

Notes:

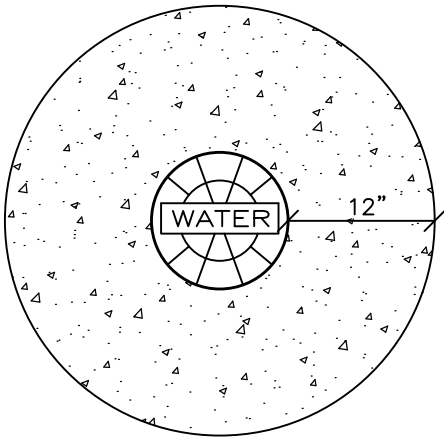
1. KID recommends contractor meet all of the requirements established for safe trenching. (See OSHA and UOSHA requirements, latest additions.)
2. Contractor shall locate all underground utilities before laying pipe within 50' of said utilities which may be exposed, damaged or crossed as shown on the drawings or as "Blue Staked". The contractor will make arrangements with the Utility Company to move the Utility if necessary or obtain permission from the District Engineer to modify grade of pipeline in order to go around existing utilities.
3. Water pipe shall be laid on 6" sand. KID Inspector is required to determine the acceptability of the pipe bedding before backfilling of the pipe zone. Contractor is responsible for scheduling of the pipe bedding inspection.
4. All water lines to be installed in acceptable Public right-of-way or acceptable recorded easements unless otherwise approved by the Kearns Improvement District.
5. KID inspection of pipe bedding placement and pipe zone backfill is required prior to placement of trench backfill.
6. Backfill above the pipe zone is as per the prevailing authority.
7. Pipe Location: Install pipe in the center of the trench.

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R.H.
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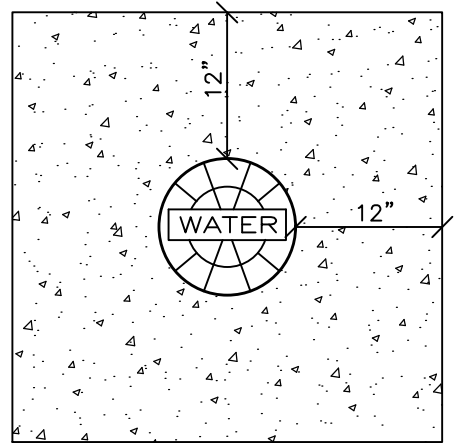


Typical Water Line Trench Detail

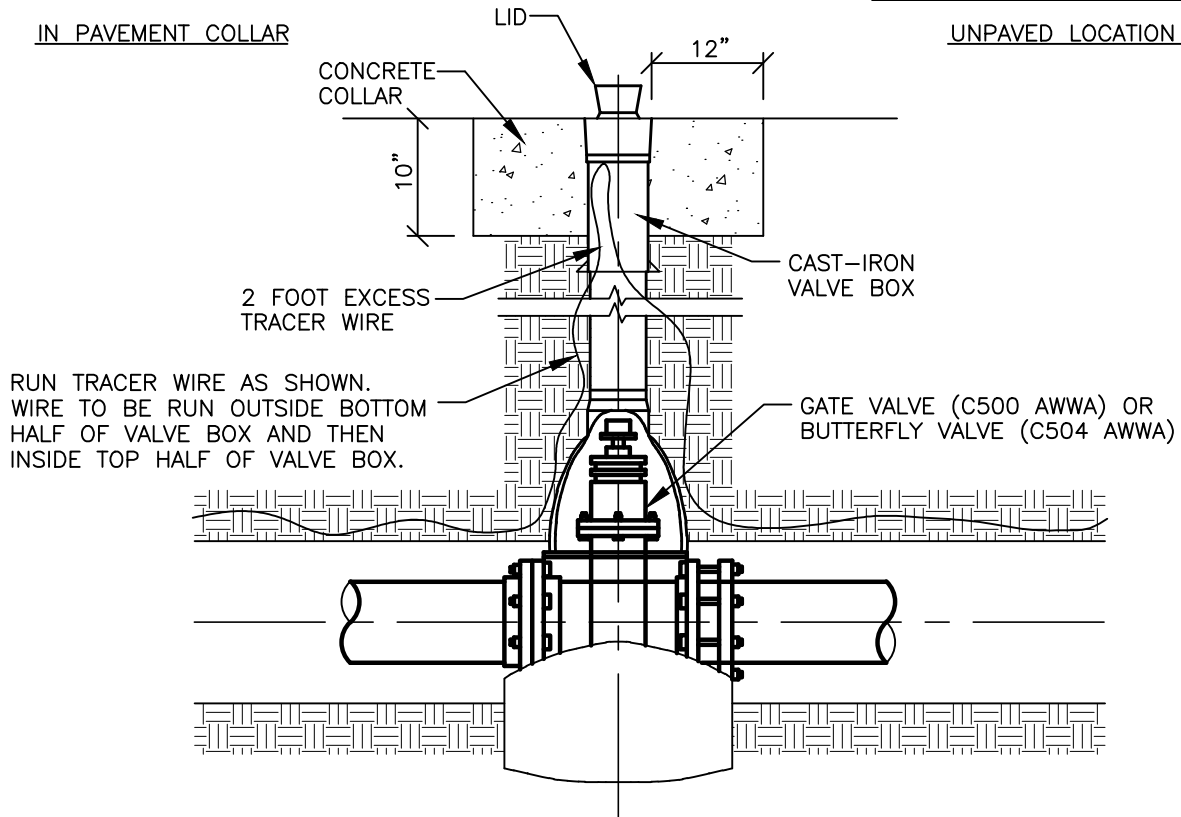
DATE:
09-06-16
DRWG NO.:
CW1



IN PAVEMENT COLLAR



UNPAVED LOCATION PAD



NOTES:

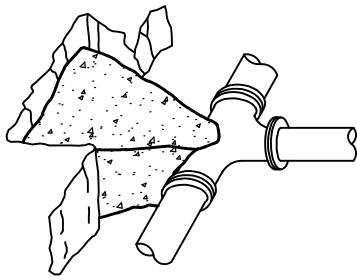
1. INSPECTION: Prior to backfilling around valve, secure inspection of installation by district inspector.
2. BACKFILLING: Install all backfill material per specification requirements.
3. GREASE: Apply poly-fm grease to all bolts. Wrap with 8 mil thick polyethylene sheet and tape wrap.
4. CONCRETE COLLAR: Concrete per city or county specifications.
5. Valve Box must be vertical to allow for valve key access.
6. Provide valve stem extensions for valves deeper than 4 feet.

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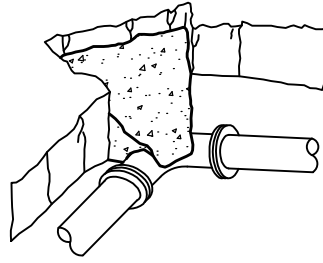


Typical Gate Valve Detail

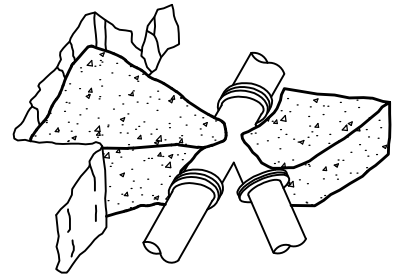
DATE:
09-06-16
DRWG NO.:
CW2



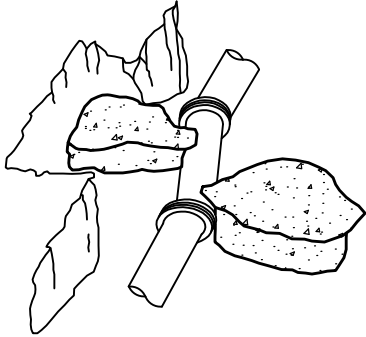
CONDITION I



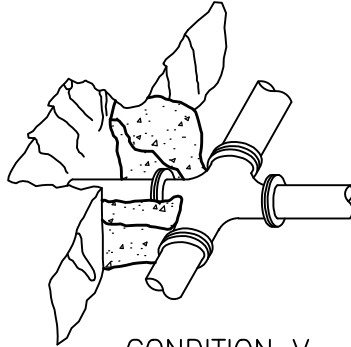
CONDITION II



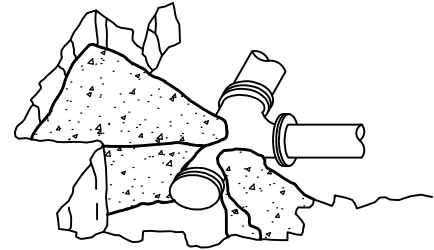
CONDITION III



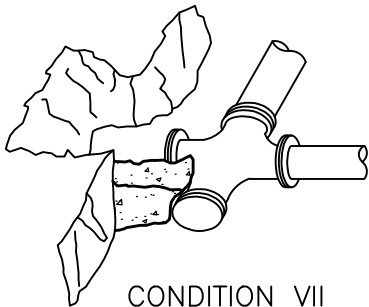
CONDITION IV



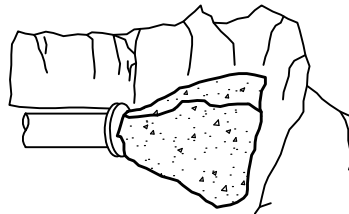
CONDITION V



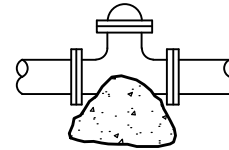
CONDITION VI



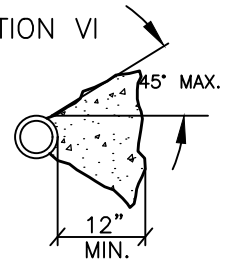
CONDITION VII



CONDITION VIII



VALVE ANCHOR
REQUIRED FOR
VALVES 12" OR
LARGER



TYPICAL SECTION
THROUGH THRUST
BLOCKS

Typical Thrust Block Details

THRUST BLOCK BEARING AREA IN SQ. FEET										
NOMINAL PIPE SIZE (IN.)	DIP I.D. (IN.)	CONDITION								
		I	II	III	IV	V	VI	VII	VIII	
4	4.3	2.2	3.1	1.5	1.7	1.1	2.2	3.1	2.2	2.2
6	6.4	4.8	6.8	3.4	3.7	2.4	4.8	6.8	4.8	4.8
8	8.6	8.6	12.2	6.1	6.6	4.3	8.6	12.2	8.6	8.6
10	10.6	13.2	18.6	9.3	10.1	6.6	13.2	18.6	13.2	13.2
12	12.6	18.8	26.6	13.3	14.4	9.4	18.8	26.6	18.8	18.8
14	14.7	25.6	36.2	18.1	19.6	12.8	25.6	36.2	25.6	25.6
16	16.8	33.3	47.0	23.5	25.4	16.7	33.3	47.0	33.3	33.3
18	18.9	42.0	59.4	29.7	32.1	21.0	42.0	59.4	42.0	42.0
20	20.9	51.7	73.1	36.5	39.5	25.9	51.7	73.1	51.7	51.7
24	25.1	74.0	104.6	52.3	56.6	37.0	74.0	104.6	74.0	74.0
30	31.2	114.4	161.8	80.9	87.5	57.2	114.4	161.8	114.4	114.4
36	37.5	164.4	232.5	116.3	125.9	82.2	164.4	232.5	164.4	164.4

NOTES:

1. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL.
2. CONCRETE SHALL BE CLASS 6.0-B-3000.
3. ALL THRUST BLOCK SIDES SHALL BE FORMED.
4. CALCULATED ON 200 LB TEST PRESSURE AND ALLOWABLE BEARING PRESSURE OF 2000 LBS PER SQUARE FOOT.
5. IN POORER SOILS SPECIAL DESIGN IS REQUIRED.
6. THRUST RESTRAINT TO INCLUDE THRUST BLOCK AND JOINT RESTRAINT AT ALL BENDS.

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R.H.
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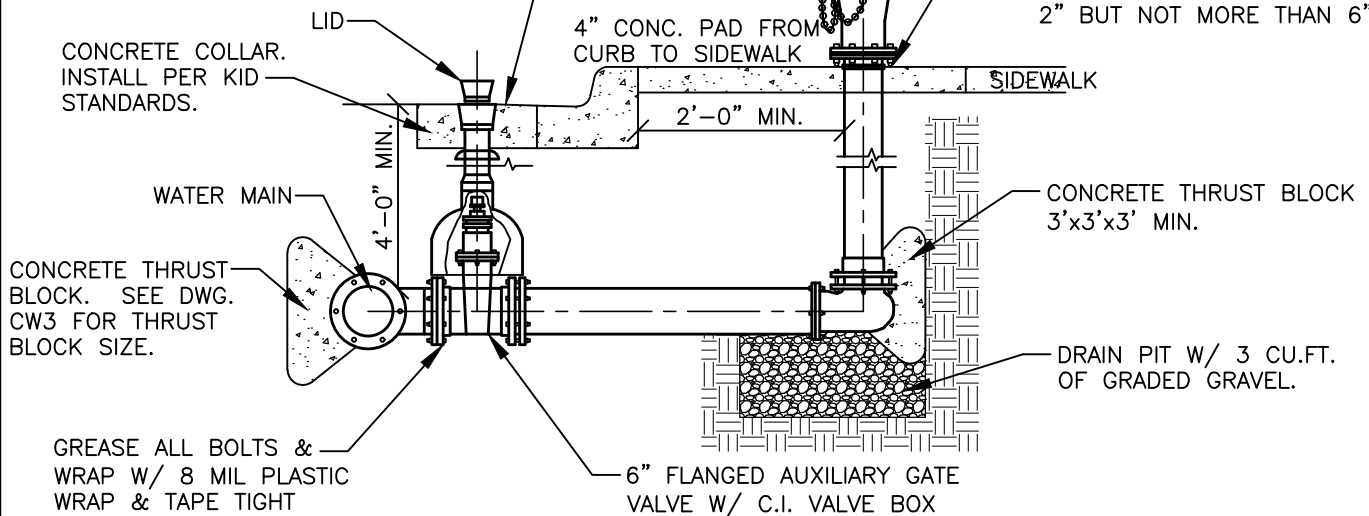
Thrust Block Details

DATE:
09-06-16
DRWG NO.:
CW3

NOTE:
 AUXILIARY VALVE AND BOX
 MAY BE LOCATED AT HYDRANT
 WITH THE USE OF MEGA-LUG
 FITTINGS WITH THE APPROVAL
 OF THE DISTRICT ENGINEER.

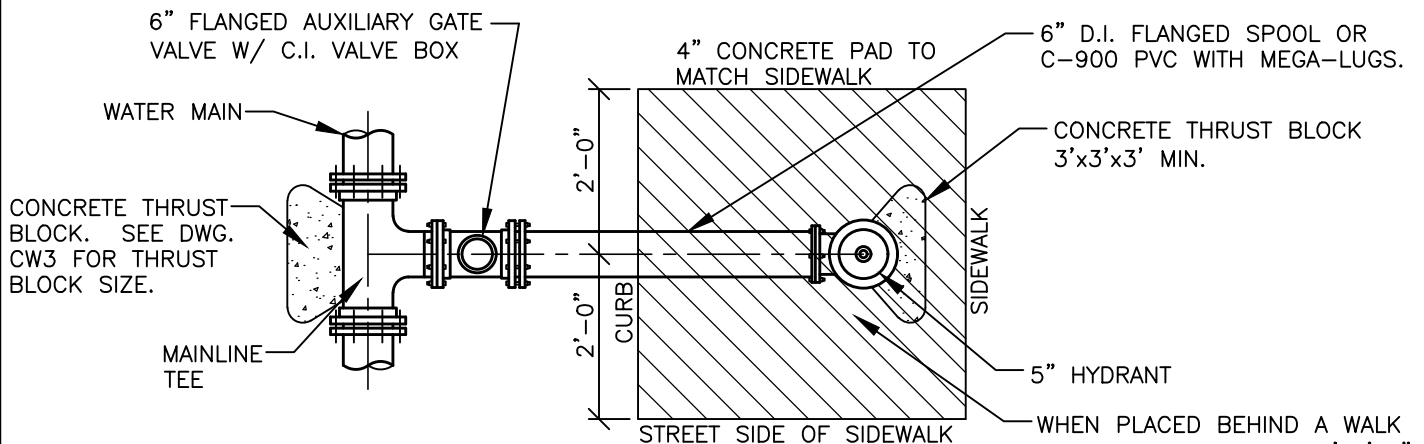
NOTE:
 BEFORE INSTALLING HYDRANT
 VALVE CONTRACTOR SHALL
 VERIFY EXACT LOCATION.
 HYDRANT SHALL NOT BE
 ALLOWED IN ANY PART OF
 THE GUTTER.

MEULLER "MODERN CENTURION"
 OR CLOW 5" FLG FIRE HYDRANT
 OR APPROVED EQUAL.
 BOTTOM OF BOLT ASSEMBLY
 MUST BE CLEAR OF CONCRETE
 2" BUT NOT MORE THAN 6".



Typical Hydrant Installation

PROFILE VIEW



Typical Hydrant and Pad Detail

PLAN VIEW

1. AVERAGE SPACING BETWEEN HYDRANTS MUST NOT BE GREATER THAN 500'.
2. SELECT SAND BEDDING AND BACKFILL IS REQUIRED 6" UNDER, 12" ON SIDES, AND 12" OVER FIRE LINE.
3. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1' ON EACH SIDE OF PIPE.
4. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO FIRE HYDRANT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
5. FIRE HYDRANT SHALL BE SET THAT THE BARREL OR STANDPIPE FLANGE IS 3" TO 6" ABOVE FINISHED GRADE.
6. GREASE AND WRAP ALL EXTERNAL FITTINGS AND BOLTS WITH FM GREASE AND 8-MIL POLYETHYLENE AND DUCT TAPE TIGHT.
7. WRAP D.I. PIPE WITH 8-MIL POLYETHYLENE TUBE WRAP AND DUCT TAPE TIGHT.
8. DRAINAGE PIT MUST HAVE 3 CUBIC FEET (MINIMUM) OF $\frac{3}{4}$ " MINUS GRAVEL.
9. ALL THRUST BLOCKING MUST BE REINFORCED BY A SECURE BANK.

DRAWN:

R.H.

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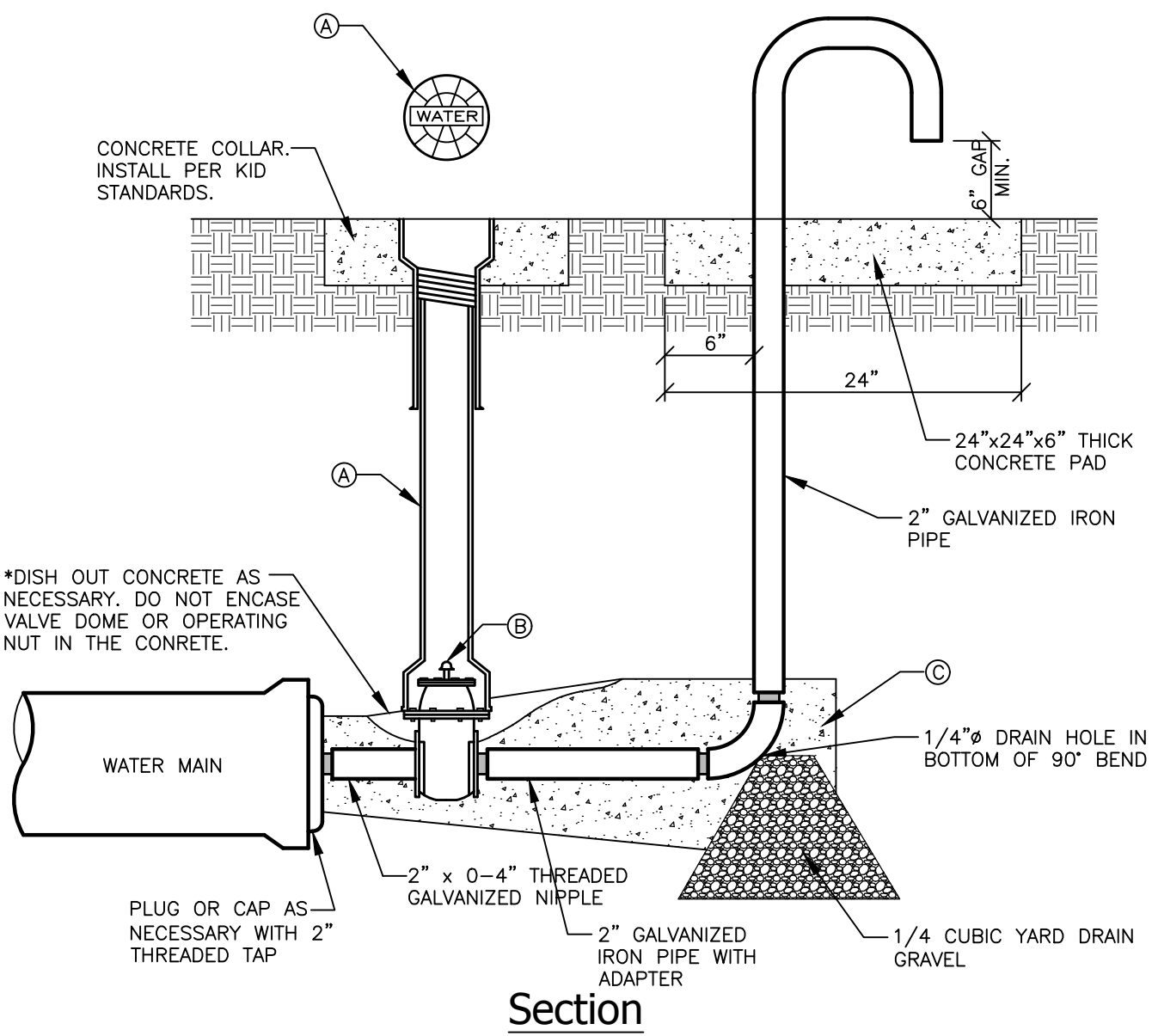
Hydrant Installation

DATE:

09-06-16

DRWG NO.:

CW4



Section

LEGEND		
NO.	ITEM	DESCRIPTION
(A)	VALVE BOX WITH LID	2 PIECE CAST IRON
(B)	2" GATE VALVE WITH SCREW ENDS	2"x2" OPERATING NUT
(C)	CONCRETE THRUST BLOCK	

NOTES:

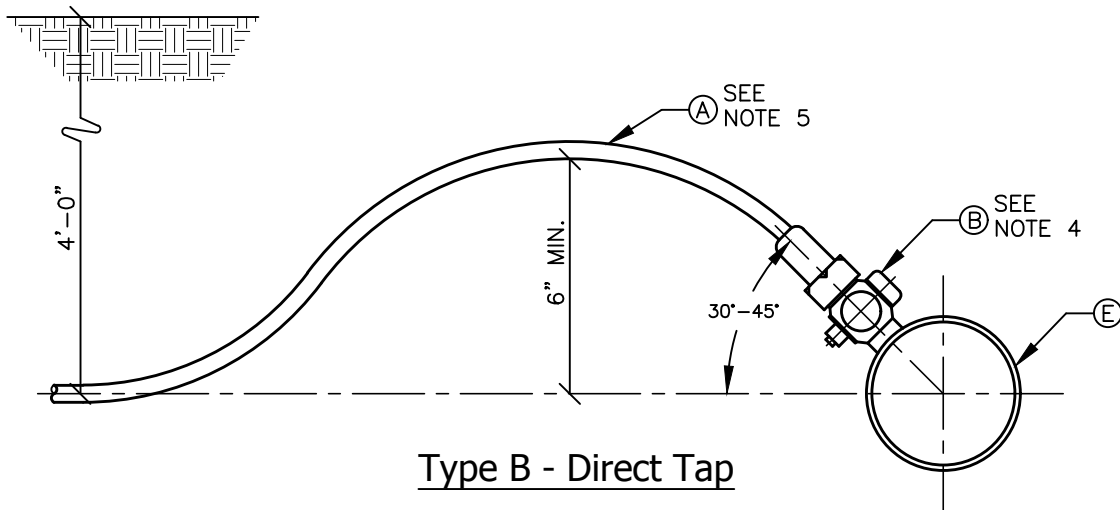
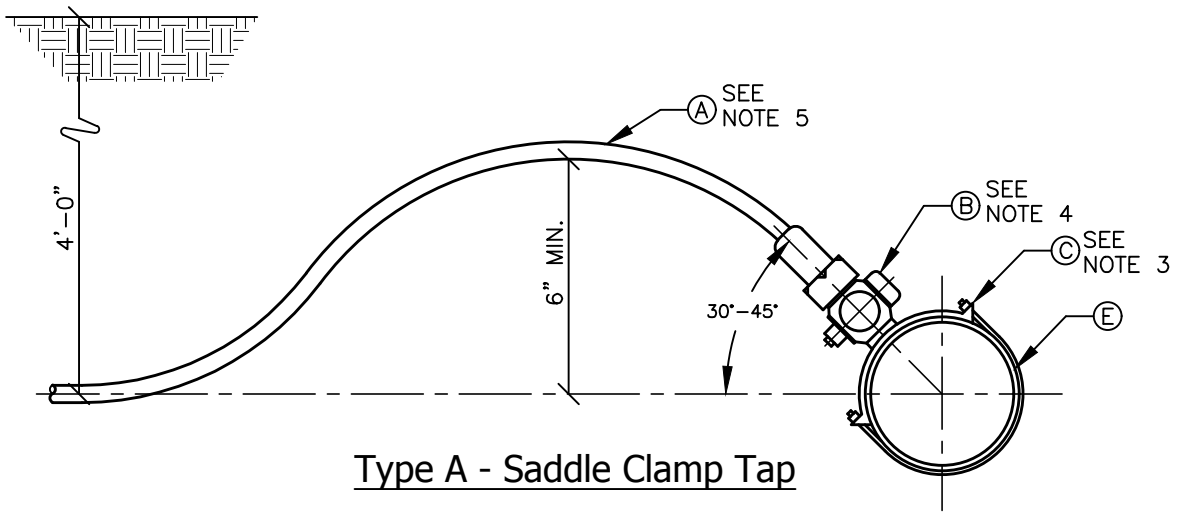
1. INSPECTION: PRIOR TO BACKFILLING AROUND THRUST BLOCK, SECURE INSPECTION OF INSTALLATION BY DISTRICT INSPECTOR.
2. BACKFILL: INSTALL AND COMPACT ALL BACKFILL MATERIAL PER SPECIFICATIONS.
3. CONCRETE: TO BE PER SPECIFICATIONS. POUR CONCRETE AGAINST UNDISTURBED SOIL.
4. SPECIAL DESIGN: WATER MAINS 12" AND LARGER REQUIRE SPECIAL WASH OUT ASSEMBLY DESIGN.
5. VALVE BOX MUST BE VERTICAL TO ALLOW FOR VALVE KEY ACCESS.

DRAWN:
R.H.
CHECKED:
CHECKED:



**Typical Wash Out Valve
Detail**

DATE:
09-06-16
DRWG NO.:
CW5



LEGEND		
NO.	ITEM	DESCRIPTION
(A)	COPPER PIPE	TYPE K - SOFT (NOTE 5)
(B)	CORPORATION STOP	BRASS (NOTE 4)
(C)	SERVICE SADDLE CLAMP	(D.I., P.V.C.) ** (NOTE 3)
(E)	WATER MAIN PIPE	(D.I., P.V.C.)

** D.I. PIPE MAY BE DIRECT TAPPED

NOTES:

1. INSPECTION: PRIOR TO BACKFILLING AROUND TAPS SECURE INSPECTION OF INSTALLATION BY KID INSPECTOR.
2. BACKFILL: AS PER SPECIFICATIONS.
3. PROVIDE BRASS DOUBLE STRAP TAPPING SADDLE FOR TAPPING DUCTILE IRON OR PVC PLASTIC PIPE, FORD SERIES OR EQUAL.
4. 3/4" FORD FB600 BALL CORP AWWA TAPER THREAD INLET, FLARE OR COMPRESSION FITTINGS ACCEPTED.
5. PROVIDE HORIZONTAL EXPANSION LOOP IN COPPER PIPE.
6. TAPPING: PLACE TAPS A MINIMUM OF 24 INCHES APART. USE A TAPPING TOOL WHICH IS SIZED CORRESPONDING TO THE SIZE OF THE SERVICE LINE TO BE INSTALLED. NO TAPS WITHIN 24 INCHES OF END OF PIPE.
7. TAPE: TEFLON TAPE IS REQUIRED ON ALL TAPS.
8. CONTRACTOR TO RETAIN ALL TAPPED PLUGS AND PROVIDE THE PLUGS TO DISTRICT INSPECTOR.
9. ALL DIRECT TAP TO UTILIZE "CC" THREADS.

DRAWN:
R.H.
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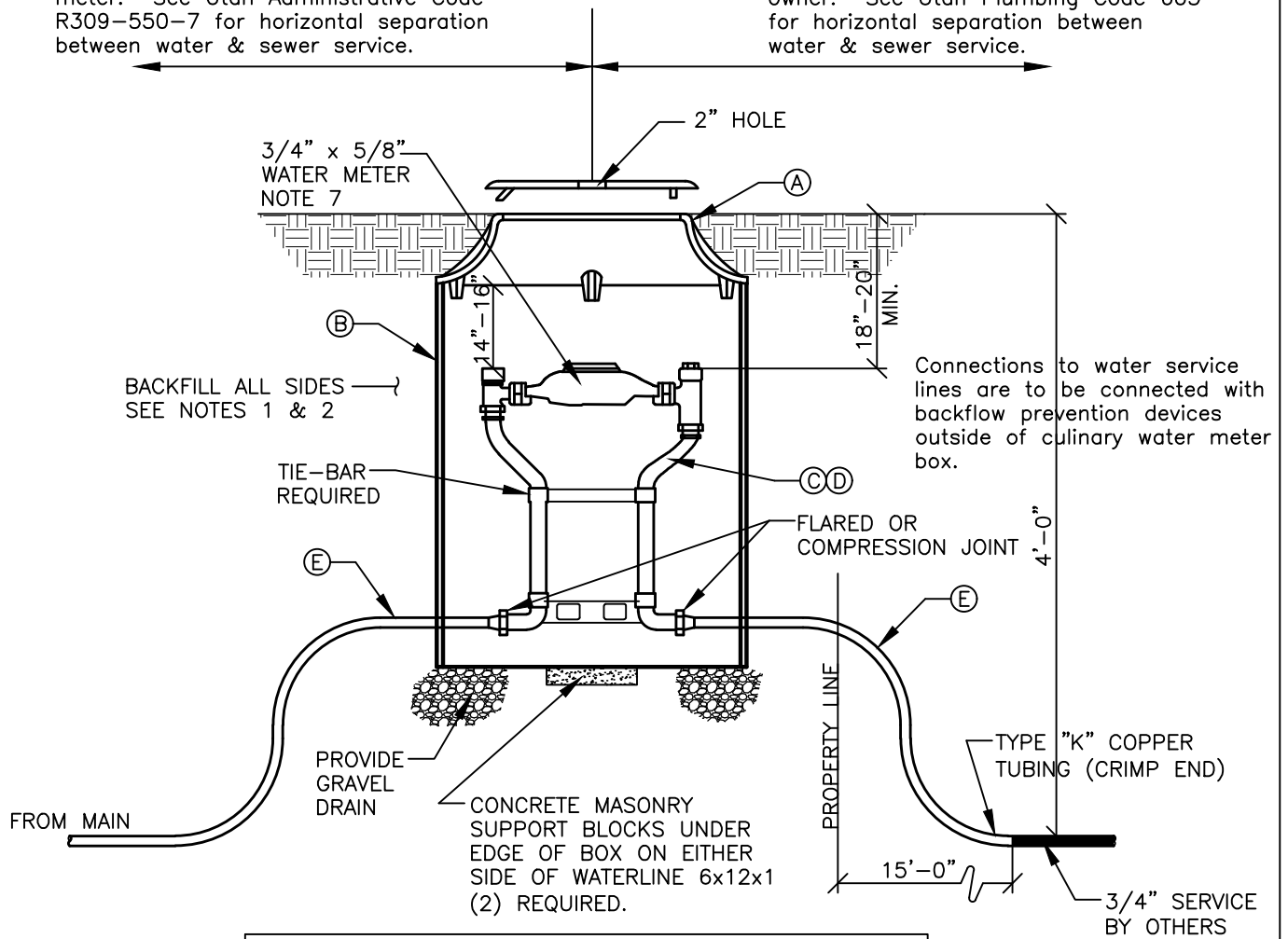
Typical Service Tap Detail

3/4" - 2"

DATE:
09-06-16
DRWG NO.:
CW6

KID owns, maintains, and repair to meter. See Utah Administrative Code R309-550-7 for horizontal separation between water & sewer service.

Culinary water service lateral owned, maintained & repaired by property owner. See Utah Plumbing Code 603 for horizontal separation between water & sewer service.



LEGEND		
NO.	ITEM	DESCRIPTION
(A)	FRAME & COVER	NOTE 3
(B)	METER BOX (19"-21"Ø)(30" DEEP)	NOTE 4
(C)	3/4" METER (18" BOX)	NOTE 5
(D)	1" METER (21" BOX)	NOTE 6
(E)	COPPER PIPE	TYPE K (SOFT)

NOTES:

- INSPECTION: PRIOR TO BACKFILLING AROUND METER BOX SECURE INSPECTION OF INSTALLATION BY DISTRICT INSPECTOR.
- BACKFILLING: INSTALL ALL BACKFILL MATERIAL PER SPECIFICATION REQUIREMENTS IN LIFTS NOT EXCEEDING 5 INCHES AFTER COMPACTION. COMPACT EACH LIFT TO A MINIMUM RELATIVE DENSITY OF 95 PERCENT.
- D&L FOUNDRY AND SUPPLY MODEL L-2240 METER BOX AND LID AND RIM WITH 2" HOLE FOR RADIO READ. BRANDED "WATER METER" CAST IN TOP.
- METER BOX MAY BE ADS FURNISH SAMPLE BOX AND REVIEW WITH DISTRICT ENGINEER.
- 3/4" COPPER WATER METER VOILE FORD 70 SERIES FULL 3/4" METER SETTER VBHC 72-21W-11-33-NL WITH RESIDENTIAL CHECK VALVE OR WATTS #JO2A-UNUM BVDC WITH 21" TUBING.
- 1" SETTER VBHC 74-21W-11-44-NL OR EQUAL.
- WATER METER FURNISHED AND INSTALLED BY KEARNS IMPROVEMENT DISTRICT.
- PLACEMENT:
 - DO NOT INSTALL METER BOXES UNDER DRIVEWAY APPROACHES, SIDEWALKS, OR CURB AND GUTTER.
 - ALL METER BOXES TO BE INSTALLED IN PARK STRIP.
 - SEE SPECIFICATIONS SEC. 1.2.1.2.

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R.H.
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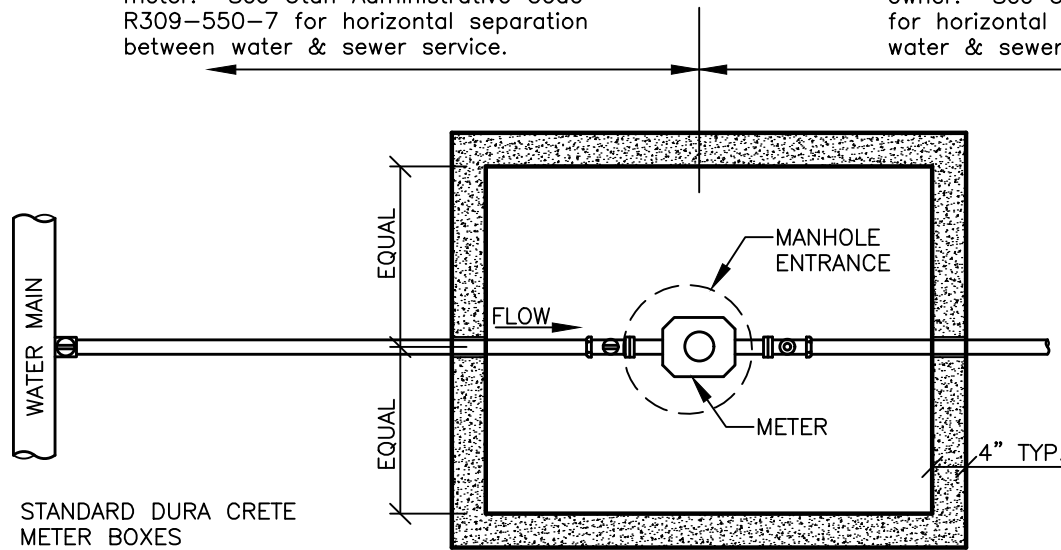
Typical Meter Box Detail

3/4" - 1"

DATE:
09-06-16
DRWG NO.:
CW7

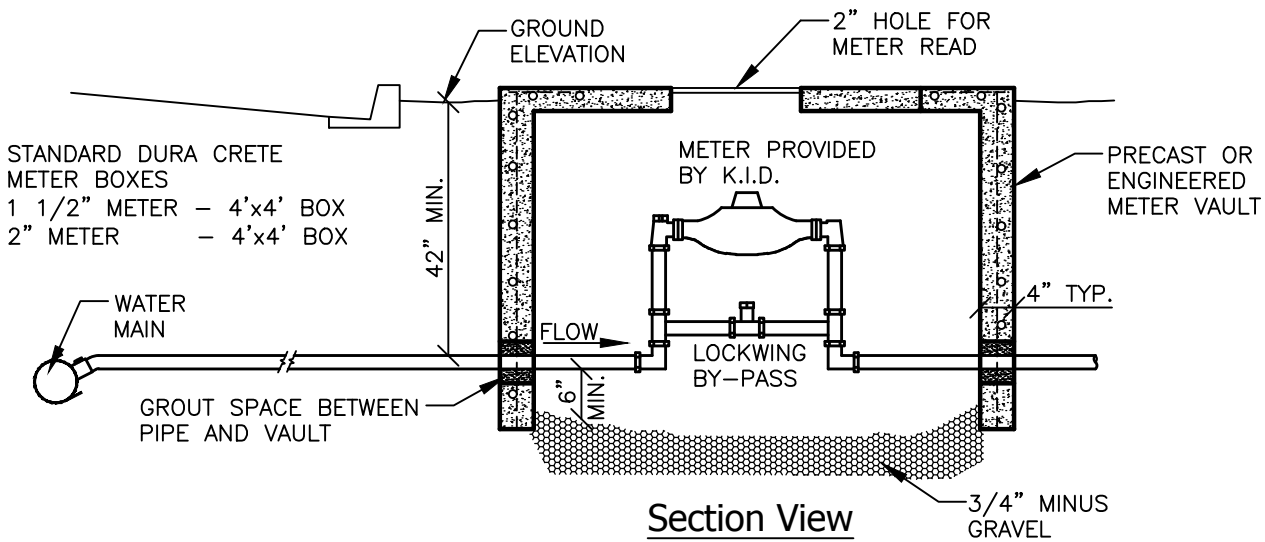
KID owns, maintains, and repair to meter. See Utah Administrative Code R309-550-7 for horizontal separation between water & sewer service.

Culinary water service lateral owned, maintained & repaired by property owner. See Utah Plumbing Code 603 for horizontal separation between water & sewer service.



STANDARD DURA CRETE
METER BOXES
1 1/2" METER - 4'x4' BOX
2" METER - 4'x4' BOX

Plan View



STANDARD DURA CRETE
METER BOXES
1 1/2" METER - 4'x4' BOX
2" METER - 4'x4' BOX

Section View

1. LOCATE MANHOLE OPENINGS DOWN CENTER LINE OF METER VAULT.
2. METER BOX SHALL BE MIN. 4' DEEP WITH GRAVEL BOTTOM.
3. BACKFLOW ASSEMBLY IS TO BE LOCATED OUTSIDE OF THE METER BOX.
4. METER SETTER FOR 1 1/2" AND 2" METERS ARE AS FOLLOWS:
FORD SERIES COPPERSETTERS FOR FLANGED METERS
1 1/2" VBHC76-21B-11-66-NL
2" VHB77-21B-11-77-NL
5. LID MUST HAVE 2" HOLE CENTERED FOR RADIO READ ASSEMBLY.

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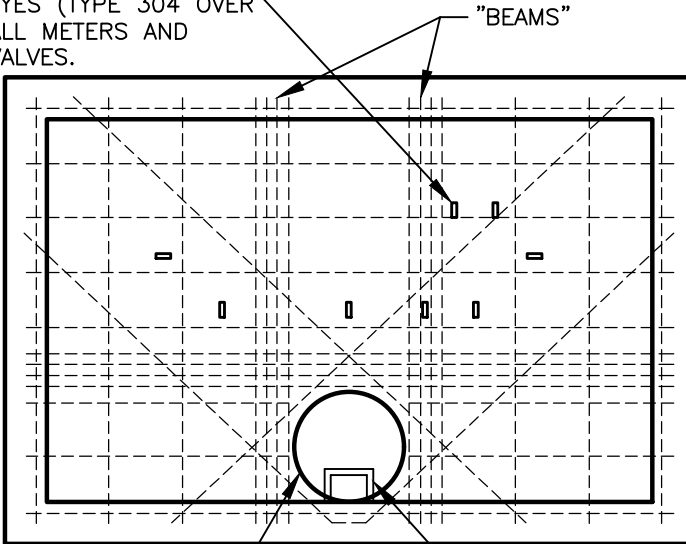
Water Meter Vault

1 1/2" - 2"

DATE:
09-06-16

DRWG NO.:
CW8

(8) 3/4" DIA. S.S. LIFTING EYES (TYPE 304 OVER ALL METERS AND VALVES).



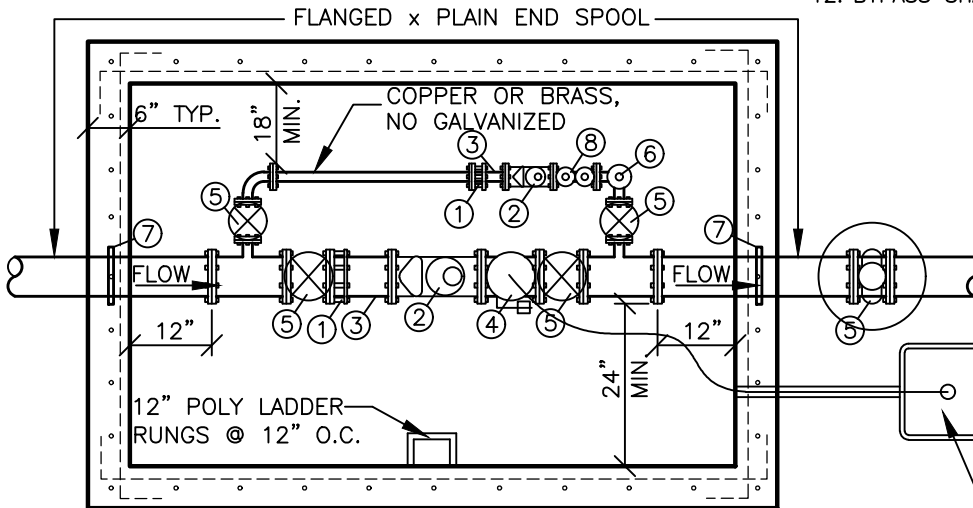
Roof Plan

26 1/2" VAULT OPENING WITH STANDARD WATER MAN HOLE RING AND COLLAR

12" POLY LADDER RUNGS @ 12" O.C.

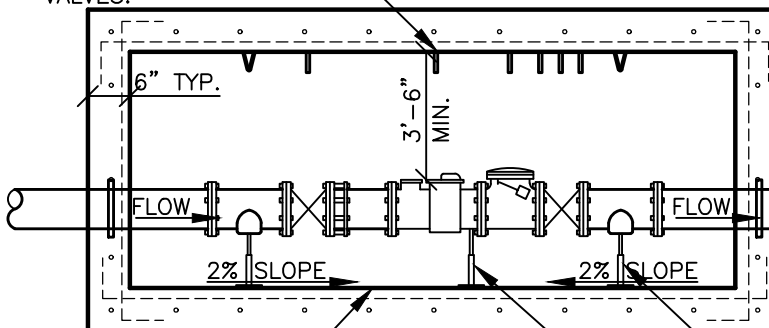
NOTES:

1. ALL MANHOLES SHALL HAVE A CONCRETE COLLAR PER A.P.W.A. PLAN 574.
2. VAULT AND PIPE BEDDING SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
3. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER LID AND COLLAR.
5. ALL FLANGED x PLAIN END SPOOLS TO BE PRE-CAST INTO VAULT WALLS BY VAULT MANUFACTURER.
6. FOR TRAFFIC USE, VAULT WALLS SHALL BE 8" THICK (MIN.) WITH #5 EPOXY COATED REBAR 6" ON CENTER EACH WAY AND 4" ON CENTER AT "BEAMS."
7. FOR NON-TRAFFIC USE, VAULT WALLS SHALL BE 6" THICK (MIN.) WITH #5 EPOXY COATED REBAR 9" ON CENTER EACH WAY AND 6" ON CENTER AT "BEAMS."
8. GREASE AND WRAP ALL EXTERNAL FITTINGS AND BOLTS WITH F.M. GREASE AND 8-MIL POLYETHYLENE AND DUCT TAPE TIGHT.
9. WRAP ALL DUCTILE IRON PIPE WITH 8-MIL POLYETHYLENE TUBE WRAP.
10. NO BYPASS ON LOOPED SYSTEMS WITH TWO OR MORE MASTER METERS.
11. VAULT SHALL BE SUITABLE FOR H-20 LOADINGS.
12. BYPASS SHALL BE 2" MINIMUM.



Vault Plan

(8) 3/4" DIA. S.S. LIFTING EYES (TYPE 304 OVER ALL METERS AND VALVES).



Vault Profile

VAULT FLOOR 2% SLOPE

ADJUSTABLE PIPE SUPPORTS

ADJUSTABLE PIPE SUPPORT ON BYPASS

- ① FLANGED COUPLING ADAPTER
- ② SENSUS OMNI METER
- ③ FLANGED x PLAIN END PIECE, CUT TO FIT
- ④ SWING CHECK VALVE
- ⑤ GATE VALVE
- ⑥ 2" TEST PLUG
- ⑦ PIPE RESTRAINT CAST INTO WALL. ALTERNATIVES AT DISCRETION OF ENGINEER
- ⑧ DUAL CHECK VALVE

12"x12" IRRIGATION BOX W/1 1/4" HOLE FOR TOUCH READ SENSOR. PLACE BOX IN LANDSCAPING. DRILL 2" HOLE IN VAULT TO RUN WIRE THROUGH. RUN 1 1/2" CONDUIT FROM VAULT TO SENSOR BOX.

12" CONCRETE APRON AROUND VALVE BOX.

ISOLATION GATE VALVE (MJ) WITH C.I. VALVE BOX AND TRACER WIRE.

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R.H.
CHECKED:
CHECKED:



Typical Large Meter Vault

DATE:
09-06-16
DRWG NO.:

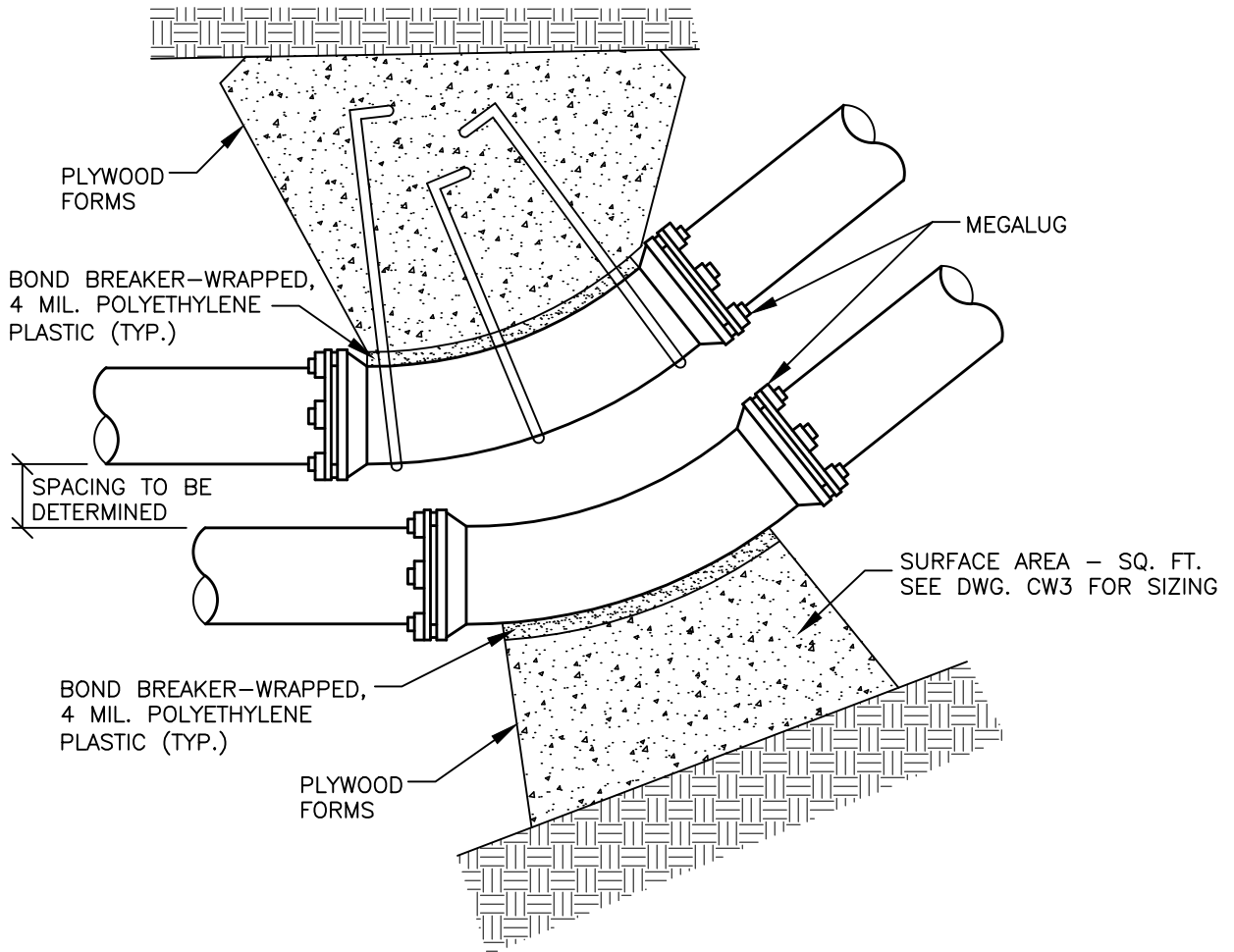
CW9

MINIMUM CUBIC YARDS OF CONCRETE

PIPE SIZE	BENDS			
	11-1/4°	22-1/2°	45°	90°
4"	0.2	0.4	1.3	N/A
6"	0.2	0.5	1.8	N/A
8"	0.2	0.5	1.8	N/A
10"	0.2	0.8	2.7	N/A
12"	0.3	1.0	3.8	N/A

N/A = NOT ALLOWED

NOTE:
LARGER THAN 12" TO BE SPECIFICALLY DESIGNED BY ENGINEER. FORMS SHALL BE 3/8" PLYWOOD OR DISTRICT APPROVED EQUIVALENT.



Top View
Horizontal Parallel Bends

GENERAL NOTES:

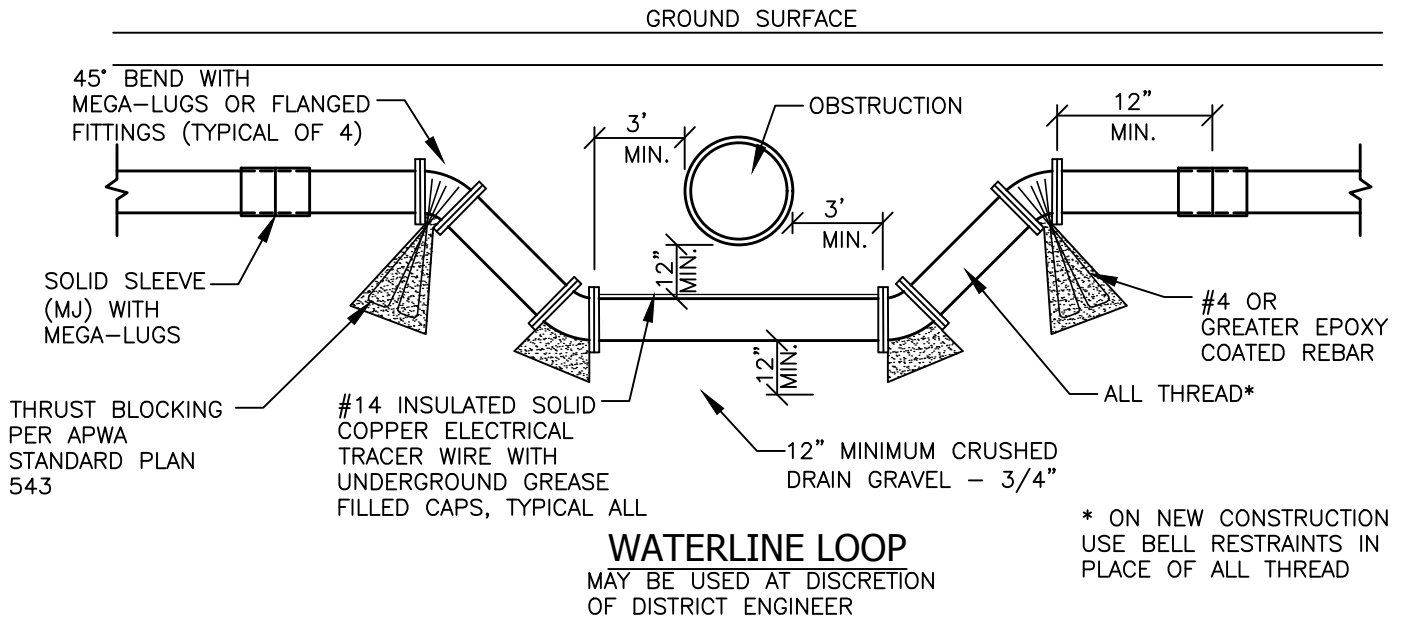
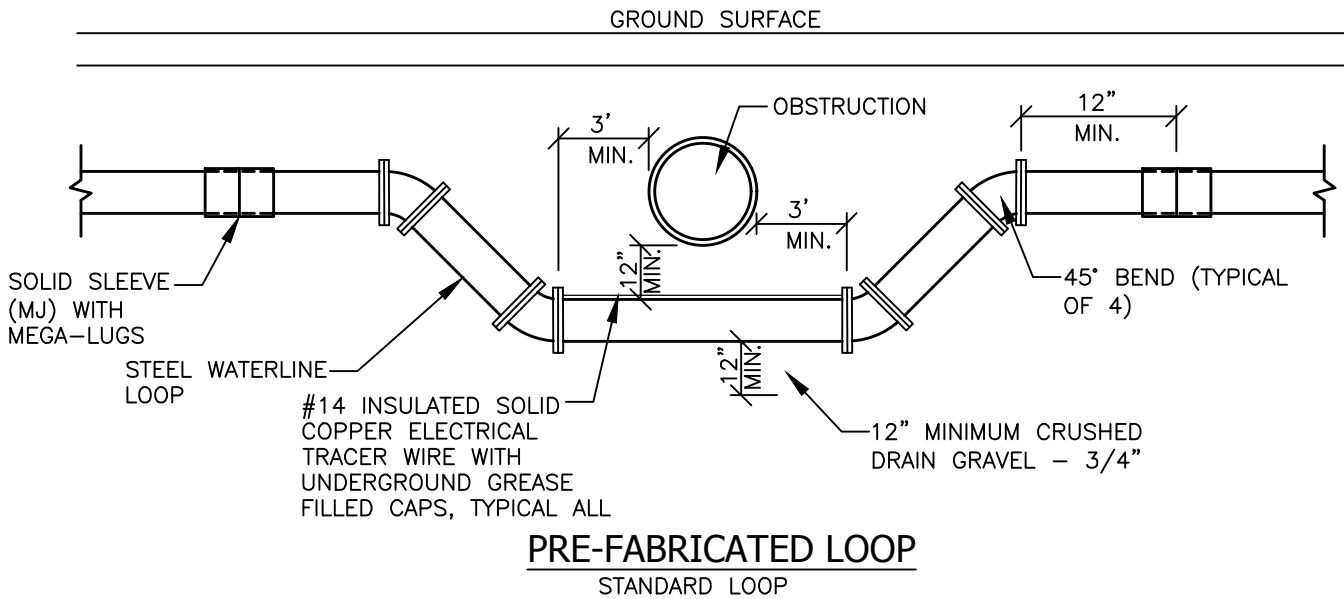
1. USE MEGALUG JOINT RESTRAINT DEVICES OR SIMILAR UPON PRIOR DISTRICT APPROVAL - POLY-WRAPPED PIPE TO SERVE AS BOND BREAKER (NOT TO INTERFERE WITH RESTRAINED JOINTS). ALL SURFACES OF THE RESTRAINED JOINTS SHALL BE ACCESSIBLE AND FREE FROM INTERFERENCE DUE TO THRUST BLOCK CONSTRUCTION.
2. MINIMUM AREA REQUIRED WILL BE THAT OF AN 8-INCH MAIN.
3. ALL THRUST BLOCKS SHALL BE FORMED. THE MINIMUM THICKNESS FORM MATERIAL SHALL BE 3/8" PLYWOOD OR DISTRICT APPROVED EQUIVALENT.
4. BEARING AREA BASED ON SOIL BEARING PRESSURE OF 2000 LB/SF.
5. EMBED THREE (3) NO. 4 EPOXY-COATED REBAR 18" INTO CONCRETE W/ ENDS BENT 90 DEGREES AS SHOWN.

DRAWN:
R.H.
CHECKED:
CHECKED:



**Parallel Bends w/
Thrust Blocks**

DATE:
09-06-16
DRWG NO.:
CW10



NOTES:

1. SELECT SAND SHALL BE USED AS BEDDING AND BACKFILL 12" UNDER, ON SIDES AND OVER WATERLINE LOOP.
2. BEDDING SHALL BE COMPACTED TO 95% MIN. ASTM D-1557.
3. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1' EACH SIDE OF PIPE.
4. IF DAMAGE IS CAUSED TO WATER MAIN CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
5. PRE-FAB WATERLINE PIPE AND FITTINGS SHALL BE BUTT WELDED A53 GRADE B SCH 80 STEEL FOR PIPES LESS THAN 12" DIAMETER AND COPPER ELECTRICAL TRACER WIRE WITH UNDERGROUND GREASE FILLED CAPS.
6. REFER TO APWA SECTION 33 05 09 FOR EPOXY LINING AND COATING DETAILS.
7. GREASE AND WRAP ALL EXTERNAL FITTINGS AND BOLTS WITH F.M. GREASE AND 8-MIL POLYETHYLENE AND DUCT TAPE TIGHT.
8. ALL THRUST BLOCKING MUST BE REINFORCED BY SECURE BANK.

DRAWN:
R.H.

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Typical Waterline Loop

DATE:
09-06-16

DRWG NO.:
CW11

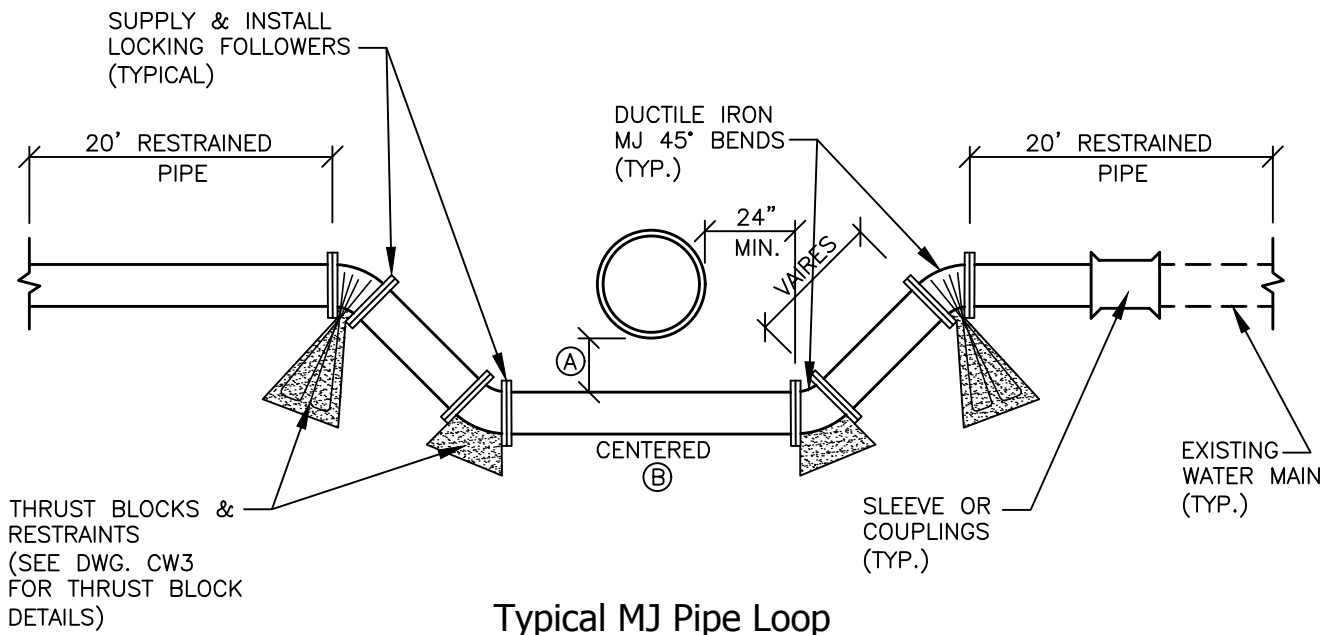


TABLE OF DIMENSIONS		
OBSTRUCTION	A	B
SEWER	18" MINIMUM	20' MINIMUM
OTHER	12" MINIMUM	O.D. + 48"

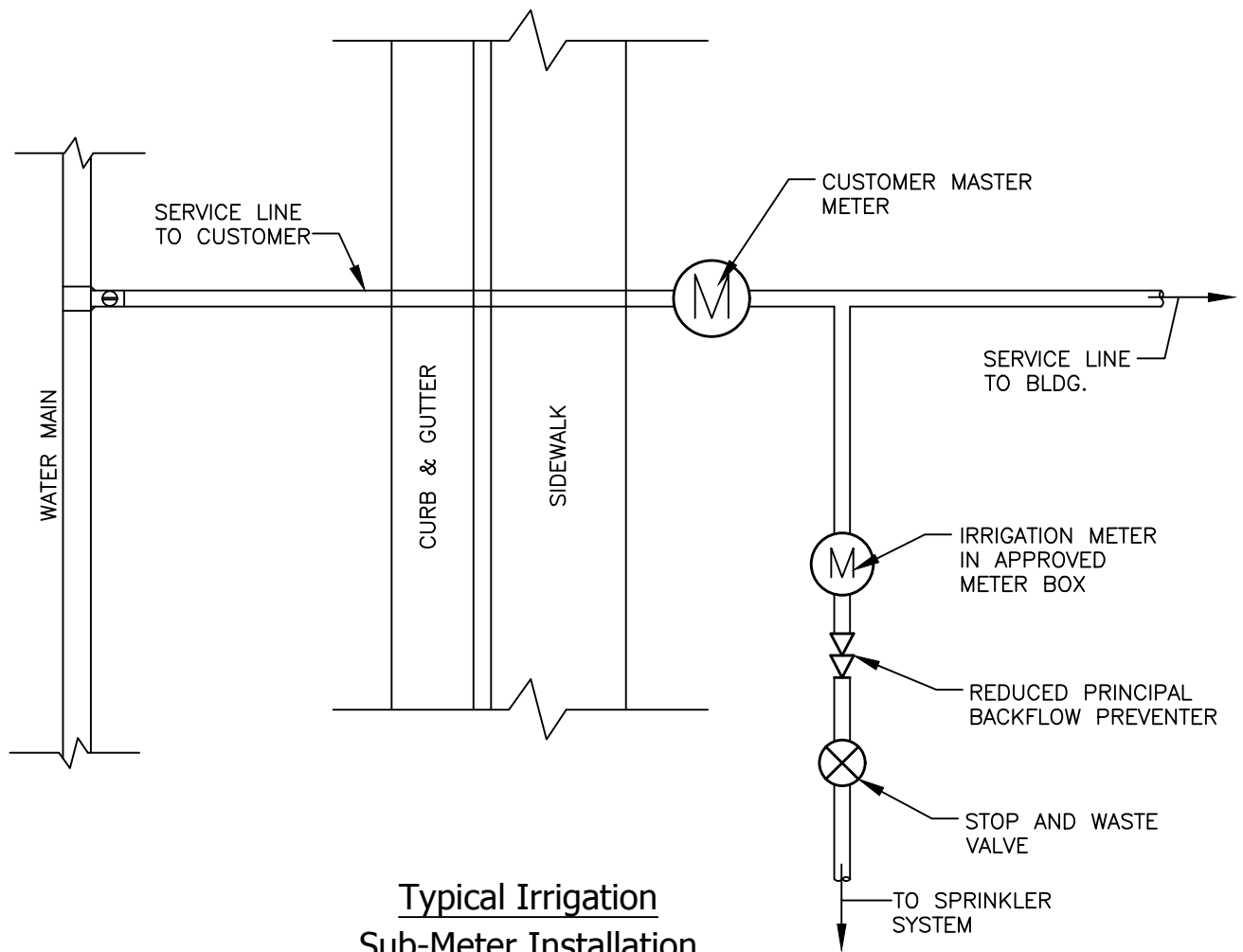
- NOTES:
1. BEFORE BACKFILLING, SECURE INSPECTION FROM KID INSPECTOR.
 2. ALL DUCTILE IRON PIPE IS TO BE POLY WRAPPED AND ALL FITTING GREASED (FM).
 3. THRUST BLOCKS – CONCRETE CLASS 4000.
 4. REINFORCEMENT: DEFORMED, 60 KSI YIELD GRADE STEEL. ASTM 615.
 5. GREASE: NON-OXIDE POLY-FM.

DRAWN:
R.H.
CHECKED:
CHECKED:



Typical Water Main MJ Loop Detail

DATE:
09-06-16
DRWG NO.:
CW12



Typical Irrigation
Sub-Meter Installation
 SCHEMATIC DETAIL NO SCALE

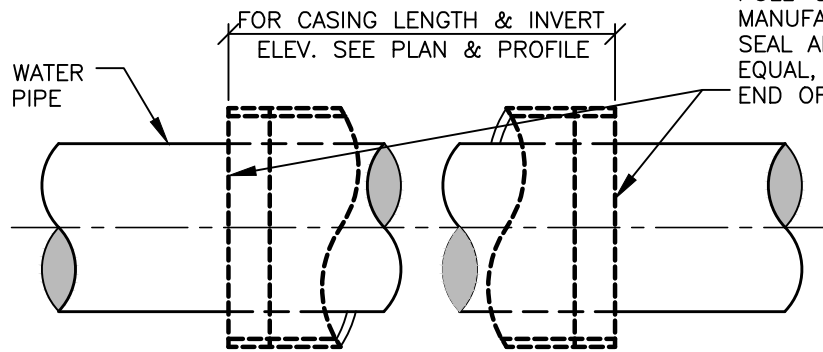
DRAWN:
 R.H.
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 CHECKED:



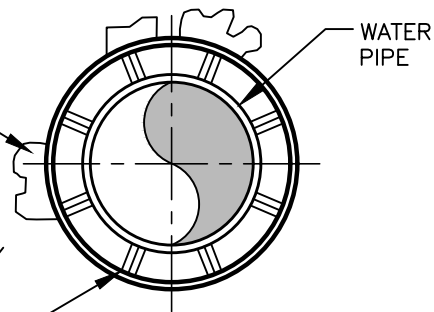
Typical Irrigation Sub-Meter Installation

DATE:
 09-06-16
 DRWG NO.:
CW13

SEAL EACH END OF CASING WITH 1/8-INCH THICK SYNTHETIC RUBBER, MODEL C PULL-ON TYPE END SEALS, AS MANUFACTURED BY PIPELINE SEAL AND INSULATOR, INC. OR EQUAL, LINK-SEAL AT EACH END OF CASING



ANY VOIDS CREATED BY BORING, JACKING, OR TUNNELING SHALL BE FILLED BY PRESSURE GROUTING



CASING SPACERS MANUFACTURED BY PIPELINE SEAL AND INSULATOR, INC. MODEL 512G-2 SPACED EVERY 5-FT TO CENTER THE PIPE INSIDE THE CASING. PIPE THROUGHOUT THE LENGTH OF THE CASING SHALL BE AT A CONTINUOUS GRADE AS SHOWN ON DRAWINGS.

Section

PIPE SIZE	MINIMUM I.D. CASING SIZE	MINIMUM WALL THICKNESS
4"	12"	0.188"
6"	16"	0.312"
8"	18"	0.312"
12"	24"	0.438"
16"	30"	0.50"
18"	30"	0.50"
24"	36"	0.625"
30"	42"	0.625"

LARGER CASINGS AS DIRECTED BY THE DISTRICT ENGINEER

NOTES:

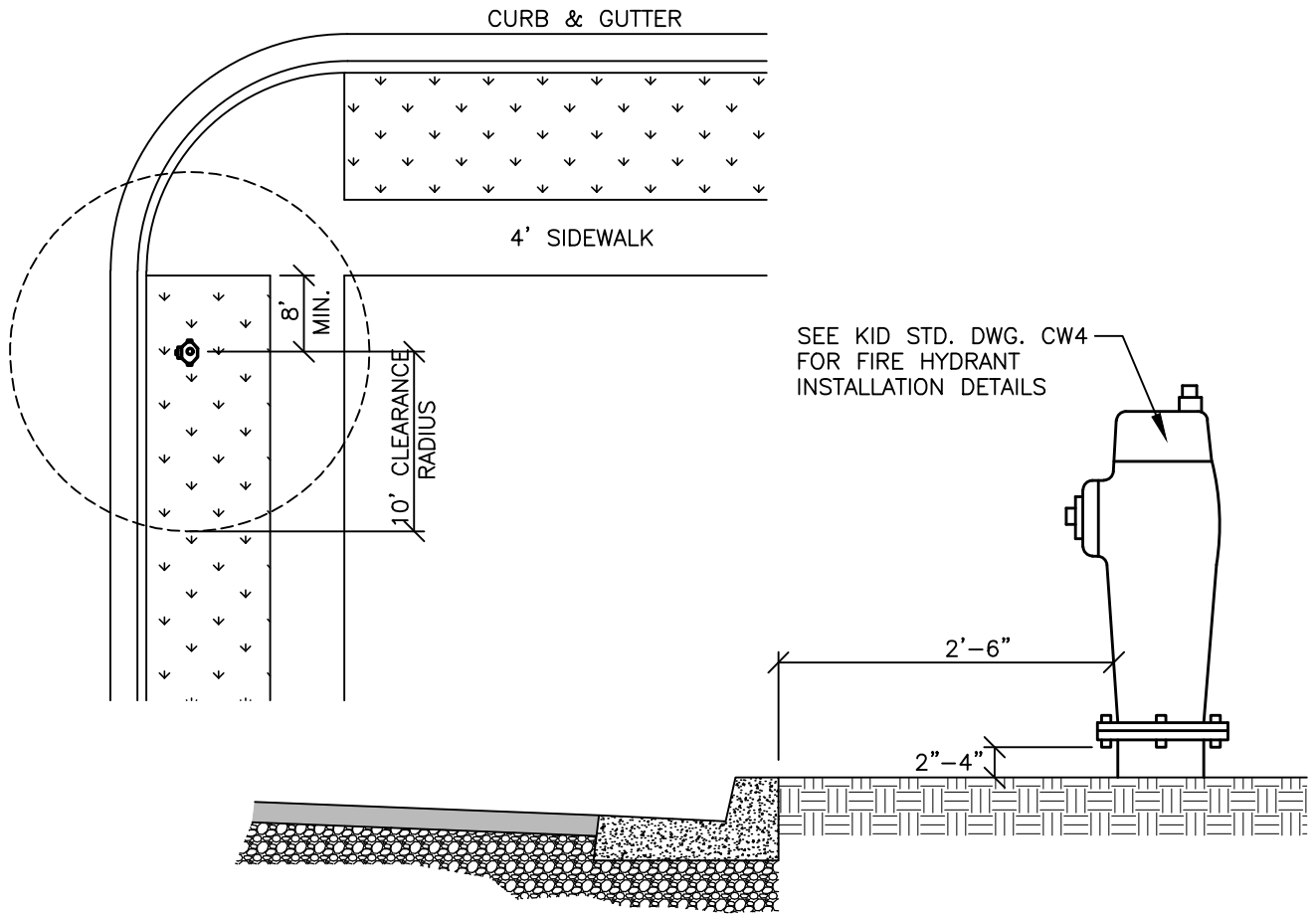
1. CASING PIPES SHALL BE REQUIRED AS INDICATED ON THE DRAWINGS AND/OR WHERE REQUIRED BY THE DISTRICT INSPECTOR OR ENGINEER.
2. CARRIER PIPE SHALL BE TESTED BEFORE SEALING THE ENDS OF THE CASING.
3. SPACERS SHALL BE SECURELY ATTACHED TO THE CARRIER PIPE PER THE MANUFACTURER'S REQUIREMENTS.
4. CASING PIPE SHALL BE WELDED STEEL, ASTM A53, GRADE B OR APPROVED EQUIVALENT.

DRAWN:
R.H.
CHECKED:
CHECKED:



Steel Casing For Water Pipe

DATE:
09-06-16
DRWG NO.:
CW14



NOTES:

1. PAINT TOP AND FACE OF CURB, 15' ON BOTH SIDES, WITH RED PAINT TO INDICATE NO PARKING.
2. NO TREES, PLANTS, FLOWERS, SHRUBS, OR ANY OTHER ITEM WHICH MAY OBSTRUCT THE VIEW OR ACCESS TO A FIRE HYDRANT, SHALL BE INSTALLED/PLANTED WITHIN 10' OF ANY FIRE HYDRANT.
3. HYDRANT SHALL BE 2'-6" BEHIND BACK OF CURB OR AS SPECIFIED BY THE DISTRICT ENGINEER.
4. MAJOR ROADS SHALL HAVE FIRE HYDRANTS ON BOTH SIDES OF THE ROADWAY.
5. INSTALL A 4'x4'x6" THICK CONCRETE PAD AROUND THE HYDRANT BASE.
6. FIRE HYDRANT SPACING:
 - A. SHALL NOT EXCEED A 500' RADIUS IN AREA WITH SINGLE FAMILY DWELLINGS
 - B. SHALL NOT EXCEED A 300' RADIUS IN ALL OTHER AREAS.

DRAWN:
R.H.
CHECKED:
CHECKED:



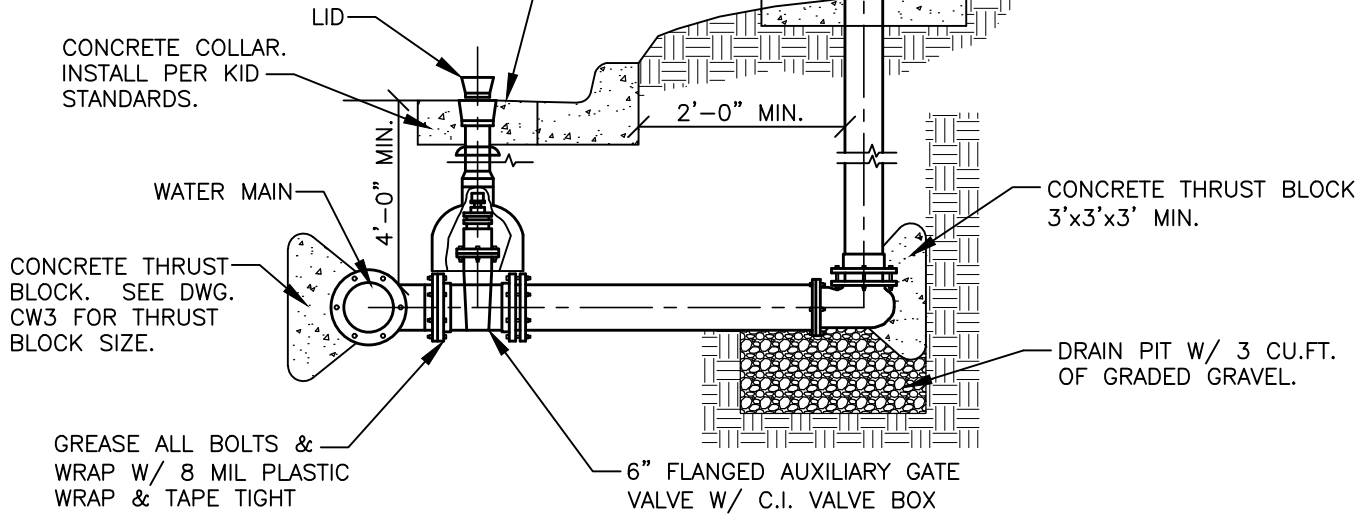
Fire Hydrant Location Detail

DATE:
09-06-16
DRWG NO.:
CW15

NOTE:
 AUXILIARY VALVE AND BOX
 MAY BE LOCATED AT HYDRANT
 WITH THE USE OF MEGA-LUG
 FITTINGS WITH THE APPROVAL
 OF THE DISTRICT ENGINEER.

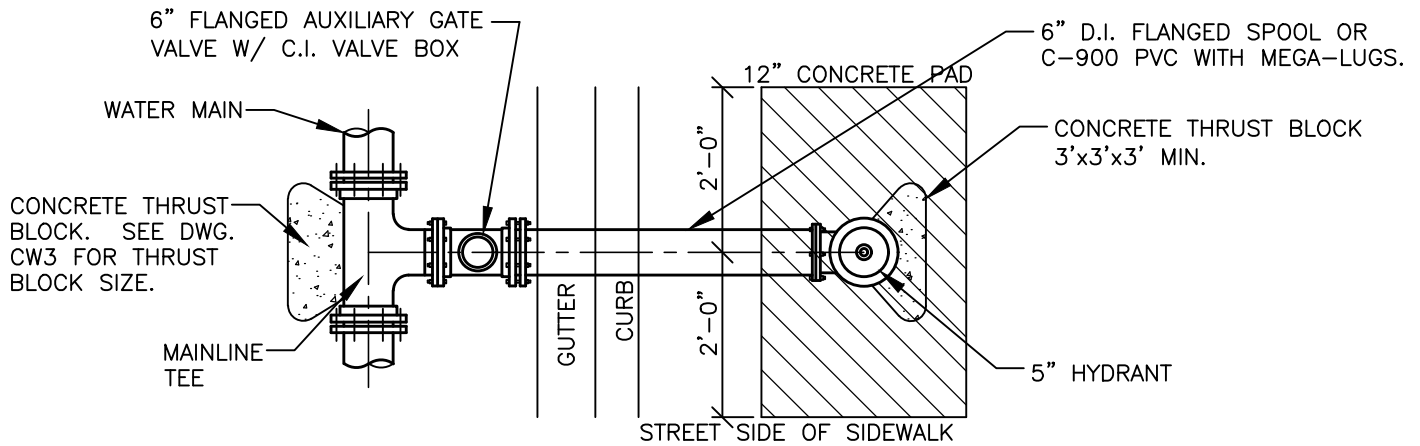
NOTE:
 BEFORE INSTALLING HYDRANT
 VALVE CONTRACTOR SHALL
 VERIFY EXACT LOCATION.
 HYDRANT SHALL NOT BE
 ALLOWED IN ANY PART OF
 THE GUTTER.

MEULLER "MODERN CENTURION"
 OR CLOW 5" FLG FIRE HYDRANT
 OR APPROVED EQUAL.
 BOTTOM OF BOLT ASSEMBLY
 MUST BE CLEAR OF CONCRETE
 2" BUT NOT MORE THAN 6".



Hillside Hydrant Installation

PROFILE VIEW



Hillside Hydrant Installation

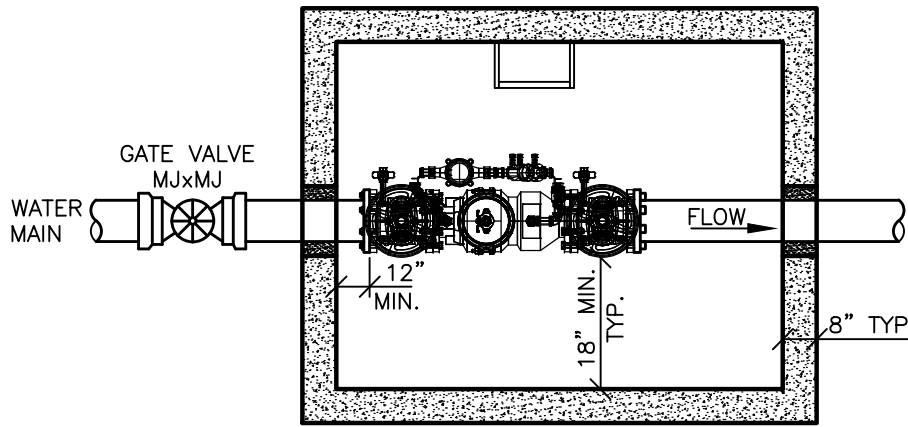
PLAN VIEW

DRAWN:
 R.H.
 CHECKED:
 CHECKED:

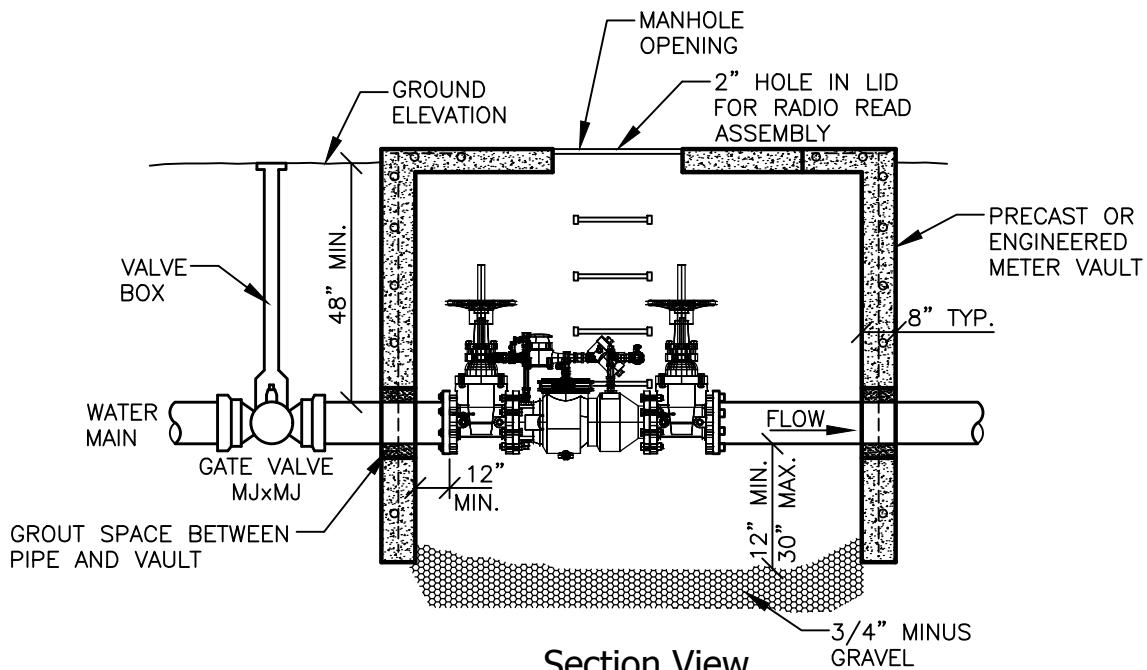


Hill Side Hydrant Installation

DATE:
 09-06-16
 DRWG NO.:
 CW16



Plan View



Section View

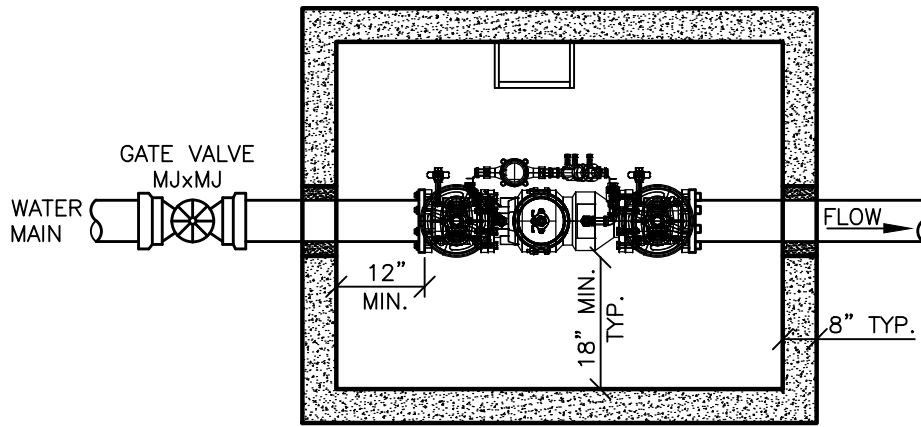
1. LOCATE MANHOLE OPENINGS DOWN CENTER LINE OF VAULT.
2. VAULT BOX SHALL BE MIN. 5' DEEP WITH GRAVEL BOTTOM.
3. CONTRACTOR SHALL PROVIDE A MINIMUM OF 18" CLEARANCE FROM THE DETECTOR CHECK AND THE VAULT WALLS. VAULT SHALL HAVE LADDER RUNGS.
4. INSTALL GATE VALVE & VALVE BOX OUTSIDE OF BUT ADJACENT TO VAULT.
5. FOR 6" AND LARGER INSTALLATIONS, CONTACT K.I.D. ENGINEERING DEPARTMENT.
6. DETECTOR CHECK TO BE WILKINS 350DA OR EQUAL. SUBMIT DATA CUT SHEET TO K.I.D. DISTRICT ENGINEER FOR APPROVAL.

DRAWN:
R.H.
CHECKED:
CHECKED:

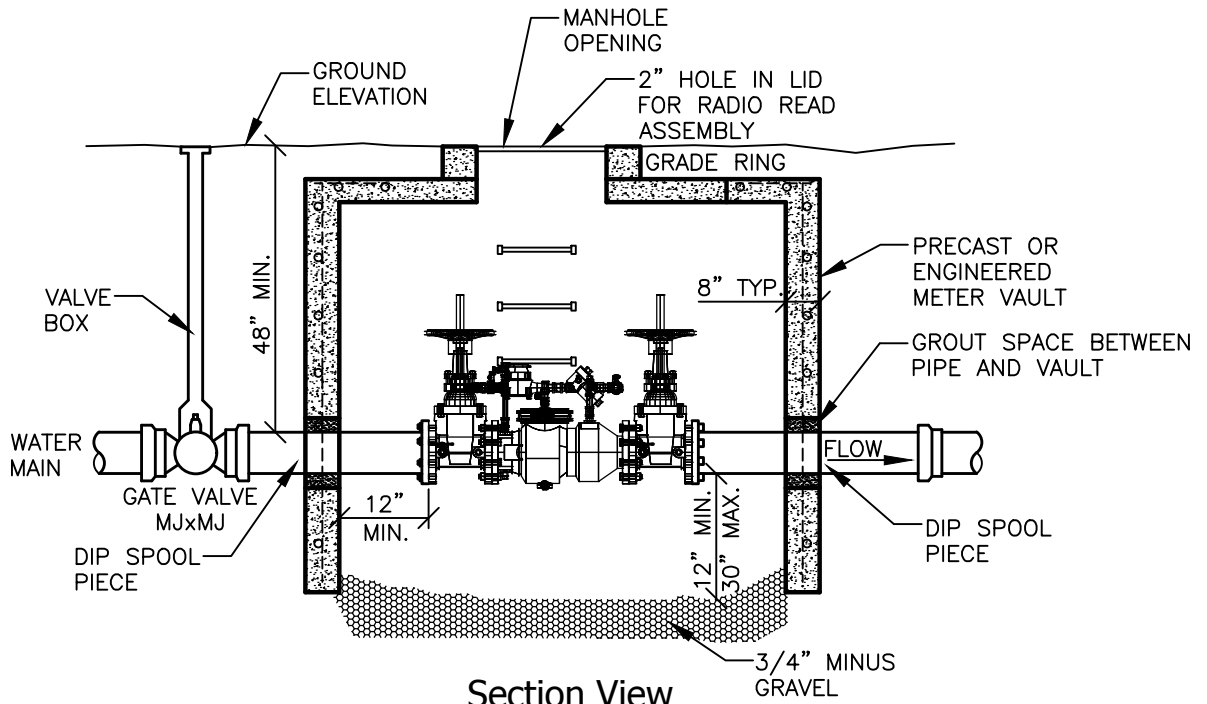


4" Detector Check Meter Vault

DATE:
09-06-16
DRWG NO.:
CW17



Plan View



Section View

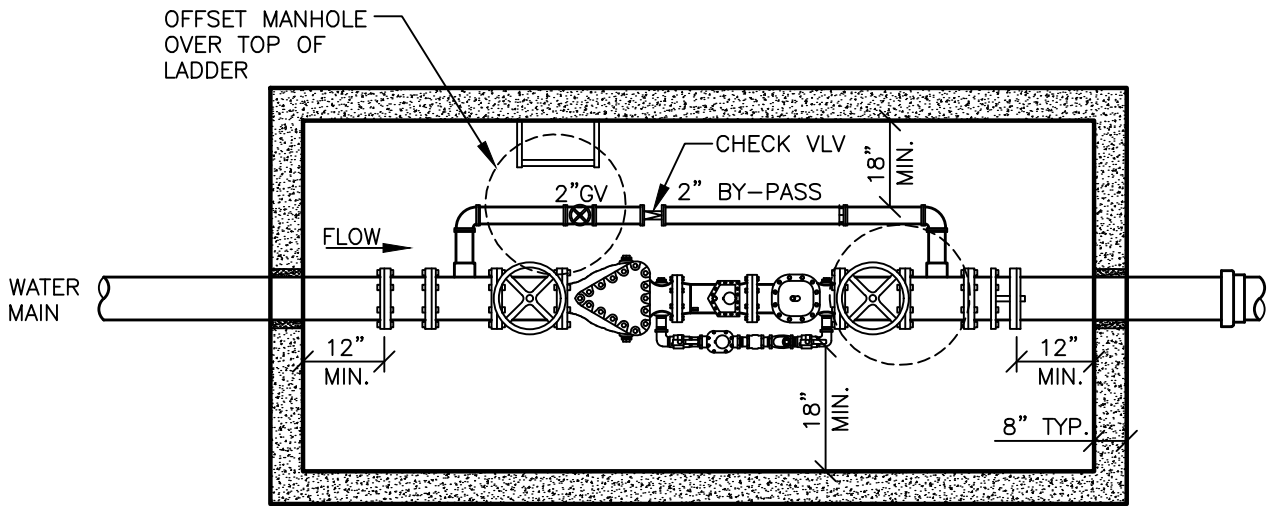
1. LOCATE MANHOLE OPENINGS DOWN CENTER LINE OF VAULT.
2. VAULT BOX SHALL BE MIN. 5' DEEP WITH GRAVEL BOTTOM.
3. CONTRACTOR SHALL PROVIDE A MINIMUM OF 12" CLEARANCE FROM THE DETECTOR CHECK AND THE VAULT WALLS. VAULT SHALL HAVE LADDER RUNGS.
4. INSTALL GATE VALVE & VALVE BOX OUTSIDE OF BUT ADJACENT TO VAULT.
5. DETECTOR CHECK TO BE WILKINS 350DA OR EQUAL. SUBMIT DATA CUT SHEET TO K.I.D. DISTRICT ENGINEER FOR APPROVAL.

DRAWN:
R.H.
CHECKED:
CHECKED:

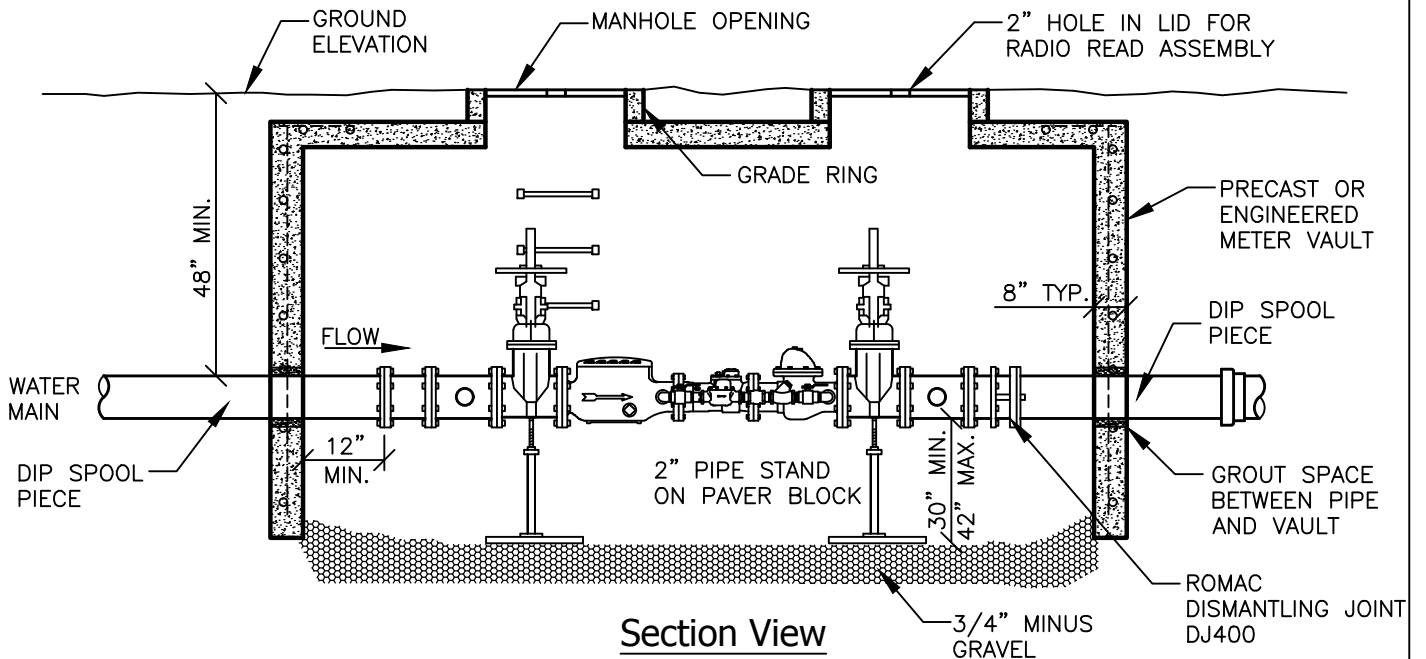


8" Detector Check Meter Vault

DATE:
09-06-16
DRWG NO.:
CW18



Plan View



Section View

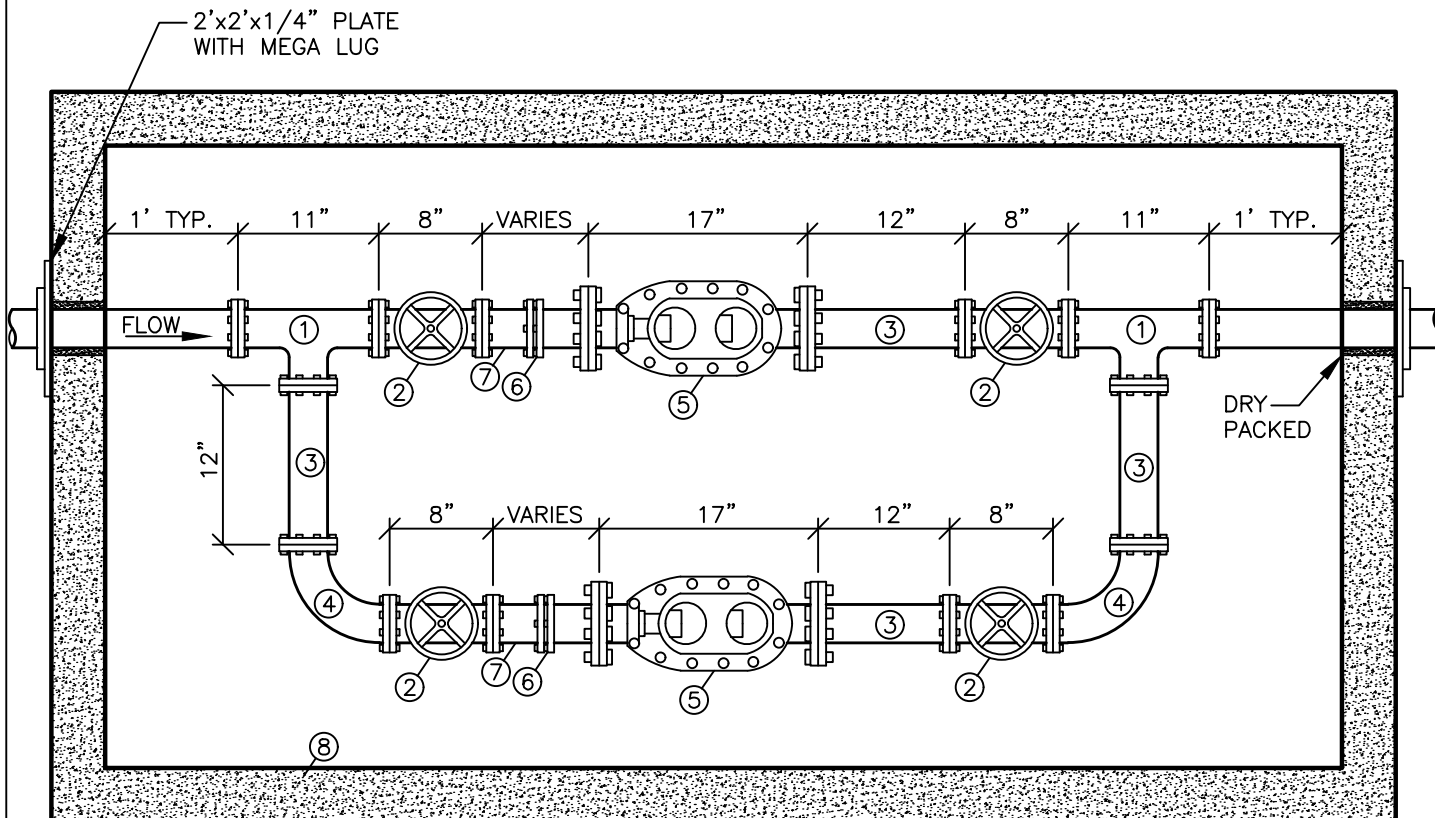
1. LOCATE MANHOLE OPENING OVER LADDER RUNGS.
2. VAULT BOX SHALL BE MIN. 5' DEEP WITH GRAVEL BOTTOM.
3. CONTRACTOR SHALL PROVIDE A MINIMUM OF 18" CLEARANCE FROM THE DETECTOR CHECK AND THE VAULT WALLS.
4. INSTALL GATE VALVES & FIRE LINE ASSEMBLY 30" TO 42" ABOVE VAULT FLOOR.
5. FIRE LINE METER ASSEMBLY TO BE FIRE LINE FM-720-R1 WITH SENSUS 8" METER. ASSEMBLY SHALL BE FM OR UL APPROVED.

DRAWN:
R.H.
CHECKED:
CHECKED:



8" Fire Line Meter Vault

DATE:
09-06-16
DRWG NO.:
CW19



*SEE CW9 FOR VAULT SIZES

NOTES:

1. CONTRACTOR TO PERFORM ALL CONSTRUCTION AND INSTALLATION OF THE WATER METER.
2. PROVIDE AND PLACE BACKFILL PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
3. SEE CW9 FOR PRECAST VAULT SIZE. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS.
4. ALL JOINTS MUST BE RESTRAINED.

ITEM	QTY	DESCRIPTION	APPROVED MATERIAL LIST NUMBER
1	2	3"x3"x3" (FLxFLxFL) TEE	6-B
2	4	3" GATE VALVE (FLxFL) WITH HANDWHEEL	2-B
3	4	3"x12" (FLxFL) SPOOL	1-C
4	2	3" 90 DEGREE ELBOW (FLxFL)	6-C
5	2	3" METER	13-C
6	2	3" DRESSER	6-A
7	4	3" DUCTILE IRON PIPE (FLxCUT TO FIT)	1-C
8	1	VAULT (PRECAST)	-

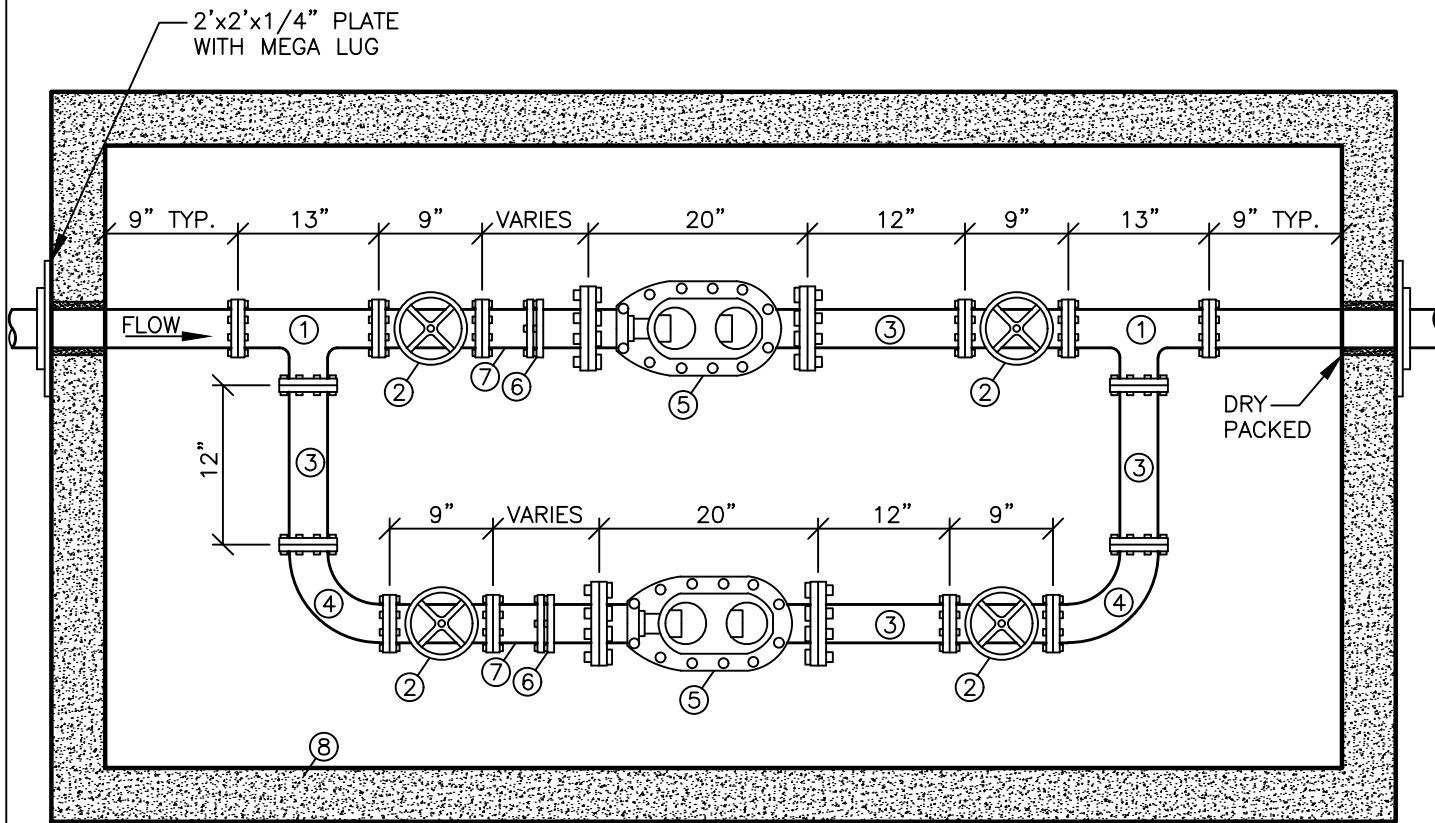
*ALL FITTINGS ARE FLANGED UNLESS OTHERWISE NOTED

DRAWN:
R.H.
CHECKED:
CHECKED:



3" Compound Meter w/ 3" Bypass

DATE:
09-06-16
DRWG NO.:
CW20



*SEE CW9 FOR VAULT SIZES

NOTES:

1. CONTRACTOR TO PERFORM ALL CONSTRUCTION AND INSTALLATION OF THE WATER METER.
2. PROVIDE AND PLACE BACKFILL PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
3. SEE CW9 FOR PRECAST VAULT SIZE. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS.
4. ALL JOINTS MUST BE RESTRAINED.

ITEM	QTY	DESCRIPTION	APPROVED MATERIAL
			LIST NUMBER
1	2	4"x4"x4" (FLxFLxFL) TEE	6-B
2	4	4" GATE VALVE (FLxFL) WITH HANDWHEEL	2-B
3	4	4"x12" (FLxFL) SPOOL	1-C
4	2	4" 90 DEGREE ELBOW (FLxFL)	6-C
5	2	4" METER	13-C
6	2	4" DRESSER	6-A
7	4	4" DUCTILE IRON PIPE (FLxCUT TO FIT)	1-C
8	1	VAULT (PRECAST)	-

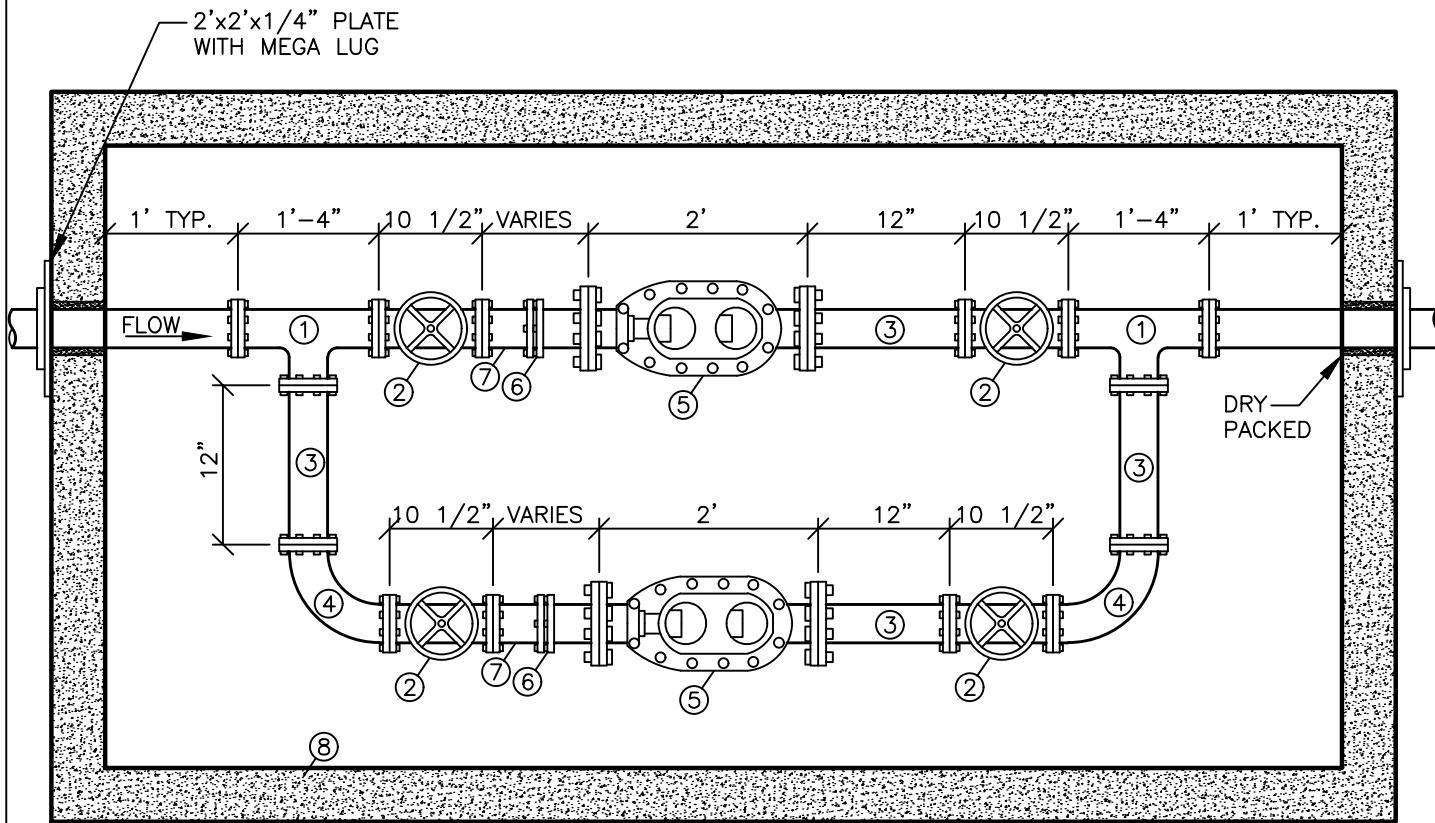
*ALL FITTINGS ARE FLANGED UNLESS OTHERWISE NOTED

DRAWN:
R.H.
CHECKED:
CHECKED:



4" Compound Meter w/ 4" Bypass

DATE:
09-06-16
DRWG NO.:
CW21



*SEE CW9 FOR VAULT SIZES

NOTES:

1. CONTRACTOR TO PERFORM ALL CONSTRUCTION AND INSTALLATION OF THE WATER METER.
2. PROVIDE AND PLACE BACKFILL PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
3. SEE CW9 FOR PRECAST VAULT SIZE. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS.
4. ALL JOINTS MUST BE RESTRAINED.

ITEM	QTY	DESCRIPTION	APPROVED MATERIAL LIST NUMBER
1	2	6"x6"x6" (FLxFLxFL) TEE	6-B
2	4	6" GATE VALVE (FLxFL) WITH HANDWHEEL	2-B
3	4	6"x12" (FLxFL) SPOOL	1-C
4	2	6" 90 DEGREE ELBOW (FLxFL)	6-C
5	2	6" METER	13-C
6	2	6" DRESSER	6-A
7	4	6" DUCTILE IRON PIPE (FLxCUT TO FIT)	1-C
8	1	VAULT (PRECAST)	9-A

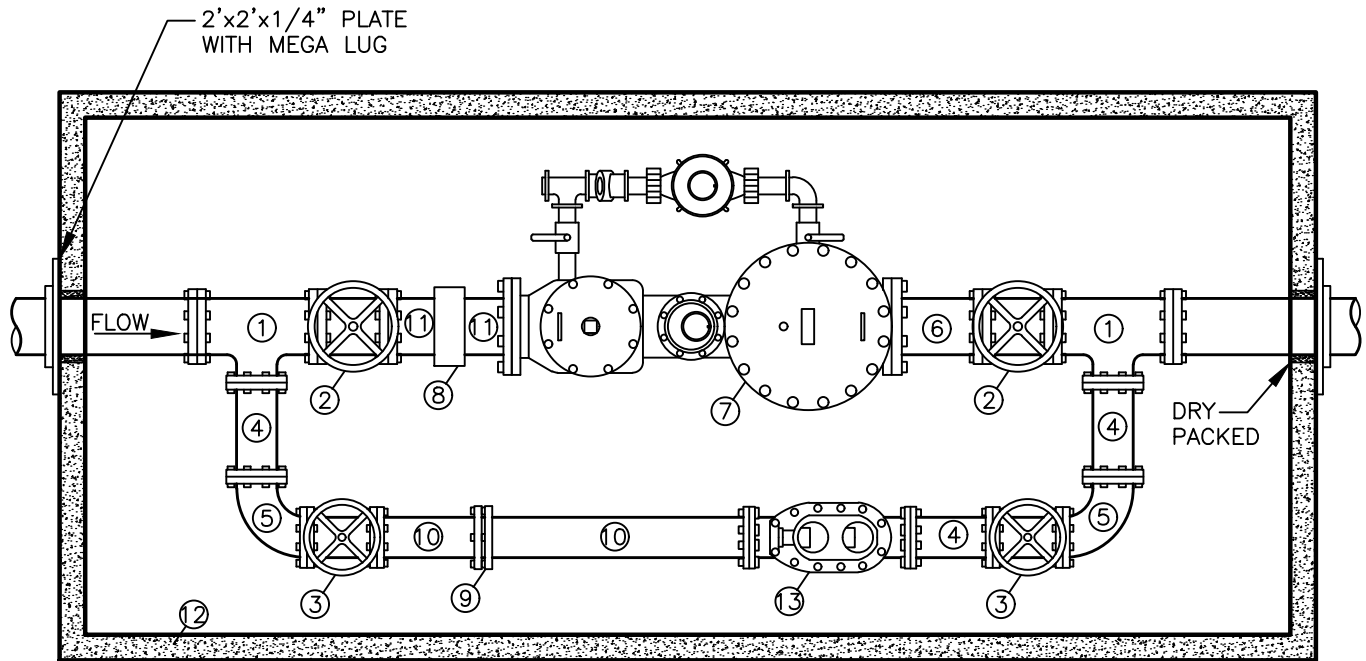
*ALL FITTINGS ARE FLANGED UNLESS OTHERWISE NOTED

DRAWN:
R.H.
CHECKED:
CHECKED:



6" Compound Meter w/ 6" Bypass

DATE:
09-06-16
DRWG NO.:
CW22



*SEE CW9 FOR VAULT SIZES

NOTES:

1. CONTRACTOR TO PERFORM ALL CONSTRUCTION AND INSTALLATION OF THE WATER METER.
2. PROVIDE AND PLACE BACKFILL PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
3. PRECAST VAULT TO BE DESIGNED BY A LICENSED STRUCTURAL ENGINEER. VAULT LAYOUT FOR AN 8" WATER METER WITH BYPASS MUST BE APPROVED BY KID DISTRICT ENGINEER. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS.
4. ALL JOINTS MUST BE RESTRAINED.

ITEM	QTY	DESCRIPTION	APPROVED MATERIAL	
			LIST NUMBER	
1	2	8"x8"x6" (FLxFLxFL) TEE	6-B	
2	2	8" GATE VALVE (FLxFL) WITH HANDWHEEL	2-B	
3	2	6" GATE VALVE (FLxFL) WITH HANDWHEEL	2-B	
4	3	6"x12" (FLxFL) SPOOL	1-C	
5	2	6" 90 DEGREE ELBOW (FLxFL)	6-C	
6	1	8"x12" (FLxFL) SPOOL	1-C	
7	1	8" WATER METER WITH RADIO HEAD	13-C	
8	1	8" DRESSER	6-A	
9	1	6" DRESSER	6-A	
10	2	6" DUCTILE IRON PIPE (FLxCUT TO FIT)	1-C	
11	2	8" DUCTILE IRON PIPE (FLxCUT TO FIT)	1-C	
12	1	VAULT (PRECAST)	9-A	
13	1	6" METER	13-C	

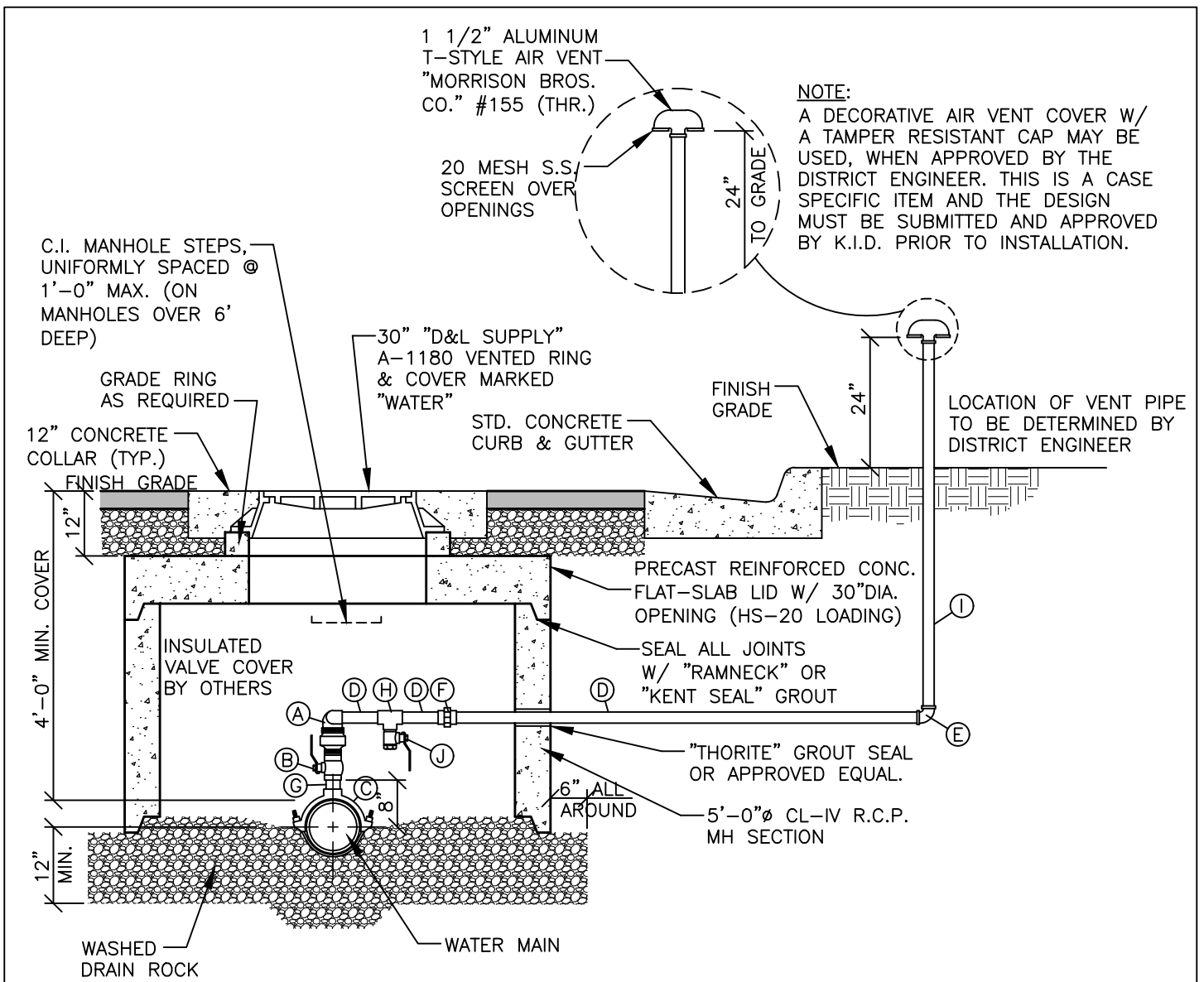
*ALL FITTINGS ARE FLANGED UNLESS OTHERWISE NOTED

DRAWN:
R.H.
CHECKED:
CHECKED:



8" Compound Meter w/ 6" Bypass

DATE:
09-06-16
DRWG NO.:
CW23



PIPE & FITTING SCHEDULE		
NO.	DESCRIPTION	FITTING
A	2" COMBINATION AIR-VACUUM RELIEF VALVE "A.R.I." MODEL D-040 P W/ NPT CONNECTIONS	THR.
B	2" BRASS BALL VALVE (1/4 TURN)	THR.
C	2" NYLON COATED W/ DOUBLE S.S. STRAPS SERVICE SADDLE	
D	1 1/2" SCH. 80 PVC PIPE	THR.
E	1 1/2" GALV. STEEL 90° ELBOW	THR.
F	1 1/2" SCH. 80 PVC UNION	THR.
G	2" BRASS PIPE	THR.
H	1 1/2" SCH. 80 PVC TEE	THR.
I	1 1/2" GALV. STEEL PIPE	THR.
J	1 1/2" BALL DRAIN VALVE	THR.

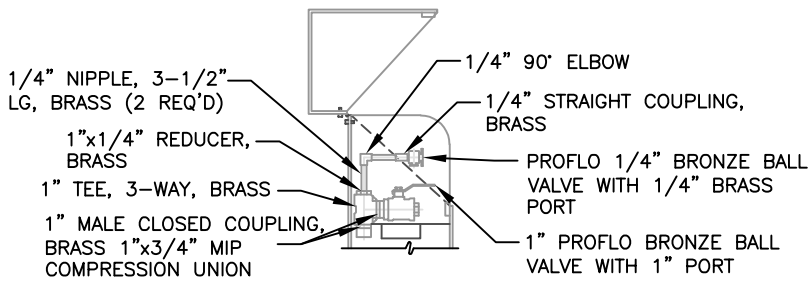
NOTE: USE A 2" HEAVY-DUTY COMBINATION AIR-VACUUM RELIEF VALVE - "APCO" MODEL 145C WHEN SPECIFIED BY THE DISTRICT ENGINEER.

DRAWN:
R.H.
CHECKED:
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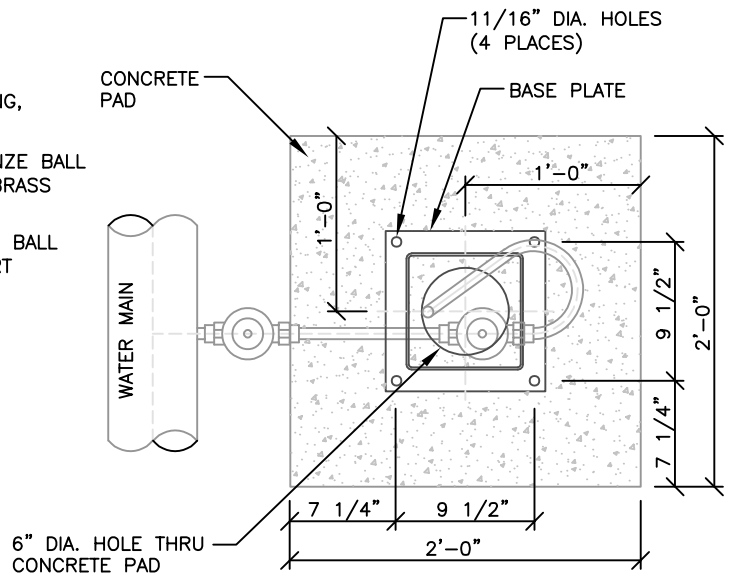


Air/Vacuum Relief Station Detail

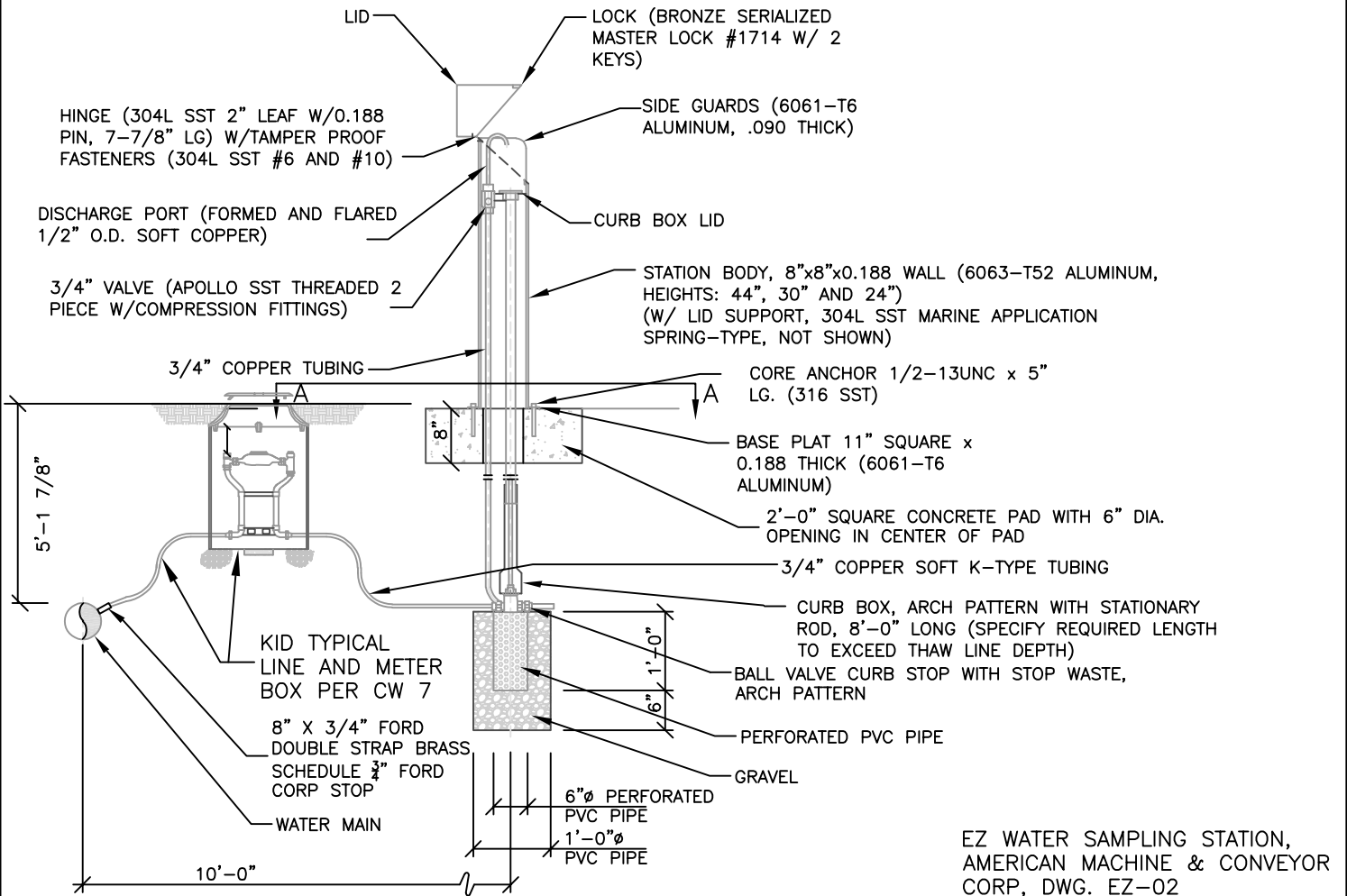
DATE:
09-06-16
DRWG NO.:
CW24



1" Flush Valve Assembly



Section A-A

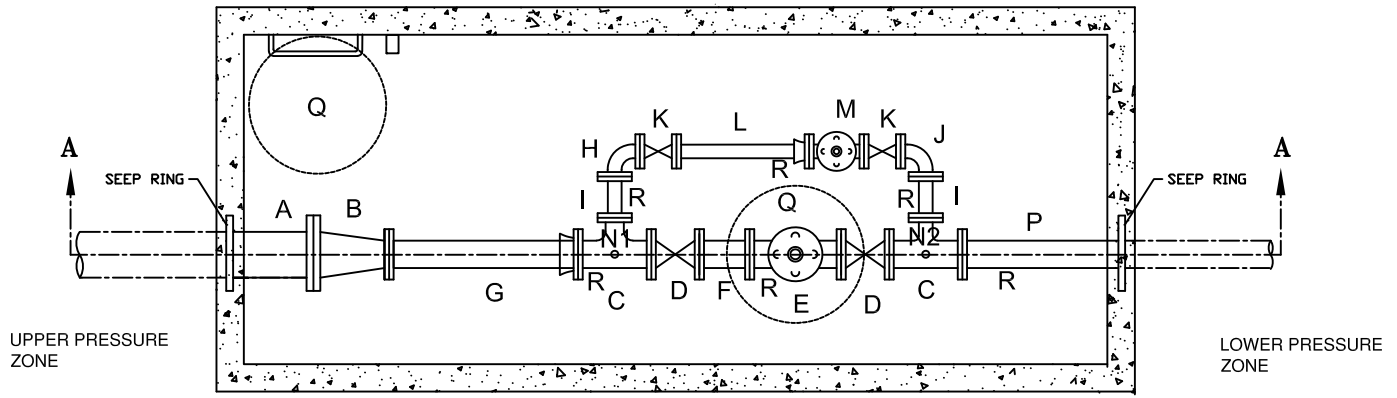


EZ WATER SAMPLING STATION,
AMERICAN MACHINE & CONVEYOR
CORP, DWG. EZ-02

DRAWN: J.W.
CHECKED:
CHECKED:

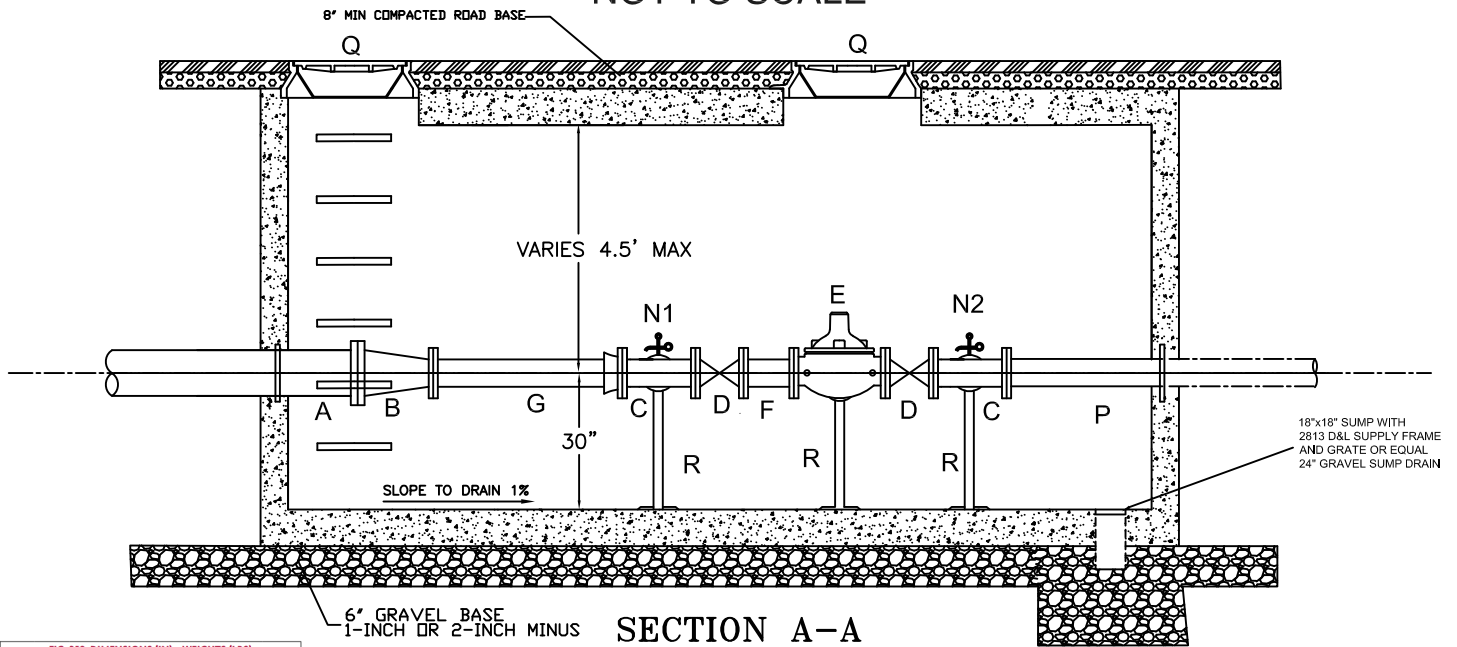
Typical Water Sampling Station

DATE: 09-22-22
DRWG NO.: CW25



H-20 AMCDR 8'X16'X7' VAULT (WITH SLOPING FLOOR TO DRAIN) OR EQUAL

NOT TO SCALE



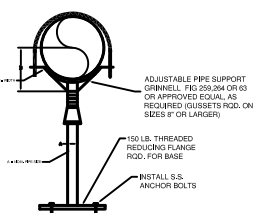
SECTION A-A
NOT TO SCALE

FIG. 259: DIMENSIONS (IN) • WEIGHTS (LBS)

Pipe Size	Weight	A	B Cast	B Fabricated	C Cast	C Fabricated	Max Lead
4	19.8		4 1/2"	20"			
5	22.1		4 3/4"	21"			
6	24.7		5 1/8"	21 1/2"			
8	27.3	3	6 1/4"	23"	3 1/2"	4	3,800
10	29.7		6 3/4"	23 1/2"			
12	31.2		6 7/8"	24"			
14	32.8		7 1/8"	24 1/2"			
16	33.8		7 3/8"	25"			5,300
18	35.0		7 7/8"	25 1/2"			
20	36.3		8 1/8"	26"			6,700
22	37.8		8 3/4"	26 1/2"			
24	39.0		8 7/8"	27"			
26	40.5		9 1/8"	27 1/2"			
28	41.8		9 3/8"	28"			
30	43.0		9 7/8"	28 1/2"			7,300
32	44.5		10 1/8"	29"			
36	48.0		10 7/8"	29 1/2"			

* Standard Wall Pipe
The above lead ratings are applicable to the saddle only and are not applicable to the station or other means used to support the saddle.

6" GRAVEL BASE
1-INCH OR 2-INCH MINUS



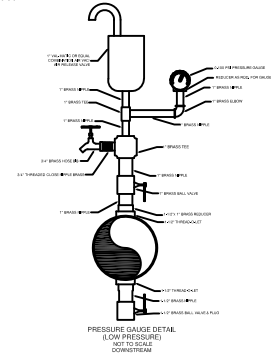
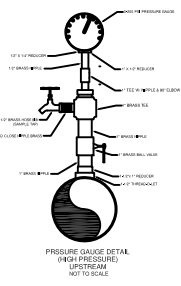
- GENERAL NOTES:**
- LOCATE MANHOLE OPENINGS OVER THE VAULT LADDER RUNGS AND CENTERED OVER THE COMBINATION PRESSURE REDUCING AND SUSTAINING VALVE.
 - WATERPROOF OUTSIDE WALLS AND TOP OF SLAB PER UBC CODE FOR BURIED VAULTS.
 - PRE-CAST VAULT SHALL BE 17 FEET LONG X 8 FEET WIDE X 6'-8" HIGH (INSIDE DIMENSION) DESIGNED FOR H-20 LOADING AND INSTALLED ON PREPARED SUBGRADE WITH 6 INCHES OF GRAVEL BASE.
 - ALL WORK SHALL CONFORM WITH KEARNS IMPROVEMENT DISTRICT DESIGN STANDARDS, CONSTRUCTION SPECIFICATIONS, AND STANDARD DRAWINGS.

7000 SOUTH PRESSURE REDUCING STATION

VALVE AND FITTING SCHEDULE

ITEM	DESCRIPTION
A	12" Flg x PE DI Spool with Seep Ring (30" ± Long)
B	12" x 10" DI Flanged Reducer
C	10"x10"x4" DI Flg Tee with 1/2" Tap for Pressure Gauge
D	10" DI Flg Gate Valve with Hand Wheel
E	10" CLA-VAL 92-01 Combination Pressure Reducing & Pressure Sustaining Valve with Strainers, Flow Control Shut Off Cocks, Flow Stabilizer, Stainless Steel Trim, Flange x Flange, 150# Class
F	10" DI Flg x Flg Spool (12" ± Long)
G	10" DI Flg x PE Spool (32" ± Long with a Flange Coupling Adapter)
H	4" DI Flg Tee
I	4" DI Flg x Flg Spool (12" ± Long)
J	4" DI Flg 90° Bend
K	4" DI Flg Gate Valve with Hand Wheel
L	4" DI Flg x PE Spool (32" ± Long) with a Flange Coupling Adapter
M	4" CLA-VAL 92-01 Combination Pressure Reducing & Pressure Sustaining Valve with Strainers, Flow Control Shut Off Cocks, Flow Stabilizer, Stainless Steel Trim, Flange x Flange, 150# Class
N (1)	High Pressure Gauge Detail (See Detail This Sheet)
N (2)	Low Pressure Gauge Detail (See Detail This Sheet)
P	10" Flg x PE DI Spool with Seep Ring (30" ± Long)
Q	24" Manhole Ring & Cover D&L A-1165 w/Plck Hole to read "Water"
R	Adjustable Pipe Saddle Supports- See Detail this Sheet

PIPE SADDLE SUPPORT
NOT TO SCALE



DATE
1-19-22

DRAWN
JW

CHECKED
BA

CHECKED
-



7000 S. PRESSURE REDUCING VAULT

DRWG. NO.
26