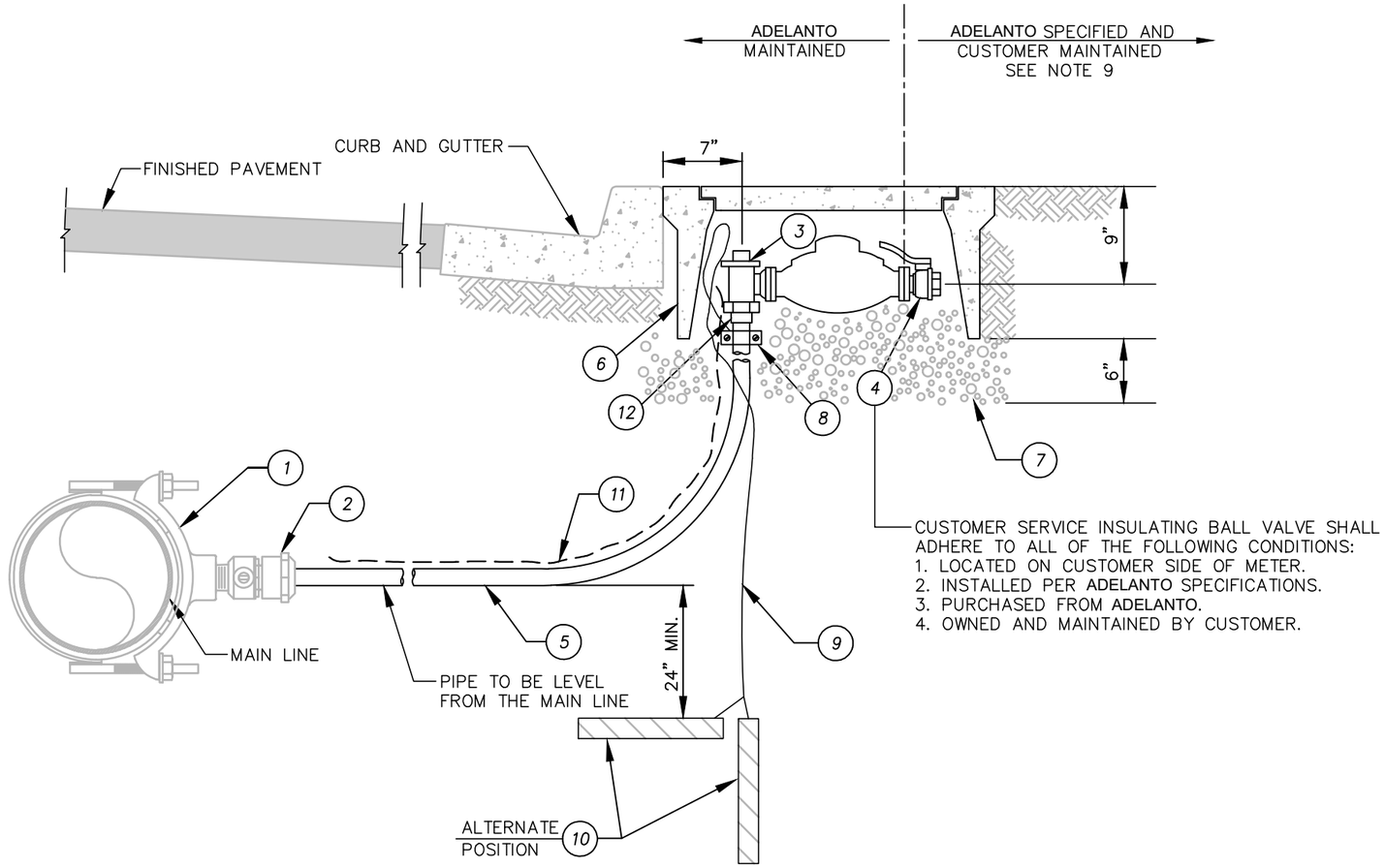
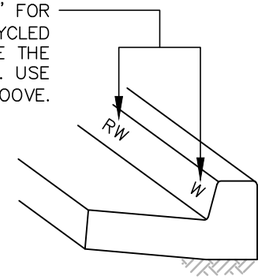


CUSTOMER SERVICE INSULATING BALL VALVE SHALL ADHERE TO ALL OF THE FOLLOWING CONDITIONS:
1. LOCATED ON CUSTOMER SIDE OF METER.
2. INSTALLED PER **ADELANTO** SPECIFICATIONS.
3. PURCHASED FROM **ADELANTO**.
4. OWNED AND MAINTAINED BY CUSTOMER.

LOCATE LATERAL WITH 2" HIGH "W" FOR POTABLE WATER OR "RW" FOR RECYCLED WATER ON FACE OF CURB WHERE THE LATERAL CROSSES UNDER THE CURB. USE WHEEL GRINDER, 1/4" DEEP GROOVE.



ZINC ANODE SIZES FOR 1" COPPER SERVICES

COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
0 TO 45	1.4 X 1.4 X 30	15
45 TO 90	2.0 X 2.0 X 30	30

ITEM — MATERIALS

1. 1" SERVICE CONNECTION TO MAIN LINE PER **ADELANTO** STD. DWG. W-3.
2. 1" BALL CORPORATION STOP PER **ADELANTO** STD. DWG. W-3.
3. 1" X METER SIZE ANGLE METER STOP WITH LOCKING WING AND F.I.P.T. INLET CONNECTION.
4. 1" CUSTOMER SERVICE INSULATING BALL VALVE, METER NUT X F.I.P.T.
5. 1" COPPER SERVICE PIPE TYPE "K" SOFT.
6. METER BOX WITH READING LID. COMPOSITE POLYMER CONCRETE BOXES AND LIDS PER **ADELANTO** STD. SPEC. SECTION 03462. "**ADELANTO**" SHALL BE STAMPED ON INNER LID.
7. 6" THICK BASE OF 3/4" CRUSHED ROCK.
8. WIRE CLAMP, SEE NOTE 6.
9. AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN METER BOX.
10. ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE COPPER SERVICE.
11. IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE.
12. WROT COPPER ADAPTER, SWEAT X M.I.P.T.

NOTES:

1. SERVICE CONNECTION SHALL NOT BE MADE WITHIN 18" OF VALVE, COUPLING, JOINT, OR FITTING.
2. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.
3. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN.
4. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
5. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
6. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE RED BRASS WITH BRASS SCREWS AND SHALL BE TESTED PER **ADELANTO** STD. SPEC. SECTION 16640, SEE TABLE HEREON FOR ZINC ANODE SIZES (SPLICES NOT ALLOWED).
7. METER BOX SHALL NOT BE LOCATED WITHIN ANY PATH OF TRAVEL, INCLUDING BUT NOT LIMITED TO, ACCESS ROADS, SIDEWALKS, TRAILS OR DRIVEWAY APPROACHES.
8. METER BOX SHALL NOT BE LOCATED WITHIN ANY CONCRETE SURFACE.
9. GASKET BETWEEN CUSTOMER SERVICE INSULATING BALL VALVE AND **ADELANTO**-MAINTAINED METER SHALL BE OWNED AND MAINTAINED BY CUSTOMER.

1" COPPER SERVICE

City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

JULY 2023
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City of ADELANTO

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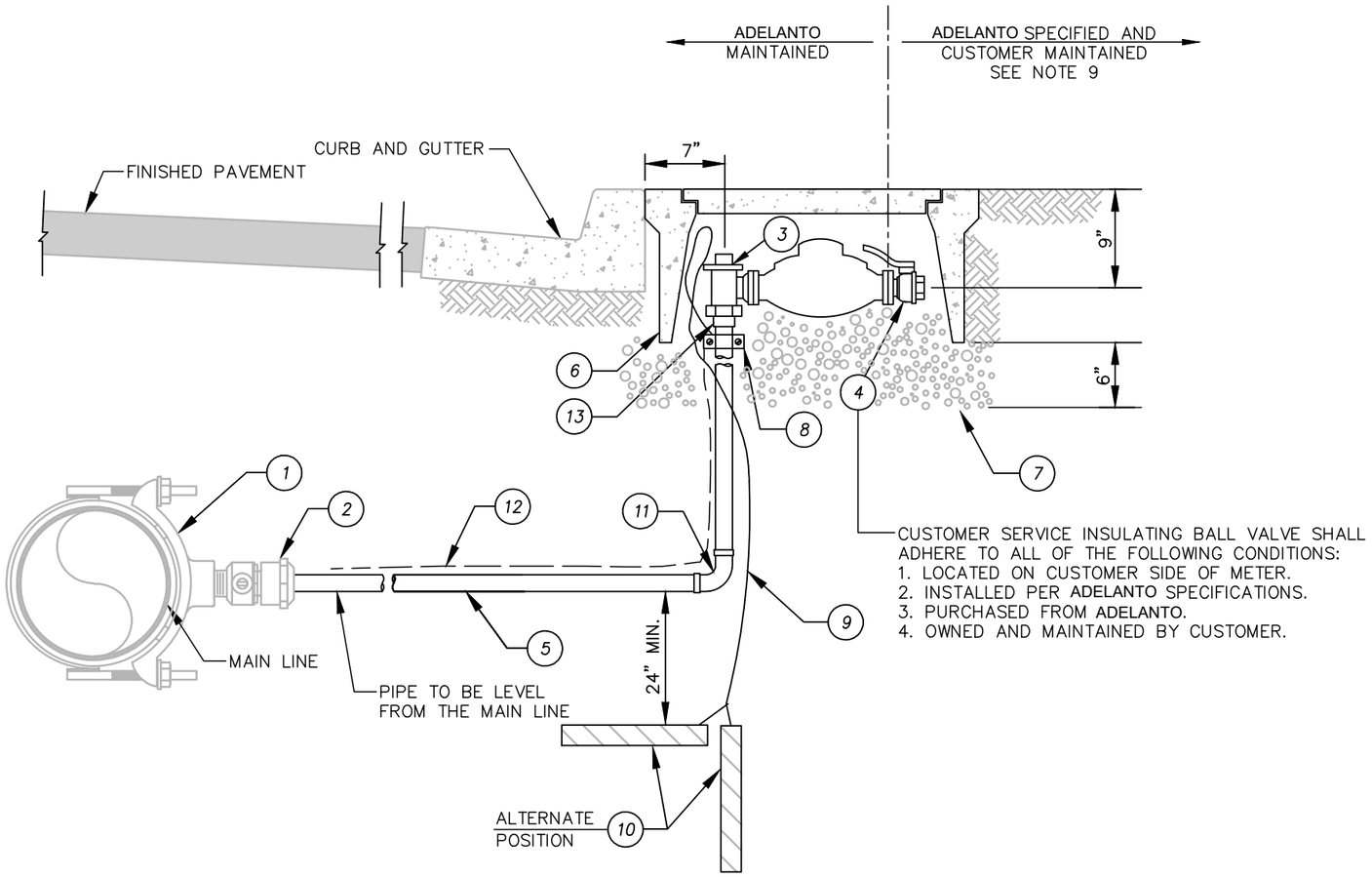
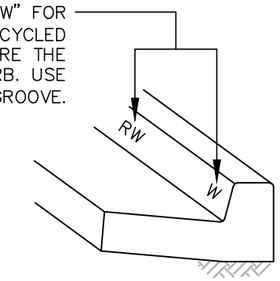
SHEET 1 OF 1





ZINC ANODE SIZES FOR 2" COPPER SERVICES

COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
0 TO 22	1.4 X 1.4 X 30	15
22 TO 45	2.0 X 2.0 X 30	30
45 TO 70	2.0 X 2.0 X 48	40
70 TO 90	2.0 X 2.0 X 60	60

ITEM	MATERIALS
1	2" SERVICE CONNECTION TO MAIN LINE PER ADELANTO STD. DWG. W-3.
2	2" BALL CORPORATION STOP PER ADELANTO STD. DWG. W-3.
3	2" X METER SIZE BRASS ANGLE METER STOP WITH LOCKING WING AND F.I.P.T. INLET CONNECTION.
4	CUSTOMER SERVICE VALVE METER NUT X F.I.P.T. WITH INSULATING FLANGE.
5	2" COPPER SERVICE PIPE TYPE "K" SOFT (COILED COPPER FOR 2" NOT ALLOWED)
6	METER BOX WITH READING LID. COMPOSITE POLYMER CONCRETE BOXES AND LIDS PER ADELANTO STD. SPEC. SECTION 03462. "ADELANTO" SHALL BE STAMPED ON INNER LID.
7	6" THICK BASE OF 3/4" CRUSHED ROCK.
8	WIRE CLAMP, SEE NOTE 6.
9	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN METER BOX.
10	ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 24" FROM THE COPPER SERVICE.
11	2" WROT COPPER 90° BEND, SWEAT X SWEAT.
12	IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE.
13	WROT COPPER ADAPTER, SWEAT X M.I.P.T.

NOTES:

1. SERVICE CONNECTION SHALL NOT BE MADE WITHIN 18" OF VALVE, COUPLING, JOINT, OR FITTING.
2. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.
3. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN.
4. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
5. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
6. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE RED BRASS WITH BRASS SCREWS AND SHALL BE TESTED PER ADELANTO STD. SPEC. SECTION 16640, SEE TABLE HEREON FOR ZINC ANODE SIZES (SPLICES NOT ALLOWED).
7. METER BOX SHALL NOT BE LOCATED WITHIN ANY PATH OF TRAVEL, INCLUDING BUT NOT LIMITED TO, ACCESS ROADS, SIDEWALKS, TRAILS OR DRIVEWAY APPROACHES.
8. METER BOX SHALL NOT BE LOCATED WITHIN ANY CONCRETE SURFACE.
9. GASKET BETWEEN CUSTOMER SERVICE INSULATING BALL VALVE AND ADELANTO-MAINTAINED METER SHALL BE OWNED AND MAINTAINED BY CUSTOMER.

2" COPPER SERVICE

City of Adelanto

APPROVED BY:

Salva Engineer 12/7/23

DATE

JULY 2023

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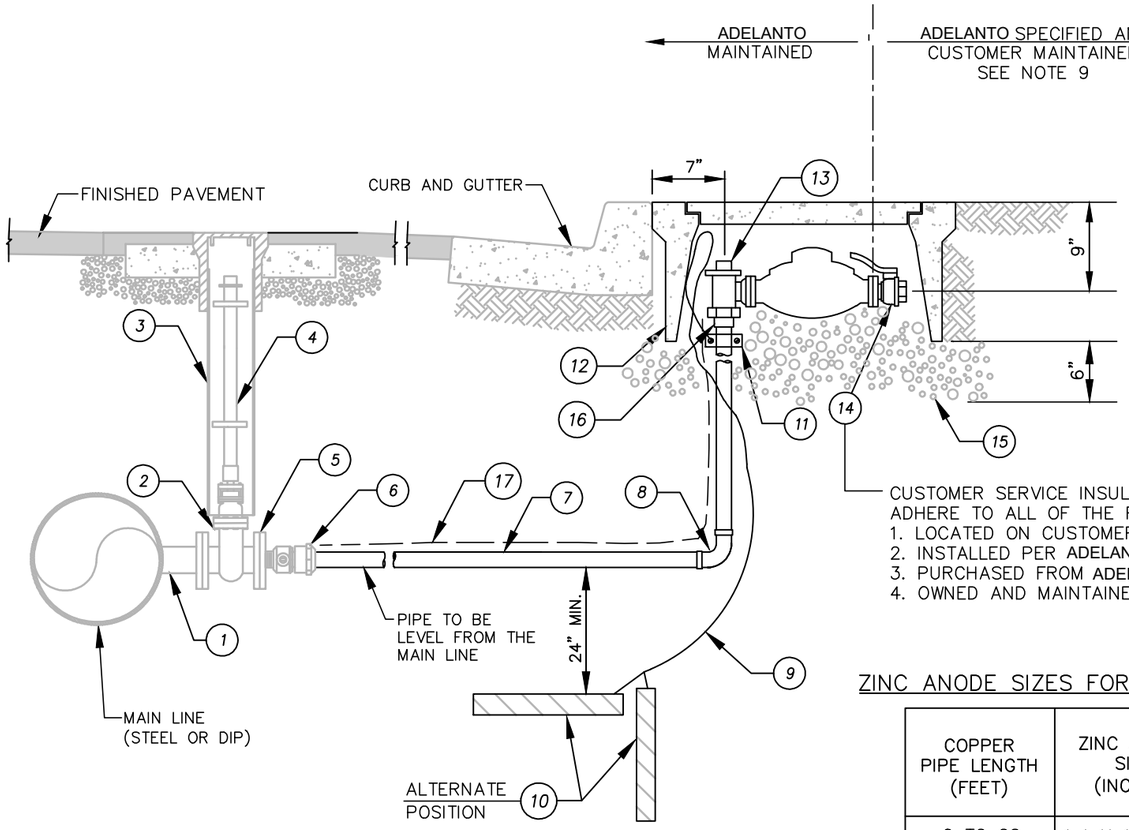
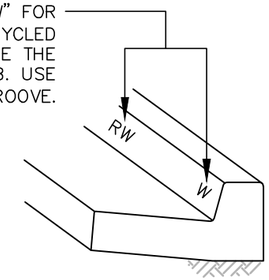


CUSTOMER SERVICE INSULATING BALL VALVE SHALL ADHERE TO ALL OF THE FOLLOWING CONDITIONS:
1. LOCATED ON CUSTOMER SIDE OF METER.
2. INSTALLED PER **ADELANTO** SPECIFICATIONS.
3. PURCHASED FROM **ADELANTO**.
4. OWNED AND MAINTAINED BY CUSTOMER.

LOCATE LATERAL WITH 2" HIGH "W" FOR POTABLE WATER OR "RW" FOR RECYCLED WATER ON FACE OF CURB WHERE THE LATERAL CROSSES UNDER THE CURB. USE WHEEL GRINDER, 1/4" DEEP GROOVE.



ZINC ANODE SIZES FOR 2" COPPER SERVICES

COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
0 TO 22	1.4 X 1.4 X 30	15
22 TO 45	2.0 X 2.0 X 30	30
45 TO 70	2.0 X 2.0 X 48	40
70 TO 90	2.0 X 2.0 X 60	60

ITEM — MATERIALS

1. FLANGED OUTLET (MIN. SIZE = 4").
2. RW GATE VALVE OR BUTTERFLY VALVE, F.E. X F.E.
3. VALVE AND VALVE BOX INSTALLATION PER **ADELANTO** STD. DWG. W-22.
4. VALVE STEM EXTENSION PER **ADELANTO** STD. DWG. W-23 (WHERE REQUIRED).
5. FLANGED OUTLET SIZE X 2" TAPPED D.I. COMPANION FLANGE.
6. 2" BRASS INSULATING BALL CORPORATION STOP PER **ADELANTO** STD. DWG. W-3.
7. 2" COPPER SERVICE PIPE TYPE "K" SOFT (COILED COPPER FOR 2" NOT ALLOWED).
8. 2" WROT COPPER 90° ELBOW, SLIP X SLIP.
9. AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN METER BOX.
10. ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE COPPER SERVICE.
11. GROUND WIRE CLAMP, SEE NOTE 6.
12. METER BOX WITH READING LID. COMPOSITE POLYMER CONCRETE BOXES AND LIDS PER **ADELANTO** STD. SPEC. SECTION 03462. "**ADELANTO**" TO BE STAMPED ON INNER LID.
13. 2" X METER SIZE BRASS ANGLE METER STOP WITH LOCKING WING AND F.I.P. INLET CONNECTION .
14. 2" BRASS CUSTOMER SERVICE VALVE METER, FLANGE X F.I.P.T., WITH INSULATING FLANGE.
15. 6" THICK BASE OF 3/4" CRUSHED ROCK.
16. WROT COPPER ADAPTER, SWEAT X M.I.P.T.
17. IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE.

NOTES:

1. SERVICE CONNECTION SHALL NOT BE MADE WITHIN 18" OF VALVE, COUPLING, JOINT, OR FITTING.
2. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.
3. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN.
4. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
5. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
6. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE RED BRASS WITH BRASS SCREWS AND SHALL BE TESTED PER **ADELANTO** STD. SPEC. SECTION 16640, SEE TABLE HEREON FOR ZINC ANODE SIZES (SPLICES NOT ALLOWED).
7. METER BOX SHALL NOT BE LOCATED WITHIN ANY PATH OF TRAVEL, INCLUDING BUT NOT LIMITED TO, ACCESS ROADS, SIDEWALKS, TRAILS OR DRIVEWAY APPROACHES.
8. METER BOX SHALL NOT BE LOCATED WITHIN ANY CONCRETE SURFACE.
9. GASKET BETWEEN CUSTOMER SERVICE INSULATING BALL VALVE AND **ADELANTO**-MAINTAINED METER SHALL BE OWNED AND MAINTAINED BY CUSTOMER.

2" COPPER SERVICE ON STEEL OR DIP GREATER THAN 16"

City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

JULY 2023
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City of ADELANTO

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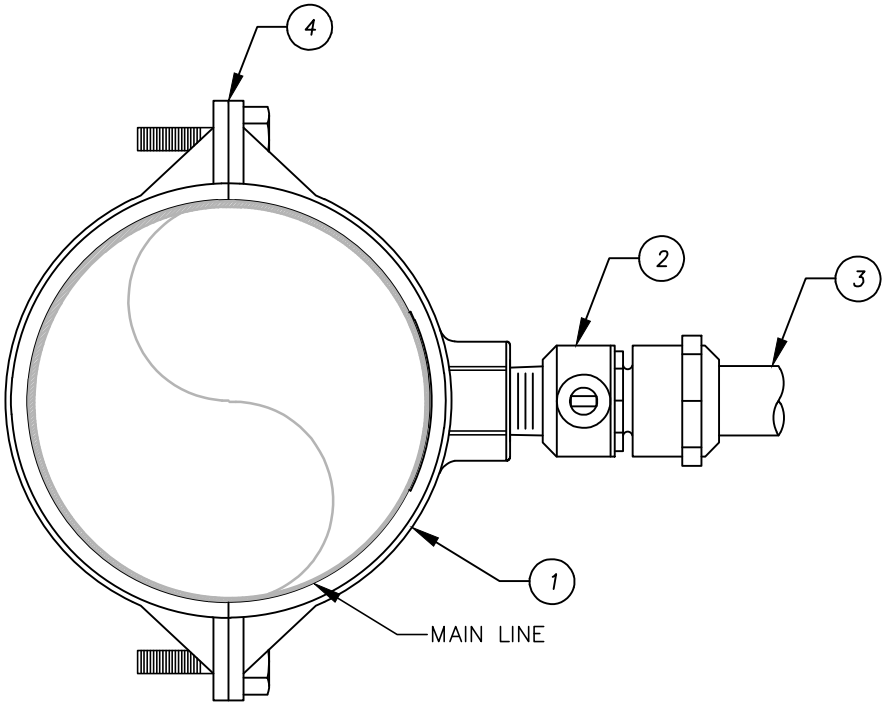

ITEM	MATERIALS
1	2–PIECE SERVICE SADDLE PER STD. SPEC. SECTION 15057 FOR O.D. CONTROLLED PVC PIPE WITH 1" OR 2" F.I.P.T. OUTLET.
2	1" OR 2" BRASS BALL CORPORATION STOP, M.I.P.T. X COMPRESSION.
3	1" OR 2" COPPER SERVICE PIPE, TYPE "K".
4	1" OR 2" SERVICE CONNECTIONS: 2 BOLTS ON EACH SIDE FOR 8" DIA. PIPE AND SMALLER. 1 BOLT ON EACH SIDE FOR 10" AND 12" DIA. PIPE.

NOTES:

1. SADDLE CONNECTIONS MAY BE USED ON PVC PIPE SIZES UP TO AND INCLUDING 12". FOR SIZES GREATER THAN 12", SERVICE CONNECTIONS AND OTHER APPARATUS SHALL BE CONNECTED VIA D.I. OR CML&C STEEL TEE FITTINGS WITH FLANGED OUTLET.
2. PLACE OPERATING NUT POSITION AS SHOWN ABOVE.

1" OR 2" SERVICE CONNECTION FOR PVC

City of Adelanto
APPROVED BY:

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DATE

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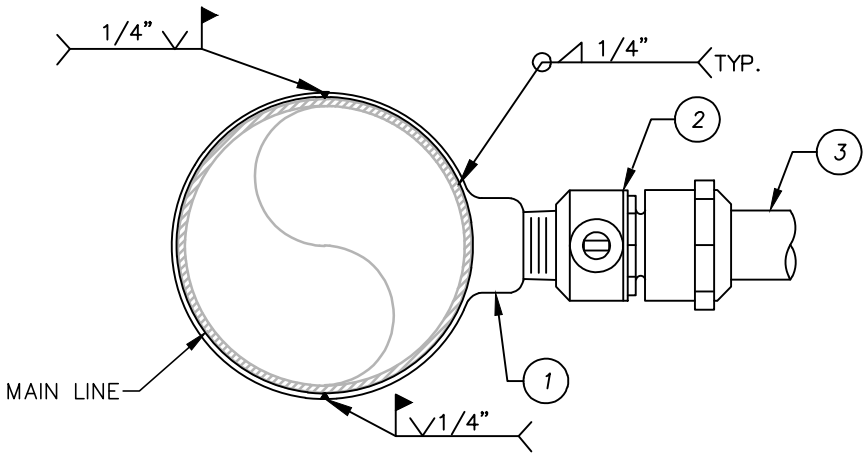

STEEL PIPE 6" DIA. AND SMALLER

ITEM	MATERIALS
1	1/4" THICK 2-PIECE 6" WIDE ROLLED STEEL WEDDING BAND REINFORCING STRAP WITH EXTRA HEAVY WELDED STEEL OUTLET (THREAD-O-LET) COUPLING, WITH 1" OR 2" F.I.P.T.
2	1" OR 2" INSULATING BRASS BALL CORPORATION STOP, M.I.P.T. X COMPRESSION.
3	1" OR 2" COPPER SERVICE PIPE, TYPE "K".

NOTES:

1. FOR USE ON EXISTING 6" DIA. AND SMALLER STEEL PIPE ONLY AND ARE SUBJECT TO APPROVAL BY ADELANTO.
2. PLACE OPERATING NUT POSITION AS SHOWN ABOVE.

1" OR 2" SERVICE CONNECTION FOR STEEL PIPE

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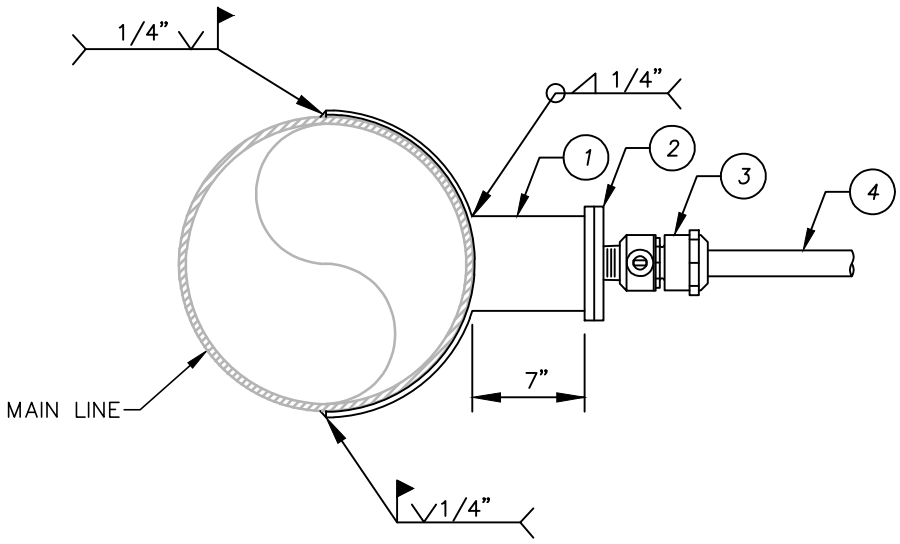

STEEL PIPE 8" DIA. AND LARGER

ITEM	MATERIALS
1	1/4"–THICK CML&C STEEL 6" FLANGED NOZZLE WITH 1/4"–THICK STEEL HALF WRAPPER PLATE.
2	6" X 1" OR 2" D.I. COMPANION FLANGE.
3	1" OR 2" INSULATING BALL CORPORATION STOP, M.I.P.T. X COMPRESSION.
4	1" OR 2" COPPER SERVICE PIPE, TYPE "K".

NOTES:

1. FOR USE ON EXISTING 8" DIA. AND LARGER STEEL PIPE.
2. PLACE OPERATING NUT POSITION AS SHOWN ABOVE.

1" OR 2" SERVICE CONNECTION FOR STEEL PIPE

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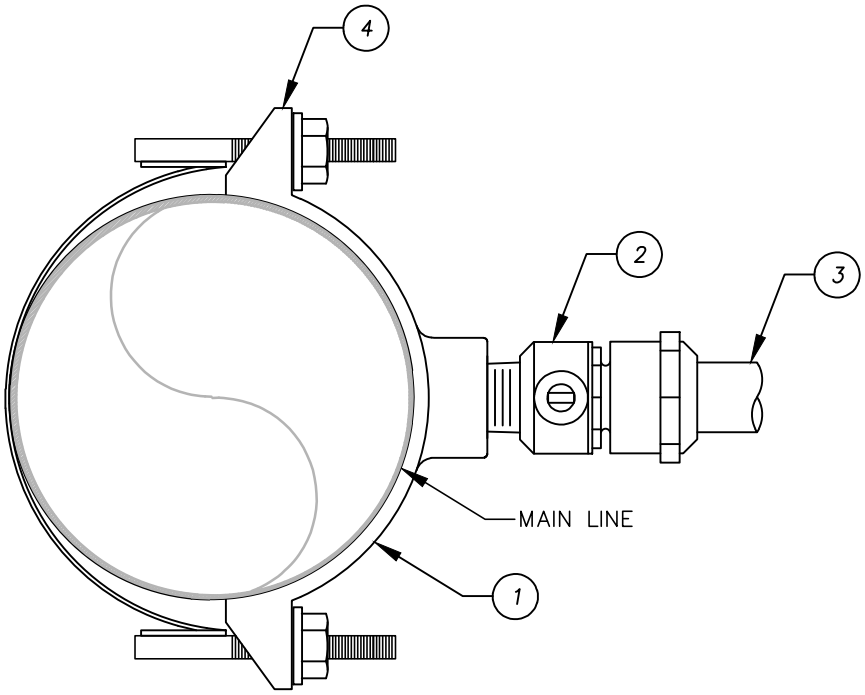
SHEET 3 OF 5



ITEM	MATERIALS
1	BRASS SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS AND 1" OR 2" F.I.P.T. OUTLET.
2	1" OR 2" BALL CORPORATION STOP, M.I.P.T. X COMPRESSION (TYP.).
3	1" OR 2" COPPER SERVICE PIPE, TYPE "K".
4	1" OR 2" SERVICE CONNECTIONS: 2 EACH SIDE – TYPE 316 STAINLESS STEEL SADDLE BOLTS AND NUTS.

NOTES:

1. SADDLE CONNECTIONS MAY BE USED ON ACP SIZES UP TO AND INCLUDING 12". FOR SIZES GREATER THAN 12", SERVICE CONNECTIONS AND OTHER APPARATUS SHALL BE CONNECTED VIA D.I. TEE FITTINGS WITH FLANGED OUTLET.
2. PLACE OPERATING NUT POSITION AS SHOWN ABOVE.

1" OR 2" SERVICE CONNECTION FOR ACP

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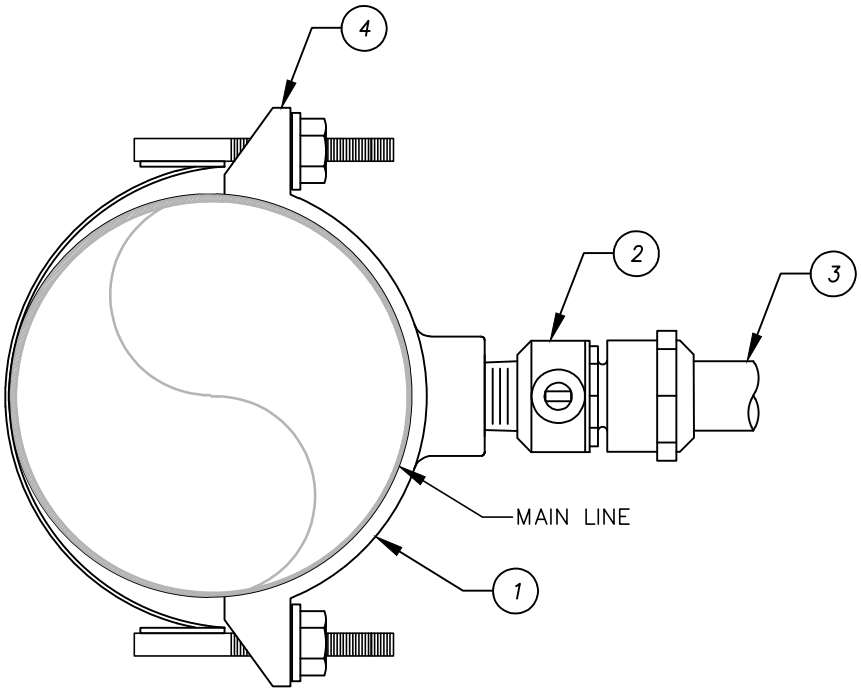

ITEM	MATERIALS
1	NYLON COATED MALLEABLE IRON BODY SERVICE SADDLE WITH DOUBLE TYPE 316 STAINLESS STEEL STRAPS AND 1" OR 2" F.I.P.T. OUTLET.
2	1" OR 2" INSULATING BRASS BALL CORPORATION STOP, M.I.P.T. X COMPRESSION.
3	1" OR 2" COPPER SERVICE PIPE, TYPE "K".
4	1" OR 2" SERVICE CONNECTIONS: 2 EACH SIDE – TYPE 316 STAINLESS STEEL SADDLE BOLTS AND NUTS.

NOTES:

1. SADDLE CONNECTIONS MAY BE USED ON DIP SIZES UP TO AND INCLUDING 12". FOR SIZES GREATER THAN 12", SERVICE CONNECTIONS AND OTHER APPARATUS SHALL BE CONNECTED VIA D.I. TEE FITTINGS WITH A FLANGED OUTLET.
2. PLACE OPERATING NUT POSITION AS SHOWN ABOVE.

1" OR 2" SERVICE CONNECTION FOR DIP

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APPROVED BY:

Sabra Engineer 12/7/23
DATE

JULY 2023
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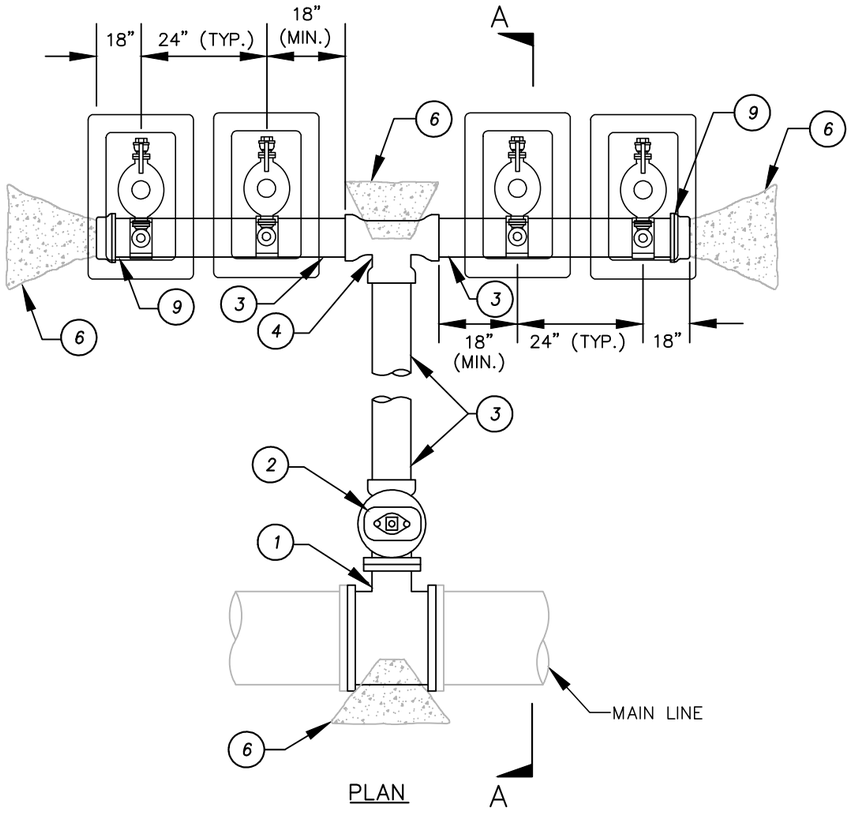
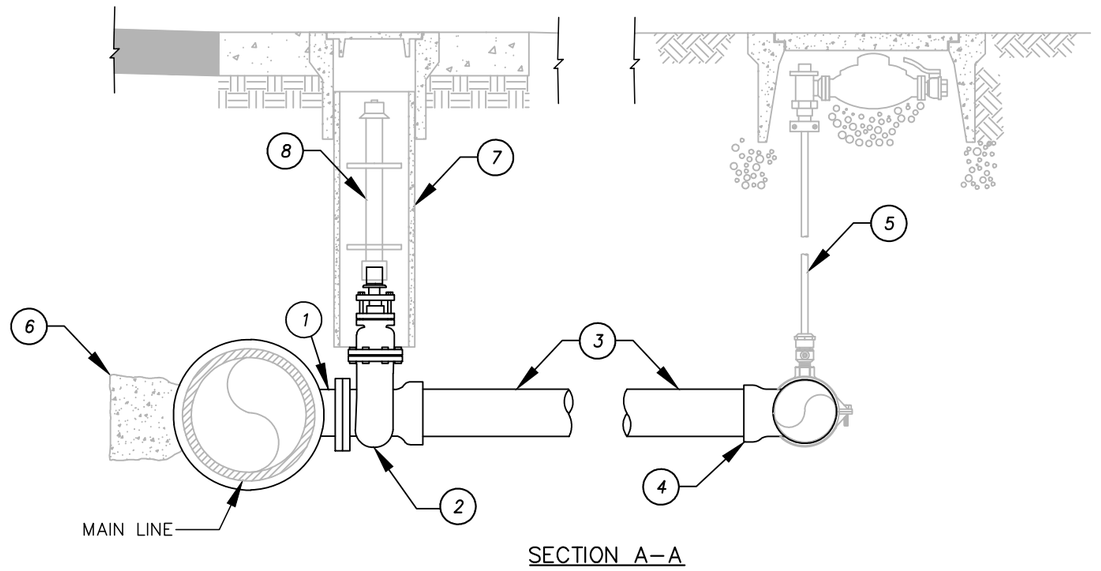
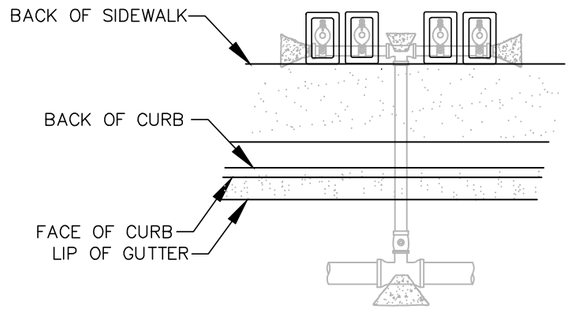


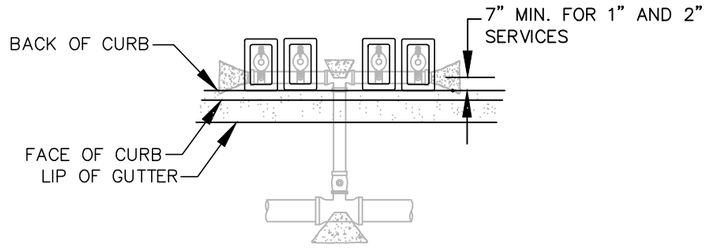


SECTION A–A

ITEM	MATERIALS
1	MAIN SIZE X 4" D.I. TEE, F.E. X F.E.
2	4" RW GATE VALVE, F.E. X P.O. SEE NOTE 3.
3	4" C–900 PVC PIPE, DR 14.
4	4" X 4" D.I. TEE, P.O. X P.O.
5	1" OR 2" SERVICE PER **ADELANTO** STD. DWG. W–1 AND W–3.
6	THRUST BLOCK PER **ADELANTO** STD. DWG. W–16.
7	VALVE BOX PER **ADELANTO** STD. DWG. W–22.
8	VALVE STEM EXTENSION PER **ADELANTO** STD. DWG. W–23, WHERE APPLICABLE.
9	4" D.I. P.O. CAP.



MANIFOLD ADJACENT TO SIDEWALK



MANIFOLD ADJACENT TO CURB

NOTES:

1. THIS ASSEMBLY SHALL NOT BE USED FOR FEWER THAN 4 OR MORE THAN 10 SERVICE CONNECTIONS UNLESS PREVIOUSLY APPROVED BY **ADELANTO**.
2. SERVICE CONNECTIONS FOR FIRE SPRINKLER SYSTEMS SHALL NOT BE PERMITTED ON THE MANIFOLD.
3. ISOLATION VALVE TYPE CHANGES FROM GATE TO BUTTERFLY FOR SYSTEM PRESSURES OVER 100 PSI.
4. WHEN MAIN LINE IS ORIENTED AT A 90 DEGREE ANGLE, AN END OF LINE FLUSH–OUT SHALL BE REQUIRED PER **ADELANTO** STD. DWG. W–13.

1" OR 2" SERVICE MANIFOLD

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
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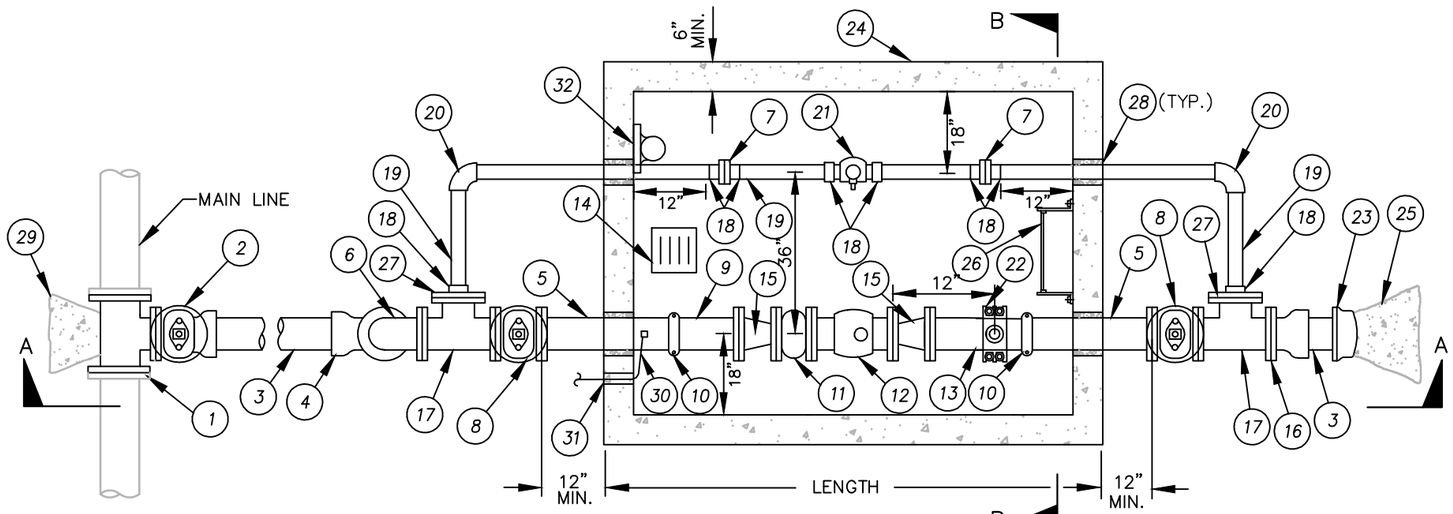
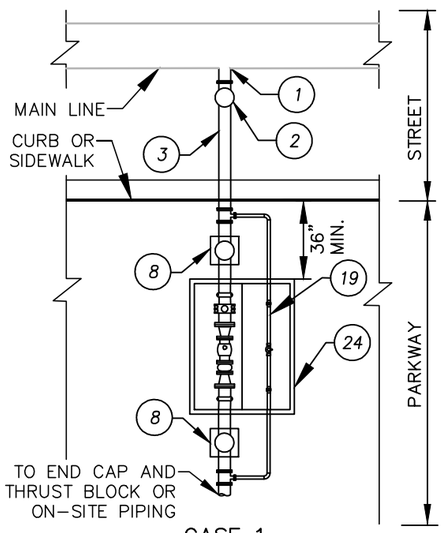
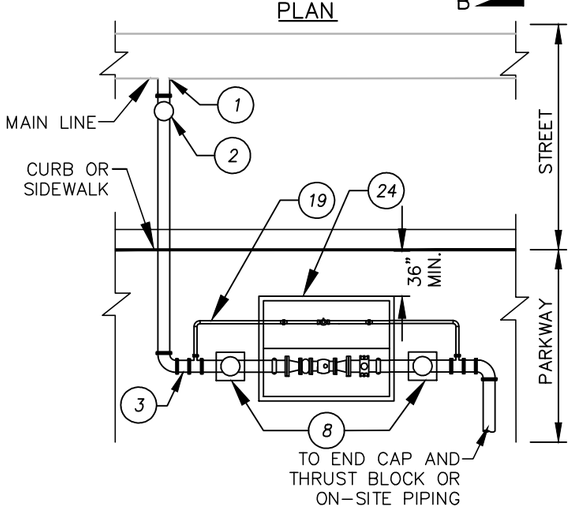
SHEET 1 OF 1





CASE 1



CASE 2

METER ASSEMBLY LOCATION PLANS

NOTES:

1. EASEMENT: METER INSTALLATION IMPROVEMENTS BEYOND THE CITY OR COUNTY RIGHT-OF-WAY REQUIRE AN EASEMENT AS DIRECTED BY **ADELANTO**.
2. RETAINING WALL: WHEN A RETAINING WALL IS REQUIRED TO ACCOMMODATE GRADE VARIATIONS, THE WALL SHALL BE CONSTRUCTED PER **ADELANTO** STD. DWG. G-4 AND SHOULD PROVIDE PROPER CLEARANCE FROM THE IMPROVEMENTS.
3. VAULTS: VAULTS SHALL BE CONSTRUCTED A MIN. 36" AWAY FROM CURB OR SIDEWALK, LEVEL, AND DESIGNED BY THE ENGINEER OF RECORD TO ACCOUNT FOR NUISANCE WATER AND THE SAFETY OF THE TRAVELING PUBLIC.
4. AT NO POINT SHALL ANY PART OF THE METER ASSEMBLY BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE OR LANDSCAPING.
5. PRECAST VAULT INSIDE DIMENSIONS SHALL BE 6' X 6'.
6. METERS, FLANGE INSULATING KITS, NUTS, BOLTS, AND WASHERS PROVIDED BY **ADELANTO**.
7. SEE **ADELANTO** STD. DWG. W-12 FOR TEMPORARY FLUSH-OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

ITEM	MATERIALS
1	MAIN LINE SIZE X 4" TEE WITH FLANGED OUTLET.
2	4" RW GATE VALVE, F.E. X P.O.
3	4" C-900 PVC DR 14 PIPE.
4	4" 90° D.I. BEND, P.O. X F.E.
5	4" X D.I. SPINDLE (LENGTH AS REQUIRED), F.E. X G.E.
6	4" 90° D.I. BEND, F.E. X F.E.
7	CL 150 THREADED BRONZE COMPANION FLANGE WITH 316 SS HARDWARE.
8	METER SIZED RW GATE VALVE, F.E. X F.E.
9	4" D.I. SPINDLE, F.E. X G.E., LENGTH AS REQUIRED.
10	G.E. COUPLING. HEAVY DUTY STYLE 77 WITH 316 SS HARDWARE.
11	METER STRAINER, F.E. X F.E.
12	METER, SINGLE-JET OR TURBINE, SEE NOTE 6.
13	4" D.I. SPINDLE, F.E. X G.E. (LENGTH AS REQUIRED FOR 3" SERVICE).
14	12" X 12" X 18" RECESSED SUMP WITH 1" THICK FIBERGLASS GRATE INLET.
15	4" X 3" D.I. REDUCER, F.E. X F.E. (FOR 3" METER ONLY)
16	4" F.E. X P.O. ADAPTER.
17	4" X 4" D.I. TEE, F.E. X F.E.
18	2" WROT COPPER ADAPTER, M.I.P.T X SLIP.
19	2" TYPE "K" RIGID COPPER PIPE (LENGTH AS REQUIRED).
20	2" 90° BEND WROT COPPER, SLIP X SLIP.
21	2" TEFLON SEATED BRASS BALL VALVE WITH LOCKING WING, F.I.P.T. X F.I.P.T.
22	2" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, NYLON COATED MALEABLE IRON BODY AND 2" F.I.P.T. OUTLET PER **ADELANTO** STD. DWG. W-3, SHEET 4.
23	4" D.I. P.O. END CAP (WHERE ON-SITE PIPING IS NOT CONNECTED). SEE NOTE 7.
24	PRECAST CONCRETE VAULT WITH SPRING-ASSIST OPEN HATCH. PROVIDE DIAMOND PLATE ALUMINUM ACCESS DOORS WITH RECESSED PADLOCK HASP FOR #5 LOCK (ON OPPOSITE END OF VAULT FROM LADDER) AND VAULT HATCH CHANNEL DRAIN (PLUMB TO CRUSHED ROCK). SEE NOTE 5 FOR VAULT SIZE.
25	THRUST BLOCK PER **ADELANTO** STD. DWG. W-16 (WHERE ON-SITE PIPING IS NOT CONNECTED). REMOVE FOR PERMANENT CONNECTION.
26	VAULT LADDER PER **ADELANTO** STD. DWG. G-5.
27	4" X 2" BRASS COMPANION FLANGE WITH F.I.P.T. OUTLET.
28	LINK-SEAL MODULAR SEAL MODEL "C" WITH EPDM AND STAINLESS STEEL HARDWARE PER **ADELANTO** STD. DWG. G-8 AND G-9.
29	THRUST BLOCK PER **ADELANTO** STD. DWG. W-16.
30	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, PROVIDE AND CONNECT TO SHUNT, LEAVE 36" OF COILED WIRE BEFORE SHUNT IN VAULT. ALUMINO-THERMIC WELD PER **ADELANTO** STD. SPEC. SECTION 16640 AND **ADELANTO** STD. DWG. CP-8 AND CP-9.
31	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. CORE DRILL VAULT AND SEAL PER **ADELANTO** STD. DWG. G-8.
32	3M DBI-SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348. SEE **ADELANTO** STD. DWG. W-15 SHEET 3 OF 15.

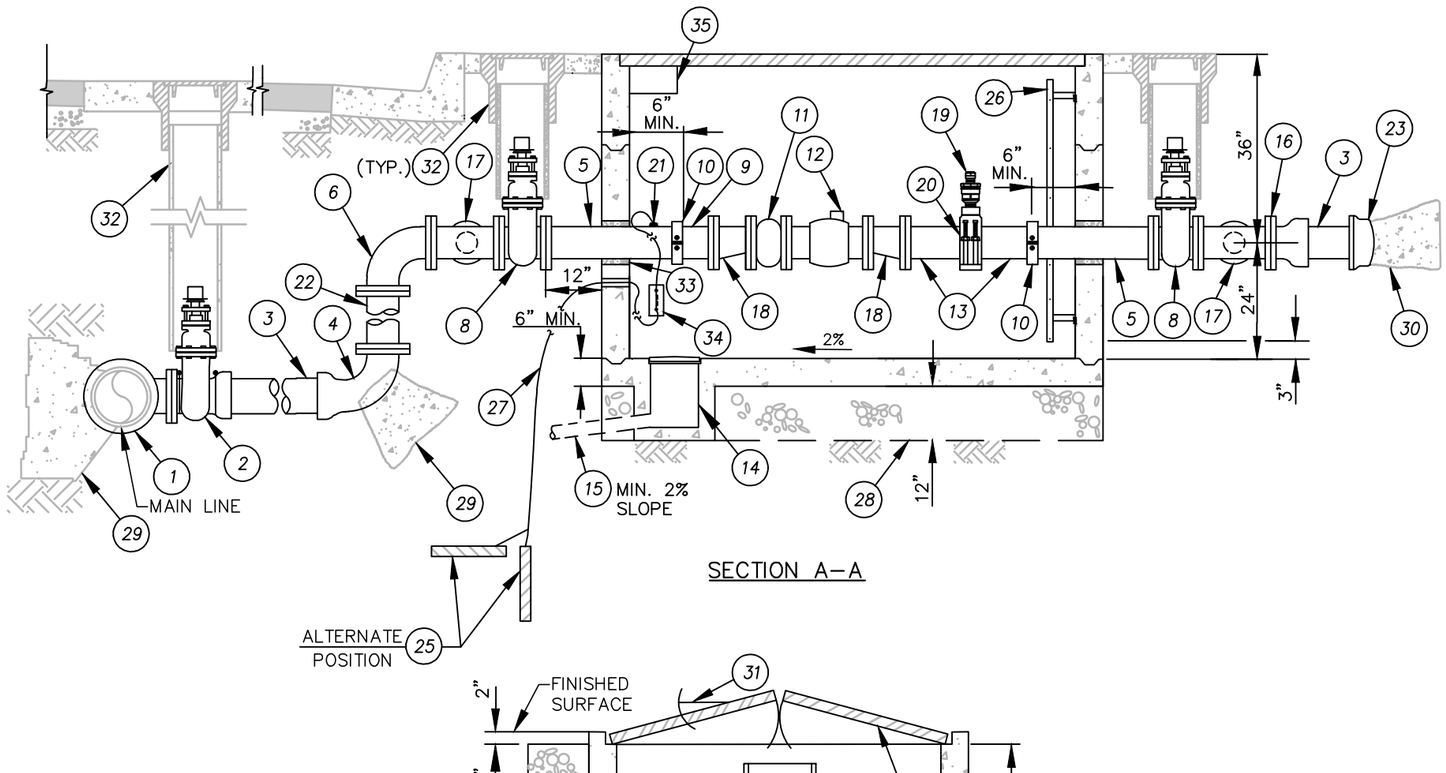
3" AND 4" METER ASSEMBLY - PLAN VIEW

City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

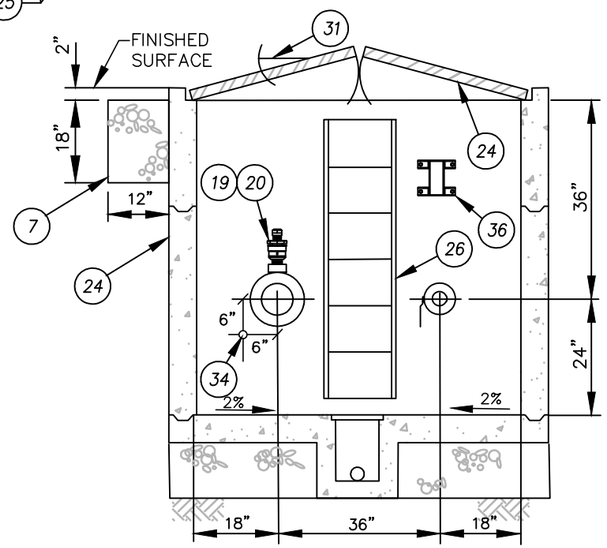
JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-5



SECTION A–A



SECTION B–B

NOTES:

1. WHERE VAULTS ARE OFFSET FROM CURB OR SIDEWALK, OR PLACED IN PARKWAYS, SET HATCH 2" ABOVE FINISHED SURFACE.
2. AT NO POINT SHALL ANY PART OF THE METER ASSEMBLY VAULT BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE OR LANDSCAPING.
3. METERS, FLANGE INSULATING KITS, NUTS, BOLTS, AND WASHERS PROVIDED BY ADELANTO.
4. SEE ADELANTO STD. DWG. W–12 FOR TEMPORARY FLUSH–OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

ITEM	MATERIALS
1	MAIN LINE SIZE X 4" TEE WITH FLANGED OUTLET.
2	4" RW GATE VALVE, F.E. X P.O.
3	4" C–900 PVC DR 14 PIPE.
4	4" 90° D.I. BEND, P.O. X F.E.
5	4" X D.I. SPINDLE (LENGTH AS REQUIRED), F.E. X G.E.
6	4" 90° D.I. BEND, F.E. X F.E.
7	18" OF 3/4" CRUSHED ROCK FOR CHANNEL DRAIN.
8	METER SIZED RW GATE VALVE, F.E. X F.E.
9	4" D.I. SPINDLE, F.E. X G.E. (LENGTH AS REQUIRED).
10	G.E. COUPLING. HEAVY DUTY STYLE 77 WITH 316 SS HARDWARE.
11	METER STRAINER, F.E. X F.E.
12	METER, SINGLE–JET OR TURBINE. SEE NOTE 3.
13	4" LONG D.I. SPINDLE, F.E. X G.E. (LENGTH AS REQUIRED FOR 3" SERVICE).
14	12" X 12" X 18" RECESSED SUMP WITH 1" THICK FIBERGLASS GRATE INLET.
15	4" SCH 80 PVC DRAIN PIPE. CONNECT TO STORM DRAINAGE SYSTEM ACCEPTABLE TO ADELANTO. SEE ALSO ADELANTO STD. DWG. G–6.
16	4" F.E. X P.O. ADAPTER.
17	4" X 4" D.I. TEE, F.E. X F.E.
18	4" X 3" D.I. ECCENTRIC REDUCER F.E. X F.E. (FOR 3" METER ONLY).
19	2" BALL CORPORATION STOP, BRASS M.I.P.T. X M.I.P.T., 2" F.I.P.T. X 2–1/2" M.F.H.T. AND 2–1/2" HYDRANT CAP.
20	2" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, NYLON COATED MALEABLE IRON BODY AND 2" F.I.P.T. OUTLET PER ADELANTO STD. DWG. W–3, SHEET 4.
21	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. ALUMINO–THERMIC WELD PER ADELANTO STD. SPEC. SECTION 16640 AND ADELANTO STD. DWG. CP–8 AND CP–9.
22	4" D.I. SPOOL, F.E. X F.E. (LENGTH AS REQUIRED TO MAKE EXACT GRADES).
23	4" D.I. P.O. END CAP. (WHERE ON–SITE PIPING IS NOT CONNECTED). SEE NOTE 4.
24	PRECAST CONCRETE VAULT WITH SPRING–ASSIST OPEN HATCH. PROVIDE DIAMOND PLATE ALUMINUM ACCESS DOORS AND VAULT HATCH CHANNEL DRAIN (PLUMB TO CRUSHED ROCK). SEE NOTE 5 ON SHEET 1 OF 4 FOR VAULT SIZE.
25	30 POUND ZINC ANODE AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE PIPING.
26	VAULT LADDER PER ADELANTO STD. DWG. G–5.
27	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. CORE DRILL VAULT AND SEAL WITH SIKAFLEX PER ADELANTO STD. DWG. G–8.
28	12" OF 3/4" CRUSHED ROCK BASE.
29	THRUST BLOCK PER ADELANTO STD. DWG. W–16.
30	THRUST BLOCK PER ADELANTO STD. DWG. W–16 (WHERE ON–SITE PIPING IS NOT CONNECTED). REMOVE FOR PERMANENT CONNECTION.
31	6" X 12" HINGED READING LID OVER METER REGISTER.
32	VALVE BOX, PER ADELANTO STD. DWG. W–22.
33	LINK–SEAL MODULAR SEAL MODEL "C" WITH EPDM AND STAINLESS STEEL HARDWARE. SEE ADELANTO STD. DWG. G–8 AND G–9.
34	BRASS SHUNT WITH PLASTIC BASE, BY FARWEST CORROSION OR MESA PRODUCTS. MOUNT SHUNT TO WALL WITH 4" RED HEAD 316 SS ANCHORS. LEAVE 36" OF COILED WIRE ON EACH SIDE OF SHUNT.
35	ALUMINUM ENCLOSURE WITH RECESSED PADLOCK HASP FOR #5 LOCK (ON OPPOSITE END OF VAULT FROM LADDER).
36	3M DBI–SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348. SEE ADELANTO STD. DWG. W–15 SHEET 3 OF 15.

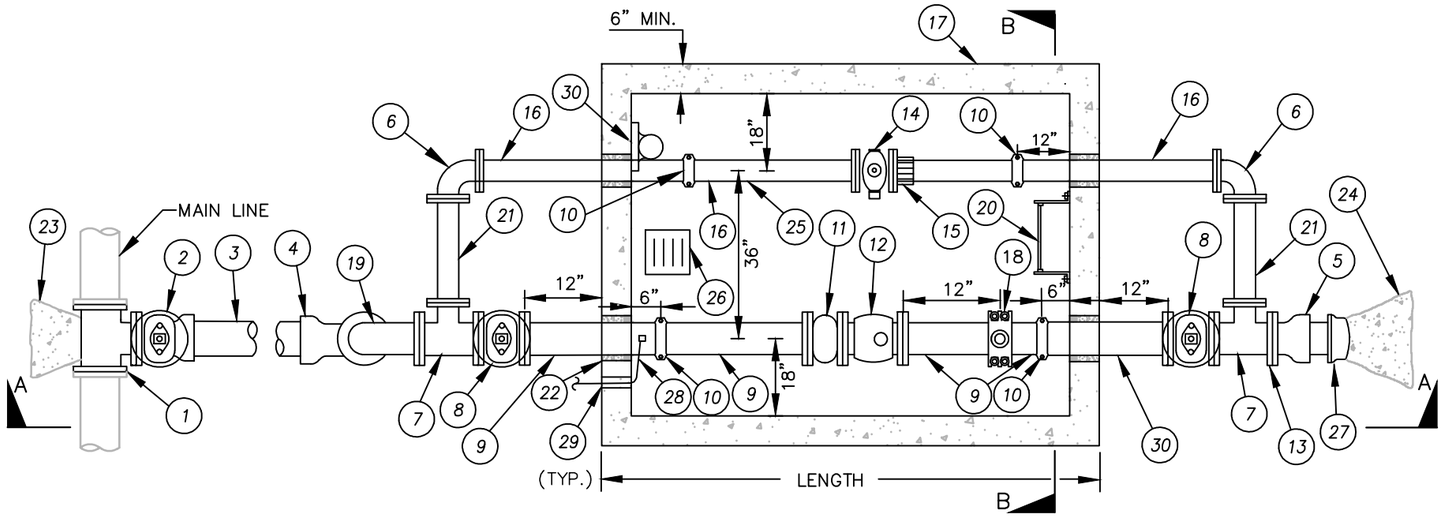
3" AND 4" METER ASSEMBLY - SECTIONS

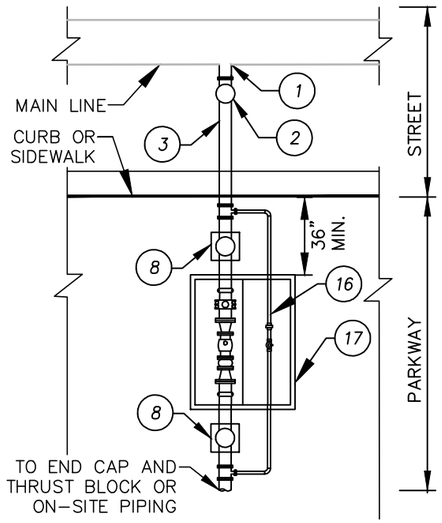
City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

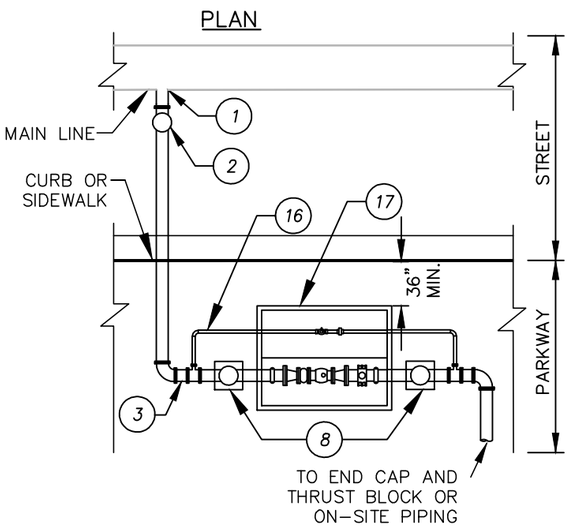
Adelanto
STD. DWG.
W-5





CASE 1

PLAN



CASE 2

METER ASSEMBLY LOCATION PLANS

NOTES:

1. EASEMENT: METER INSTALLATION IMPROVEMENTS BEYOND THE CITY OR COUNTY RIGHT-OF-WAY REQUIRE AN EASEMENT AS DIRECTED BY ADELANTO.
2. RETAINING WALL: WHEN RETAINING WALL IS REQUIRED TO ACCOMMODATE GRADE VARIATIONS, THE WALL SHALL BE CONSTRUCTED PER ADELANTO STD. DWG. G-4 AND SHOULD PROVIDE PROPER CLEARANCE FROM THE IMPROVEMENTS.
3. VAULTS: VAULTS ADJACENT TO CURB OR SIDEWALK WITH A CROSS SLOPE OF 3% OR GREATER SHALL BE CONSTRUCTED A MIN. 24" AWAY FROM CURB OR SIDEWALK, LEVEL, AND DESIGNED BY THE ENGINEER OF RECORD TO ACCOUNT FOR NUISANCE WATER AND THE SAFETY OF THE TRAVELING PUBLIC.
4. AT NO POINT SHALL ANY PART OF THE METER ASSEMBLY BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE OR LANDSCAPING.
5. PRECAST VAULT INSIDE DIMENSIONS SHALL BE 8' X 6'.
6. METERS, FLANGE INSULATING KITS, NUTS, BOLTS, AND WASHERS PROVIDED BY ADELANTO
7. SEE ADELANTO STD. DWG. W-12 FOR TEMPORARY FLUSH-OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

ITEM	MATERIALS
1	MAIN LINE SIZE X METER SIZE TEE WITH FLANGED OUTLET.
2	METER SIZE RW GATE VALVE, F.E. X P.O.
3	METER SIZE C-900 PVC DR 14 PIPE.
4	METER SIZE 90° D.I. BEND, P.O. X F.E.
5	METER SIZE C-900 PVC DR 14 PIPE, 30" LONG.
6	4" 90° D.I. BEND, F.E. X F.E.
7	METER SIZE X 4" D.I. TEE, F.E. X F.E.
8	METER SIZE RW GATE VALVE, F.E. X F.E.
9	METER SIZE X D.I. SPINDLE (LENGTH AS REQUIRED), F.E. X G.E.
10	G.E. COUPLING, HEAVY DUTY STYLE 77 WITH 316 SS HARDWARE.
11	METER STRAINER, F.E. X F.E.
12	METER, SINGLE JET OR TURBINE. SEE NOTE 6.
13	METER SIZE F.E. X P.O. D.I. ADAPTER.
14	4" GATE VALVE WITH LOCKING CAP, F.E. X F.E.
15	4" FLANGED COUPLING ADAPTER.
16	4" D.I. SPINDLE, F.E. X G.E. (LENGTH AS REQUIRED).
17	PRECAST CONCRETE VAULT WITH SPRING-ASSIST OPEN HATCH. PROVIDE DIAMOND PLATE ALUMINUM ACCESS DOORS WITH RECESSED PADLOCK HASP FOR #5 LOCK (ON OPPOSITE END OF VAULT FROM LADDER) AND VAULT HATCH CHANNEL DRAIN (PLUMB TO CRUSHED ROCK). SEE NOTE 5 FOR VAULT SIZE.
18	2" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, NYLON COATED MALEABLE IRON BODY AND 2" F.I.P.T. OUTLET PER ADELANTO STD. DWG. W-3, SHEET 4.
19	METER SIZE 90° D.I. BEND, F.E. X F.E.
20	VAULT LADDER PER ADELANTO STD. DWG. G-5.
21	4" D.I. SPOOL F.E. X F.E., LENGTH 21-1/2" FOR 6" DIA., 20-1/2" FOR 8" DIA., 18-1/2" FOR 10" DIA.
22	LINK-SEAL MODULAR SEAL MODEL "C" WITH EPDM AND STAINLESS STEEL HARDWARE PER ADELANTO STD. DWG. G-9.
23	THRUST BLOCK PER ADELANTO STD. DWG. W-16.
24	THRUST BLOCK PER ADELANTO STD. DWG. W-16 (WHERE ON-SITE PIPING IS NOT CONNECTED). REMOVE FOR PERMANENT CONNECTION.
25	4" D.I. PIPE P.E. X G.E., LENGTH AS REQUIRED.
26	12" X 12" X 18" RECESSED SUMP WITH 1" THICK FIBERGLASS GRATE INLET.
27	METER SIZE D.I. END CAP, P.O. (WHERE ON-SITE PIPING IS NOT CONNECTED). SEE NOTE 7.
28	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, PROVIDE AND CONNECT TO SHUNT, LEAVE 36" OF COILED WIRE BEFORE SHUNT IN VAULT. ALUMINO-THERMIC WELD PER ADELANTO STD. SPEC. SECTION 16640 AND ADELANTO STD. DWG. CP-8 AND CP-9.
29	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. CORE DRILL VAULT AND SEAL PER ADELANTO STD. DWG. G-8.
30	3M DBI-SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348. SEE ADELANTO STD. DWG. W-15 SHEET 3 OF 15.

6", 8" AND 10" METER ASSEMBLY - PLAN VIEW

City of Adelanto
APPROVED BY:
Sala Engineer 12/7/23
DATE

JULY 2023
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Adelanto
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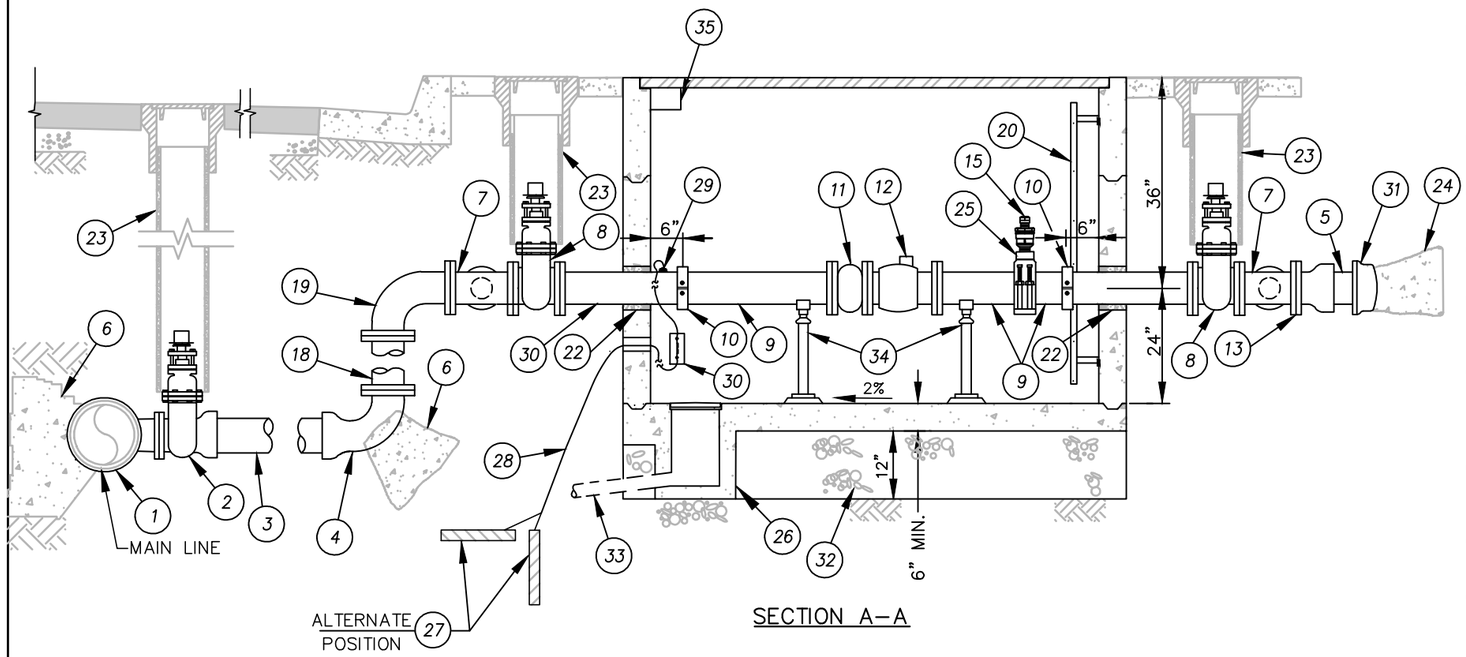
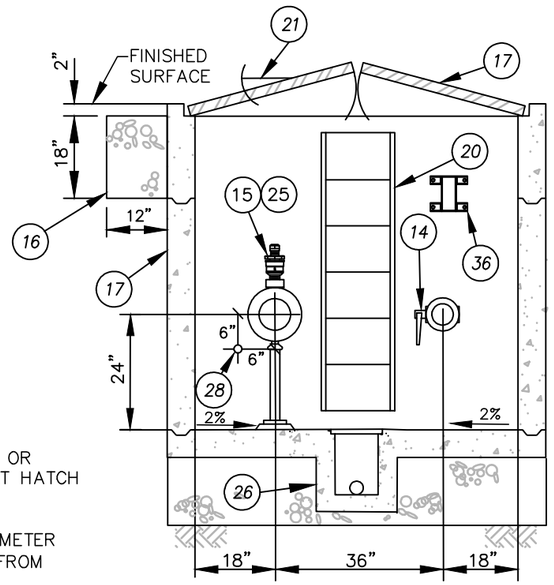


SECTION A–A



SECTION B–B

NOTES:

1. WHERE VAULTS ARE OFFSET FROM CURB OR SIDEWALK, OR PLACED IN PARKWAYS, SET HATCH 2" ABOVE FINISHED SURFACE.
2. AT NO POINT SHALL ANY PART OF THE METER ASSEMBLY BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE OR LANDSCAPING.
3. METERS, FLANGE INSULATING KITS, NUTS, BOLTS, AND WASHERS PROVIDED BY **ADELANTO**.
4. SEE **ADELANTO** STD. DWG. W–12 FOR TEMPORARY FLUSH–OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

ITEM	MATERIALS
1	MAIN LINE SIZE X 4" TEE WITH FLANGED OUTLET.
2	4" RW GATE VALVE, F.E. X P.O.
3	METER SIZE C–900 PVC DR 14 PIPE.
4	METER SIZE 90° D.I. BEND, P.O. X F.E.
5	METER SIZE C–900 PVC DR 14 PIPE, 30" LONG.
6	THRUST BLOCK PER **ADELANTO** STD. DWG. W–16.
7	METER SIZE X 4" D.I. TEE, F.E. X F.E.
8	METER SIZE RW GATE VALVE, F.E. X F.E.
9	METER SIZE X D.I. SPINDLE (LENGTH AS REQUIRED), F.E. X G.E.
10	G.E. COUPLING, HEAVY DUTY STYLE 77 WITH STAINLESS STEEL HARDWARE.
11	METER STRAINER, F.E. X F.E.
12	METER, SINGLE JET OR TURBINE. SEE NOTE 3.
13	METER SIZE D.I. F.E. X P.O. ADAPTER.
14	4" GATE VALVE WITH LOCKING CAP, F.E. X F.E.
15	2" BALL CORPORATION STOP, M.I.P.T. X M.I.P.T., 2" F.I.P.T. X 2–1/2" M.F.H.T. AND 2–1/2" BRASS HYDRANT CAP.
16	18" OF 3/4" CRUSHED ROCK FOR CHANNEL DRAIN.
17	PRECAST CONCRETE VAULT WITH SPRING–ASSIST OPEN HATCH. PROVIDE DIAMOND PLATE ALUMINUM ACCESS DOORS AND VAULT HATCH CHANNEL DRAIN (PLUMB TO CRUSHED ROCK). SEE NOTE 5 ON SHEET 3 OF 4 FOR VAULT SIZE.
18	METER SIZE X D.I. SPOOL, F.E. X F.E. (LENGTH AS REQUIRED TO MAKE EXACT GRADE).
19	METER SIZE 90° D.I. BEND, F.E. X F.E.
20	VAULT LADDER PER **ADELANTO** STD. DWG. G–5.
21	6" X 12" HINGED READING LID OVER METER REGISTER.
22	LINK–SEAL MODULAR SEAL MODEL "C" WITH EPDM AND STAINLESS STEEL HARDWARE. SEE **ADELANTO** STD. DWG. G–8 AND G–9.
23	VALVE BOX, PER **ADELANTO** STD. DWG. W–22.
24	THRUST BLOCK PER **ADELANTO** STD. DWG. W–16 (WHERE ON–SITE PIPING IS NOT CONNECTED). REMOVE FOR PERMANENT CONNECTION.
25	2" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS, NYLON COATED MALEABLE IRON BODY AND 2" F.I.P.T. OUTLET PER **ADELANTO** STD. DWG. W–3, SHEET 4.
26	12" X 12" X 18" RECESSED SUMP WITH 1" THICK FIBERGLASS GRATE INLET.
27	30 POUND ZINC ANODE AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE PIPING.
28	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. CORE DRILL VAULT AND SEAL PER **ADELANTO** STD. DWG. G–8.
29	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, ALUMINO–THERMIC WELD PER **ADELANTO** STD. SPEC. SECTION 16640 AND **ADELANTO** STD. DWG. CP–8 AND CP–9.
30	BRASS SHUNT WITH PLASTIC BASE, BY FARWEST CORROSION OR MESA PRODUCTS. MOUNT SHUNT TO WALL WITH 4" RED HEAD 316 SS ANCHORS. LEAVE 36" OF COILED WIRE ON EACH SIDE OF SHUNT.
31	METER SIZED D.I. END CAP, P.O. (WHERE ON–SITE PIPING IS NOT CONNECTED). SEE NOTE 4.
32	12" OF 3/4" CRUSHED ROCK BASE.
33	4" SCH 80 PVC DRAIN PIPE. CONNECT TO STORM DRAINAGE SYSTEM ACCEPTABLE TO **ADELANTO**. SEE **ADELANTO** STD. DWG. G–6.
34	ADJUSTABLE PIPE SUPPORT FOR ASSEMBLIES 8" DIA. AND LARGER PER **ADELANTO** STD. DWG. W–24.
35	ALUMINUM ENCLOSURE WITH RECESSED PADLOCK HASP FOR #5 LOCK (ON OPPOSITE END OF VAULT FROM LADDER).
36	3M DBI–SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348. SEE **ADELANTO** STD. DWG. W–15 SHEET 3 OF 15.

6", 8" AND 10" METER ASSEMBLY - SECTIONS

City of Adelanto
APPROVED BY:

Sabra Engineer 12/7/23
DATE

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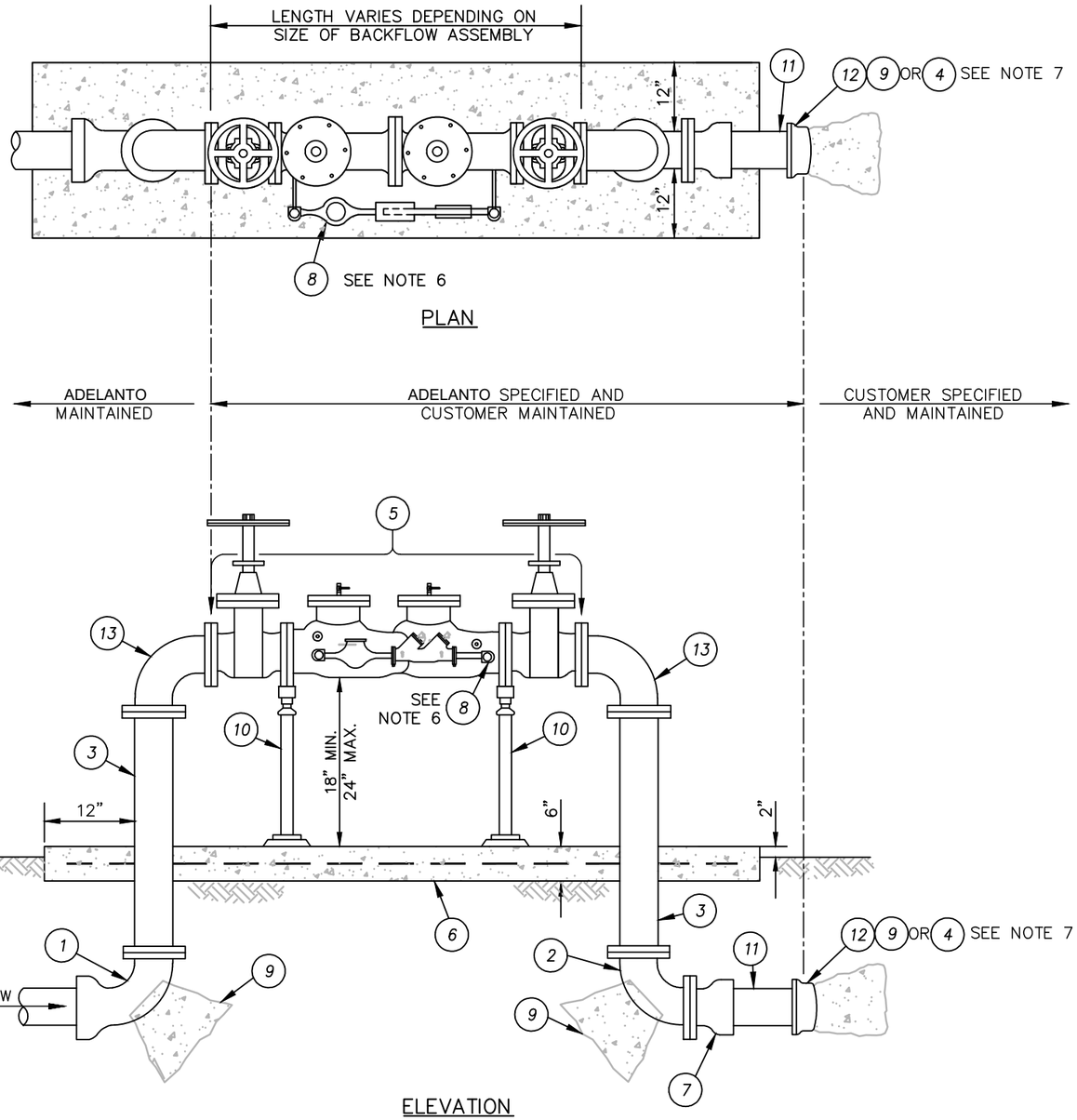


ITEM	MATERIALS
1	D.I. 90° BEND, F.E. X P.O.
2	D.I. 90° BEND, F.E. X F.E.
3	D.I. SPOOL, F.E. X F.E., LENGTH AS REQUIRED.
4	TRANSITION COUPLING (BY OTHERS, FOR ON–SITE CONNECTION WHEN ON–SITE PIPING EXISTS).
5	APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY WITH RISING STEM RESILIENT WEDGE GATE VALVES, VALVES SHALL BE PROVIDED AS AN INTEGRAL PART OF BACKFLOW ASSEMBLY.
6	6" THICK P.C.C. SLAB, REINFORCE WITH W.W.F. 1.6 X 1.6.
7	F.E. X P.O. ADAPTER.
8	FACTORY INSTALLED BY–PASS METER ASSEMBLY CONSISTING OF APPROVED POSITIVE DISPLACEMENT METER, DOUBLE CHECK VALVE AND ASSOCIATED PIPING. METER TO BE USED FOR FIRE SYSTEMS ONLY. METER READS IN CUBIC FEET PER **ADELANTO** STD. SPEC. SECTION 15112.
9	THRUST BLOCK PER **ADELANTO** STD. DWG. W–16.
10	ADJUSTABLE PIPE SUPPORT FOR ASSEMBLIES 8" DIA. AND LARGER PER **ADELANTO** STD. DWG. W–24.
11	C–900 PVC DR 14 PIPE SECTION, 36" LONG.
12	END CAP, P.O.
13	D.I. 90° BEND, F.E. X F.E. (FOR 3" DOUBLE CHECK BACKFLOW ASSEMBLY USE 4" X 3" D.I. 90° REDUCING BEND F.E. X F.E.).

NOTES:

1. NOTIFY **ADELANTO** PRIOR TO INSTALLATION OF BACKFLOW DEVICE.
2. FIRE DEPARTMENT CONNECTION AND POST–INDICATOR VALVES SHALL NOT BE PART OF THE BACKFLOW ASSEMBLY AND MUST BE INSTALLED ON THE CUSTOMER SPECIFIED PIPING SIDE.
3. AT NO POINT SHALL ANY PART OF THE BACKFLOW DEVICE BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, FACE OF CURB, BACK OF SIDEWALK, LANDSCAPING OR PATH OF TRAVEL.
4. BACKFLOW ASSEMBLY AND IRWD PIPING SHALL BE WITHIN A DEDICATED **ADELANTO** EASEMENT OR PUBLIC RIGHT–OF–WAY.
5. PLACE BRASS PLUGS IN ALL 3/4" VALVE OUTLETS.
6. BY–PASS METER TO BE USED FOR FIRE SYSTEMS ONLY. DO NOT INSTALL BY–PASS METERS WHERE SUPPLY TO DEVICE IS ALREADY METERED.
7. SEE **ADELANTO** STD. DWG. W–12 FOR TEMPORARY FLUSH–OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

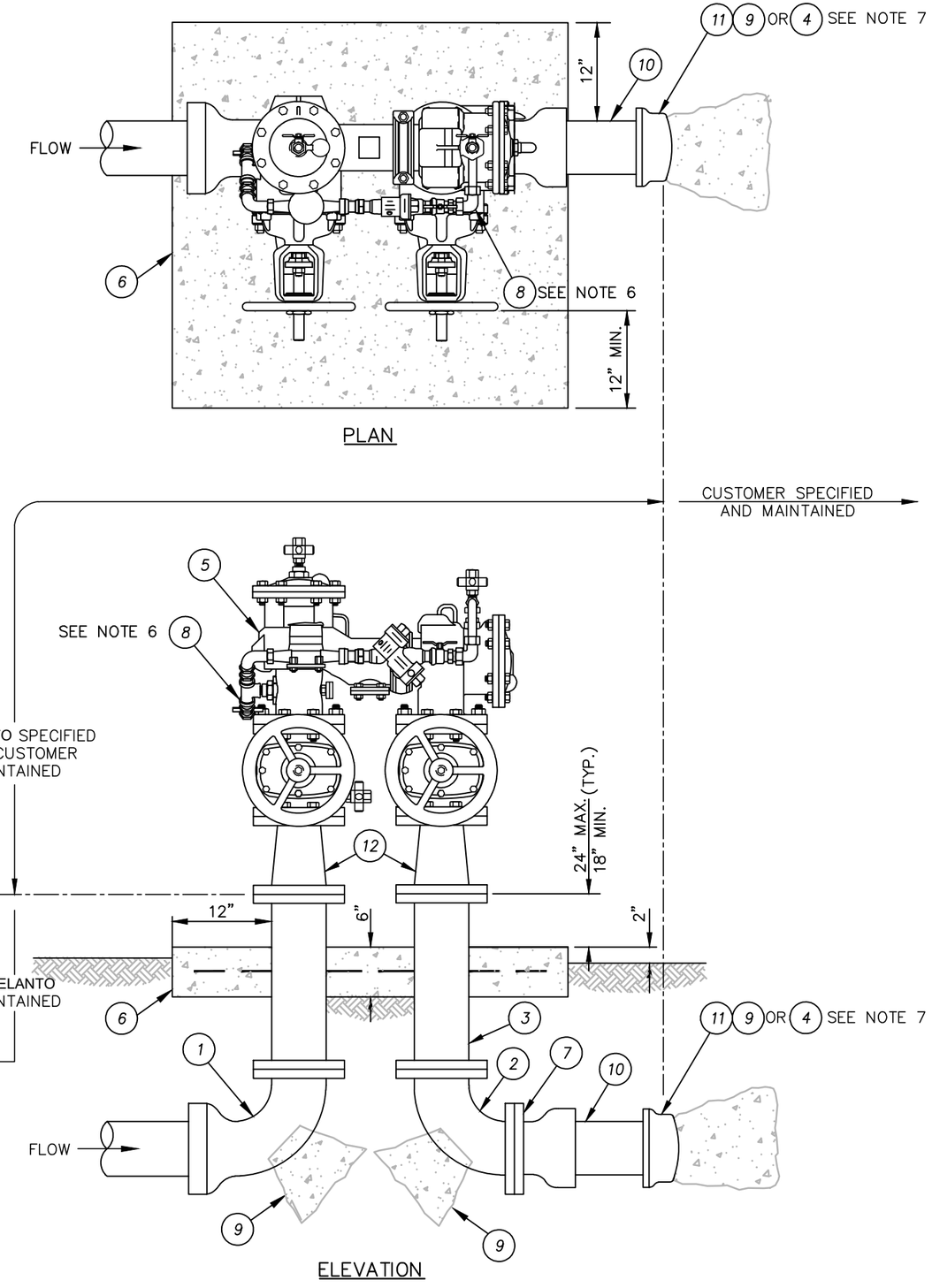
DOUBLE CHECK BACKFLOW ASSEMBLY, 3" AND LARGER

City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-6



ITEM	MATERIALS
1	D.I. 90° BEND, F.E. X P.O.
2	D.I. 90° BEND, F.E. X F.E.
3	D.I. SPOOL, F.E. X F.E., LENGTH AS REQUIRED.
4	TRANSITION COUPLING (BY OTHERS, FOR ON-SITE CONNECTION WHEN ON-SITE PIPING EXISTS).
5	APPROVED N-PATTERN DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY WITH RISING STEM RESILIENT WEDGE GATE VALVES, VALVES SHALL BE PROVIDED AS AN INTEGRAL PART OF BACKFLOW ASSEMBLY.
6	6" THICK P.C.C. SLAB, REINFORCE WITH W.W.F. 1.6 X 1.6.
7	F.E. X P.O. ADAPTER.
8	FACTORY INSTALLED BY-PASS METER ASSEMBLY CONSISTING OF APPROVED POSITIVE DISPLACEMENT METER, DOUBLE CHECK VALVE, AND ASSOCIATED PIPING. METER TO BE USED FOR FIRE SYSTEMS ONLY. METER READS IN CUBIC FEET.
9	THRUST BLOCK PER **ADELANTO** STD. DWG. W-16. A D.I. MJ X FL VALVE SETTER MAY BE PROVIDED IN LIEU OF THRUST BLOCK, SUBJECT TO APPROVAL BY **ADELANTO**.
10	C-900 PVC DR 14 PIPE SECTION, 36" LONG.
11	END CAP, P.O.
12	4" X 3" D.I. REDUCER F.E. X F.E. FOR 3" DOUBLE CHECK BACKFLOW ASSEMBLY. FOR DEVICES 4" AND GREATER, OMIT REDUCING SPOOLS.

NOTES:

1. NOTIFY **ADELANTO** PRIOR TO INSTALLATION OF BACKFLOW DEVICE.
2. FIRE DEPARTMENT CONNECTION AND POST-INDICATOR VALVES SHALL NOT BE PART OF THE BACKFLOW ASSEMBLY AND MUST BE INSTALLED ON THE CUSTOMER SPECIFIED PIPING SIDE.
3. AT NO POINT SHALL ANY PART OF THE BACKFLOW DEVICE BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, FACE OF CURB, BACK OF SIDEWALK, LANDSCAPING OR PATH OF TRAVEL.
4. BACKFLOW ASSEMBLY AND **ADELANTO** PIPING SHALL BE WITHIN A DEDICATED **ADELANTO** EASEMENT OR PUBLIC RIGHT-OF-WAY.
5. PLACE BRASS PLUGS IN ALL 3/4" VALVE OUTLETS.
6. BY-PASS METER TO BE USED FOR FIRE SYSTEMS ONLY. DO NOT INSTALL BY-PASS METERS WHERE SUPPLY TO DEVICE IS ALREADY METERED.
7. SEE **ADELANTO** STD. DWG. W-12 FOR TEMPORARY FLUSH-OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

DOUBLE CHECK BACKFLOW ASSEMBLY (N-PATTERN), 3" AND LARGER

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

Adelanto
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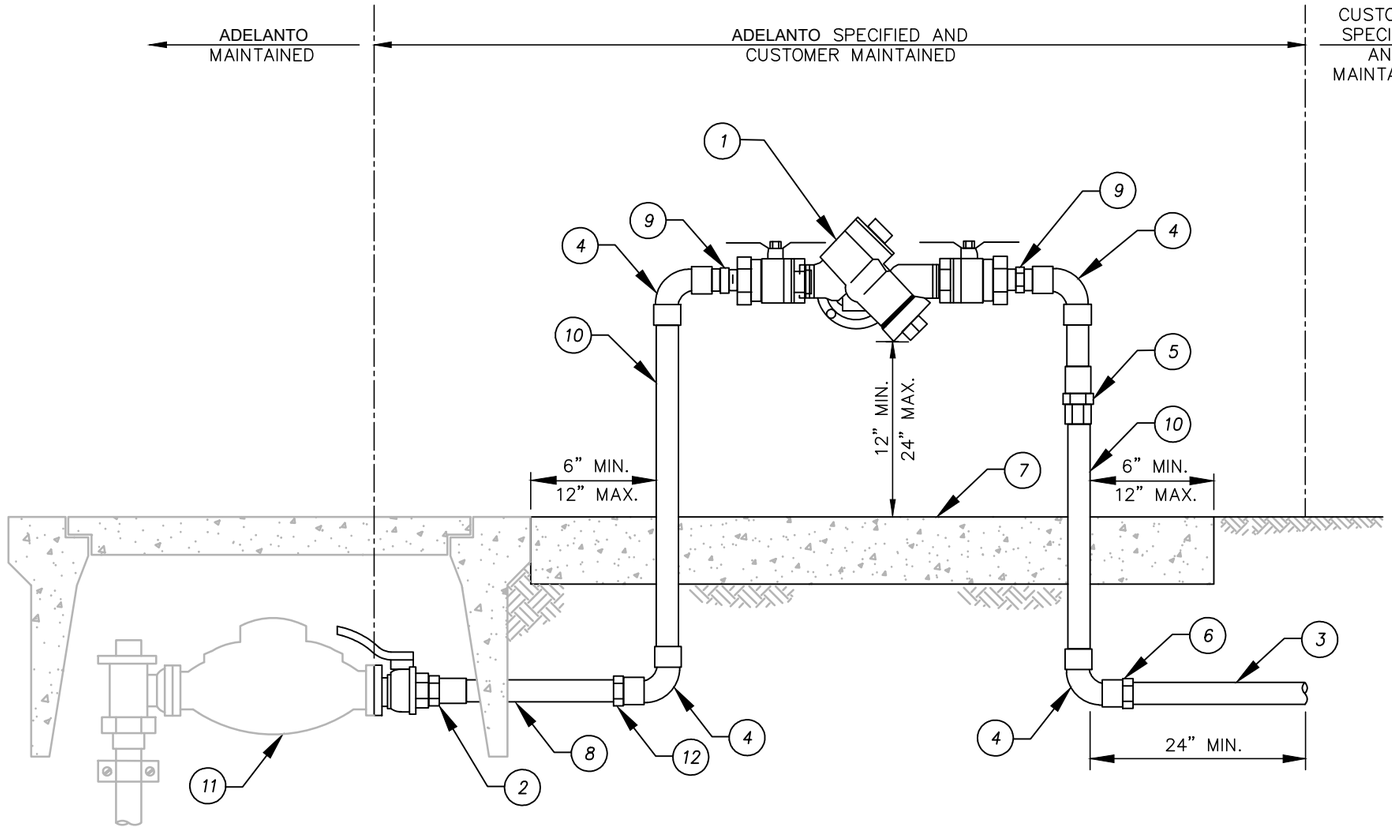

ITEM	MATERIALS
1	3/4" THROUGH 2" REDUCED PRESSURE BACKFLOW PREVENTOR WITH BALL VALVES.
2	PVC ADAPTER, M.I.P.T. X F.I.P.T.
3	COPPER WATER TUBE, TYPE "K" OR BRASS OR SCH 40 PVC.
4	COPPER OR BRASS 90 DEGREE BEND WITH COPPER SOLDER JOINTS.
5	COPPER OR BRASS UNION WITH COPPER SOLDER OR THREADED JOINTS.
6	BRASS OR COPPER TO PVC ADAPTER.
7	18" WIDE X 4" THICK CONCRETE PAD, LENGTH VARIES PER ASSEMBLY SIZE.
8	SCH 40 PVC PIPE.
9	BRASS OR COPPER NIPPLE.
10	COPPER WATER TUBE, TYPE "K" OR BRASS.
11	1" OR 2" SERVICE PER **ADELANTO** STD. DWG. W-1 AND W-2.
12	PVC TO BRASS OR COPPER ADAPTER.

NOTES:

1. PROVIDE AN USC APPROVED BACKFLOW PREVENTION ASSEMBLY.
2. **ADELANTO** MAINTENANCE RESPONSIBILITY STOPS AT THE METER. THE CUSTOMER IS RESPONSIBLE TO TEST AND MAINTAIN THE BACKFLOW PREVENTION ASSEMBLY. CERTIFICATION SHALL BE DELIVERED TO **ADELANTO.**
3. BACKFLOW CERTIFICATION TESTING IS REQUIRED ANNUALLY AT A MINIMUM BUT MAY BE MORE FREQUENT AS DEEMED NECESSARY BY **ADELANTO.** CERTIFICATION TESTING IS REQUIRED IMMEDIATELY AFTER AN ASSEMBLY IS RELOCATED, REPLACED, AND REPAIRED.
4. BACKFLOW PREVENTION ASSEMBLY SIZE SHALL MATCH THE DIAMETER OF THE METER IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE; CHAPTER 6, SECTION 610 AS AMENDED, OR UP TO 1" LARGER.
5. BACKFLOW PREVENTION ASSEMBLY INSTALLATIONS INCLUDING ALL APPURTENACES FOR THE SUPPLY OF DOMESTIC WATER SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA LEAD–FREE ACT AB1953.
6. BACKFLOW PREVENTION ASSEMBLY SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE WATER METER BOX BUT NOT FURTHER THAN 12".
7. NO OUTLETS, TEES, OR CONNECTIONS SHALL BE ALLOWED BETWEEN THE METER AND THE BACKFLOW PREVENTION ASSEMBLY.
8. BACKFLOW PREVENTION ASSEMBLIES SHALL MAINTAIN A VERTICAL CLEARANCE FROM THE LOWEST POINT OF 12" (MIN.) TO 24" (MAX.) ABOVE FINISHED GRADE, WITH SIDE AND TOP CLEARANCES OF 12" (MIN.) FOR ANY OBSTRUCTIONS IN ALL DIRECTIONS.
9. PARALLEL INSTALLATIONS OF THE SAME TYPE OF BACKFLOW PREVENTION ASSEMBLIES ARE RECOMMENDED FOR ALL FACILITIES REQUIRING UNINTERRUPTED WATER SUPPLY, SUCH AS, HOSPITALS AND SCHOOLS.
10. THEFT PREVENTION DEVICES ARE RECOMMENDED FOR BRASS ASSEMBLIES ALLOWING ADEQUATE ACCESS TO THE ASSEMBLY FOR TESTING, MAINTENANCE, AND PROPER DRAINAGE.

REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 2" AND SMALLER

City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
Thomas R. Holliman, PE
CA RCE 33108
DATE

JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
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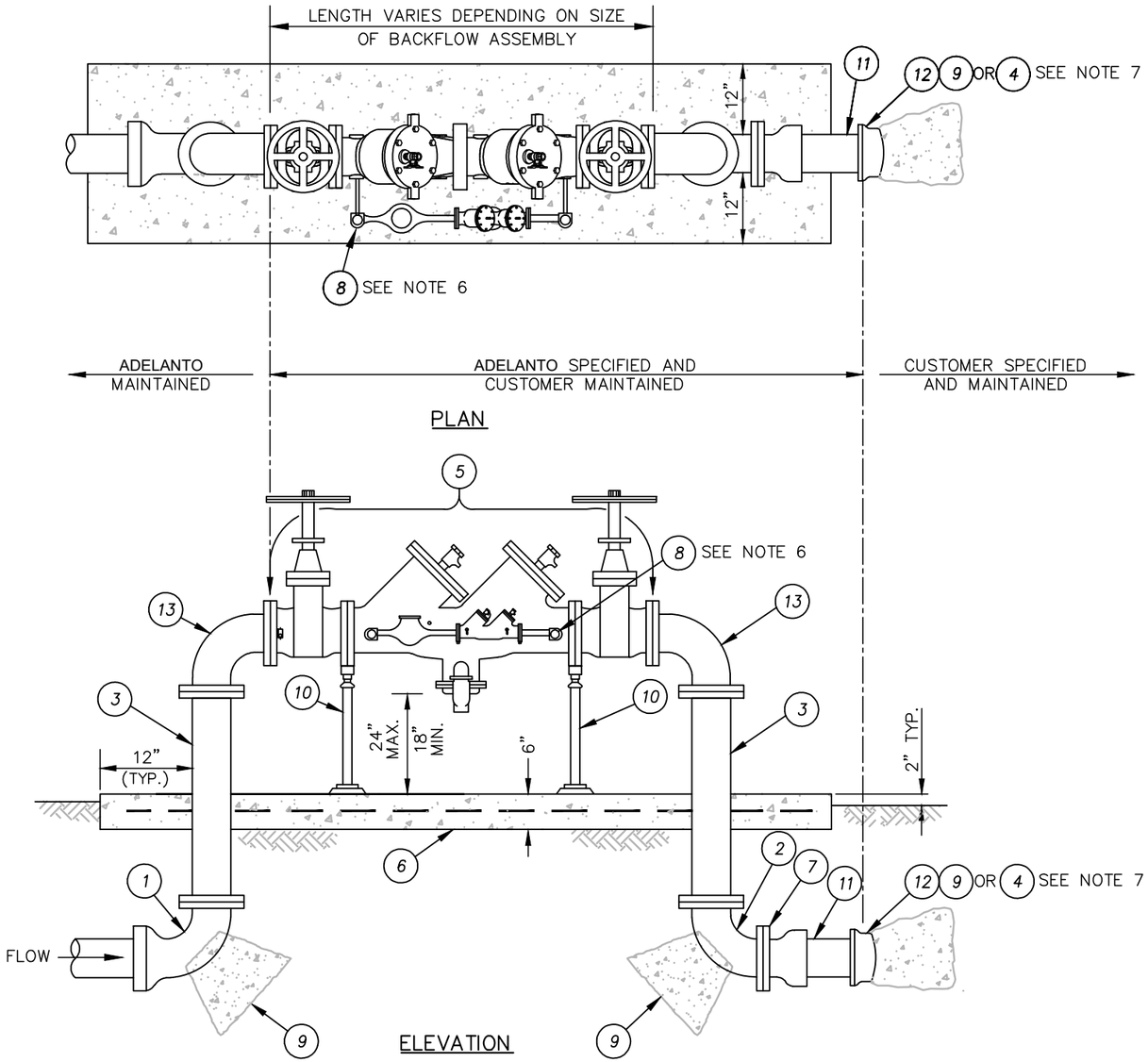


ITEM	MATERIALS
1	D.I. 90° BEND, F.E. X P.O.
2	D.I. 90° BEND, F.E. X F.E.
3	D.I. SPOOL, F.E. X F.E., LENGTH AS REQUIRED.
4	TRANSITION COUPLING (BY OTHERS, FOR ON-SITE CONNECTION WHEN ON-SITE PIPING EXISTS).
5	APPROVED REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTION ASSEMBLY WITH RISING STEM RESILIENT WEDGE GATE VALVES, VALVES SHALL BE PROVIDED AS AN INTEGRAL PART OF BACKFLOW ASSEMBLY.
6	6" THICK P.C.C. SLAB, REINFORCE WITH W.W.F. 1.6 X 1.6.
7	F.E. X P.O. ADAPTER.
8	FACTORY INSTALLED BY-PASS METER ASSEMBLY CONSISTING OF APPROVED POSITIVE DISPLACEMENT METER, REDUCED PRESSURE PRINCIPAL DEVICE AND ASSOCIATED PIPING PER **ADELANTO** STD. SPEC. SECTION 15112. METER TO BE USED FOR FIRE SYSTEMS ONLY. METER READS IN CUBIC FEET.
9	THRUST BLOCK PER **ADELANTO** STD. DWG. W-16.
10	ADJUSTABLE PIPE SUPPORT FOR ASSEMBLIES 8" DIA. AND LARGER PER **ADELANTO** STD. DWG. W-24.
11	C-900 PVC DR 14 PIPE SECTION, 36" LONG.
12	END CAP, P.O.
13	D.I. 90° BEND, F.E. X F.E. FOR 3" REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY USE 4" X 3" D.I. 90° REDUCING BEND, F.E. X F.E.

NOTES:

1. NOTIFY **ADELANTO** PRIOR TO INSTALLATION OF BACKFLOW DEVICE.
2. FIRE DEPARTMENT CONNECTION AND POST-INDICATOR VALVES SHALL NOT BE PART OF THE BACKFLOW ASSEMBLY AND MUST BE INSTALLED ON THE CUSTOMER SPECIFIED PIPING SIDE.
3. AT NO POINT SHALL ANY PART OF THE BACKFLOW DEVICE BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, FACE OF CURB, BACK OF SIDEWALK, LANDSCAPING OR PATH OF TRAVEL.
4. BACKFLOW ASSEMBLY AND IRWD PIPING SHALL BE WITHIN A DEDICATED IRWD EASEMENT OR PUBLIC RIGHT OF WAY.
5. PLACE BRASS PLUGS IN ALL 3/4" VALVE OUTLETS.
6. BY-PASS METER TO BE USED FOR FIRE SYSTEMS ONLY. DO NOT INSTALL BY-PASS METERS WHERE SUPPLY TO DEVICE IS ALREADY METERED.
7. SEE **ADELANTO** STD. DWG. W-12 FOR TEMPORARY FLUSH-OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

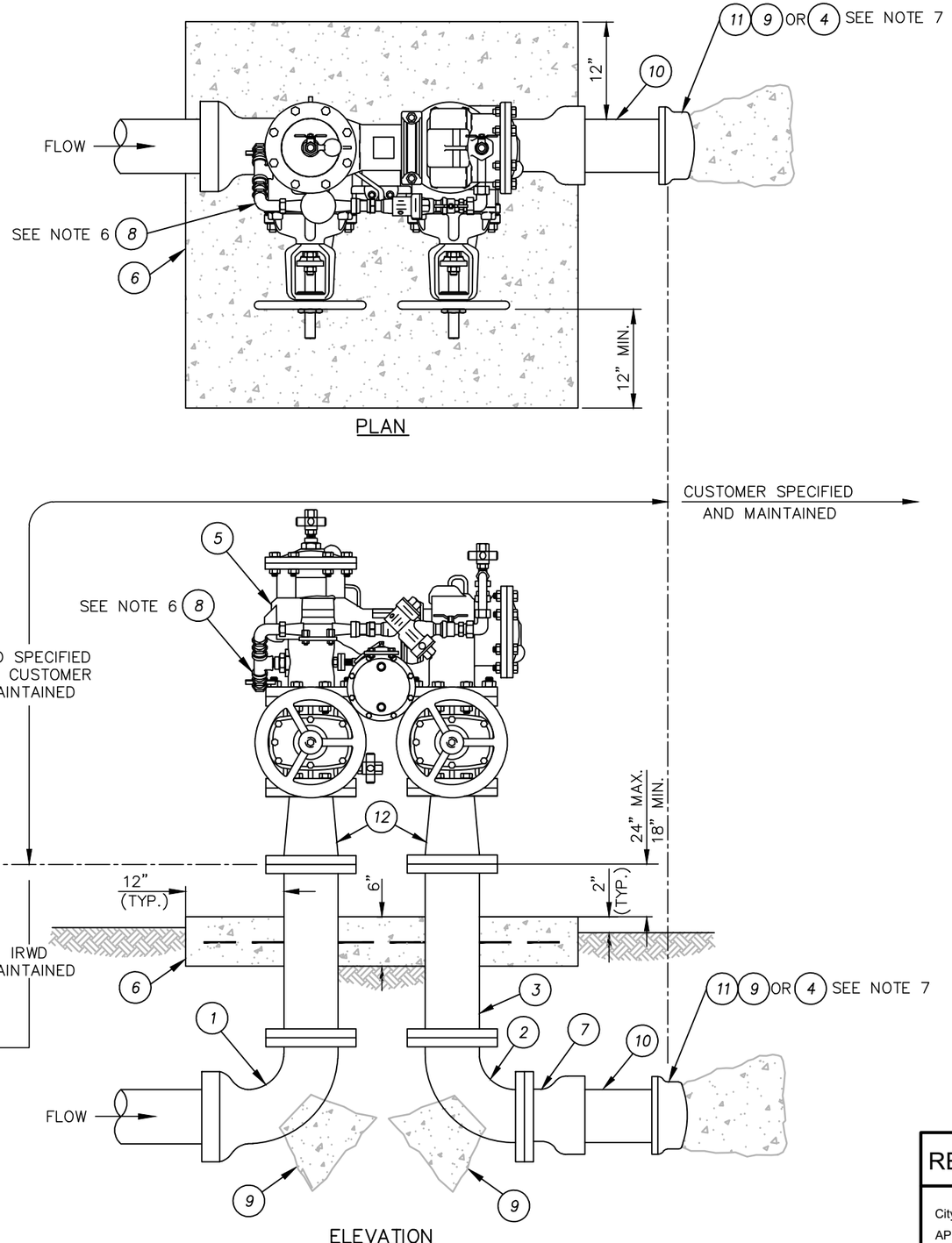
REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 3" AND LARGER

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-7



ITEM	MATERIALS
1	D.I. 90° BEND, F.E. X P.O.
2	D.I. 90° BEND, F.E. X F.E.
3	D.I. SPOOL, F.E. X F.E., LENGTH AS REQUIRED.
4	TRANSITION COUPLING (BY OTHERS, FOR ON-SITE CONNECTION WHEN ON-SITE PIPING EXISTS).
5	APPROVED N-PATTERN REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTION ASSEMBLY WITH RISING STEM RESILIENT WEDGE GATE VALVES, VALVES SHALL BE PROVIDED AS AN INTEGRAL PART OF BACKFLOW ASSEMBLY.
6	6" THICK P.C.C. SLAB, REINFORCE WITH W.W.F. 1.6 X 1.6.
7	F.E. X P.O. ADAPTER.
8	FACTORY INSTALLED BY-PASS METER ASSEMBLY CONSISTING OF APPROVED POSITIVE DISPLACEMENT METER, REDUCED PRESSURE PRINCIPAL DEVICE AND ASSOCIATED PIPING PER **ADELANTO** STD. SPEC. SECTION 15112. METER TO BE USED FOR FIRE SYSTEMS ONLY. METER READS IN CUBIC FEET.
9	THRUST BLOCK PER **ADELANTO** STD. DWG. W-16. A D.I. MJ X FL VALVE SETTER MAY BE PROVIDED IN LIEU OF THRUST BLOCK, SUBJECT TO APPROVAL BY **ADELANTO**.
10	C-900 PVC DR 14 PIPE SECTION, 36" LONG.
11	END CAP, P.O.
12	4" X 3" D.I. REDUCER, F.E. X F.E., FOR 3" DOUBLE CHECK BACKFLOW ASSEMBLY.

NOTES:

1. NOTIFY **ADELANTO** PRIOR TO INSTALLATION OF BACKFLOW DEVICE.
2. FIRE DEPARTMENT CONNECTION AND POST-INDICATOR VALVES SHALL NOT BE PART OF THE BACKFLOW ASSEMBLY AND MUST BE INSTALLED ON THE CUSTOMER SPECIFIED PIPING SIDE.
3. AT NO POINT SHALL ANY PART OF THE BACKFLOW DEVICE BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, FACE OF CURB, BACK OF SIDEWALK, LANDSCAPING OR PATH OF TRAVEL.
4. BACKFLOW ASSEMBLY AND IRWD PIPING SHALL BE WITHIN A DEDICATED IRWD EASEMENT OR PUBLIC RIGHT OF WAY.
5. PLACE BRASS PLUGS IN ALL 3/4" VALVE OUTLETS.
6. BY-PASS METER TO BE USED FOR FIRE SYSTEMS ONLY. DO NOT INSTALL BY-PASS METERS WHERE SUPPLY TO DEVICE IS ALREADY METERED.
7. SEE **ADELANTO** STD. DWG. W-12 FOR TEMPORARY FLUSH-OUT REQUIRED TO CONDUCT HYDROSTATIC TESTING AND CHLORINATION.

REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY (N-PATTERN), 3" AND LARGER

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

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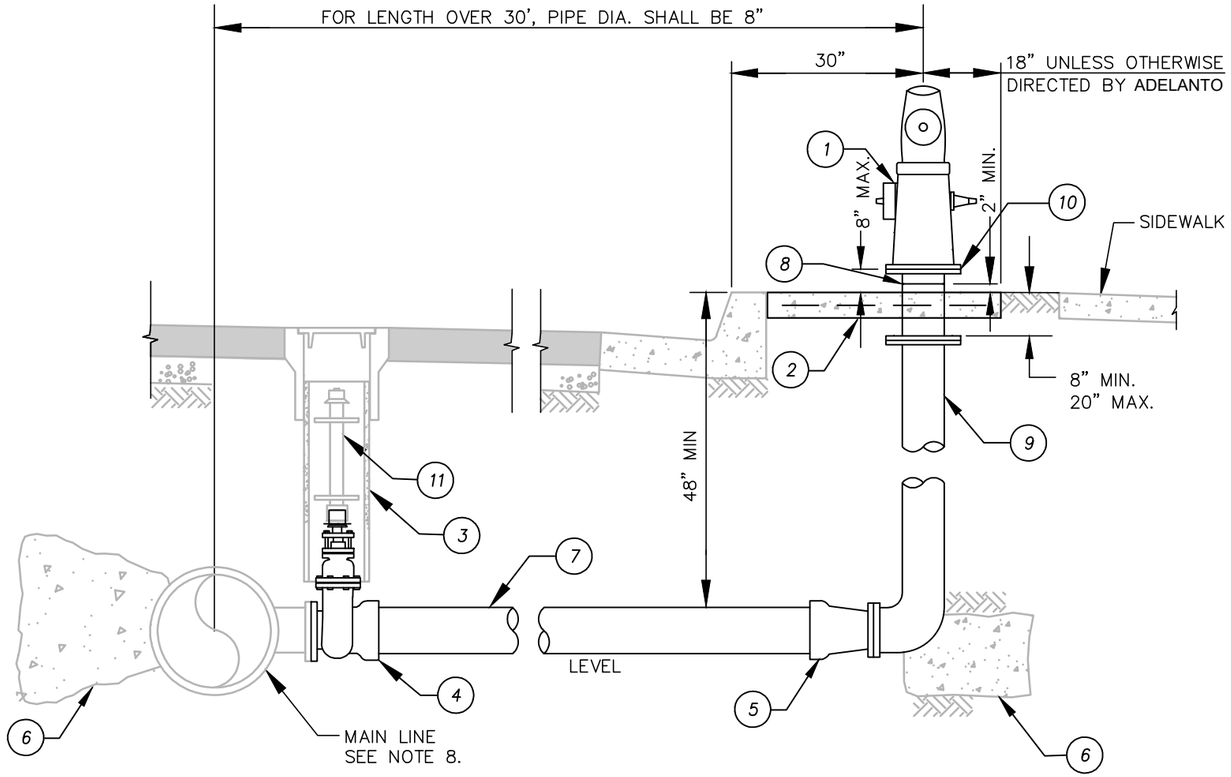
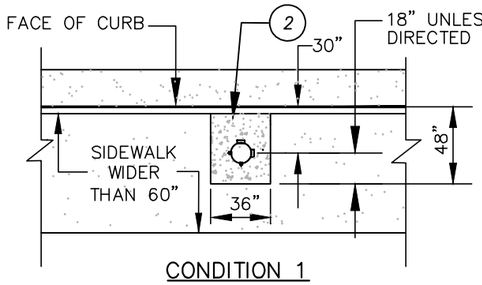
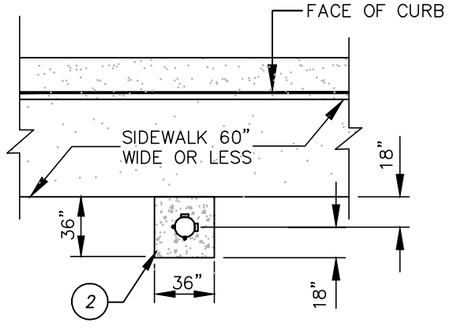




CONDITION 1



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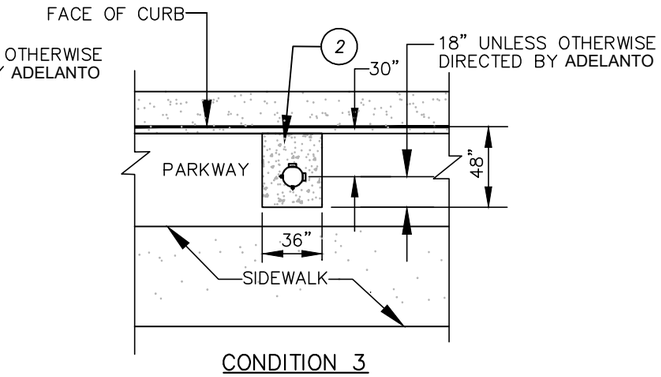

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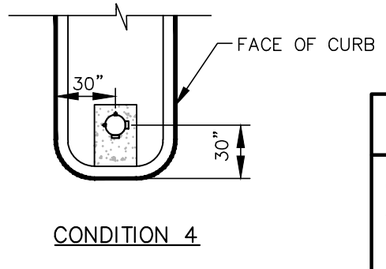

CONDITION 4

HYDRANT LOCATION PLANS

ITEM	MATERIALS
1	RESIDENTIAL HYDRANT WITH (1) 4" AND (1) 2–1/2" FIRE HOSE OUTLETS. NON–RESIDENTIAL HYDRANT WITH (2) 4" AND (1) 2–1/2" FIRE HOSE OUTLETS.
2	CONSTRUCT 48" X 36" X 6" THICK OR 36" X 36" X 6" THICK CONCRETE PAD REINFORCED WITH W.W.F. 1.6 X 1.6, SEE HYDRANT LOCATION PLANS BELOW FOR APPLICABLE CONDITION.
3	VALVE BOX PER **ADELANTO** STD. DWG. W–22.
4	6" OR 8" F.E. X P.O. VALVE.
5	8" X 6" REDUCER ON LONG SIDE OF STREET, P.O. X F.E. WITH FLANGE BURY (WHERE REQUIRED).
6	THRUST BLOCK PER **ADELANTO** STD. DWG. W–16.
7	C–900 PVC PIPE OR DIP WHERE REQUIRED.
8	SCORED HYDRANT SPOOL. MIN. LENGTH = 12", MAX. LENGTH = 24". ONE SCORE PER SPOOL (SCORED END ABOVE PAD).
9	FIRE HYDRANT BURY (42" TYP.).
10	CAD–PLATED BREAK–AWAY BOLTS AT HYDRANT FLANGE.
11	VALVE STEM EXTENSION PER **ADELANTO** STD. DWG. W–23 (WHERE REQUIRED).

NOTES:

1. SEE **ADELANTO** STD. SPEC. SECTION 15139 FOR APPROVED HYDRANT TYPES AND ADDITIONAL REQUIREMENTS.
2. HYDRANTS SHALL BE PAINTED ACCORDING TO PAINT SCHEDULE PER **ADELANTO** STD. SPEC. SECTION 09900.
3. HYDRANT FLANGE GASKET SHALL BE "FULL FACE" AND OF RUBBER COMPOSITION 1/8" THICK.
4. SCORED SPOOL MAY BE UTILIZED TO ADJUST HYDRANT TO GRADE.
5. LOCATE 4" OUTLET PERPENDICULAR TO THE CURB LINE.
6. FILL CAD–PLATED BREAK–AWAY BOLTS WITH SILICONE SEALANT.
7. COMMERCIAL PROPERTY FIRE HYDRANTS: ORIENTATION OF OUTLETS TO BE DETERMINED BY **ADELANTO** REPRESENTATIVE.
8. MAIN LINE TEE SHALL BE FLANGED.
9. AT NO POINT SHALL ANY PART OF THE FIRE HYDRANT BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, LANDSCAPING OR PATH OF TRAVEL.

FIRE HYDRANT

City of Adelanto
APPROVED BY:
Isaba Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

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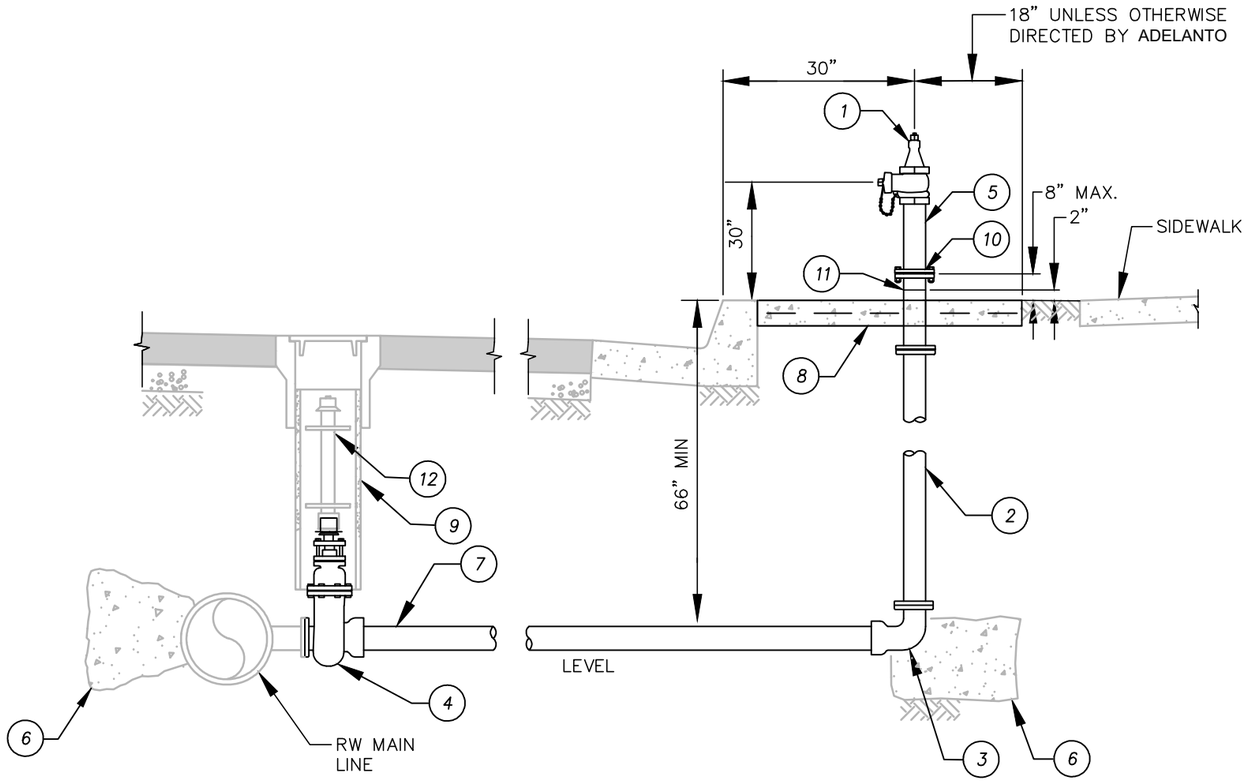
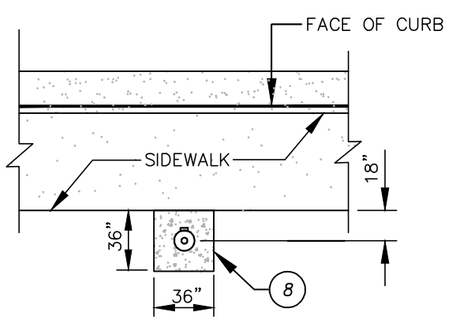


ITEM MATERIALS

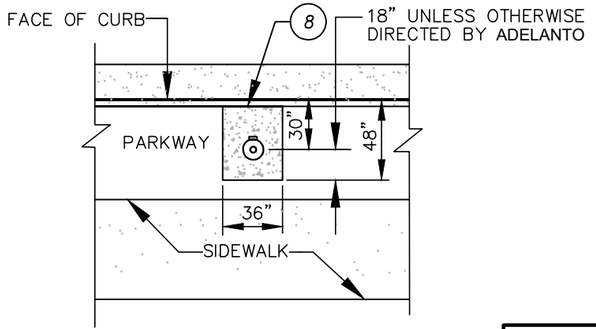
1. RECYCLED WATER WHARF HEAD STYLE HYDRANT WITH 2–1/2" HOSE OUTLET.
2. 4" D.I.P. SPOOL, F.E. X F.E.
3. 4" D.I.P., 90 DEGREE BEND, P.O. X F.E.
4. 4" F.E. X P.O. VALVE.
5. 4" BRASS NIPPLE, M.I.P.T X M.I.P.T.
6. THRUST BLOCK PER **ADELANTO** STD. DWG. W–16.
7. 4" C–900 PVC PIPE OR DIP WHERE REQUIRED.
8. CONSTRUCT 48" X 36" X 6" THICK OR 36" X 36" X 6" THICK CONCRETE PAD REINFORCED WITH W.W.F. 1.6 X 1.6, SEE HYDRANT LOCATION PLANS BELOW FOR APPLICABLE CONDITION.
9. VALVE BOX PER **ADELANTO** STD. DWG. W–22.
10. 4" BRONZE COMPANION FLANGES, THREADED, WITH CAD–PLATED BREAK–AWAY BOLTS.
11. 4" SCORED SPOOL, F.E. X F.E. (SCORED END 2" ABOVE PAD). MIN. LENGTH = 12". MAX. LENGTH = 24". ONE SCORE PER SPOOL.
12. VALVE STEM EXTENSION PER **ADELANTO** STD. DWG. W–23 (WHERE REQUIRED).

NOTES:

1. SEE **ADELANTO** STD. SPEC. SECTION 15139 FOR APPROVED HYDRANT TYPES AND ADDITIONAL REQUIREMENTS.
2. RECYCLED WATER WHARF HEAD TYPE HYDRANTS MAY BE USED TEMPORARILY AND SHALL BE LOCATED OFF BLOW–OFFS OR MAIN LINES ONLY. AFTER TEMPORARY USE HAS CONCLUDED, BLOW–OFFS OR MAIN LINES SHALL BE RESTORED BACK TO THEIR PERMANENT CONDITION PER THE DIRECTION OF IRWD.
3. RECYCLED WATER WHARF HEAD TYPE HYDRANTS FOR PERMANENT USE SHALL BE CONSTRUCTED ON THE MAIN LINE ONLY IN SELECT LOCATIONS AS APPROVED BY IRWD.
4. RECYCLED WATER WHARF HEAD TYPE HYDRANTS SHALL BE PAINTED ACCORDING TO PAINT SCHEDULE PER IRWD STD. SPEC. SECTION 09900.
5. LOCATE 2–1/2" HOSE OUTLET PERPENDICULAR TO THE CURB LINE.
6. AT NO POINT SHALL ANY PART OF THE HYDRANT BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, LANDSCAPING OR PATH OF TRAVEL.
7. FILL CAD–PLATED BREAK–AWAY BOLTS WITH SILICONE SEALANT.



CONDITION 1



CONDITION 2

HYDRANT LOCATION PLANS

RECYCLED WATER WHARF HEAD HYDRANT

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

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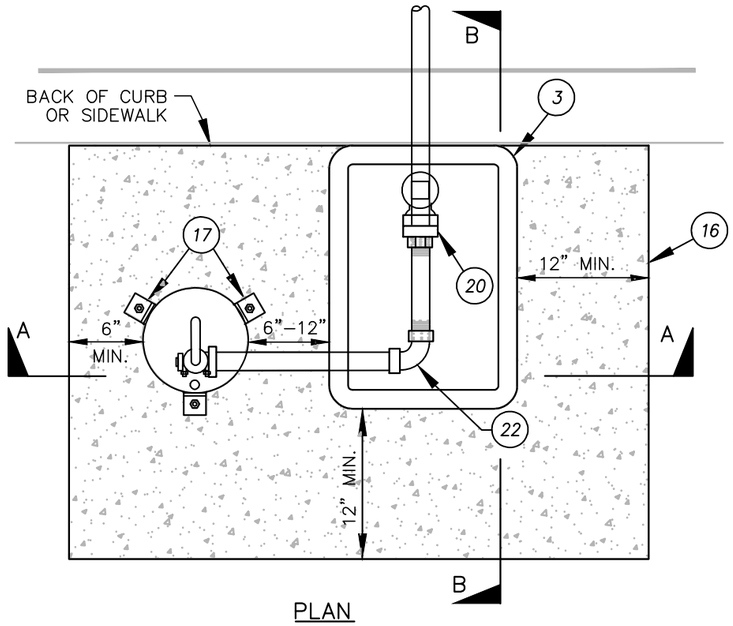
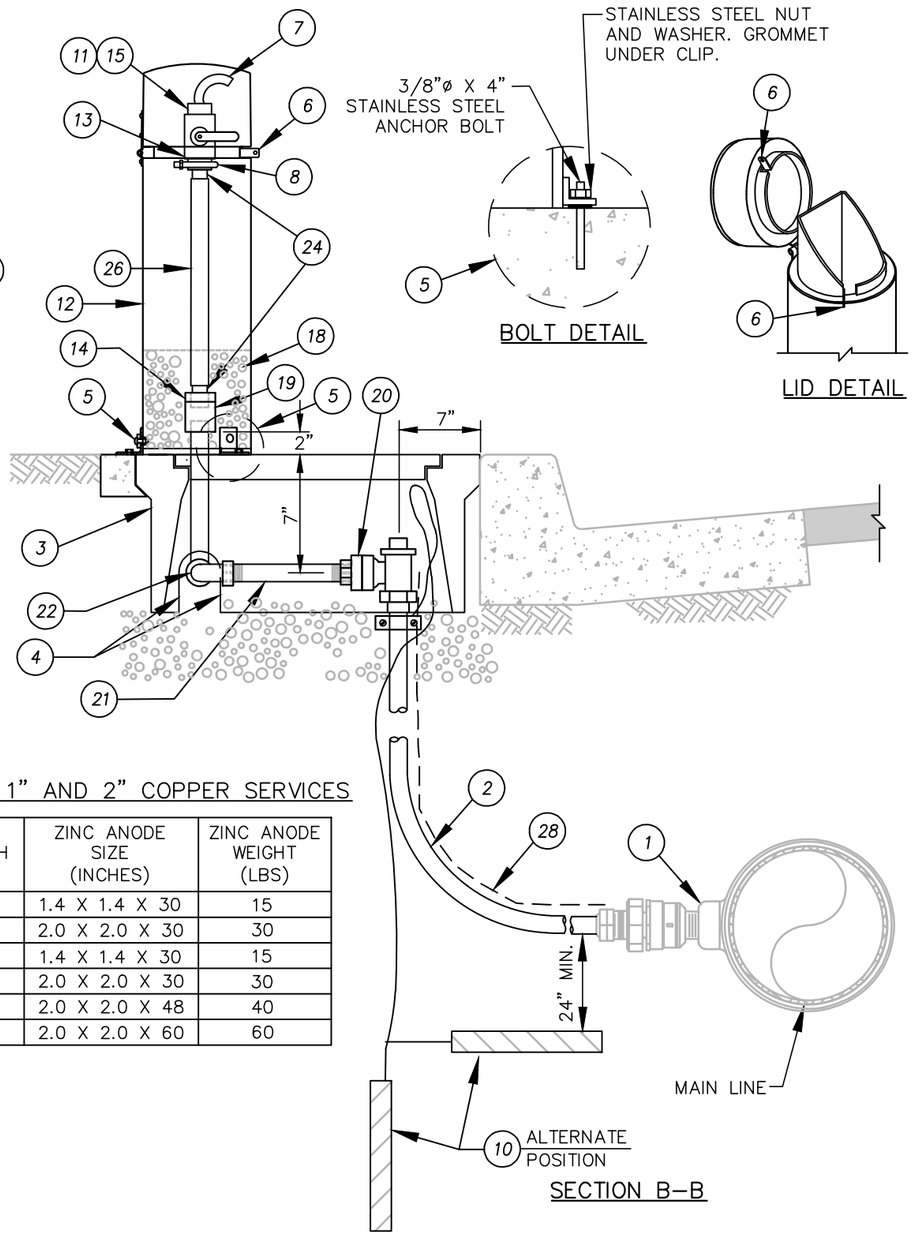
SHEET 1 OF 1



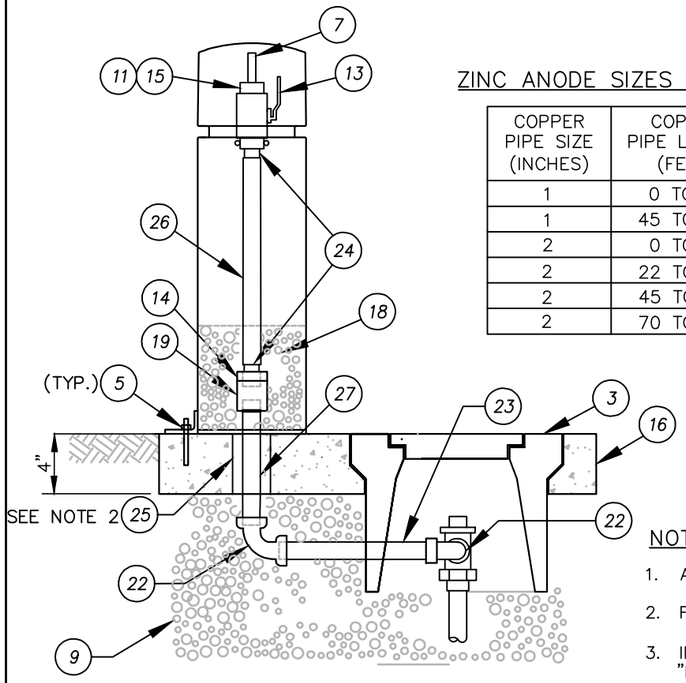
PLAN



SECTION B–B

BOLT DETAIL

LID DETAIL



SECTION A–A

ZINC ANODE SIZES FOR 1" AND 2" COPPER SERVICES

COPPER PIPE SIZE (INCHES)	COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
1	0 TO 45	1.4 X 1.4 X 30	15
1	45 TO 90	2.0 X 2.0 X 30	30
2	0 TO 22	1.4 X 1.4 X 30	15
2	22 TO 45	2.0 X 2.0 X 30	30
2	45 TO 70	2.0 X 2.0 X 48	40
2	70 TO 90	2.0 X 2.0 X 60	60

NOTES:

1. ALL HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.
2. FILL ANNULAR SPACE IN SLAB SLEEVE WITH SAND.
3. INSTALL ADELANTO LOGO DECAL "DOMESTIC" OR "RECYCLED" AS DIRECTED BY ADELANTO.
4. COVERS SHALL BE MANUFACTURED BY ARMORCAST PRODUCTS OR PIPELINE PRODUCTS, INC. SEE ADELANTO STD. SPEC. SECTION 15089 FOR SIMILAR APPLICATION.
5. AT NO POINT SHALL ANY PART OF THE WATER SAMPLE STATION BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE, LANDSCAPING OR PATH OF TRAVEL.

ITEM	MATERIALS
1	1" SERVICE CONNECTION PER ADELANTO STD. DWG. W–1.
2	1" TYPE "K" SOFT COPPER TUBING PER ADELANTO STD. DWG. W–1.
3	POLYMER CONCRETE METER BOX WITH READING LID PER ADELANTO STD. DWG. W–1.
4	SAWCUT OR CORE DRILL FOR 1" PIPE.
5	3/8" DIA. X 4" LONG TYPE 316 STAINLESS STEEL ANCHOR BOLT (3 EACH AT 120° APART WITH 2–PART EPOXY AND STAINLESS STEEL NUTS AND WASHERS). INSTALL WITH RUBBER GROMMET UNDER ANCHOR CLIPS TO PROVIDE 1/4" GAP.
6	LOCK HASP FOR #5 LOCK, SEE LID DETAIL HEREON.
7	3/8" TYPE "K" SOFT COPPER SPIGOT BEND TO 120° FOR DOWNWARD OPENING W/CAP.
8	5/16" DIA. U–BOLT ASSEMBLY SIZED FOR 1" DIA. PIPE, STAINLESS STEEL.
9	3/4" CRUSHED ROCK, PLACE TO DEPTH 6" BELOW CONCRETE METER BOX.
10	ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE COPPER PIPE.
11	1/2" X 3/8" COPPER TUBE FLARE NUT X M.I.P.T. ADAPTER.
12	LINEAR LOW DENSITY POLYETHYLENE SAMPLE STATION COVER. 12" DIA. X 30" HIGH. SEE NOTES 3 AND 4.
13	1/2" STAINLESS STEEL TEFLON SEATED BALL VALVE, F.I.P.T. X F.I.P.T. (ORIENT VALVE HANDLE TOWARD FRONT OF SAMPLE STATION).
14	1" X 1/2" BRASS BUSHING, M.I.P.T. X F.I.P.T.
15	1/2" M.I.P.T. X FEMALE FLARE FITTING.
16	4" THICK CLASS "B" CONCRETE.
17	3 ANCHOR CLIPS WITH 1/2" HOLES AT 120° SPACING.
18	3/4" GRAVEL, 12" DEEP IN BOTTOM OF CAN.
19	1" PVC SCH 80 COUPLING, F.I.P.T. X F.I.P.T.
20	1" METER NUT BY F.I.P.T. ADAPTER.
21	1" RED BRASS NIPPLE, T.B.E., 6" LONG.
22	1" BRASS 90° BEND, F.I.P.T. X F.I.P.T.
23	1" RED BRASS NIPPLE, T.B.E.
24	1/2" SWEAT X M.I.P.T. ADAPTER.
25	2" SCH 80 PVC SLEEVE.
26	1/2" TYPE "K" RIGID COPPER PIPE.
27	1" RED BRASS NIPPLE, T.B.E., 10" LONG.
28	IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE AT 2' INTERVALS USING 2" WIDE 10–MIL TAPE.

WATER SAMPLE STATION

City of Adelanto

APPROVED BY:

Saba Engineer 12/7/23

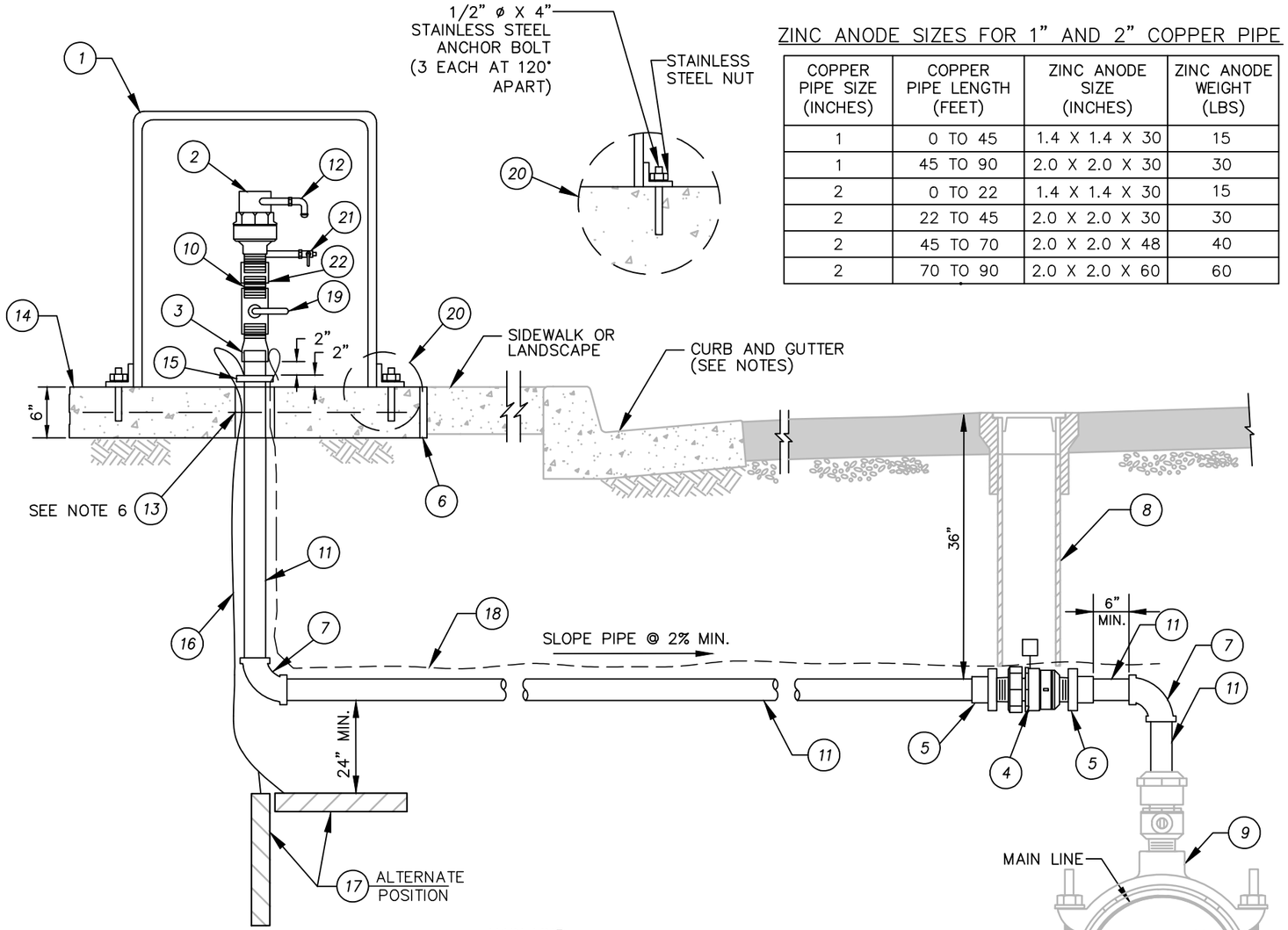
DATE

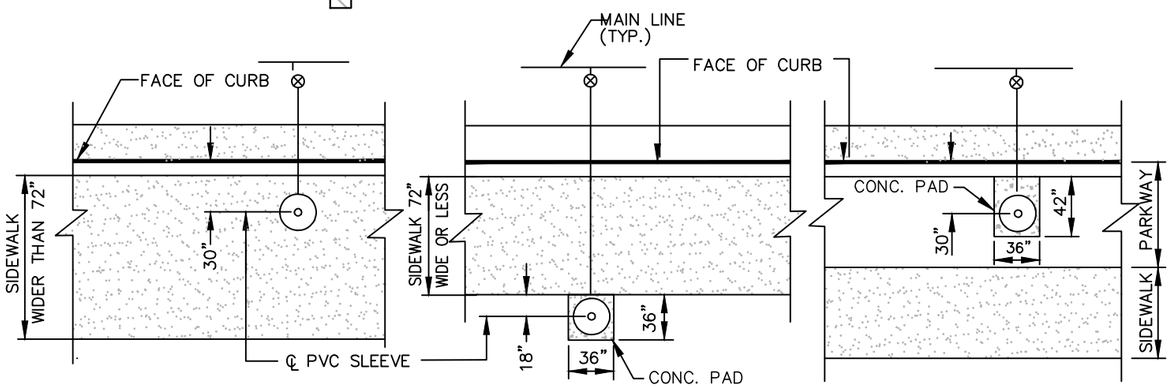
JULY 2023

REVISION

City of ADELANTO

Adelanto STD. DWG. W-10





ZINC ANODE SIZES FOR 1" AND 2" COPPER PIPE

COPPER PIPE SIZE (INCHES)	COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
1	0 TO 45	1.4 X 1.4 X 30	15
1	45 TO 90	2.0 X 2.0 X 30	30
2	0 TO 22	1.4 X 1.4 X 30	15
2	22 TO 45	2.0 X 2.0 X 30	30
2	45 TO 70	2.0 X 2.0 X 48	40
2	70 TO 90	2.0 X 2.0 X 60	60

ITEM	MATERIALS
1	LINEAR LOW DENSITY POLYETHYLENE VENTED PIPE COVER, SEE NOTE 1. 20" DIA. X 30" HIGH COVER FOR 1" AND 2" SIZE.
2	1" OR 2" AIR RELEASE & VACUUM RELIEF VALVE, SEE NOTES 2 AND 3.
3	1" OR 2" WROT COPPER ADAPTER, SWEAT X M.I.P.T.
4	1" OR 2" BRASS BALL CORP WITHOUT "STOPS" AND WITH 2" SQUARE OPERATING NUT ADAPTER ATTACHED WITH STAINLESS STEEL BOLT AND NUT.
5	1" OR 2" WROT COPPER ADAPTER, F.I.P.T. X SWEAT.
6	COLD JOINT STRIP WHEN ADJACENT TO SIDEWALK.
7	1" OR 2" 90° WROT COPPER 90° BEND, SWEAT X SWEAT.
8	VALVE BOX PER ADELANTO STD. DWG. W-22.
9	1" OR 2" SERVICE CONNECTION PER ADELANTO STD. DWG. W-3.
10	SCH 80 PVC NIPPLE, M.I.P.T. X M.I.P.T., 6" LONG.
11	1" OR 2" COPPER SERVICE PIPE, TYPE "K" RIGID.
12	PRE-FABRICATED PVC OUTLET WITH RIGID STAINLESS STEEL SCREEN M.I.P.T. INLET.
13	2" OR 4" SCH 40 PVC SLEEVE, SEE NOTE 6.
14	CLASS "B" CONCRETE PAD REINFORCED WITH W.W.F. 1.6 X 1.6 AND SUPPORT WHERE APPLICABLE PER CASE 1, 2, OR 3 AS SHOWN HEREON.
15	1" OR 2" BRASS WIRE CLAMP.
16	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE; LEAVE 18" OF COILED WIRE IN VENTED PIPE COVER.
17	ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT LEAST 24" FROM THE COPPER PIPE.
18	IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE CIRCUMFERENTIALLY AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE. LEAVE 18" OF TAPE ABOVE SURFACE OF CONCRETE PAD IN VENTED PIPE COVER.
19	1" OR 2" BRASS AWWA BALL VALVE WITH BRASS LEVER HANDLE, F.I.P.T. X F.I.P.T.
20	1/2" DIA. X 4" LONG TYPE 316 STAINLESS STEEL ANCHOR BOLT (3 EACH AT 120° APART WITH 2-PART EPOXY AND STAINLESS STEEL NUTS AND WASHERS).
21	FOR A 1" AIR RELEASE AND VACUUM RELIEF VALVE: 1/4" DIA. X 1" LONG STAINLESS STEEL NIPPLE AND 1/4" STAINLESS STEEL BALL VALVE. FOR A 2" AIR RELEASE AND VACUUM RELIEF VALVE: 3/8" DIA. X 1" LONG STAINLESS STEEL NIPPLE AND 3/8" STAINLESS STEEL BALL VALVE.
22	SCH 80 PVC COUPLING, F.I.P.T. X F.I.P.T., WITH 316 STAINLESS STEEL BAND.

NOTES:

1. INSTALL ADELANTO LOGO DECAL "DOMESTIC" OR "RECYCLED" AS DIRECTED BY ADELANTO. SEE ADELANTO STD. SPEC. SEC 15089 FOR COLOR OF VENTED PIPE COVER.
2. SEE STD. SPEC. SECTION 15089 FOR ACCEPTABLE PRODUCTS.
3. POSITION ASSEMBLY PER APPLICABLE CASE 1, 2, OR 3 AS SHOWN HEREON.
4. ADELANTO WILL DETERMINE IF 1" OR 2" ASSEMBLY IS TO BE INSTALLED. REFER TO PROJECT PLANS.
5. MARK BALL CORP LOCATION AND DISTANCES TO TWO POINTS ON ADJACENT CURB BY USE OF A 4" WHEEL GRINDER. SEE ADELANTO STD. DWG. S-1 FOR SIMILAR APPLICATION.
6. FILL ANNULAR SPACE WITH SAND PER ADELANTO STD. SPEC. SECTION 02223.

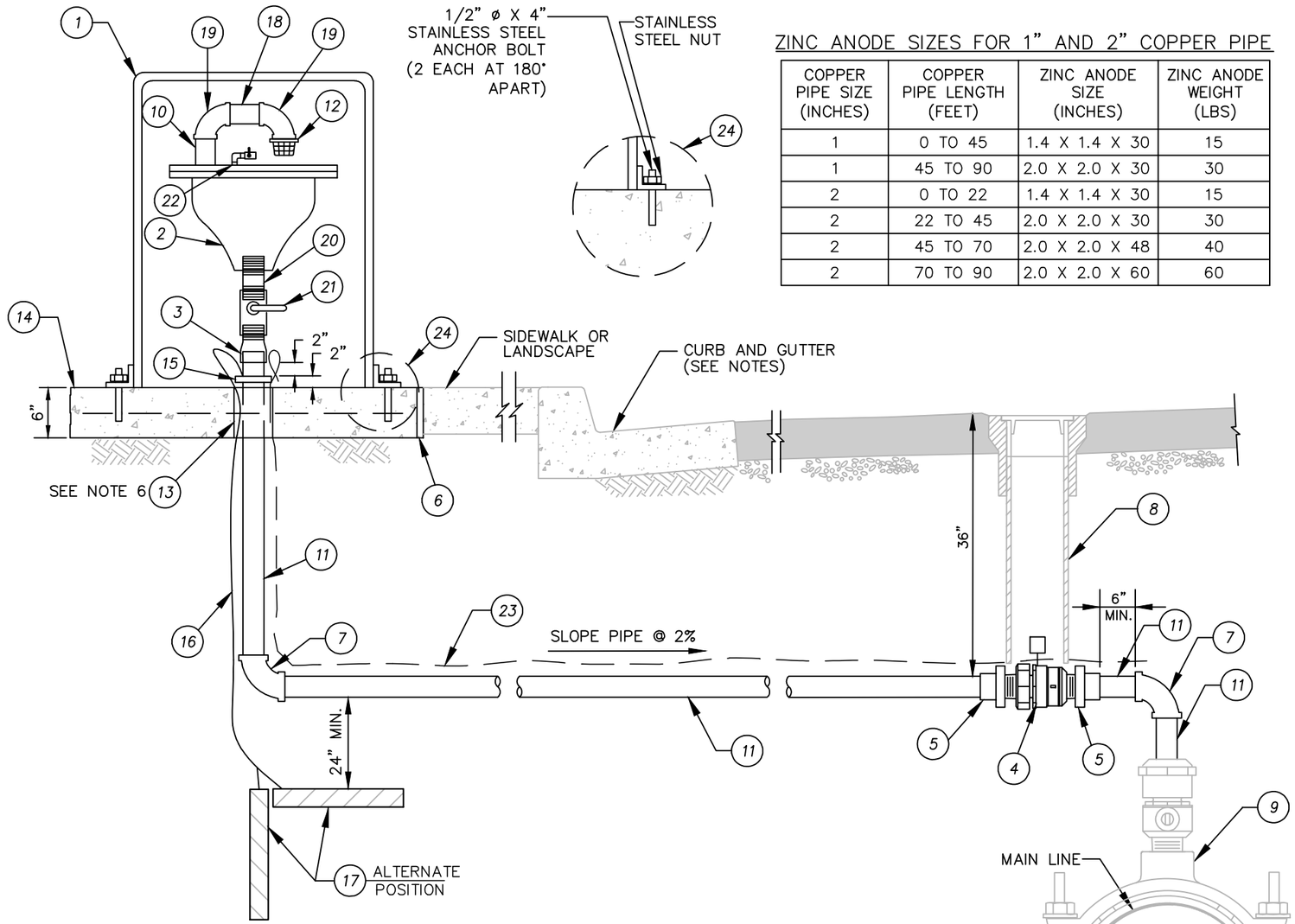
1" or 2" AIR RELEASE AND VACUUM RELIEF (PVC PIPE)

City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
DATE

JULY 2023
REVISION

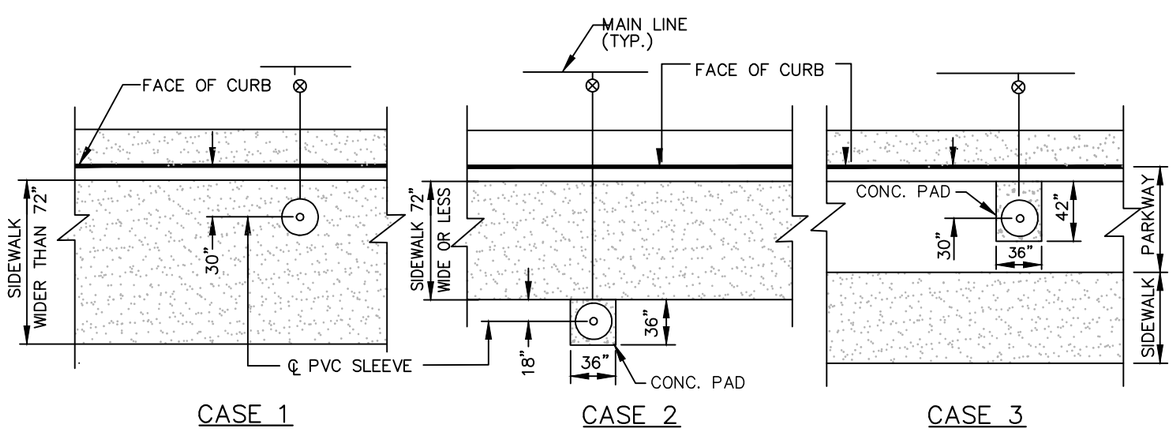
City of ADELANTO

Adelanto
STD. DWG.
W-11



ZINC ANODE SIZES FOR 1" AND 2" COPPER PIPE

COPPER PIPE SIZE (INCHES)	COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
1	0 TO 45	1.4 X 1.4 X 30	15
1	45 TO 90	2.0 X 2.0 X 30	30
2	0 TO 22	1.4 X 1.4 X 30	15
2	22 TO 45	2.0 X 2.0 X 30	30
2	45 TO 70	2.0 X 2.0 X 48	40
2	70 TO 90	2.0 X 2.0 X 60	60



ITEM	MATERIALS
1	LINEAR LOW DENSITY POLYETHYLENE VENTED PIPE COVER, SEE NOTE 1. 20" DIA. X 30" HIGH COVER FOR 1" AND 2" SIZE.
2	1" OR 2" AIR RELEASE & VACUUM RELIEF VALVE, SEE NOTES 2 AND 3.
3	1" OR 2" WROT COPPER ADAPTER, SWEAT X M.I.P.T.
4	1" OR 2" BRASS BALL CORP WITHOUT "STOPS" AND WITH 2" SQUARE OPERATING NUT ADAPTER ATTACHED WITH STAINLESS STEEL BOLT AND NUT.
5	1" OR 2" WROT COPPER ADAPTER, F.I.P.T. X SWEAT.
6	COLD JOINT STRIP WHEN ADJACENT TO SIDEWALK.
7	1" OR 2" WROT COPPER 90° BEND, SWEAT X SWEAT.
8	VALVE BOX PER **ADELANTO** STD. DWG. W-22.
9	1" OR 2" SERVICE CONNECTION PER **ADELANTO** STD. DWG. W-3.
10	1" OR 2" SCH 80 PVC NIPPLE, 2" LONG.
11	1" OR 2" COPPER SERVICE PIPE, TYPE "K" RIGID.
12	PRE-FABRICATED PVC OUTLET WITH RIGID STAINLESS STEEL SCREEN M.I.P.T. INLET.
13	2" OR 4" SCH 40 PVC SLEEVE, SEE NOTE 6.
14	CLASS "B" CONCRETE PAD AND SUPPORT WHERE APPLICABLE PER CASE 1, 2, OR 3 AS SHOWN HEREON.
15	1" OR 2" BRASS WIRE CLAMP.
16	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN VENTED PIPE COVER.
17	ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT LEAST 24" FROM THE COPPER PIPE.
18	1" OR 2" SCH 80 PVC NIPPLE, SLIP X SLIP.
19	1" OR 2" SCH 80 PVC 90° BEND, SWEAT X F.I.P.T.
20	SCH 80 PVC NIPPLE M.I.P.T. X M.I.P.T., 6" LONG.
21	1" OR 2" BRASS AWWA BALL VALVE WITH BRASS LEVER HANDLE, F.I.P.T. X F.I.P.T.
22	1/2" X 2" SCH 40 SST NIPPLE, 1/2" SST 90° BEND, AND 1/2" SST BALL VALVE.
23	IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE CIRCUMFERENTIALLY AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE. LEAVE 18" OF TAPE ABOVE SURFACE OF CONCRETE PAD IN VENTED PIPE COVER.
24	1/2" DIA. X 4" LONG TYPE 316 STAINLESS STEEL ANCHOR BOLT (3 EACH AT 120° APART WITH 2-PART EPOXY AND STAINLESS STEEL NUTS AND WASHERS).

NOTES:

1. INSTALL **ADELANTO** LOGO DECAL "DOMESTIC" OR "RECYCLED" AS DIRECTED BY **ADELANTO**.
2. SEE **ADELANTO** STD. SPEC. SECTION 15089 FOR ACCEPTABLE PRODUCTS.
3. POSITION ASSEMBLY PER APPLICABLE CASE 1, 2, OR 3 AS SHOWN HEREON.
4. THE CITY WILL DETERMINE IF 1" OR 2" ASSEMBLY IS TO BE INSTALLED. REFER TO PROJECT PLANS.
5. MARK BALL CORP LOCATION AND DISTANCES TO TWO POINTS ON ADJACENT CURB BY USE OF A 4" WHEEL GRINDER. SEE **ADELANTO** STD. DWG. S-1 FOR SIMILAR APPLICATION.
6. FILL ANNULAR SPACE WITH SAND PER **ADELANTO** STD. SPEC. SECTION 02223.

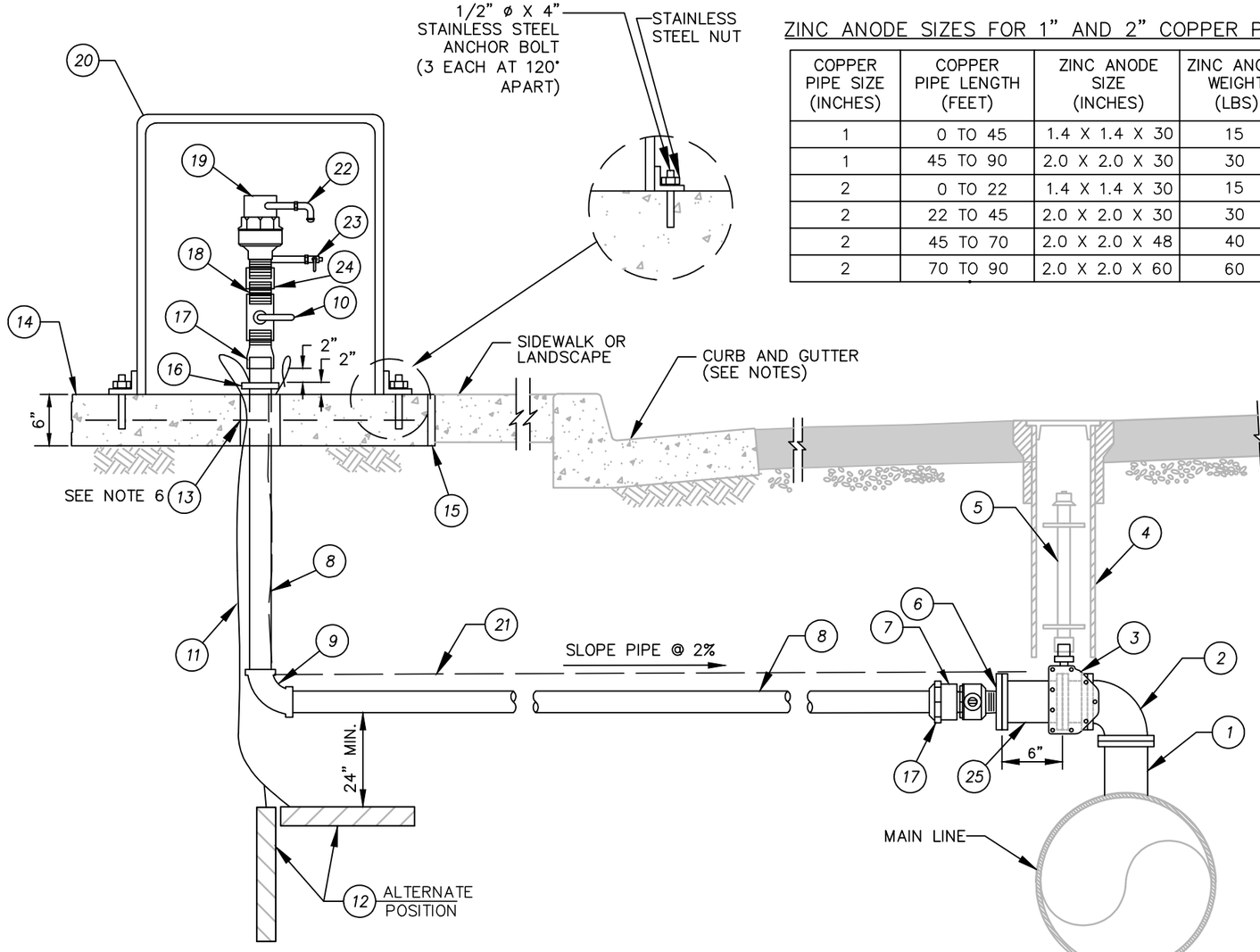
1" or 2" AIR RELEASE AND VACUUM RELIEF (PVC PIPE)

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

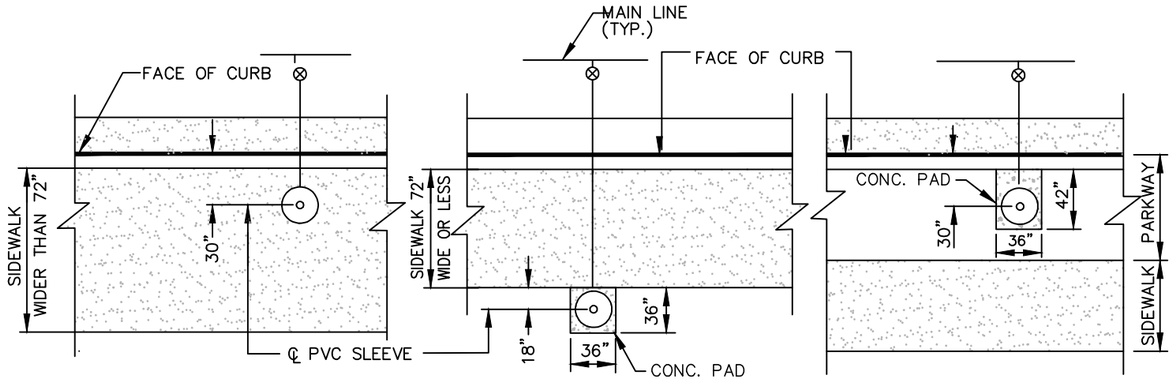
Adelanto
STD. DWG.
W-11



ZINC ANODE SIZES FOR 1" AND 2" COPPER PIPE

COPPER PIPE SIZE (INCHES)	COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
1	0 TO 45	1.4 X 1.4 X 30	15
1	45 TO 90	2.0 X 2.0 X 30	30
2	0 TO 22	1.4 X 1.4 X 30	15
2	22 TO 45	2.0 X 2.0 X 30	30
2	45 TO 70	2.0 X 2.0 X 48	40
2	70 TO 90	2.0 X 2.0 X 60	60

ITEM	MATERIALS
1	4" FLANGED OUTLET PER **ADELANTO** STD. DWG. W-3.
2	4" FLANGED 90° ELBOW (SAME MATERIAL AS MAIN LINE).
3	4" BUTTERFLY VALVE, F.E. x F.E.
4	VALVE AND VALVE BOX INSTALLATION PER **ADELANTO** STD. DWG W-22.
5	VALVE STEM EXTENSION PER **ADELANTO** STD. DWG W-23 (WHERE REQUIRED).
6	4" X 1" OR 2" TAPPED D.I. COMPANION FLANGE.
7	1" OR 2" BRASS INSULATING BALL CORPORATION STOP PER **ADELANTO** STD. DWG. W-3.
8	1" OR 2" COPPER SERVICE PIPE, TYPE "K" RIGID.
9	1" OR 2" SWEAT COPPER 90° BEND.
10	1" OR 2" BRASS AWWA BALL VALVE WITH BRASS LEVER HANDLE, F.I.P.T. X F.I.P.T.
11	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN VENTED PIPE COVER.
12	ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED HORIZONTALLY AT LEAST 24" FROM THE COPPER PIPE.
13	2" OR 4" SCH 40 PVC SLEEVE, SEE NOTE 6.
14	CLASS "B" CONCRETE PAD REINFORCED WITH W.W.F. 1.6" X 1.6" AND SUPPORT WHERE APPLICABLE PER CASE 1, 2, OR 3 AS SHOWN HEREON.
15	COLD JOINT STRIP WHEN ADJACENT TO SIDEWALK.
16	1" OR 2" BRASS WIRE CLAMP.
17	1" OR 2" WROT COPPER ADAPTER M.I.P.T. X SWEAT.
18	SCH 80 PVC NIPPLE, M.I.P.T. X M.I.P.T., 6" LONG.
19	1" OR 2" AIR RELEASE & VACUUM RELIEF VALVE, SEE NOTES 2 AND 3.
20	LINEAR LOW DENSITY POLYETHYLENE VENTED PIPE COVER, SEE NOTE 1. 20" DIA. X 30" HIGH COVER FOR 1" AND 2" SIZE.
21	IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE CIRCUMFERENTIALLY AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE. LEAVE 18" OF TAPE ABOVE SURFACE OF CONCRETE PAD IN VENTED PIPE COVER.
22	PRE-FABRICATED PVC OUTLET WITH RIGID STAINLESS STEEL SCREEN M.I.P.T. INLET.
23	FOR A 1" AIR RELEASE AND VACUUM RELIEF VALVE: 1/4" DIA. X 1" LONG STAINLESS STEEL NIPPLE AND 1/4" STAINLESS STEEL BALL VALVE. FOR A 2" AIR RELEASE AND VACUUM RELIEF VALVE: 3/8" DIA. X 1" LONG STAINLESS STEEL NIPPLE AND 3/8" STAINLESS STEEL BALL VALVE.
24	SCH 80 PVC COUPLING, F.I.P.T. X F.I.P.T., WITH 316 STAINLESS STEEL BAND.
25	4" X 6" FLANGED PIPE SPOOL (SAME MATERIAL AS MAIN LINE).



CASE 1 CASE 2 CASE 3

NOTES:

1. INSTALL **ADELANTO** LOGO DECAL "DOMESTIC" OR "RECYCLED" AS DIRECTED BY ADELANTO.
2. SEE **ADELANTO** STD. SPEC. SECTION 15089 FOR ACCEPTABLE PRODUCTS.
3. POSITION ASSEMBLY PER APPLICABLE CASE 1, 2, OR 3 AS SHOWN HEREON.
4. **ADELANTO** WILL DETERMINE IF 1" OR 2" ASSEMBLY IS TO BE INSTALLED. REFER TO PROJECT PLANS.
5. MARK BALL CORP LOCATION AND DISTANCES TO TWO POINTS ON ADJACENT CURB BY USE OF A 4" WHEEL GRINDER. SEE **ADELANTO** STD. DWG. S-1 FOR SIMILAR APPLICATION.
6. FILL ANNULAR SPACE WITH SAND PER **ADELANTO** STD. SPEC. SECTION 02223.

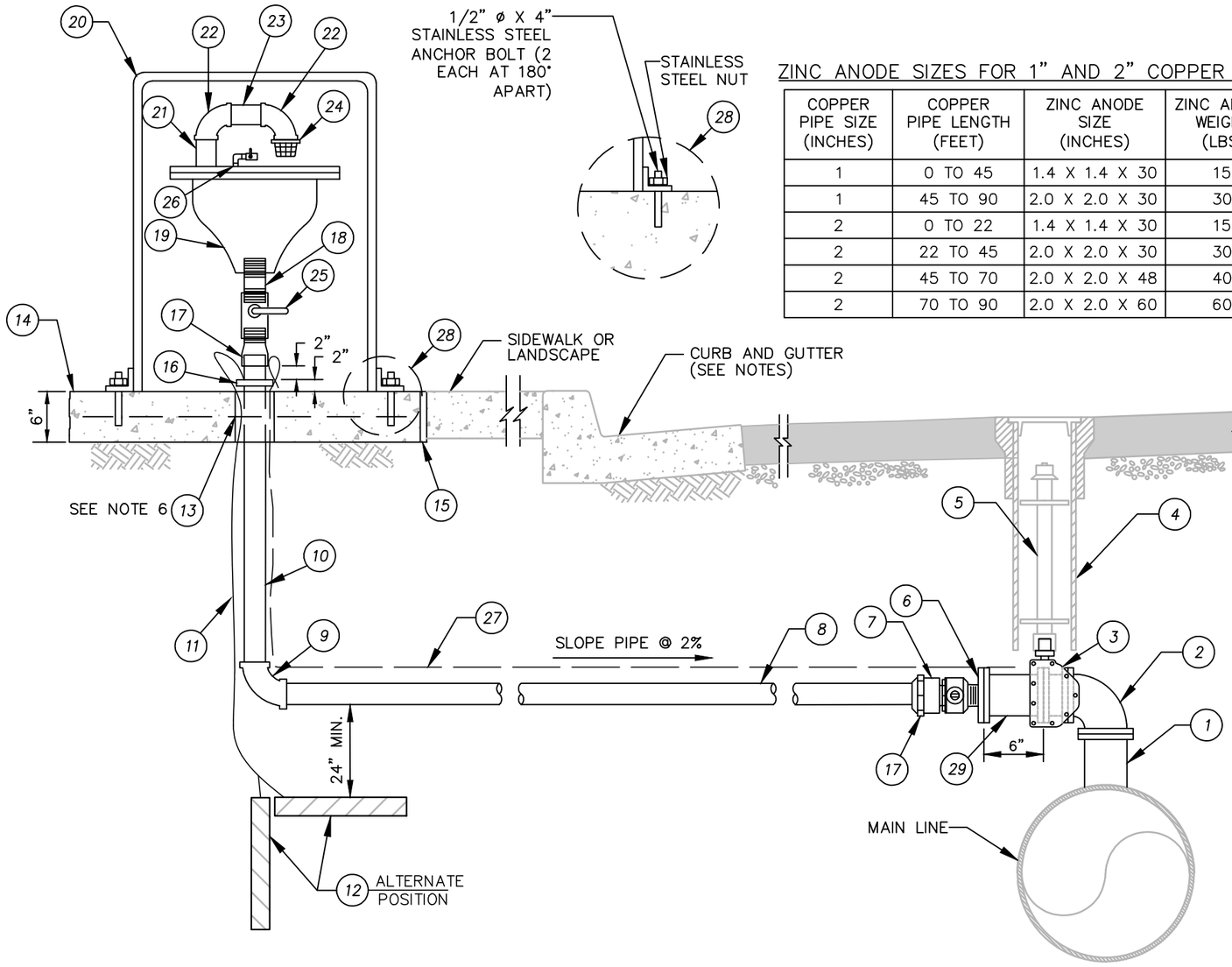
1" or 2" AIR RELEASE AND VACUUM RELIEF (STEEL PIPE OR DIP)

City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-11



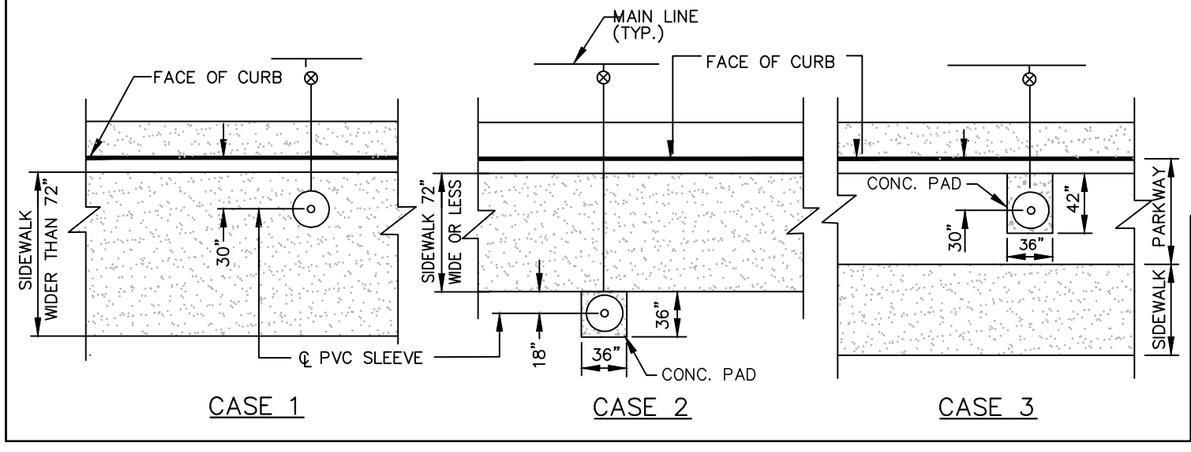
ZINC ANODE SIZES FOR 1" AND 2" COPPER PIPE

COPPER PIPE SIZE (INCHES)	COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
1	0 TO 45	1.4 X 1.4 X 30	15
1	45 TO 90	2.0 X 2.0 X 30	30
2	0 TO 22	1.4 X 1.4 X 30	15
2	22 TO 45	2.0 X 2.0 X 30	30
2	45 TO 70	2.0 X 2.0 X 48	40
2	70 TO 90	2.0 X 2.0 X 60	60

ITEM	MATERIALS
1	4" FLANGED OUTLET.
2	4" FLANGED 90° ELBOW (SAME MATERIAL AS MAIN LINE).
3	4" BUTTERFLY VALVE, F.E. X F.E.
4	VALVE AND VALVE BOX INSTALLATION PER ADELANTO STD. DWG. W-22.
5	VALVE STEM EXTENSION PER ADELANTO STD. DWG. W-23 (WHERE REQUIRED).
6	4" X 1" OR 2" TAPPED COMPANION FLANGE (STEEL OR D.I.).
7	1" OR 2" BRASS BALL INSULATING CORPORATION STOP PER ADELANTO STD. DWG. W-3.
8	1" OR 2" COPPER SERVICE PIPE, TYPE "K" RIGID.
9	1" OR 2" SWEAT COPPER 90° BEND.
10	1" OR 2" COPPER SERVICE PIPE, TYPE "K" RIGID.
11	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN VENTED PIPE COVER.
12	ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED HORIZONTALLY AT LEAST 24" FROM THE COPPER PIPE.
13	2" OR 4" SCH 40 PVC SLEEVE.
14	CLASS "B" CONCRETE PAD AND SUPPORT WHERE APPLICABLE PER CASE 1, 2, OR 3 AS SHOWN HEREON.
15	COLD JOINT STRIP WHEN ADJACENT TO SIDEWALK.
16	1" OR 2" BRASS WIRE CLAMP.
17	1" OR 2" WROT COPPER ADAPTER M.I.P.T. X SWEAT.
18	SCH 80 PVC NIPPLE, M.I.P.T. X M.I.P.T., 6" LONG.
19	1" OR 2" AIR RELEASE & VACUUM RELIEF VALVE, SEE NOTES 2 AND 3.
20	LINEAR LOW DENSITY POLYETHYLENE VENTED PIPE COVER, SEE NOTE 1. 20" DIA. X 30" HIGH COVER FOR 1" AND 2" SIZE.
21	1" OR 2" SCH 80 PVC NIPPLE, 2" LONG.
22	1" OR 2" SCH 80 PVC 90° BEND, SLIP X F.I.P.T.
23	1" OR 2" SCH 80 PVC NIPPLE, SLIP X SLIP.
24	PRE-FABRICATED PVC OUTLET WITH RIGID STAINLESS STEEL SCREEN M.I.P.T. INLET.
25	1" OR 2" BRASS AWWA BALL VALVE WITH BRASS LEVER HANDLE, F.I.P.T. X F.I.P.T.
26	1/2" X 2" SCH 40 SST NIPPLE, 1/2" SST 90° BEND, AND 1/2" SST BALL VALVE
27	IDENTIFICATION TAPE PER IRWD STD. SPEC. SECTION 15151. TAPE TO COPPER PIPE CIRCUMFERENTIALLY AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE. LEAVE 18" OF TAPE ABOVE SURFACE OF CONCRETE PAD IN VENTED PIPE COVER.
28	1/2" DIA. X 4" LONG TYPE 316 STAINLESS STEEL ANCHOR BOLT (3 EACH AT 120° APART WITH 2-PART EPOXY AND STAINLESS STEEL NUTS AND WASHERS).
29	4" X 6" FLANGED PIPE SPOOL (SAME MATERIAL AS MAIN LINE).

NOTES:

1. INSTALL ADELANTO LOGO DECAL "DOMESTIC" OR "RECYCLED" AS DIRECTED BY ADELANTO.
2. SEE ADELANTO STD. SPEC. SECTION 15089 FOR ACCEPTABLE PRODUCTS.
3. POSITION ASSEMBLY PER APPLICABLE CASE 1, 2, OR 3 AS SHOWN HEREON.
4. ADELANTO WILL DETERMINE IF 1" OR 2" ASSEMBLY IS TO BE INSTALLED. REFER TO PROJECT PLANS.
5. MARK BALL CORP LOCATION AND DISTANCES TO TWO POINTS ON ADJACENT CURB BY USE OF A 4" WHEEL GRINDER. SEE ADELANTO STD. DWG. S-1 FOR SIMILAR APPLICATION.
6. FILL ANNULAR SPACE WITH SAND PER ADELANTO STD. SPEC. SECTION 02223.



1" or 2" AIR RELEASE AND VACUUM RELIEF (STEEL PIPE OR DIP)

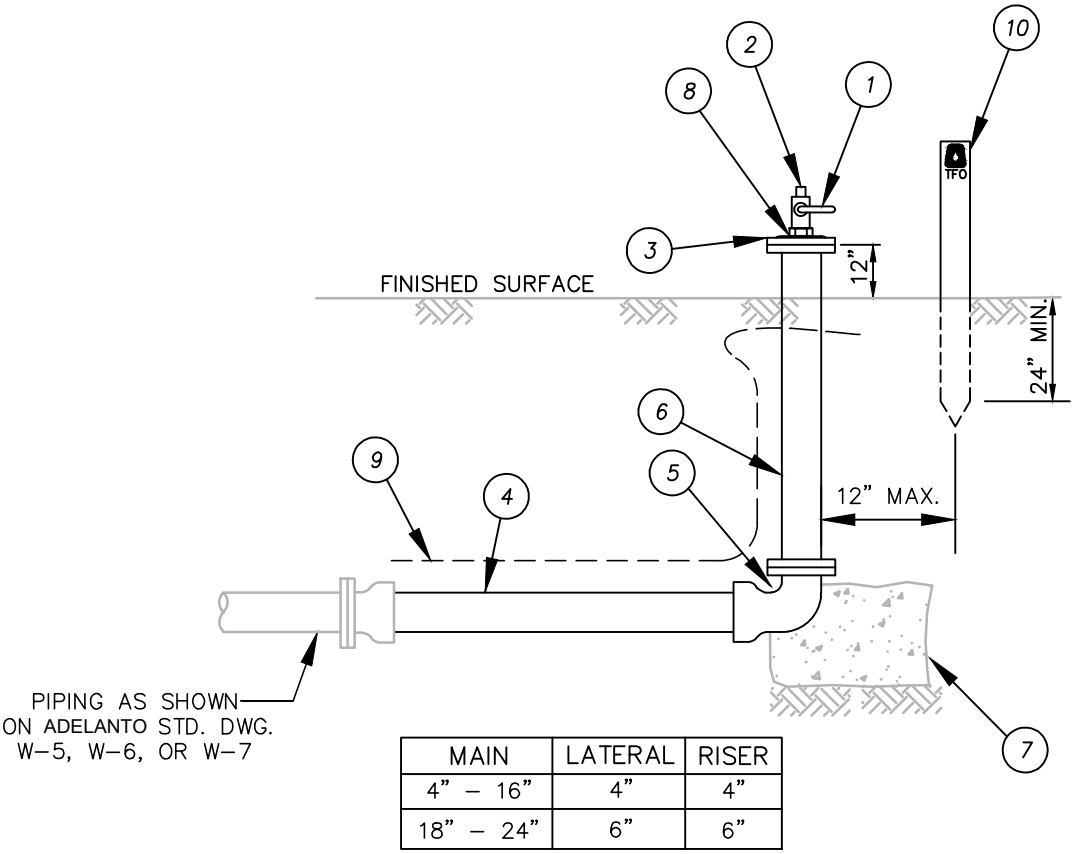
City of Adelanto

APPROVED BY: Salva Engineer 12/7/23

DATE

JULY 2023
REVISION

Adelanto STD. DWG. W-11



MAIN	LATERAL	RISER
4" – 16"	4"	4"
18" – 24"	6"	6"

ITEM	MATERIALS
1	2" STAINLESS STEEL BALL VALVE WITH LEVER HANDLE, F.I.P.T. X F.I.P.T.
2	2" THREADED STAINLESS STEEL PLUG.
3	D.I. BLIND FLANGE TAPPED WITH 2" F.I.P.T.
4	C-900 DR 14 OR DR 18 PVC LATERAL PIPE (DEPENDING ON PIPE SIZE).
5	D.I. 90° BEND, F.E. X P.O.
6	DIP F.E. X F.E. RISER SPOOL.
7	THRUST BLOCK PER ADELANTO STD. DWG. W-16.
8	2" STAINLESS STEEL CLOSE NIPPLE, M.I.P.T., T.B.E.
9	IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151. TAPE TO PIPE CIRCUMFERENTIALLY AT 5' INTERVALS USING 2" WIDE 10-MIL TAPE.
10	UTILITY MARKER PER ADELANTO STD. DWG. G-2 INDICATING LOCATION OF BURIED ASSEMBLY LABELED "TFO". LOCATE WITHIN 12" OF RISER.

NOTES:

1. TEMPORARY FLUSH-OUT ASSEMBLY REQUIRED AT ALL TEMPORARY DEAD END LINES.
2. SEE ADELANTO STD. DWG. W-13 FOR TEMPORARY FLUSH-OUT REQUIRED FOR TESTING AND FILLING OF MAIN LINES.
3. FOR FILLING OF NEW MAIN LINES, USE BACKFLOW DEVICE (CERTIFIED ANNUALLY). BACKFLOW DEVICE MUST BE DISINFECTED PRIOR TO USE AND PLACED 18" MIN. ABOVE FINISHED SURFACE.

TEMPORARY FLUSH OUT ASSEMBLY

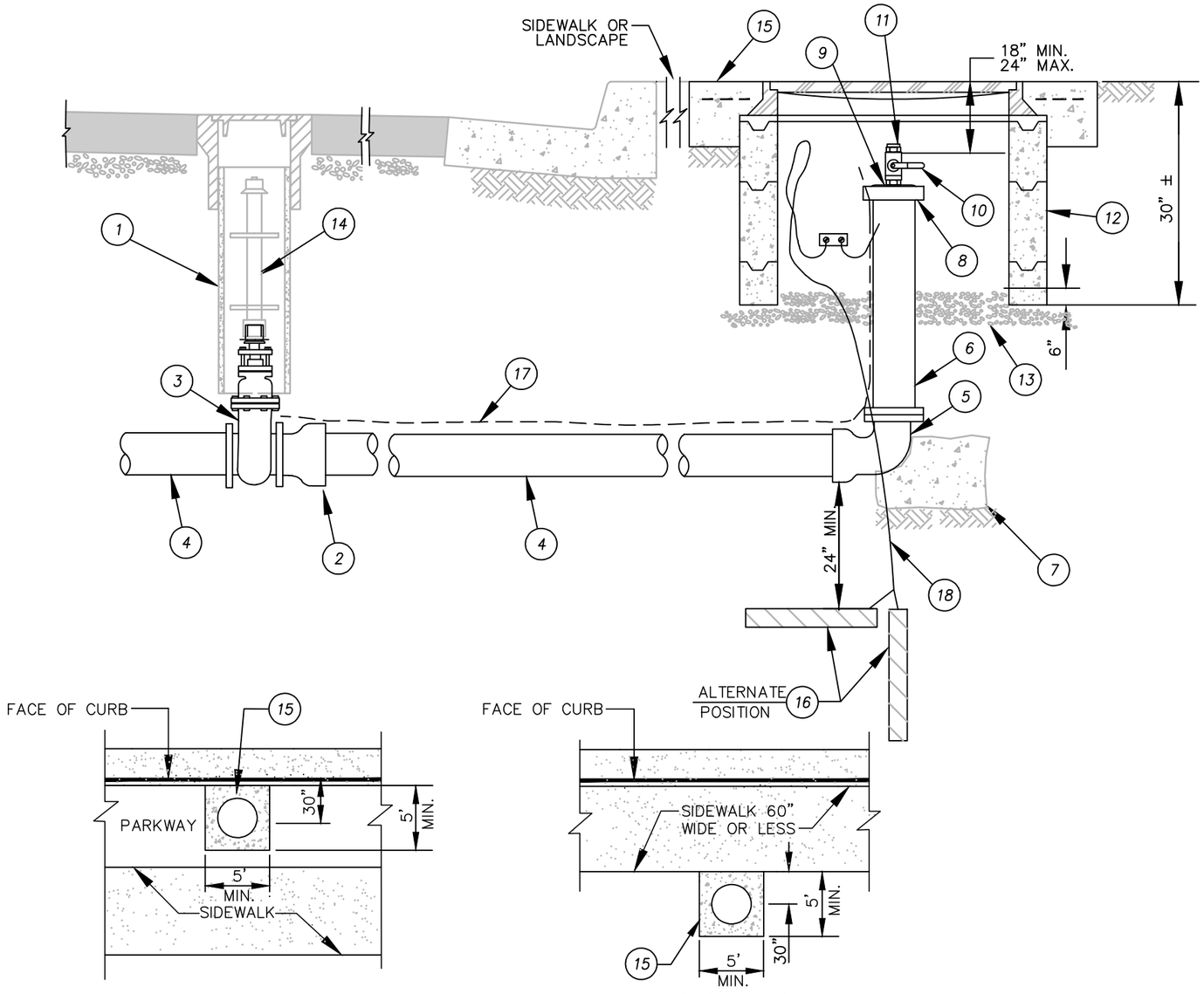
City of Adelanto
APPROVED BY:

Salva Engineer 12/7/23
DATE

JULY 2023
REVISION

Adelanto
STD. DWG.
W-12

SHEET 1 OF 1



CONDITION 1

CONDITION 2

FLUSH-OUT ASSEMBLY LOCATION PLANS

MAIN	LATERAL	RISER
8" – 16"	4"	4"
18" – 24"	6"	6"
30"	8"	8"
36" – 48"	12"	12"

ITEM — MATERIALS

1. VALVE BOX PER ADELANTO STD. DWG. W-22.
2. D.I. F.E. X P.O. ADAPTER.
3. GATE VALVE, F.E. X F.E.
4. C-900 PVC DR 14 LATERAL PIPE.
5. D.I. 90° BEND, F.E. X P.O.
6. DIP (DIA. ACCORDING TO CHART), F.E. X F.E. RISER SPOOL (LENGTH AS REQUIRED).
7. THRUST BLOCK PER ADELANTO STD. DWG. W-16 (USE ONLY IF VALVE IS NOT BOLTED TO A FITTING).
8. D.I. COMPANION FLANGE.
9. 2" STAINLESS STEEL CLOSE NIPPLE M.I.P.T., T.B.E.
10. 2" STAINLESS STEEL BALL VALVE PER ADELANTO STD. SPEC. SECTION 15057.
11. 2" THREADED STAINLESS STEEL PLUG.
12. 30" MANHOLE WITH FRAME AND COVER WITH GRADE RINGS PER ADELANTO STD. DWG. S-1, WITH COVER MARKED "ADELANTO DOMESTIC WATER" OR "ADELANTO RECYCLED WATER" IN LIEU OF "SEWER".
13. 6" BASE OF 3/4" CRUSHED ROCK (EXTEND BEDDING 6" INTO VAULT).
14. VALVE STEM EXTENSION PER ADELANTO STD. DWG. W-23 (WHERE REQUIRED).
15. 5' X 5' CONCRETE PAD MIN. 6" THICK WITH W.W.F. 1.6 X 1.6. FOR 4' X 4' VAULT USE 7' X 7' PAD.
16. ZINC ANODE (60 LB.) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE PIPE.
17. IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151. TAPE TO PIPE CIRCUMFERENTIALLY AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE.
18. AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, PROVIDE AND CONNECT TO SHUNT, LEAVE 36" OF COILED WIRE BEFORE SHUNT IN VAULT. ALUMINO-THERMIC WELD PER ADELANTO STD. SPEC. SECTION 16640 AND ADELANTO STD. DWG. CP-8 AND CP-9.

NOTES:

1. FLUSH-OUT ASSEMBLIES SHALL BE INSTALLED ON DEAD END PIPE WHERE FIRE HYDRANT ASSEMBLIES ARE NOT PRACTICAL.
2. MANHOLE SHALL BE WITHIN A DEDICATED ADELANTO EASEMENT OR PUBLIC RIGHT-OF-WAY.
3. PAINT RISER PIPING PER ADELANTO SPEC. SECTION 09900.
4. WHERE MAIN LINE PIPE MATERIAL (4) IS STEEL, USE OF CML&C STEEL FOR (2) (5) (6) AND (8) IS PERMITTED.
5. WHERE VAULTS OR MANHOLE FRAMES ARE OFFSET FROM CURB OR SIDEWALK, OR PLACED IN PARKWAYS, SET 2" ABOVE FINISHED SURFACE.
6. FOR TEMPORARY INSTALLATIONS REQUIRED FOR TESTING AND FILLING MAIN LINES, OMIT GATE VALVE, ZINC ANODES, AND SUBSTITUTE 30" MANHOLE FRAME AND COVER FOR 2" METER BOX PER ADELANTO STD. SPEC. SECTION 03462. 2" METER BOX SHALL BE LEFT 2" ABOVE FINISH GRADE.

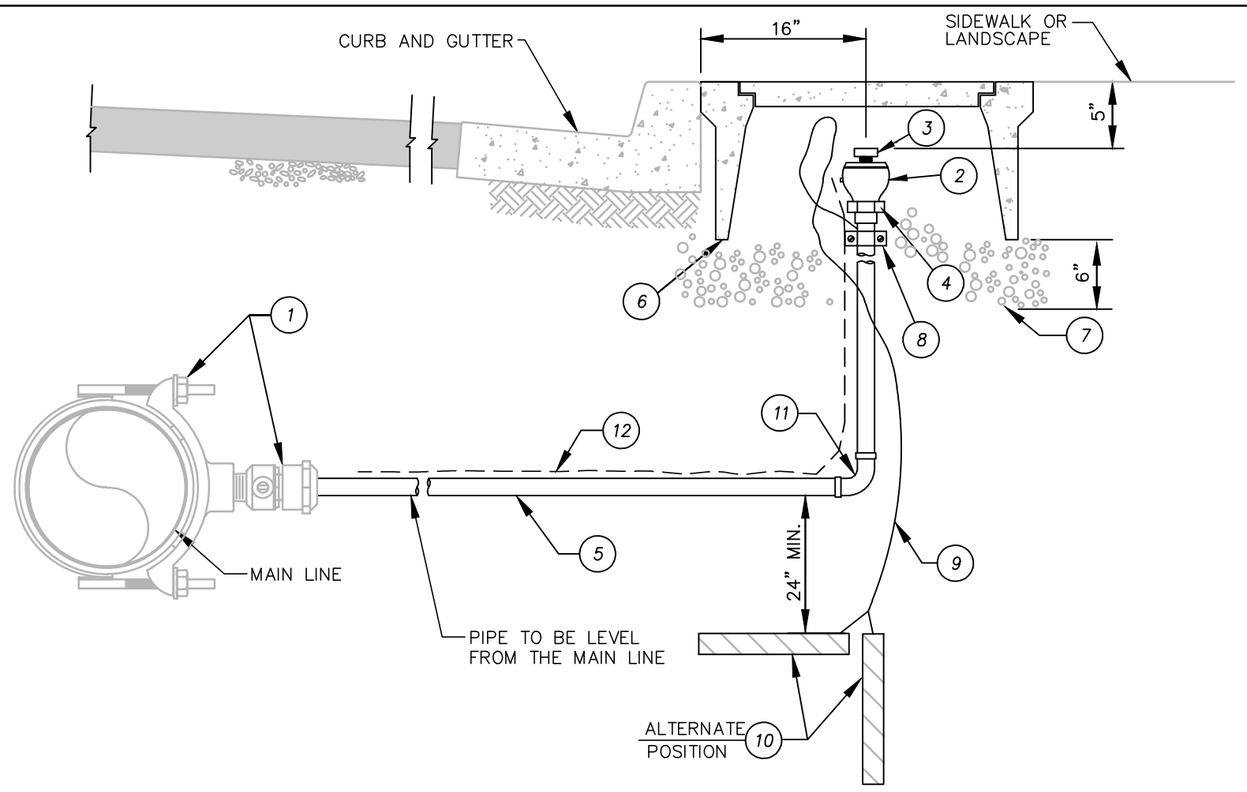
FLUSH-OUT ASSEMBLY, FOR MAIN LINES 8" AND LARGER

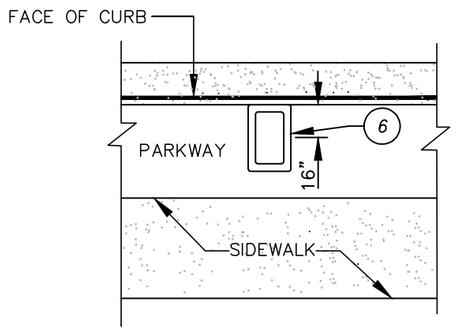
City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

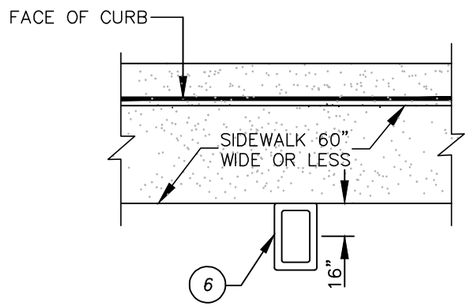
City of ADELANTO

Adelanto STD. DWG. W-13





CONDITION 1



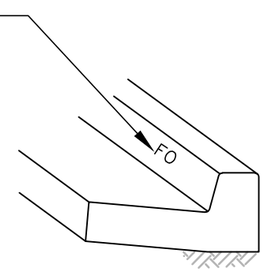
CONDITION 2

2" FLUSH–OUT ASSEMBLY LOCATION PLANS

NOTES:

1. SERVICE CONNECTION SHALL BE INSTALLED 18" FROM END OF MAIN LINE.
2. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN.
3. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
4. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
5. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH STAINLESS STEEL SCREWS AND SHALL BE TESTED PER **ADELANTO** STD. SPEC. SECTION 16640 (SEE TABLE HEREON FOR ZINC ANODE SIZES).

LOCATE LATERAL WITH 2" HIGH "FO" ON FACE OF CURB WHERE THE LATERAL CROSSES UNDER THE CURB. USE WHEEL GRINDER, 1/4" DEEP GROOVE.



ZINC ANODE SIZES FOR 2" COPPER SERVICES

COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (LBS)
0 TO 22	1.4 X 1.4 X 30	15
22 TO 45	2.0 X 2.0 X 30	30
45 TO 70	2.0 X 2.0 X 48	40
70 TO 90	2.0 X 2.0 X 60	60

ITEM — MATERIALS

1. 2" SERVICE CONNECTION PER **ADELANTO** STD. DWG. W–3.
2. 2" BRASS BALL CORPORATION STOP M.I.P.T. X M.I.P.T. (NORMALLY CLOSED) WITH 2" SQUARE OPERATING NUT ADAPTER ATTACHED WITH STAINLESS STEEL BOLT AND NUT.
3. 2" SCH 80 PVC CAP, F.I.P.T.
4. 2" SWEAT X F.I.P.T. ADAPTER.
5. 2" COPPER SERVICE PIPE TYPE "K" SOFT (COILED COPPER FOR 2" NOT ALLOWED).
6. METER BOX ONE PIECE LID. COMPOSITE POLYMER CONCRETE BOXES AND LIDS PER **ADELANTO** STD. SPEC. SECTION 03462.
7. 6" THICK BASE OF 3/4" CRUSHED ROCK.
8. GROUND WIRE CLAMP (SEE NOTE 5).
9. AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE; LEAVE 18" OF COILED WIRE IN METER BOX.
10. ZINC ANODE (SEE TABLE HEREON FOR SIZE OF ANODE) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE COPPER SERVICE.
11. 2" WROT COPPER 90° BEND, SWEAT X SWEAT.
12. IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151. TAPE TO PIPE CIRCUMFERENTIALLY AT 2' INTERVALS USING 2" WIDE 10–MIL TAPE.

FLUSH-OUT ASSEMBLY, FOR MAIN LINES 6" AND SMALLER

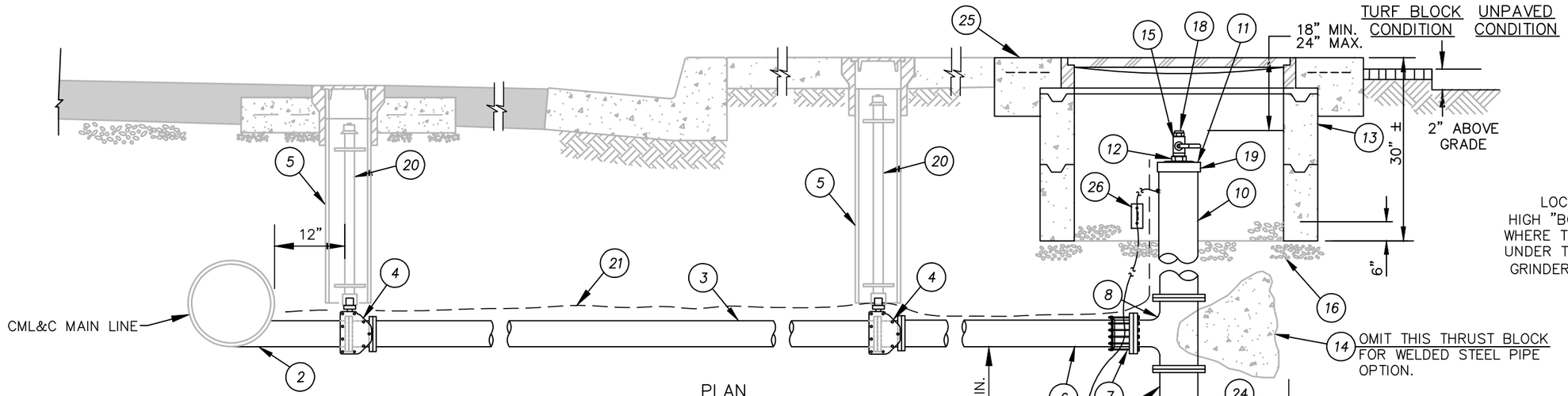
City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

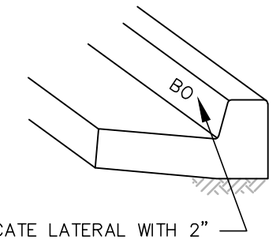
JULY 2023
REVISION

City of ADELANTO

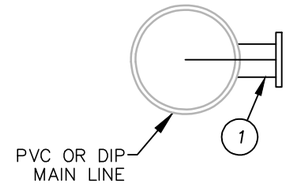
Adelanto STD. DWG. W-13

SHEET 2 OF 2





LOCATE LATERAL WITH 2" HIGH "BO" ON FACE OF CURB WHERE THE LATERAL CROSSES UNDER THE CURB. USE WHEEL GRINDER, 1/4" DEEP GROOVE.



BLOWOFF/BOTTOM DRAIN ASSEMBLY DIP CONNECTION DETAIL

MAIN	LATERAL SIZE	RISER SIZE
4" – 6"	4"	8"
8" – 16"	4"	8"
18" – 24"	6"	8"
30"	8"	12"
36" – 48"	12"	12"

ITEM	MATERIALS
1	PIPE DIA. X 4" D.I. FLANGED TEE, FLANGED OUTLET, SEE NOTES 4, 6, AND 7.
2	4" TO 12" SHOP FABRICATED CML&C STEEL FLANGED OUTLET, SEE NOTES 6 AND 7.
3	4" TO 12" X LENGTH AS REQUIRED (12" MIN.) D.I. OR CML&C STEEL SPOOL, SEE NOTE 6.
4	4" TO 12" RW BUTTERFLY VALVE, F.E. X F.E.
5	VALVE AND VALVE BOX INSTALLATION PER **ADELANTO** STD. DWG. W–22.
6	4" TO 12" X LENGTH AS REQUIRED D.I. PIPE SPINDLE PIECE, F.E. X P.E. WITH MJ RETAINER GLAND OR CML&C STEEL SPOOL, F.E. X F.E., SEE NOTE 6.
7	4" TO 12" D.I. FLANGED COUPLING ADAPTER (OMIT FOR STEEL PIPE).
8	4" TO 12" X 8" TO 12" D.I. OR CML&C STEEL TEE, F.E. X F.E., SEE NOTE 6.
9	8" TO 12" D.I. OR CML&C BLIND FLANGE, SEE NOTE 6.
10	8" TO 12" X LENGTH AS REQUIRED D.I. PIPE SPINDLE PIECE, F.E. X F.E., SEE NOTES 6 AND 9.
11	G.E. CAP TAPPED WITH 2" F.I.P.T.
12	2" STAINLESS STEEL CLOSE NIPPLE, M.I.P.T, T.B.E.
13	30" MANHOLE WITH FRAME AND COVER, GRADE RINGS PER **ADELANTO** STD. DWG. S–1, WITH COVER MARKED "**ADELANTO** DW B.O." OR "**ADELANTO** RW B.O." IN LIEU OF "SEWER".
14	THRUST BLOCKS PER **ADELANTO** STD. DWG. W–16.
15	2" STAINLESS STEEL BALL VALVE WITH LEVER HANDLE.
16	12" BASE LAYER OF 3/4" CRUSHED ROCK, PLUS 6" OF ROCK INTO MANHOLE.
17	8" TO 12" X 12" LONG D.I. OR CML&C STEEL SPOOL, F.E. X F.E., SEE NOTE 6.
18	2" THREADED STAINLESS STEEL PLUG.
19	8" TO 12" X 2" D.I. COMPANION FLANGE.
20	VALVE STEM EXTENSION PER **ADELANTO** STD. DWG. W–23 (WHERE REQUIRED).
21	IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151. TAPE TO PIPE AT 2' INTERVALS USING 2" WIDE 10–MIL TAPE.
22	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. ALUMINO–THERMIC WELD PER **ADELANTO** STD. SPEC. SECTION 16640 AND **ADELANTO** STD. DWG. CP–8 AND CP–9.
23	ZINC ANODE (60 LB) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE PIPE. ALUMINO–THERMIC WELD PER **ADELANTO** STD. SPEC. SECTION 16640 AND **ADELANTO** STD. DWG. CP–8 AND CP–9.
24	CONCRETE MATERIAL (MIN. 12" THICK).
25	5' X 5' CONCRETE PAD MIN. 6" THICK WITH W.W.F. 1.6 X 1.6.
26	BRASS SHUNT WITH PLASTIC BASE, BY FARWEST CORROSION OR MESA PRODUCTS. MOUNT SHUNT TO WALL WITH 4" RED HEAD 316 SS ANCHORS. LEAVE 36" OF COILED WIRE ON EACH SIDE OF SHUNT.

NOTES:

1. IN UNPAVED AREAS, TOP OF MANHOLE SHALL BE RAISED TO MIN. 2" ABOVE FINISHED GRADE.
2. ONE VALVE SHALL BE PROVIDED FOR MAIN LINES LESS THAN 24" IN DIA. TWO VALVES SHALL BE PROVIDED FOR MAIN LINES 24" IN DIA. AND LARGER.
3. MANHOLE FRAME, COVER, GRADE RING, AND SHAFT SHALL BE LOCATED BEYOND THE SIDEWALK OR BEHIND CURB, SEE NOTE 8.
4. FOR DIP, SEE **ADELANTO** STD. DWG. CP–9.
5. INSTALL PIPE WITH ZERO SLOPE (LEVEL).
6. BLOWOFF ASSEMBLY PIPING MATERIALS SHALL MATCH THE TYPE OF MAIN LINE PIPING MATERIAL (I.E., STEEL WITH A STEEL MAIN, DUCTILE IRON WITH A DUCTILE IRON MAIN). IF MAIN LINE IS PVC, THEN USE EITHER STEEL OR DUCTILE IRON.
7. SEE DETAIL HEREON FOR DIP CONNECTION TO PVC OR DIP MAIN LINE DETAIL.
8. SEE SHEET 2 OF 2 FOR BLOWOFF/BOTTOM DRAIN LOCATION PLANS.
9. PAINT EXPOSED RISER PIPE PER **ADELANTO** STD. SPEC. SECTION 09900.
10. ALL JOINTS SHALL BE BONDED PER **ADELANTO** STD. SPEC. SECTION 16640.
11. AT NO POINT SHALL ANY PART OF THE BLOWOFF ASSEMBLY BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE OR LANDSCAPING.

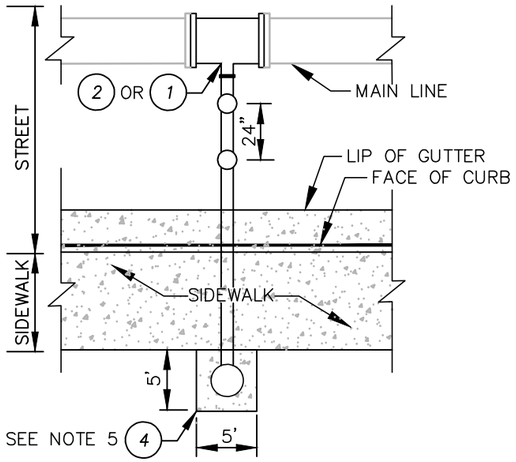
BLOWOFF/BOTTOM DRAIN ASSEMBLY

City of Adelanto
APPROVED BY:
Salva Engineer 12/7/23
DATE

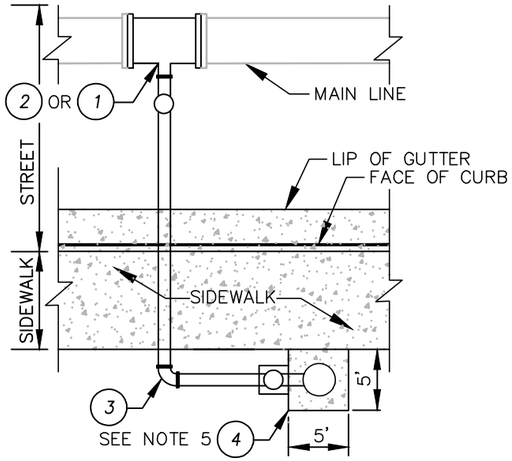
JULY 2023
REVISION

City of ADELANTO

Adelanto STD. DWG. W-14



CASE 1



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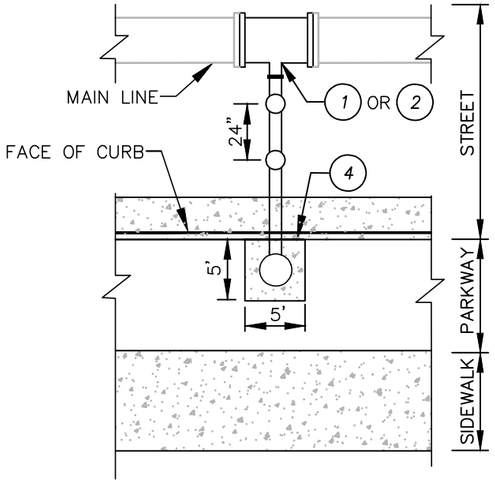

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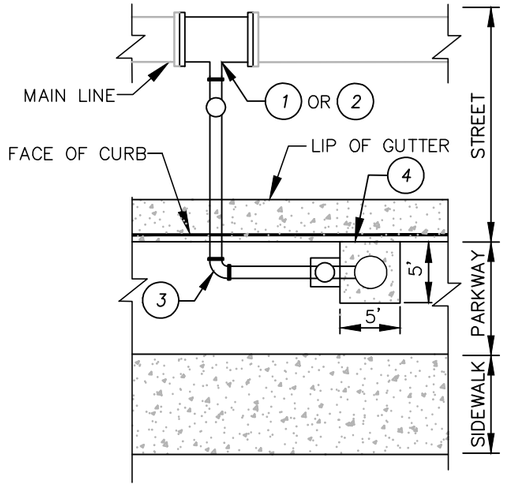


CASE 4

BLOWOFF/BOTTOM DRAIN
LOCATION PLANS

ITEM	MATERIALS
1	PIPE DIA. X 4" TO 12" D.I. FLANGED TEE AND FLANGED OUTLET, SEE NOTES 4, 6, AND 7 ON SHEET 1 OF 2.
2	4" TO 12" SHOP FABRICATED CML&C STEEL FLANGED OUTLET, SEE NOTES 6 AND 7 ON SHEET 1 OF 2.
3	THRUST BLOCKS PER ADELANTO STD. DWG. W-16.
4	5' X 5' CONCRETE PAD MIN. 6" THICK WITH W.W.F.-1.6 X 1.6.

NOTES:

1. POSITION ASSEMBLY PER APPLICABLE CASE 1, 2, 3, OR 4 AS SHOWN HEREON.
2. ONE VALVE REQUIRED FOR MAIN LINES LESS THAN 24" IN DIA., TWO VALVES ARE REQUIRED FOR MAIN LINES 24" AND LARGER.
3. MANHOLE FRAME, COVER, GRADE RING, AND SHAFT SHALL BE LOCATED BEYOND THE SIDEWALK OR BEHIND CURB.
4. MARK VALVE LOCATION AND DISTANCES TO TWO POINTS ON ADJACENT CURB BY USE OF A 4" WHEEL GRINDER. SEE SHEET 1 OF 2.
5. BLOWOFF/BOTTOM DRAIN ASSEMBLY INSTALLATION IMPROVEMENTS BEYOND THE ADELANTO OR COUNTY RIGHT-OF-WAY REQUIRE AN EASEMENT AS DIRECTED BY ADELANTO.

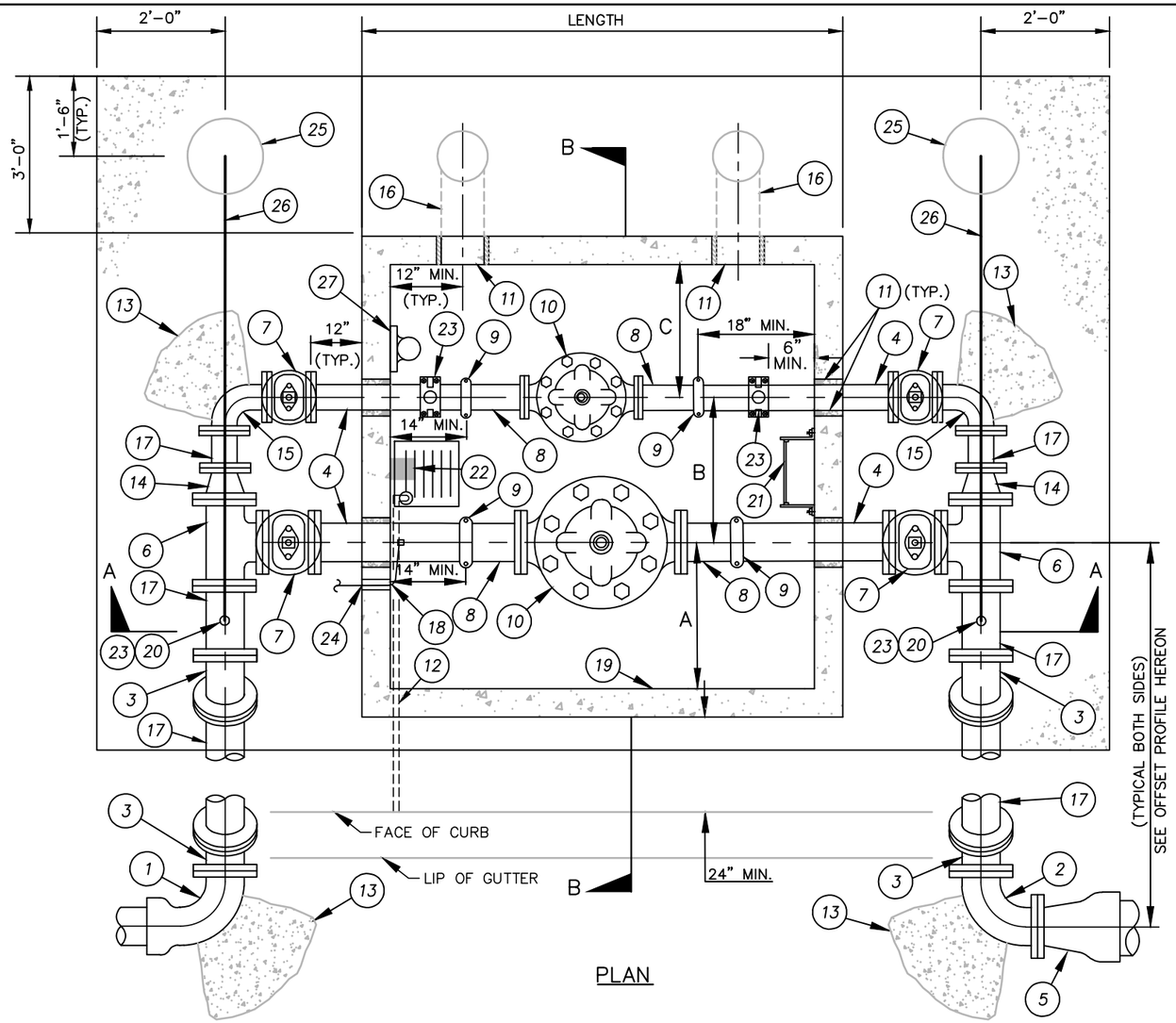
BLOWOFF/BOTTOM DRAIN ASSEMBLY LOCATION PLANS

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

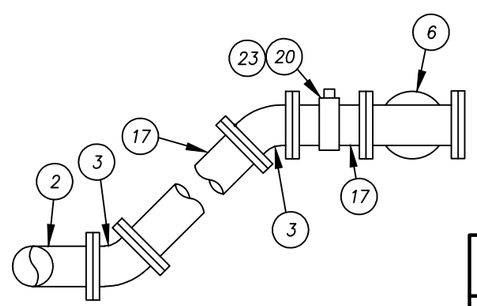
City of ADELANTO

Adelanto
STD. DWG.
W-14



PLAN

PRV LENGTH (IN)	PRV SIZE (IN)	MIN. VAULT DIMENSION			
		A	B	C	L (MIN)
9 3/4	3 (MIN.)	24	36	24	72
15	4	24	36	24	72
20	6	24	36	24	72
25 3/8	8	36	36	36	84
29 3/4	10	36	36	36	84
34	12	36	48	36	96
39	14	36	48	36	96
41 3/8	16	36	48	36	96
A, B & L ARE BASED ON THE LARGER REGULATING VALVE, C IS BASED ON THE SMALLER REGULATING VALVE.					
A+B+C = INSIDE VAULT WIDTH (MIN.)					



OFFSET PROFILE

ITEM	MATERIALS
1	D.I. 90° BEND, P.O. X F.E.
2	D.I. 90° BEND, F.E. X F.E.
3	D.I. 45° BEND, F.E. X F.E.
4	D.I. SPINDLE, F.E. X G.E., LENGTH AS REQUIRED.
5	D.I. REDUCER, P.O. X F.E., WHERE REQUIRED.
6	D.I. TEE, F.E. X F.E.
7	RW GATE VALVE OR BUTTERFLY VALVE, PER ADELANTO STD. SPEC. SECTION 15100, F.E. X F.E.
8	12" LONG D.I. SPINDLE, F.E. X G.E.
9	G.E. COUPLING. HEAVY DUTY STYLE 77 WITH STAINLESS STEEL HARDWARE.
10	PRESSURE REGULATING VALVE PER ADELANTO STD. SPEC. SECTION 15120 AND PROJECT SPECIFICATIONS. MIN. PRESSURE REGULATING VALVE SIZE SHALL BE 3".
11	LINK-SEAL MODULAR SEAL MODEL "C" WITH EPDM AND STAINLESS STEEL HARDWARE. SEE ADELANTO STD. DWG. G-9.
12	SEAL CORE HOLE OPENING PER ADELANTO STD. DWG. G-8.
13	THRUST BLOCK PER ADELANTO STD DWG. W-16.
14	D.I. REDUCER, F.E. X F.E.
15	D.I. 90° BEND, F.E. X F.E.
16	12" DIA. AIR VENT AND PIPING PER ADELANTO STD. SPEC. SECTION 03462 AND PER ADELANTO STD. DWG. G-7.
17	D.I. SPOOL, F.E. X F.E., LENGTH AS REQUIRED.
18	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE, PROVIDE AND CONNECT TO SHUNT, LEAVE 36" OF COILED WIRE BEFORE SHUNT IN VAULT. ALUMINO-THERMIC WELD PER ADELANTO STD. SPEC. SECTION 16640 AND ADELANTO STD. DWG. CP-8 AND CP-9.
19	PRECAST CONCRETE VAULT WITH SPRING-ASSIST OPEN HATCH. PROVIDE DIAMOND PLATE ALUMINUM ACCESS DOORS WITH RECESSED PADLOCK HASP FOR #5 LOCK (ON OPPOSITE END OF VAULT FROM LADDER) AND VAULT HATCH CHANNEL DRAIN (PLUMB TO CRUSHED ROCK). SEE TABLE FOR VAULT SIZE. SEE NOTE 2 FOR ADDITIONAL HATCH REQUIREMENTS.
20	1" AIR & VACUUM RELEASE PER ADELANTO STD. DWG. W-11.
21	LADDER PER ADELANTO STD. DWG. G-5.
22	INTRUSION SWITCH. SEE ADELANTO STD. DWG. W-15 (SHEET 4 OF 15) FOR DETAIL.
23	1" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS AND NYLON COATED MALLEABLE IRON BODY AND 1" INSULATED BALL CORP OUTLET PER ADELANTO STD. DWG. W-3. SEE ADELANTO STD. DWG W-15, SHEET 4 OF 15, FOR TRANSMITTER ASSEMBLY DETAIL.
24	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. CORE DRILL VAULT AND SEAL PER ADELANTO STD. DWG. G-8.
25	20" DIA. VENTED PIPE COVER PER ADELANTO STD. SPEC. SECTION 15089 AND ADELANTO STD. DWG. G-7.
26	1" OR 2" COPPER SERVICE PIPE, TYPE "K" RIGID PER ADELANTO STD. DWG. W-11.
27	3M DBI-SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348. SEE ADELANTO STD. DWG. W-15 SHEET 3 OF 15.

NOTES:

1. THIS IS A TEMPLATE – THE ACTUAL SIZES OF THE COMPONENT PRV'S REQUIRED FOR A SPECIFIC LOCATION NEED TO BE SHOWN ON THE PLAN ALONG WITH THEIR SETTINGS.
2. WHERE VAULTS ARE CONSTRUCTED WITHIN ANY VEHICLE TRAVEL LANE, ACCESS HATCHES SHALL BE STAINLESS STEEL AND RATED FOR CONTINUOUS H-20 TRAFFIC LOADING.
3. VAULTS SHALL BE CONSTRUCTED A MIN. OF 24" AWAY FROM CURB OR SIDEWALK, LEVEL, AND DESIGNED BY THE ENGINEER OF RECORD TO ACCOUNT FOR NUISANCE WATER AND THE SAFETY OF THE TRAVELING PUBLIC.
4. AT NO POINT SHALL ANY PART OF THE PRESSURE REGULATING STATION BE CLOSER THAN 36" AWAY FROM ANY STRUCTURE OR LANDSCAPING.
5. PIPING FOR 3" PRV ASSEMBLIES SHALL BE 4" DIA. PROVIDE 3"X4" REDUCER AT PRV.

PRESSURE REGULATING STATION (PRV)

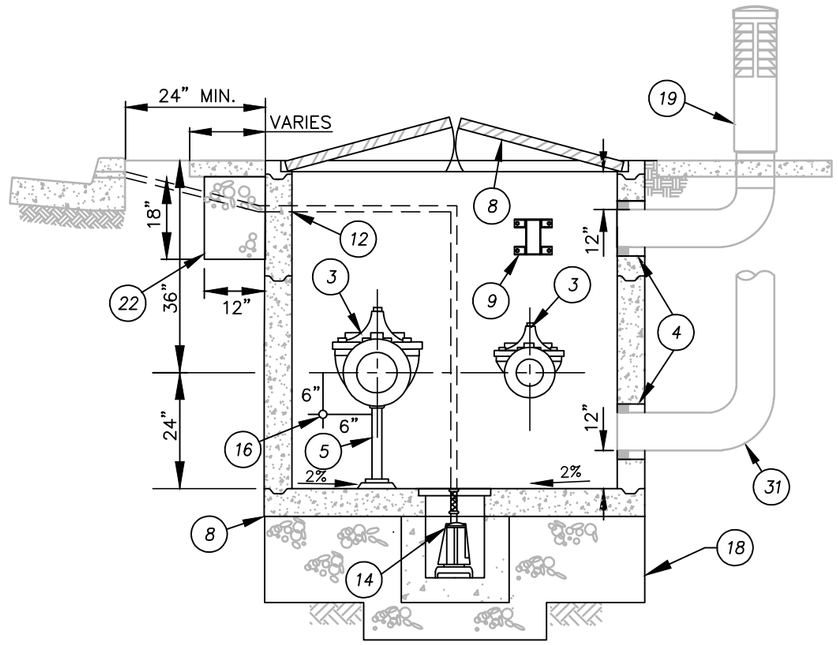
City of Adelanto
APPROVED BY:

Salva Engineer 12/7/23
DATE

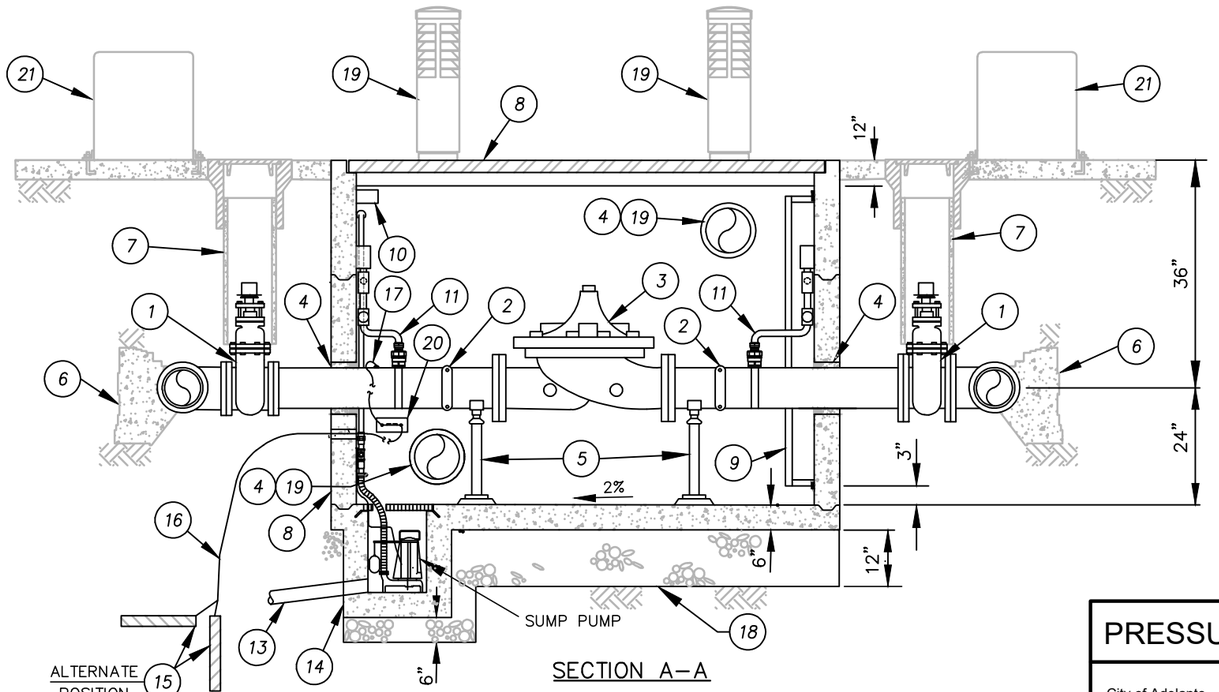
JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-15



SECTION B–B



SECTION A–A

ITEM	MATERIALS
1	RW GATE VALVE OR BUTTERFLY VALVE, PER **ADELANTO** STD. SPEC. SECTION 15100, F.E. X F.E.
2	G.E. COUPLING. HEAVY DUTY STYLE 77 WITH STAINLESS STEEL HARDWARE.
3	PRESSURE REGULATING VALVE PER **ADELANTO** STD. SPEC. SECTION 15120 AND PROJECT SPECIFICATIONS. MIN. PRESSURE REGULATING VALVE SIZE SHALL BE 3".
4	LINK–SEAL MODULAR SEAL MODEL "C" WITH EPDM AND STAINLESS STEEL HARDWARE. SEE **ADELANTO** STD. DWG. G–9.
5	PIPE SUPPORT PER **ADELANTO** STD. DWG. W–24.
6	THRUST BLOCK PER **ADELANTO** STD. DWG. W–16.
7	VALVE BOX PER **ADELANTO** STD. DWG. W–22.
8	PRECAST CONCRETE VAULT WITH SPRING–ASSIST OPEN HATCH. PROVIDE DIAMOND PLATE ALUMINUM ACCESS DOORS WITH RECESSED PADLOCK HASP FOR #5 LOCK (ON OPPOSITE END OF VAULT FROM LADDER) AND VAULT HATCH CHANNEL DRAIN (PLUMB TO CRUSHED ROCK). SEE TABLE ON SHEET 1 OF 15 FOR VAULT SIZE. SEE NOTE 1 FOR ADDITIONAL HATCH REQUIREMENTS.
9	3M DBI–SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348. SEE **ADELANTO** STD. DWG. W–15 SHEET 3 OF 15.
10	INTRUSION SWITCH. SEE **ADELANTO** STD. DWG. W–15 (SHEET 4 OF 15) FOR DETAIL.
11	1" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS AND NYLON COATED MALLEABLE IRON BODY AND 1" BALL CORP OUTLET PER **ADELANTO** STD. DWG. W–3. SEE **ADELANTO** STD. DWG. W–15 SHEET 4 OF 15 FOR TRANSMITTER ASSEMBLY.
12	SEAL CORE HOLE PER **ADELANTO** STD. DWG. G–8.
13	4" SCH 80 PVC DRAIN PIPE OR SUMP PUMP (FOR DOMESTIC WATER APPLICATIONS ONLY), SEE **ADELANTO** STD. DWG. G–6.
14	VAULT SUMP PER **ADELANTO** STD. DWG. .G–6
15	60 POUND ZINC ANODE AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MIN. SEPARATION OF 24" FROM THE PIPING.
16	AWG NO. 8 STRANDED COPPER ANODE LEAD WIRE. CORE DRILL VAULT AND SEAL PER **ADELANTO** STD. DWG. G–8.
17	AWG NO 8 STRANDED COPPER ANODE LEAD WIRE, PROVIDE AND CONNECT TO SHUNT, LEAVE 36" OF COILED WIRE BEFORE SHUNT IN VAULT. ALUMINO–THERMIC WELD PER **ADELANTO** STD. SPEC. SECTION 16640 AND **ADELANTO** STD. DWG. CP–8 AND CP–9.
18	3/4" CRUSHED ROCK.
19	12" DIA. AIR VENT AND PIPING PER **ADELANTO** STD. SPEC. SECTION 03462 AND PER **ADELANTO** STD. DWG. G–7.
20	BRASS SHUNT WITH PLASTIC BASE, BY FARWEST CORROSION OR MESA PRODUCTS. MOUNT SHUNT TO WALL WITH 4" RED HEAD 316 SS ANCHORS. LEAVE 36" OF COILED WIRE ON EACH SIDE OF SHUNT.
21	AIR & VACUUM RELEASE COVER PER **ADELANTO** STD. DWG. W–11. SEE NOTE 2.
22	18" OF 3/4" CRUSHED ROCK FOR CHANNEL DRAIN.

NOTES:

1. WHERE VAULTS ARE CONSTRUCTED WITHIN ANY VEHICLE TRAVEL LANE, ACCESS HATCHES SHALL BE STAINLESS STEEL AND RATED FOR CONTINUOUS H–20 TRAFFIC LOADING.
2. INSTALL **ADELANTO** LOGO DECAL "DOMESTIC" OR "RECYCLED" AS DIRECTED BY **ADELANTO**.
3. STENCIL "DOMESTIC" OR "RECYCLED" ON WHITE BACKING WITH BLACK 4" HIGH LETTERING INSIDE VAULT AT 12" BELOW BOTTOM OF HATCH OPENING. PROVIDE STENCIL IN TWO LOCATIONS ON OPPOSITE WALLS.
4. WHERE VAULTS ARE OFFSET FROM CURB OR SIDEWALK, OR PLACED IN PARKWAYS, SET HATCH 2" ABOVE FINISHED SURFACE.

PRESSURE REGULATING STATION (PRV)

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
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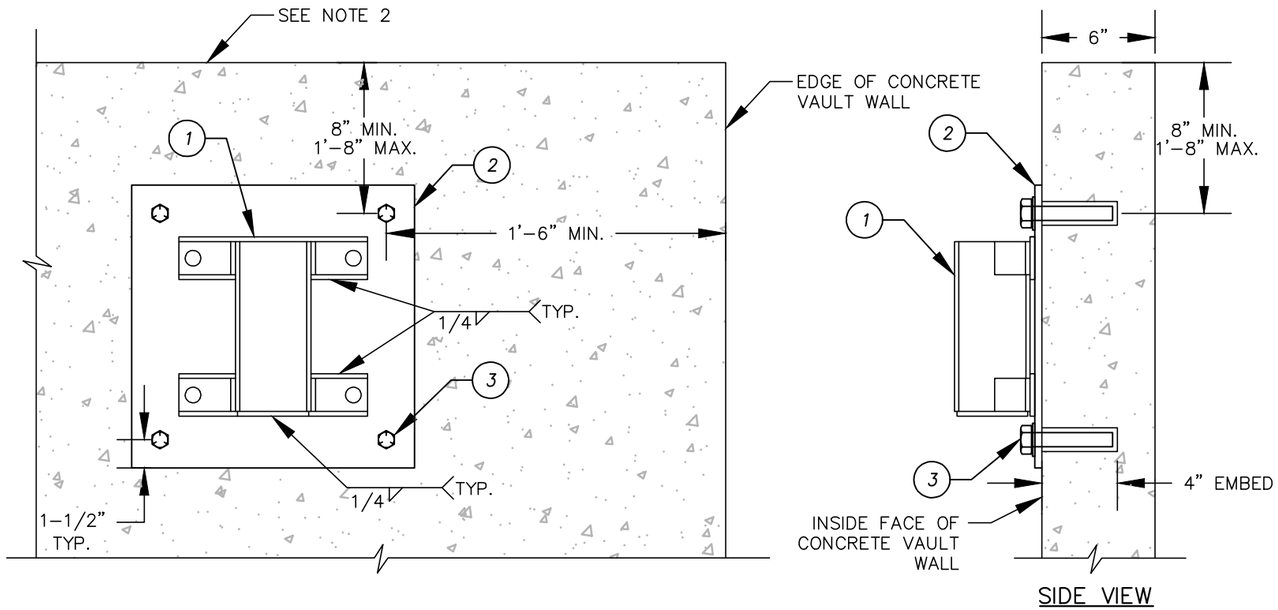
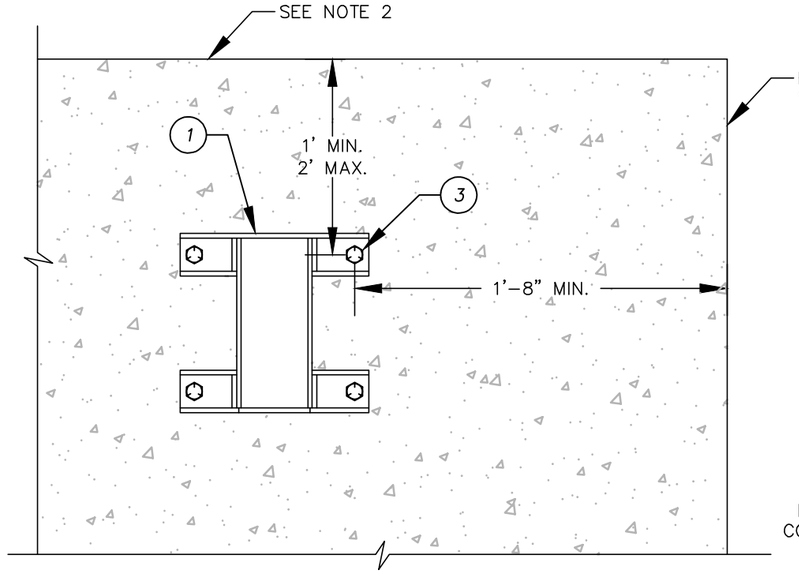
City of ADELANTO

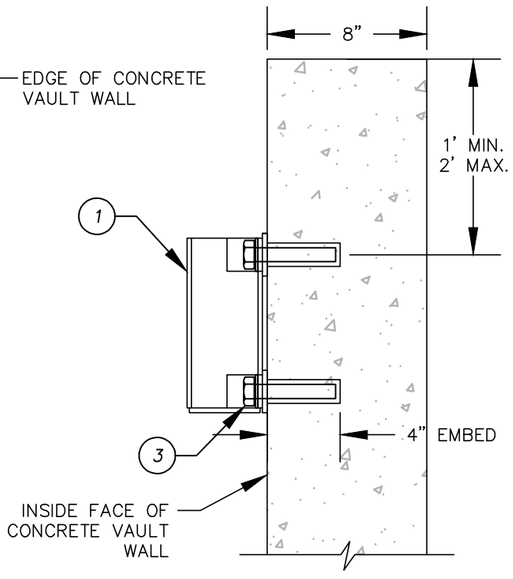
Adelanto
STD. DWG.
W-15



SIDE VIEW

WALL MOUNTED SLEEVE DAVIT BASE ANCHORING DETAIL
6" THICK VAULT WALL





SIDE VIEW

WALL MOUNTED SLEEVE DAVIT BASE ANCHORING DETAIL
8" THICK VAULT WALL AND LARGER

ITEM	MATERIALS
1	3M DBI-SALA WALL MOUNTED SLEEVE DAVIT BASE, MODEL #8518348.
2	15" X 15" 316 STAINLESS STEEL MOUNTING PLATE, 1/2" THICK. CENTER SLEEVE DAVIT BASE.
3	3/4" STAINLESS STEEL ADHESIVE ANCHORS, EMBED 4" INTO VAULT WALL. HILTY-HY 200, SIMPSON AT-XP, OR EQUAL.

NOTES:

1. 15" X 15" STAINLESS STEEL MOUNTING PLATE REQUIRED FOR VAULTS WITH 6" THICK WALLS. MOUNTING PLATE SHALL BE OMITTED WHEN VAULT WALLS ARE 8" THICK OR LARGER AND THE SLEEVE DAVIT BASE SHALL BE MOUNTED DIRECTLY TO THE VAULT WALL.
2. MOUNTING PLATE OR SLEEVE DAVIT BASE SHALL BE MOUNTED ACCORDING TO THE MINIMUM DIMENSIONS SHOWN FROM ANY OF THE FOLLOWING CONDITIONS WITHIN THE VAULT: BOTTOM OF VAULT HATCH LIDS, TOP OF VAULT WALL, AND HORIZONTAL WALL JOINT, WHICHEVER IS CLOSEST TO THE INSTALLATION.
3. SLEEVE DAVIT BASE SHALL NOT BE LOCATED ABOVE SUMP PUMP.
4. COORDINATE FINAL LOCATION OF SLEEVE DAVIT BASE WITH ADELANTO REPRESENTATIVE PRIOR TO MOUNTING TO VAULT WALL.

PRESSURE REGULATING STATION (PRV)

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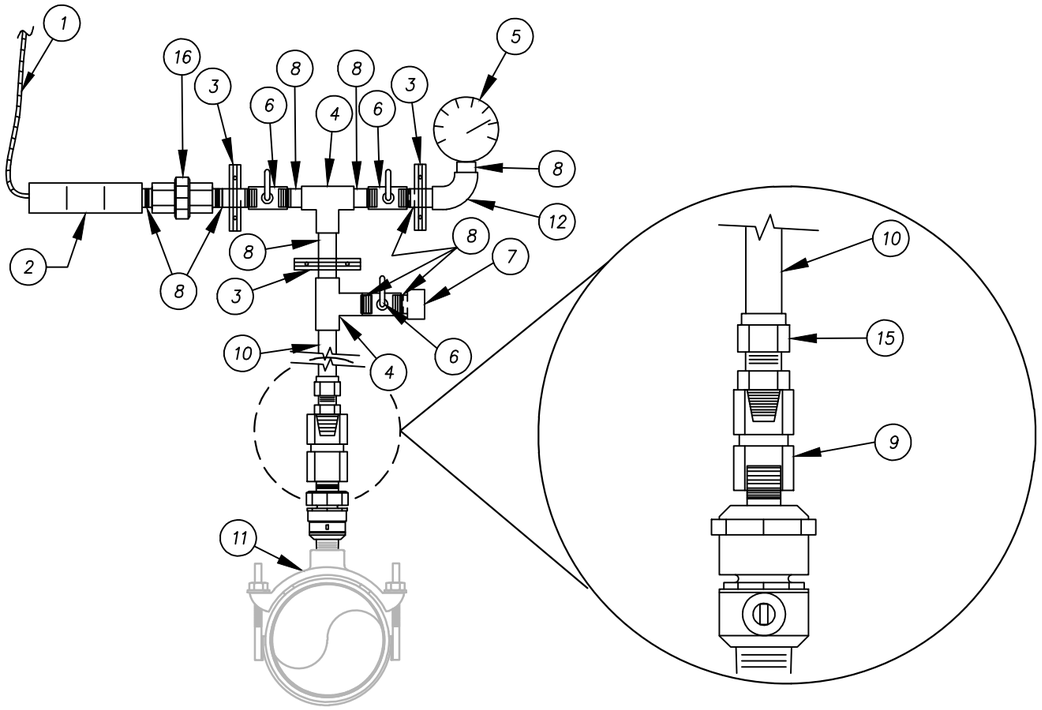
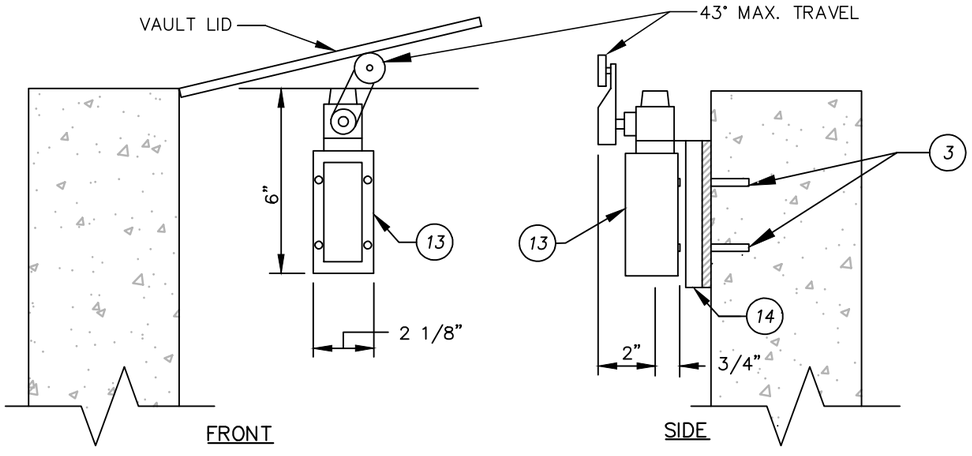
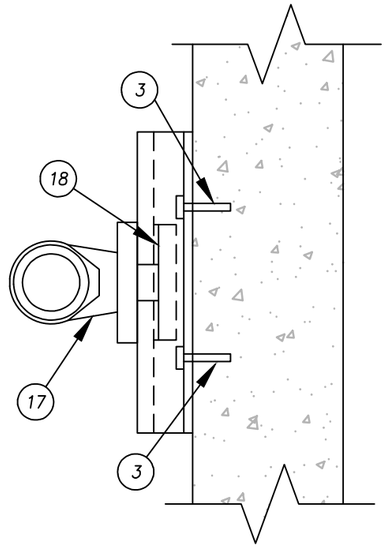
Adelanto
STD. DWG.
W-15



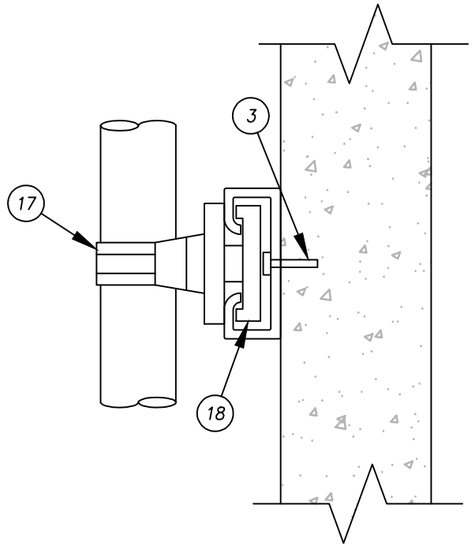
TRANSMITTER ASSEMBLY DETAIL



INTRUSION SWITCH



SIDE VIEW



TOP VIEW

TYPICAL BRACKET

ITEM	MATERIALS
1	FLEXIBLE WATER TIGHT CONDUIT.
2	PRESSURE TRANSMITTER, 4–20 mA, PER **ADELANTO** STD. SPEC. SECTION 17200.
3	MOUNT TO WALL WITH STAINLESS STEEL STRUT CHANNEL AND HARDWARE. USE 3/8" P4000SS 2" RED HEAD ANCHORS.
4	3/8" X 3/8" STAINLESS STEEL THREADED TEE, F.I.P.T.
5	PRESSURE GAUGE, PER **ADELANTO** STD. SPEC. SECTION 17200.
6	3/8" STAINLESS STEEL BALL VALVE, WITH LEVER HANDLE F.I.P.T. BOTH ENDS.
7	3/8" STAINLESS STEEL THREADED CAP, F.I.P.T.
8	3/8" STAINLESS STEEL CLOSE NIPPLE, M.I.P.T.
9	1" X 3/8" STAINLESS STEEL THREADED REDUCER BUSHING, F.I.P.T. BOTH ENDS.
10	3/8" STAINLESS STEEL FLEX TUBING WITH COMPRESSION ADAPTER FITTINGS ON EACH END.
11	1" SERVICE SADDLE WITH DOUBLE STAINLESS STEEL STRAPS AND NYLON COATED MALLEABLE IRON BODY AND 1" INSULATED BALL CORP WITH F.I.P.T. OUTLET, SEE **ADELANTO** STD. DWG. W–3.
12	3/8" STAINLESS STEEL THREADED 90° BEND, F.I.P.T.
13	ELECTRO–MECHANICAL LIMIT SWITCH FOR INTRUSION ALARM.
14	1/8" ALUMINUM PLATE FOR MOUNTING INTRUSION SWITCH.
15	3/8" STAINLESS STEEL MALE CONNECTOR, M.I.P.T. X TUBE.
16	3/8" STAINLESS STEEL THREADED COUPLING.
17	3/8" PLASTIC PIPE HANGER CLIP (CLIC SYSTEM OR EQUAL).
18	P4000SS UNI–STRUT CHANNEL HARDWARE FOR ANCHORING CLIP TO CHANNEL.

PRESSURE REGULATING STATION (PRV)

City of Adelanto

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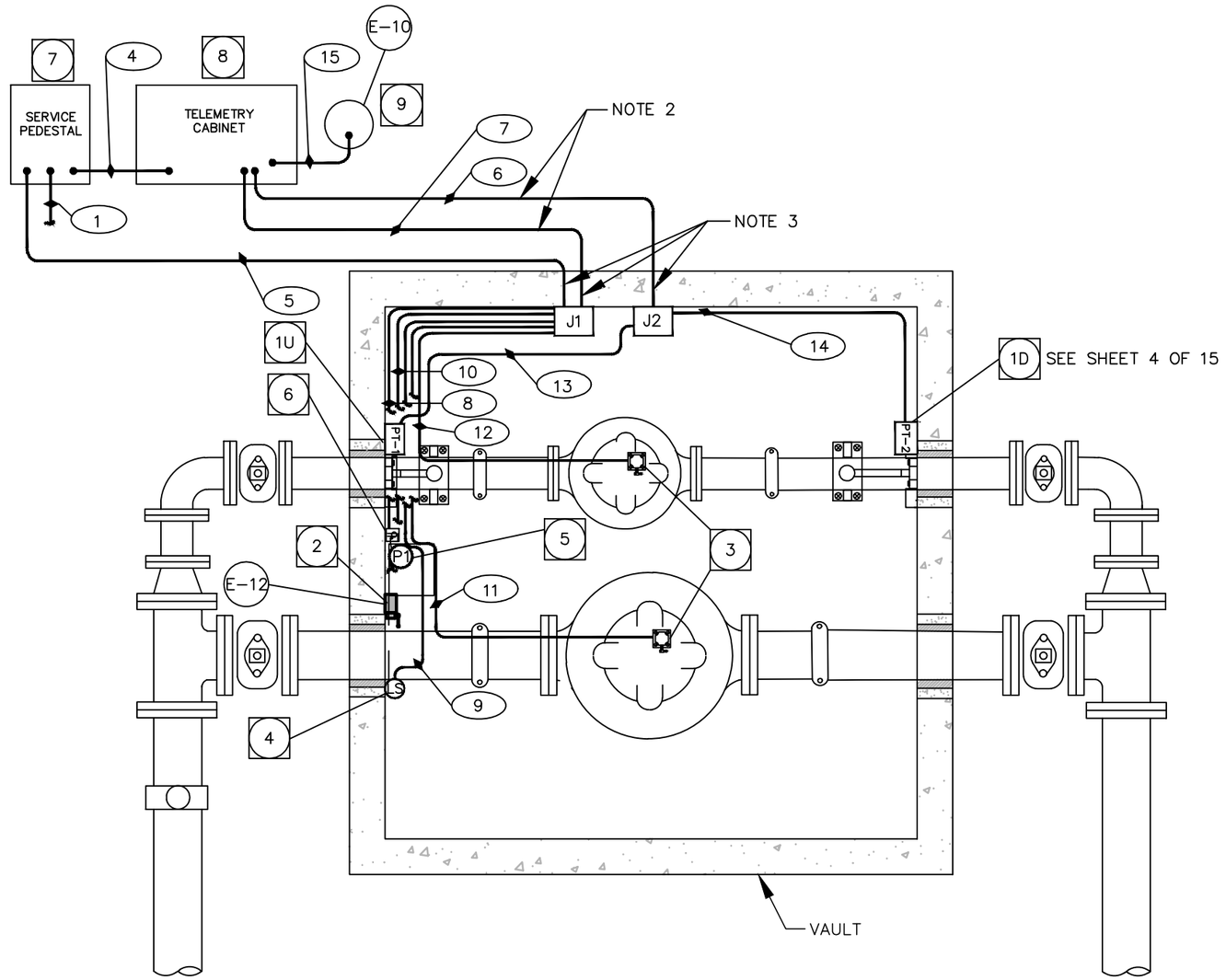
Adelanto STD. DWG. W-15



PRESSURE REDUCING STATION ELECTRICAL–CONDUIT PLAN (VAULT #1)

NOTES:

1. INSTALL CONDUIT SO THERE IS NO INTERFERENCE WITH UNDERLYING PIPING, VALVES, OR APPURTENANCES.
2. LOCATE SERVICE PEDESTAL AND TELEMETRY CABINET AS REQUIRED. TYPICAL LOCATIONS SHOWN.
3. SEAL CORE HOLE OPENING PER **ADELANTO** STD. DWG. G–8.

LEGEND:

(X) CONDUIT NO. SEE CONDUIT SCHEDULE ON **ADELANTO** STD. DWG. W–15 (E–3) SHEET 7 OF 15.

[X] ITEM NO. SEE MATERIAL LIST ON **ADELANTO** STD. DWG. W–15 (E–3) SHEET 7 OF 15.

(X–1) **ADELANTO** STD. DWG. W–15 ELECTRICAL DRAWING (E–#) SHEET NUMBER.

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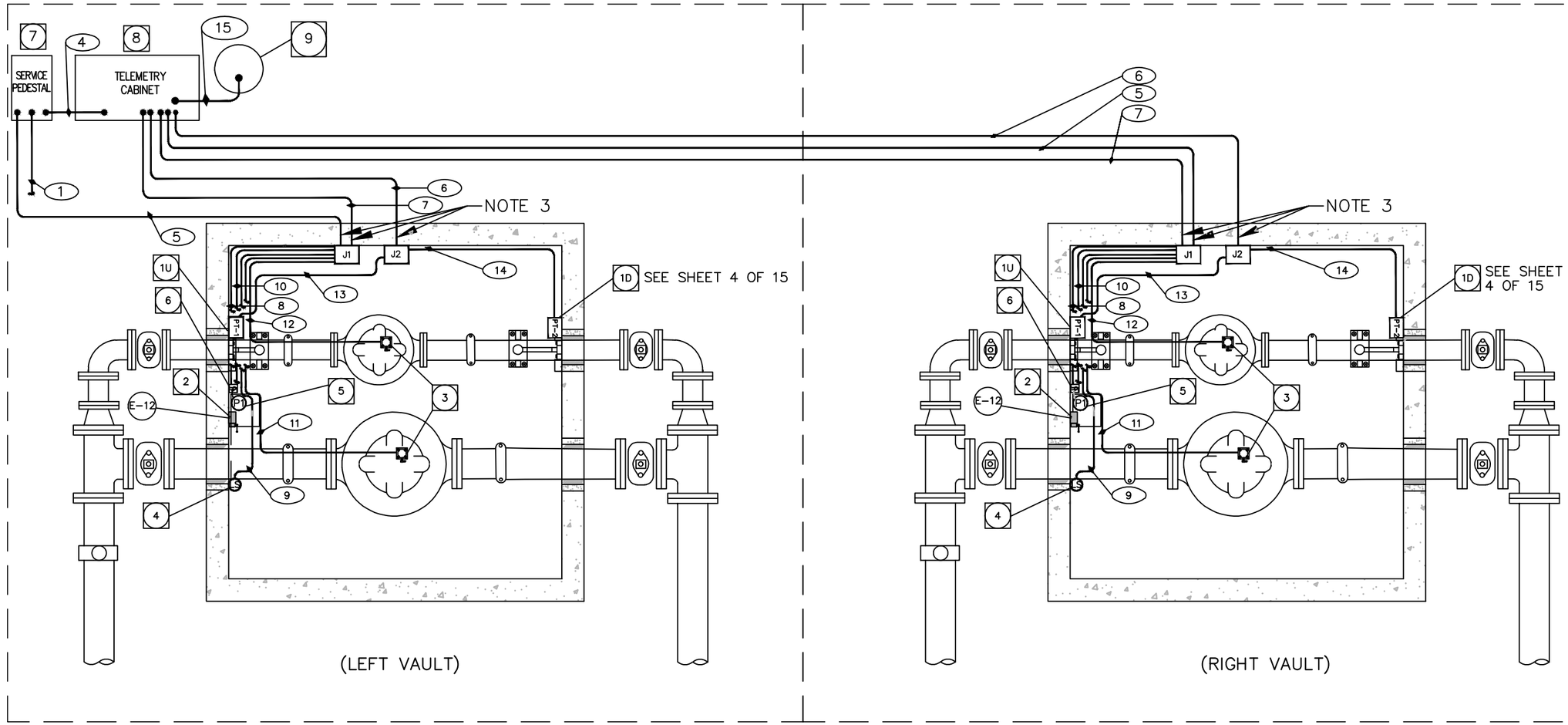
Adelanto STD. DWG. W-15 (E-1)



NOTES:

1. THIS SHEET APPLIES TO DUAL PRV CONFIGURATIONS. "LEFT" AND "RIGHT" DESIGNATIONS ARE DERIVED FROM YOU FACING THE FRONT OF THE "TELEMETRY CABINET".
2. LOCATE SERVICE PEDESTAL AND TELEMETRY CABINET AS REQUIRED. TYPICAL LOCATIONS SHOWN.
3. SEAL CORE HOLE OPENING PER **ADELANTO** STD. DWG. G-8 OR G-9.

LEGEND:

(X) CONDUIT NO. SEE CONDUIT SCHEDULE ON **ADELANTO** STD. DWG. W-15 (E-3) SHEET 7 OF 15.

[X] ITEM NO. SEE MATERIAL LIST ON **ADELANTO** STD. DWG. W-15 (E-3) SHEET 7 OF 15.

(X-1) **ADELANTO** STD. DWG. W-15 ELECTRICAL DRAWING (E-#) SHEET NUMBER.

PRESSURE REGULATING STATION (PRV)

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Adelanto
STD. DWG.
W-15 (E-2)

ELECTRICAL COMPONENTS MATERIAL LIST

ITEM	QTY.	DEVICE ID.	DESCRIPTION	MANUFACTURER	MODEL NUMBER	SUBSTITUTIONS	RANGE	REMARKS
1U	1	PT–10	PRESSURE TRANSMITTER	AMETEK	575S	NOT ALLOWED	0–250 PSI	CABLE TO BE UNSPLICED TO TELEMETRY CAB.
				DRUCK	PTX–530–8839		0–250 PSI	
				KELLER PSI	730–142–00250		0–250 PSI	
1D	1	PT–20	PRESSURE TRANSMITTER	AMETEK	575S	NOT ALLOWED	0–150 PSI	
				DRUCK	PTX–530–8839		0–150 PSI	
				KELLER PSI	730–142–00150		0–150 PSI	
2	1	ZS–10	HATCH ENTRY SWITCH	ALLEN BRADLEY	802–T–AP	NOT ALLOWED		NORMALLY OPEN
	1		ROLLER ARM FOR HATCH SW.	ALLEN BRADLEY	802T–W2B	NOT ALLOWED		
3	2	ZS–20 & 3	STEM POS. SW. (HELD CLOSED)	N\A	N\A	NOT ALLOWED		NORMALLY OPEN\ SUPPLIED W\ VALVE
4	1	LS–10	VAULT FLOODED SWITCH	ANCHOR SCIENTIFIC	ROTO–FLOAT MODEL S, NONC	NOT ALLOWED		NORMALLY CLOSED
5	1	P–1	SUMP PUMP	ZOELLER	GRAINGER CAT. #2P550	NOT ALLOWED		INSTALL ITEM 6 ON FACTORY SUPPLIED CORD
6	1	N\A	WEATHER PROOF OUTLET AND PLUG	DANIEL WOODHEAD	PLUG 14W47 RECPT. 60W47	NOT ALLOWED		
7	1	N\A	SERVICE AND METERING CABINET	MEYERS	MEUG16A – M100	ALLOWED		120 / 240 V, 100A
8	1	N\A	TELEMETRY CABINET	APX ENCLOSURES, INC.	TC512516 SS	ALLOWED		SEE SHT. 9 OF 15 (E–5)
9	1	N\A	POLE WITH ANTENNA	U.S. POLE	35–11	NOT ALLOWED		SEE SHT. 14 OF 15 (E–10)

CONDUIT SCHEDULE

SYMBOL	CONDUIT		WIRE	DESCRIPTION	LOCATION		REMARKS
NO.	QTY.	SIZE	QTY. SIZE	USE	FROM	TO	
1	1	3"	2#2&1#12 GND	POWER	SCE SOURCE	SERVICE PEDSTAL	120/240VAC SERVICE FEED
2							NOT USED
3							NOT USED
4	1	1"	5#12&2#12 GND	POWER	SERVICE PED.	TELEMTRY CABINET	CONTROL POWER
5	1	1"	2#12&1#12 GND	POWER	SERVICE PED.	PULL BOX J1	SUMP PUMP POWER
6	1	1"	2 TRANSDUCER CABLES	INSTRUMENT	TELEMETRY CAB.	PULL BOX J2	FOR PT–10, PT–20
7	1	1"	8#14&1#12 GND	CONTROL	TELEMETRY CAB.	PULL BOX J1	FOR ZS–10, ZS–20, ZS–3, LS–10
8	1	3/4"	2#12&1#12 GND	POWER	PULL BOX J1	SUMP PUMP OUTLET	DEDICATED CIRCUIT FROM SVS. PED
9	1	3/4"	2#14&1#14 GND	CONTROL	PULL BOX J1	LS–10	VAULT FLOODED SWITCH
10	1	3/4"	2#14&1#14 GND	CONTROL	PULL BOX J1	ZS–3	INTRUSION SWITCH
11	1	3/4"	2#14&1#14 GND	CONTROL	PULL BOX J1	ZS–10	VALVE POSITION SWITCH
12	1	3/4"	2#14&1#14 GND	CONTROL	PULL BOX J1	ZS–20	VALVE POSITION SWITCH
13	1	3/4"	TRANSDUCER CABLE	INSTRUMENT	PULL BOX J2	PT–10	UPSTREAM PRESS. TRANSDUCER
14	1	3/4"	TRANSDUCER CABLE	INSTRUMENT	PULL BOX J2	PT–20	DOWNSTREAM PRESS. TRANSDUCER
15	1	2"	COAX	ANTENNA CABLE	ANTENNA	TELEMETRY CABINET	LMR–400 COAX

PRESSURE REGULATING STATION (PRV)

City of Adelanto
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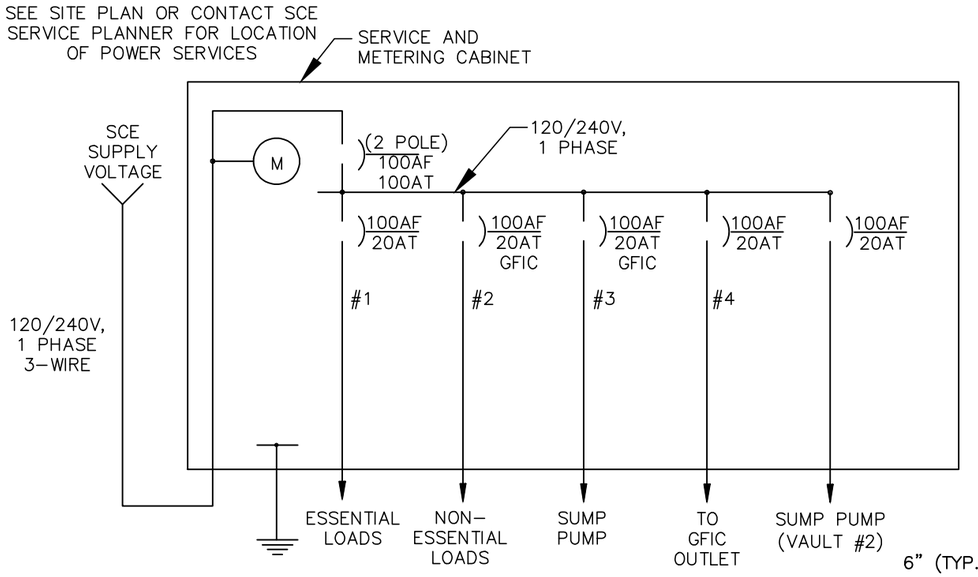
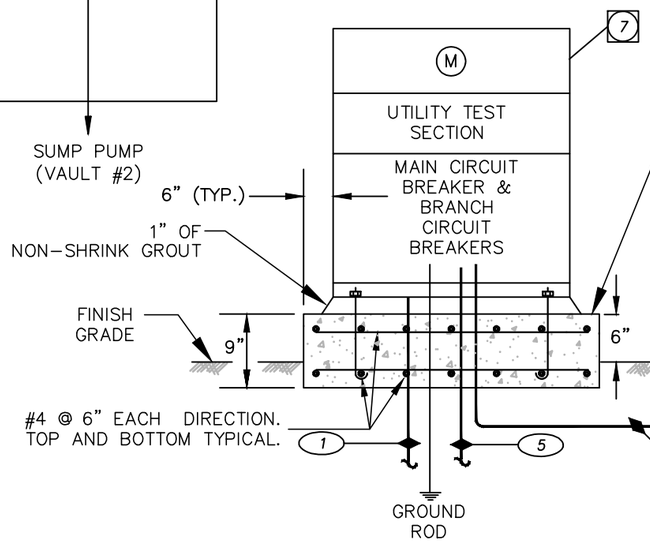
JULY 2023
REVISION

City of ADELANTO

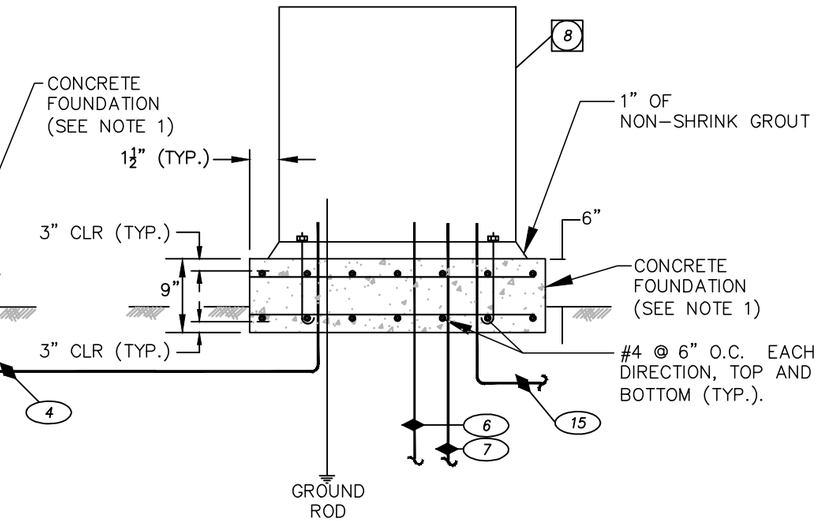
Adelanto
STD. DWG.
W-15 (E-3)



SINGLE LINE DIAGRAM



SERVICE AND METERING CABINET



TELEMETRY CABINET

CABINET ELEVATIONS

NOTES:

1. CONCRETE CABINET FOUNDATION (AT **ADELANTO** DISCRETION) MAY BE POURED AS A SINGLE PAD. IN THAT EVENT, CABINETS SHALL BE SPACED 9" APART MIN.
2. REFER TO CONDUIT AND ELECTRICAL COMPONENT SCHEDULES ON **ADELANTO** STD. DWG. W-15 (E-3), SHEET 7 OF 15.
3. CONDUIT PENETRATIONS THROUGH SLAB AND IN AND OUT OF CABINETS SHALL BE PVC LINED AND COATED OCAL PER **ADELANTO** STD. SPEC. SECTION 16110.

PRESSURE REGULATING STATION (PRV)

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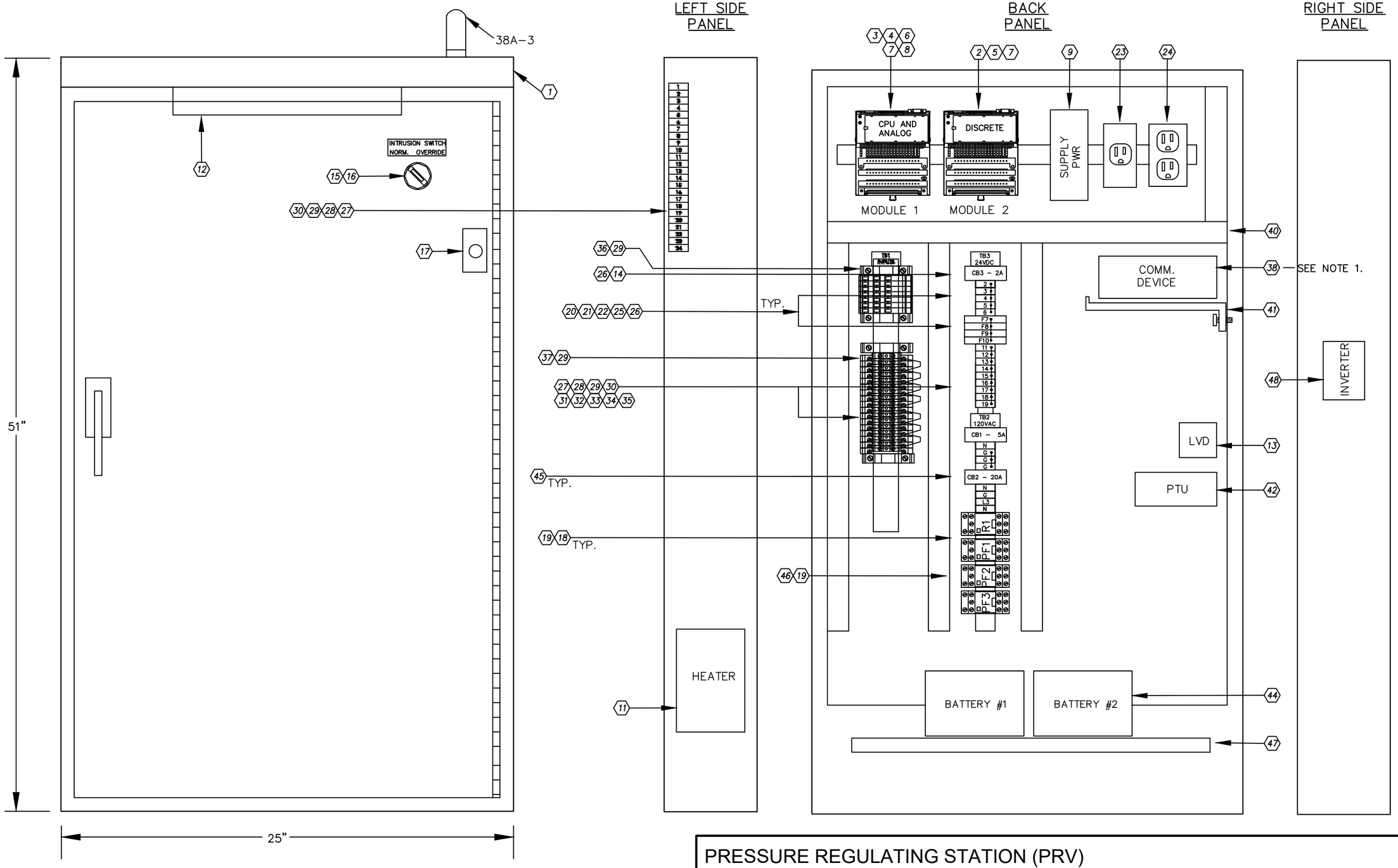
Adelanto
STD. DWG.
W-15 (E-4)



NOTE:

1. PROVIDE ITEM 38A OR 38B PER ADELANTO ELECTRICAL ENGINEERING REPRESENTATIVE OR PROJECT DRAWINGS/SPECIFICATIONS.

TELEMETRY CABINET DETAILS

PRESSURE REGULATING STATION (PRV)

City of Adelanto

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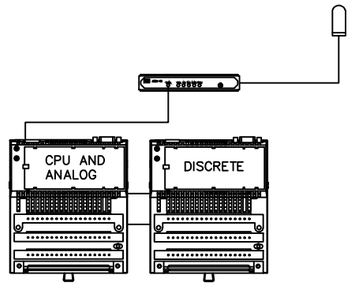
City of ADELANTO

Adelanto STD. DWG. W-15 (E-5)

MATERIAL LIST

ITEM	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
1	NEMA 4X Enclosure	APX Enclosures	TLCS-512516	1
	WITH BACK PANEL	APX Enclosures	TLCS-512516	1
	WITH SWING OUT PANEL	APX Enclosures	TLCS-512516	1
2	Modican Momentum PLC Discrete I/O Base	Square D	170ADM35010	1
3	Modican Momentum PLC Analog I/O Base	Square D	170AAI03000	1
4	Modican Momentum PLC M1 Ethernet Card	Square D	171CCC96030	1
5	Modican Momentum PLC Interbus Comm. Adapter	Square D	171INT11000	1
6	Modican Momentum PLC Cm Interbus Cable	Square D	170MCI00700	1
7	Modican Momentum PLC 800 I/O Module	Square D	170XTS00100	3
8	Modican Momentum PLC Mb Option Adapter	Square D	170JNN21032	1
9	Power Supply Quint 24V/2.5A 24VDC-28VDC	Phoenix	2938578	1
10	1000VA UPS	Powerware	PW115-1000	0
11	Electric Heater	Hoffman	DAH4001B	1
12	Light Fixture	Hoffman	A-LF16M18R	1
13	Circuit Breaker 1P 20Amp	Allen-Bradley	1492-GB1G200	1
14	Circuit Breaker 1P 2Amp	Allen-Bradley	1492-GB1G020	1
15	Key Switch	Cutter-Hammer	10250T15113	1
16	Contact Block for Item 15	Cutter-Hammer	10250T1H	1
17	Intrusion Switch	Cutter-Hammer	10316H2042	1
18	Relay	Idec	RR2PULAC120V	4
19	Relay Base	Idec	SR2P05	4
20	5mm x 20mm BMA Glass Fuse	Bussman	GMA-4A	1
21	5mm x 20mm BMA Glass Fuse	Bussman	GMA-200ma	1
22	5mm x 20mm BMA Glass Fuse	Bussman	GMA-350ma	2
23	Din Rail Mount Duplex Receptacle 15A	Leviton	16252-DIN	1
24	Din Rail Mount Single Receptacle 15A	Phoenix	5604253	1
25	Fuse Cartridge plug ST-SI-UK4	Phoenix	921011	5
26	Fuse Cartridge Terminal Block UK4-TG	Phoenix	2812018	11
27	Terminal Block UK5N (Grey)	Phoenix	3004362	100
28	Terminal End Cover	Phoenix	3003020	2
29	End Stop	Phoenix	800886	2
30	Din Rail	Phoenix	1201730	6 ft
31	Terminal Marker Strip ZB6 1-10	Phoenix	1051029-1-10	6
32	Terminal Marker Strip ZB6 11-20	Phoenix	1051029-11-20	6
33	Terminal Marker Strip ZB6 21-30	Phoenix	1051029-21-30	6
34	Terminal Marker Strip ZB6 31-40	Phoenix	1051029-31-40	6
35	Terminal Marker Strip ZB6 CMS SPL, PR. (See Attached Sheet)	Phoenix	1050499	1
36	DIKD 1.5	Phoenix		6
37	UKKB 5	Phoenix		21
38	Communication Device (3 Options)			
38a	A) Cell Modem Option			
38b	B) Wireless Ethernet Radio 900MHz Option			
39	Surge Protector	Polyphaser	IS-50NX-C2	0
40	Wire Duct	Tyton	1.5x4	6 ft
41	Aluminum Bracket For Modem	Custom	5.5x9	1
42	Power Transfer Unit	Altronix	AL300LUB	1
43	Low Voltage Detector	Tyco	CSL-38-30010	1
44	12VDC, 28AH Seal Lead-Acid Battery	Power Sonic	PS12880	2
45	Circuit Breaker 1P 5 Amp	Allen-Bradley	1492-CB1G050	1
46	Relay 2 Pole Octal	Idec	RR2PULDC24V	1
47	Battery Bracket & Top Hat Bracket 1/8" Alum. 5"x23"	N/A	Custom	1
48	250 WATT Inverter	Xantrex	X Power 300	1

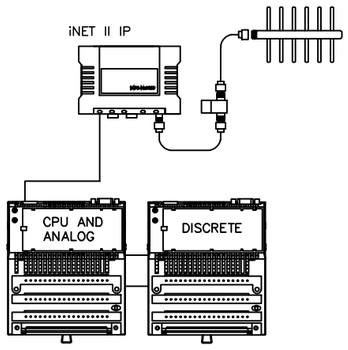
ITEM 38A



CELL MODEM OPTION

CELL MODEM OPTION COMPONENTS						
ITEM	QUANTITY			DESCRIPTION	MANUFACTURER	PART NO.	REMARKS
	TOTAL	LOCAL	REMOTE				
38A-1	1	1	0	CELL MODEM	SIERRA WIRELSS AIRLINK GX440 LTE	1101413	PLUG IN TO ITEM 23
38A-2	1	1	0	N-TYPE WIRELESS ADAPTER CABLE	LAIRD TECHNOLOGIES	COA5850 RG58A/U	N-TYPE MALE TO RP-5MA FEMALE, 5FT
38A-3	1	1	0	CELL ANTENNA	LAIRD TECHNOLOGIES	TRA6927M3PB-001	OMNI, Ph, PMT, BK, 698/1710 MHz,3Dbi

ITEM 38B



WIRELESS ETHERNET RADIO 900MHz OPTION

RADIO OPTION COMPONENTS						
ITEM	QUANTITY			DESCRIPTION	MANUFACTURER	PART NO.	REMARKS
	TOTAL	LOCAL	REMOTE				
38B-1	1	1	0	ETHERNET RADIO	MDS	iNET-II IP	
38B-2	1	0	1	ETHERNET RADIO	MDS	iNET-II AP	
38B-3	2	1	1	CAT5 CROSSOVER CABLE			
38B-4	1	1	0	ANTENNA CABLE, LMR-400, 50 FT	TIMES	A40B-30	
38B-5	2	1	1	ANTENNA CABLE PIGTAIL, CABLE TYPE FSJ1, TYPE N MALE TO TYPE TNC MALE, 3 FT	ANDREWS	CONTACT ANDREWS	
38B-6	2	1	1	SURGE PROTECTOR	POLYPHASER	IS-50NX-C2	
38B-7	2	1	1	DIN Rail Bracket for MDS iNET 900 Radio	MDS	03-4022A02	
38B-8	2	1	1	DIRECTIONAL ANTENNA	SCALA	TY-900	
38B-9	0	0	0	OMNI ANTENNA (panel top mounting)	ANTENNEX	TRA9023NP	OPTION SEE NOTE 3

NOTES:

1. PROVIDE 35 FOOT MAST PER ADELANTO STD. DWG. W-15 (E-10) SHEET 14 OF 15 UNLESS OTHERWISE DIRECTED BY ADELANTO.
2. PROVIDE SECOND SET OF COMMUNICATIONS EQUIPMENT FOR INSTALLATION BY OTHERS AT REMOTE SITE. REFER TO PROJECT DOCUMENTS FOR INSTALLATION REQUIREMENTS AT REMOTE SITE.
3. ALTERNATIVE ANTENNA, USE IF APPROVED BY ADELANTO FOR A SPECIFIC SITE.

PRESSURE REGULATING STATION (PRV)

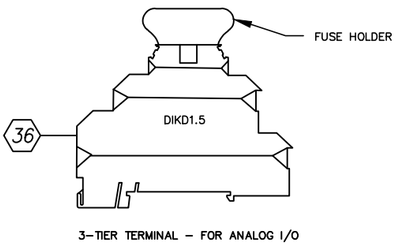
City of Adelanto
APPROVED BY:

Saba Engineer 12/7/23
DATE

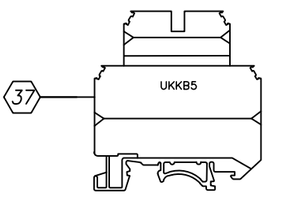
JULY 2023
REVISION

City of ADELANTO

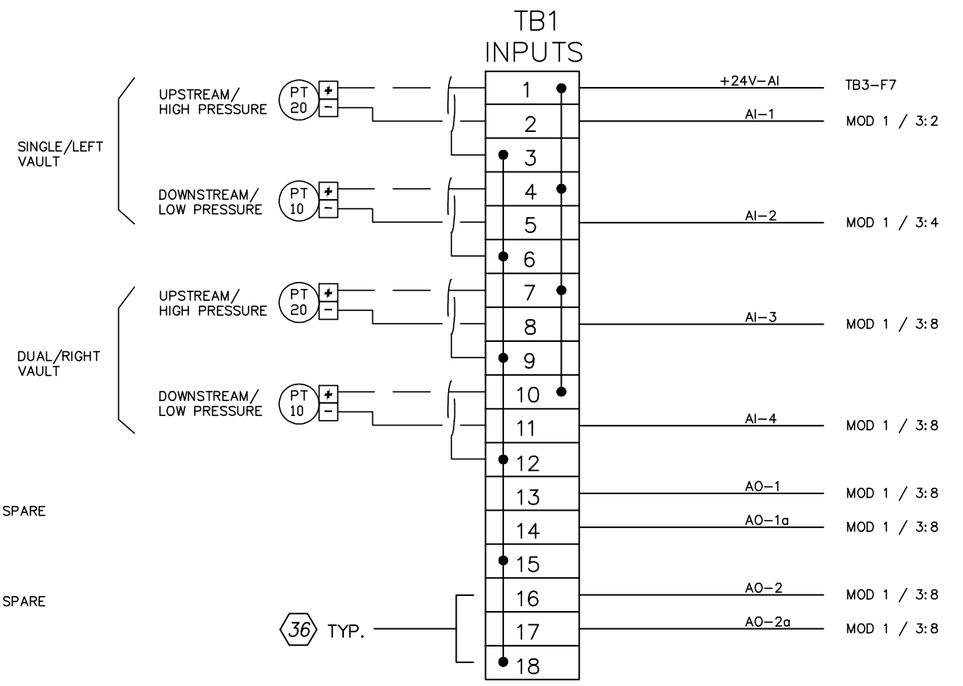
Adelanto STD. DWG. W-15 (E-6)



3-TIER TERMINAL - FOR ANALOG I/O

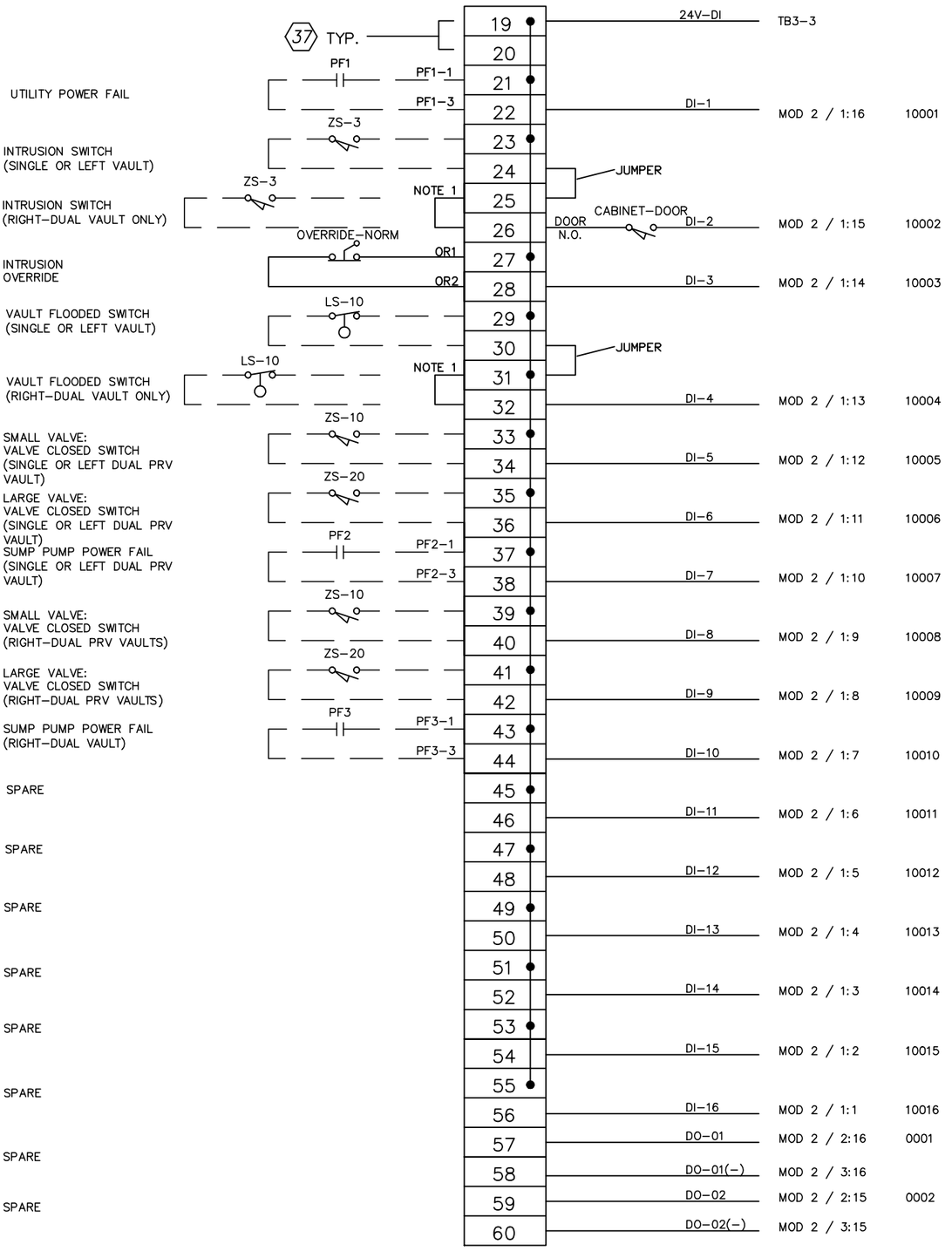


2-TIER TERMINAL - FOR DISCRETE I/O



NOTE:

1. REMOVE JUMPER FOR DUAL VAULT FACILITIES.



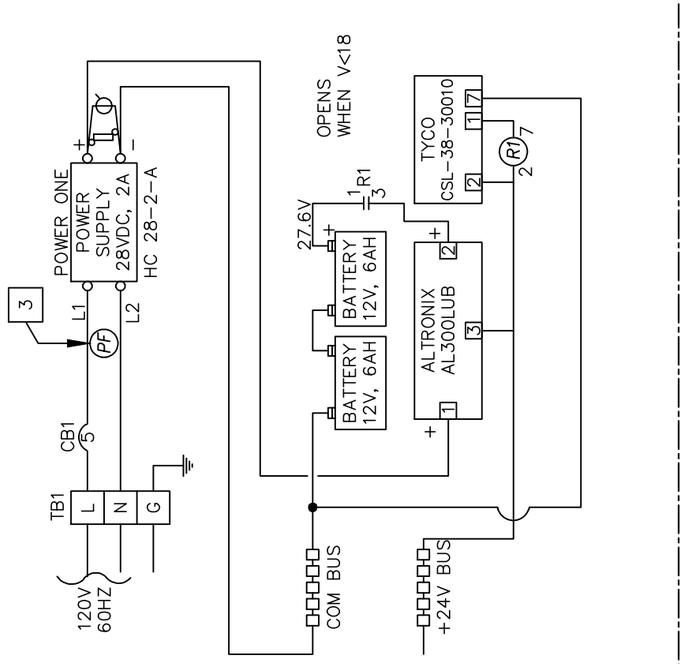
PRESSURE REGULATING STATION (PRV)

City of Adelanto
APPROVED BY:
Saber Engineer
12/7/23
DATE

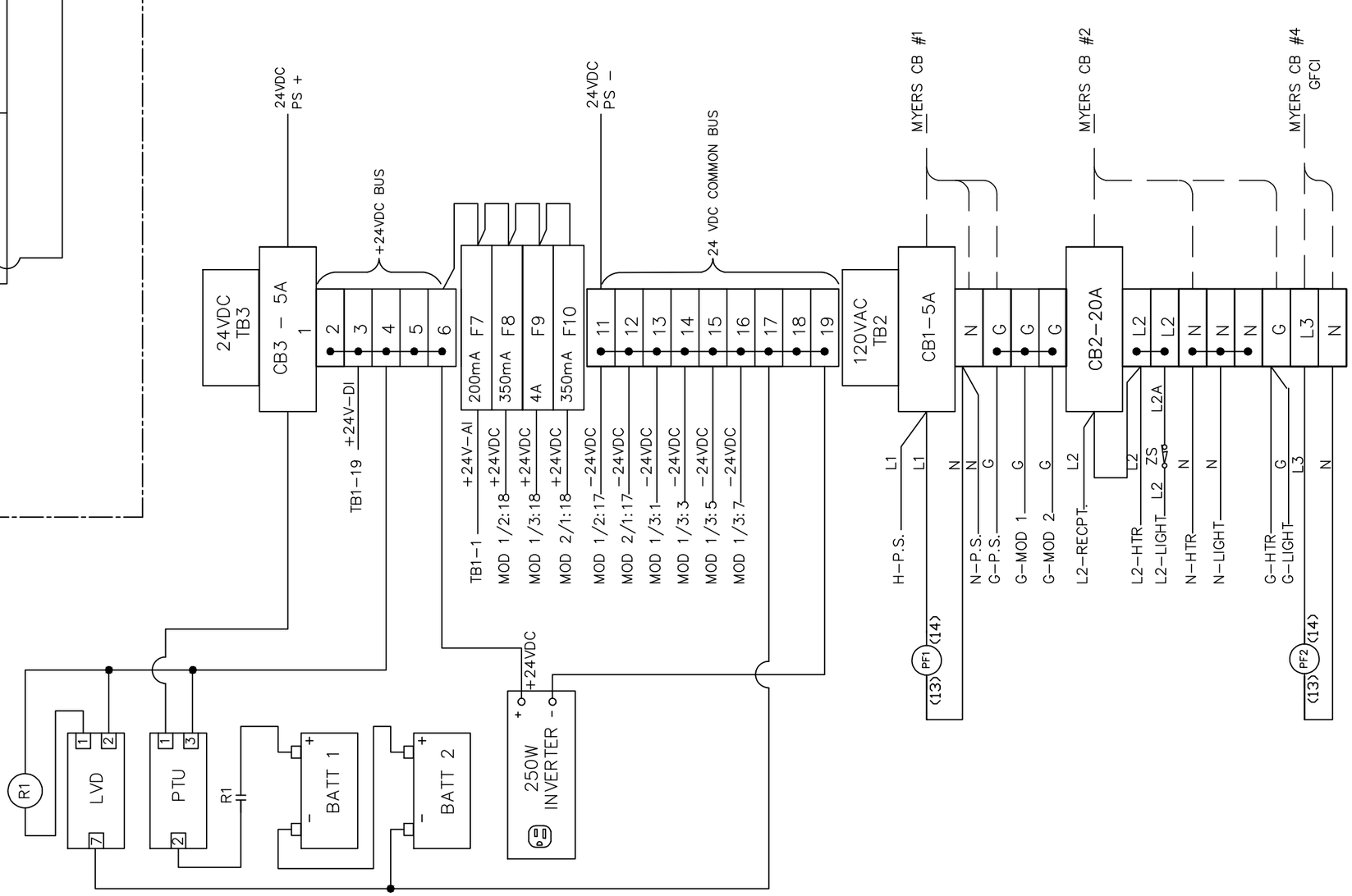
JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-15 (E-7)



24V DC
POWER WIRING



NOTE:

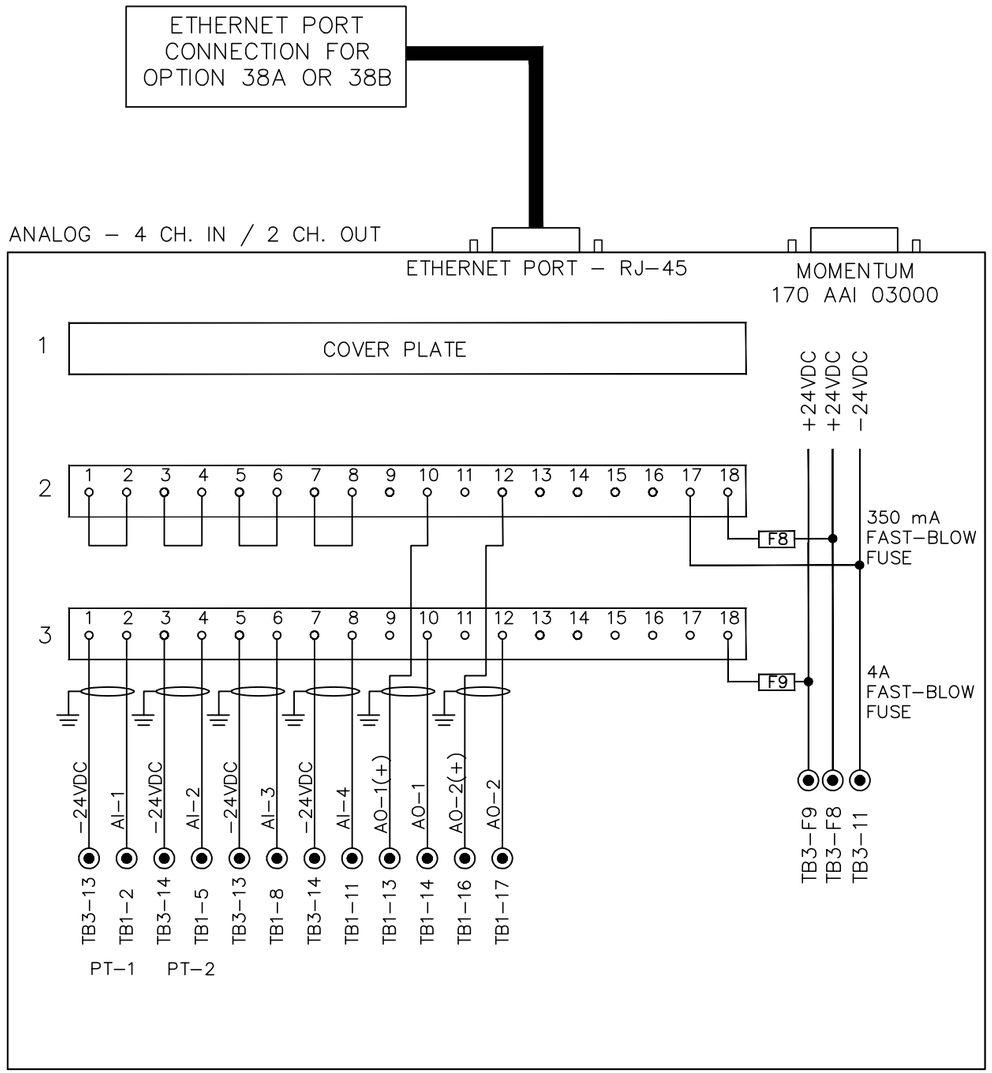
1. REMOVE JUMPER FOR DUAL VAULT FACILITIES.

PRESSURE REGULATING STATION (PRV)

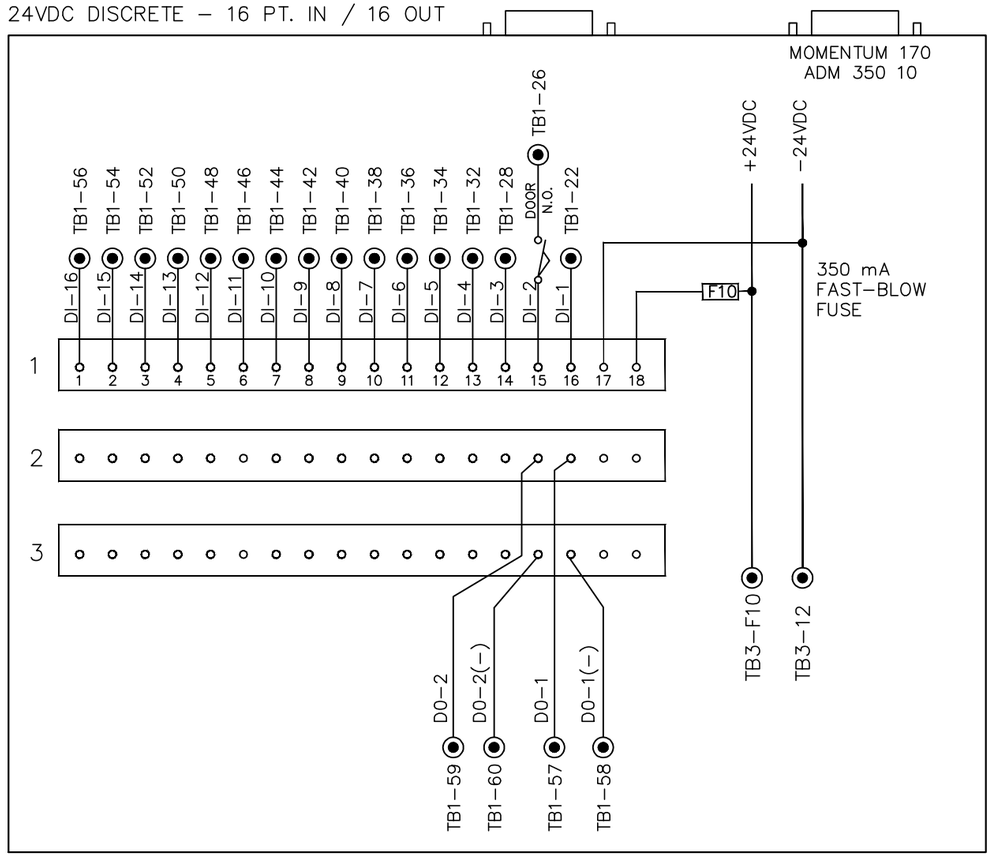
City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
DATE

JULY 2023
REVISION

Adelanto
STD. DWG.
W-15 (E-8)



MODULE 1



MODULE 2

PRESSURE REGULATING VALVE

City of Adelanto

APPROVED BY:

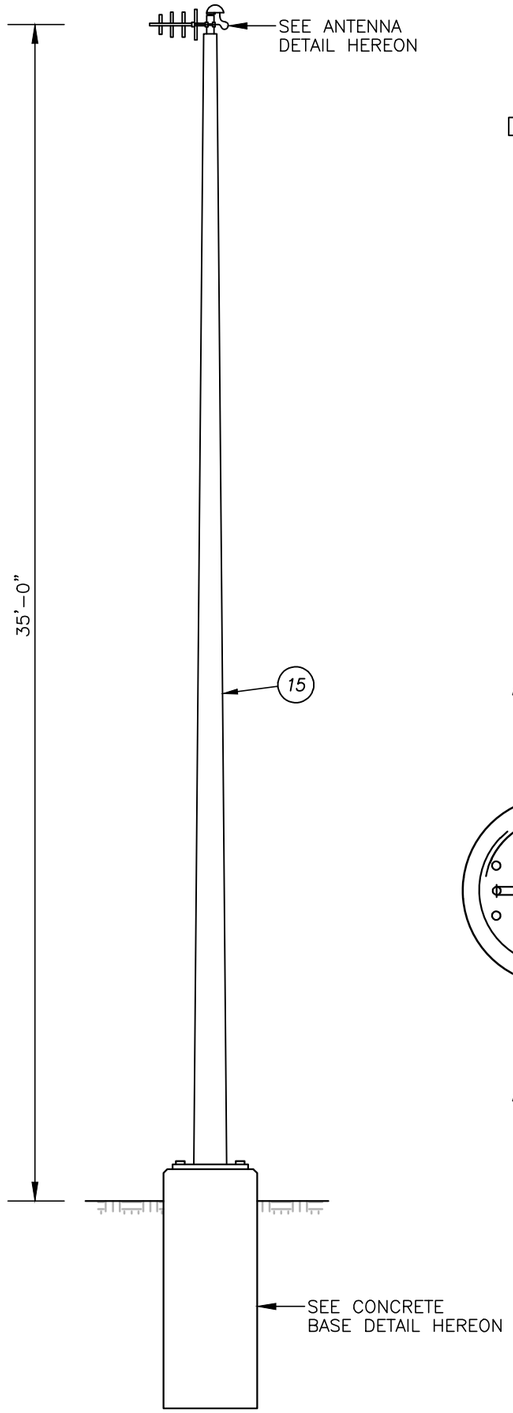
Sala Engineer 12/7/23

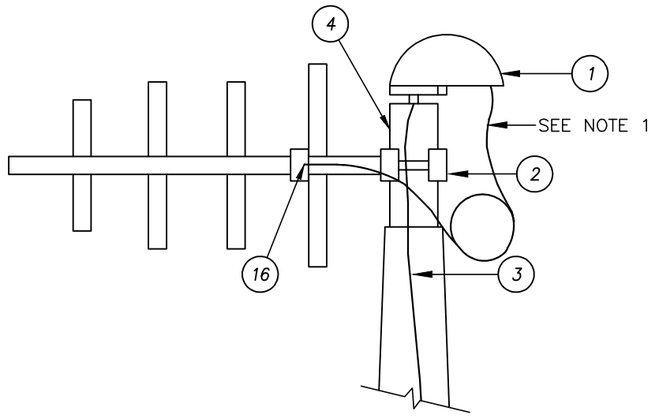
DATE

JULY 2023

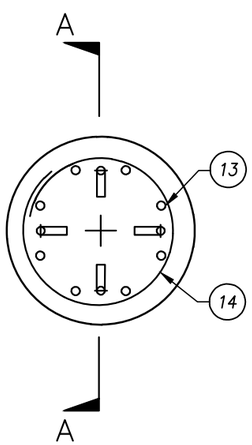
REVISION

Adelanto STD. DWG. W-15 (E-9)

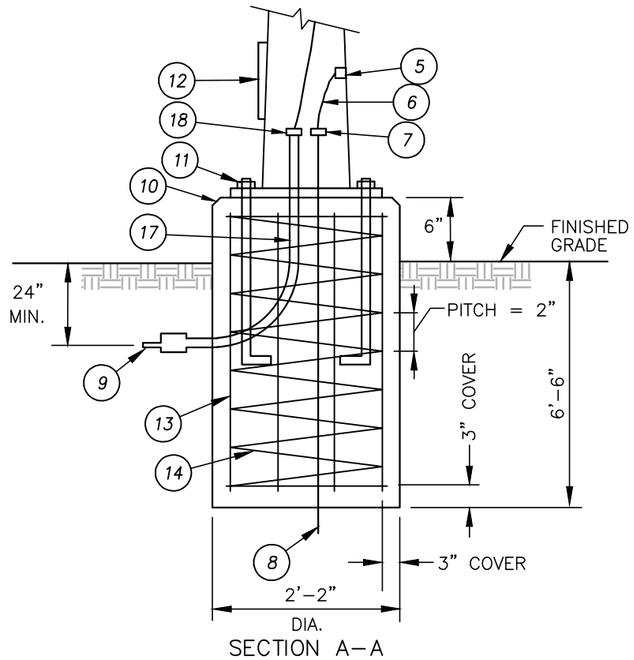




ANTENNA DETAIL



PLAN



SECTION A-A

CONCRETE BASE DETAIL

ITEM	MATERIALS
1	2" WEATHER HEAD.
2	ANTENNA WITH MOUNTING HARDWARE.
3	ANTENNA COAXIAL CABLE. PROVIDE CABLE GRIP TO SUPPORT CABLE WEIGHT.
4	2" X 12" OR 18" TENYON.
5	GROUND LUG.
6	#6 BOND WIRE.
7	ACORN CONNECTOR.
8	COPPER GROUND ROD, 10' X 5/8" DIAMETER.
9	CONDUIT TO TELEMETRY RADIO.
10	1/4" CHAMFER AT TOP EDGE OF CONCRETE BASE.
11	(4) 1" X 36" X 4" ANCHOR BOLTS WITH DOUBLE LOCKNUTS.
12	HANDHOLE COVER.
13	(8) #7 BARS.
14	3/8" SPIRALS WITH 20" DIA.
15	ANTENNA MAST. HEIGHT SHALL BE 35'.
16	ANTENNA CABLE CONNECTIONS. PROVIDE WEATHERPROOF SEAL BETWEEN CABLE AND ANTENNA CONNECTION.
17	2" OCAL RISER.
18	2" GROUND BUSHING.

NOTES:

1. PROVIDE WEATHER HEAD, DRIP LOOP, AND VAPOR-WRAP FOR EXPOSED RF CONNECTORS.
2. THIS DETAIL IS FOR INFORMATION ONLY AND NOT FOR CONSTRUCTION. STRUCTURAL DESIGN MUST BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD FOR EACH PROJECT.
3. ALLOWABLE SOIL BEARING CAPACITY ASSUMED TO BE 1,500 PSF.
4. ASSUMED GRADE 60 REBARS, ALLOWABLE STRESS = 24,000 PSI.
5. ASSUMED f'c = 3,000 PSI AND fy = 40,000 PSI.

POLE MOUNTED ANTENNA AND FOUNDATION

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-15 (E-10)

ITEM	D/I	STATUS	DESCRIPTION	PRE-TEST	TEST		RETEST	
					PASS	FAIL	PASS	FAIL
1	DI-1	NO	TELEMETRY PANEL POWER FAIL (PF-1)					
2	DI-2	NO	TELEMETRY PANEL INTRUSION SWITCH					
3-L	DI-2	NO	VAULT INTRUSION SWITCH					
4-R	DI-2	NO	VAULT INTRUSION SWITCH					
5	DI-3	NC	INTRUSION OVERRIDE SWITCH					
6-L	DI-4	NC	VAULT FLOODED SWITCH					
7-R	DI-4	NC	VAULT FLOODED SWITCH					
8-L	DI-5	NO	SMALL VALVE CLOSED SWITCH					
9-L	DI-6	NO	LARGE VALVE CLOSED SWITCH					
10-L	DI-7	NO	SUMP PUMP POWER FAIL (PF-2)					
11-R	DI-8	NO	SMALL VALVE CLOSED SWITCH					
12-R	DI-9	NO	LARGE VALVE CLOSED SWITCH					
13-R	DI-10	NO	SUMP PUMP POWER FAIL (PF-3)					
14U-L	AI-1	4-20m A	PRESSURE TRANSMITTER 0-_____psi PRESSURE _____psi MILLIAMP _____mA, ACTUAL _____mA					
15D-L	AI-2	4-20m A	PRESSURE TRANSMITTER 0-_____psi PRESSURE _____psi MILLIAMP _____mA, ACTUAL _____mA					
16U-R	AI-3	4-20m A	PRESSURE TRANSMITTER 0-_____psi PRESSURE _____psi MILLIAMP _____mA, ACTUAL _____mA					
17D-R	AI-4	4-20m A	PRESSURE TRANSMITTER 0-_____psi PRESSURE _____psi MILLIAMP _____mA, ACTUAL _____mA					
18		<25ohms	METER PANEL GROUND ROD RESISTANCE (MUST BE <25ohms)					
19		<25ohms	TELEMETRY PANEL GROUND ROD RESISTANCE (MUST BE <25ohms)					
20			TRIP TEST GROUND FAULT RECEPTACLES					
21			PUMP WATER WITH THE SUMP PUMP CHECK FOR PROPER OPERATION					
22		>30min.	VERIFY BACK UP POWER > 30 min. TYPE: TYPE: UPS _____ BATTERY _____					

COMMENTS: _____

NOTES: _____

1. L=LEFT VAULT, R=RIGHT VAULT
2. IF ONLY ONE VAULT USE THE I/O FOR THE LEFT VAULT
3. IF ONLY ONE VALVE USE THE I/O FOR THE LARGE VALVE
4. CONTRACTOR SHALL PERFORM THE PRE-TEST BEFORE THE ADELANTO START-UP TEST

CONTRACTOR RESPONSIBLE FOR WORK: _____

CONTRACTOR REPRESENTATIVE: _____
NAME DATE

ADELANTO REPRESENTATIVE: _____
NAME DATE

PROJECT NAME: _____

PROJECT LOCATION: _____

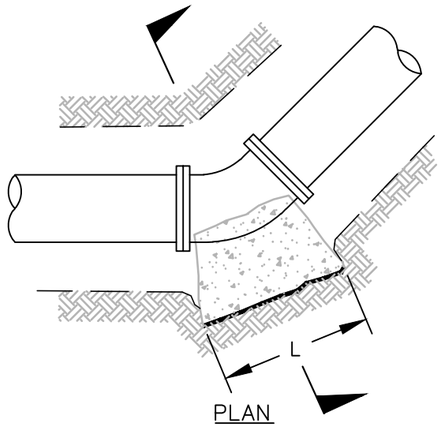
ADELANTO PROJECT/TRACT NUMBER:

PRESSURE REGULATING STATION - ELECTRICAL TEST CERTIFICATION

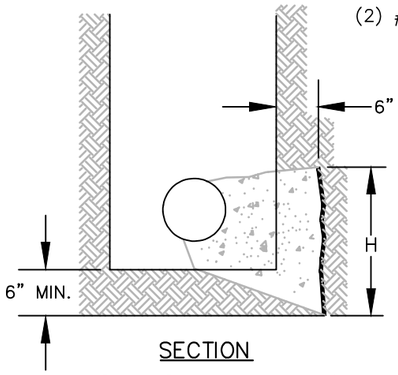
City of Adelanto
APPROVED BY:
Sala Engineer 12/7/23
DATE

JULY 2023
REVISION

Adelanto
STD. DWG.
W-15 (E-11)

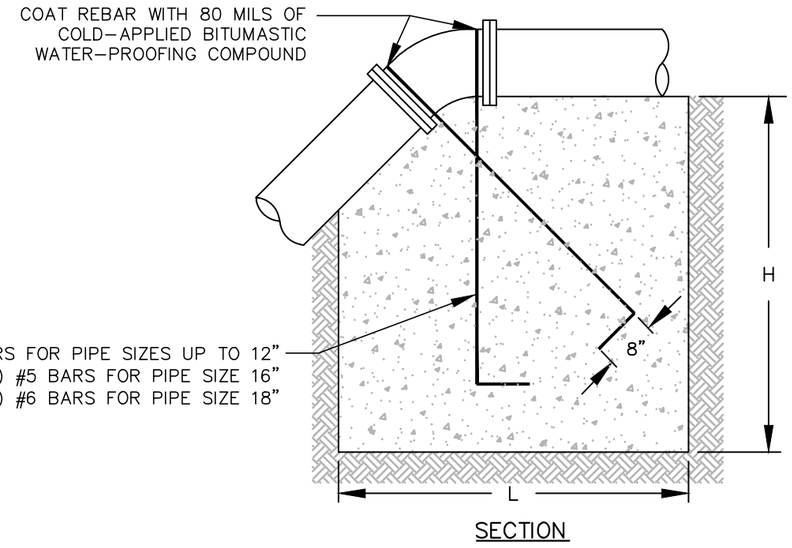


PLAN



SECTION

HORIZONTAL BEND

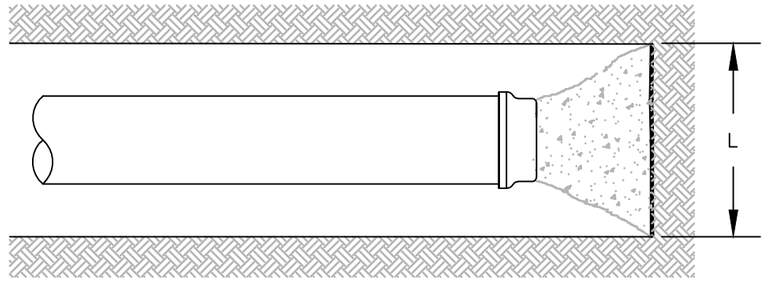


SECTION

VERTICAL BEND ANCHOR

VERTICAL BEND ANCHOR BLOCK *						
PIPE SIZE (IN)	22 1/2° BEND L, H, W (IN)	VOLUME (YD^3)	THRUST (LBS)	45° BEND L, H, W (IN)	VOLUME (YD^3)	THRUST (LBS)
4	26	0.4	1,104	32	0.7	2,165
6	34	0.8	2,483	42	1.6	4,871
8	41	1.5	4,414	51	2.8	8,659
10	47	2.2	6,897	59	4.4	13,529
12	53	3.2	9,932	67	6.4	19,482

* FOR DUCTILE IRON PIPE, ALL VERTICAL BENDS SHALL BE MECHANICALLY RESTRAINED. SEE NOTE 14 ON SHEET 3 OF 3.



END OF LINE

HORIZONTAL BEND THRUST BLOCK																				
PIPE SIZE (IN)	11 ¼° BEND				22 1/2° BEND				45° BEND				90° BEND				END OF LINE			
	L (IN)	H (IN)	AREA (IN^2)	THRUST (LBS)	L (IN)	H (IN)	AREA (IN^2)	THRUST (LBS)	L (IN)	H (IN)	AREA (IN^2)	THRUST (LBS)	L (IN)	H (IN)	AREA (IN^2)	THRUST (LBS)	L (IN)	H (IN)	AREA (IN^2)	THRUST (LBS)
4	12	6	72	554	16	8	128	1,104	23	12	276	2,165	31	16	496	4,000	26	13	338	2,828
6	17	9	153	1,248	24	12	288	2,483	34	17	578	4,871	46	23	1,058	9,000	39	20	780	6,364
8	23	12	276	2,218	32	16	512	4,414	45	23	1,035	8,659	61	31	1,891	15,999	52	26	1,352	11,313
10	29	15	435	3,465	40	20	800	6,897	56	28	1,568	13,529	76	38	2,888	24,999	64	32	2,048	17,677
12	34	17	578	4,990	48	24	1,152	9,932	67	34	2,278	19,482	92	46	4,232	35,999	77	39	3,003	25,455

NOTE:

1. SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.

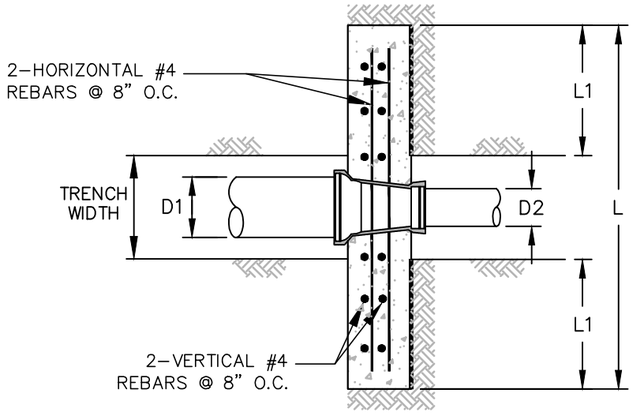
THRUST BLOCK

City of Adelanto
APPROVED BY:
Sala Engineer 12/7/23
DATE

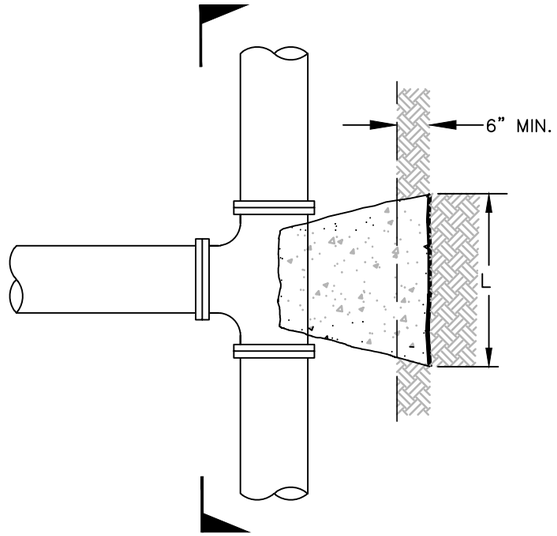
JULY 2023
REVISION

City of ADELANTO

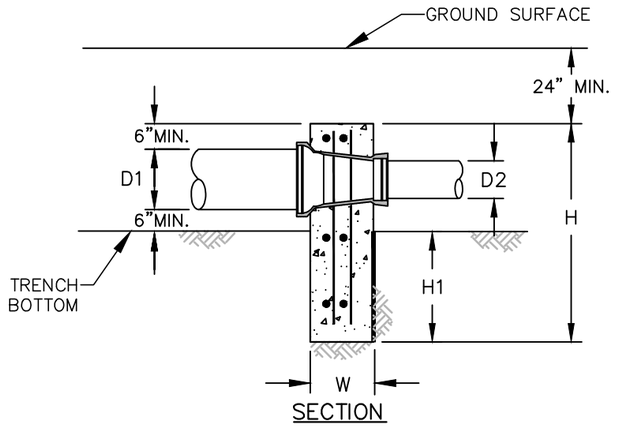
Adelanto
STD. DWG.
W-16



PLAN

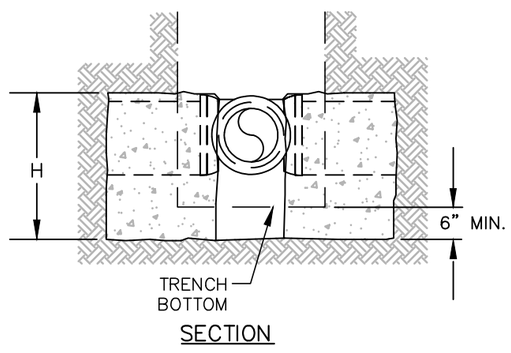


PLAN



SECTION

REDUCER



SECTION

TEE

PIPE SIZE (IN)	TEE			
	L (IN)	H (IN)	AREA (IN^2)	THRUST (LBS)
4	26	13	338	2,828
6	39	20	780	6,364
8	52	26	1,352	11,313
10	64	32	2,048	17,677
12	77	39	3,003	25,455

D1xD2 (IN)	REDUCER								
	TRENCH WIDTH* (IN)	L (IN)	H (IN)	H1 (IN)	L1 (IN)	W (IN)	TOTAL AREA INCLD. TRENCH (IN^2)	MIN. BEARING AREA** (IN^2)	THRUST (LBS)
12X10	30	52	34	8	11	12	1,768	954	7,778
12X8	30	62	41	15	16	12	2,542	1,762	14,142
12X6	30	68	45	19	19	12	3,060	2,280	19,091
12X4	30	72	48	22	21	10	3,456	2,676	22,627
10X8	30	48	32	8	9	10	1,536	816	6,364
10X6	30	56	37	13	13	10	2,072	1,352	11,313
10X4	30	62	41	17	16	10	2,542	1,822	14,849
8X6	24	42	28	6	9	10	1,176	648	4,950
8X4	24	48	32	10	12	8	1,536	1,008	8,485
6X4	24	38	25	5	7	8	950	470	3,535

* IF A DIFFERENT TRENCH WIDTH IS USED, THE THRUST BLOCK SHALL MAINTAIN THE MIN. BEARING AREA SHOWN.
** BEARING AREA REQUIRED ON UNDISTURBED SOIL OUTSIDE OF TRENCH.

NOTE:

1. SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.

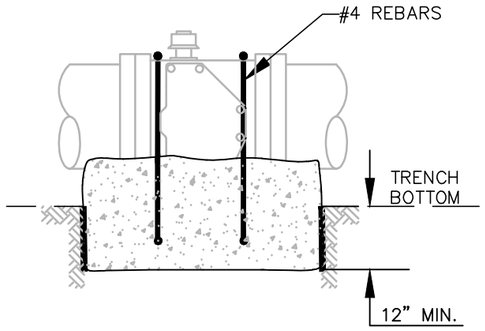
THRUST BLOCK

City of Adelanto
APPROVED BY:
Sabo Engineer 12/7/23
DATE

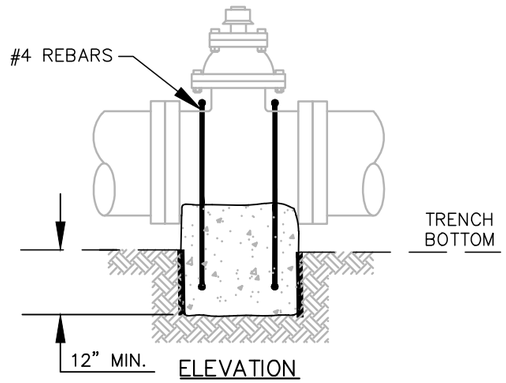
JULY 2023
REVISION

City of ADELANTO

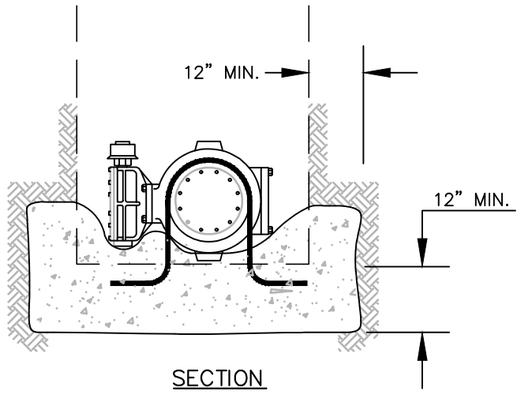
Adelanto
STD. DWG.
W-16



ELEVATION



ELEVATION



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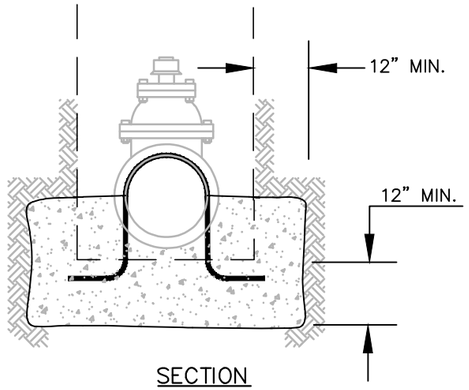
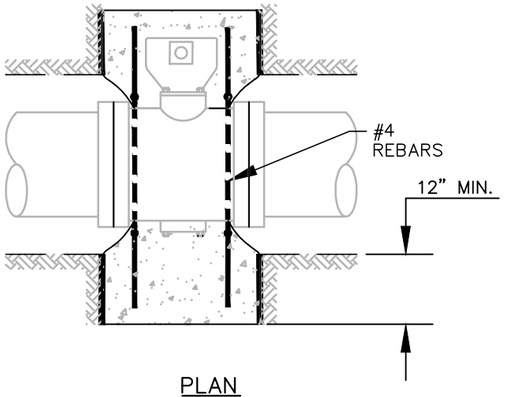
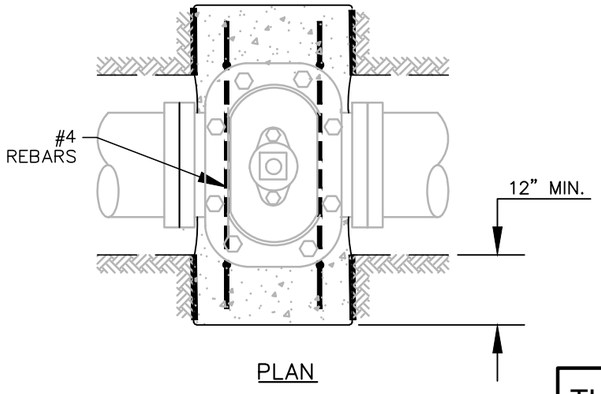


SECTION



PLAN

BUTTERFLY VALVES



PLAN

GATE VALVES

NOTES:

1. THRUST BLOCK BEARING AREA BASED ON ALLOWABLE SOIL BEARING VALUE OF 1500 PSF PRESSURE, 225 PSI LINE PRESSURE WITH 3'–0" COVER MIN., AND A MIN. SAFETY FACTOR OF 1.2.
   FOR BEARING = 1000 PSF, 1.5 X AREA SHOWN
   FOR BEARING = 500 PSF, 3.0 X AREA SHOWN
2. ALL THRUST BLOCKS SHALL BE PORTLAND CEMENT CONCRETE MIX 560–C–3250 AND PLACED AGAINST UNDISTURBED SOIL.
3. THRUST BLOCKS ON REDUCERS SHALL BE KEYED INTO THE TRENCH BOTTOM AS SHOWN.
4. CONCRETE SHALL NOT EXTEND ONTO FLANGE OR ADJOINING PIPE.
5. DO NOT COVER FITTING BOLTS WITH CONCRETE.
6. WHEN VALVES ARE FLANGED TO FITTINGS, AVOID PLACING CONCRETE ON ANY PART OF THE VALVE BONNET OR VALVE OPERATOR.
7. COAT REBAR WITH 80 MILS OF COLD–APPLIED BITUMASTIC WATER–PROOFING COMPOUND. WRAP EXTERIOR OF VALVE, ACTUATOR AND REBAR WITH 8 MIL POLYETHYLENE SHEETING AND TAPE PER **ADELANTO** SPEC. SECTION 15100.
8. MIN. CONCRETE COVER OVER REBAR SHALL BE 3".
9. NO CONCRETE SHALL BE POURED ON VALVE OR PIPE JOINT.
10. YIELD STRENGTH OF STEEL BARS IS ASSUMED TO BE 36 KSI.
11. FOR PIPELINES LARGER THAN 12" IN DIA., THE ENGINEER SHALL CALCULATE THRUST BLOCK SIZE BASED ON PROJECT SPECIFIC SOIL CONDITIONS AND SHALL SUBMIT THE CALCULATIONS TO **ADELANTO** FOR APPROVAL.
12. MECHANICAL THRUST RESTRAINTS SHALL BE PROVIDED IN LIEU OF THRUST OR ANCHOR BLOCKS IF THE BEARING FACE OF THE THRUST OR ANCHOR BLOCK MAY BE DISTURBED AT ANY POINT AFTER CONSTRUCTION OR DURING CONSTRUCTION OF OTHER FACILITIES.
13. WHERE MECHANICAL THRUST RESTRAINTS ARE PROVIDED, THE ENGINEER SHALL CALCULATE THE REQUIRED LENGTH OF THRUST RESTRAINT ALONG THE PIPELINE ALIGNMENT AND SHALL SUBMIT THE CALCULATIONS TO **ADELANTO** FOR APPROVAL.
14. DUCTILE IRON PIPE JOINT FITTINGS SHALL BE MECHANICALLY RESTRAINED AT ALL VERTICAL BENDS. VERTICAL BEND ANCHOR BLOCKS SHALL ONLY BE PROVIDED WHERE APPROVED BY **ADELANTO**.
15. CONCRETE SHALL BE MIXED THROUGH A READY–MIX OR A BATCH TYPE MIXER. REFER TO **ADELANTO** SPEC. SECTION 03300 FOR ADDITIONAL REQUIREMENTS.

THRUST BLOCK

City of Adelanto

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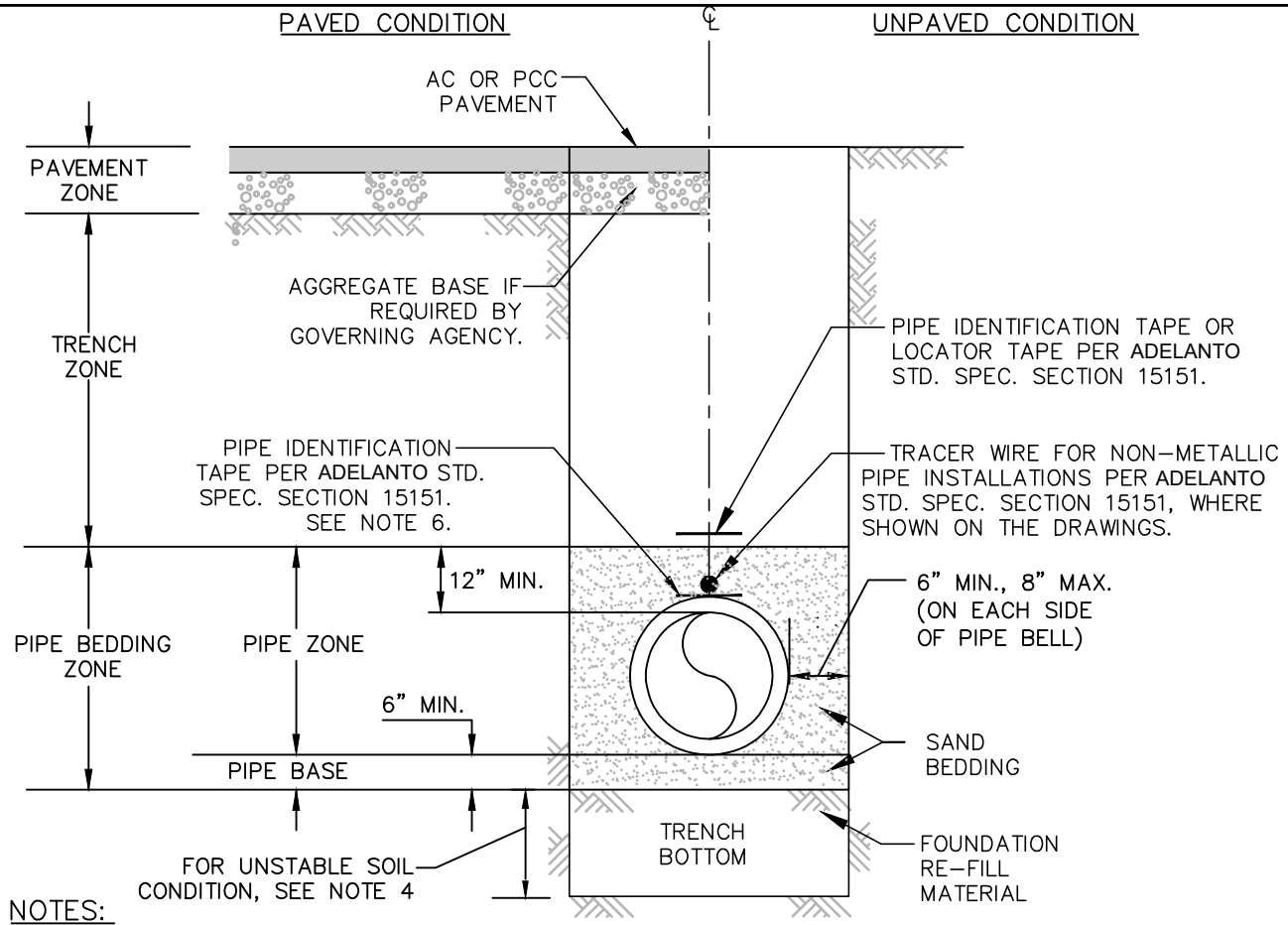

NOTES:

1. ALL WORK SHALL BE PER ADELANTO STD. SPEC. SECTION 02223.
2. PIPE BASE SHALL BE A MIN. OF 6" IN DEPTH. PIPE BEDDING MATERIAL SHALL BE PER ADELANTO STD. SPEC. SECTION 02223 AND SHALL INCLUDE BOTH PIPE BASE AND PIPE BEDDING ZONE.
3. CONTRACTOR SHALL PROVIDE HAND EXCAVATED "BELL HOLE" FOR EACH PIPE JOINT SO THAT THE WEIGHT OF PIPE DOES NOT BEAR ON THE BELL. CONTRACTOR SHALL RE-FILL AND HAND-TAMP EACH "BELL HOLE" PRIOR TO COMPLETING THE PLACEMENT OF PIPE BEDDING.
4. IF UNSTABLE SOIL IS ENCOUNTERED, THE DISTRICT REPRESENTATIVE SHALL DETERMINE OVEREXCAVATION DEPTH AND FOUNDATION RE-FILL MATERIAL PER ADELANTO STD. SPEC. SECTION 02223.
5. WHERE CONTRACTOR FAILS TO MAINTAIN PROPER TRENCH WIDTH LIMITS, SPECIAL BACKFILL SUCH AS ONE-SACK SLURRY AND BEDDING SHALL BE USED AS DETERMINED IN THE FIELD BY THE ADELANTO REPRESENTATIVE.
6. PIPE IDENTIFICATION TAPE SHALL BE INSTALLED PER ADELANTO STD. SPEC. SECTION 15151. TAPE SHALL BE FASTENED TO THE PIPE WITH 2" WIDE 10 MIL PIPE WRAP TAPE AT 5' INTERVALS. PIPE WRAP TAPE SHALL BE WRAPPED AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE.
7. THE MIN. DEPTH OF COVER FROM FINISH GRADE TO THE TOP OF THE PIPELINE SHALL BE AS FOLLOWS UNLESS OTHERWISE APPROVED BY ADELANTO.

   DOMESTIC WATER PIPELINE (1" TO 10" DIA.) = 42"
   DOMESTIC WATER PIPELINE (> 10" DIA.) = 48"
   RECYCLED WATER PIPELINE (ALL DIA.) = 60"

WATER TRENCH

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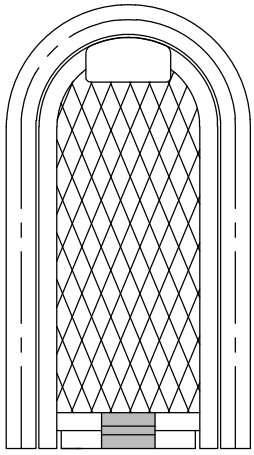
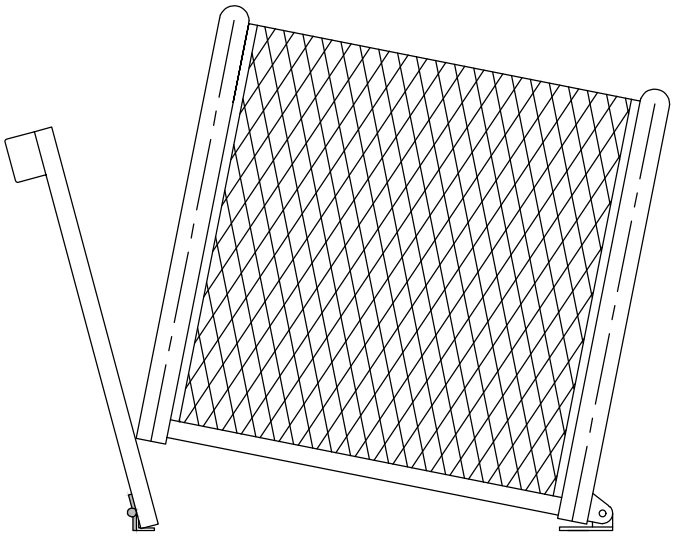
SHEET 1 OF 1



FRONT VIEW



SIDE VIEW

INTERNAL DIMENSIONS 10" W X 24" H X 30" L

NOTES:

1. ENCLOSURE TO BE ANCHORED ON A MINIMUM OF 28" X 46" X 6" THICK CONCRETE PAD. USE 560-C-325 CONCRETE.
2. ENCLOSURE: GUARDSHACK MODEL HGS-2.
3. ALL CAGES IN GREENERY MUST BE POWDER COATED - FOREST GREEN.
4. ALL CAGES IN DESERT LANDSCAPE MUST BE POWDER COATED - WOODLANDS TAN.
5. THE USE OF ANY OTHER CAGE MUST BE APPROVED BY ADELANTO PRIOR TO INSTALLATION (CONTACT ADELANTO ENGINEER).
6. ANY PADLOCK MUST BE ADELANTO APPROVED PRIOR TO INSTALLATION.

BACKFLOW PROTECTION ENCLOSURE

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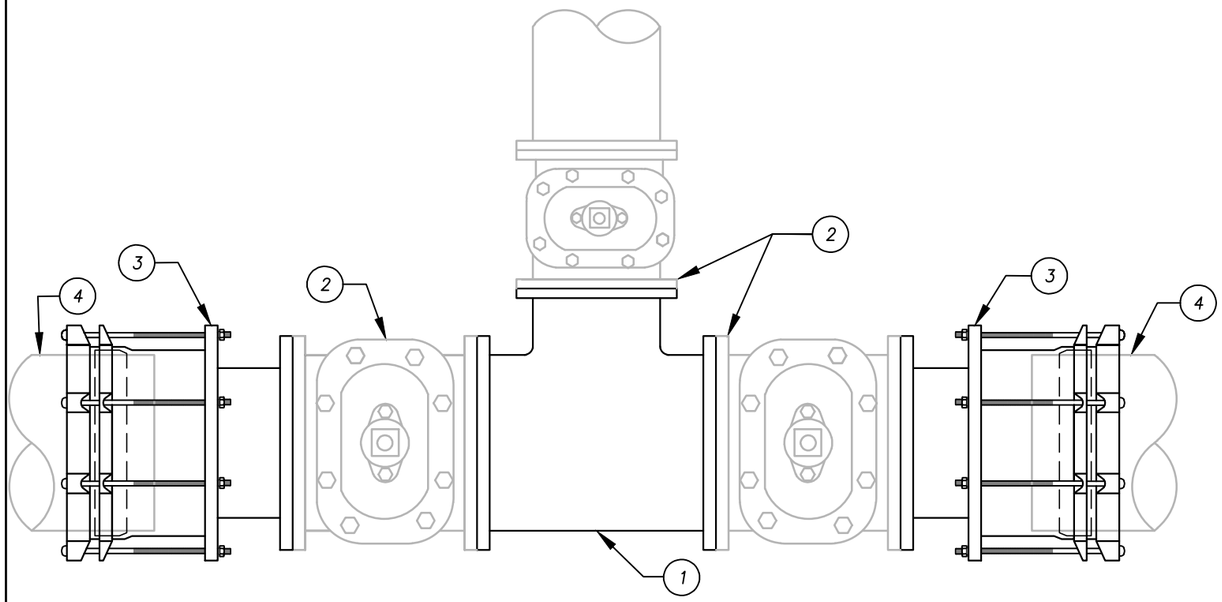
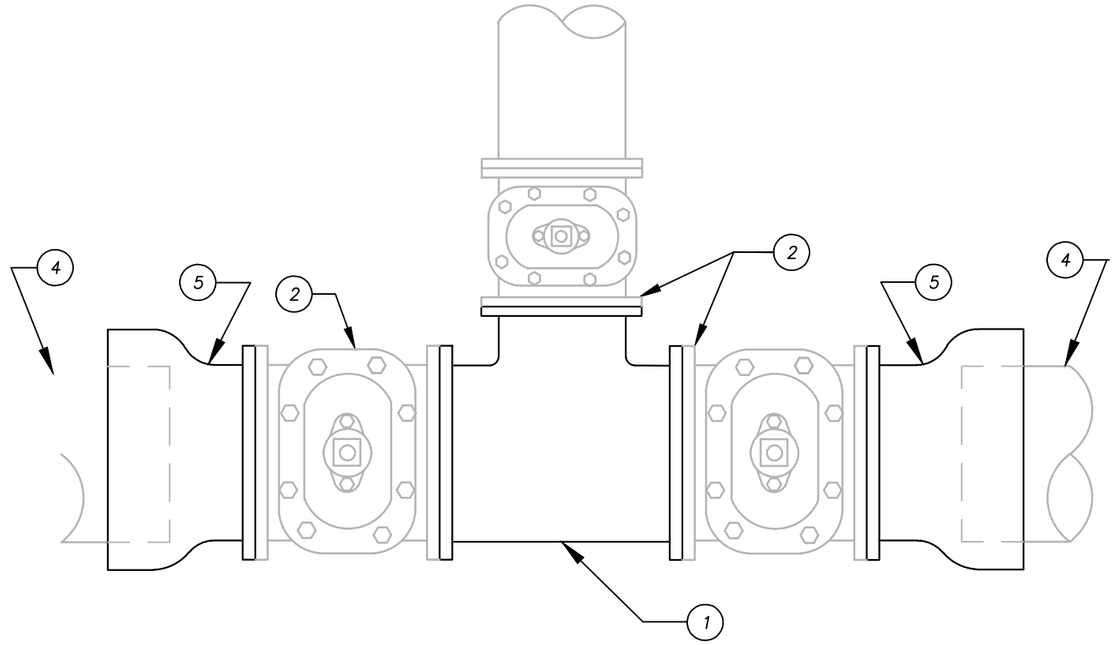
SHEET 1 OF 1



OPTION 1



OPTION 2

ITEM	MATERIALS
1	D.I. TEE, F.E. X F.E.
2	RW GATE VALVE OR BUTTERFLY VALVE F.E. X F.E., WHERE REQUIRED ON PLANS.
3	D.I. FLANGED COUPLING ADAPTER WITH 316 STAINLESS STEEL NUTS, BOLTS AND WASHERS.
4	EXISTING PVC PIPE.
5	D.I. ADAPTER, F.E. X P.O.

NOTE:

1. WRAP ALL METALLIC PARTS WITH 8 MIL POLYETHYLENE ENCASEMENT PER ADELANTO STD. SPEC. SECTION 15056.

CUT-IN TEE FOR PVC

City of Adelanto

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Saba Engineer 12/7/23

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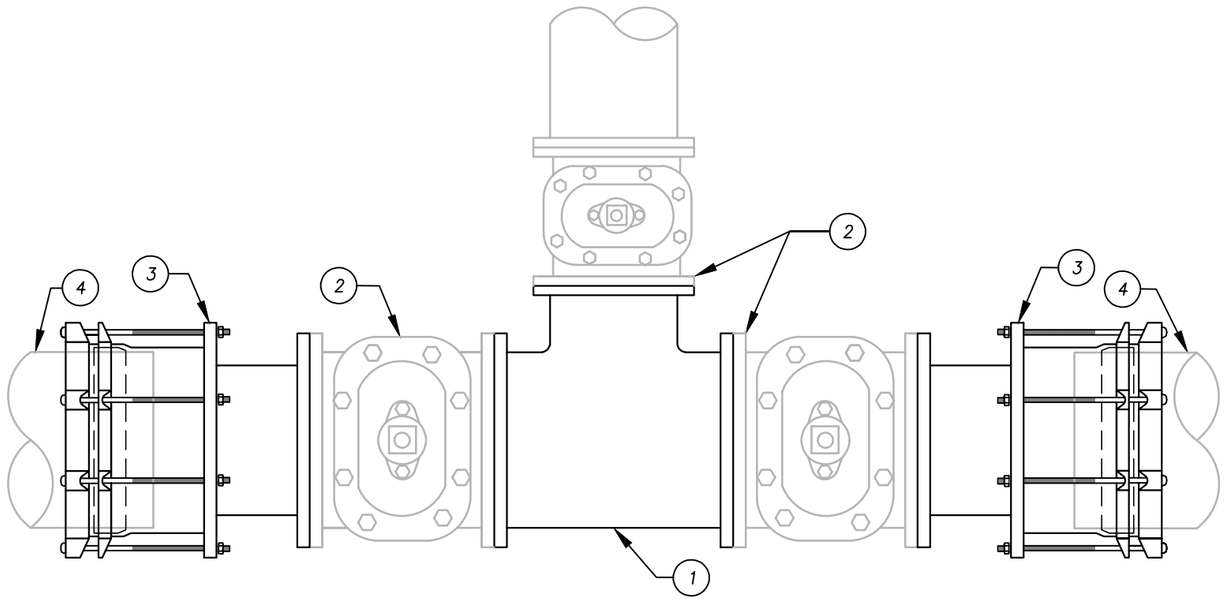
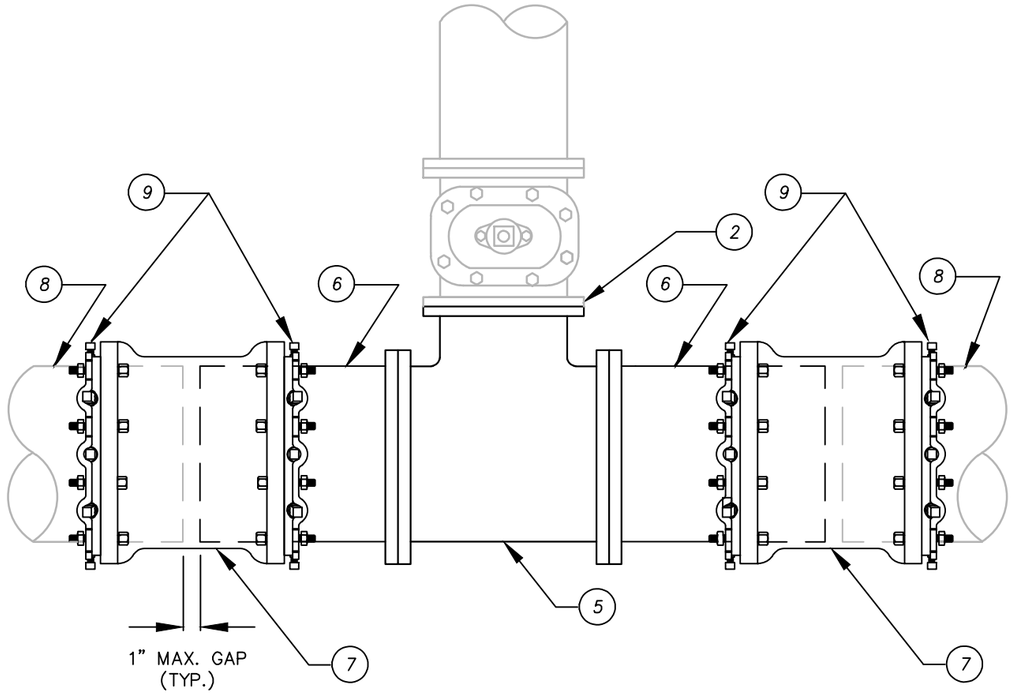


WITH VALVES



WITHOUT VALVES

ITEM	MATERIALS
1	D.I. TEE, F.E. X F.E.
2	RW GATE VALVE OR BUTTERFLY VALVE, F.E. X F.E.
3	D.I. FLANGED COUPLING ADAPTER WITH 316 STAINLESS STEEL NUTS, BOLTS AND WASHERS.
4	EXISTING DIP.

ITEM	MATERIALS
5	D.I. TEE, F.E. X F.E.
6	D.I. PIPE, CLASS 52 (LENGTH = 24").
7	SOLID D.I. MECHANICAL JOINT SLEEVE.
8	EXISTING DIP.
9	MECHANICAL JOINT RETAINER GLAND AND 316 STAINLESS STEEL T-BOLTS, NUTS AND WASHERS.

NOTE:

1. WRAP ALL METALLIC PARTS WITH 8 MIL. POLYETHYLENE ENCASEMENT PER **ADELANTO** STD. SPEC. SECTION 15056.

CUT-IN TEE FOR DIP

City of Adelanto

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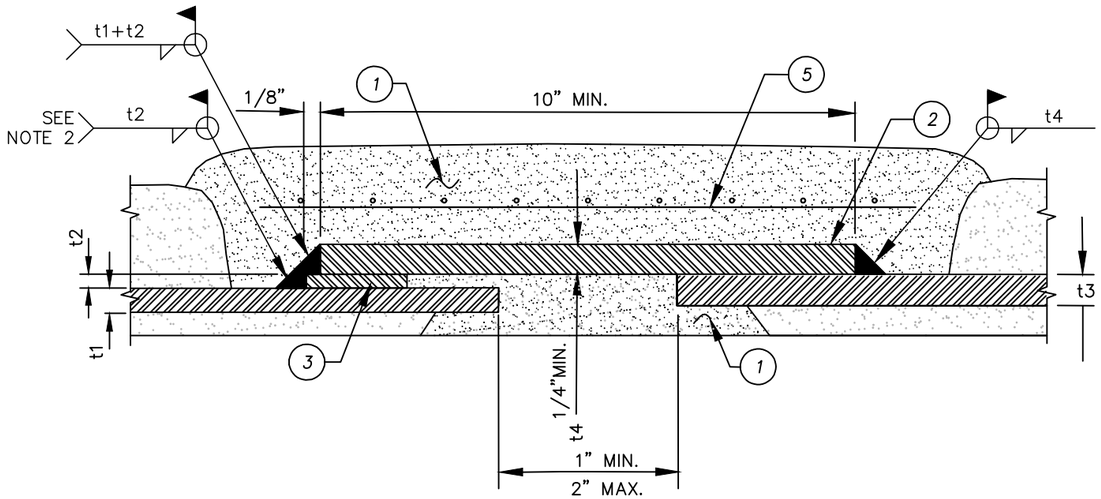
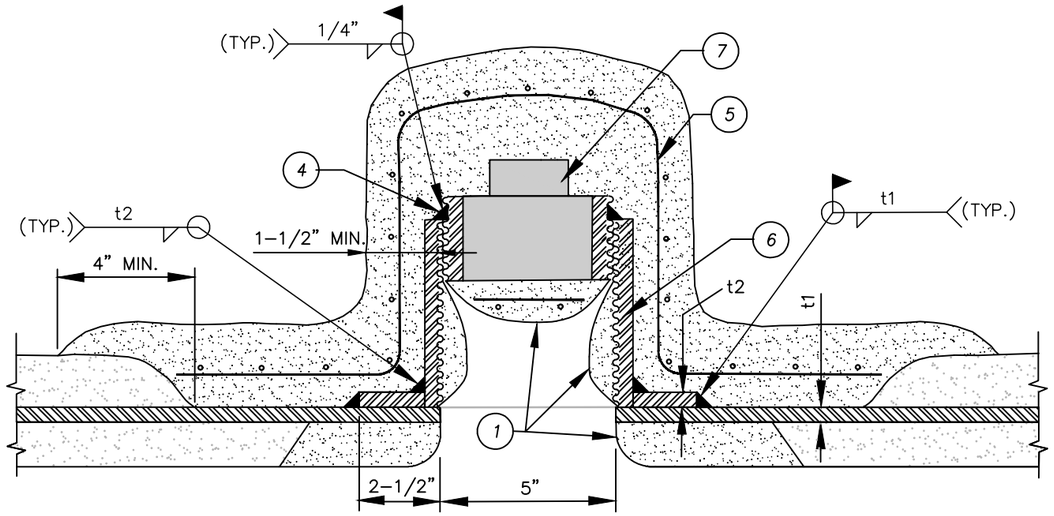


WELDED COLLAR JOINT



HANDHOLE

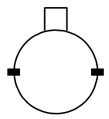
ITEM MATERIALS

1. FIELD APPLIED CEMENT MORTAR.
2. 10" MIN. WIDTH ROLLED STEEL BUTTSTRAP 2-PIECE COLLAR. MIN. PLATE THICKNESS OF 1/4" OR THINNEST PIPE WALL THICKNESS (t1 OR t3) BEING JOINED, WHICHEVER IS GREATER. CENTER BUTTSTRAP COLLAR OVER PIPE JOINT.
3. FILLER BAR (WHERE NECESSARY) TO FILL GAP BETWEEN PIPE WALL AND WELD COLLAR. SEE GENERAL NOTES 1 AND 2. ROLL TO MATCH PIPE RADIUS.
4. WELD PLUG TO COUPLING ENTIRE CIRCUMFERENCE.
5. 2" X 2" W.W.M. 12 GAUGE BOTH WAYS.
6. 5" EXTRA HEAVY STEEL COUPLING.
7. HEAVY SOLID STEEL THREADED PLUG WITH 2" SQUARE DRIVING NUT, TIGHTEN PLUG INTO THREADED COUPLING. LEAVE SEVERAL THREADS EXPOSED TO ALLOW PROPER WELD SURFACE. TACK WELD PIECE OF WELD WIRE MESH TO BOTTOM TO FACILITATE FIELD APPLIED CEMENT MORTAR.

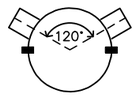
HANDHOLE NOTES:

1. ONE HANDHOLE IS REQUIRED FOR PIPE DIA. 16" OR LESS. SEE BELOW FOR ORIENTATION.
2. TWO HANDHOLES ARE REQUIRED FOR PIPE DIA. 18" TO 24". SEE BELOW FOR ORIENTATION.
3. FOUR HANDHOLES ARE REQUIRED FOR PIPE DIA. 30" AND LARGER. SEE BELOW FOR ORIENTATION.

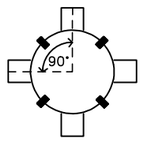
ONE HANDHOLE



TWO HANDHOLES



FOUR HANDHOLES



LEGEND

- BUTT WELD LOCATION FOR JOINING COLLAR PIECES
- HANDHOLE LOCATION

GENERAL NOTES:

1. ROLLED STEEL WELD COLLARS ("BUTT STRAPS") SHALL NOT BE HEATED OR HAMMERED TO FIT O.D. OF SMALLER PIPE. USE FILLER BAR AS SHOWN, WHERE NECESSARY.
2. WELD IS REQUIRED ONLY WHERE FILLER BAR IS USED.
3. FOR 24" DIA. AND LARGER, GROUT ALL HAND-HOLE OPENINGS FULL OF GROUT AND FINISH FLUSH AND CURVED TO MIMICK FACTORY CEMENT MORTAR LINING.

MORTAR LINED AND COATED STEEL PIPE JOINTS

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

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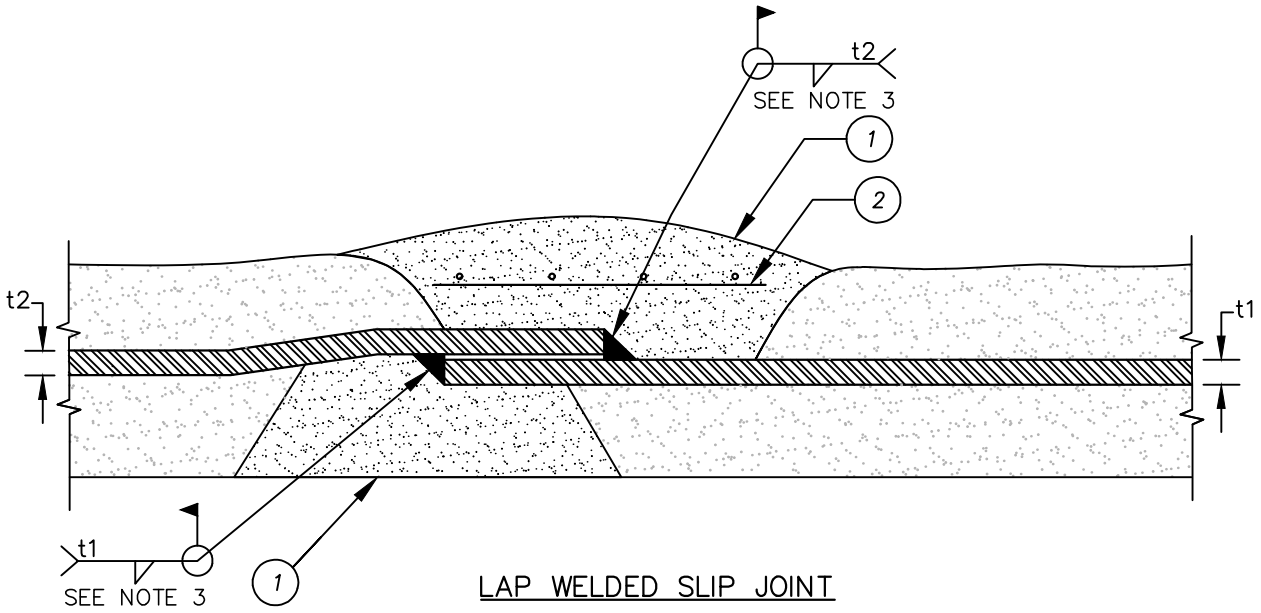

LAP WELDED SLIP JOINT

ITEM	MATERIALS
1	FIELD APPLIED CEMENT MORTAR.
2	2" X 2" W.W.M. 12 GAUGE BOTH WAYS.

NOTES:

1. SEE ADELANTO STD. SPEC. SECTION 15076 FOR STEEL PIPE SHELL THICKNESS AND MORTAR LINING AND COATING THICKNESS.
2. APPLY WELD MATERIAL WITH A MIN. OF TWO WELD PASSES FOR EACH WELD JOINT FOR PIPE DIA. LESS THAN 36". USE A MIN. OF THREE WELD PASSES FOR PIPE DIA. 36" AND LARGER.
3. PIPE DIA. < 24": OUTSIDE WELD REQUIRED.
   PIPE DIA. 24" – 30": INSIDE WELD OR OUTSIDE WELD, AT CONTRACTORS OPTION.
   PIPE DIA. > 30": INSIDE WELD REQUIRED.
4. WHERE t2≠t1, WELD DIMENSION SHALL BE EQUAL TO THE THICKEST PIPE WALL.

MORTAR LINED AND COATED STEEL PIPE JOINTS

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Saba Engineer 12/7/23
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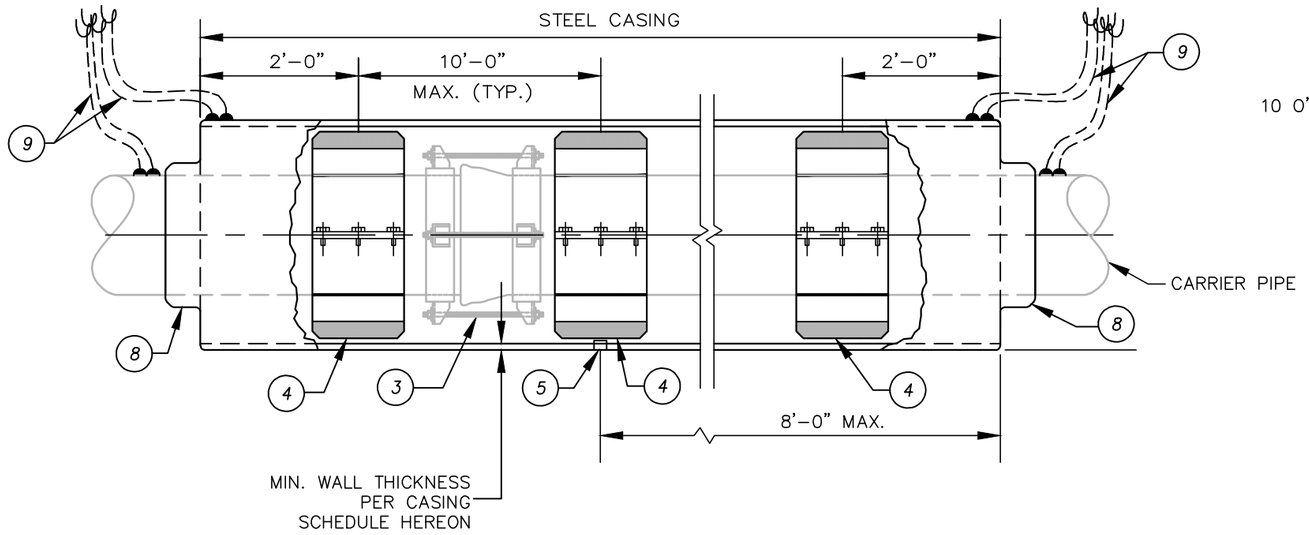
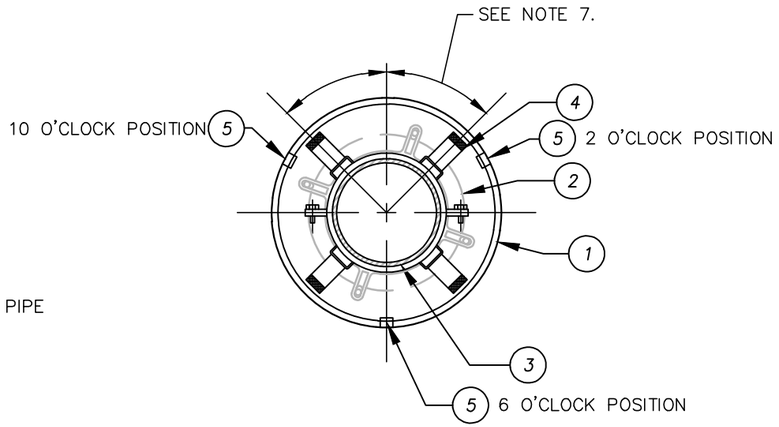
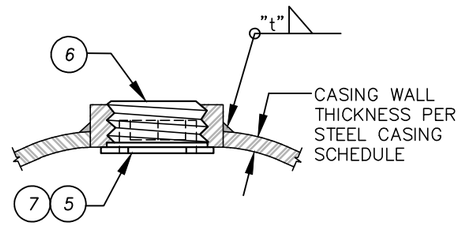
SHEET 2 OF 2





CROSS–SECTION



GROUT FITTING DETAIL

ITEM	MATERIALS
1	STEEL CASING PER **ADELANTO** STD. SPEC. SECTION 02315.
2	CARRIER PIPE JOINT BELL, BEYOND.
3	CARRIER PIPE WITH ALL JOINTS RESTRAINED.
4	STAINLESS STEEL CASING SPACERS WITH UHMW POLYETHYLENE RUNNERS PER **ADELANTO** STD. SPEC. SECTION 02315.
5	GROUT FITTING @ 8' O.C. PER DETAIL HEREON. FOR ALL CASINGS 30" IN DIA. AND LARGER, INSTALL ONE COUPLING IN 6 O'CLOCK POSITION @ 8' O.C.; STAGGER COUPLINGS BETWEEN 10 O'CLOCK AND 2 O'CLOCK POSITIONS EVERY 4 LINEAR FEET ALONG CASING AXIS.
6	2" NPT THREADED STEEL PLUG.
7	2" NPT STANDARD WEIGHT STEEL PIPE HALF COUPLING.
8	EPDM CASING END SEAL PER **ADELANTO** SPEC. SECTION 02315 WITH STAINLESS STEEL WORM–SCREW BAND CLAMPS.
9	CASING TEST STATION PER **ADELANTO** STD. DWG. CP–3 (OMIT 2 WIRES FOR NON–METALLIC CARRIER PIPE).

NOTES:

1. CASING SHALL BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD, OR OPEN TRENCH. SEE **ADELANTO** STD. SPEC. SECTIONS 02315 AND 02316. BEDDING MATERIAL FOR OPEN TRENCH CASING INSTALLATION SHALL CONSIST OF 6" OF 3/4" CRUSHED ROCK.
2. SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN STEEL CASING SCHEDULE HEREON. FOR LONG BORES OR SPECIAL SITUATIONS GREATER WALL THICKNESS THAN SHOWN IN SCHEDULE MAY BE REQUIRED.
3. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE WELDED FULL–CIRCUMFERENCE.
4. CARRIER PIPE SHALL BE PRESSURE TESTED PRIOR TO SEALING ENDS OF CASING.
5. EACH END OF CASING SHALL BE SEALED WITH APPROVED RUBBER CASING END SEALS.
6. BACKFILL FOR CASING IN OPEN CUT SHALL BE PER **ADELANTO** STD. DWG. W–17.
7. NUMBER AND PLACEMENT OF SPACERS ON CARRIER PIPE PER MANUFACTURER'S SPECIFICATIONS.
8. ALL CARRIER PIPE JOINTS INSIDE THE STEEL CASING AND A MIN. 5' OUTSIDE THE STEEL CASING SHALL BE RESTRAINED.
9. CATHODIC PROTECTION REQUIRED FOR STEEL CASING 40 FEET IN LENGTH AND LONGER ONLY.
10. REFER TO TABLE IN **ADELANTO** STD. SPEC. SECTION 02315 AND 02316 FOR ANNULAR SPACE FILL REQUIREMENTS.

STEEL CASING SCHEDULE		
NOMINAL CARRIER PIPE SIZE	MINIMUM CASING SIZE (NOMINAL)	MINIMUM WALL THICKNESS
4"	12"	1/4"
6"	16"	5/16"
8"	18"	5/16"
10"	20"	5/16"
12"	24"	3/8"
14"	27"	3/8"
16"	30"	3/8"
18"	30"	1/2"
20"	36"	1/2"
24"	42"	1/2"

STEEL CASING FOR WATER PIPE

City of Adelanto
APPROVED BY:
Sabo Engineer 12/7/23
DATE

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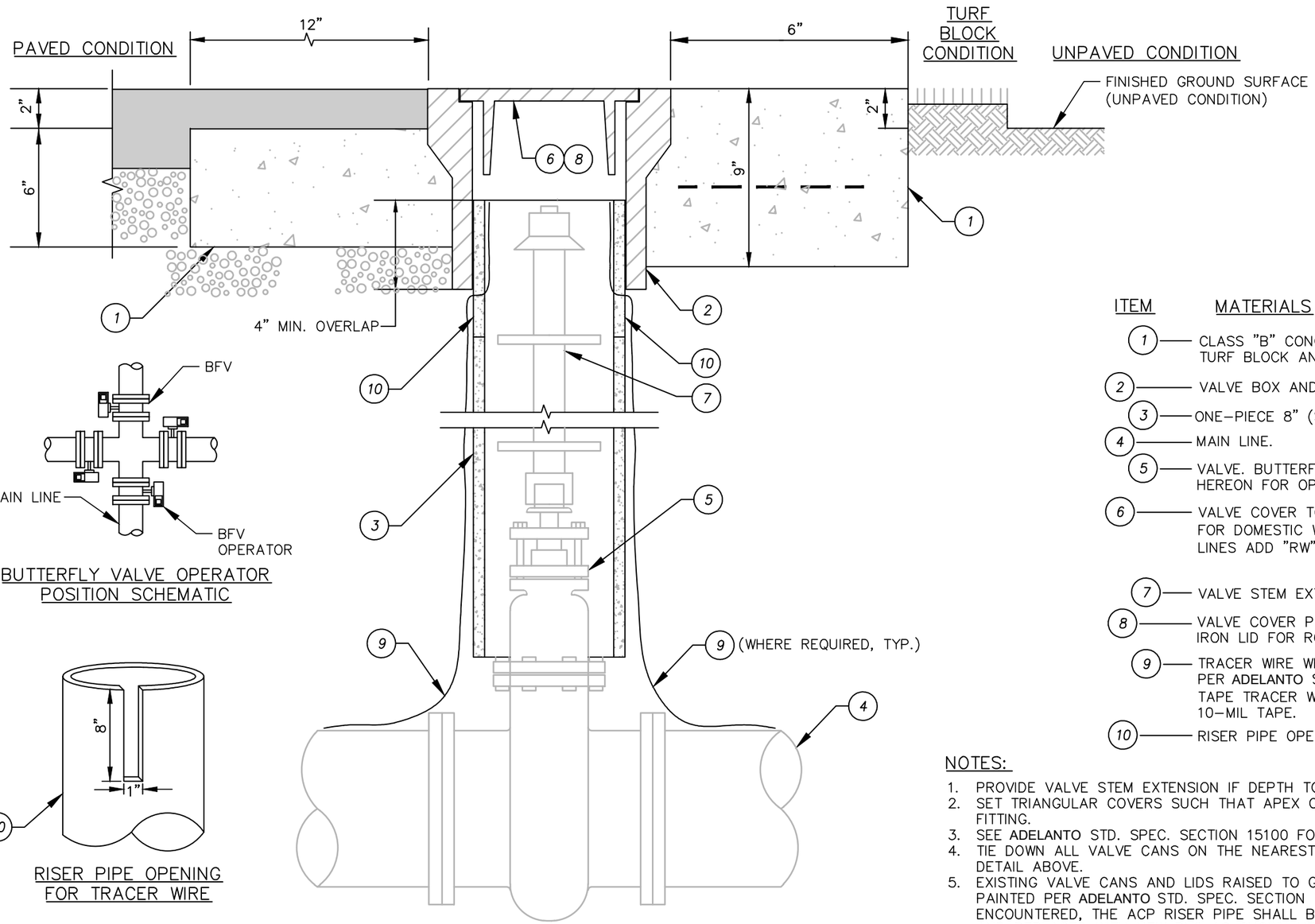
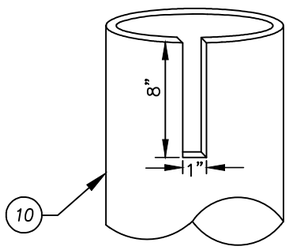
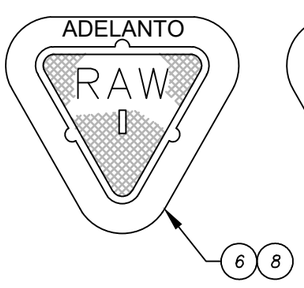
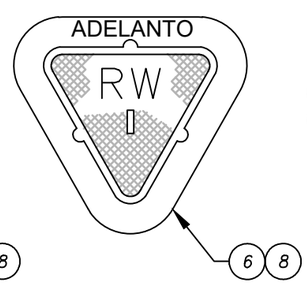


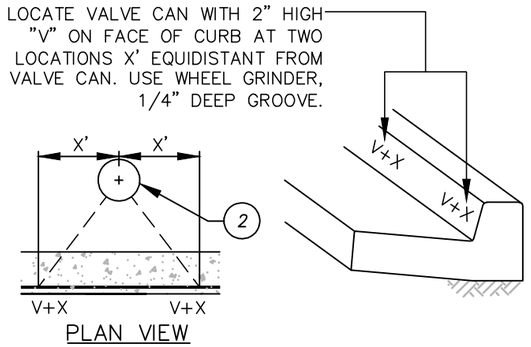
BUTTERFLY VALVE OPERATOR POSITION SCHEMATIC



RISER PIPE OPENING FOR TRACER WIRE







PLAN VIEW

VALVE BOX TIE–DOWN

ITEM	MATERIALS
1	CLASS "B" CONCRETE COLLAR. REINFORCE WITH W.W.F. 1.6 X 1.6 IN TURF BLOCK AND UNPAVED CONDITIONS.
2	VALVE BOX AND FRAME PER **ADELANTO** STD. SPEC. SECTION 15100.
3	ONE–PIECE 8" (SDR 35) PVC RISER PIPE.
4	MAIN LINE.
5	VALVE. BUTTERFLY OR GATE. SEE BFV OPERATOR POSITION SCHEMATIC HEREON FOR OPERATOR POSITIONS ALONG THE PIPELINE.
6	VALVE COVER TO BE IRON WITH LETTERS "**ADELANTO**" CAST THEREON. FOR DOMESTIC WATER LINES ADD "WATER", FOR RECYCLED WATER LINES ADD "RW", FOR RAW WATER SUPPLY LINES ADD "RAW".
7	VALVE STEM EXTENSION PER **ADELANTO** STD. DWG. W–23. SEE NOTE 1.
8	VALVE COVER PER DETAIL HEREON. USE LONG–SKIRTED CAST IRON LID FOR ROUND BOXES.
9	TRACER WIRE WHERE REQUIRED ON PLANS. INSTALL AND TEST PER **ADELANTO** STD. DWG. W–17 AND **ADELANTO** STD. SPEC. SECTION 15151. TAPE TRACER WIRE TO PIPE AT 2' INTERVALS USING 2" WIDE 10–MIL TAPE.
10	RISER PIPE OPENING FOR TRACER WIRE.

NOTES:

1. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 84". SEE **ADELANTO** STD. DWG. W–23.
2. SET TRIANGULAR COVERS SUCH THAT APEX OR TRIANGLE POINT ALONG AXIS OF PIPE, AWAY FROM NEAREST FITTING.
3. SEE **ADELANTO** STD. SPEC. SECTION 15100 FOR VALVE BOX REQUIREMENTS.
4. TIE DOWN ALL VALVE CANS ON THE NEAREST CURB FACE BY MEANS OF A 4–INCH WHEEL GRINDER, SEE DETAIL ABOVE.
5. EXISTING VALVE CANS AND LIDS RAISED TO GRADE SHALL BE REMOVED AND REPLACED WITH NEW, SET, AND PAINTED PER **ADELANTO** STD. SPEC. SECTION 15100. SOME EXISTING VALVES MAY HAVE ACP RISER PIPE, WHEN ENCOUNTERED, THE ACP RISER PIPE SHALL BE REMOVED, ENCAPSULATED, DISPOSED OF PER REGULATIONS, AND REPLACED WITH NEW PVC AS SHOWN HEREON.
6. VALVE BOX MUST BE CONSTRUCTED AS SHOWN HEREON REGARDLESS OF CONSTRUCTION PHASE. NO INTERIM CONDITIONS WILL BE ACCEPTED.
7. VALVE AND VALVE BOX SHALL NOT BE LOCATED WITHIN A SIDEWALK UNDER ANY CONDITION.
8. STREET REHABILITATION AND/OR ASPHALT OVERLAY PROJECTS SHALL NOT INTERRUPT THE SERVICE FUNCTION OF ANY VALVES AND EMERGENCY ACCESS SHALL BE MAINTAINED AT ALL TIMES. VALVES THAT ARE PAVED OVER DURING CONSTRUCTION SHALL BE RAISED TO GRADE NO LATER THAN THREE DAYS AFTER THEY WERE PAVED OVER.

VALVE BOX

City of Adelanto

APPROVED BY:

Sala Engineer 12/7/23

DATE

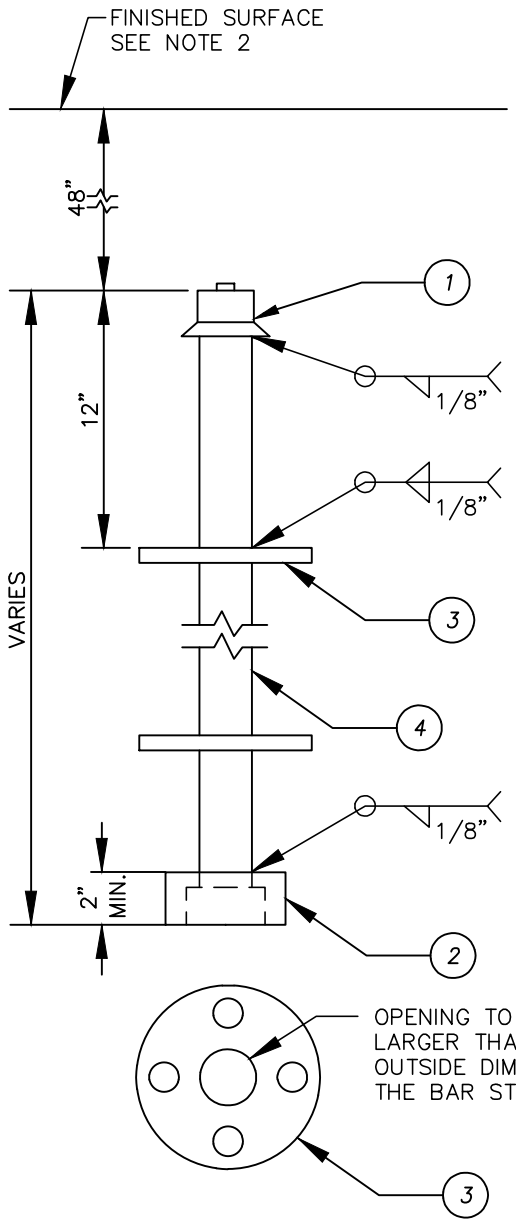
AUGUST 2023

REVISION

City of ADELANTO

Adelanto STD. DWG. W-22

SHEET 1 OF 1



ITEM	MATERIALS
1	A.W.W.A. 2" SQUARE OPERATING NUT.
2	A.W.W.A. SOCKET FOR 2" SQUARE OPERATING NUT.
3	6–1/2" DIA. X 3/16" SPACER PLATE.
4	1–1/4" SOLID, ROUND OR SQUARE, STEEL BAR STOCK (PINNED COUPLERS ARE NOT ALLOWED, HOLLOW TUBE OR PIPE ARE NOT ALLOWED).

NOTES:

1. PROVIDE VALVE STEM EXTENSION WHEN DEPTH TO OPERATING NUT EXCEEDS 84" (FABRICATE EXTENSION TO FIELD MEASUREMENT, SEE NOTE 2).
2. TERMINATE EXTENSION 48" FROM FINISHED SURFACE.
3. PROVIDE ADDITIONAL SPACER PLATE(S) WHEN DISTANCE TO BOTTOM SOCKET EXCEEDS 60" BEYOND LOWEST PLATE.

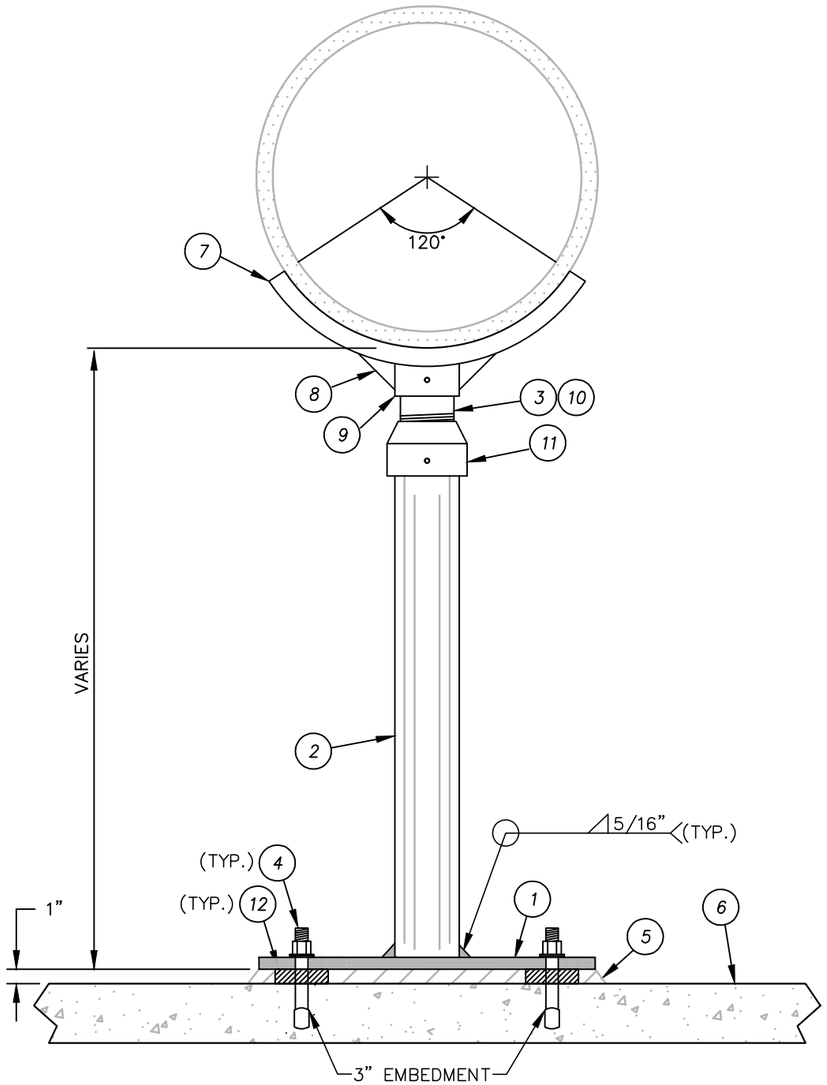
VALVE STEM EXTENSION

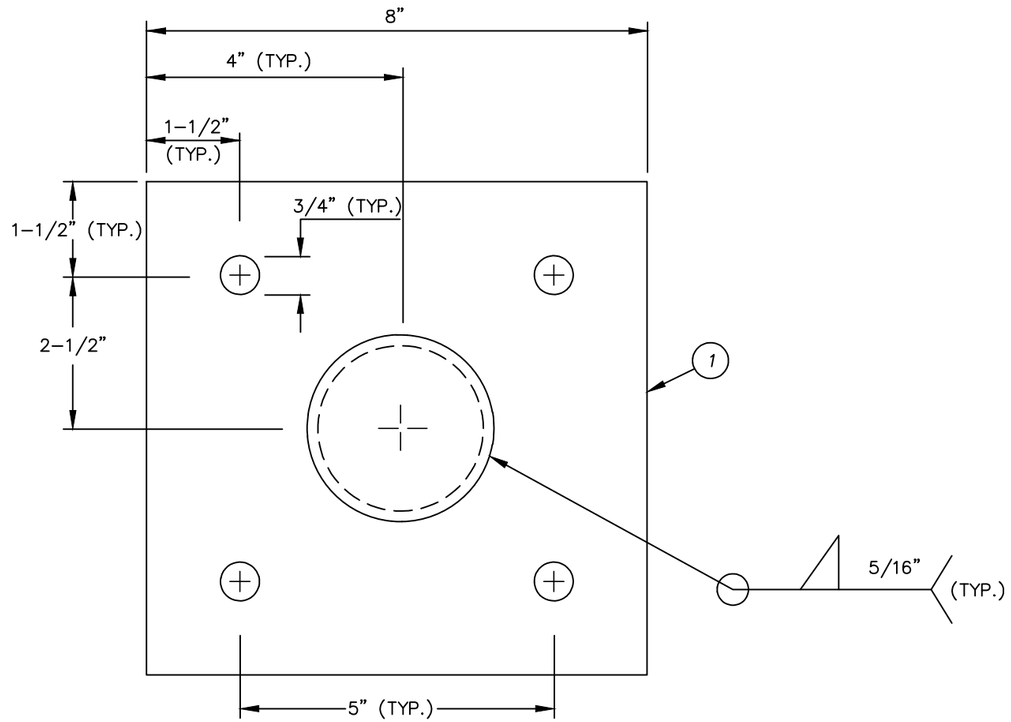
City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

JULY 2023
REVISION

Adelanto
STD. DWG.
W-23

SHEET 1 OF 1





ITEM	MATERIALS
1	8" X 8" X 1/2" BLACK STEEL BASE PLATE WITH (4) 3/4" DIA. BOLT HOLES.
2	3" DIA. SCH 40 BLACK STEEL PIPE WELDED TO BASE PLATE, STOCKED @ 15" LONG TO BE CUT TO SIZE IN THE FIELD.
3	COAT THREADS WITH LIBERAL AMOUNTS OF ANTI–SEIZE COMPOUND.
4	5/8" DIA. RED HEAD STAINLESS STEEL CONCRETE ANCHOR BOLT WITH 5/8" DIA. STAINLESS STEEL HEX HEAD ANCHOR NUT AND 1" X 5/8" HEAVY STAINLESS STEEL WASHER. DRILL AND MOUNT INTO CONCRETE PAD OR VAULT FLOOR.
5	1" THICK NON–SHRINK GROUT LEVELING COURSE.
6	CONCRETE PAD OR VAULT FLOOR.
7	3/8" THICK X 4" WIDE STAINLESS STEEL SADDLE ASSEMBLY. PRE–COAT WITH POLYURETHANE SPRAY COATING. 40 MILS THICK. TOP AND SIDE SURFACES ONLY. SADDLE ROLLED TO MATCH RADIUS OF PIPE.
8	3/8" THICK STAINLESS STEEL GUSSET PLATE.
9	3" DIA. SCH 80 STAINLESS STEEL RECEIVER TUBE WITH 1/2" STAINLESS STEEL ALLEN SET SCREW.
10	2–1/2" DIA. SCH 40 STAINLESS STEEL THREADED RISER, PROVIDES APPROXIMATELY 6" OF ADJUSTMENT.
11	3" DIA. STAINLESS STEEL HEAVY THREADED ADJUSTMENT COUPLING WITH 1/2" DIA. STAINLESS STEEL SET SCREW.
12	1" STAINLESS STEEL SPACER.

NOTE:

1. ALL PIPE SUPPORT COMPONENTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION, WITH THE EXCEPTION OF THE SADDLE AND THREADED STAINLESS STEEL PARTS.

PIPE SUPPORT

City of Adelanto

APPROVED BY:

Saba Engineer 12/7/23

DATE

JULY 2023

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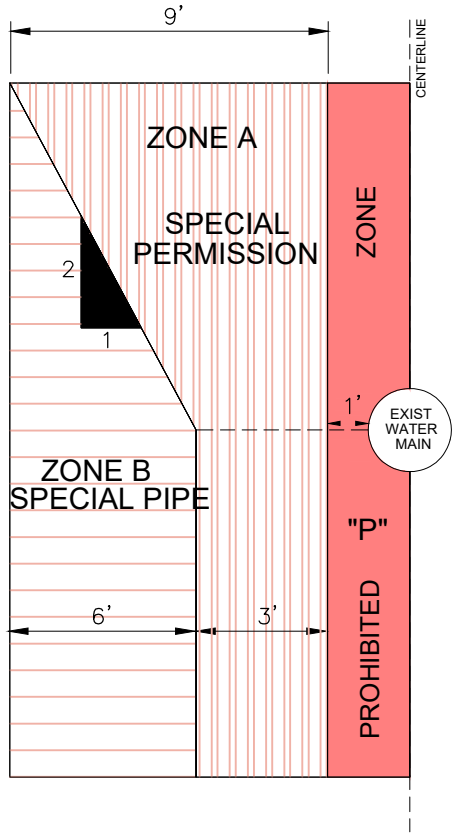
City of ADELANTO

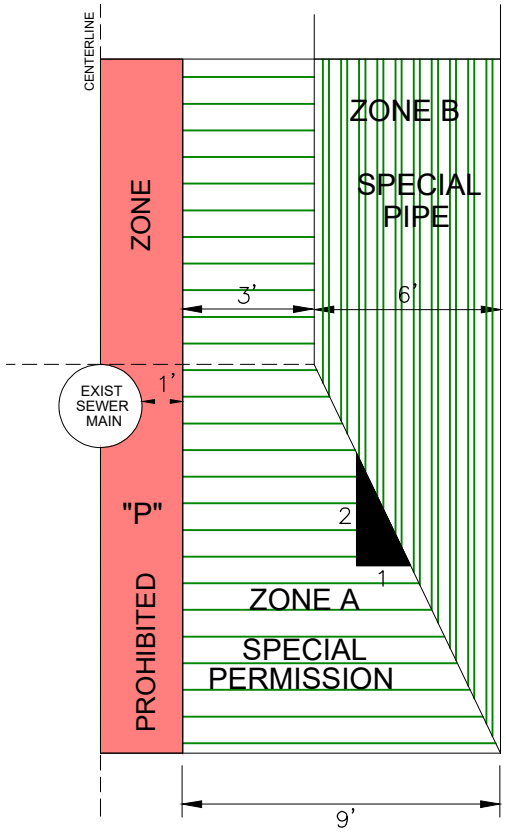
Adelanto STD. DWG. W-24

SHEET 1 OF 1

CASE 1
NEW SEWER MAIN



CASE 1
NEW WATER MAIN



PARALLEL CONSTRUCTION

NOTES:

1. ZONE 'P' IS A PROHIBITED ZONE PER SECTION 64572 (a) (2) CALIFORNIA CODE OF REGULATIONS, TITLE 22.
2. ZONE 'A' IS A NO CONSTRUCTION ZONE WITHOUT APPROVAL FROM RESPONSIBLE HEALTH AGENCY AND WATER SUPPLIER.
3. ZONE 'B' : NEW WATER MAIN SHALL BE CONSTRUCTED OF DIP CLASS 350 FOR PIPE SIZE 12 INCHES OR SMALLER AND CLASS 250 FOR PIPE SIZE LARGER THAN 12 INCHES. RESTRAINED JOINTS WITH 12 MIL POLYWRAP SHALL BE USE.
4. PIPE, COATING AND LINING SHALL BE PER AWWA STANDARD SPECIFICATIONS.
5. ZONE "B": NEW SEWER LINE TO COMPLY WITH CDPH REQUIREMENTS.

WATER MAIN AND SEWER SEPARATION REQUIREMENTS - PARALLEL

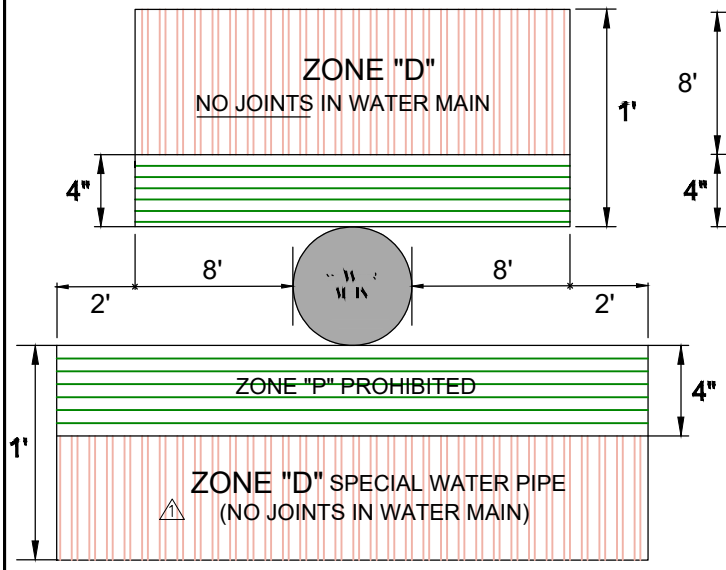
City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

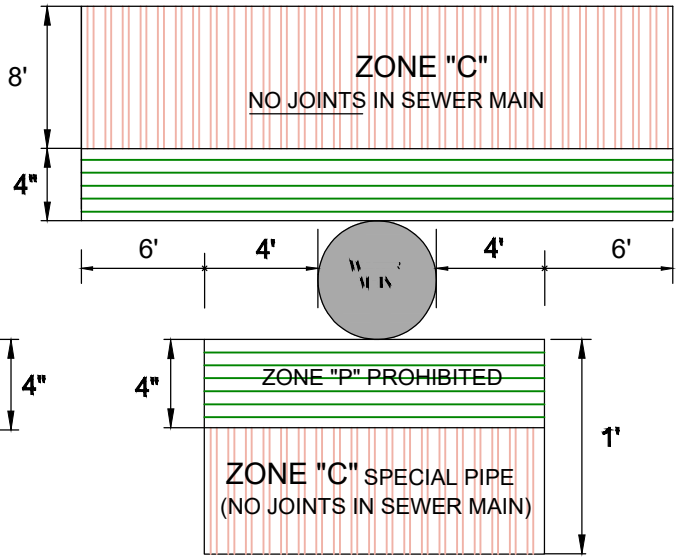
City of ADELANTO

Adelanto
STD. DWG.
W-25

(CASE 2)
NEW WATER MAIN



(CASE 1)
NEW SEWER MAIN



CROSSING

NOTES:

1. ZONE 'P' IS A PROHIBITED ZONE PER SECTION 64572 (a) (2) CALIFORNIA CODE OF REGULATIONS, TITLE 22.
2. ZONE 'C': NEW WATER MAIN SHALL BE CONSTRUCTED OF DIP CLASS 350 FOR PIPE SIZE 12 INCHES OR SMALLER AND CLASS 250 FOR PIPE LARGER THAN 12 INCHES. RESTRAINED JOINTS WITH 12 MIL POLYWRAP SHALL BE USED.
3. ZONE 'C': NEW SEWER LINE WILL BE CONSTRUCTED PER SANITATION APPROVED MATERIALS.
4. ZONE 'D': NEW WATER MAIN SHALL BE CONSTRUCTED OF DIP CLASS 350 FOR PIPE SIZE 12 INCHES OR SMALLER AND CLASS 250 FOR PIPE LARGER THAN 12 INCHES. RESTRAINED JOINTS WITH 12 MIL POLYWRAP SHALL BE USED.
5. PIPE, COATING AND LINING SHALL BE PER A.W.W.A. STANDARD SPECIFICATIONS
6. ALL AWWA STANDARDS REFER TO LATEST EDITION;
7. RESTRAINED JOINTS FOR ALL CROSSING.

WATER MAIN AND SEWER SEPARATION REQUIREMENTS - CROSSING

City of Adelanto
APPROVED BY:

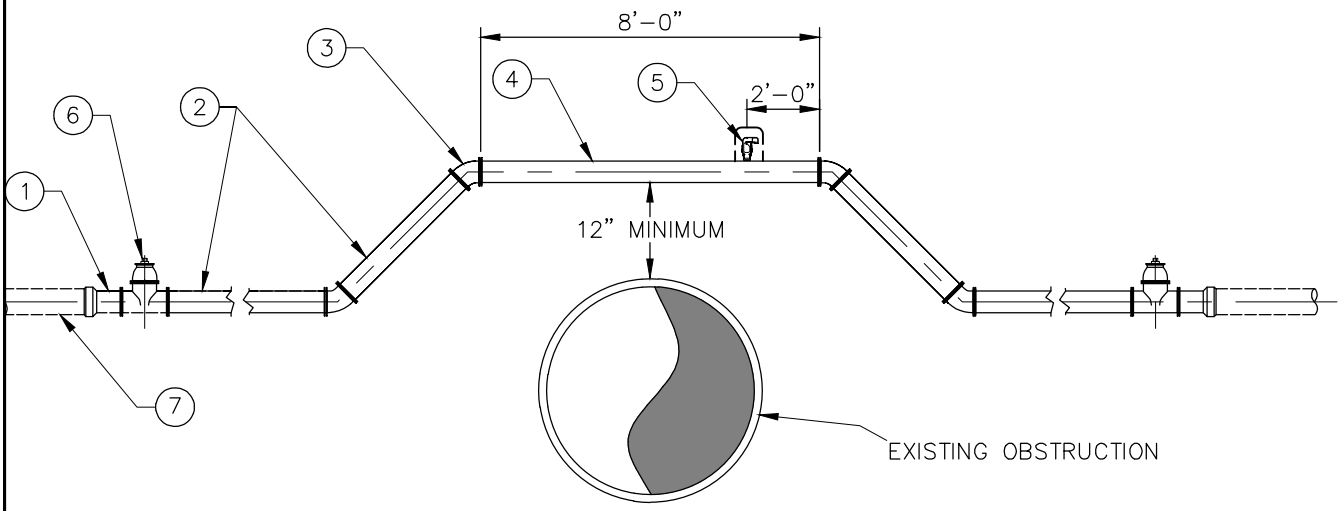
Saba Engineer 12/7/23
DATE

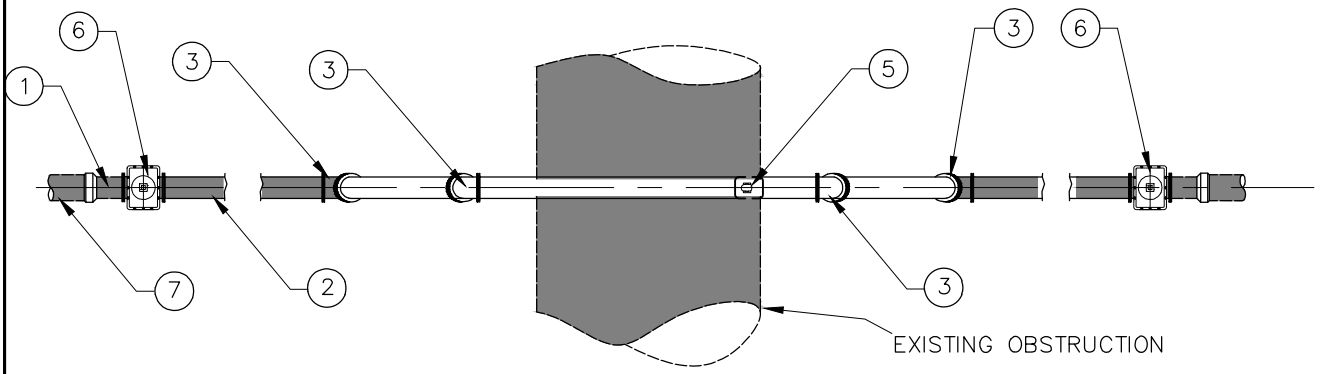
AUGUST 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
W-25

SIDE VIEW
NTS





PLAN VIEW
NTS

ITEM	DESCRIPTION
1	TRANSITION COUPLING FLANGE X MJ
2	DUCTILE IRON PIPE WITH RESTRAINT FITTINGS
3	45° BEND MJ X MJ WITH RESTRAINED JOINTS (SEE NOTE BELOW)
4	DUCTILE IRON PIPE
5	AIR RELEASE VALVE PER STD. DRAWING W-11
6	GATE VALVE FLANGE X FLANGE (BOTH SIDES) WITH ADAPTERS (LOCATION TO BE DETERMINE BY **ADELANTO** ENGINEER
7	WATER MAIN

NOTES:
1. THE TOTAL NO. OF RESTRAINED JOINTS TO BE DETERMINED BY DESIGN ENGINEER & APPROVED BY **ADELANTO**.
2. LOCATE AIR RELEASE VALVE ASSEMBLY ON SIDE WITH HIGHEST ELEVATION.
3. A MINIMUM OF ONE(1) AIR RELIEF VALVE IS REQUIRED. AN ADDITIONAL AIR RELIEF VALVE MAY BE REQUIRED IF DETERMINED BY THE **ADELANTO** ENGINEER.

INVERTED SIPHON ASSEMBLY

City of Adelanto
APPROVED BY:

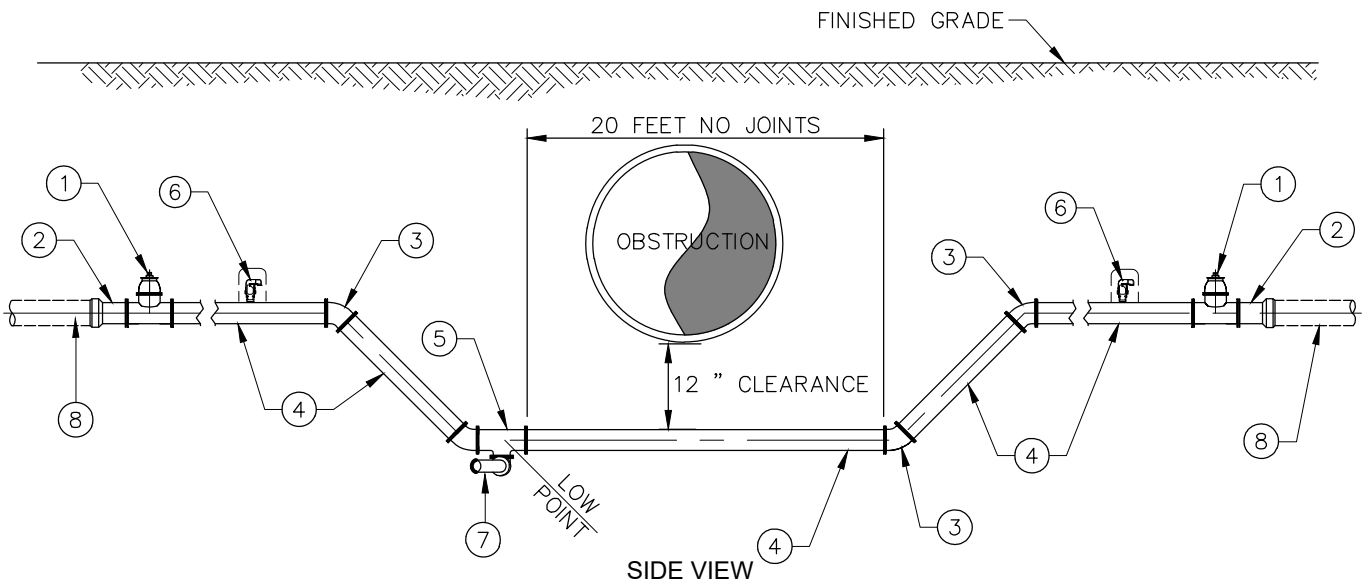
Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

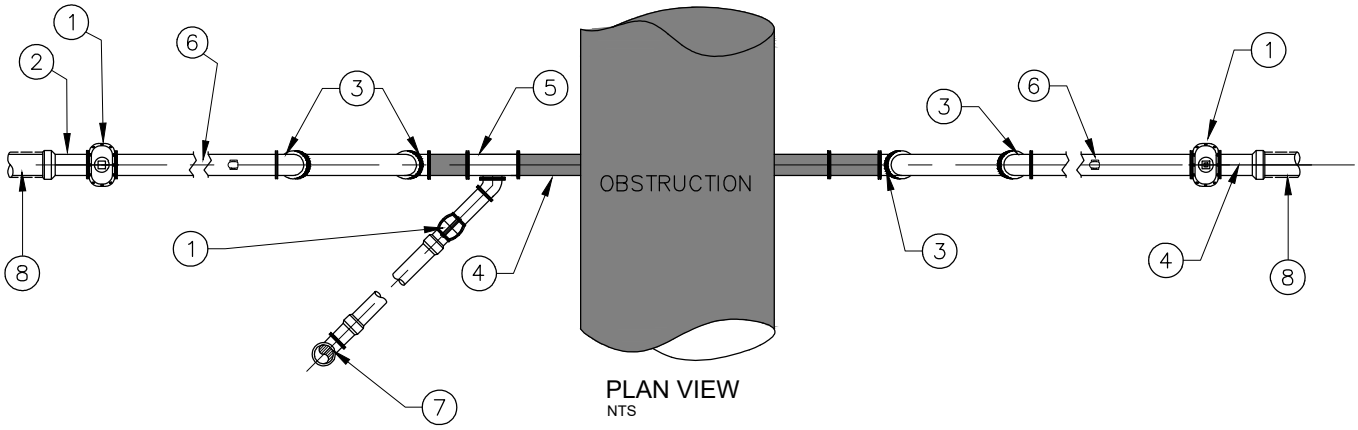
City of ADELANTO

Adelanto
STD. DWG.
W-26

SHEET 1 OF 1



SIDE VIEW
NTS



PLAN VIEW
NTS

ITEM	DESCRIPTION
1	GATE VALVE FLANGE X FLANGE(LOCATION TO BE APPROVED BY **ADELANTO** ENGINEER)
2	FLANGE X MJ COUPLING
3	45° FLANGE X FLANGE OR RESTRAINED JOINT (SEE NOTE BELOW)
4	DUCTILE IRON PIPE OR APPROVED EQUAL
5	MJ X MJ FLANGE TEE AND FLANGE X FLANGE 45° BEND
6	AIR RELIEF VALVE PER STANDARD DRAWING W-11
7	PUMP OUT ASSEMBLY RISER (MIN. 4" DIA.) LOCATION AS APPROVED ON PLAN, SEE STANDARD DRAWING W-14 FOR DETAIL
8	WATER MAIN

NOTES:
1. A MINIMUM OF ONE(1) AIR RELIEF VALVE IS REQUIRED.AN ADDITIONAL AIR RELIEF VALVE MAY BE REQUIRED IF DETERMINED BY THE **ADELANTO** ENGINEER.
2. THE TOTAL NUMBER OF RESTRAINED JOINTS TO BE DETERMINED BY DESIGN ENGINEER AND APPROVED BY **ADELANTO**.

SIPHON ASSEMBLY

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

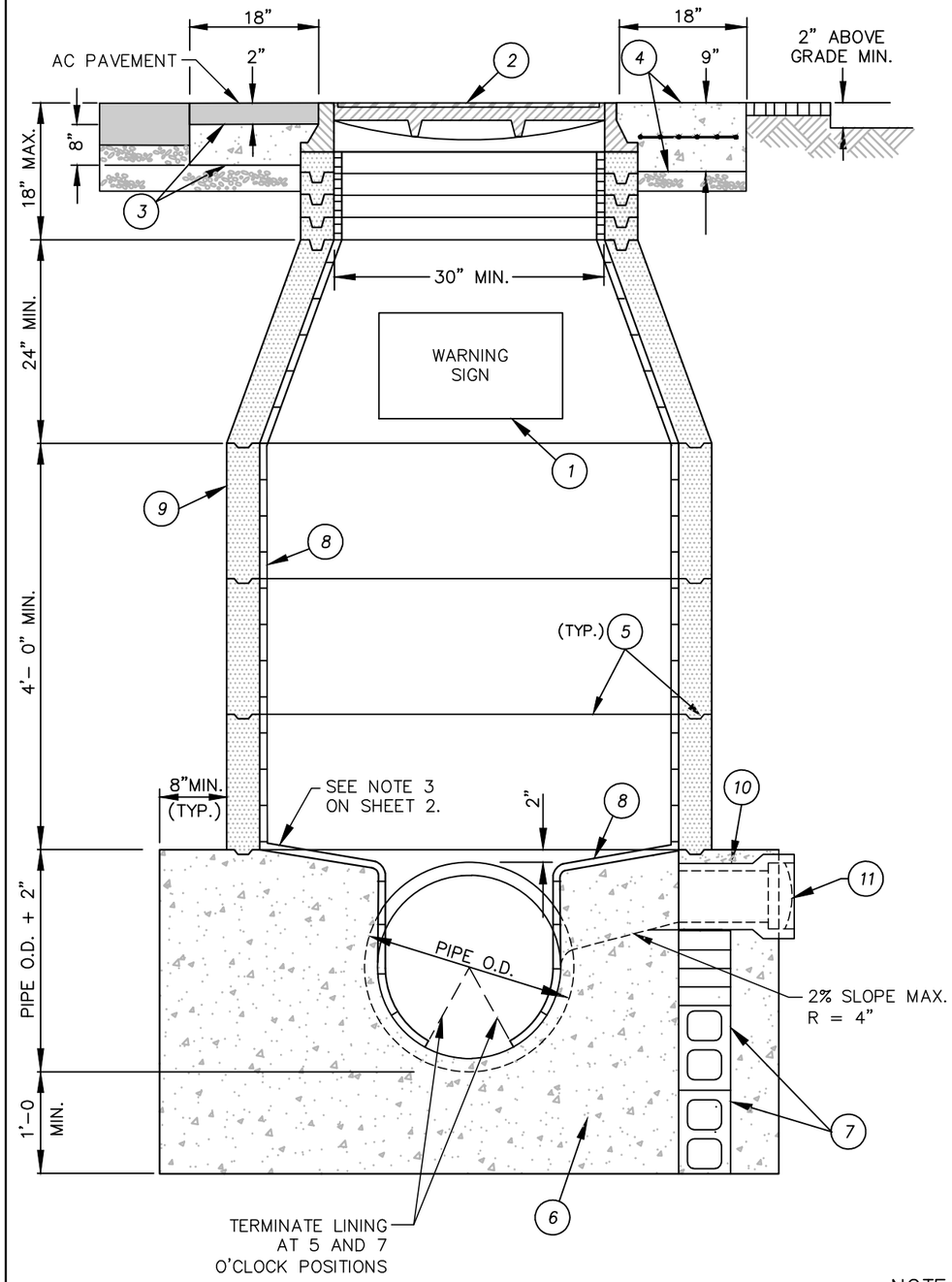
Adelanto
STD. DWG.
W-27

SHEET 1 OF 1

TABLE OF CONTENTS

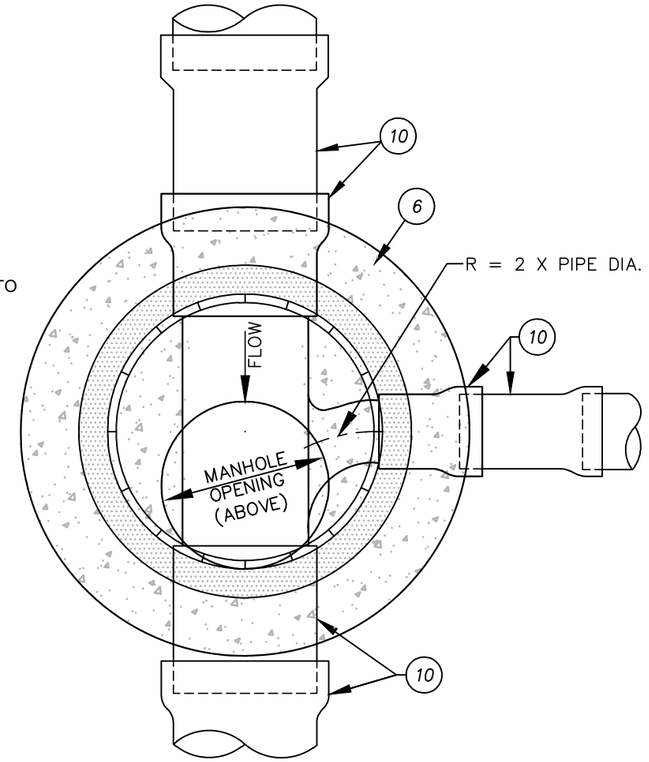
Sewer Standard Drawings

NUMBER	DESCRIPTION	DATE
S-1	Manhole	Jan 2021
S-2	<Not Used>	
S-3	Sewer Lateral	Jan 2021
S-4	Cut-in Wye Connection	Jan 2021
S-5	Terminal Cleanout	Jan 2021
S-6	Sewer Trench	Jan 2021
S-7	Steel Casing for Sewer Pipe	Jan 2021

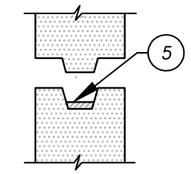


ITEM MATERIALS

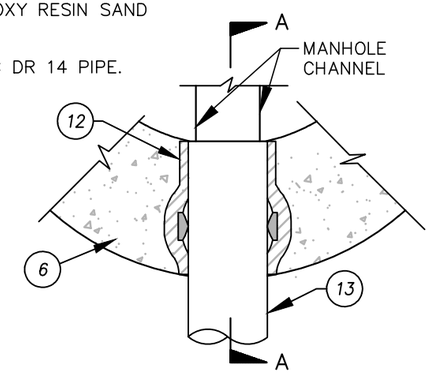
1. STENCILED WARNING SIGN WITH WHITE BACKING. SEE DETAIL ON SHEET 2.
2. FRAME AND COVER PER **ADELANTO** STD. SPEC. SECTION 03461. SEE DETAIL ON SHEET 2.
3. ROUND CLASS "B" CONCRETE COLLAR AND AC PAVEMENT.
4. SQUARE CLASS "B" CONCRETE PAD REINFORCE WITH 6" X 6" W.W.F. 10 GAUGE CENTERED IN CONCRETE.
5. SHAFT JOINT WITH JOINT SEALING COMPOUND. SEE NOTE 8 ON SHEET 2.
6. CONCRETE MANHOLE BASE, CAST IN PLACE PER **ADELANTO** STD. SPEC. SECTION 03300. SEE NOTES 6 AND 8 ON SHEET 2.
7. CONCRETE BLOCK AND/OR BRICK SUPPORT. SEE NOTE 4 ON SHEET 2.
8. MANHOLE LINER (WHERE REQUIRED) PER **ADELANTO** STD. SPEC. SECTION 09900. APPLY NON-SKID SURFACE ON TOTAL SHELF AREA.
9. PRECAST CONCRETE MANHOLE SHAFT, MIN. WALL THICKNESS PER **ADELANTO** STD. SPEC. SECTION 03461, AND AS NOTED BELOW:
   48" DIA. MANHOLE 6" WALL THICKNESS
   60" DIA. MANHOLE 6" WALL THICKNESS
   72" DIA. MANHOLE 7" WALL THICKNESS
10. INSTALL 16" LONG VCP THROUGH MANHOLE BASE FOLLOWED BY A 12" LONG VCP, AS SHOWN, FOR FLEXIBILITY. FOR PVC PIPE, REFER TO "PVC PIPE CONNECTION" DETAILS HEREON.
11. INSTALL TEMPORARY PLUG IN PIPE BELL-JOINT.
12. FOR SDR-35 PVC PIPE: GASKETED SDR-35 (SDR 26 FOR 15" THRU 18") PVC MANHOLE COUPLING WITH EPOXY RESIN SAND COATING ON EXTERIOR SURFACE. FOR C900 PVC DR 14 PIPE: GASKETED C900 PVC DR 14 MANHOLE COUPLING WITH EPOXY RESIN SAND COATING ON EXTERIOR SURFACE.
13. SDR-35 PVC PIPE OR C900 PVC DR 14 PIPE.



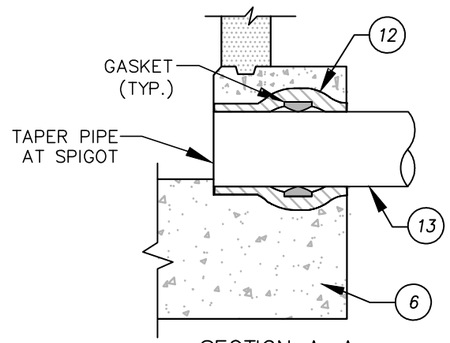
MANHOLE BASE WITH VCP CONNECTION



SHAFT JOINT



PLAN



SECTION A-A

PVC PIPE CONNECTION

NOTE:
SEE SHEET 2 OF 2 FOR ADDITIONAL NOTES.

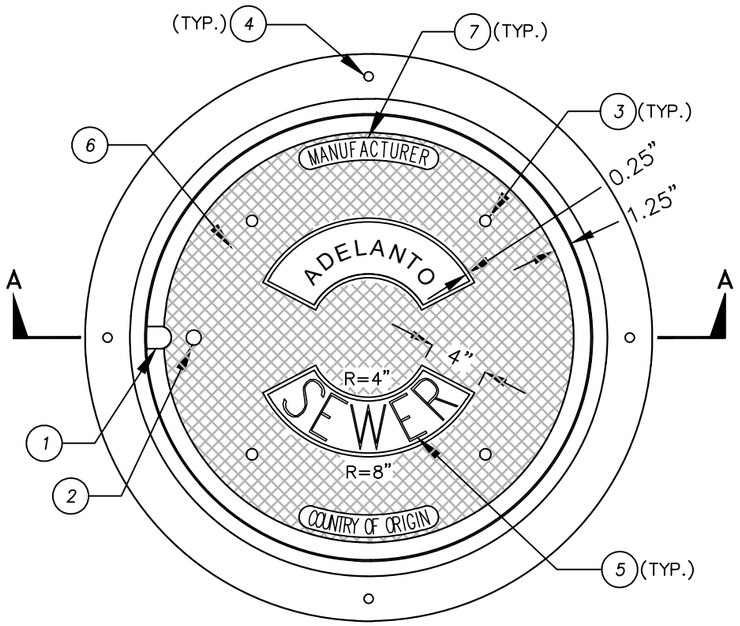
MANHOLE

City of Adelanto
APPROVED BY:
Sabo Engineer 12/7/23
DATE

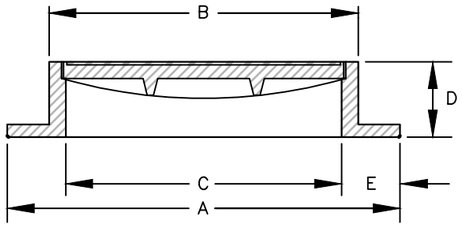
AUGUST 2023
REVISION

Adelanto STD. DWG. S-1

SHEET 1 OF 2

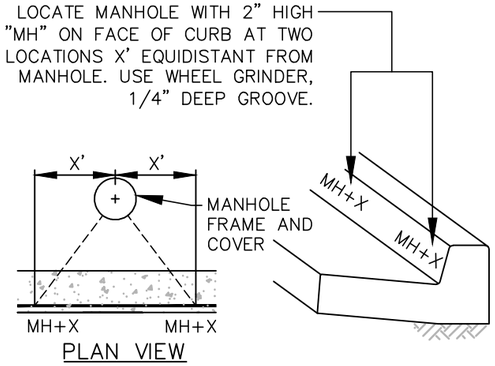


FRAME AND COVER



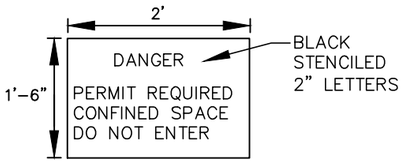
SECTION A–A

FRAME AND COVER DIMENSIONS		
SIZE (IN)	30	36
A	38	44
B	33	39
C	30	36
D	6	6
E	4	4

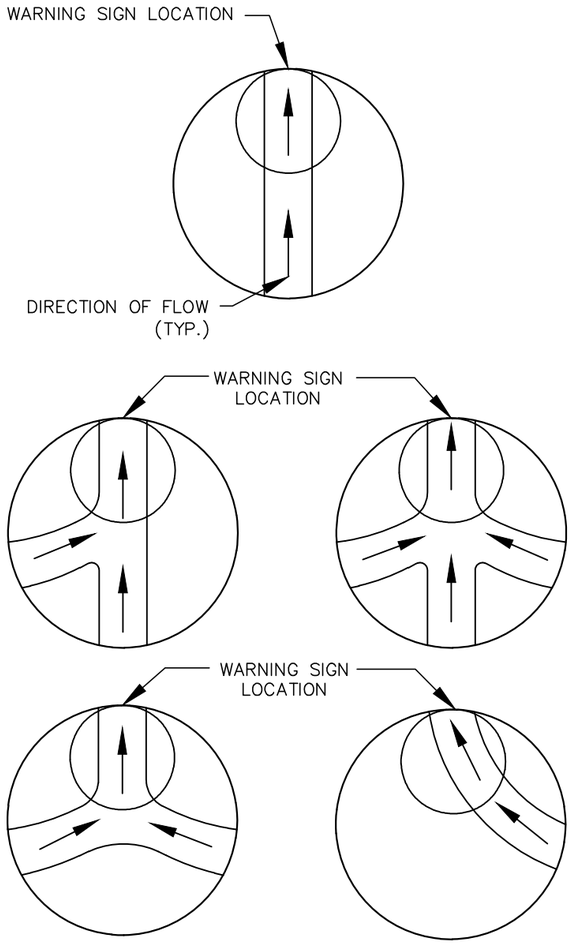


PLAN VIEW

MANHOLE TIE–DOWN



WARNING SIGN WITH WHITE BACKING



ORIENTATION OF MANHOLE COVER TO MANHOLE BASE

NOTES:

1. 48" AND 60" MANHOLES SHALL HAVE 30" COVERS. 72" MANHOLES SHALL HAVE 36" COVERS.
2. COAT FRAME AND COVER PER **ADELANTO** STD. SPEC. SECTION 09900.
3. PLACE TWO HALF MOON SHAPED PLYWOOD COVERS (5/8" THICK MIN.) ON BOTTOM OF MANHOLE AFTER SHAFTS HAVE BEEN SET TO KEEP DEBRIS FROM ENTERING SEWER. REMOVE PLYWOOD PRIOR TO FINAL ACCEPTANCE.
4. ALL INLETS AND OUTLETS SHALL BE SUPPORTED WITH CONCRETE BLOCK AND/OR BRICK SUPPORTS, PRIOR TO POURING MANHOLE BASE TO PREVENT PIPE MOVEMENT DURING CONSTRUCTION OF MANHOLE BASE
5. ALL PRECAST CONCRETE MANHOLE SHAFTS SHALL BE MANUFACTURED PER **ADELANTO** STD. SPEC. SECTION 03461.
6. BASE SHALL BE POURED AGAINST UNDISTURBED SOIL. IF SOIL IS DISTURBED, OR IF GROUND WATER EXISTS, CRUSHED ROCK SHALL BE INSTALLED BENEATH BASE PER **ADELANTO** STD. SPEC. SECTION 02223.
7. CLASS "A" CONCRETE BASE, CAST IN PLACE MONOLITHICALLY.
8. PREFORMED COLD–APPLIED READY–TO–USE PLASTIC JOINT SEALING COMPOUND SHALL BE USED FOR ALL MANHOLE JOINTS. REMOVE EXCESS FROM SURFACES INSIDE MANHOLE.
9. RETAINING WALLS SHALL BE INSTALLED AROUND MANHOLE WHEN THERE IS AN ADJACENT SLOPE. CONSTRUCT RETAINING WALL PER **ADELANTO** STD. DWG. G–4.
10. MANHOLES SHALL NOT BE PLACED IN SIDEWALKS OR IN CONCRETE DRIVEWAY APRONS.
11. MANHOLES DEEPER THAN 20'–0" TO TOP OF PIPE SHALL BE DESIGNED BY A REGISTERED CIVIL ENGINEER.
12. TIE DOWN ALL MANHOLES ON THE NEAREST CURB FACE BY MEANS OF A 4–INCH WHEEL GRINDER, SEE DETAIL ABOVE.
13. INSTALL UTILITY MARKER PER **ADELANTO** STD. DWG. G–2 FOR MANHOLES WITHIN UNPAVED AREAS.
14. PAINTED WARNING SIGN SHALL HAVE WHITE BACKGROUND AND BLACK LETTERS.
15. MANHOLE MUST BE CONSTRUCTED AS SHOWN HEREON REGARDLESS OF CONSTRUCTION PHASE. NO INTERIM CONDITIONS WILL BE ACCEPTED.
16. STREET REHABILITATION AND/OR ASPHALT OVERLAY PROJECTS SHALL NOT INTERRUPT THE SERVICE FUNCTION OF ANY SEWER MANHOLES AND EMERGENCY ACCESS SHALL BE MAINTAINED AT ALL TIMES. MANHOLES THAT ARE PAVED OVER DURING CONSTRUCTION SHALL BE RAISED TO GRADE NO LATER THAN THREE DAYS AFTER THEY WERE PAVED OVER.

ITEM	MATERIALS
1	1–1/2" LIFTING SLOT.
2	1" THRU HOLE (ONE PLACE).
3	3/4" THRU HOLE (FOUR PLACES).
4	5/8" DIA. HOLES CORED IN FRAME (FOUR PLACES).
5	CAST 3" LETTERS, 3/8" THICK, RAISED 3/16", OFFSET 0.25" FROM 0.25" THICK RAISED 3/16" RIBBON EDGE.
6	3/16" RAISED DIAMOND TREAD SURFACE PATTERN.
7	MANUFACTURER AND COUNTRY OF ORIGIN STAMP, CAST 1" LETTERS, ORIENTATION AS SHOWN.

MANHOLE

City of Adelanto

APPROVED BY:

City Engineer 12/7/23

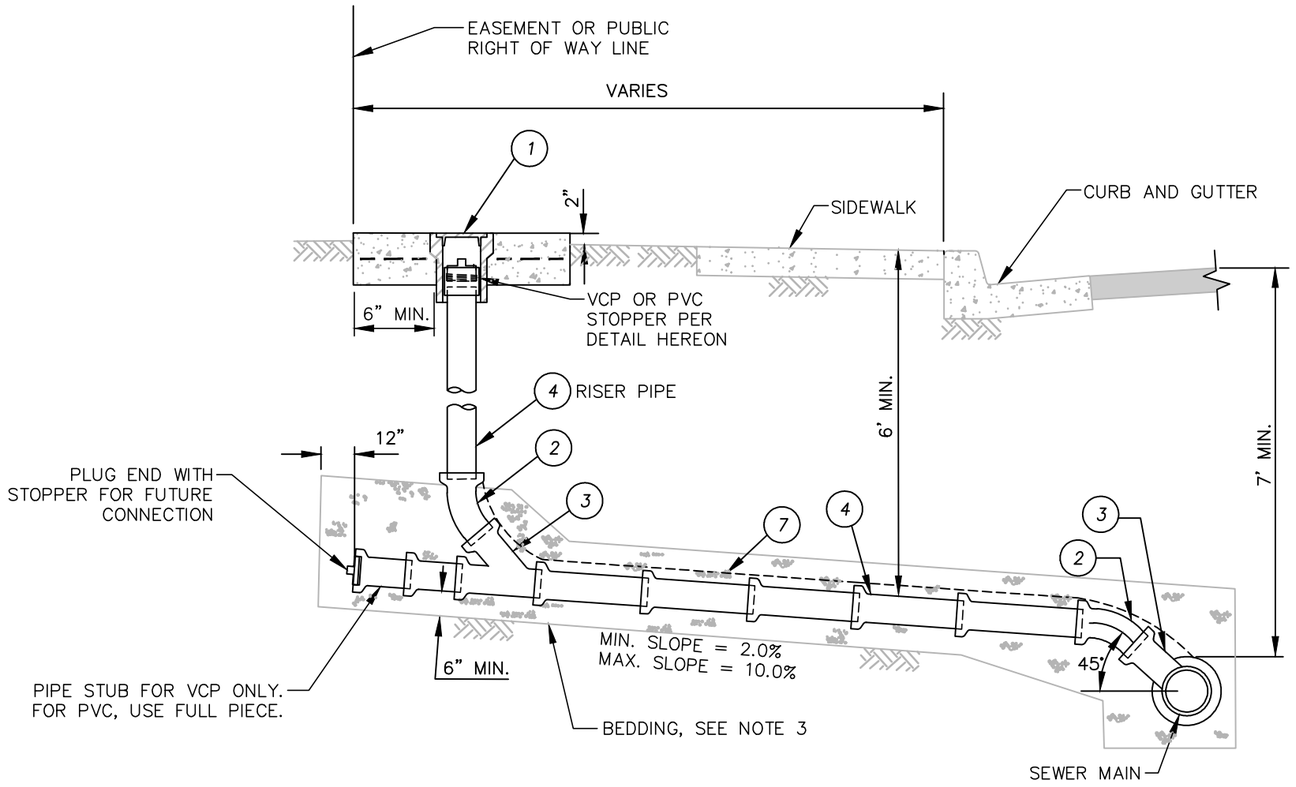
DATE

AUGUST 2023

REVISION

City of ADELANTO

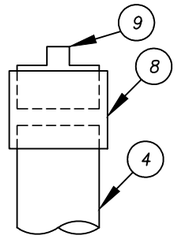
Adelanto STD. DWG. S-1



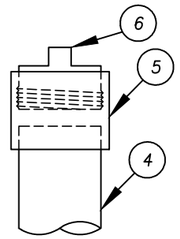
ITEM	MATERIALS
1	PRECAST BOX, FRAME AND COVER PER **ADELANTO** STD. DWG. S-5, COVER SHALL HAVE FOUR 3/4" DIA. HOLES.
2	1/8 BEND (OR OTHER FITTING NECESSARY TO ADJUST TO PROPER GRADE).
3	VCP OR PVC WYE BRANCH FITTING.
4	VCP OR PVC PIPE. LATERAL MATERIAL SHALL MATCH MAIN MATERIAL.
5	SOLVENT WELD X F.I.P.T. SCH 40 PVC COUPLING.
6	PVC SCH. 40 STOPPER M.I.P.T. PLUG WITH MALE SQUARE NUT.
7	PIPE LOCATOR FOR NON-METALLIC PIPE INSTALLATIONS. IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151.
8	BANDED RUBBER COUPLING.
9	PLASTIC PLUG.

NOTES:

1. LATERAL SIZE TO BE DETERMINED ON THE BASIS OF TOTAL NUMBER OF FIXTURE UNITS, BUT IN NO CASE SHALL THE LATERAL DIA. BE LESS THAN THE FOLLOWING:
   - 4" FOR SINGLE FAMILY RESIDENTIAL BUILDINGS
   - 6" FOR MULTIPLE FAMILY RESIDENTIAL BUILDINGS OR PARKS
   - 8" FOR COMMERCIAL, INDUSTRIAL, APARTMENT OR HOTEL BUILDINGS
2. LATERAL RISER WHERE REQUIRED SHALL BE INSTALLED IMMEDIATELY ADJACENT TO DEDICATED EASEMENT OR PUBLIC RIGHT OF WAY LINE. OMIT FOR SINGLE FAMILY RESIDENCES.
3. PLACE 3/4" CRUSHED ROCK BEDDING PER **ADELANTO** STD. SPEC. SECTION 02223.
4. PLUG WYE BRANCH WITH ABS STOPPER OR APPROVED "COOKIE".
5. CONNECTIONS TO THE RISER PIPE ARE NOT PERMITTED.
6. CLEANOUT SHALL NOT BE INSTALLED WITHIN SIDEWALKS, WALKWAYS, CONCRETE SURFACE AREAS, OR ANY PATH OF TRAVEL.

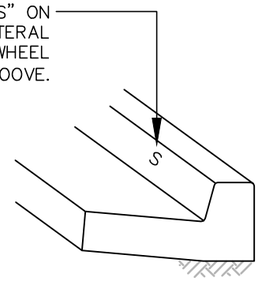


VCP STOPPER DETAIL



PVC STOPPER DETAIL

LOCATE LATERAL WITH 2" HIGH "S" ON FACE OF CURB WHERE THE LATERAL CROSSES UNDER THE CURB. USE WHEEL GRINDER, 1/4" DEEP GROOVE.



SEWER LATERAL TIE-DOWN

SEWER LATERAL

City of Adelanto
APPROVED BY:

Sabra Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

Adelanto
STD. DWG.
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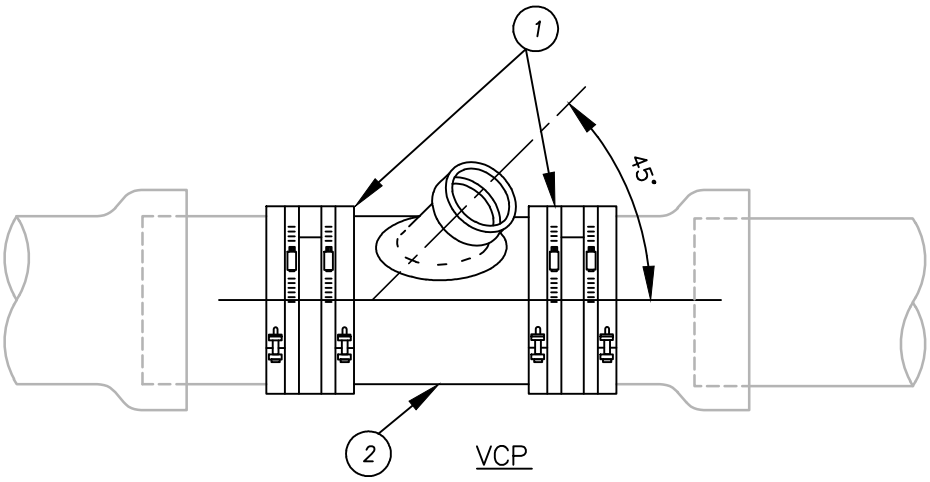
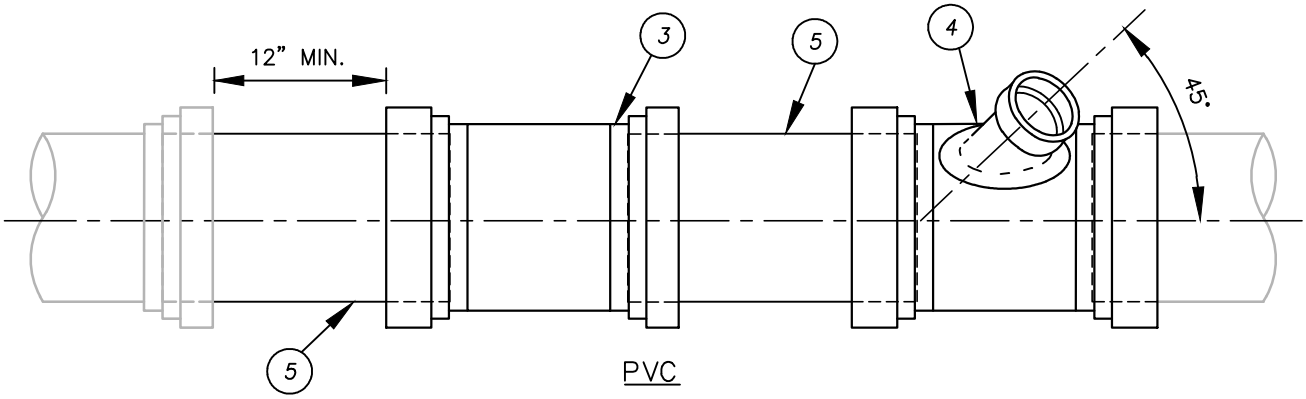


VCP



PVC

ITEM	MATERIALS
1	BANDED RUBBER COUPLING WITH OUTSIDE TYPE 316 STAINLESS STEEL SHEAR RING.
2	VCP WYE FITTING.
3	GASKETED PVC PIPE COUPLING, REPAIR STYLE.
4	GASKETED PVC WYE FITTING.
5	SDR-35 PVC PIPE (PUP), MIN. LENGTH: 12".

NOTES:

1. WHEN 12" MIN. SPACE BETWEEN EDGE OF COUPLING AND BELL CANNOT BE PROVIDED, CUT-OUT NEAREST BELL JOINT AND INSERT PLAIN-END PIPE.
2. ALL DEBRIS SHALL BE KEPT OUT OF THE SEWER. THE PIPE REACH CUT-INTO SHALL BE CLEANED AND BALLED, IF NECESSARY, AS DIRECTED BY THE ADELANTO REPRESENTATIVE.
3. DAMAGED PIPE SHALL BE REPLACED AS DIRECTED BY THE ADELANTO REPRESENTATIVE.
4. SADDLE-TYPE CONNECTIONS SHALL ONLY BE USED FOR SPECIAL SITUATIONS, AND SHALL NOT BE CONSTRUCTED WITHOUT PRIOR ADELANTO APPROVAL.
5. 8" AND LARGER DIA. LATERALS SHALL BE CONNECTED TO MAIN LINE VIA MANHOLE ONLY, PER ADELANTO STD. DWG. S-1.

CUT-IN WYE CONNECTION

City of Adelanto
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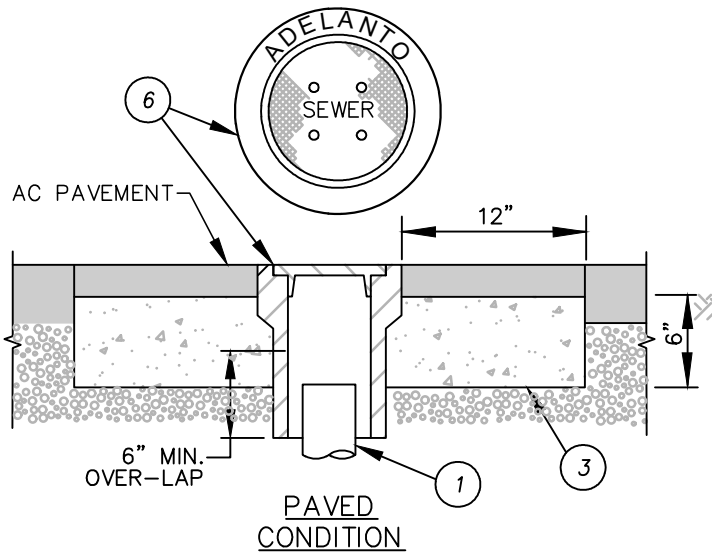
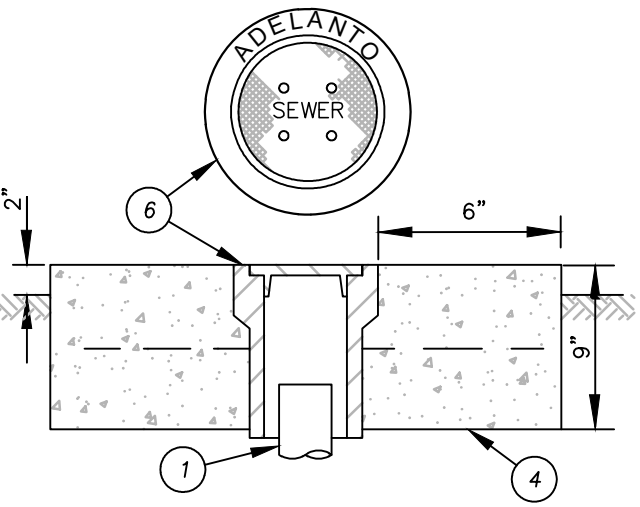
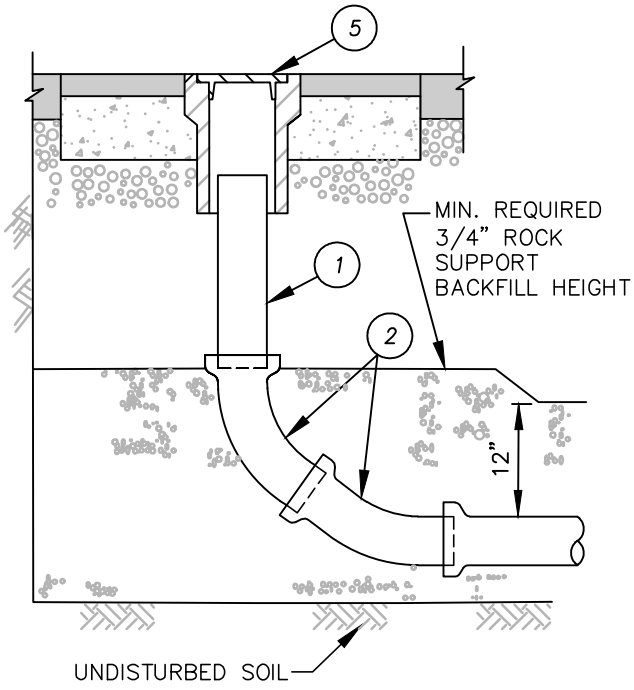


PAVED CONDITION



UNPAVED CONDITION

ITEM	MATERIAL
1	8" CLEAN-OUT RISER, SEE NOTE 1.
2	8" 45° BEND, LONG-RADIUS SWEEP (VCP ONLY).
3	CLASS "B" CONCRETE COLLAR (ROUND).
4	CLASS "B" CONCRETE COLLAR (SQUARE). WITH W.W.F. 1.6 X 1.6.
5	CONSTRUCT FRAME, COVER AND CONCRETE COLLAR PER "PAVED" OR "UNPAVED" CONDITION HEREON.
6	PRECAST BOX, FRAME AND COVER WITH MARKING AS SHOWN HEREON. COVER TO HAVE FOUR 3/4" DIA. HOLES. SEE ADELANTO STD. DWG. W-22 FOR SIMILAR APPLICATION.



ELEVATION

NOTES:

1. CLEANOUT RISER PIPE SHALL BE SAME MATERIAL AS SEWER MAIN.
2. SEWER MAINS LARGER THAN 8" SHALL HAVE TERMINAL MANHOLE.
3. USE BAND SEAL RUBBER REDUCER (VCP/PVC) WHEN VCP IS USED.
4. TIE DOWN ALL CLEANOUTS ON THE NEAREST CURB FACE BY MEANS OF A 4-INCH WHEEL GRINDER, SEE DETAIL ON ADELANTO STD. DWG. S-1, SHEET 2 FOR SIMILAR APPLICATION.
5. CLEANOUT SHALL NOT BE INSTALLED IN SIDEWALK, WALKWAY, CONCRETE SURFACE AREA, OR ANY PATH OF TRAVEL.

TERMINAL CLEANOUT

City of Adelanto
APPROVED BY:

Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

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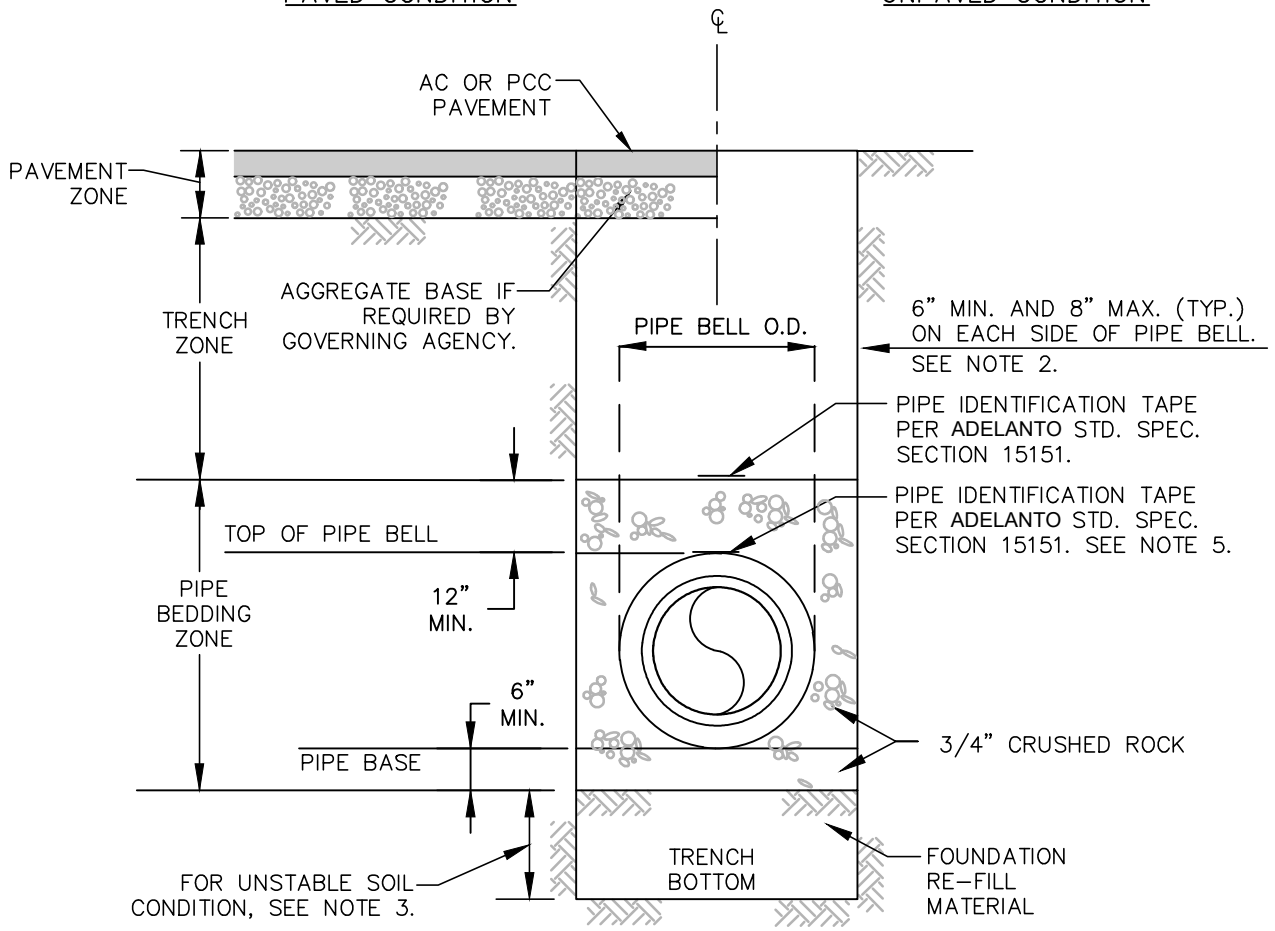

NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH ADELANTO STD. SPEC. SECTION 02223.
2. WHERE CONTRACTOR FAILS TO MAINTAIN PROPER TRENCH WIDTH LIMITS, SPECIAL BACKFILL (SUCH AS ONE-SACK SLURRY) AND BEDDING SHALL BE REQUIRED AS DETERMINED IN THE FIELD BY THE ADELANTO REPRESENTATIVE.
3. IF UNSTABLE SOIL IS ENCOUNTERED, THE ADELANTO REPRESENTATIVE SHALL DETERMINE OVEREXCAVATION DEPTH AND FOUNDATION RE-FILL MATERIAL PER ADELANTO STD. SPEC. SECTION 02223.
4. CONTRACTOR SHALL PROVIDE HAND EXCAVATED "BELL HOLE" FOR EACH PIPE JOINT SO THAT THE WEIGHT OF PIPE DOES NOT BEAR ON THE BELL. CONTRACTOR SHALL RE-FILL AND HAND-TAMP EACH "BELL HOLE" PRIOR TO COMPLETING THE PLACEMENT OF PIPE BEDDING.
5. PIPE IDENTIFICATION TAPE (LABELED SEWER) SHALL BE INSTALLED PER ADELANTO STD. SPEC. SECTION 15151. TAPE SHALL BE FASTENED TO THE PIPE WITH 2" WIDE 10 MIL PIPE WRAP TAPE AT 5' INTERVALS. PIPE WRAP TAPE SHALL BE WRAPPED AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE.
6. THE MIN. DEPTH OF COVER FROM FINISH GRADE TO THE TOP OF THE SEWER MAIN SHALL BE 7' UNLESS OTHERWISE APPROVED BY THE ADELANTO.

SEWER TRENCH

City of Adelanto
APPROVED BY:

Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

Adelanto
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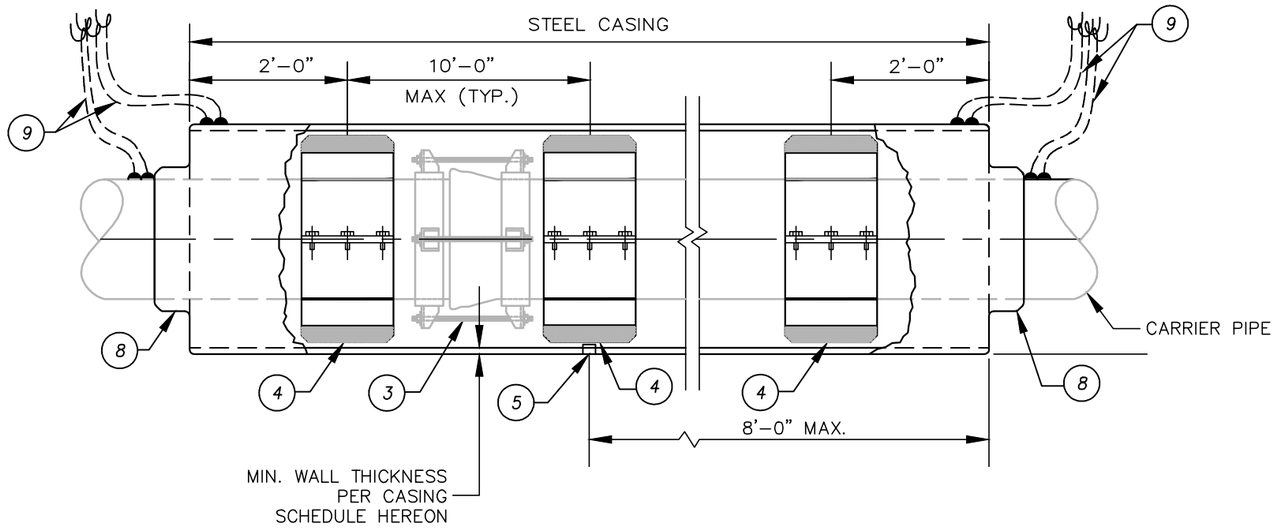
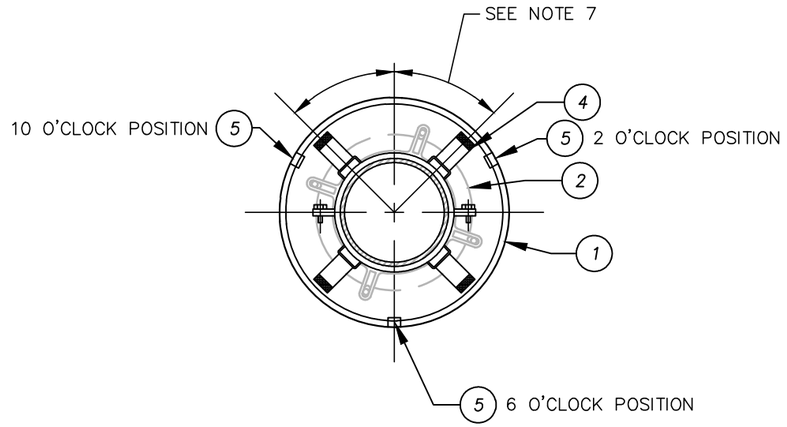
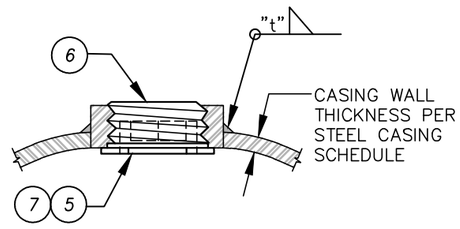




CROSS–SECTION



GROUT FITTING DETAIL

ITEM	MATERIALS
1	STEEL CASING PER **ADELANTO** STD. SPEC. SECTION 02315 AND 02316.
2	CARRIER PIPE JOINT BELL, BEYOND.
3	CARRIER PIPE WITH ALL JOINTS RESTRAINED.
4	STAINLESS STEEL CASING SPACERS WITH UHMW POLYETHYLENE RUNNERS PER **ADELANTO** STD. SPEC. SECTION 02315.
5	GROUT FITTING @ 8' O.C. PER DETAIL HEREON. FOR ALL CASINGS 30" IN DIA. AND LARGER, INSTALL ONE COUPLING IN 6 O'CLOCK POSITION @ 8' O.C.; STAGGER COUPLINGS BETWEEN 10 O'CLOCK AND 2 O'CLOCK POSITIONS EVERY 4 LINEAR FEET ALONG CASING AXIS.
6	3" NPT THREADED STEEL PLUG WITH FLUSH HEAD AND INTERNAL TURN HANDLE.
7	2" NPT STANDARD WEIGHT STEEL PIPE HALF COUPLING.
8	CASING END SEAL PER **ADELANTO** STD. SPEC. SECTION 02315 AND 02316 WITH STAINLESS STEEL WORM–SCREW BAND CLAMPS.
9	CASING TEST STATION PER **ADELANTO** STD. DWG. CP–3 (OMIT 2 WIRES FOR NON–METALLIC CARRIER PIPE).

NOTES:

1. CASING SHALL BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD, OR OPEN TRENCH. SEE **ADELANTO** STD. SPEC. SECTIONS 02315 AND 02316. BEDDING MATERIAL FOR OPEN TRENCH CASING INSTALLATION SHALL CONSIST OF 6" OF 3/4" CRUSHED ROCK.
2. SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN SCHEDULE. FOR LONG BORES OR SPECIAL SITUATIONS GREATER WALL THICKNESS THAN SHOWN IN SCHEDULE MAY BE REQUIRED.
3. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE WELDED FULL–CIRCUMFERENCE.
4. CARRIER PIPE SHALL BE PRESSURE TESTED PRIOR TO SEALING ENDS OF CASING.
5. EACH END OF CASING SHALL BE SEALED WITH APPROVED RUBBER CASING END SEALS.
6. BACKFILL FOR CASING IN OPEN CUT SHALL BE PER **ADELANTO** STD. DWG. S–6.
7. NUMBER AND PLACEMENT OF SPACERS ON CARRIER PIPE PER MANUFACTURER'S SPECIFICATION.
8. CATHODIC PROTECTION REQUIRED FOR STEEL CASING 40 FEET IN LENGTH AND LONGER ONLY.
9. ALL CARRIER PIPE JOINTS INSIDE THE STEEL CASING AND A MIN. 5' OUTSIDE STEEL CASING SHALL BE RESTRAINED.
10. REFER TO TABLE IN **ADELANTO** STD. SPEC SECTION 02315 AND 02316 FOR ANNULAR SPACE FILL REQUIREMENTS.

STEEL CASING SCHEDULE		
NOMINAL CARRIER PIPE SIZE	MINIMUM CASING SIZE (NOMINAL)	MINIMUM WALL THICKNESS
4"	12"	1/4"
6"	16"	5/16"
8"	18"	5/16"
10"	20"	5/16"
12"	24"	3/8"
14"	27"	3/8"
16"	30"	3/8"
18"	30"	1/2"
20"	36"	1/2"
24"	42"	1/2"

STEEL CASING FOR SEWER PIPE

City of Adelanto
APPROVED BY:

Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

Adelanto
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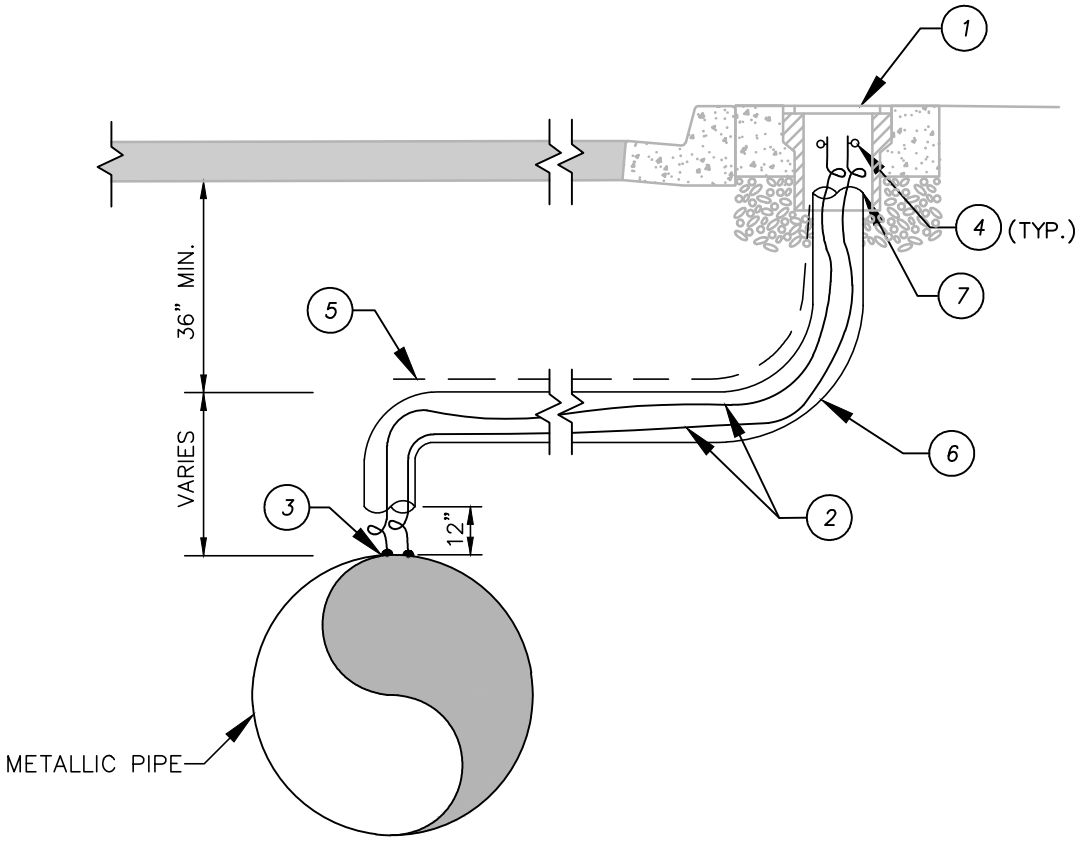
Cathodic Protection Standard Drawings

NUMBER	DESCRIPTION	DATE
CP-1	Two Wire Test Station	Jan 2021
CP-2	<Not Used>	
CP-3	Casing Test Station	Jan 2021
CP-4	Insulator Test Station	Jan 2021
CP-5	Cathodic Protection Rectifier and Shunt Panel	Jan 2021
CP-6	Test Box, Wiring, and Identification Tags	Jan 2021
CP-7	Test Box Locations	Jan 2021
CP-8	Alumino-Thermic (CAD) Welding	Jan 2021
CP-9	Bonding for Pipe Joints and Fittings	Jan 2021
CP-10	Insulating Joints	Jan 2021



ITEM	MATERIALS
1	TEST BOX AND CONCRETE PAD PER ADELANTO STD. DWG. CP-6.
2	NO. 8 STRANDED COPPER WIRE WITH BLACK INSULATION PER ADELANTO STD. SPEC. SECTION 16640. COIL BOTH ENDS PER NOTE 1.
3	ALUMINO-THERMIC WELD PER ADELANTO STD. SPEC. SECTION 16640 AND ADELANTO STD. DWG. CP-8 AND CP-9 (FOR METALLIC PIPE ONLY).
4	IDENTIFICATION TAGS PER ADELANTO STD. DWG. CP-6.
5	IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151.
6	2" SCH 40 PVC CONDUIT WITH LONG SWEEP ELBOWS FROM PIPE TO TEST BOX.
7	CAP CONDUIT END WITH DUCT SEAL, GARDNER BENDER DS-110N, OR EQUAL.

NOTES:

1. PROVIDE 36" OF COILED SLACK IN EACH WIRE AT EACH END (I.E. AT PIPE AND AT BOX). PUT THE SLACK AT THE BOX END INSIDE THE BOX.
2. FOR TEST STATIONS ON PIPES IN STREETS, SEE ADELANTO STD. DWG. CP-7.

TWO WIRE TEST STATION

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

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City of ADELANTO

Adelanto
STD. DWG.
CP-1

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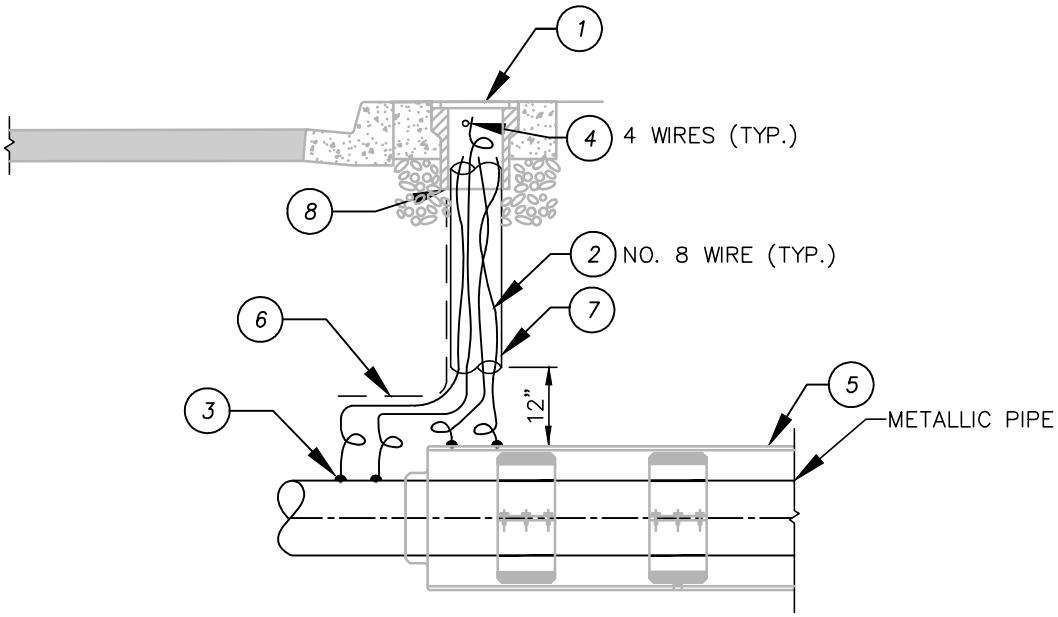

ITEM	MATERIALS
1	TEST BOX AND CONCRETE PAD PER **ADELANTO** STD. DWG. CP–6.
2	NO. 8 STRANDED COPPER WIRE WITH BLACK INSULATION PER **ADELANTO** STD. SPEC. SECTION 16640. COIL BOTH ENDS PER NOTE 5. CONNECT WIRES WITHIN 5 FEET OF END OF CASING.
3	ALUMINO–THERMIC WELD PER **ADELANTO** STD. SPEC. SECTION 16640 AND **ADELANTO** STD. DWG. CP–8 AND CP–9 (FOR METALLIC PIPE ONY).
4	IDENTIFICATION TAGS PER **ADELANTO** STD. DWG. CP–6.
5	STEEL CASING PER **ADELANTO** STD. DWG. W–21 AND S–7.
6	IDENTIFICATION TAPE PER **ADELANTO** STD. SPEC. SECTION 15151.
7	2" SCH 40 PVC CONDUIT WITH LONG SWEEP ELBOWS FROM PIPE TO TEST BOX.
8	CAP CONDUIT END WITH DUCT SEAL, GARDNER BENDER DS–110N, OR EQUAL.

NOTES:

1. FOR TEST STATIONS INSTALLED CROSS COUNTRY OR IN UNPAVED AREAS, A UTILITY MARKER SHALL BE INSTALLED ADJACENT TO TEST STATION AND APPURTENANCES PER **ADELANTO** STD. DWG. G–2.
2. FOR TEST BOX LOCATIONS, SEE **ADELANTO** STD. DWG. CP–7.
3. THE TEST STATION SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE TEST STATION BOX.
4. THE TEST BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
5. PROVIDE 36" OF COILED SLACK IN EACH WIRE AT EACH END (I.E. AT PIPE AND AT BOX). PUT THE SLACK AT THE BOX END INSIDE THE BOX.

CASING TEST STATION

City of Adelanto
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Saba Engineer 12/7/23
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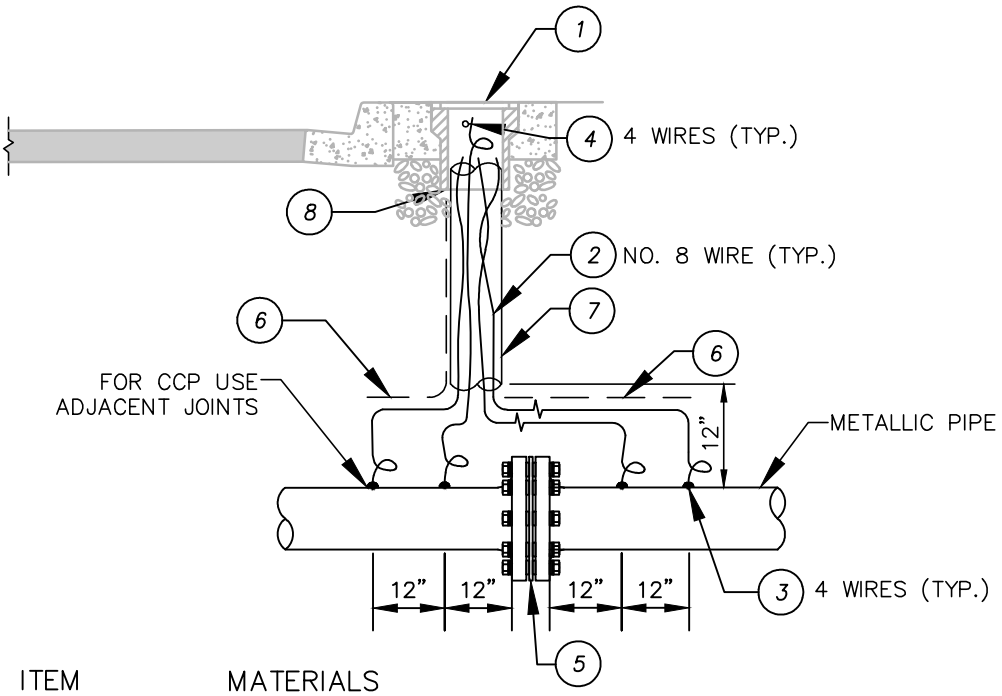

ITEM	MATERIALS
1	TEST BOX AND CONCRETE PAD PER ADELANTO STD. DWG. CP–6.
2	NO. 8 STRANDED COPPER WIRE WITH BLACK INSULATION PER ADELANTO STD. SPEC. SECTION 16640. COIL BOTH ENDS PER NOTE 5.
3	ALUMINO–THERMIC WELD PER ADELANTO STD. SPEC. SECTION 16640 AND ADELANTO STD. DWG. CP–8 AND CP–9 (FOR METALLIC PIPE ONLY).
4	IDENTIFICATION TAGS PER ADELANTO STD. DWG. CP–6.
5	INSULATING TEST KIT PER ADELANTO STD. DWG. CP–10.
6	IDENTIFICATION TAPE PER ADELANTO STD. SPEC. SECTION 15151.
7	2" SCH 40 PVC CONDUIT WITH LONG SWEEP ELBOWS FROM PIPE TO TEST BOX.
8	CAP CONDUIT END WITH DUCT SEAL, GARDNER BENDER DS–110N, OR EQUAL.

NOTES:

1. FOR TEST STATIONS INSTALLED CROSS COUNTRY OR IN UNPAVED AREAS, A UTILITY MARKER SHALL BE INSTALLED ADJACENT TO TEST STATION AND APPURTENANCES PER ADELANTO STD. DWG. G–2.
2. FOR TEST BOX LOCATIONS, SEE ADELANTO STD. DWG. CP–7.
3. THE TEST STATION SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE TEST STATION BOX.
4. THE TEST BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
5. PROVIDE 36" OF COILED SLACK IN EACH WIRE AT EACH END (I.E. AT PIPE AND AT BOX). PUT THE SLACK AT THE BOX END INSIDE THE BOX.

INSULATOR TEST STATION

City of Adelanto
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Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

Adelanto
STD. DWG.
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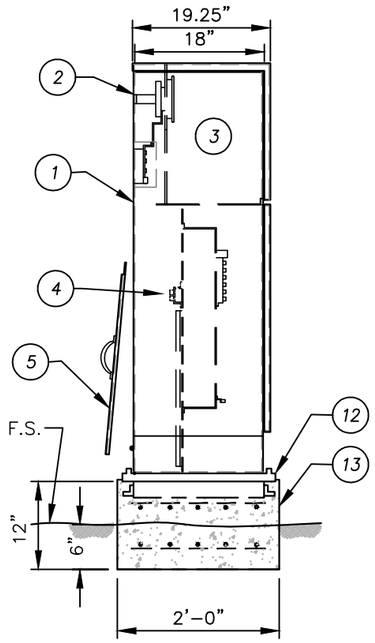
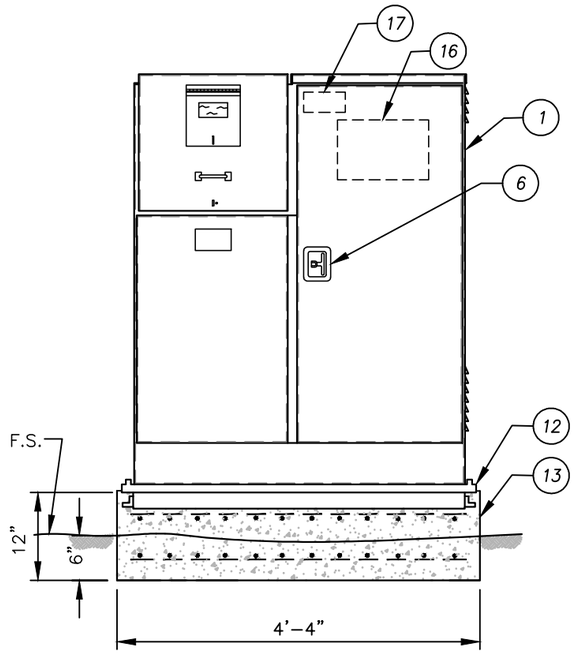
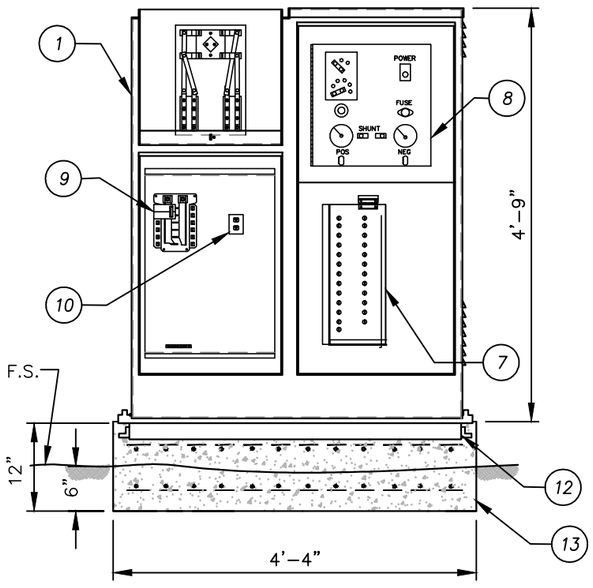


SIDE VIEW

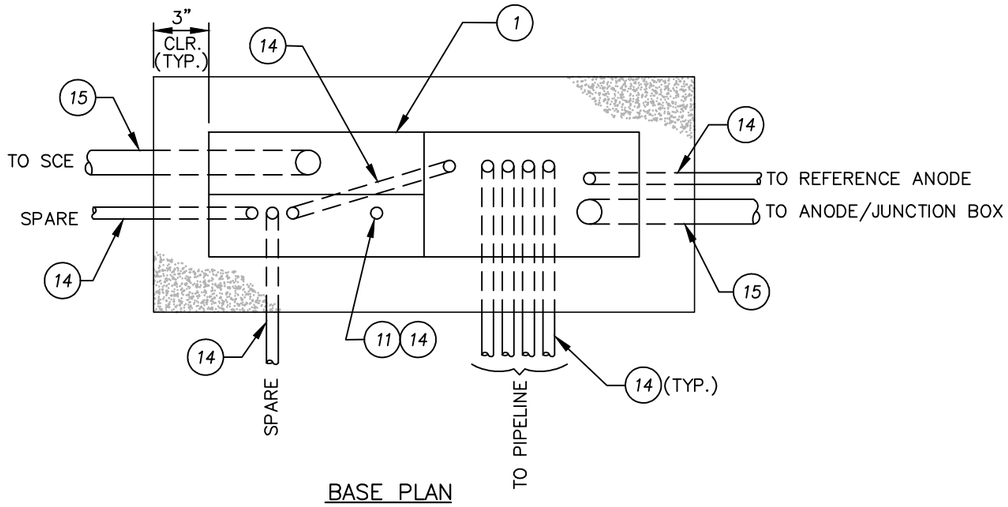


EXTERIOR VIEW



INTERIOR VIEW

ITEM	MATERIALS
1	COMBINATION ELECTRIC SERVICE AND RECTIFIER CABINET. MYERS POWER PEDESTAL PRODUCT NO. MEUG46IX–M100–316.
2	SCE METER SOCKET.
3	SCE METER SECTION.
4	UTILITY LANDING.
5	REMOVABLE UTILITY ACCESS COVER WITH PADLOCK.
6	T–HANDLE WITH PADLOCK HASP.
7	SHUNT PANEL. SEE SHEET 2 OF 2.
8	RECTIFIER. SEE SHEET 2 OF 2. MOUNT IN CABINET WITH "SLIDE–OUT" RACK.
9	12 CIRCUIT LOAD CENTER.
10	GFI RECEPTACLE, 20 AMP.
11	COPPER CLAD GROUND ROD WITH NO. 6 AWG BARE SOLID COPPER CONDUCTOR. CADWELD TO GROUND ROD AND PEDESTAL.
12	PADMOUNT SLEEVE, MYERS.
13	CONCRETE PAD WITH NO. 4 BARS @ 12" O.C. BOTH WAYS TOP AND BOTTOM.
14	2" SCH 40 CONDUIT, EXTEND 2" ABOVE CONCRETE PAD.
15	3" SCH 40 CONDUIT, EXTEND 2" ABOVE CONCRETE PAD.
16	METAL POCKET HOLDER ATTACHED TO INSIDE OF CABINET DOOR.
17	SCE ADDRESS WITH VINYL ADHESIVE 1" DIE CUT VINYL LETTERS ON EXTERIOR OF CABINET DOOR.



BASE PLAN

NOTE:

1. CONDUIT PENETRATIONS THROUGH SLAB AND IN AND OUT OF CABINETS SHALL BE PVC LINED AND COATED OCAL PER **ADELANTO** STD. SPEC. SECTION 16110.

CATHODIC PROTECTION RECTIFIER AND SHUNT PANEL

City of Adelanto
APPROVED BY:
Sabo Engineer 12/7/23
DATE

AUGUST 2023
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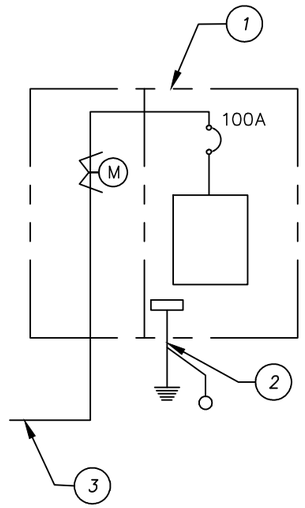
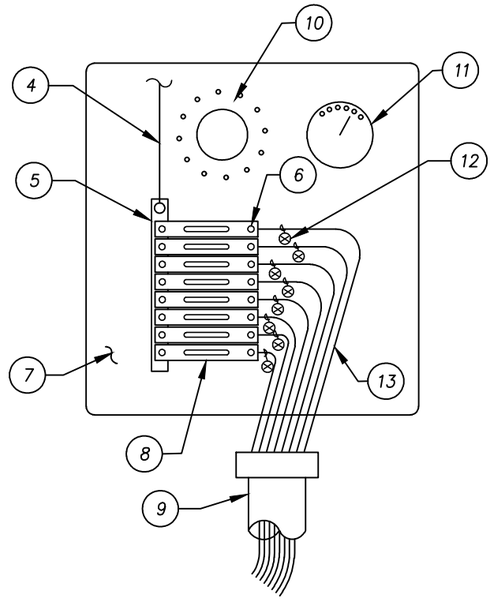
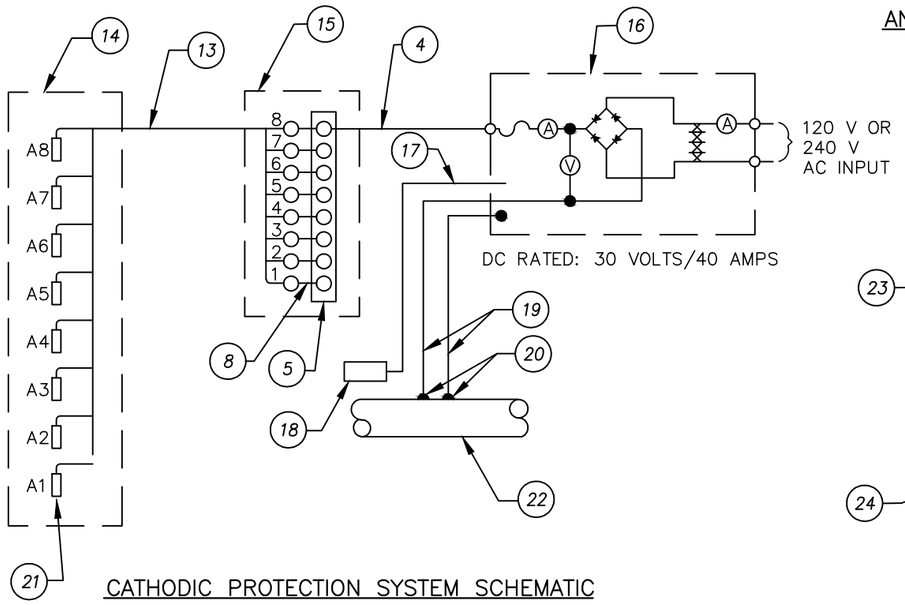


SINGLE LINE DIAGRAM

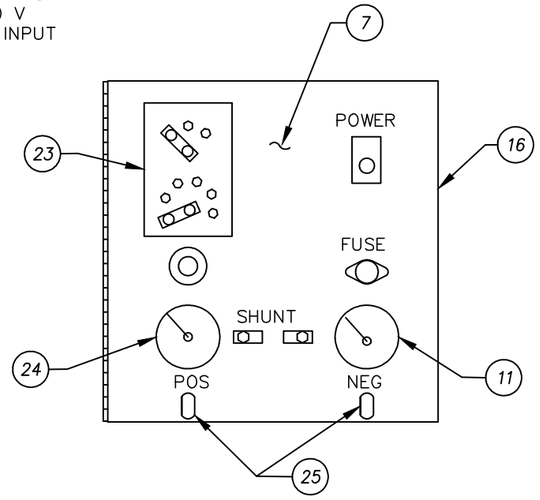


TO ANODE/JUNCTION BOX

ANODE SHUNT PANEL



CATHODIC PROTECTION SYSTEM SCHEMATIC



RECTIFIER

ITEM	MATERIALS
1	COMBINATION ELECTRIC SERVICE AND RECTIFIER CABINET. MYERS POWER PEDESTAL PRODUCT NO. MEUG46IX–M100–316.
2	COPPER CLAD GROUND ROD WITH NO. 6 AWG BARE SOLID COPPER CONDUCTOR. CADWELD TO GROUND ROD AND PEDESTAL.
3	(1) 3" CONDUIT TO ELECTRIC UTILITY MANHOLE.
4	ANODE HEADER WIRE. (1) NO. 4 AWG STRANDED COPPER WIRE WITH HMWPE INSULATION TO RECTIFIER.
5	COPPER BUS BAR (1' X 1/8").
6	SCREW TERMINALS. ILSCO SLU–70 COPPER MECHANICAL LUG, OR EQUAL.
7	BAKELITE PANEL MATERIAL, ENGRAVED.
8	0.01 OHM SHUNT (TYP. OF 8). REFER TO PROJECT SPECIFICATIONS.
9	3" SCH 40 PVC CONDUIT TO ANODE BED 3"ø CASING. INSTALL WEATHERPROOF SEALING MASTIC INSIDE CONDUIT TO SEAL OUT GASSES FROM ANODE BED.
10	INDIVIDUAL SHUNT OUTPUT SELECTOR SWITCH.
11	PANEL–MOUNT DC AMMETER.
12	PVC IDENTIFICATION TAG WITH ANODE NO. (TYP. OF 8).
13	ANODE LEAD WIRES (TYP. 8 – NO. 8 AWG) STRANDED COPPER WIRES WITH HMWPE INSULATION PER **ADELANTO** STD. SPEC. SECTION 16640. FOR EXACT QUANTITY, REFER TO PROJECT SPECIFICATIONS.
14	DEEP ANODE SYSTEM. REFER TO PROJECT SPECIFICATIONS.
15	ANODE SHUNT PANEL WITH SHUNT SELECT SWITCH AND AMMETER.
16	RECTIFIER. AIR–COOLED WITH MANUAL TAP ADJUSTMENT. MOUNT IN CABINET WITH SLIDE–OUT RACK. UNIVERSAL BRAND OR AS OTHERWISE SPECIFIED IN PROJECT SPECIFICATIONS.
17	ANODE HEADER WIRE. (1) NO. 8 AWG STRANDED COPPER WIRE WITH THWN INSULATION.
18	REFERENCE ELECTRODE. SEE **ADELANTO** STD. SPEC. SECTION 16640.
19	PIPE LEAD WIRE. (2) NO. 4 AWG STRANDED COPPER WIRE WITH HMWPE INSULATION.
20	ALUMINO–THERMIC WELD. SEE **ADELANTO** STD. DWG. CP–8.
21	ANODES (TYP. OF 8). FOR EXACT QUANTITY, REFER TO PROJECT SPECIFICATIONS.
22	PIPELINE BEING PROTECTED.
23	COARSE AND FINE STEP VOLTAGE CONTROL TAPS.
24	PANEL–MOUNT DC VOLT METER.
25	DC OUTPUT TERMINALS WITH SOLDERLESS LUG.

NOTES:

1. SERIES CONNECTED RATING OF BREAKERS MAY BE USED. ALL BREAKERS MUST BE OF SAME MANUFACTURER AND U.L. LISTED SERIES CONNECTED SHORT CIRCUIT RATING FOR THAT VOLTAGE.
2. FIELD MARKED ON ALL EQUIPMENT SHALL READ: "CAUTION SERIES RATED SYSTEM 42,000A AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED".

CATHODIC PROTECTION RECTIFIER AND SHUNT PANEL

City of Adelanto
APPROVED BY:
Sales Engineer 12/7/23
DATE

AUGUST 2023
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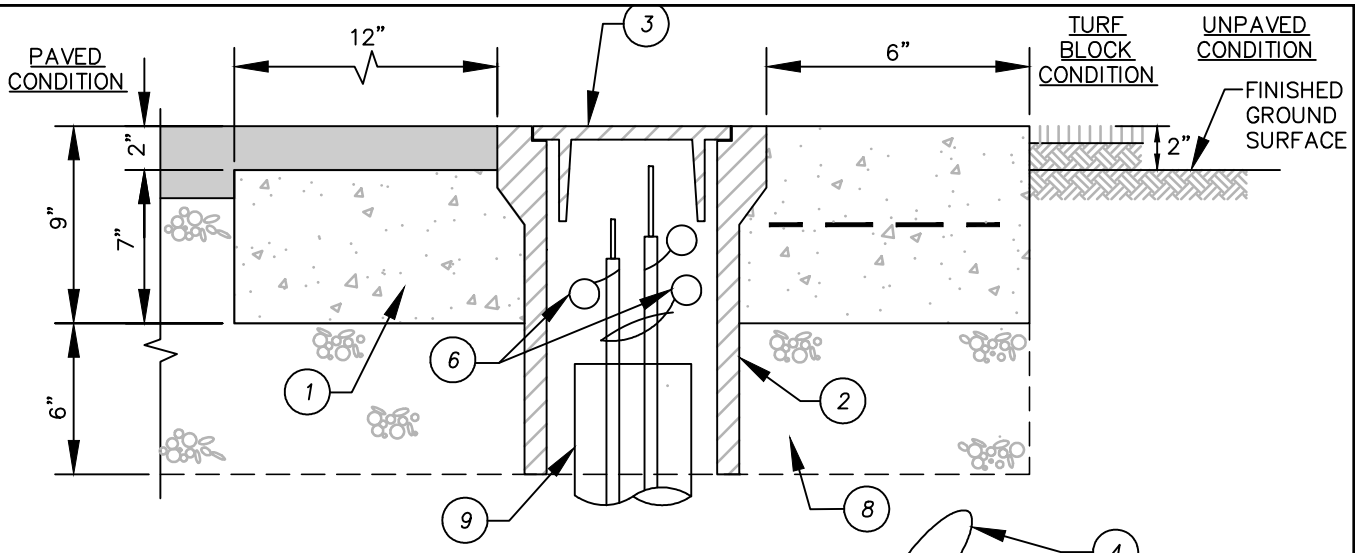
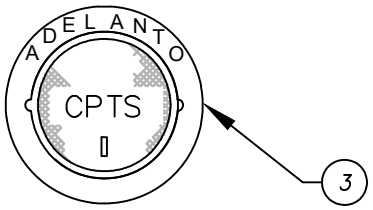
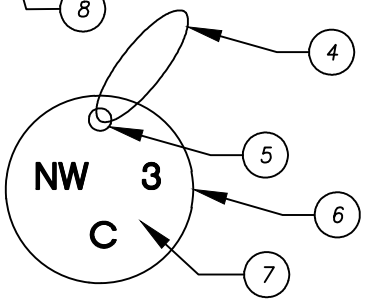




COVER



IDENTIFICATION TAG

ITEM	MATERIALS
1	CLASS "B" CONCRETE COLLAR. REINFORCE WITH W.W.F. 1.6 X 1.6 IN UNPAVED AND TURF BLOCK CONDITIONS.
2	TEST BOX AND FRAME PER ADELANTO STD. SPEC. SECTION 16640.
3	TEST BOX COVER PER DETAIL HEREON. CAST IRON LID PER ADELANTO STD. SPEC. SECTION 16640.
4	NYLON WIRE.
5	3/16" DIA. HOLE.
6	2" DIA. PVC IDENTIFICATION TAG PER ADELANTO STD. SPEC. SECTION 16640 AND DETAIL HEREON. SEE SHEET 2 FOR TEST BOX IDENTIFICATION TAG AND WIRE IDENTIFICATION TAG LABELING STANDARDS. BLANK PVC IDENTIFICATION TAG PROVIDED BY ADELANTO FOR CONTRACTOR'S USE.
7	1/4" HIGH LETTERS AND NUMBERS.
8	3/4" CRUSHED ROCK BEDDING.
9	2" SCH. 40 PVC CONDUIT.

NOTES:

1. INSTALLATION TYPICAL FOR TWO WIRE, INSULATING JOINT, AND CASING TEST STATIONS. SEE SHEET 2 FOR LABELING STANDARDS.
2. PROVIDE 36" OF COILED SLACK IN EACH WIRE AT EACH END (I.E. AT PIPE AND AT BOX). PUT THE SLACK AT THE BOX END INSIDE THE BOX.
3. STRIP INSULATION FROM END OF EACH TEST LEAD, MIN. 1/4", MAX. 1/2". INSTALL WIRE NUTS AND ANTI-ARC COMPOUND TO PROTECT BARE WIRE ENDS.

TEST BOX, WIRING AND IDENTIFICATION TAGS

City of Adelanto
APPROVED BY:

Saba Engineer 12/7/23
DATE

AUGUST 2023
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City of ADELANTO

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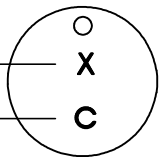
WIRE NUMBER

X = SEQUENTIAL, 1 DIGIT NUMBER ASSIGNED TO EACH TEST STATION WIRE; UNIQUE TO EACH TEST WIRE. LOWEST NUMBERS (1 AND 2) ARE TO BE CLOSEST TO THE JOINT OR TEST BOX SITE.

FACILITY IDENTIFIER

P = PIPELINE
C = CASING
A = ANODE
I J = INSULATING JOINT



(1 TAG FOR EACH WIRE IN THE TEST BOX)

WIRE IDENTIFICATION LABELING STANDARDS

STATION NUMBER = TS - _ _ _

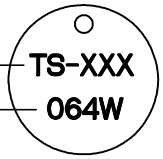
TS = CATHODIC PROTECTION TEST STATION BOX

XXX = SEQUENTIAL, 3 DIGIT NUMBER ASSIGNED TO EACH TEST STATION; UNIQUE TO THE ATLAS PAGE.

*SEE NOTE 1

IRWD ATLAS PAGE

*SEE NOTE 1



(1 TAG FOR EACH TEST BOX)

PIPE SIZE

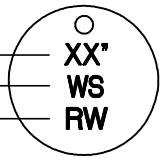
XX" = DIAMETER

PIPE MATERIAL

WS = WELDED STEEL
DI = DUCTILE IRON

SYSTEM TYPE

DW = DOMESTIC WATER
RW = RECYCLED WATER
UT = UNTREATED WATER
FM = FORCE MAIN (SEWER)



(1 TAG FOR EACH TEST BOX)

TEST BOX IDENTIFICATION LABELING STANDARDS

NOTES:

1. ADELANTO WILL PROVIDE THIS INFORMATION TO THE CONTRACTOR DURING THE TAG SUBMITTAL PROCESS.
2. ADELANTO WILL PROVIDE BLANK PLASTIC TAGS FOR EACH WIRE AND TEST BOX TO THE CONTRACTOR.
3. THE CONTRACTOR SHALL PROVIDE THE REMAINING INFORMATION, ENGRAVE THE TAGS, AND INSTALL TAGS AT EACH TEST BOX.

TEST BOX, WIRING AND IDENTIFICATION TAGS

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

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REVISION

City of ADELANTO

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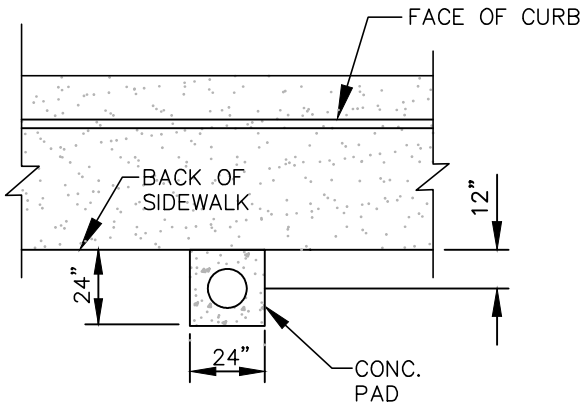
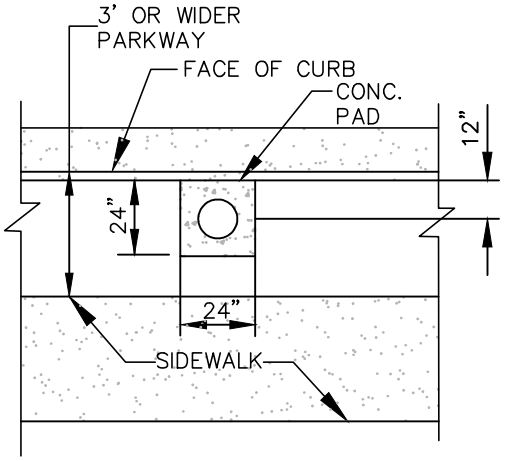
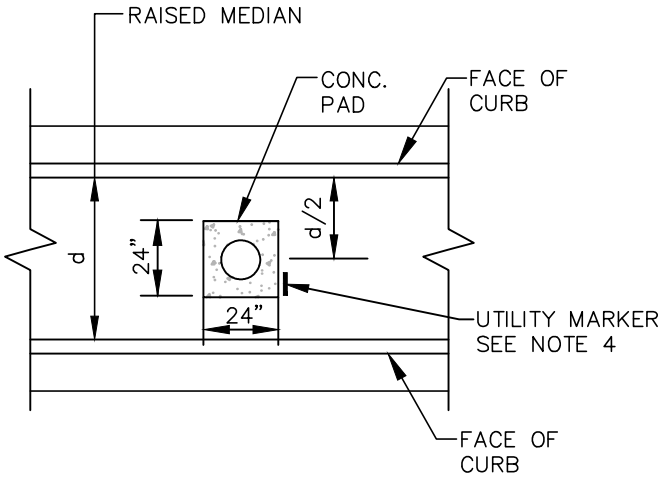


CASE I – SIDEWALK ADJACENT TO CURB



CASE II – SIDEWALK NOT ADJACENT TO CURB



CASE III – CENTER MEDIAN

NOTES:

1. USE CASE I OR II FOR PIPE CLOSE TO THE CURB.
2. USE CASE III FOR PIPE CLOSE TO THE CENTER MEDIAN WHERE MEDIAN IS RAISED AND d > 10'–0".
3. IF DIFFERENT FROM THESE THREE CASES, ADELANTO'S REPRESENTATIVE SHALL DETERMINE THE TEST BOX LOCATION.
4. INSTALL UTILITY MARKER PER ADELANTO STD. DWG. G–2.

TEST BOX LOCATIONS

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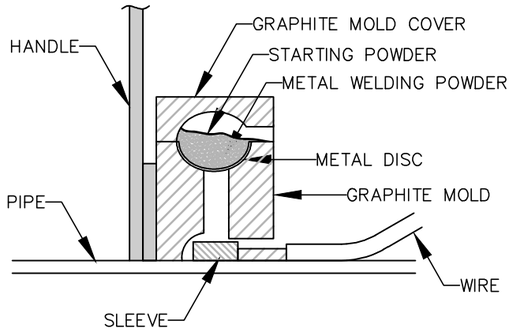
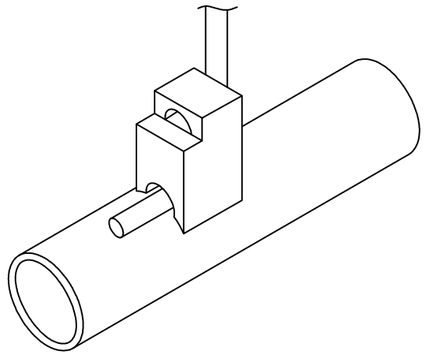
SHEET 1 OF 1





NOTES:

1. ALL WIRE WELDS SHALL BE MIN. 6" APART.
2. CAD–WELD MOLD SHOWN IS FOR HORIZONTAL SURFACES. FOR VERTICAL SURFACES SIDE WELD MOLD IS REQUIRED.

CATHODIC PROTECTION TEST STATION			
PIPE MATERIAL	WIRE SIZE	MOLD SIZE	SHOT MIX
STEEL CML&C	#8 AWG STRANDED	CAHAA–1G	CA–15
STEEL CYLINDER PIPE	#8 AWG STRANDED	CAHAA–1G	CA–15
DUCTILE IRON PIPE	#8 AWG STRANDED	CA 32X–F19	XF–19

JOINT BONDING			
PIPE MATERIAL	WIRE SIZE	MOLD SIZE	SHOT MIX
STEEL CML&C	#4 AWG STRANDED	CAHAA–1G	CA–15
STEEL CYLINDER PIPE	#4 AWG STRANDED	CAHAA–1G	CA–15
DUCTILE IRON PIPE	#4 AWG STRANDED	CA 32X–F19	XF–19

STEP 1: REMOVE COATING OR ENCASEMENT FROM PIPE.

STEP 2: FILE OR GRIND PIPE SURFACE TO BARE SHINY METAL (EQUIVALENT TO SSPC–10 "NEAR WHITE METAL") TO A MIN. SIZE OF AN AREA OF 3" X 3".

STEP 3: PREHEAT THE AREA TO BE CAD–WELDED WITH A PROPANE TORCH TO REMOVE ANY SURFACE MOISTURE (DO NOT OVER HEAT).

STEP 4: STRIP 1" OF INSULATION FROM END OF CP TEST WIRE.

STEP 5: WRAP TEST LEAD WIRE ONCE AROUND OUTSIDE CIRCUMFERENCE OF PIPE THEN TIE WIRE INTO A "HALF HITCH" KNOT APPROXIMATELY 12" AWAY FROM CAD–WELD AREA. LEAVE 12" OR MORE OF WIRE (SLACK) BETWEEN KNOT AND CAD–WELD (THIS WILL HELP PREVENT FUTURE DAMAGE TO CAD–WELD).

STEP 6: INSTALL APPROPRIATE CAD–WELD PROTECTIVE SLEEVE ONTO SPECIFIC AWG WIRE SIZE. (REFER TO TABLES HEREON).

STEP 7: SELECT CORRECT CAD–WELD GRAPHITE MOLD AND APPROPRIATE WELDING POWDER FOR THE SIZE AND TYPE OF WIRE AND METALLIC PIPE THAT IS TO BE WELDED (REFER TO TABLES HEREON).

STEP 8: INSPECT AND CLEAN THE GRAPHITE MOLD.

STEP 9: INSERT CAD–WELD DISC IN BOTTOM OF GRAPHITE MOLD, POUR ENTIRE CONTENTS OF SHOT (ALUMINO–THERMIC WELD POWDER AND STARTER) INTO GRAPHITE MOLD.

STEP 10: PLACE WIRE IN THE CENTER OF THE CLEANED AREA SO THAT ALL OF THE STRIPPED WIRE IS IN CONTACT WITH THE PIPE SURFACE.

STEP 11: PLACE LOADED GRAPHITE MOLD OVER WIRE AND HOLD FIRMLY IN PLACE.

STEP 12: POSITION YOURSELF (AND ANY OTHER PERSONNEL) AT LEAST 90° AWAY FROM IGNITION PORT OPENING.

STEP 13: HOLD FLINT GUN AT IGNITION PORT AND IGNITE STARTING POWDER.

STEP 14: REMOVE GRAPHITE MOLD FROM PIPE AFTER CAD–WELD COMBUSTION HAS STOPPED.

STEP 15: REMOVE SLAG FROM WELD AREA USING A WELDING PEEN HAMMER.

STEP 16: GRASP WIRE AND APPLY TENSION TO WIRE WHILE STRIKING WELD WITH A 2 LBS. HAMMER TO CHECK SOUNDNESS OF WELD. (BE CAUTIOUS OF DAMAGE TO INTERIOR OF PIPE LINING.)

STEP 17: COAT WIRE, CAD–WELD, AND EXPOSED PIPE SURFACE WITH APPROVED CONNECTION COATING PER **ADELANTO** STD. SPEC. SECTION 16640.

STEP 18: REPLACE PIPE COATING AND PLASTIC WRAP OR TAPE IF REQUIRED.

ALUMINO-THERMIC (CAD) WELDING

City of Adelanto

APPROVED BY:

Saba Engineer 12/7/23

DATE

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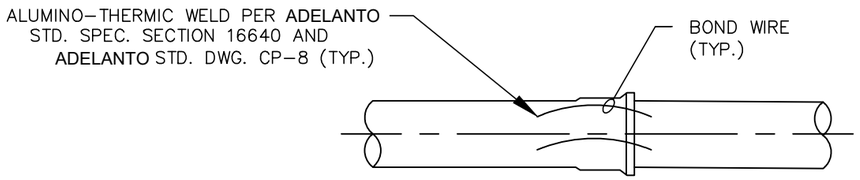
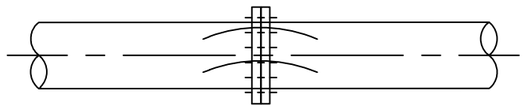
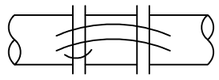
Adelanto STD. DWG. CP-8



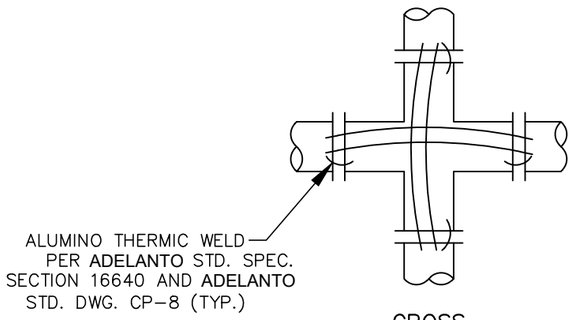
BELL AND SPIGOT PIPE JOINT



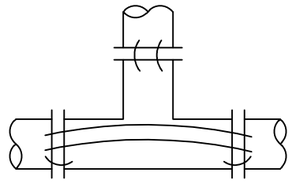
FLANGED OR MECHANICAL PIPE JOINT



ADAPTER AND FLEXIBLE COUPLING



CROSS



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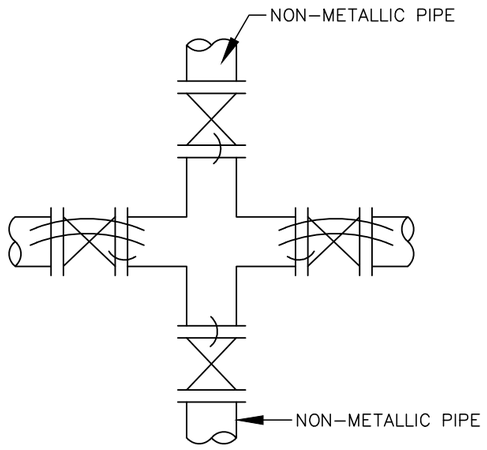
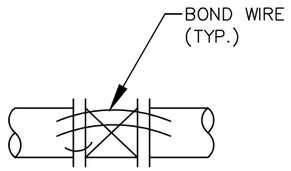
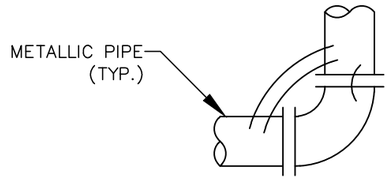


VALVE CROSSING



VALVE



BEND

NOTES:

1. ALL WIRE WELDS SHALL BE MIN. 6" APART.
2. BOND WIRES SHALL NOT BE INSTALLED ACROSS INSULATING JOINTS.
3. COAT WELD PER **ADELANTO** STD. SPEC. SECTION 16640.
4. THREE BOND WIRES ARE REQUIRED FOR PIPE DIAMETERS 18" OR LARGER.
5. ALL BOND WIRES SHALL BE AS SPECIFIED IN **ADELANTO** STD. SPEC. SECTION 16640.
6. BOND WIRES AT VALVE CROSSING SHALL BE WELDED AT A DISTANCE OF 6" FROM FACE OF FLANGE.
7. BOND WIRES SHALL BE AWG NO. 4 STRANDED COPPER WIRE.

BONDING FOR PIPE JOINTS AND FITTINGS

City of Adelanto

APPROVED BY:

Saba Engineer 12/7/23

DATE

AUGUST 2023

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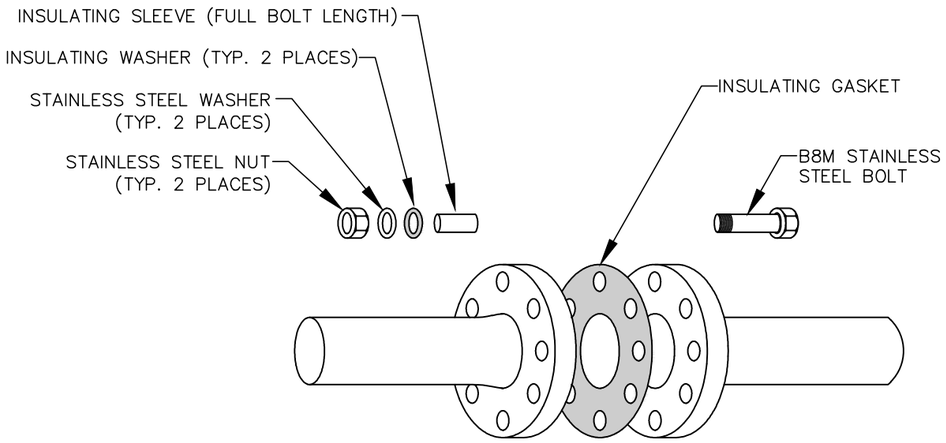
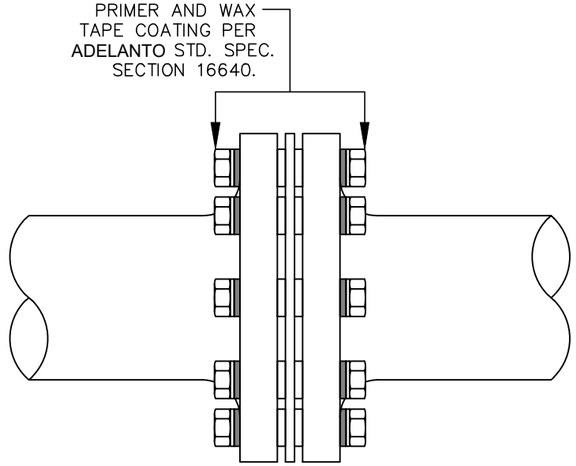
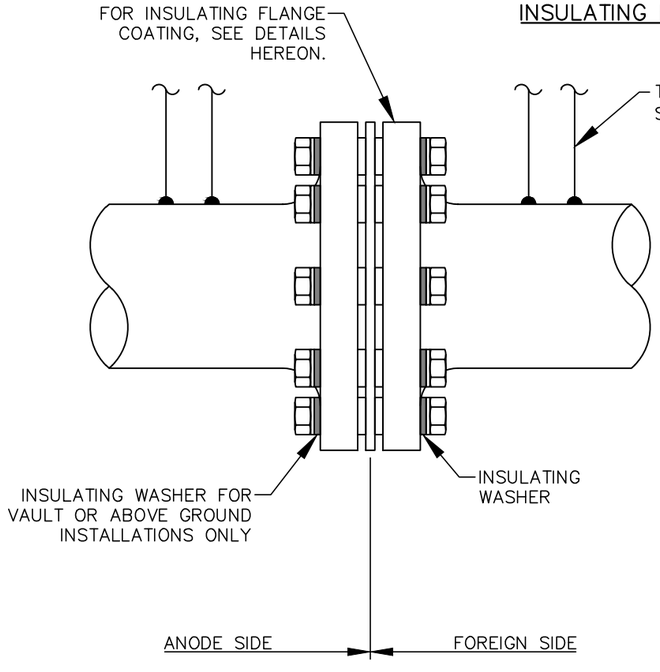


INSULATING FLANGE KIT

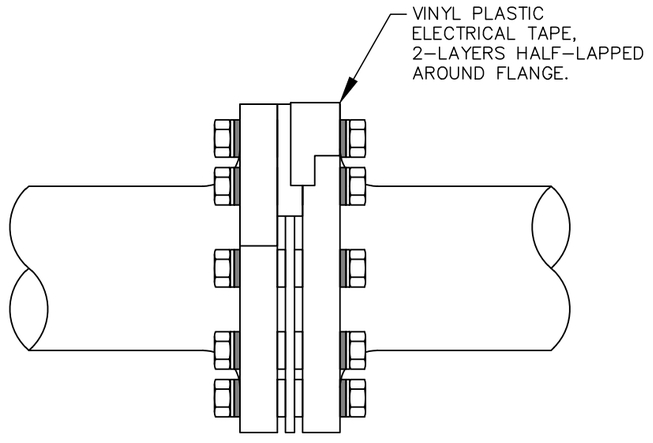


BURIED INSULATING FLANGE COATING



NOTES:

1. HARDWARE QUANTITIES IN INSULATING FLANGE KIT WILL VARY BASED ON GASKET PATTERN AND PIPE SIZE.
2. FOR BELOW GROUND INSTALLATIONS, INSTALL SINGLE-WASHER KITS WITH THE INSULATING WASHERS ONLY ON THE FOREIGN SIDE OF THE FLANGES.
3. THREADED STUD STYLE KITS ARE NOT PERMITTED.



ABOVE GROUND INSULATING FLANGE COATING

INSULATING JOINT

City of Adelanto

APPROVED BY:

Saba Engineer 12/7/23

DATE

AUGUST 2023

REVISION

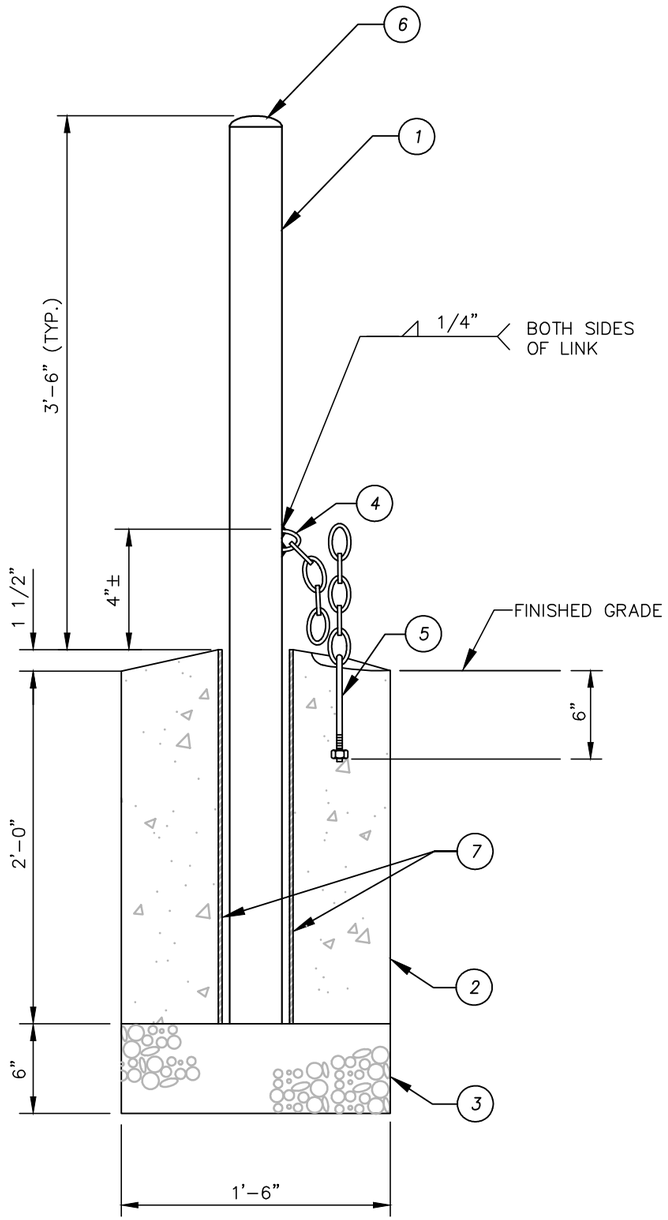
City of ADELANTO

Adelanto STD. DWG. CP-10

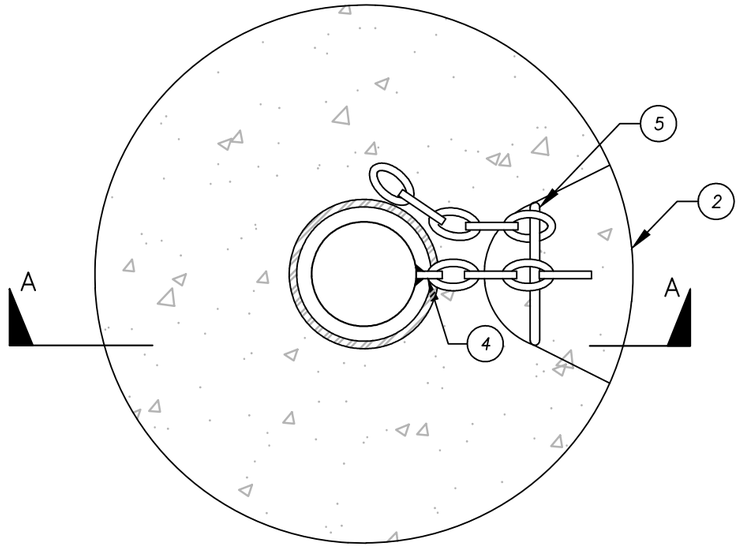
TABLE OF CONTENTS

General Standard Drawings

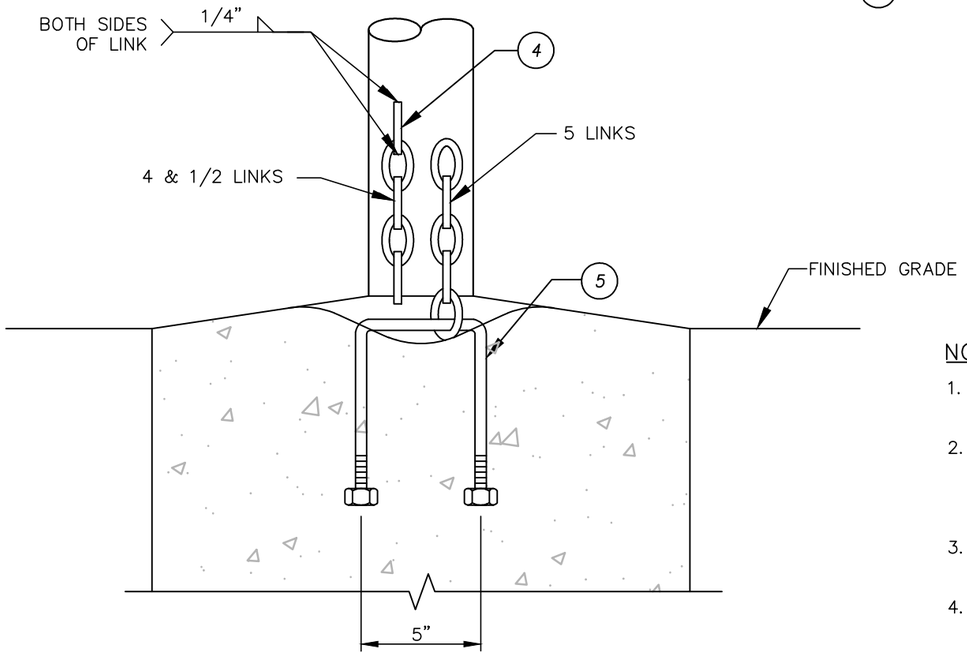
NUMBER	DESCRIPTION	DATE
G-1	Removable Guard Post	Jan 2021
G-2	Utility Marker	Jan 2021
G-3	Access Gate	Jan 2021
G-4	Retaining Wall	Jan 2021
G-5	Vault Ladder	Jan 2021
G-6	Vault Sumps	Jan 2021
G-7	Vault Vent	Jan 2021
G-8	2-1/2" < Wall Penetration < 4"	Jan 2021
G-9	Wall Penetration ≥ 4"	Jan 2021
G-10	Concrete Slope Anchors	Jan 2021



SECTION A–A



PLAN VIEW



FRONT VIEW

ITEM	MATERIALS
1	4" SCH 40 BLACK STEEL PIPE.
2	ANNULAR CONCRETE POST ANCHOR. CAST IN PLACE.
3	3/4" CRUSHED ROCK.
4	LOCKING ASSEMBLY MADE OF 4 & 1/2 LINKS OF 3/8" GRADE 80 STAINLESS CHAIN. WELD THE 1/2 LINK TO POST.
5	EMBED 3/8" DIA. 5" WIDE STAINLESS STEEL U–BOLT WITH NUTS EMBEDDED INTO CONCRETE POST ANCHOR. LOOP 5 LINK STAINLESS CHAIN SEGMENT OF 3/8" GRADE 80 CHAIN ONTO U–BOLT AS SHOWN IN DETAIL. SEE NOTE 2.
6	4" SCH 40, WELDED STEEL END CAP.
7	5" SCH 40, HOT DIP GALVANIZED STEEL PIPE SLEEVE.

NOTES:

1. PAINT GUARD POST AND CAP OSHA SAFETY YELLOW PER **ADELANTO** STD. SPEC. SECTION 09900.
2. TROWEL CONCRETE POST ANCHOR SURFACE TO DRAIN AWAY FROM STEEL SLEEVE. SHAPE THE U–BOLT SWALE TO MINIMIZE THE PROTRUSION ABOVE THE ADJACENT CONCRETE SURFACE TO ELIMINATE THE TRIPPING HAZARD.
3. ORIENT THE U–BOLT TO FACE THE DOWN STREAM SURFACE DIRECTION.
4. LOCK POST IN PLACE WITH IRWD APPROVED SOLID BRASS PAD LOCK.

REMOVABLE GUARD POST

City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
DATE

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City of ADELANTO

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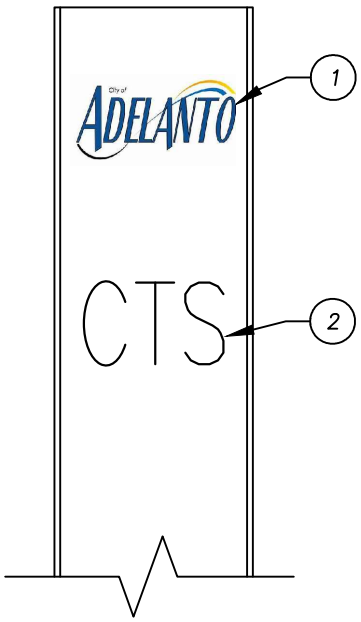
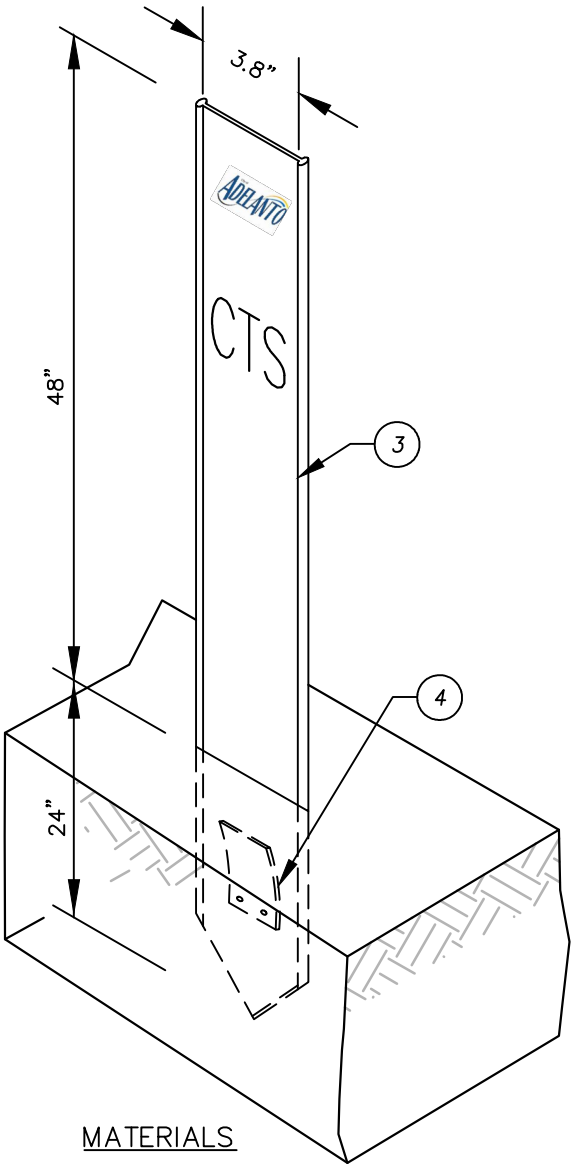
G-1

SHEET 1 OF 1





ABBREVIATIONS

ABD	ANODE BED / ANODE WELL
AVR	AIR AND VACUUM RELEASE VALVE
BO	BLOW OFF
CBL	DIRECT BURIED CABLE
CTS	CATHODIC PROTECTION TEST STATION
EPB	ELECTRICAL PULL BOX
FO	FLUSH–OUT
IJ	INSULATING JOINT
MH	MANHOLE
MTR	METER
PRV	PRESSURE REGULATING VALVE
PZ	PIEZOMETER
SBX	SHUNT BOX
SCO	SEWER CLEAN OUT
SWR	SEWER MAIN
TFO	TEMPORARY FLUSH–OUT
TPB	TELEMETRY PULL BOX
TW	TEST WELL
VLT	VAULT
VLV	VALVE
WTR	WATER MAIN
WQS	WATER QUALITY SAMPLE STATION

ITEM	MATERIALS
1	ADELANTO LOGO DECAL 3.25" HIGH X 2.75" WIDE.
2	2 OR 3 CHARACTER FACILITY LABEL. YELLOW LETTERS (1" HIGH) ON A CLEAR SELF ADHESIVE DECAL (USE ABBREVIATIONS HEREON).
3	POST SHALL BE "CARSONITE" MODEL: CIB–380 MATERIAL: COLORED FIBERGLASS COMPOSITE WIDTH: 3.8" LENGTH: 72" COLOR: BROWN
4	SPRING–LOADED STEEL BARB ANCHOR, FACTORY ATTACHED WITH RIVETS.

UTILITY MARKER

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

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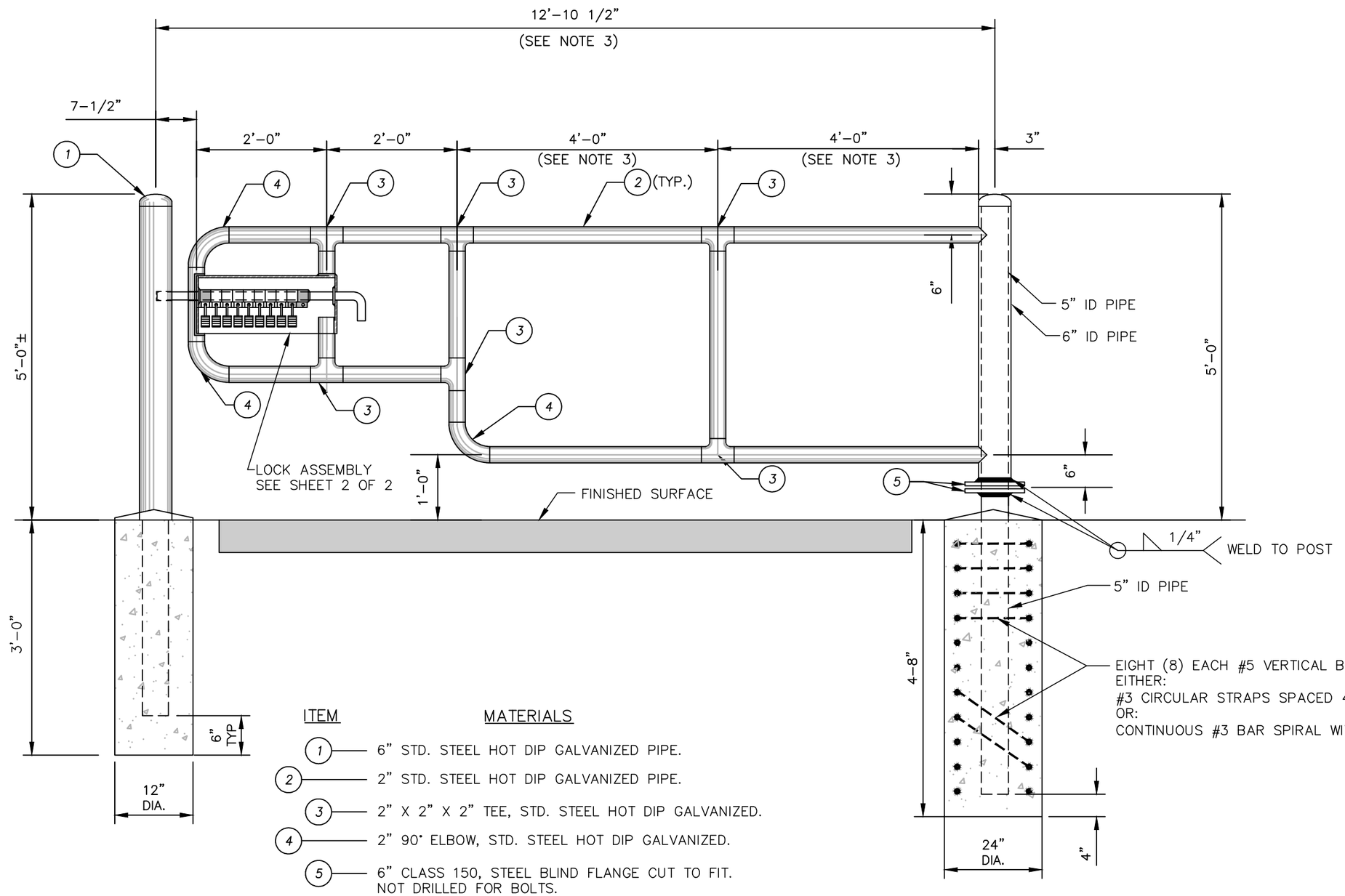
SHEET 1 OF 1



ITEM	MATERIALS
1	6" STD. STEEL HOT DIP GALVANIZED PIPE.
2	2" STD. STEEL HOT DIP GALVANIZED PIPE.
3	2" X 2" X 2" TEE, STD. STEEL HOT DIP GALVANIZED.
4	2" 90° ELBOW, STD. STEEL HOT DIP GALVANIZED.
5	6" CLASS 150, STEEL BLIND FLANGE CUT TO FIT. NOT DRILLED FOR BOLTS.

NOTES:

1. COAT OR HOT DIP GALVANIZE PER **ADELANTO** STD. SPEC. SECTION 09900.
2. SET GATE TOP BAR LEVEL. SET POST SO THAT ELEVATION OF POST TOPS ARE EQUAL.
3. INCREASE DIMENSION TO SPAN ROAD WIDTH (UP TO MAX. TOTAL SPAN OF 17').

ACCESS GATE

City of Adelanto

APPROVED BY:

Sabo Engineer 12/7/23

DATE

AUGUST 2023

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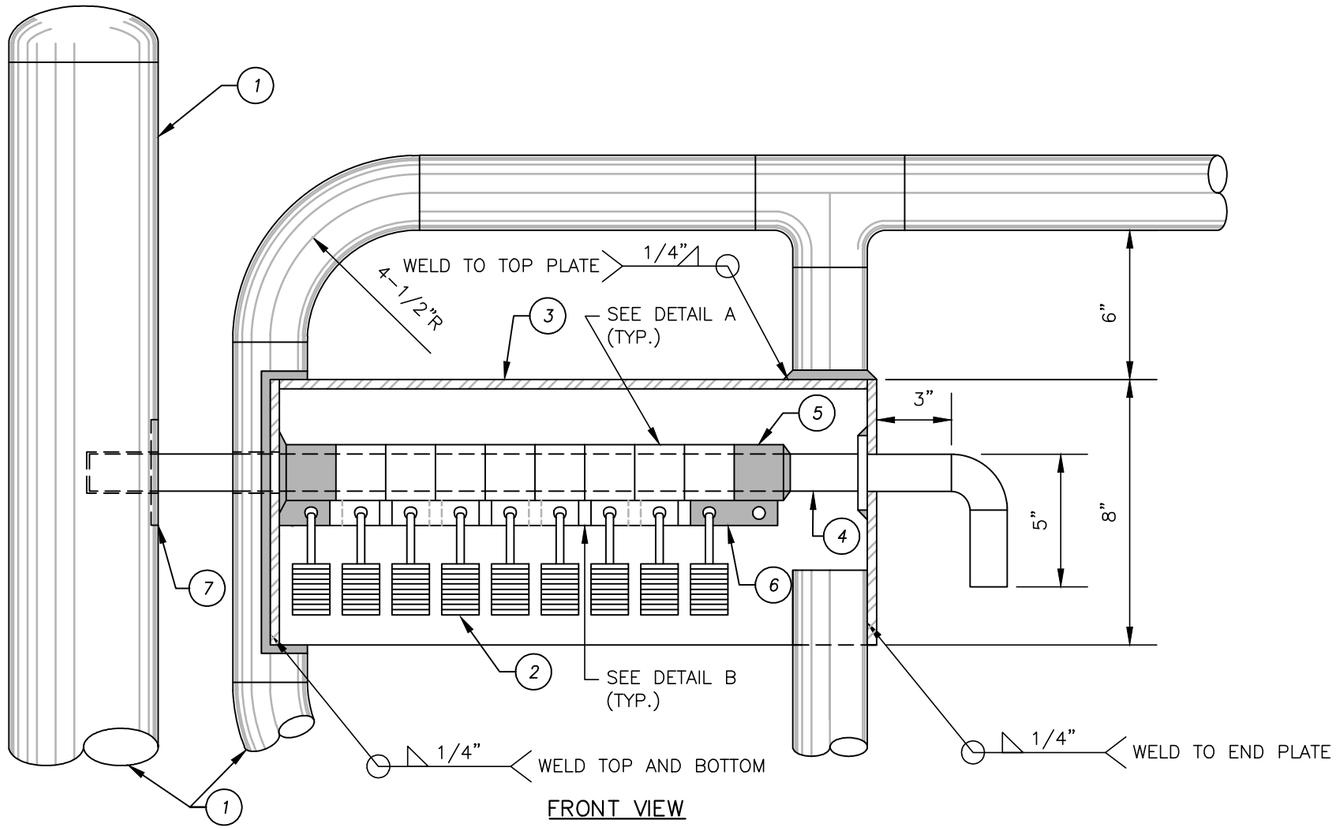
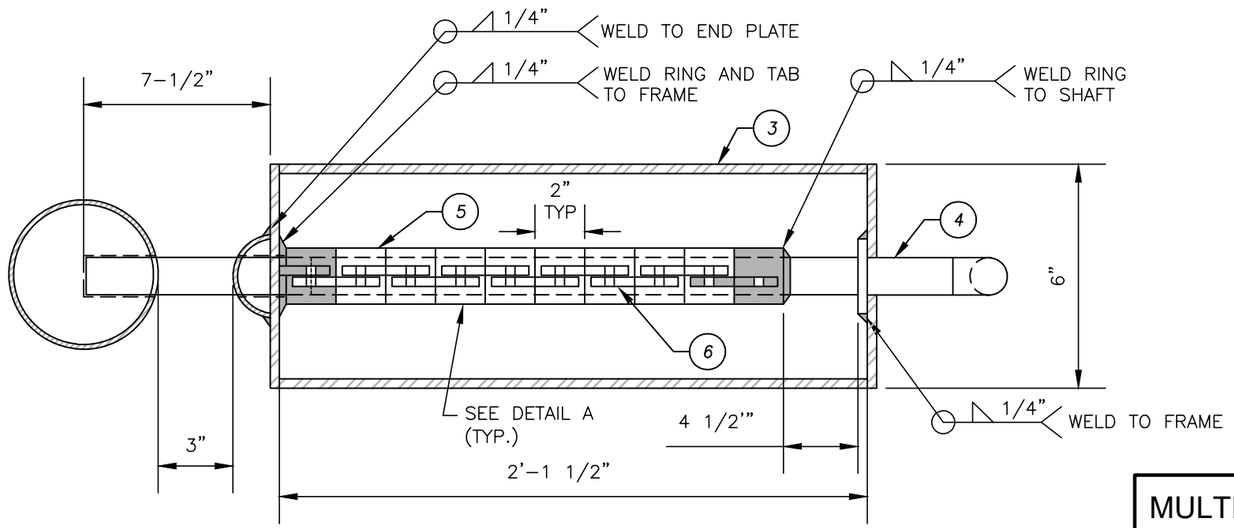


FRONT VIEW

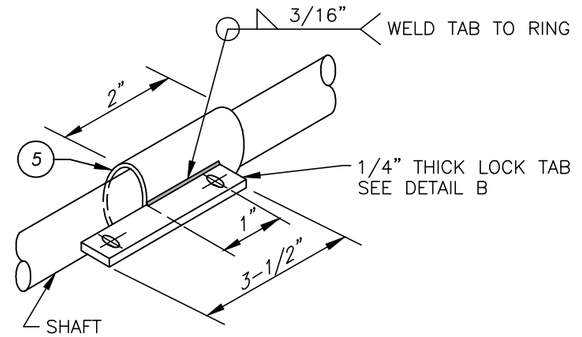


BOTTOM VIEW

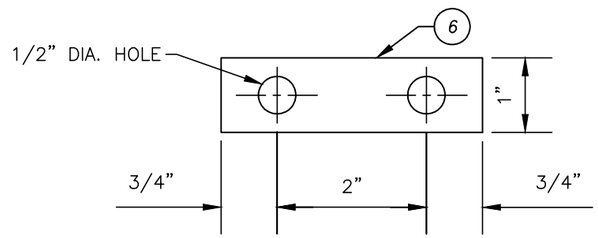
NOTE:

COAT OR HOT DIP GALVANIZE PER ADELANTO STD. SPEC. SECTION 09900.

ITEM	MATERIALS
1	GATE FRAME. SEE SHEET 1 OF 2.
2	NO. 5 SOLID BRASS PADLOCKS AS APPROVED BY ADELANTO
3	1/4" THICK PLATE METAL BOX COVERING LOCKS. ACCESS TO LOCKS FROM BOTTOM ONLY.
4	1-1/2" DIA. STD. STEEL PIPE. LOCK ASSEMBLY SHAFT.
5	2" STD. STEEL PIPE COUPLING. 2" LONG AS SHAFT RING COUPLING. WELD THE TWO RINGS AT THE END TO THE PIPE SHAFT AND THE METAL BOX, RESPECTIVELY, AS SHOWN.
6	1/4" STEEL PLATE, 3-1/2" LONG BY 1" WIDE AS A LOCK TAB. WELD TO SHAFT RINGS AS SHOWN.
7	4" VERTICAL SLOT.



DETAIL A



DETAIL B

MULTI LOCK GATE ASSEMBLY

City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

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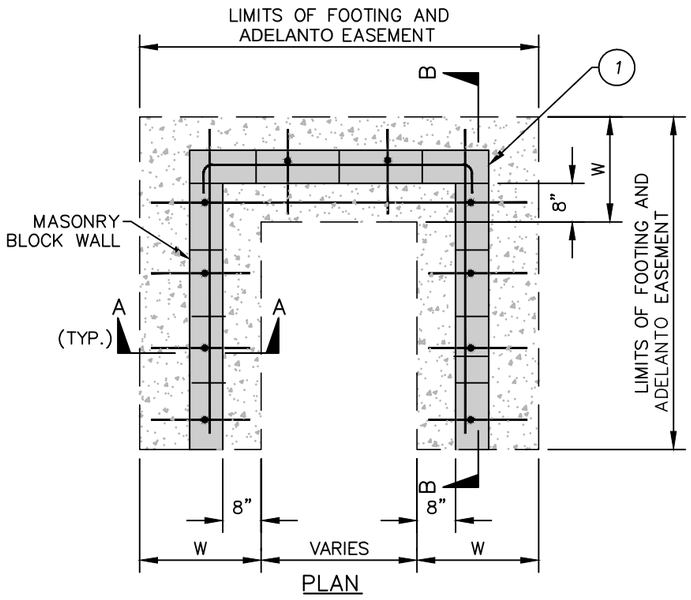

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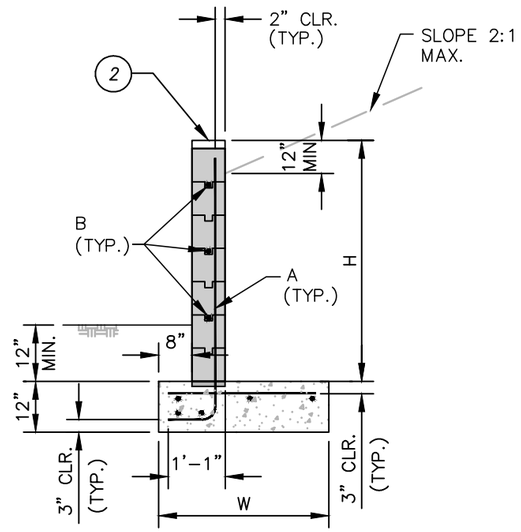
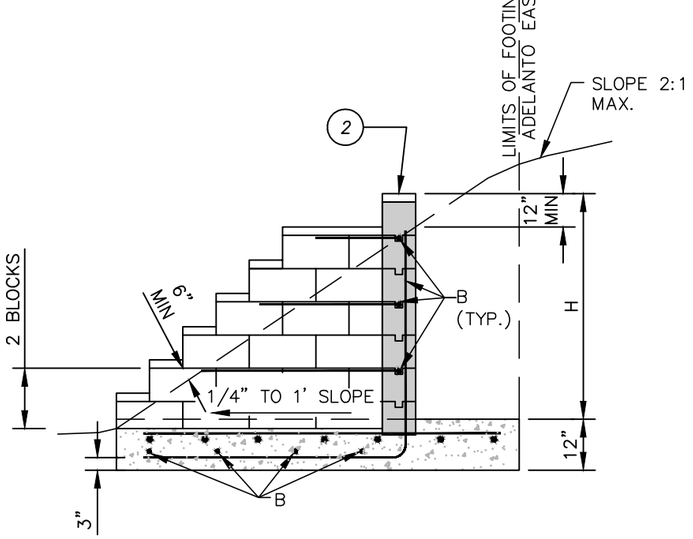


SECTION A–A



SECTION B–B

REINFORCEMENT TABLE					
DESIGN H	3'–4"	4'–0"	4'–8"	5'–4"	6'–0"
DESIGN W	2'–8"	3'–0"	3'–4"	3'–8"	4'–0"
A VERT. REINF.	#4@16"	#4@16"	#5@16"	#6@16"	#6@16"
B VERT. REINF.	#4@16"	#4@16"	#5@16"	#6@16"	#6@16"

DESIGN CRITERIA:

1. EQUIVALENT FLUID PRESSURE = 35 PCF (TOE AND HEEL)
2. ALLOWABLE BEARING CAPACITY = 1500 PSF

ITEM	MATERIALS
1	MASONRY BLOCK WALL, SEE NOTE 2.
2	BLOCK CAP, MATCH MASONRY BLOCK WALL STYLE AND COLOR.

NOTES:

1. RETAINING WALL TO BE CONSTRUCTED WITH ALL IRWD APPURTENANCES WHEN A SLOPE EXISTS AT THE LOCATION OF THE APPURTENANCES. EXAMPLES INCLUDE CLEAN–OUTS, BACKFLOW DEVICES, FIRE HYDRANTS, AIR/VACS, FLUSH–OUTS, METERS, PRV STATIONS, TEST STATIONS, MANHOLES, VAULTS, VALVES AND WHEREVER REQUIRED BY THE **ADELANTO** REPRESENTATIVE.

   A. CLEARANCE BETWEEN INSIDE WALL FACE AND THE OUTERMOST EDGE OF ANY **ADELANTO** APPURTENANCE SHALL BE 36" MIN.

   B. SEE **ADELANTO** STD. DWG. W–15 FOR SPECIFIC PRESSURE REDUCING STATION CLEARANCE REQUIREMENTS.

   C. FOR POWERED APPURTENANCES, SUCH AS TRANSFORMERS, REFER TO THE SCE MIN. CLEARANCE REQUIREMENTS.

   D. SEWER MANHOLES REQUIRE ADDITIONAL WALL LENGTH TO PROVIDE EQUIPMENT ACCESS. MIN. LENGTH FOR MANHOLES (INSIDE, FROM WALL FACE TO WALL FACE IS 13').

2. MASONRY BLOCK SHALL BE 8" X 8" X 16" UNITS CONFORMING TO ASTM C–90 CLASS "S" AND CONCRETE MASONRY ASSOCIATION STANDARDS. BLOCK SHALL BE "SPLIT FACE" BEIGE COLOR FINISH ON ALL EXPOSED FACES. FILL ALL CELLS WITH GROUT.
3. MORTAR AND GROUT SHALL MATCH BLOCKWORK AND BE IN CONFORMANCE WITH **ADELANTO** STD. SPECIFICATIONS AND SECTION 202–2 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
4. OMIT MORTAR FROM THE FIRST VERTICAL JOINT OF THE BLOCK COURSE ABOVE FINISH GRADE TO PROVIDE WEEP HOLES FOR SUB–DRAINAGE PURPOSES.
5. CONCRETE SHALL BE CLASS 560–C–3250.
6. WALL CONSTRUCTION SHALL MEET **ADELANTO** STD. SPECIFICATIONS.
7. PROVIDE RAILING ON TOP OF WALL WHEN REQUIRED BY CODE.
8. PROVIDE WATERPROOFING ON EXTERIOR OF BURIED PORTION OF WALL PER **ADELANTO** STD. SPEC. SECTION 03345.

RETAINING WALL

City of Adelanto

APPROVED BY:

Salva Engineer 12/7/23

DATE

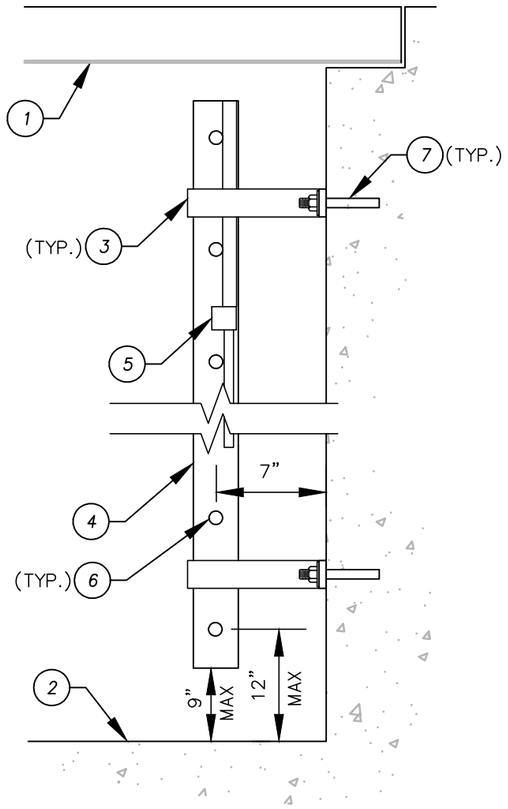
AUGUST 2023

REVISION

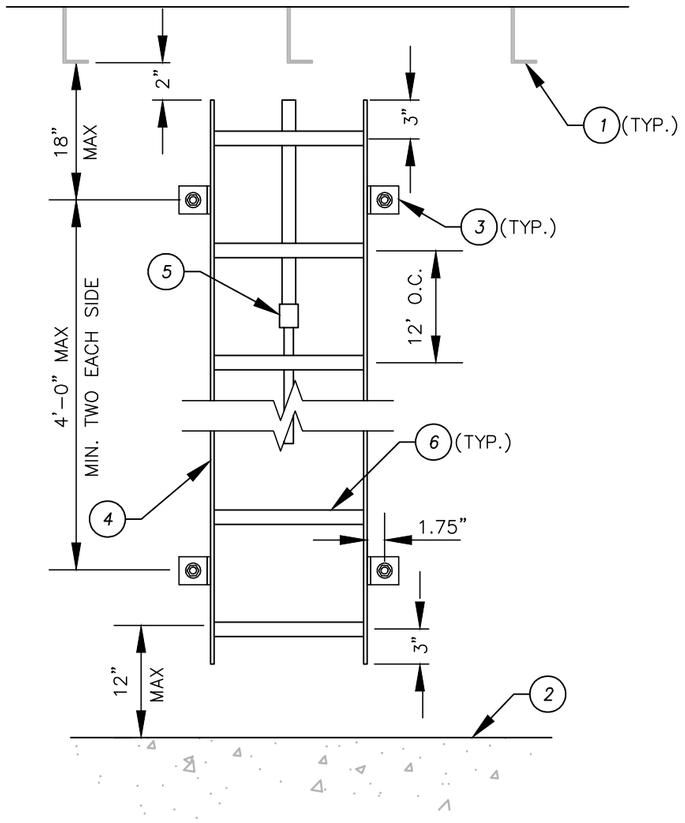
Adelanto STD. DWG. G-4

SHEET 1 OF 1

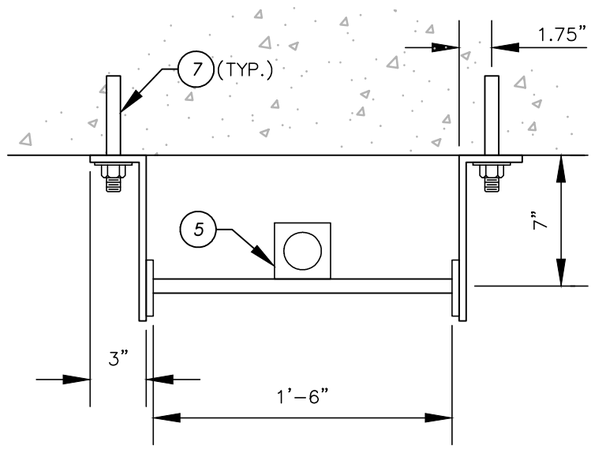
ITEM	MATERIALS
1	BOTTOM OF GRATING OR HATCH.
2	FLOOR OF VAULT.
3	INSTALL 3" X 3/8"X 7" BRACKET.
4	INSTALL 2" X 3/8" RUNNER BAR.
5	INSTALL "LADDER UP" SAFETY POST PER **ADELANTO** STD. SPEC. SECTION 05120.
6	INSTALL 1" ROUND BAR KNURLED RUNGS @ 12" O.C., PLUG WELD INTO RUNNERS.
7	CONCRETE: INSTALL 3/4" DIA. HILTI KB TZ (WITH 4–3/4" MIN. EMBED) MASONRY: INSTALL 3/4" DIA. HILTI KB3 (WITH 4–3/4" MIN. EMBED)



SIDE VIEW



FRONT VIEW



TOP VIEW

NOTES:

1. ALL SURFACES AND WELDS SHALL BE GROUND SMOOTH AND CLEANED AFTER FABRICATION.
2. ALL JOINTS SHALL BE WELDED PER AMERICAN WELDING SOCIETY STANDARDS, LATEST REVISION.
3. HOT DIP GALVANIZE AFTER FABRICATION.
4. ALL CONNECTING AND MOUNTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.
5. SAFETY POST SHALL NOT BE CUT OR MODIFIED IN THE FIELD IN ANY WAY.

VAULT LADDER

City of Adelanto
APPROVED BY:
Sabra Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

Adelanto
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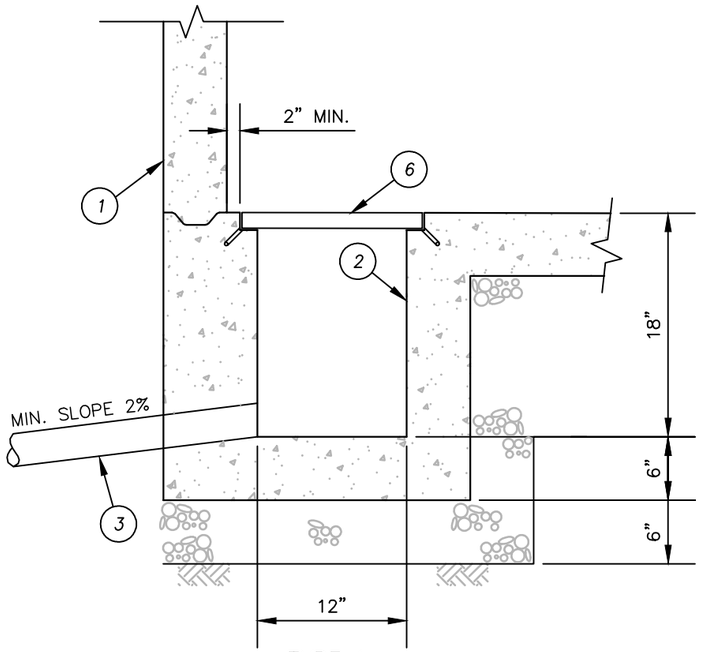
SHEET 1 OF 1



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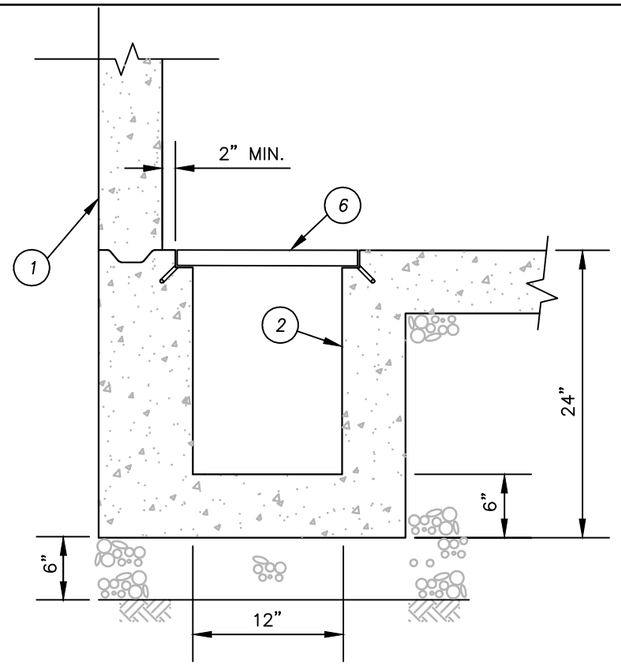
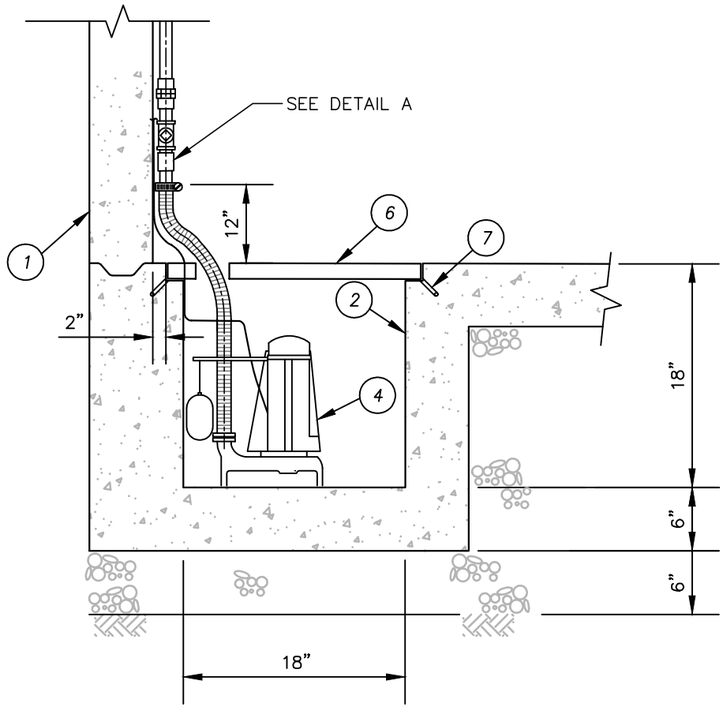


TYPE 3

ITEM	MATERIALS
1	PRECAST REINFORCED CONCRETE VAULT.
2	12" X 12" OR 18" X 18" X 24" DEEP RECESSED REINFORCED CONCRETE SUMP. MIN. WALL THICKNESS = 6".
3	4" SCH 80 PVC DRAIN PIPE. CONNECT TO DRAINAGE SYSTEM ACCEPTABLE TO **ADELANTO**.
4	SUMP PUMP PER **ADELANTO** STD. DWG. W-15 (E-3) WHEN DRAIN PIPE OPTION IS NOT AVAILABLE. CONNECT TO DRAINAGE SYSTEM ACCEPTABLE TO **ADELANTO**.
5	2" SCH 80 PVC UNION, SLIP X SLIP.
6	14" X 14" OR 20" X 20" X 1" THICK FIBER GRATE INLET, SEE DETAIL B.
7	1-1/2" X 1-1/2" X 1/4" FIBER REINFORCED PLASTIC ANGLE FRAME WITH EMBEDMENT ANCHOR AT EACH CORNER. SERIES 1625 OR APPROVED EQUAL.
8	PROVIDE 4" HOLE IN GRATE AND NOTCH-OUT USING 4" HOLE SAW TO ACCOMMODATE 2" PIPE (FOR TYPE 2 ONLY).
9	2" SCH 80 PVC PIPE. SECURED TO VAULT WALL WITH STAINLESS STEEL PIPE CLAMPS, ONE CLAMP EACH 3' OF PIPE.
10	2" SCH 80 PVC ADAPTER, SLIP X M.I.P.T.
11	2" BRASS SWING CHECK VALVE, F.I.P.T. BOTH ENDS.
12	STAINLESS STEEL HOSE CLAMP.
13	2" STAINLESS STEEL REINFORCED PVC HOSE.

NOTES:

1. INSTALLATION OF TYPE 3 SUMPS REQUIRES PRIOR WRITTEN **ADELANTO** APPROVAL.
2. RECYCLED WATER VAULTS SHALL USE TYPE 3 SUMPS ONLY.
3. VAULT FLOOR AND SUMP SHALL CONSIST OF ONE PRECAST SECTION.



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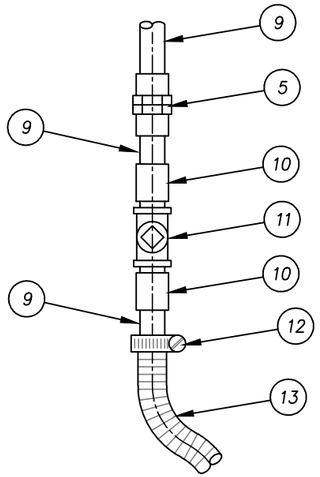
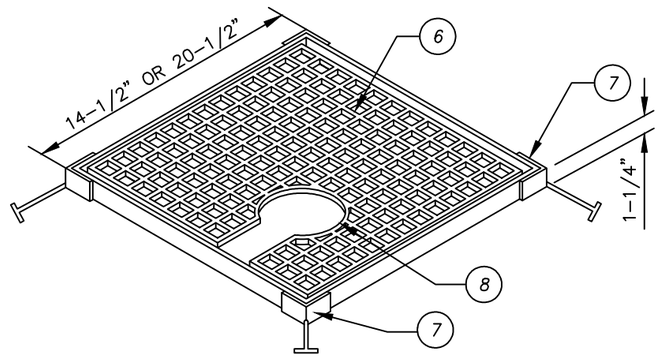


DETAIL A



DETAIL B

VAULT SUMPS

City of Adelanto

APPROVED BY:

Sabra Engineer 12/7/23

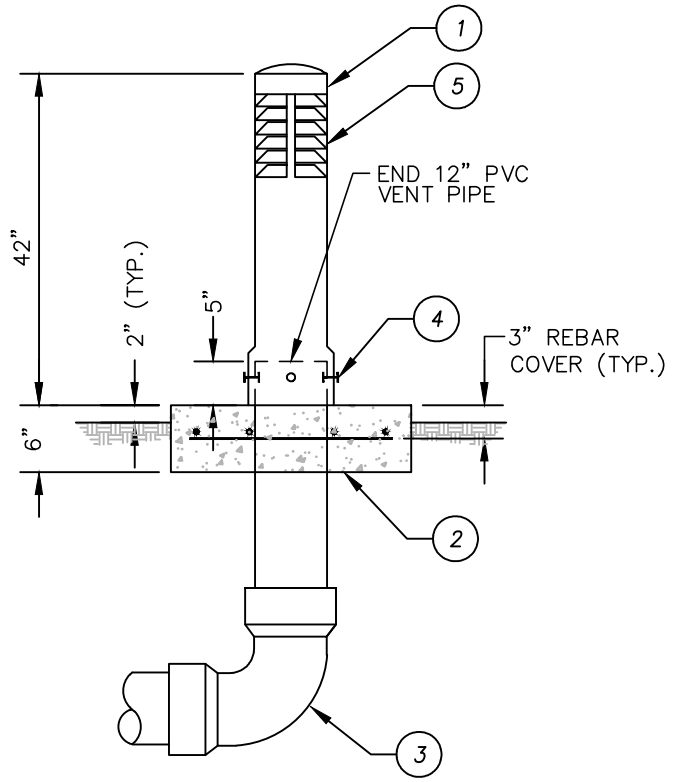
DATE

AUGUST 2023

REVISION

City of ADELANTO

Adelanto STD. DWG. G-6



ITEM	MATERIALS
1	12" DIA. LLDPE PIPE VENT PER ADELANTO STD. SPEC. SECTION 15089.
2	CONSTRUCT 36" SQ. CONCRETE SLAB (TYP.) WITH 4 EACH #4'S EACH WAY, AS SHOWN. PROVIDE 3" REBAR COVER IN 560-C-3250 CONCRETE MIX.
3	INSTALL 12" DIA. SCH 80 PVC VENT PIPE WITH BENDS AND CONNECTIONS BELOW GRADE AS REQUIRED.
4	CONNECT VENT AT 4 PLACES WITH 3/8" DIA. X 1-1/2" TYPE 316 STAINLESS STEEL SELF-TAPPING SCREW. DRILL THRU PVC DUCT AND VENT STACK BELL.
5	INSTALL STAINLESS STEEL BUG SCREEN AT INTERIOR OF VENT OPENINGS.

VAULT VENT

City of Adelanto
APPROVED BY:
Saba Engineer 12/7/23
DATE

AUGUST 2023
REVISION

City of ADELANTO

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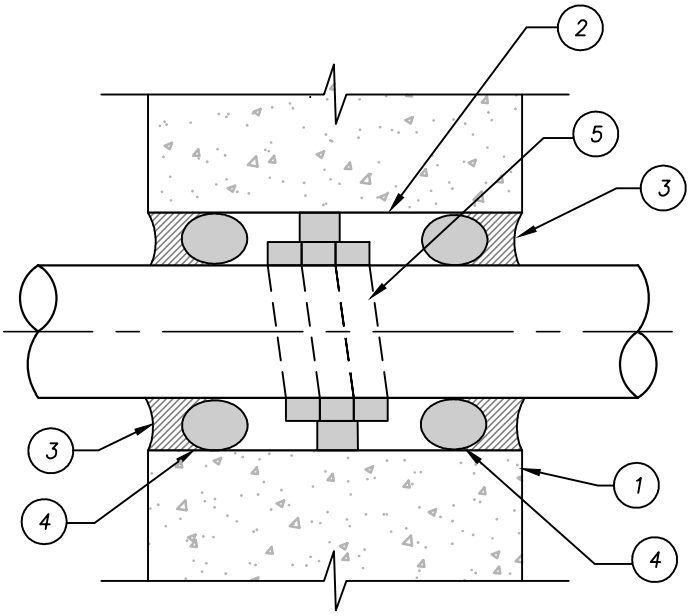
SHEET 1 OF 1



ITEM	MATERIALS
1	VAULT WALL OR STRUCTURAL MEMBER.
2	ANNULAR SPACE 1" MIN. ALL AROUND.
3	SIKAFLEX ELASTOMERIC SEALANT. APPLY A MIN. OF 3/4" OF SEALANT OUTSIDE BACKER ROD, SEE NOTE 2.
4	"CLOSED CELL" POLYETHYLENE FOAM BACKER ROD.
5	INSTALL GREENSTREAK HYDROPHILIC WATERSTOP MATERIAL "SWELL-STOP". MIN. 3 COIL WRAPS AROUND OUTSIDE OF CONDUIT OR PIPE AS REQUIRED FOR A SNUG INITIAL FILL OF THE ANNULAR SPACE.

NOTES:

1. BACKER ROD AND SEALANT TO BE INSTALLED ON BOTH SIDES OF "SWELL STOP" MATERIAL.
2. CEMENTITIOUS OR OTHER RIGID GROUT MATERIAL SHALL NOT BE ALLOWED FOR SEALING OR COVERING THE ANNULAR OPENING ON EITHER SIDE.
3. SEE **ADELANTO** STD. DWG. G-9 FOR WALL PENETRATIONS 4" IN DIA. AND GREATER AND **ADELANTO** STD. SPEC. SECTION 03462 FOR WALL PENETRATIONS 2-1/2" IN DIA. AND SMALLER.

2-1/2" < WALL PENETRATION < 4"

City of Adelanto
APPROVED BY:

Saba Engineer 12/7/23
DATE

AUGUST 2023
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City of ADELANTO

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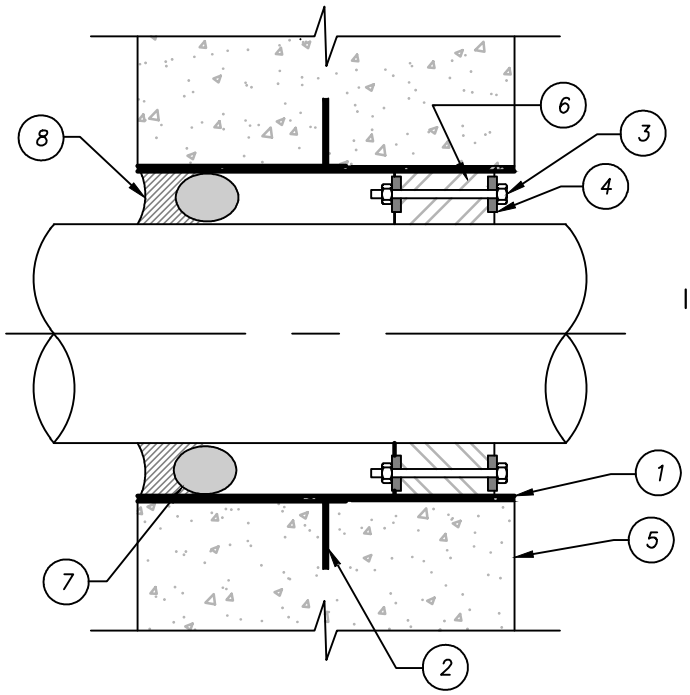
SHEET 1 OF 1



ITEM	MATERIALS
1	WALL SLEEVE. SEE NOTE 1.
2	ANCHOR COLLAR/2" WATER STOP.
3	S.S. HEX BOLT, NUT AND WASHER (TYP.).
4	PRESSURE PLATE.
5	VAULT WALL OR STRUCTURAL MEMBER.
6	EPDM ELASTOMERIC COMPRESSION SEAL ELEMENT.
7	"CLOSED CELL" POLYETHYLENE FOAM BACKER ROD.
8	SIKAFLEX ELASTOMERIC SEALANT. APPLY A MIN. OF 3/4" OF SEALANT OUTSIDE BACKER ROD, SEE NOTE 2.

NOTES:

1. WALL SLEEVE SHALL BE HOT DIPPED GALVANIZED STEEL OR HDPE ONE-PIECE PRE-MOLDED SLEEVE, PROVIDED THAT IT HAS AN INTEGRAL WATER-STOP RING AND IS CAST INTO THE WALL OR STRUCTURAL ELEMENT.

2. BACKER ROD AND SEALANT TO BE INSTALLED ON "OUTSIDE" OF STRUCTURE.

3. CEMENTITIOUS OR OTHER RIGID GROUT MATERIAL SHALL NOT BE ALLOWED FOR SEALING OR COVERING THE ANNULAR OPENING ON EITHER SIDE.

WALL PENETRATION ≥ 4"

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Saba Engineer 12/7/23
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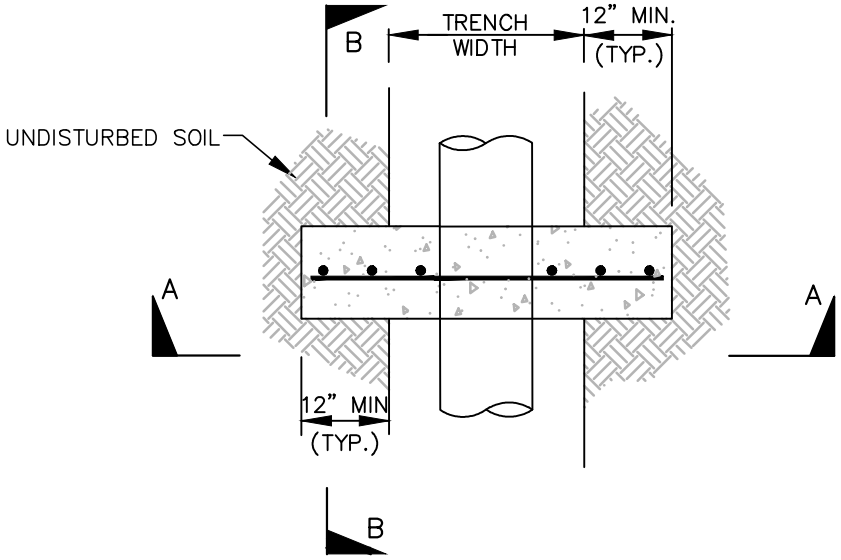
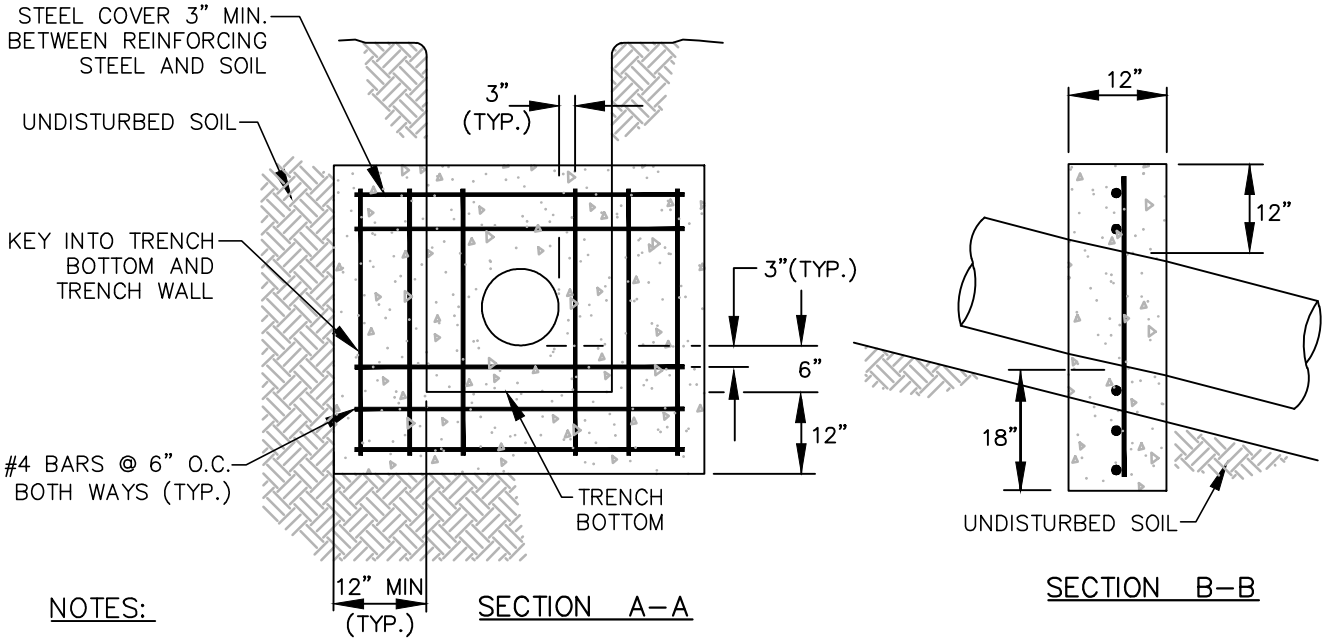


PLAN VIEW



SECTION A–A

SECTION B–B

NOTES:

1. PIPE ANCHORS REQUIRED FOR DOMESTIC WATER, RECYCLED WATER, OR SEWER PIPELINES IN SLOPES 3:1 OR STEEPER IN UNPAVED CONDITIONS.
2. ANCHORS SHALL BE PLACED AT ONE PER PIPE LENGTH, NOT TO EXCEED A SLOPE DISTANCE OF 18'.
3. CONCRETE SHALL BE CLASS 560–C–3250 FOR STANDARD PLACEMENT AND 565–C–3250P FOR PUMP PLACEMENT PER **ADELANTO** STD. SPEC. SECTION 03300. SEE **ADELANTO** STD. SPEC. SECTION 03201 FOR CONCRETE REINFORCEMENT.
4. ANCHORS FOR TRAPEZOIDAL TRENCH SECTIONS WILL CONFORM TO TRENCH CROSS SECTION AND EXTEND A MIN. OF 12" INTO UNDISTURBED SOIL.
5. SLOPE ANCHORS SHALL NOT BE USED ON VCP.

CONCRETE SLOPE ANCHORS

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