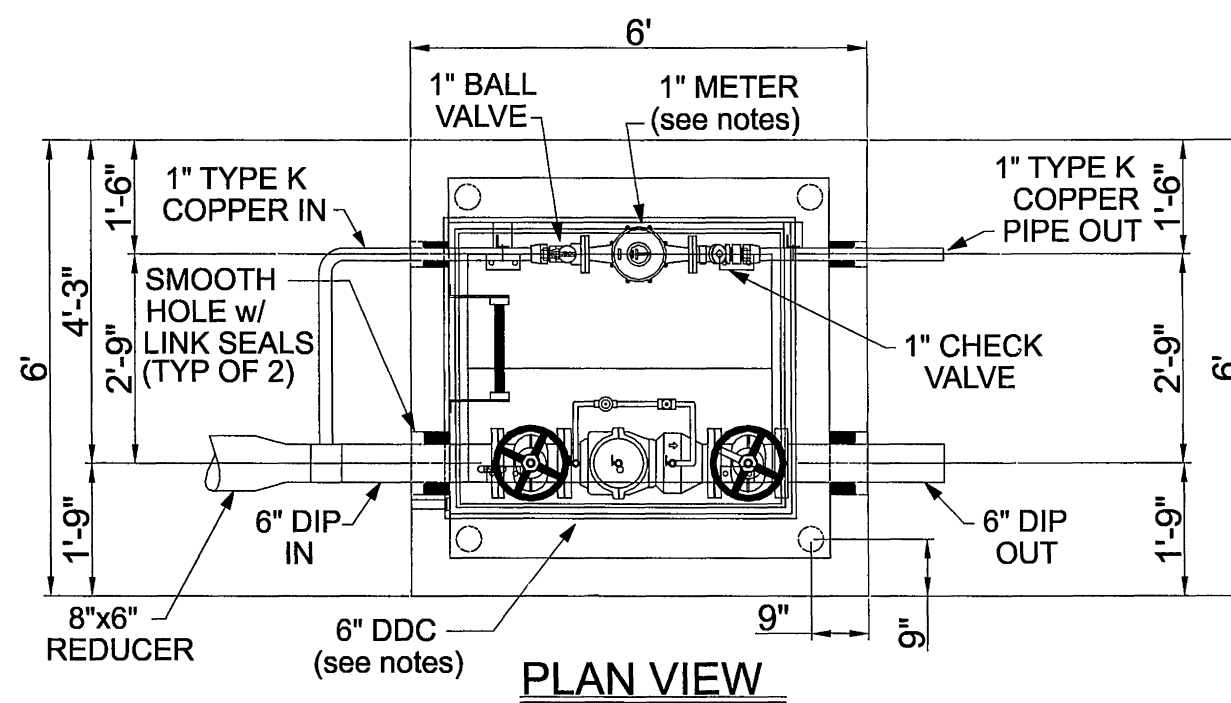
- MECHANICAL JOINT RESTRAINING DEVICES SHALL BE EBAA IRON, INC. MEGALUG, WITH A WORKING PRESSURE OF 250 PSI AND A MINIMUM DESIGN SAFETY FACTOR OF 2.
- THE RESTRAINED LENGTH OF WATER MAIN IS BASED ON THE FOLLOWING: AN INTERNAL PRESSURE OF 200 PSI WITH A FACTOR OF SAFETY OF 2, 3 FEET OF PIPE COVER, PIPE BEDDED ON 4" OF LOOSE MATERIAL WITH COMPACTED BEDDING EXTENDING TO THE TOP OF PIPE AND A SOIL TYPE CLASSIFICATION OF "ML" AND A FACTOR OF SAFETY OF 2.
- PLUGS SHALL BE RESTRAINED BASED ON THE RESTRAINED LENGTH FOR 90° VERTICAL BENDS.
- VALVES, TEES, AND WYES SHALL BE RESTRAINED BASED ON THE RESTRAINED LENGTH FOR 45° HORIZONTAL BENDS.
- EXISTING WATER MAIN ADJACENT TO PROPOSED BENDS, WYES, VALVES, TEES, AND PLUGS SHALL BE UNCOVERED AND THE EXISTING JOINTS SHALL BE RESTRAINED FOR THE LENGTH INDICATED. IF THE EXISTING WATER MAIN WILL NOT ACCEPT THE MECHANICAL JOINT RESTRAINING MECHANISM, THE EXISTING WATER MAIN SHALL BE REPLACED WITH DUCTILE IRON WATER MAIN FOR THE LENGTH INDICATED.



- 12" FLANGE x MECH. JOINT ADAPTOR (SEE NOTE BELOW)
- 12" FLANGE x FLANGE MAIN LINE GATE VALVE
- 12" FLANGE x FLANGE MAIN LINE PRESSURE REGULATING VALVE (12" CLA-VAL MODEL 90-01) PATTERN - GLOBE, PRESSURE CLASS - 250 PSI TRIM - STAINLESS STEEL INSIDE & OUT, ADJUSTMENT RANGE 30-300 PSI.
- 12"x4" FLANGE x FLANGE MAIN LINE REDUCING TEE
- 4" FLANGE x FLANGE GATE VALVE
- 4" FLANGE x FLANGE PRESSURE RELIEF VALVE (4" CLA-VAL MODEL 50-01), STAINLESS STEEL TRIM INSIDE AND OUT
- NOT USED.
- LIQUID FILLED PRESSURE GAUGE
- 48"x48" GUTTER-FRAME H2O TRAFFIC RATED ALUM. ACCESS HATCH (E-2 SET GDH-4848, OR EQUAL)
- PRE-CAST REINFORCED CONCRETE VAULT W/ 6" MIN. WALLS, TOP, AND BOTTOM (H2O TRAFFIC RATED)

## PRESSURE REDUCING VALVE VAULT

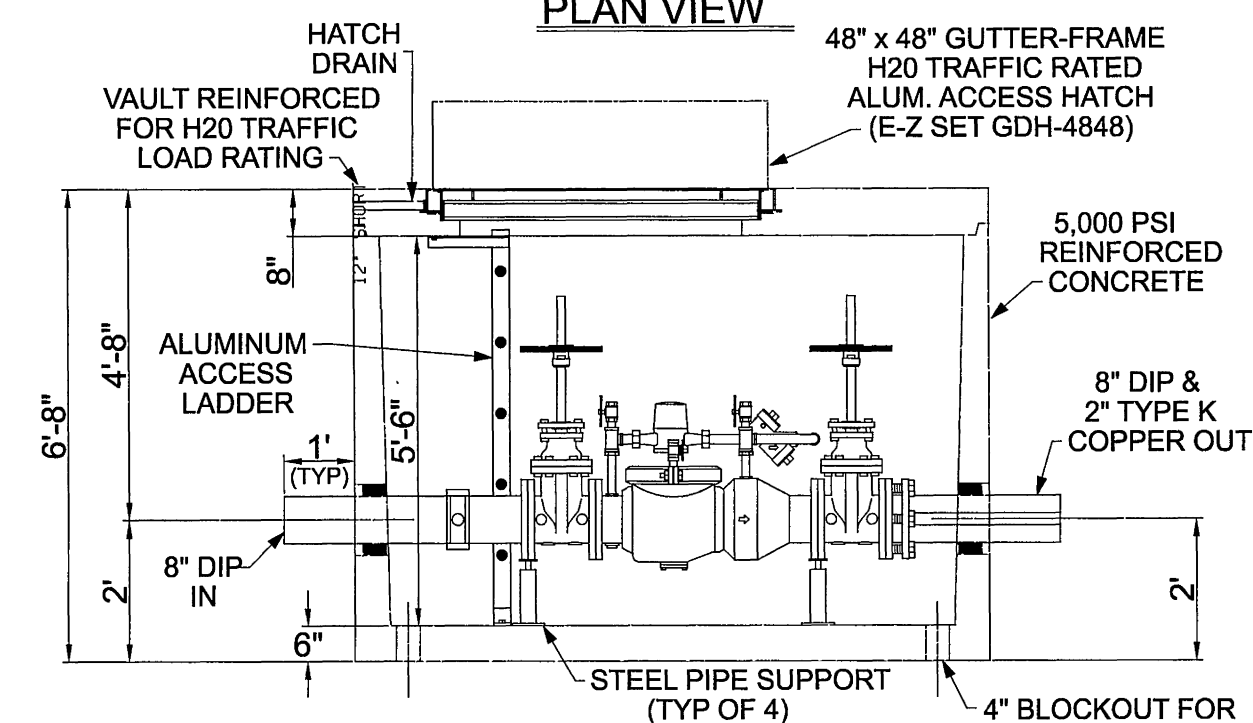
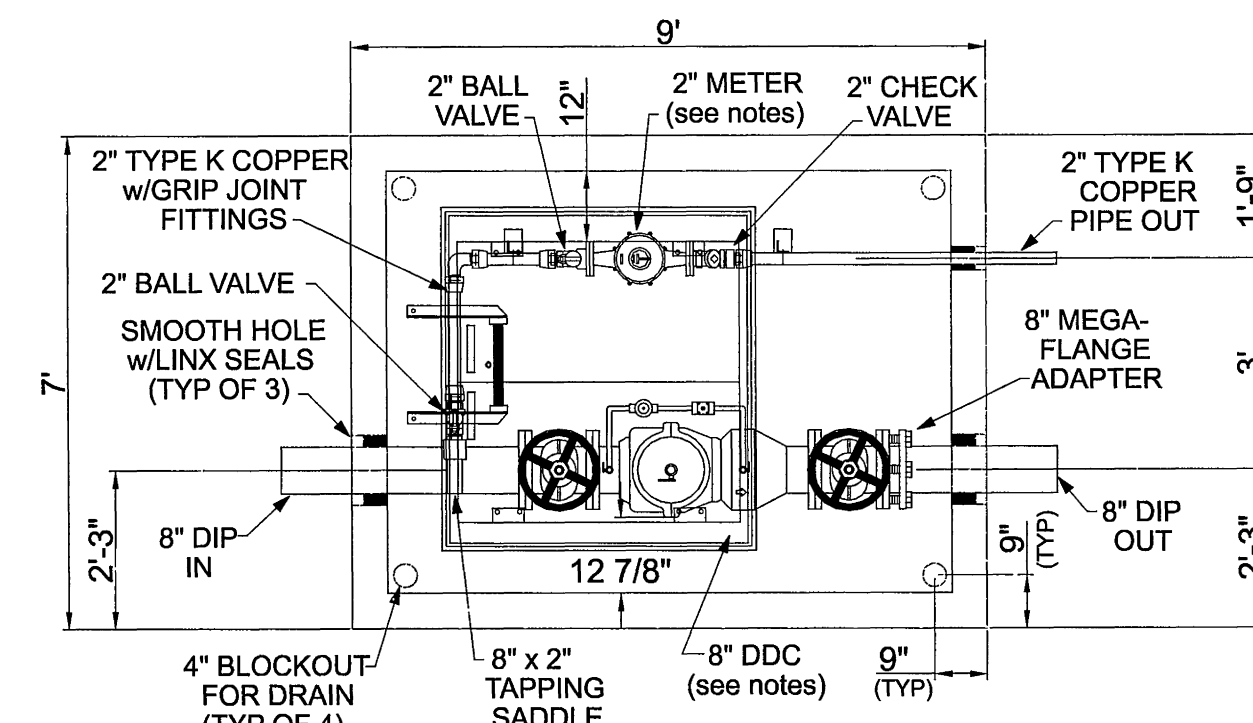
NOT TO SCALE



- NOTES:
- VAULT SHIPPED ASSEMBLED WEIGHING APPROX. 16,000 LBS.
  - 6" WILKINS 350DA DOUBLE CHECK DETECTOR ASSEMBLY w/OS&Y GATE VALVES
  - 1" METER LINE IS TYPE K COPPER WITH GRIP JOINT FITTINGS, BALL VALVE ON INLET (w/LOCKING TABS) & CHECK VALVE OUTLET
  - 1" METER SUPPLIED BY WYWA TO VAULT MANUFACTURER & INSTALLED BY MFR.
  - VAULT SHALL BE BY CLEAR FLOW / AMERICAST OR EQUAL.

## METER VAULT (STA. 78+85)

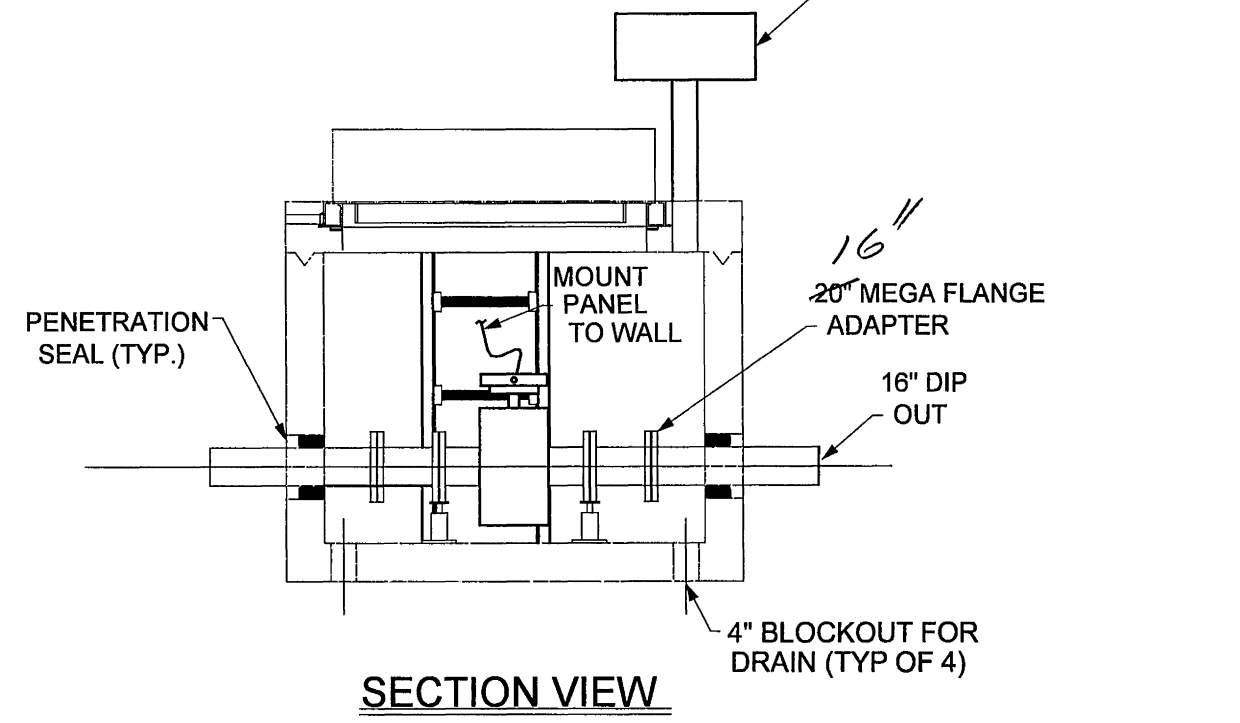
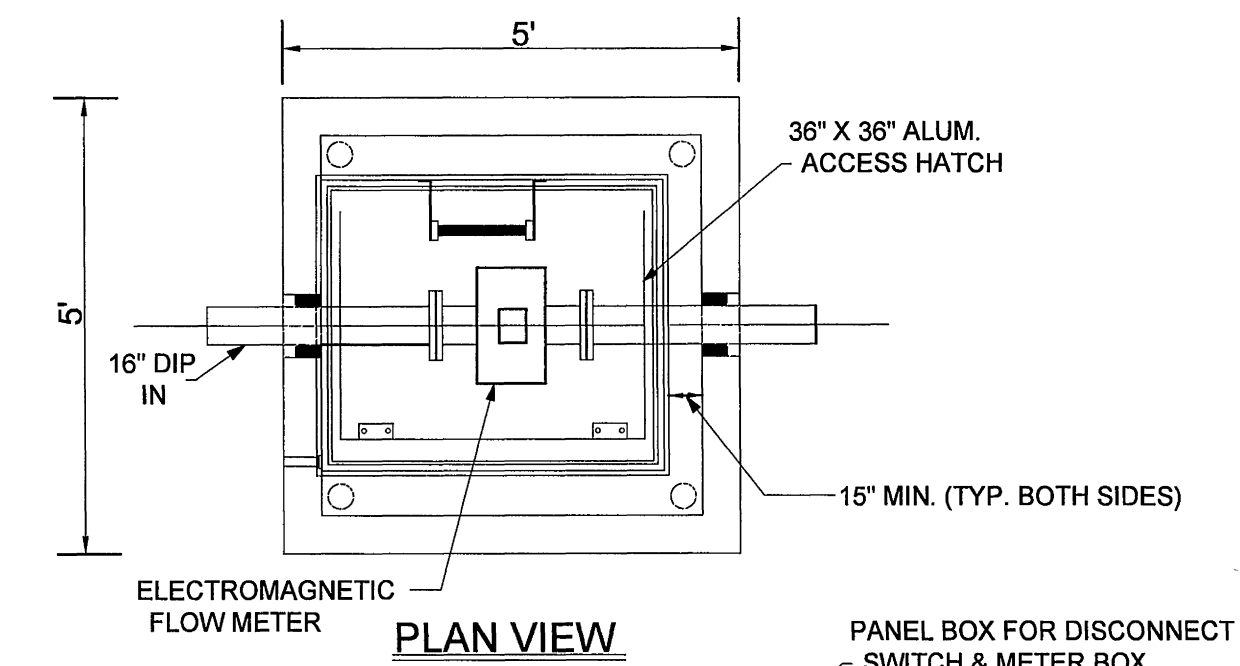
NOT TO SCALE



- NOTES:
- VAULT SHIPPED ASSEMBLED WEIGHING APPROXIMATELY 24,000 LBS.
  - 8" WILKINS 350DA DOUBLE CHECK DETECTOR ASSEMBLY w/METERED BYPASS (GALLONS)
  - 2" METER LINE IS TYPE K COPPER WITH GRIP JOINT FITTINGS, BALL VALVE ON INLET (w/LOCKING TABS) & CHECK VALVE OUTLET
  - 2" METER SUPPLIED BY WYWA TO VAULT MANUFACTURER & INSTALLED BY MFR.

## METER VAULT (STA. 71+75)

NOT TO SCALE



- NOTES:
- ELECTROMAGNETIC FLOWMETER SHALL BE MCCROMETER MODEL UM08 OR APPROVED EQUAL.
  - CONTRACTOR SHALL COORDINATE WITH POWER COMPANY AND PROVIDE CONDUIT AND WIRING FOR A COMPLETE INSTALLATION.

## BULK METER VAULT

NOT TO SCALE