Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

IEUA STANDARD DETAILS

Revised date: December 2025

Version 1.0

Approval:

Manager of Engineering
Jason Marseilles

This Guidelines document is an integral part of the IEUA ENGINEERING STANDARD DETAILS.

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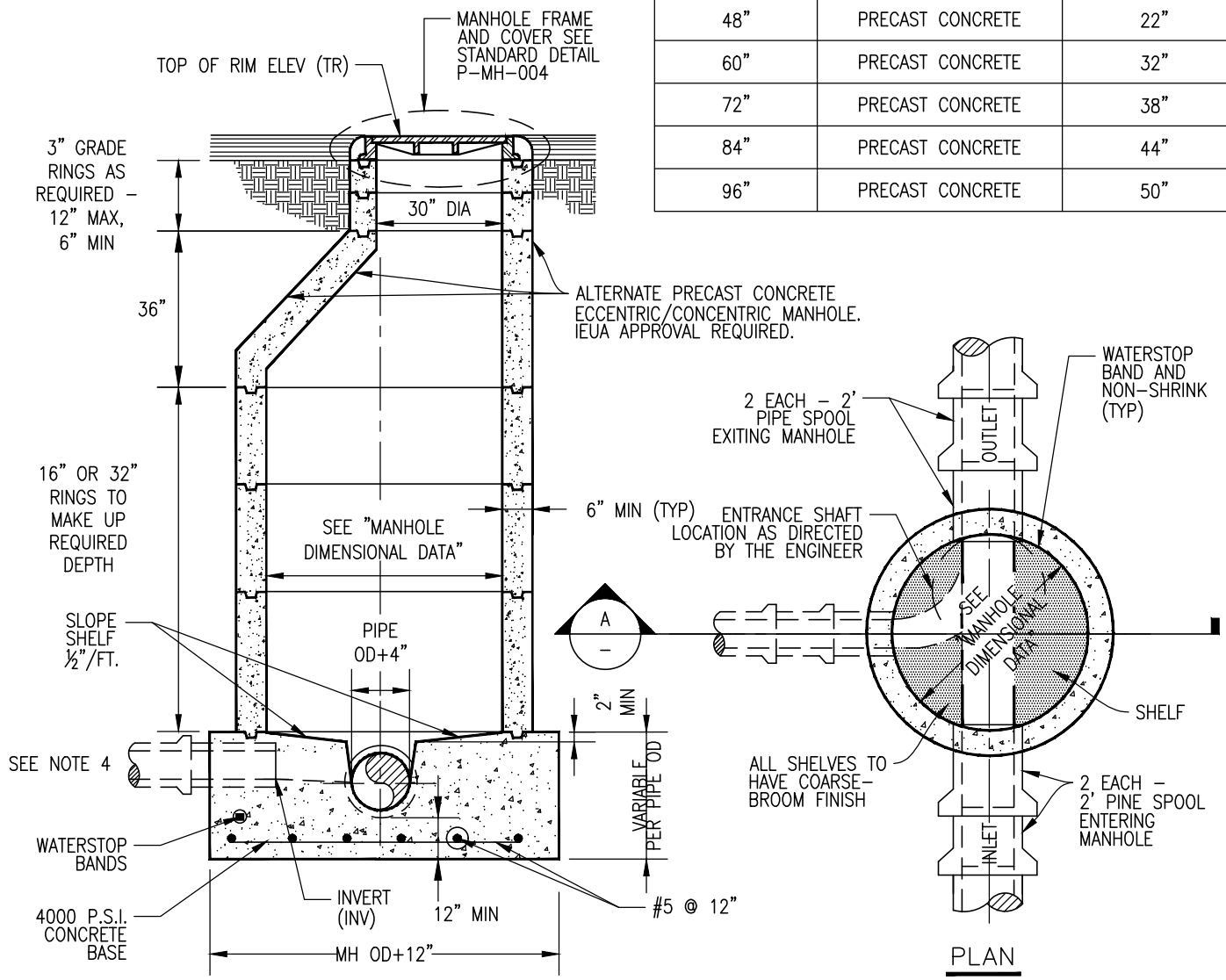
MANHOLE DIMENSIONAL DATA		
MANHOLE DIAMETER	TYPE	MAX PIPE OUTSIDE DIAMETER
48"	PRECAST CONCRETE	22"
60"	PRECAST CONCRETE	32"
72"	PRECAST CONCRETE	38"
84"	PRECAST CONCRETE	44"
96"	PRECAST CONCRETE	50"



SECTION A-A

NOTES:

1. PRECAST MANHOLE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO MINIMUM H-20 LOADING, OR AS DIRECTED BY IEUA.
2. MATERIALS, EMBEDMENT, PLACEMENT, AND COMPACTION OF GRANULAR EMBEDMENT AND COMPACTED BACKFILL WILL CONFORM TO THE AGENCY'S STANDARD SPECIFICATIONS FOR PIPE BEDDING AND TRENCH BACKFILL.
3. LINE INTERIOR SURFACES OF MANHOLE AND MANHOLE BASE WITH POLYURETHANE (SANCON 100 OR APPROVED EQUAL). APPLY NON-SKID SURFACE ON TOTAL SHELF AREA.
4. SOFFIT OF INCOMING PIPE SHALL MATCH OUTLET PIPE SOFFIT.
5. IEUA APPROVAL REQUIRED PRIOR TO CONNECTING AT MANHOLE.
6. ECCENTRIC CONE SHALL BE SET WITH THE STRAIGHT SIDE ON DOWNSTREAM SIDE OF MANHOLE

SCALE: NOT TO SCALE

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JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
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TYPICAL SEWER MANHOLE DETAIL

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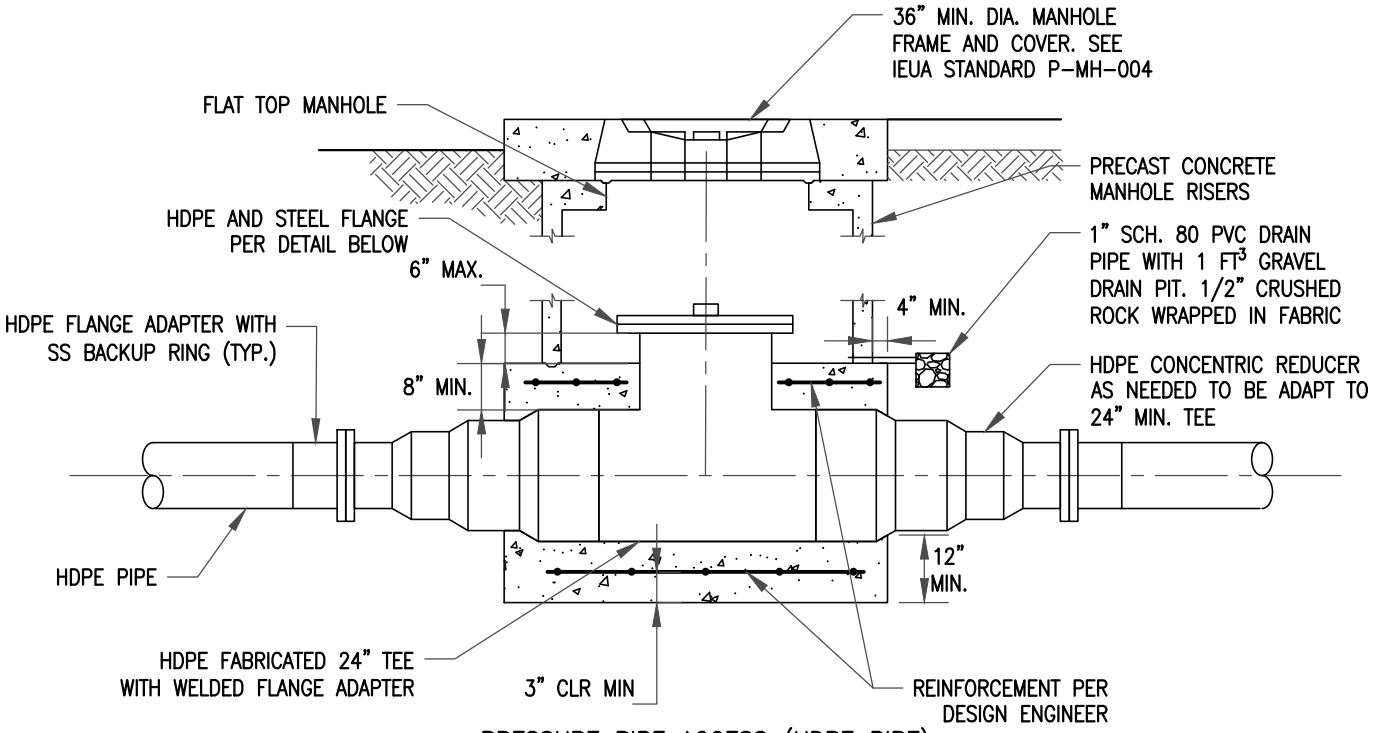
P-MH-001

SHEET 1 OF 1

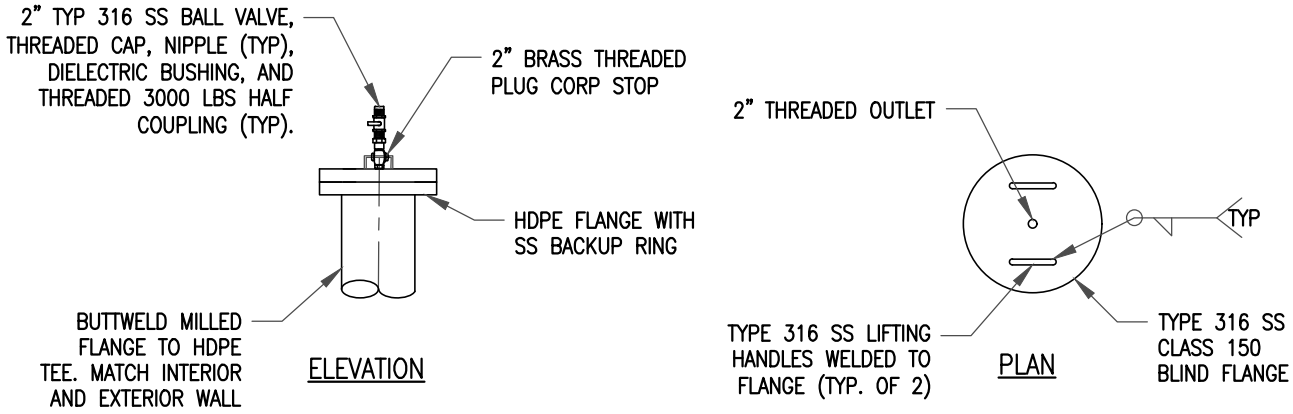
G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA PHASE 1 AND 2 STD DETAILS\IEUA PHASE 1 AND 2 STD DETAILS\P-MH-001 New.dwg Oct 15, 2025 - 2:54pm

NOTES:

1. MANHOLE SHALL BE 60-INCH MINIMUM DIAMETER.
2. ENGINEER SHALL VERIFY THAT ACCESS WAY IS SIZED SUFFICIENTLY FOR IEUA CAMERA EQUIPMENT.
3. BOLTS SHALL BE HEX HEAD BOLTS. NUTS SHALL BE HEAVY HEX NUTS. MINIMUM YIELD STRENGTH SHALL BE 55,000 PSI PER 2021 PPI TN-38.
4. GASKETS SHALL BE COMPRESSED FIBER OR PTFE. GASKETS SHALL NOT BE REUSED.
5. IF THREADED STUDS ARE USED, WASHERS AND NUTS SHALL BE INSTALLED ON BOTH SIDES.



PRESSURE PIPE ACCESS (HDPE PIPE)



BLIND FLANGE

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PRESSURE PIPE MAINTENANCE HOLE DETAIL

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P-MH-002

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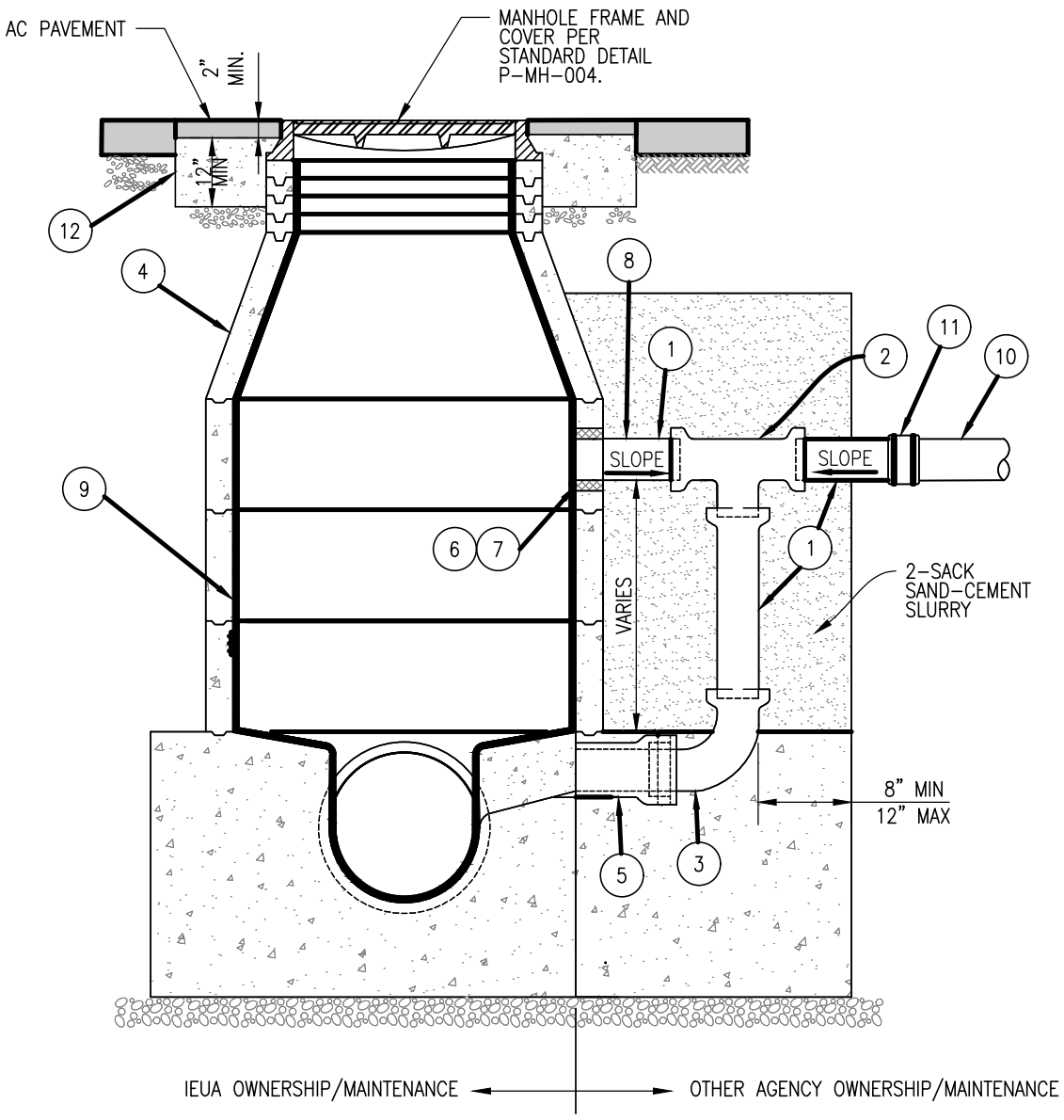

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DROP MANHOLE

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P-MH-003

SHEET 1 OF 2

ITEM	MATERIALS
1	SDR-26 PVC PIPE. SIZE AS REQUIRED.
2	SDR-26 PVC TEE, BELL X BELL. SIZE AS REQUIRED.
3	SDR-26 PVC LONG RADIUS 90-DEGREE BEND BELL x SPIGOT END. SIZE AS REQUIRED.
4	STANDARD MANHOLE PER IEUA STANDARD P-MH-001.
5	INSTALL SDR-26 PVC PIPE CONNECTION TO MANHOLE BASE PER IEUA STANDARD P-MH-001.
6	CORE DRILL MANHOLE SHAFT. FILL ANNULAR SPACE WITH DRY PACK GROUT.
7	REPAIR MANHOLE LINING TO THE SATISFACTION OF IEUA.
8	SLOPE PIPE TO FALL 1/2" TOWARD TEE.
9	LINE INTERIOR SURFACES OF MANHOLE AND MANHOLE BASE WITH POLYURETHANE (SANCON 100 OR APPROVED EQUAL). APPLY NON-SKID SURFACE ON TOTAL SHELF AREA.
10	EXTRA-STRENGTH VCP
11	TRANSITION BAND SEAL COUPLING.
12	560-C-3250 CONCRETE COLLAR (ROUND). SEE NOTE 5.

NOTES:

1. DROP MANHOLE SHALL BE APPROVED BY IEUA WHEN JUSTIFICATION IS PROVIDED SHOWING NO ALTERNATIVES ARE AVAILABLE.
2. FOR MANHOLE CONSTRUCTION NOTES AND DETAILS NOT SHOWN, SEE IEUA STANDARD P-MH-001.
3. CONSTRUCT CLEANOUTS OF THE SAME DIAMETER (4", 6" OR 8") AND MATERIAL AS THE SEWER LATERAL.
4. USE SDR 35 PIPE AND FITTINGS WHERE COVER OVER PIPE EXCEEDS 5-FT AND SDR 26 WHERE COVER IS 5-FT OR LESS.
5. PIPE CONNECTIONS USED FOR DROP MANHOLES INTO IEUA FACILITIES SHALL BE MAINTAINED BY THE CONNECTING AGENCY. IEUA DOES NOT TAKE OWNERSHIP OR MAINTENANCE RESPONSIBILITY OUTSIDE OF THE MANHOLE.
6. IF CONCRETE COLLAR IS BROUGHT TO FINISHED SURFACE, COLOR OF CONCRETE SHALL MATCH GOVERNING AGENCY STANDARD.

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DROP MANHOLE

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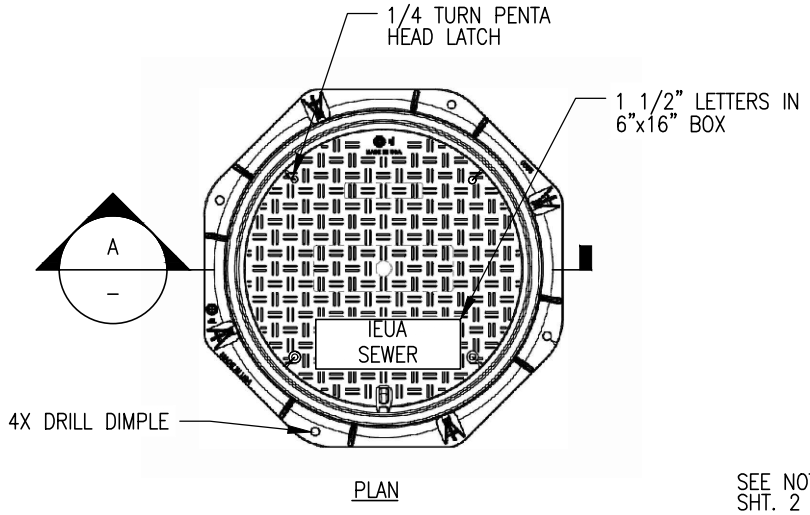
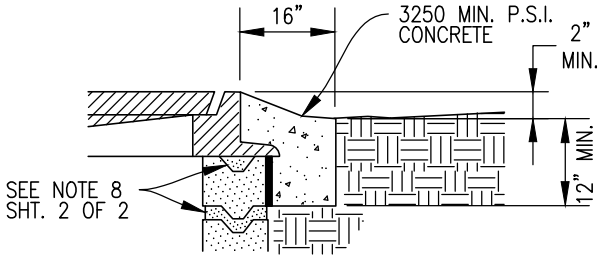
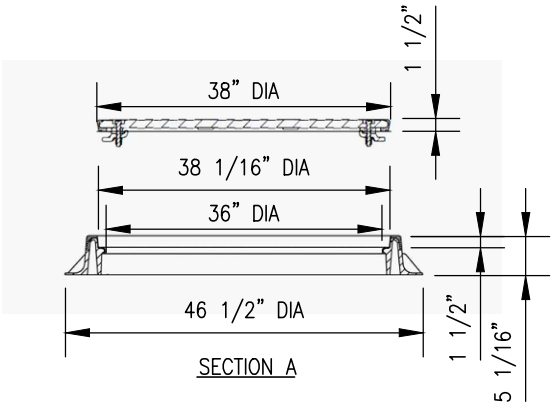


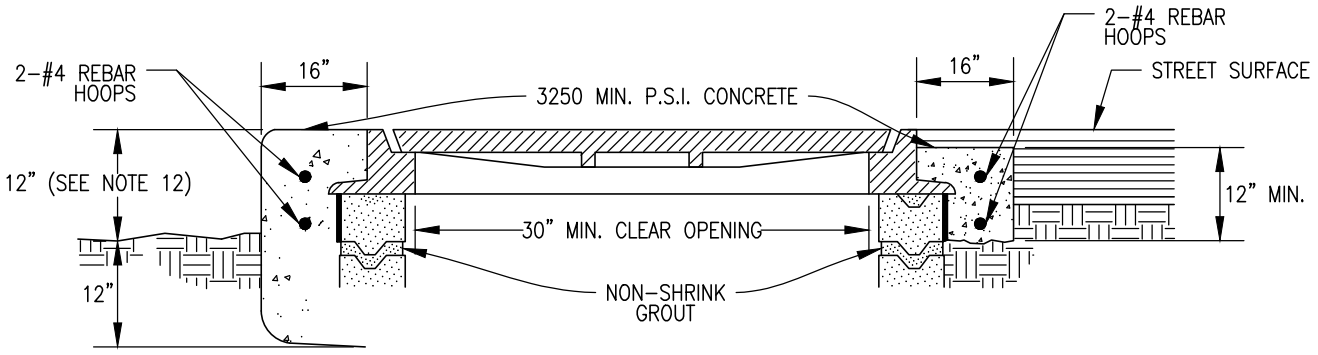
PLAN



ROADWAY SHOULDER



TOP VIEW COVER DETAIL FOR 36" COVER



UNFINISHED SURFACE

ROADWAY

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MANHOLE FRAME AND COVER

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P-MH-004

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NOTES:

1. MANHOLE FRAME AND COVER SHALL BE EJ WATER-RESISTANT BLACK COMPOSITE WITH GASKET AND "IEUA SEWER" CUSTOM CENTER INSERT.
2. MANHOLE FRAME AND COVER SHALL BE HEAVY DUTY TRAFFIC RATED, U.S. LOAD SPECIFICATION, MEETS H-25 TRAFFIC REQUIREMENTS.
3. (4) TITUS TWISTLIFT SECURITY LOCK SYSTEMS BOLT SHALL BE MACHINED FROM 17-4PH H900 HARDENED STAINLESS STEEL WITH TITUS 4-TWISTLIFT SECURITY LOCKS.
4. CONTRACTOR SHALL PROVIDE ONE (1) COMPOSITE COVER TWISTLIFT OPENING TOOL WITH LOCK SOCKET, 30" LONG AND POWDER COATED BLACK.
5. COVER SHALL BE FURNISHED WITH STAINLESS STEEL BOLTS WITH CAPTIVE WASHERS AND "T" STYLE GASKET. STAINLESS STEEL BOLTS WITH CAPTIVE WASHERS FROM INWESCO CO., AZUSA, CA (CAT. #85A84). "T" STYLE GASKET (R&D CO. #TG101) IS AVAILABLE FROM MAYDWELL & HARTZELL CO. LOS ANGELES, CA.
6. MANHOLE FRAME AND COVER COLOR SHALL BE BLACK.
7. AREA AROUND PERIMETER ON BOTTOM SIDE OF COVER SHALL BE SMOOTH, FLAT, AND FREE OF ANY POCKETS OR IMPERFECTIONS.
8. THE MANHOLE FRAME SHALL BE SECURED TO THE GRADE RING WITH HIGH STRENGTH NON-SHRINK GROUT. AFTER THE FRAME IS SECURELY SET, THE FRAME AND THE COVER SHALL BE CLEANED AND SCRAPED FREE OF FOREIGN MATERIALS AND SHALL BE FLUSH WITH THE FRAME.
9. THE RELIEF DEPTH OF THE CAST LETTERS SHALL BE AT LEAST 3/16". TOP SURFACE OF THE LETTERS AND TOP FINISH SHALL BE FLUSH WITH THE OUTER RING EDGE AND THE FRAME TOP SURFACES.
10. PRECAST SECTIONS SHALL BE ASSEMBLED SUCH THAT THE MANHOLE COVER IS FLUSH WITH THE PAVING SURFACE.
11. THE CONTRACTOR SHALL REPLACE THE COVER AT THEIR OWN EXPENSE IF CRACKS DEVELOP, REGARDLESS OF SIZE, THAT RUN FROM ONE EDGE TO ANOTHER EDGE OR TO THE MANHOLE OPENING.
12. IF WITHIN A PLANTER, 12" DIMENSION CAN BE REDUCED TO 6".
13. CONCRETE COLLAR SHALL BE HIGH EARLY STRENGTH CONCRETE 3250 PSI MINIMUM.
14. FOR NEW CONSTRUCTION MANHOLE FRAME AND COVER SHALL BE DETERMINED BY THE ABILITY TO INSTALL AN EXTENSION LADDER TO THE SHELF WITH SUFFICIENT CLEARANCE FOR ENTRANCE
15. REPAIR ALL DAMAGED INTERIOR COATING/LINING WITH POLYURETHANE (SANCON 100 OR APPROVED EQUAL).
16. IF CONCRETE COLLAR IS BROUGHT TO FINISHED SURFACE, COLOR OF CONCRETE SHALL MATCH GOVERNING AGENCY STANDARD.
17. #4 REINFORCING HOOPS SHALL HAVE A MINIMUM CONCRETE COVER OF 2" AND A MINIMUM CLEAR SPACING OF 2".

SCALE: NOT TO SCALE

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MAHOLE FRAME AND COVER

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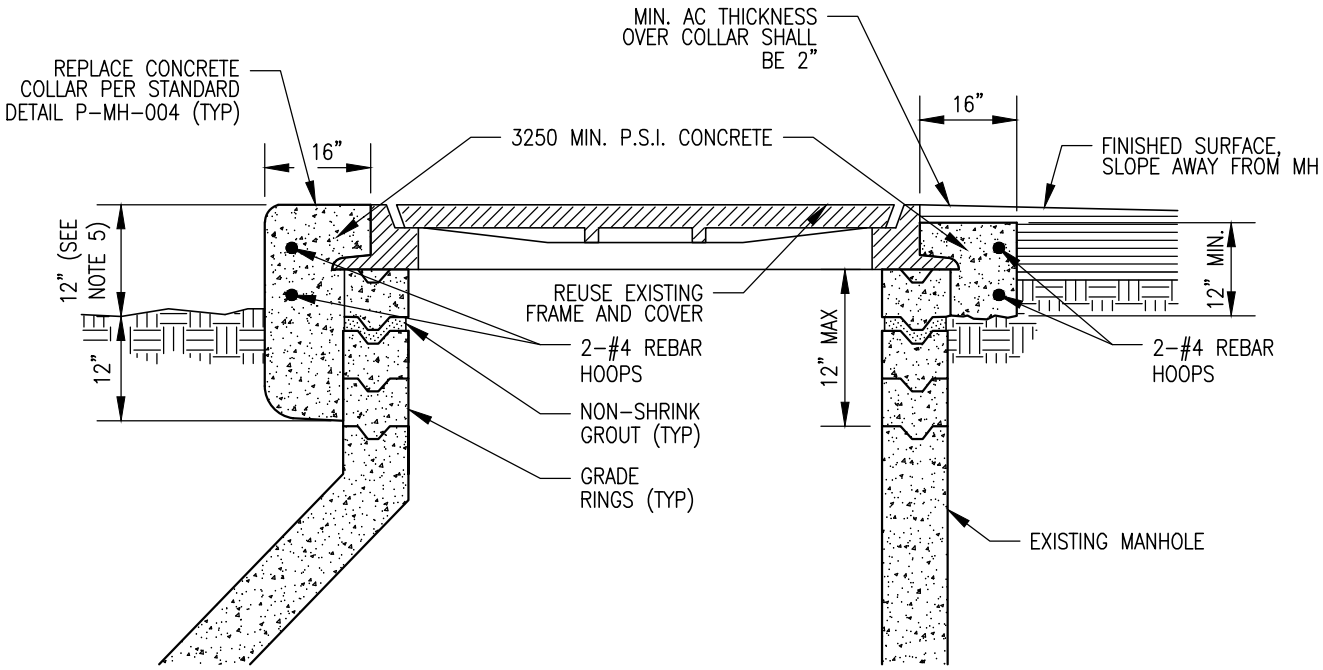
P-MH-004

SHEET 2 OF 2



NOTES:

1. REMOVE AND REPLACE EXISTING CAST IRON FRAME AND COVER WITH COMPOSITE TYPE (STANDARD DETAIL P-MH-004). IF EXISTING FRAME AND COVER IS COMPOSITE TYPE, RE-ADJUST PER DETAIL ABOVE

2. PROVIDE ADDITIONAL GRADE RINGS AS REQUIRED, NOT EXCEEDING 12" HIGH PER STANDARD DETAIL P-MH-001. WHERE GRADE ADJUSTMENT EXCEEDS THE 12" MAX GRADE RING HEIGHT, THE EXISTING GRADE RINGS AND CONE SHALL BE REPLACED WITH NEW BARRELS, CONE, AND GRADE RINGS AS REQUIRED TO ACHIEVE THE NEW GRADE, OR AS DIRECTED BY IEUA.

3. WHEN ADDITIONAL GRADE RINGS ARE USED, CHIP OUT LEVELING MORTAR ON EXISTING GRADE RING WHERE PRESENT AND RESET WITH FLEXIBLE JOINT SEALANT. HIGH STRENGTH NON-SHRINK GROUT NEW UPPER GRADE RING AS REQUIRED TO LEVEL FRAME AND COVER WITH FINISH SURFACE GRADE PER STANDARD DETAIL P-MH-004.

4. 3250 P.S.I. CAST-IN-PLACE CONCRETE MAY BE USED IN LIEU OF THE UPPER GRADE RING WHEN AN ADDITIONAL GRADE RING WILL NOT FIT. THE MINIMUM CAST-IN-PLACE GRADE RING HEIGHT SHALL BE 1 INCH. WHEN A CAST-IN-PLACE GRADE RING IS USED IT SHALL BE POURED MONOLITHICALLY WITH THE CONCRETE COLLAR.

5. IF WITHIN A PLANTER, 12" DIMENSION CAN BE REDUCED TO 6".

6. REPAIR ALL DAMAGED INTERIOR COATING/LINING WITH POLYURETHANE (SANCON 100 OR APPROVED EQUAL).

7. #4 REINFORCING HOOPS SHALL HAVE A MINIMUM CONCRETE COVER OF 2" AND A MINIMUM CLEAR SPACING OF 2".

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MANHOLE ADJUSTMENT TO GRADE

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P-MH-005

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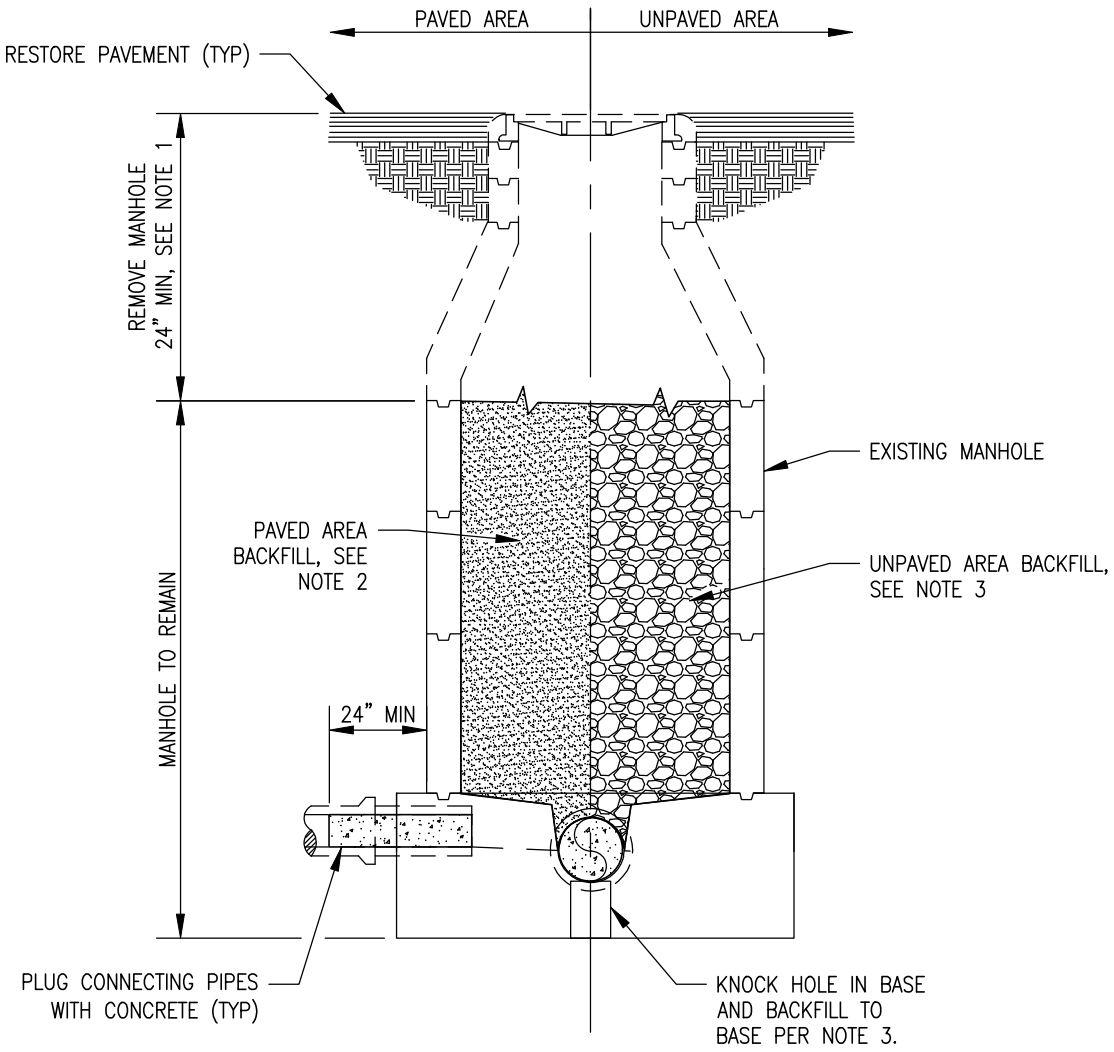

NOTES:

1. REMOVE MANHOLE CONE, GRADE RINGS, AND FRAME AND COVER AS REQUIRED TO MIN 24" BELOW FINISHED GRADE. SALVAGE FRAME, COVER, AND GRADE RINGS AND DELIVERY TO IEUA BACKFILL TO GRADE PER NOTES 2 OR 3.
2. IN PAVED AREAS, BACKFILL WITH 1-SACK SLURRY AND RESTORE EXISTING PAVEMENT.
3. IN UNPAVED AREAS, BACKFILL WITH COARSE AGGREGATE BASE OR RIVER RUN GRAVEL COMPACTED TO 90% RELATIVE COMPACTION. KNOCK 6" MIN HOLE IN BASE.

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MANHOLE ABANDONMENT

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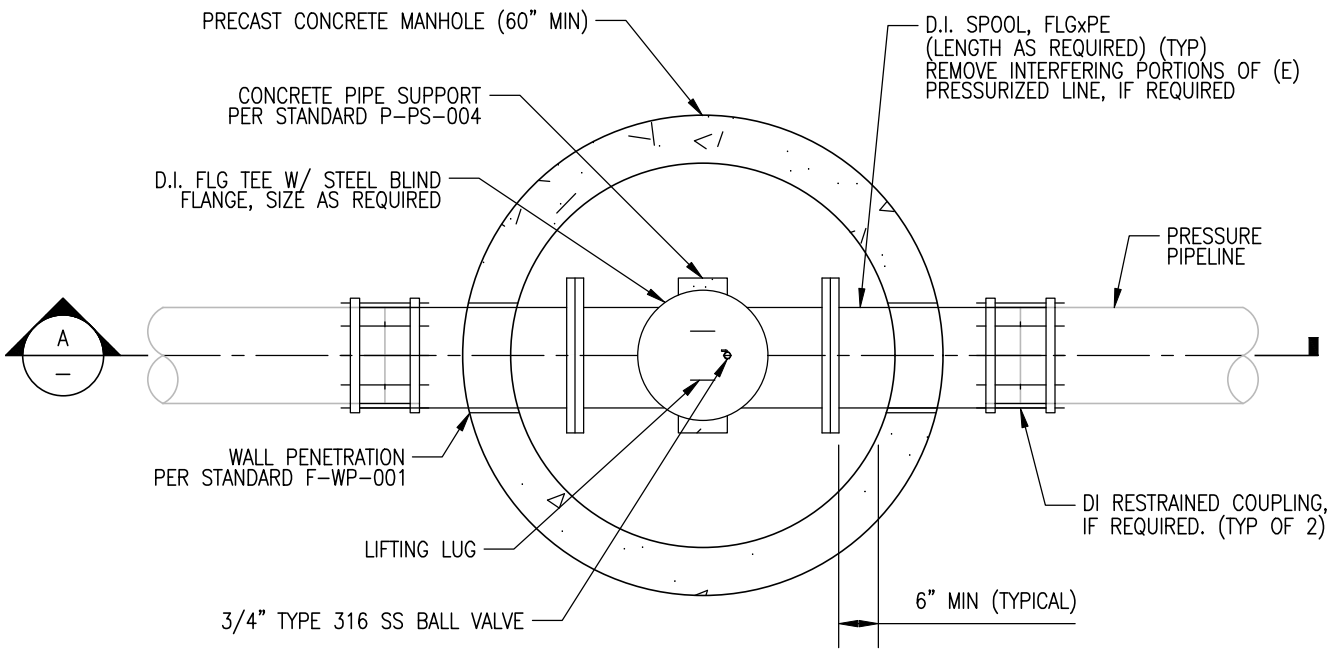

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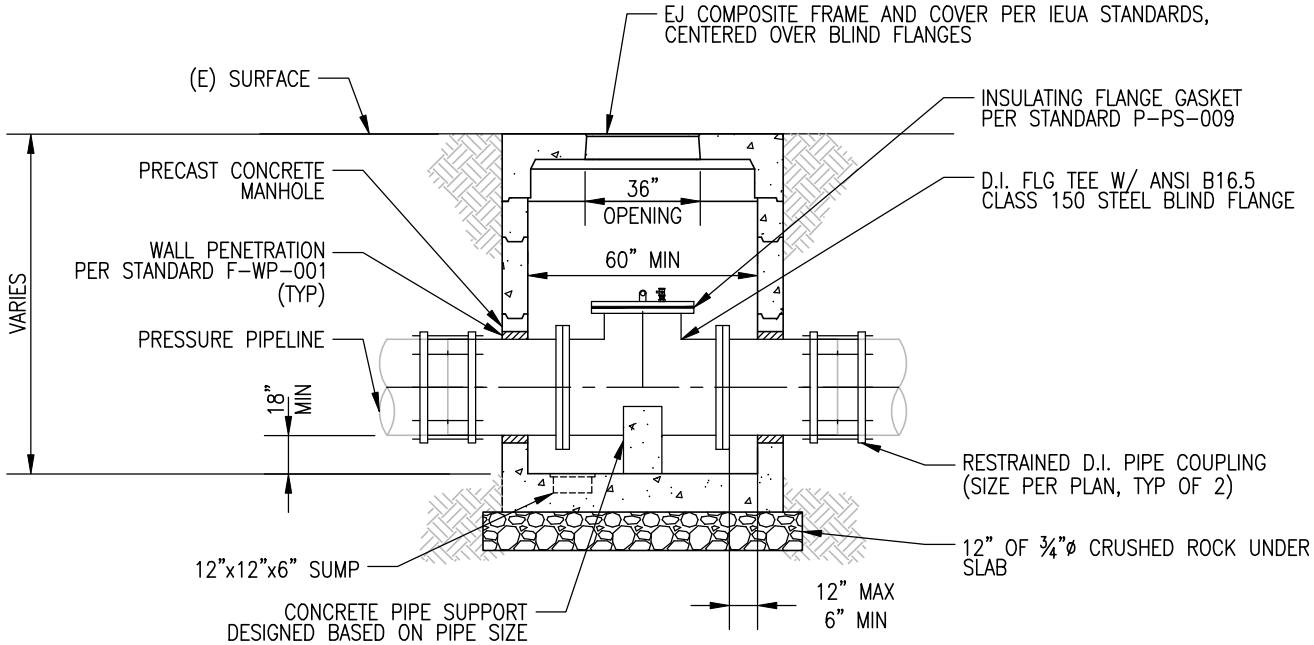

ACCESS VAULT

SECTION A

SCALE: NOT TO SCALE

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PRESSURE PIPE ACCESS DETAIL

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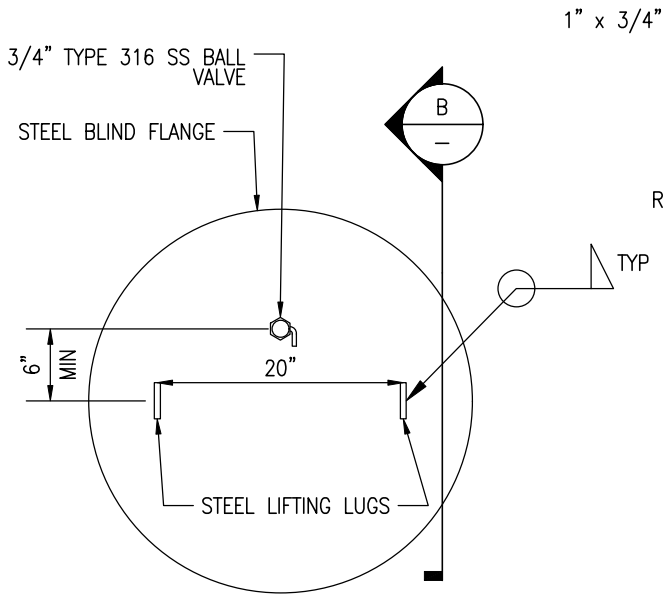

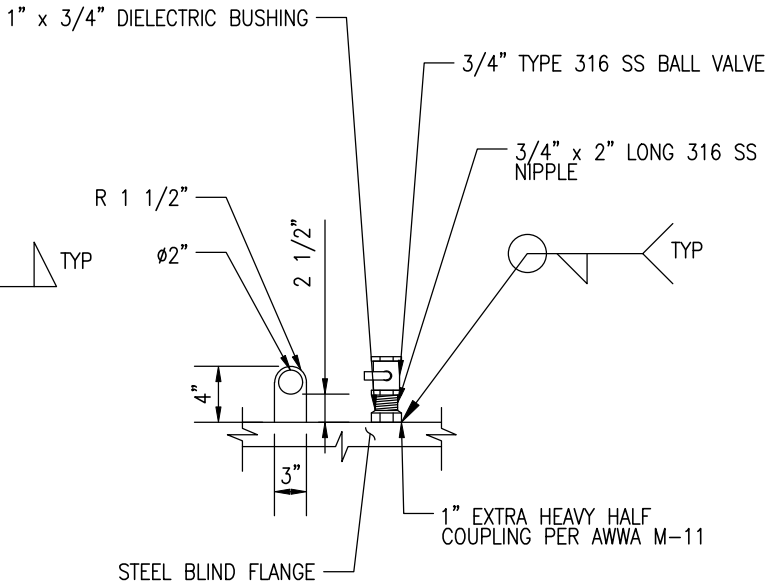

PLAN

SECTION B

LIFTING LUG AND PRESSURE GAUGE DETAIL

NOTES:

1. ALL DI PIPING SHALL BE THICKNESS CLASS 52 OR PRESSURE CLASS 250, UNLESS NOTED OTHERWISE BY IEUA, AND SHALL BE LINED WITH PROTECTO 401 AND COATED.
2. DI FLANGES SHALL ANSI B16.1 CLASS 125.
3. COVER ON PLAN VIEW NOT SHOWN FOR CLARITY.
4. SLOPE CONCRETE FLOOR 0.50% TO SUMP.
5. FRAME AND COVER SHALL BE TRAFFIC-RATED TO AASHTO H-20 AND H-25 LOADING.

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PRESSURE PIPE ACCESS DETAIL

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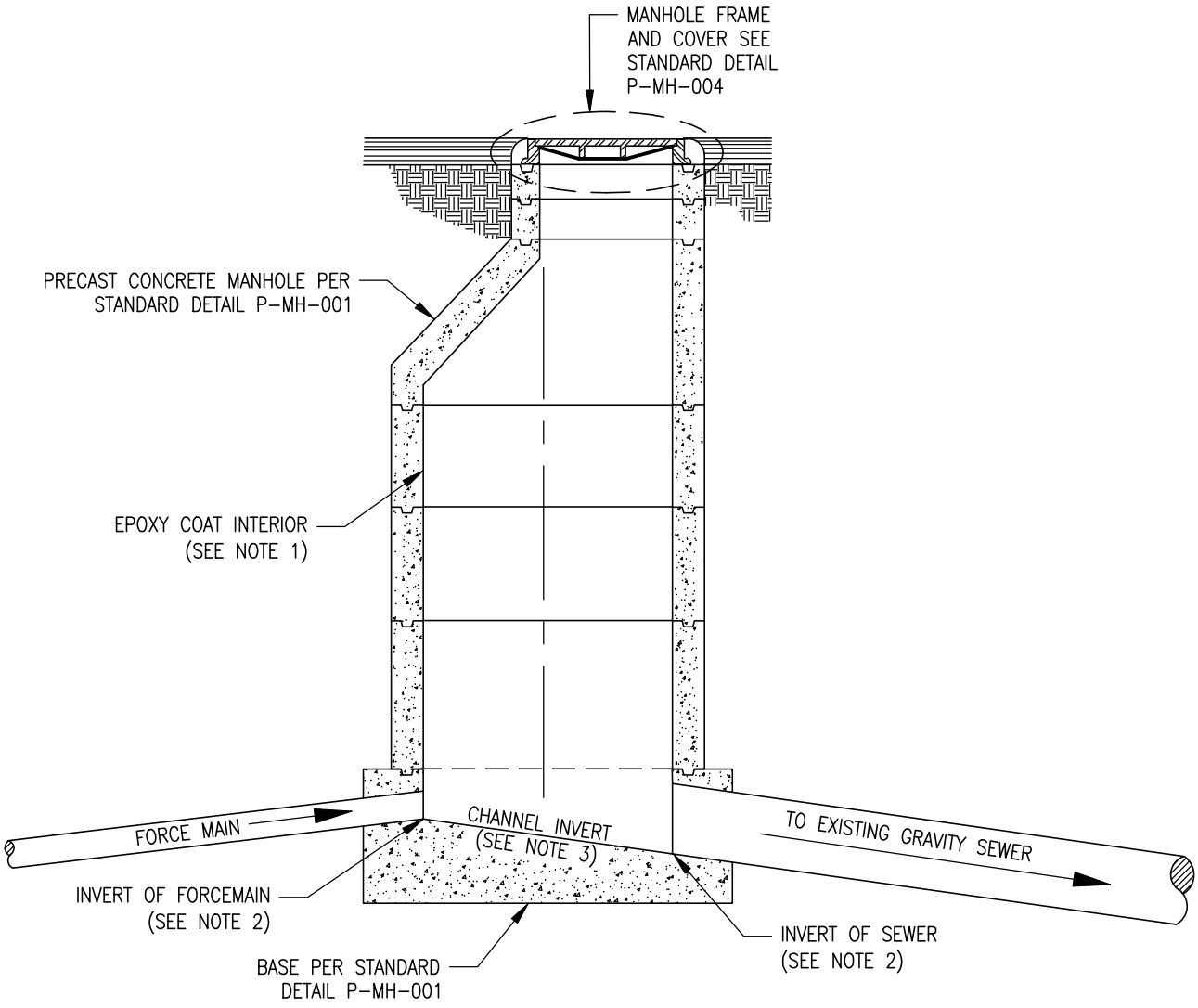

NOTES:

1. COAT INTERIOR OF MANHOLE WITH APPROVED EPOXY COATING AT MINIMUM 80 MILS. IN LIEU OF EPOXY COATED MANHOLE, A H2S RESISTANT MANHOLE OR POLYMER CONCRETE MANHOLE MAY BE INSTALLED.
2. ELEVATION OF GRAVITY SEWER INVERT SHALL BE MINIMUM 1" BELOW ELEVATION OF FORCE MAIN INVERT.
3. PROVIDE SMOOTH DOWNWARD SLOPING CHANNEL FROM FORCE MAIN TO GRAVITY SEWER.
4. FORCE MAIN SHALL NOT CONNECT WITH EXISTING GRAVITY SEWER MANHOLES.
5. INSTALL APPROVED ODOR CONTROL AT DISCHARGE MANHOLE.
6. FORCEMAIN DROP CONNECTIONS ARE NOT PERMITTED.
7. MAXIMUM OF ONE FORCEMAIN CONNECTION PER MANHOLE; MULTIPLE CONNECTIONS NOT ALLOWED.

SCALE: NOT TO SCALE

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DISCHARGE MANHOLE

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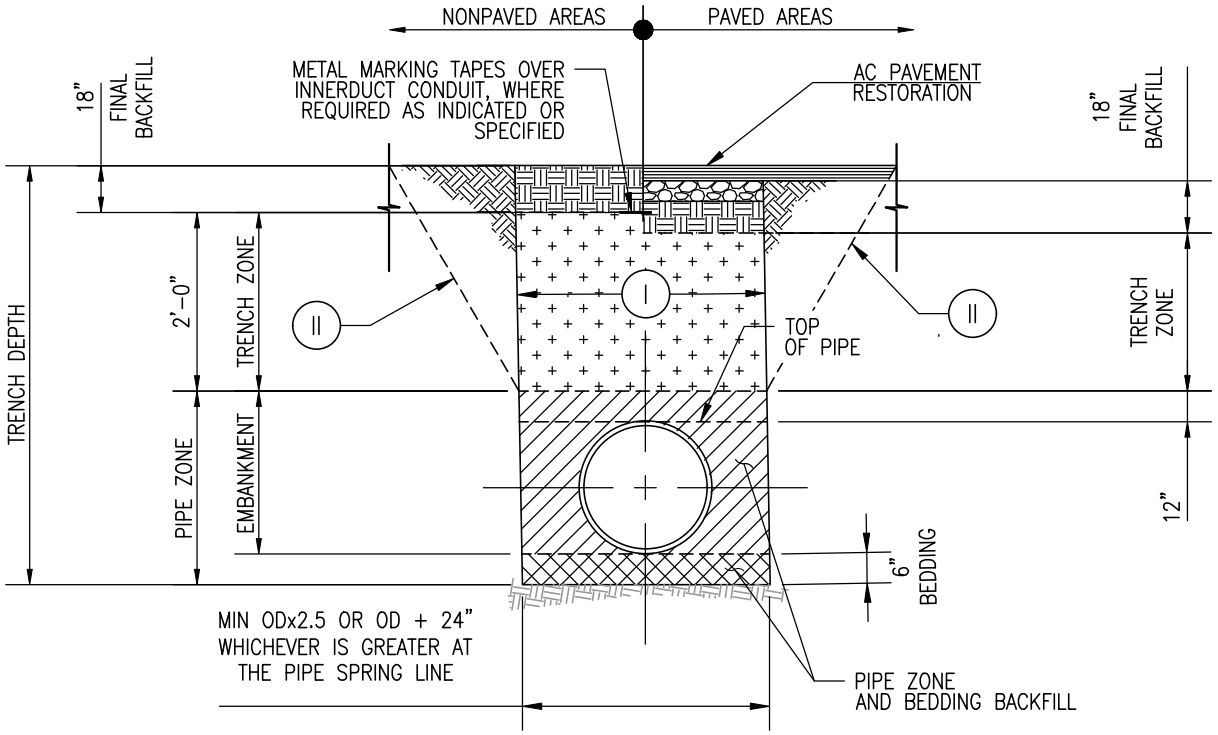
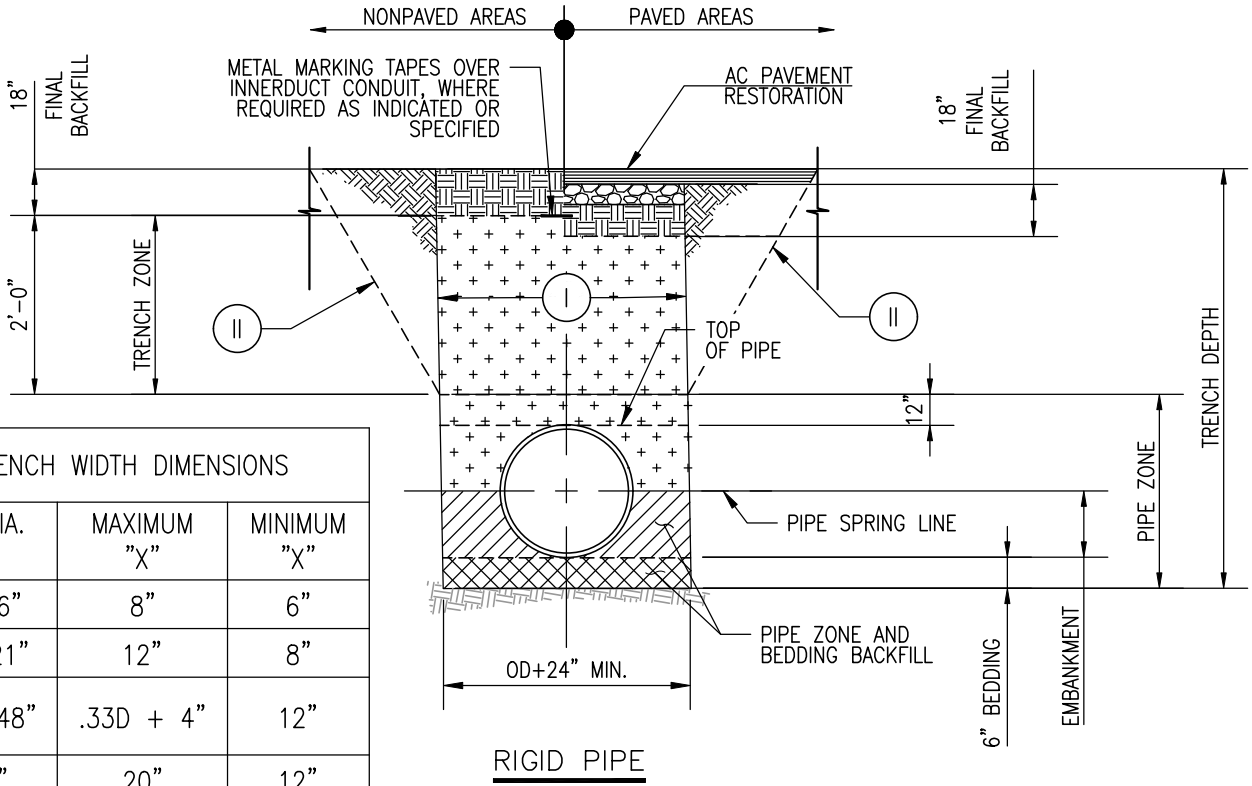
SHEET 1 OF 1



FLEXIBLE PIPE



RIGID PIPE

TRENCH WIDTH DIMENSIONS		
PIPE DIA. "D"	MAXIMUM "X"	MINIMUM "X"
4" – 6"	8"	6"
8" – 21"	12"	8"
24" – 48"	.33D + 4"	12"
> 48"	20"	12"

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TYPICAL TRENCH DETAIL FLEXIBLE AND RIGID PIPE

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SHEET 1 OF 2

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NOTES:

1. FLEXIBLE PIPE REFERS TO ALL STEEL, DUCTILE IRON, AND PLASTIC PIPES. RIGID PIPE REFERS TO ALL TYPES OF REINFORCED AND NON-REINFORCED CONCRETE PIPE AND CLAY PIPE.
2. DEFINITIONS OF FINAL BACKFILL, BEDDING, EMBEDMENT, PIPE AND TRENCH ZONES AND PIPE AND UTILITY BACKFILL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND GEOTECHNICAL REPORT.
3. TYPICAL TRENCH SECTIONS, (I) VERTICAL TRENCH WALLS, (II) COMBINATION OF VERTICAL AND SLOPING TRENCH WALLS.
4. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THAT THEY COMPLY WITH APPLICABLE LOCAL, STATE (CAL-OSHA), AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS COMPLIANCE AND THE PIPE DESIGN CALCULATIONS PREPARED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED TO THE ENGINEER.
5. THE NEED FOR TRENCH PROTECTIVE SYSTEMS SHALL BE DETERMINED IN CONSIDERATION OF APPLICABLE LOCAL, (CAL-OSHA), AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS AND GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
6. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALLS SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, (CAL-OSHA), AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS UNLESS SUPPORTING DOCUMENTATION IS SUBMITTED ACCORDING TO AFOREMENTIONED SAFETY STANDARDS.
7. PROTECTION SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE LOCAL, (CAL-OSHA), AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING THE DESIGN OF SHORING, BRACING, SLOPING OF OTHER PROTECTION SYSTEMS AND THEIR COMPLIANCE WITH APPLICABLE LOCAL, (CAL-OSHA), AND FEDERAL (OSHA) SAFETY STANDARDS.
8. A STAIRWAY, LADDER, RAMP OR OTHER SAFE MEANS OF EGRESS SHALL BE LOCATED IN TRENCH EXCAVATIONS 4.0 FEET OR MORE IN DEPTH SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL FOR EMPLOYEES/WORKERS PER CCR, TITLE 8 SECTION 1541.
9. VOIDS LEFT WHEN REMOVING SHEETING AND SHORING SHALL BE FILLED WITH CONTROLLED LOW STRENGTH MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS.
10. DETECTABLE METALLIC LOCATING TAPE SHALL BE PLACED ABOVE ALL BURIED PLASTIC PIPELINES AND OTHER PIPELINES THAT ARE NOT COMPRISED AT LEAST IN PART OF MAGNETIC COMPONENTS IN ACCORDANCE WITH THE EARTHWORK AND RESPECTIVE PIPING SECTIONS OF THE SPECIFICATIONS.
11. IF OVER-EXCAVATION DUE TO POOR FOUNDATION MATERIAL IS ORDERED BY THE ENGINEER, THE BACKFILL MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH THE EARTHWORK SECTION OF THE SPECIFICATIONS.
12. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED, AND APPROPRIATE DEWATERING SHALL BE IMPLEMENTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM IN ACCORDANCE WITH THE DEWATERING REQUIREMENTS PROVIDED IN THE SPECIFICATIONS. BACKFILL MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH THE EARTHWORK SECTION OF THE SPECIFICATIONS OR AS ORDERED BY THE ENGINEER.
13. TRENCH SHALL BE BACKFILLED AT 90% RELATIVE COMPACTION FOR PIPE ZONE AND AT 95% RELATIVE COMPACTION FOR TRENCH ZONE, UNLESS APPROVED BY IEUA.
14. IN PUBLIC RIGHT-OF-WAY, FINAL BACKFILL SHALL COMPLY WITH LOCAL JURISDICTION REQUIREMENTS UNLESS OTHERWISE NOTED BY IEUA.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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TYPICAL TRENCH DETAIL FLEXIBLE AND RIGID PIPE

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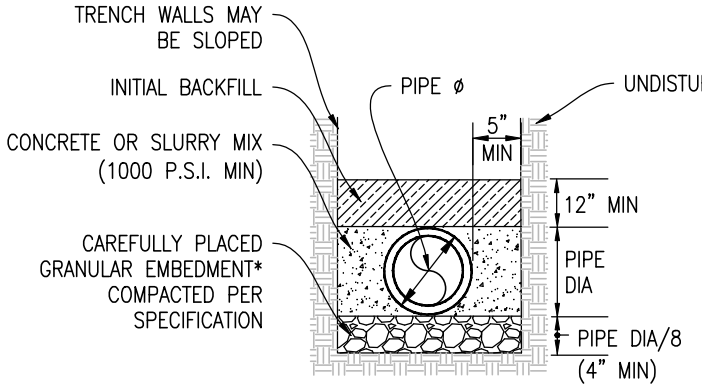
P-PS-001

SHEET 2 OF 2

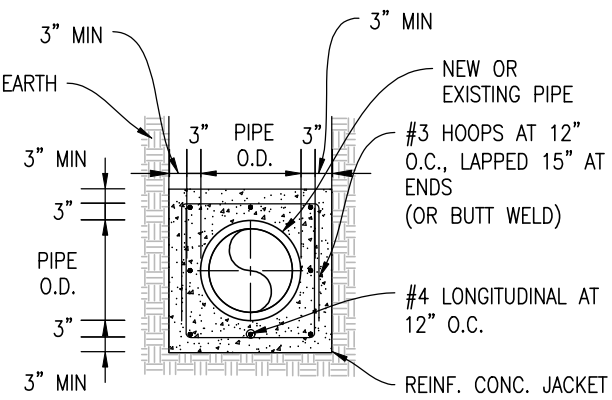


NOTE: THIS TYPE OF CONSTRUCTION REQUIRES THE CONCRETE TO EXTEND FROM THE PIPE TO THE TRENCH WALL.

CAUTION: NOT RECOMMENDED WHERE NATIVE SOILS ARE EXPANSIVE.

LOAD FACTOR: 2.7

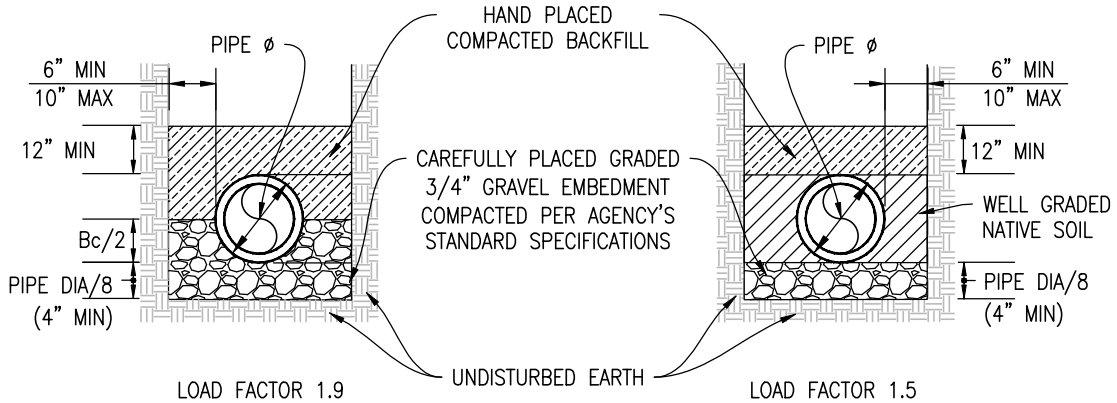
CLASS A–III – SIDECRADLING



NOTE: DETAIL SHALL BE USED FOR MINIMUM DIMENSIONS ONLY. TOTAL SIZE OF CONCRETE ENCASEMENT IS DEPENDENT ON PIPE SIZE (WEIGHT) AND SOIL BEARING PRESSURE PER PROJECT GEOTECHNICAL REPORT.

LOAD FACTOR: 4.5

CLASS A–IV – CONCRETE ENCASEMENT



LOAD FACTOR 1.9

CLASS B

LOAD FACTOR 1.5

CLASS C

*GRANULAR EMBEDMENT:

COARSE GRAINED NATIVE SOILS OR IMPORTED SAND WITH A MINIMUM SAND EQUIVALENCE OF 30 AND OF SUCH SIZE THAT 90 TO 100 PERCENT WILL PASS A NO.4 SIEVE AND NO MORE THAN 5 PERCENT WILL PASS A NO. 200 SIEVE.

1. SLAG, PEA GRAVEL, OR OTHER ALTERNATIVE MATERIALS WILL NOT BE ACCEPTABLE IN LIEU OF GRANULAR EMBEDMENT.
2. TRENCH SHORING & TRENCH WALL SLOPING SHALL BE IN CONFORMANCE WITH P–PS–001.
3. MATERIALS, EMBEDMENT, PLACEMENT AND COMPACTION OF GRANULAR EMBEDMENT* AND COMPACTED BACKFILL WILL CONFORM TO THE AGENCY'S STANDARD SPECIFICATION FOR PIPE BEDDING AND TRENCH BACKFILL.
4. CAREFULLY PLACED PIPE BEDDING MATERIAL SHALL BE VIBRATED.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
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ALTERNATIVE PIPE BEDDING DETAILS

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P-PS-002

SHEET 1 OF 1

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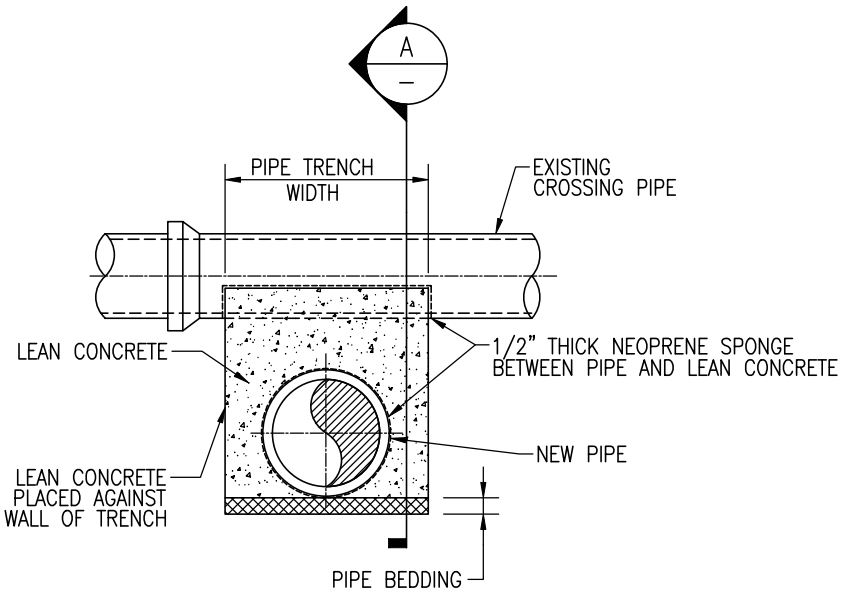
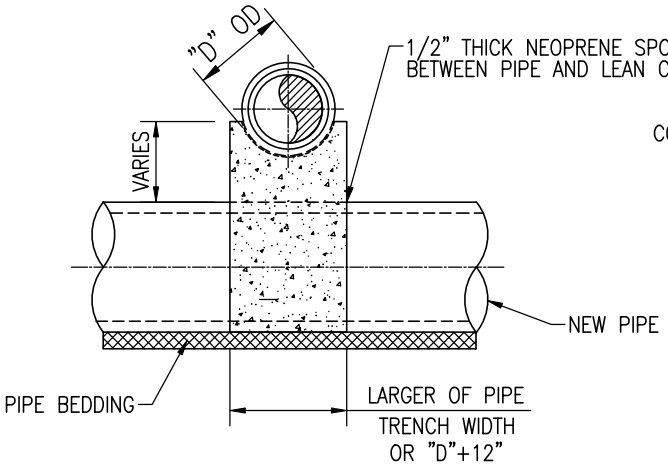
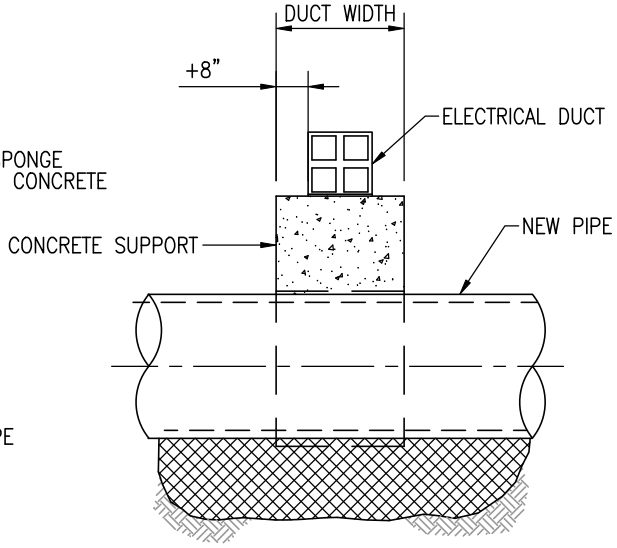


SECTION THRU NEW PIPE TRENCH



EXISTING PIPE CROSSING SECTION



ALTERNATIVE ELECTRICAL DUCT CROSSING SECTION

NOTES:

1. UNDERGROUND UTILITY SUPPORTS SHALL BE PROVIDED WHEN MINIMUM CLEARANCE OF 12 INCHES CANNOT BE PROVIDED.
2. EXISTING PIPE OR DUCT SHALL BE FIRMLY SUPPORTED DURING INSTALLATION OF NEW PIPE AND SUPPORT.

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
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UNDERGROUND UTILITY SUPPORT ACROSS TRENCH

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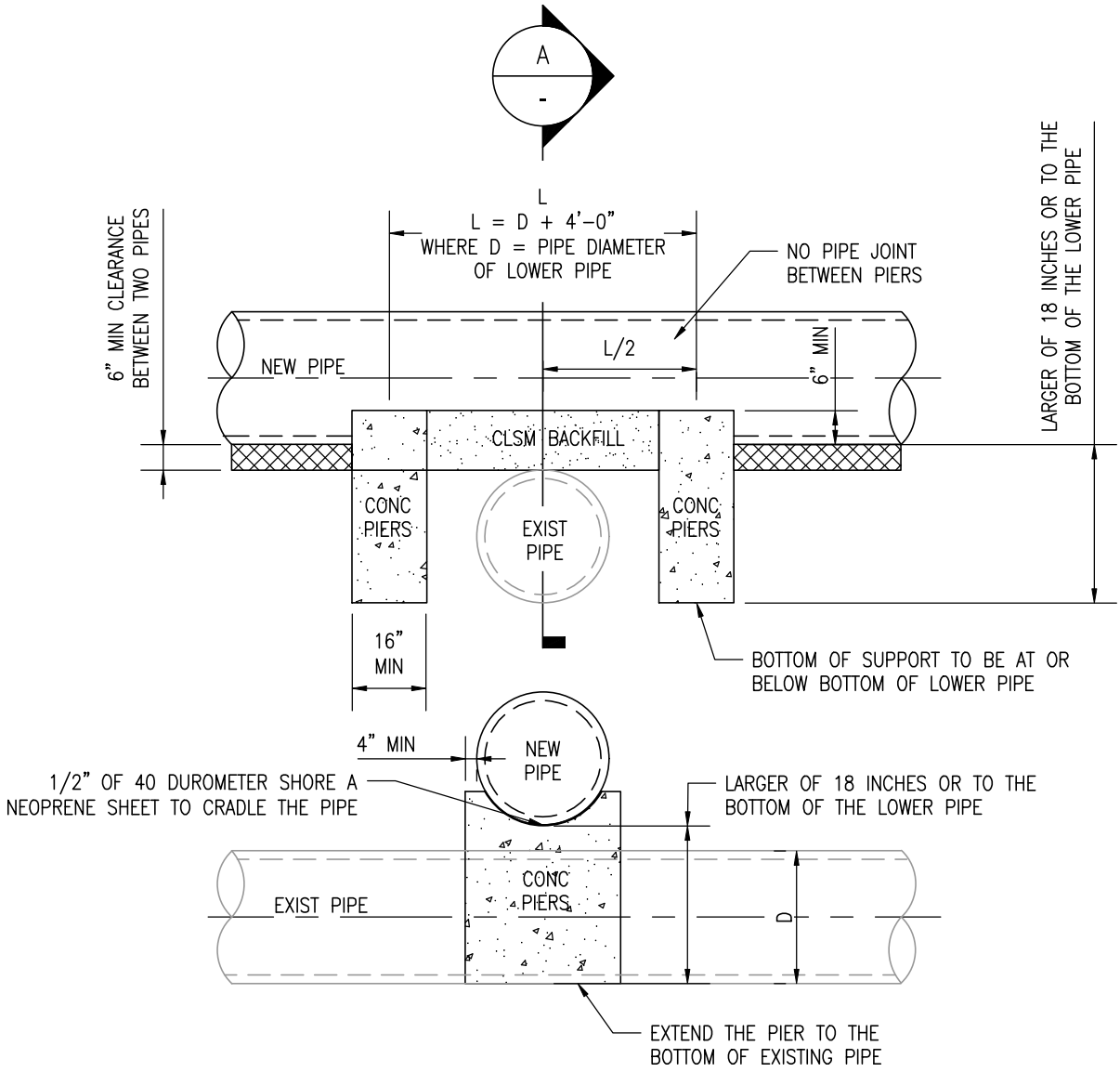
P-PS-003

SHEET 1 OF 1



SECTION A

NOTES:

1. PROVIDE PIERS ONLY WHEN LARGE DIAMETER PIPE (15" OR LARGER) CROSSES OVER EXISTING PIPELINE WITH VERTICAL CLEARANCE LESS THAN 12".
2. PIERS SHALL BE CONSTRUCTED ON UNDISTURBED EARTH. CONCRETE SHALL BE LEAN CONCRETE PER ENGINEERING DESIGN GUIDELINES.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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UNDERGROUND UTILITY SUPPORT CONCRETE PIERS

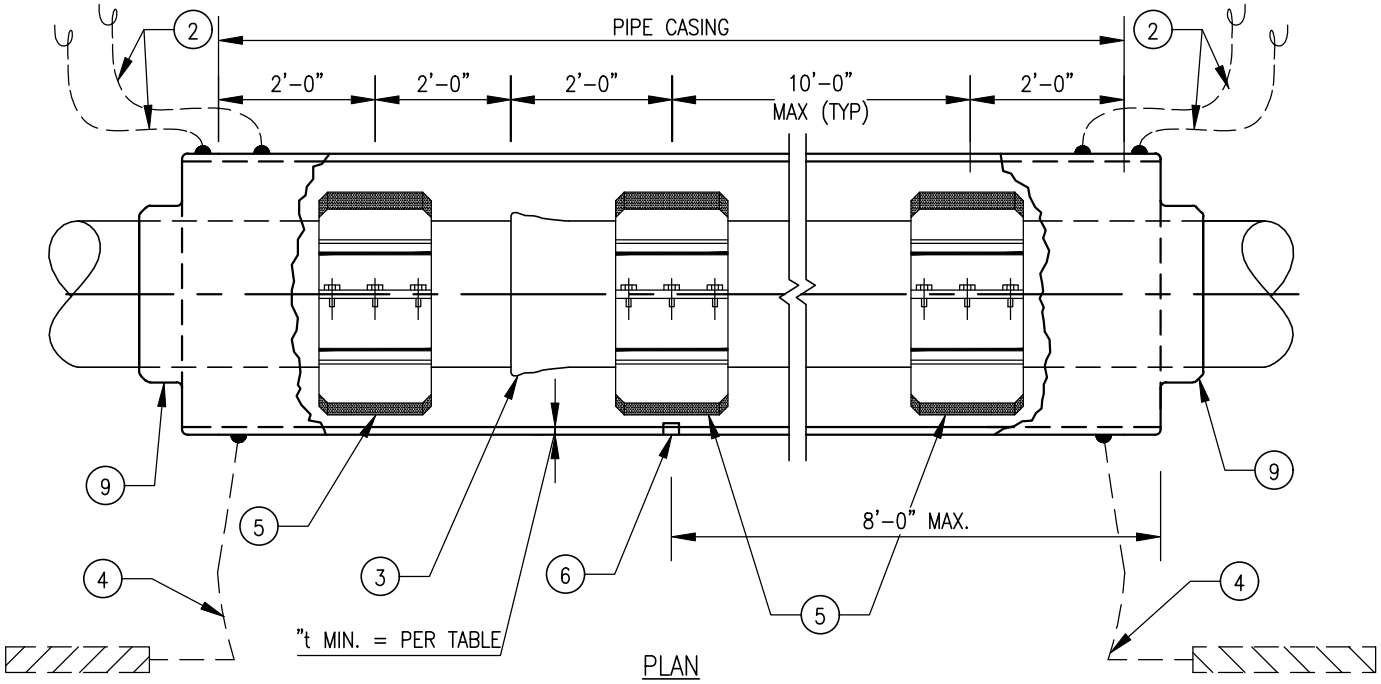
REVISION NO.	BY	DATE	APPROVED

P-PS-004

SHEET 1 OF 1

NOTES:

1. CASING SHALL BE A MINIMUM OF 4 INCHES GREATER THAN THE BELL DIAMETER.
2. SIZE AND THICKNESS OF CASING SHALL BE SHOWN IN SCHEDULE. FOR LONG BORES OR SPECIAL SITUATION GREATER WALL THICKNESS THAN SHOWN IN SCHEDULE MAY BE REQUIRED.
3. WELD FULL-CIRCUMFERENCE ALL STEEL CASING PIPE FIELD JOINTS.
4. PRESSURE TEST CARRIER PIPE PRIOR TO FILLING CASING.
5. SEAL EACH END OF CASING WITH CASING END SEALS.
6. BACKFILL CASING IN OPEN CUT PER DWG. P-PS-001.
7. NUMBER AND PLACEMENT OF SPACER ON CARRIER PIPE PER MANUFACTURER'S SPECIFICATIONS.
8. INSTALLATION OF 30-INCH DIAMETER OR LARGER CASING BY BORE, JACK AND/OR TUNNEL METHOD REQUIRES A TUNNEL CLASSIFICATION FROM THE CALIFORNIA DIVISION OF OCCUPATIONAL SAFETY AND HEALTH, MINING AND TUNNELING UNIT.
9. ANNULAR BACKFILL MATERIAL MAY BE SUPERSEDED BY JURISDICTIONAL REQUIREMENTS.
10. FLEXIBLE PIPE (PVC, HDPE, ETC.) SHALL HAVE SPACER GUIDE ALONG ON THE TOP TO PREVENT PIPE FROM FLOATING. PIPE WITHIN CASING TO BE BONDED TOGETHER AT THE JOINTS FOR AN INTEGRAL UNIT PER MANUFACTURER'S RECOMMENDATIONS. TWO (2) APPROVED FLEXIBLE COUPLINGS SHALL BE USED AT EACH END OF CASING.



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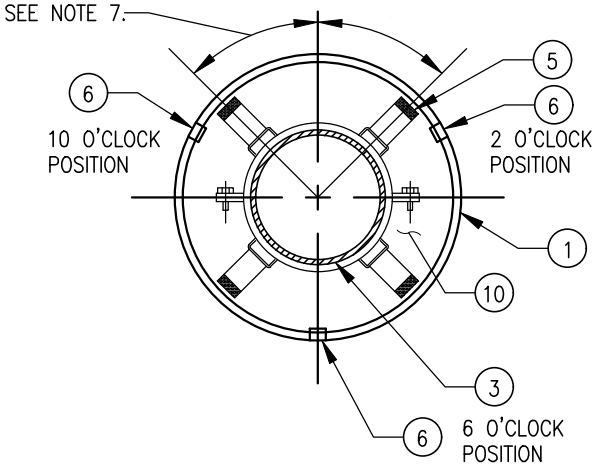
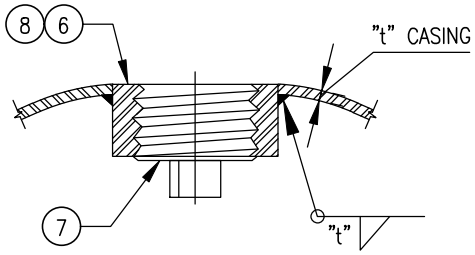


CROSS-SECTION



GROUT FITTING DETAIL

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

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APPROVED BY:
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CASING FOR PIPELINES DETAIL

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P-PC-005

SHEET 1 OF 2

TABLE "A"			
CASING O.D. "D"	STREETS & HWYS THICHNESS "t" MIN		RAILROADS
DIAMETER (INCHES)	UP TO 150' LENGTH	OVER 150' LENGTH	STEEL THICKNESS "t" (MINIMUM)
4"–10" ID	1/4"	1/4"	4"–12" : 1/4"
12"–16" OD	1/4"	1/4"	14"–16" : 9/32"
18"–20" OD	1/4"	1/4"	18" : 5/16" 20" : 11/32"
22" OD	1/4"	1/4"	3/8"
24" OD	1/4"	1/4"	13/32"
26" OD	1/4"	1/4"	7/16"
28" OD	1/4"	1/4"	15/32"
30" OD	3/8"	1/2"	15/32"
32" OD	3/8"	1/2"	1/2"
34"–36" OD	3/8"	1/2"	17/32"
38" OD	3/8"	1/2"	9/16"
40" OD	1/2"	3/4"	9/16"
42" OD	1/2"	3/4"	9/16"
48"–60" OD	1/2"	3/4"	AS REQUIRED
62"–72" OD	3/4"	3/4"	AS REQUIRED

MATERIAL LIST FOR STEEL CASING	
ITEM	DESCRIPTION
1	STEEL CASING.
2	INSTALL CASING TEST STATION PER CP–TS–001.
3	CARRIER PIPE CENTERED IN CASING WITH ALL JOINTS RESTRAINED.
4	INSTALL 60 LB. ANODE.
5	STAINLESS STEEL CASING SPACERS WITH HEAVY–DUTY 2–INCH WIDE ANTI–FRICTION RUNNERS.
6	GROUT FITTING @ 8–FOOT O.C. PER DETAIL HEREON. FOR ALL CASINGS 24–INCH IN DIAMETER AND LARGER, INSTALL ONE COUPLING IN 6 O'CLOCK POSITION @ 8–FOOT O.C.; STAGGER COUPLINGS BETWEEN 10 O'CLOCK AND 2 O'CLOCK POSITIONS EVERY 4 LINEAR FEET ALONG CASING AXIS.
7	2–INCH NPT THREADED STEEL PLUG WITH RAISED HEAD.
8	2–INCH NPT. STD. WT. STL. PIPE HALF COUPLING.
9	EDPM CASING END SEAL. INSTALL WITH STAINLESS STEEL WORM–SCREW BAND CLAMPS.
10	BACKFILL ANNULAR SPACE PER JURISDICTIONAL REQUIREMENTS AND PROJECT SPECIFICATIONS.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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MANAGER OF ENGINEERING — DATE

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CASING FOR PIPELINES DETAIL

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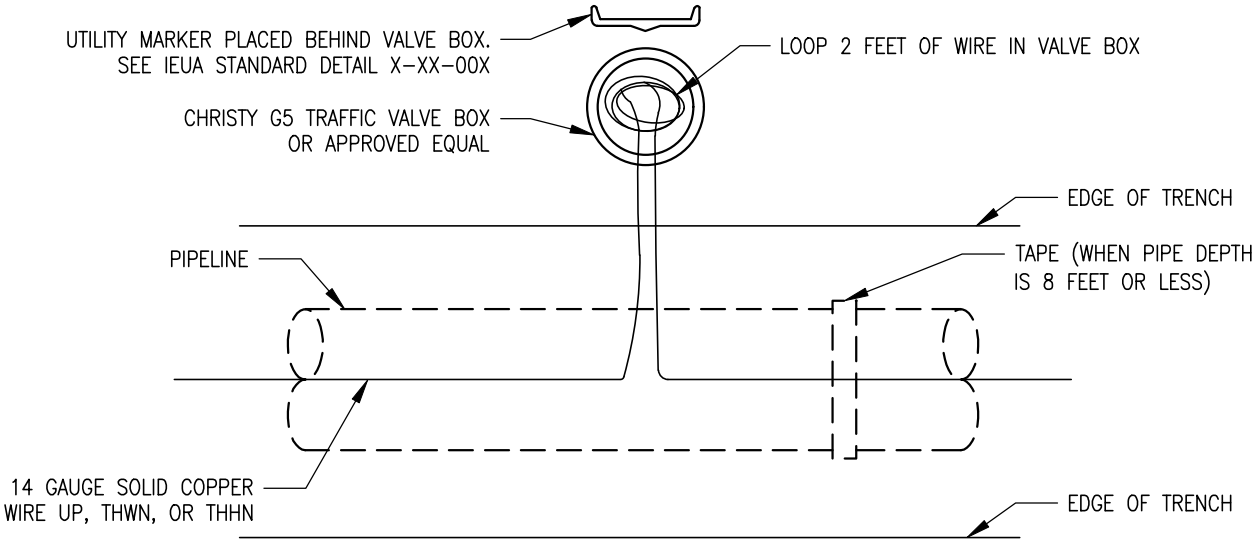
P-PS-005

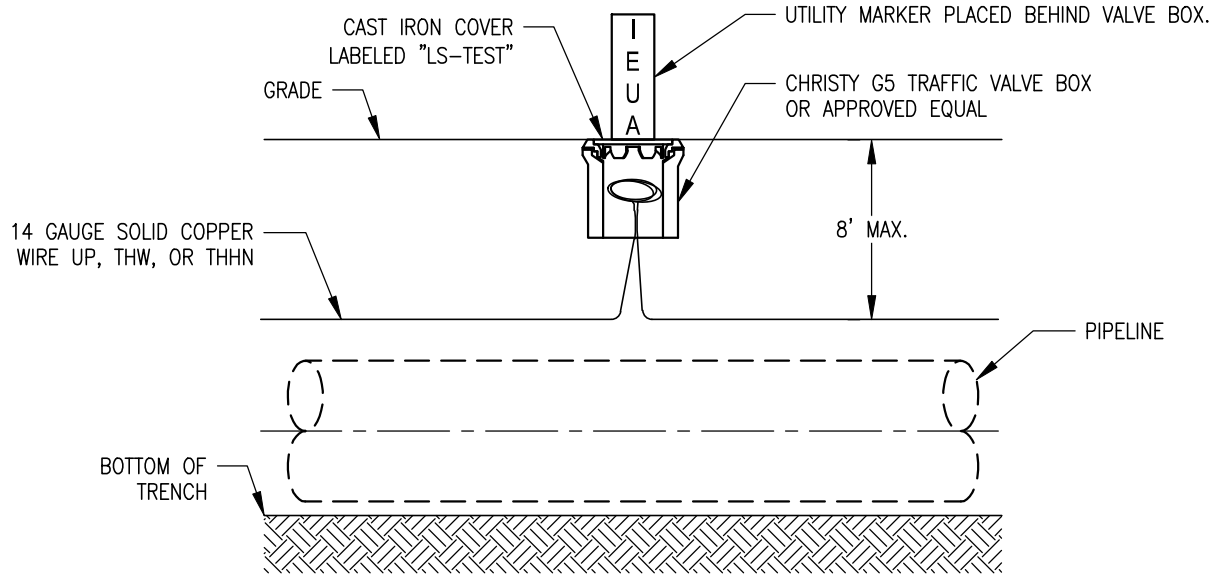
SHEET 2 OF 2

NOTES:

1. LOCATOR WIRE SHALL BE BROUGHT TO THE SURFACE AT 660 FEET OC MAXIMUM. LOCATOR WIRE SHALL TERMINATE AT EACH VALVE BOX AND BE CAPABLE OF EXTENDING 12" ABOVE TOP OF BOX.
2. LOCATOR WIRE SHALL BE INSTALLED OVER ALL NON-METALLIC RECLAIMED WATERLINES AND FORCE MAINS LOCATED WITH THE RIGHT-OF-WAY.
3. LOCATION OF VALVE BOX SHALL BE PER STANDARD CP-TS-002.
4. USE CAST IRON COVER LABELED "LS-TEST".
5. USE DUCT TAPE AS NECESSARY TO HOLD WIRE DIRECTLY ON THE TOP OF PIPE.
6. LOCATOR WIRE TO BE CONTINUOUS STRAND.
7. SPLICES TO BE DONE WITH A CRIMPABLE BUTT CONNECTOR.
8. FOR PIPE DEPTHS GREATER THAN 8 FEET, LOCATOR WIRE SHALL BE PLACED ABOVE PIPE AT A MAXIMUM 8 FEET DEPTH. UTILITY MARKER TAPE SHALL BE PLACED 1 FOOT ABOVE THE LOCATOR WIRE.
9. LOCATABILITY TEST SHALL BE PERFORMED ON ALL LOCATOR WIRES.



PLAN



PROFILE

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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PIPE LOCATOR WIRE DETAIL

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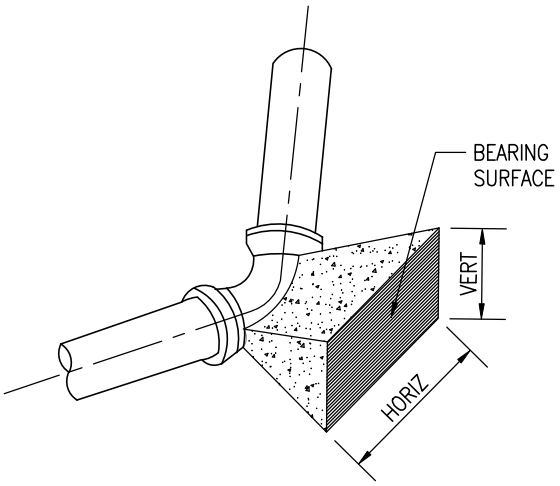
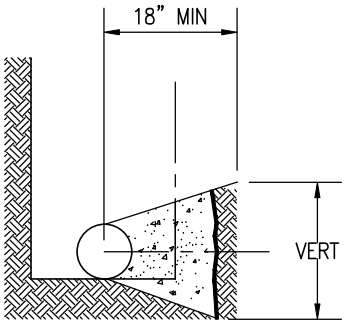
P-PS-006

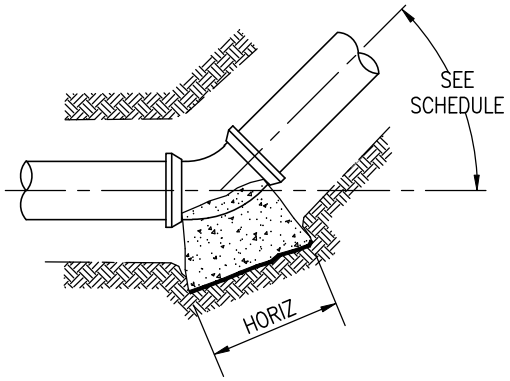
SHEET 1 OF 1



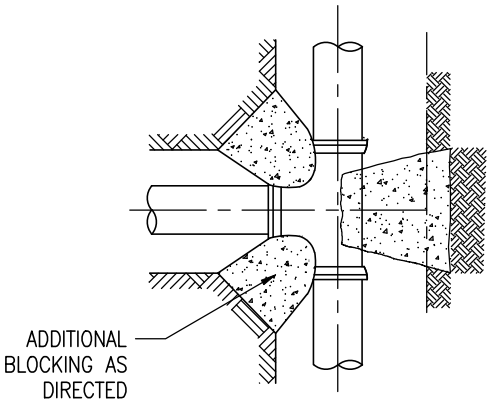
TYPICAL BEARING SURFACE



TYPICAL PROFILE



TYPICAL BEND



TEE OR VALVE

FOR MINIMUM SIZE OF THRUST BLOCK BEARING SURFACE AND ADDITIONAL NOTES – SEE SHEET 3

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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THRUST BLOCK DETAILS

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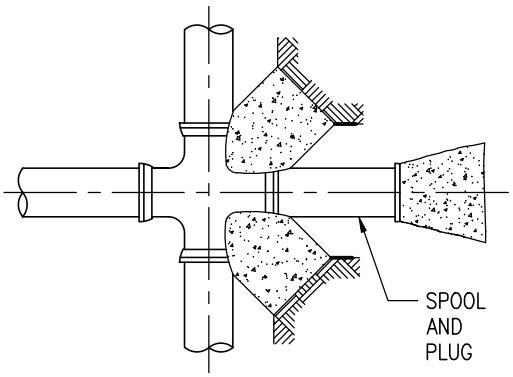
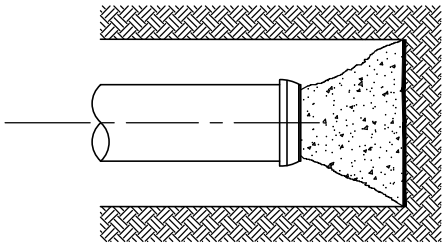
P-PS-007

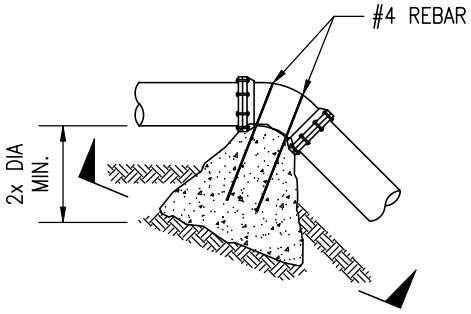
SHEET 1 OF 4



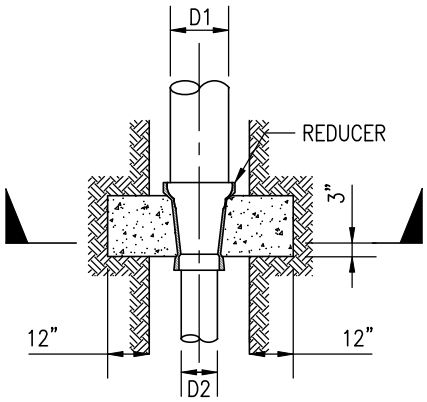
CROSS



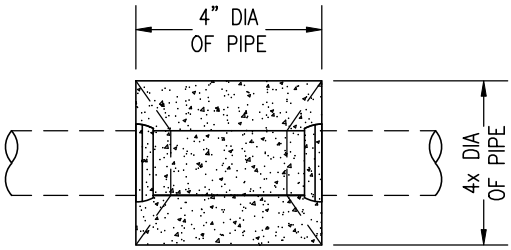
END CAP



ELEVATION

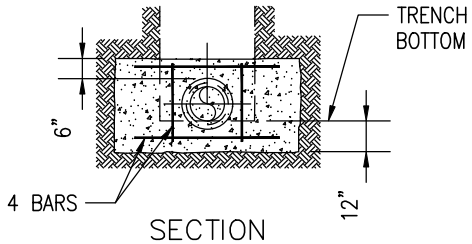


PLAN



SECTION

VERTICAL BEND



SECTION

REDUCER

FOR MINIMUM SIZE OF THRUST BLOCK BEARING SURFACE AND ADDITIONAL NOTES – SEE SHEET 3

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:

JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.

APPROVED BY:

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THRUST BLOCK DETAILS

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P-PS-007

SHEET 2 OF 4

NOTES:

1. THRUST BLOCK BEARING AREA BASED ON ALLOWABLE SOIL BEARING VALUE OF 1500 psf AND 225 psi LINE PRESSURE WITH 3'–0" COVER MINIMUM.
   FOR SOIL BEARING VALUE = 1000 psf, 1.5 X AREA SHOWN
   FOR SOIL BEARING VALUE = 500 psf, 3.0 X AREA SHOWN
2. ALL THRUST BLOCKS SHALL BE CLASS "B" CONCRETE AND PLACED AGAINST UNDISTURBED SOIL. DESIGN ENGINEER SHALL DETERMINE SIZES NOT SHOWN.
3. THRUST BLOCKS ON CROSSES SHALL BE USED ONLY WHEN THERE IS A STUB–OUT ON ONE OR MORE SIDES.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A15 AND A305 INTERMEDIATE GRADE.
5. CONCRETE SHALL NOT EXTEND ONTO FLANGE OR ADJOINING PIPE.
6. REBAR TIES AROUND PIPE SHALL BE EPOXY COATED.
7. PIPE SIZES LARGER THAN 16" SHALL REQUIRE ENGINEERING CALCULATIONS.
8. H = HORIZONTAL
   V = VERTICAL

MINIMUM SIZE OF THRUST BLOCK BEARING SURFACE

PIPE SIZE	11 1/4" BEND		22 1/2" BEND		45° BEND		90° BEND		TEE AND PLUGGED END	
	H	V	H	V	H	V	H	V	H	V
4"	1'–1"	0'–9"	1'–7"	1'–0"	2'–2"	1'–5"	3'–0"	1'–11"	2'–6"	1'–7"
6"	1'–7"	1'–0"	2'–3"	1'–5"	3'–2"	2'–0"	4'–4"	2'–9"	3'–8"	2'–4"
8"	2'–1"	1'–4"	3'–0"	1'–11"	4'–2"	2'–8"	5'–8"	3'–7"	4'–9"	3'–1"
10"	2'–7"	1'–8"	3'–8"	2'–4"	5'–1"	3'–3"	6'–11"	4'–5"	5'–10"	3'–9"
12"	3'–1"	2'–0"	4'–4"	2'–9"	6'–1"	3'–11"	8'–3"	5'–3"	6'–11"	4'–5"
16"	4'–1"	2'–7"	5'–9"	3'–8"	8'–0"	5'–1"	10'–10"	7'–0"	9'–2"	5'–10"

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

Inland Empire Utilities Agency

THRUST BLOCK DETAILS

REVISION NO.	BY	DATE	APPROVED

P-PS-007

SHEET 3 OF 4

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MINIMUM SIZE OF THRUST BLOCK BEARING SURFACE

D1 x D2 (IN)	TRENCH WIDTH* (IN)	H (IN)	V (IN)	MIN. BEARING AREA (FT^2)
6x4	24	27	41	4.3
8x4	24	37	55	10.4
8x6	24	31	46	6.1
10x4	30	47	70	17.7
10x6	30	42	63	13.4
10x8	30	34	52	7.3
12x4	30	56	83	26.7
12x6	30	52	77	22.4
12x8	30	46	69	16.3
12x10	30	37	56	9.0
16x8	36	67	100	39.0
16x10	36	61	92	31.7
16x12	36	54	81	22.7

*IF A DIFFERENT TRENCH WIDTH IS USED, THE THRUST BLOCK SHALL MAINTAIN THE MINIMUM BEARING AREA SHOWN.

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APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

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APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
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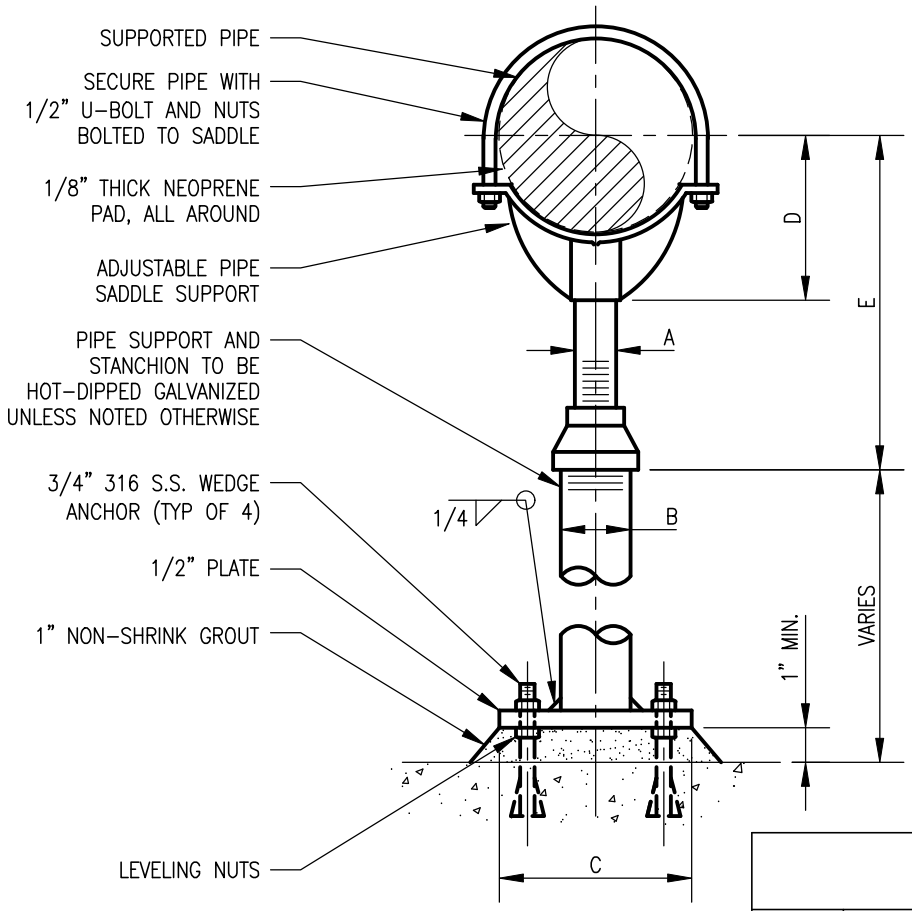
THRUST BLOCK DETAILS

REVISION NO.	BY	DATE	APPROVED

P-PS-007

SHEET 4 OF 4



DIMENSION TABLE (INCHES)						
PIPE SIZE	A	B	C	D	E	
					MIN	MAX
2 1/2	1 1/2	2 1/2	9	3 1/2	8	13
3	1 1/2	2 1/2	9	3 3/4	8 1/4	13 1/4
3 1/2	1 1/2	2 1/2	9	4	8 1/2	13 1/2
4	2 1/2	3	9	4 1/4	9 1/4	14
5	2 1/2	3	9	4 7/8	10	14 3/4
6	2 1/2	3	9	5 1/2	10 1/2	15 1/4
8	2 1/2	3	9	6 7/8	11 3/4	16 1/2
10	2 1/2	3	9	8 1/2	13 1/2	18 1/4
12	2 1/2	3	9	9 15/16	15	19 3/4
14	3	4	11	10 15/16	16 1/4	20 3/4
16	3	4	11	12 3/8	17 3/4	22 1/4
18	3 1/2	6	13 1/2	13 7/8	19 1/2	24
20	3 1/2	6	13 1/2	15 3/8	21	25 1/2
24	4	6	13 1/2	17 15/16	23 3/4	28 1/4
30	4	6	15	21 5/16	27	31 1/2
32	4	6	18	22 1/2	28 1/4	32 3/4
36	4	6	18	24 1/2	30 1/4	34 3/4

NOTES:

1. ADJUSTABLE PIPE SADDLE SUPPORT GRINNELL FIG. 265 WITH THREADED PIPE STANCHION GRINNELL FIG. 63T OR APPROVED EQUIVALENT.
2. PIPE STANCHION SADDLE DESIGNED FOR PIPE 4"-36". PIPE LARGER THAN 36" SHALL BE SUPPORTED BY A STANCHION SADDLE DESIGNED BY THE MANUFACTURER.
3. ENGINEER TO EVALUATE USE OF SUPPORTS FOR SEISMIC LOADING, THERMAL EXPANSION, AND THRUST, AND SHALL SPECIFY SUPPORT SPACING.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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APPROVED BY:
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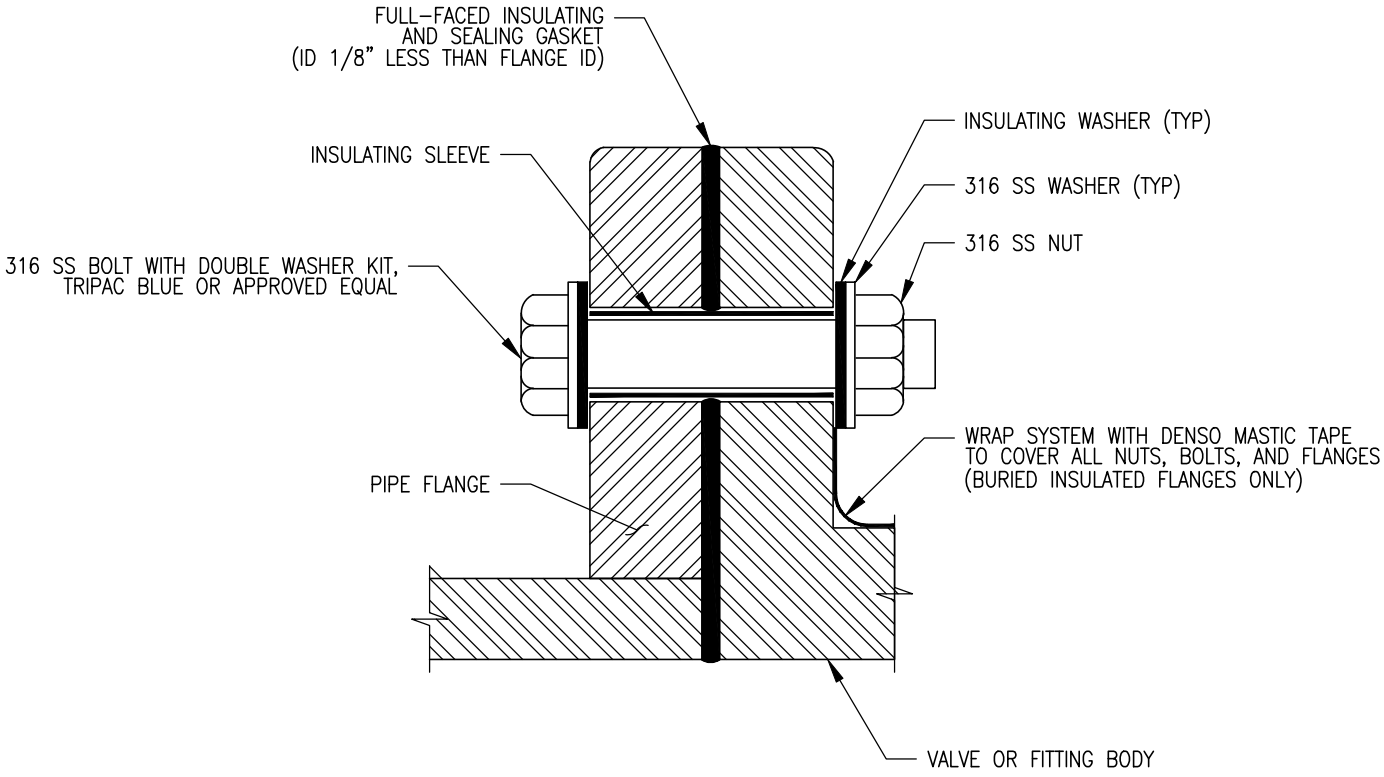
ADJUSTIBLE PIPE SUPPORT

REVISION			
NO.	BY	DATE	APPROVED

P-PS-008

SHEET 1 OF 1



NOTES:

1. INSULATING FLANGE KIT TO BE USED FOR ALL DISSIMILAR METALS UNLESS INDICATED OTHERWISE.
2. FOR TAPPED BOLTS, INSTALL INSULATING SLEEVE WHICH IS CUT TO FIT LENGTH OF BOLT HOLE FOR FLANGE.
3. INSULATED FLANGE KIT MATERIALS, INSTALLATION, AND TESTING PROCEDURES PER MANUFACTURER'S RECOMMENDATIONS.

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

APPROVED BY:
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INSULATING FLANGE

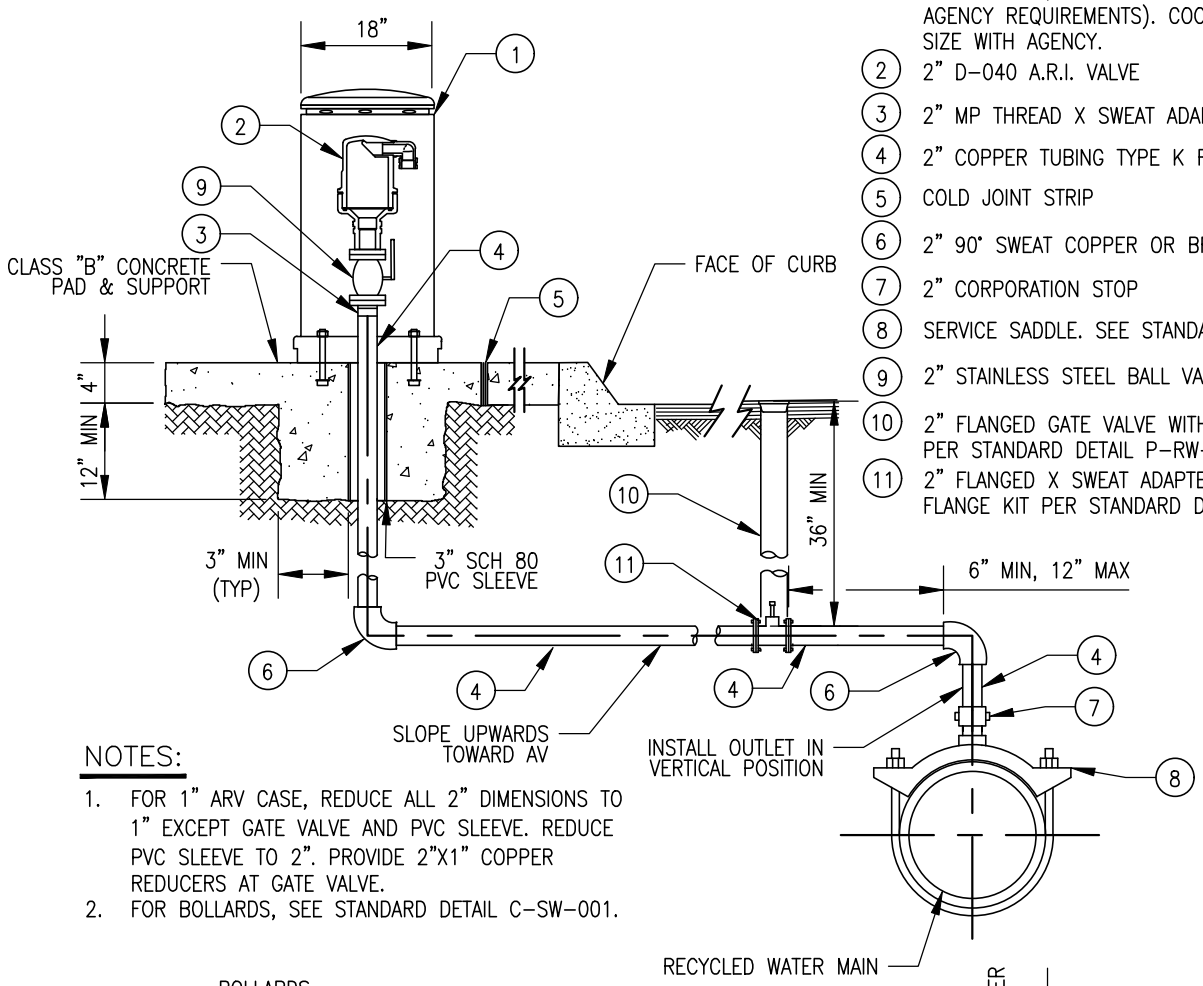
REVISION NO.	BY	DATE	APPROVED

P-PS-009

SHEET 1 OF 1

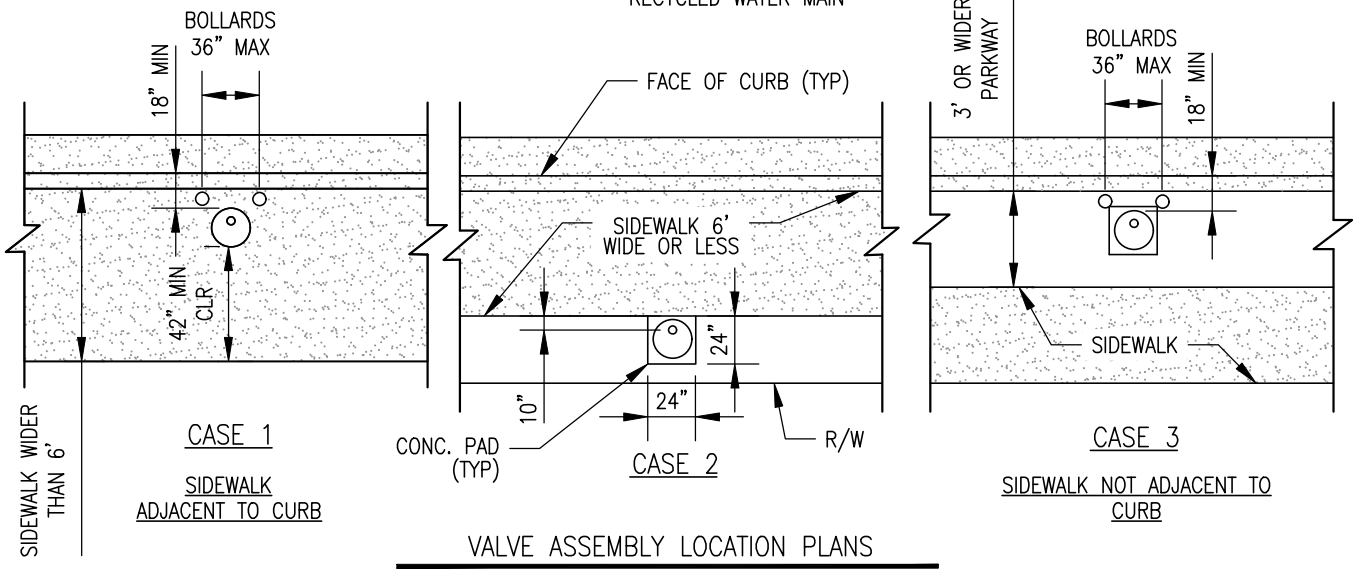
MATERIALS

ITEM NO	
1	LDPE ADVANTAGE SERIES AIR AND VACUUM VALVE ENCLOSURE (COLOR: PURPLE OR PER MEMBER AGENCY REQUIREMENTS). COORDINATE ENCLOSURE SIZE WITH AGENCY.
2	2" D-040 A.R.I. VALVE
3	2" MP THREAD X SWEAT ADAPTER
4	2" COPPER TUBING TYPE K RIGID
5	COLD JOINT STRIP
6	2" 90° SWEAT COPPER OR BRASS ELBOW
7	2" CORPORATION STOP
8	SERVICE SADDLE. SEE STANDARD DETAIL P-RW-008.
9	2" STAINLESS STEEL BALL VALVE
10	2" FLANGED GATE VALVE WITH VALVE BOX PER STANDARD DETAIL P-RW-010.
11	2" FLANGED X SWEAT ADAPTER. PROVIDE INSULATING FLANGE KIT PER STANDARD DETAIL P-PS-009.



NOTES:

1. FOR 1" ARV CASE, REDUCE ALL 2" DIMENSIONS TO 1" EXCEPT GATE VALVE AND PVC SLEEVE. REDUCE PVC SLEEVE TO 2". PROVIDE 2"X1" COPPER REDUCERS AT GATE VALVE.
2. FOR BOLLARDS, SEE STANDARD DETAIL C-SW-001.



VALVE ASSEMBLY LOCATION PLANS

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
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1" OR 2" AIR RELEASE & VACUUM RELIEF VALVE ASSEMBLY

REVISION NO.	BY	DATE	APPROVED

P-RW-001

SHEET 1 OF 1

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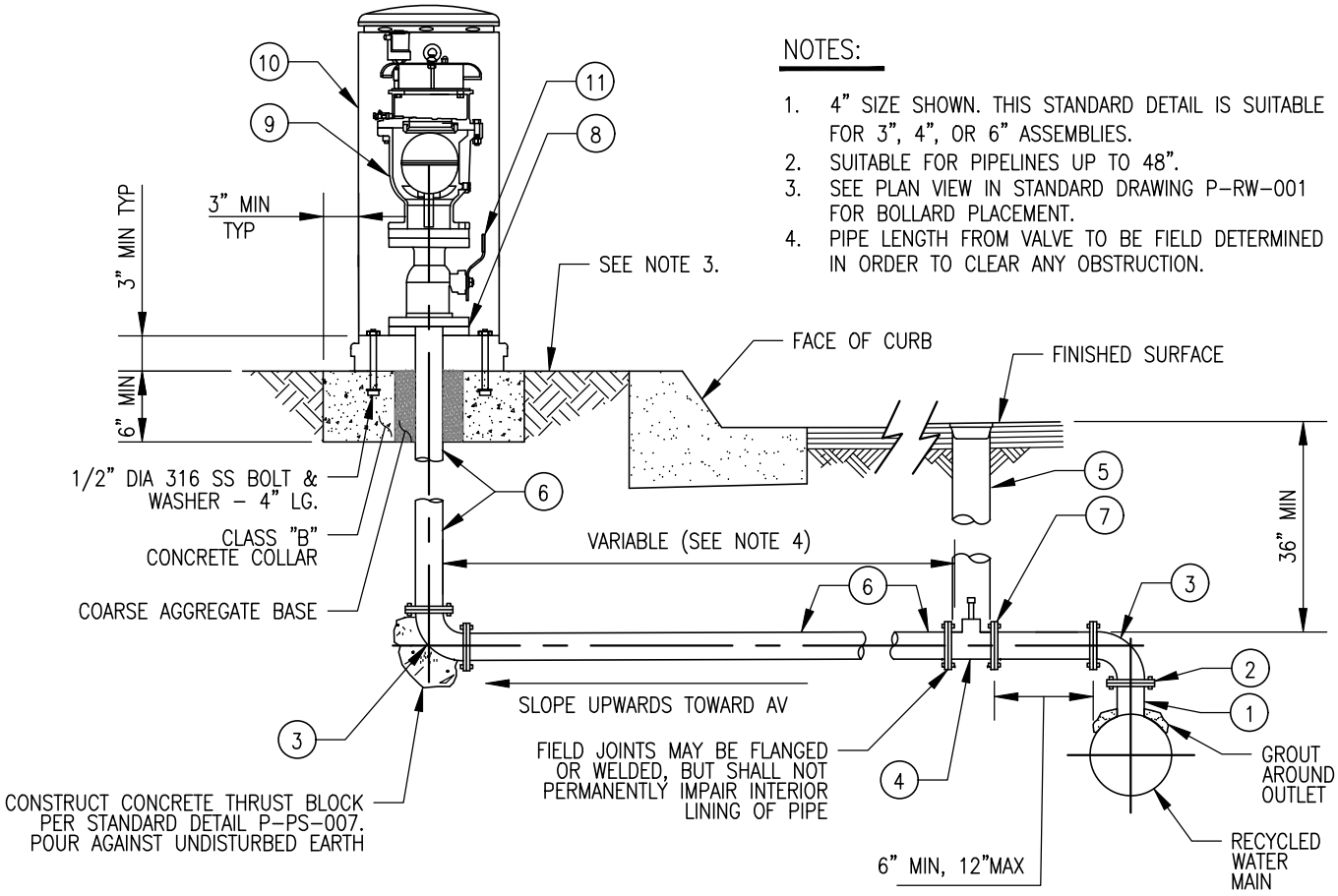

NOTES:

1. 4" SIZE SHOWN. THIS STANDARD DETAIL IS SUITABLE FOR 3", 4", OR 6" ASSEMBLIES.
2. SUITABLE FOR PIPELINES UP TO 48".
3. SEE PLAN VIEW IN STANDARD DRAWING P-RW-001 FOR BOLLARD PLACEMENT.
4. PIPE LENGTH FROM VALVE TO BE FIELD DETERMINED IN ORDER TO CLEAR ANY OBSTRUCTION.

MATERIAL LIST FOR 4" ARV

ITEM	NO. REQ'D.	DESCRIPTION
1	1	4" FLANGED CONNECTION PER STANDARD DETAIL P-RW-007.
2	1	4" A.S.A. 250 LB. SLIP-ON FLANGE (SHIP LOOSE FOR FIELD WELDING)
3	2	4" STEEL 90° FLANGED ELBOW, CML&C (STD. RADIUS)
4	1	4" AWWA FLANGED RESILIENT SEAT GATE VALVE WITH 2" SQ. OPERATING NUT. 250 LB. RATING.
5	1	VALVE BOX PER STANDARD DETAIL P-RW-010.
6	AS NEEDED	4" STEEL SCH. 40 PIPE, CML&C
7	2	4" 250 LB. SLIP-ON FLANGE TO MATCH FLANGE ON GATE VALVE (SHIP LOOSE FOR FIELD WELDING)
8	1	4" 250 LB. SLIP-ON FLANGE TO MATCH FLANGE ON AIR VALVE
9	1	4" D-060-C HF A.R.I. VALVE
10	1	LDPE ADVANTAGE SERIES AIR AND VACUUM VALVE ENCLOSURE (COLOR: PURPLE OR PER MEMBER AGENCY REQUIREMENTS). COORDINATE ENCLOSURE SIZE WITH AGENCY.
11	1	4" FLANGED STAINLESS STEEL BALL VALVE. INCLUDE INSULATING FLANGE KIT. SEE STANDARD DETAIL P-PS-009

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

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APPROVED BY:
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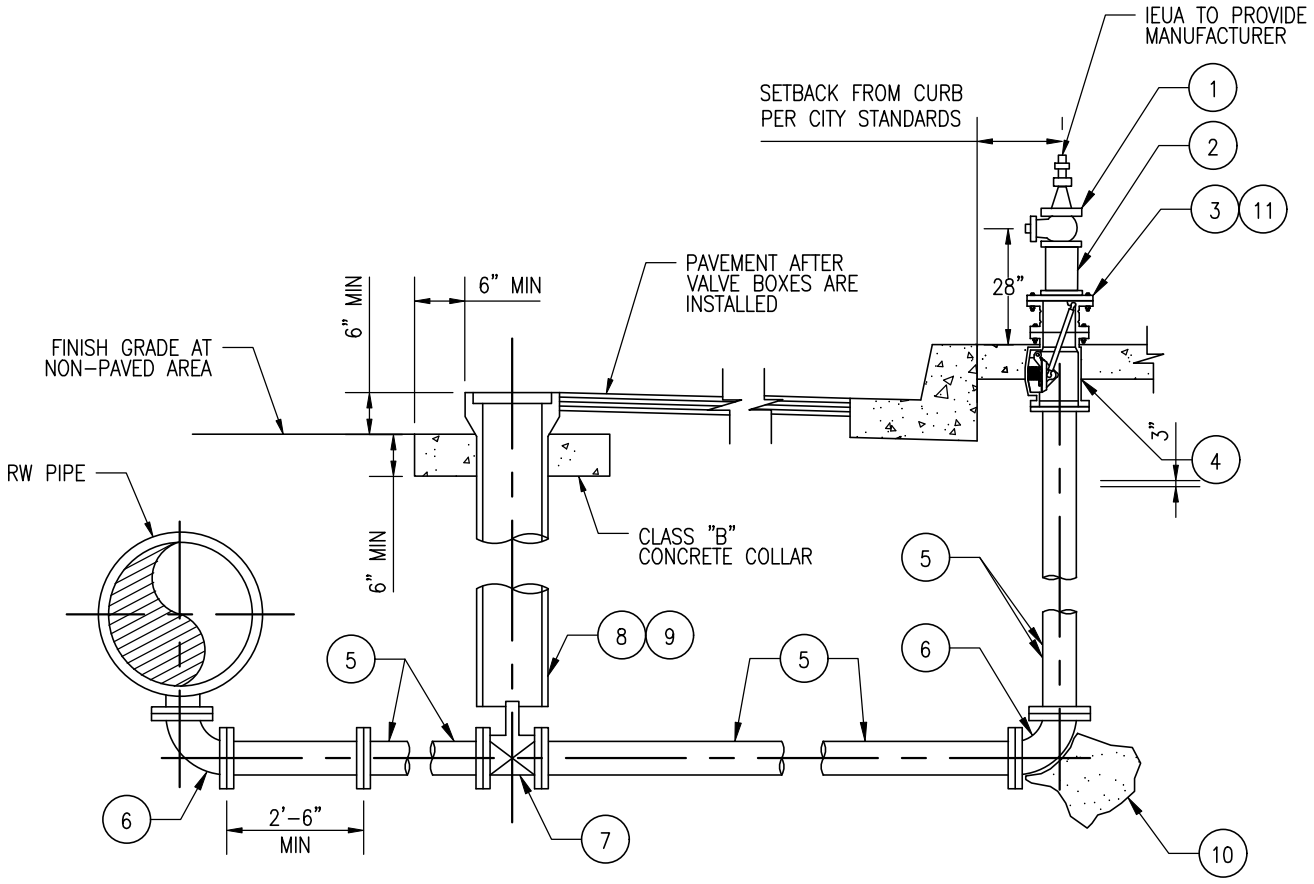
3", 4", OR 6" AIR RELEASE & VACUUM RELIEF VALVE ASSEMBLY

REVISION			
NO.	BY	DATE	APPROVED

P-RW-002

SHEET 1 OF 1



NOTES:

1. HYDRANT TO BE LOCATED DIRECTLY BEHIND CURB CLOSEST TO THE REGIONAL MANHOLE.
2. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 4 FEET.
3. PIPING AND FITTINGS SHALL BE FLANGED.
4. HYDRANT SHALL BE MARKED "IEUA RW" OR PAINTED PURPLE LABEL "IEUA".
5. BACKFILL CLASS SHALL BE EQUAL TO THE ADJACENT RECYCLED WATER PIPELINE UNLESS OTHERWISE SHOWN.
6. ALL BURIED BOLTS SHALL BE 316 STAINLESS STEEL. COAT WITH WAX TAPE. THE WAX TAPE COATING SHALL CONSIST OF THREE PARTS: SURFACE PRIMER, WAX TAPE AND OUTER COVERING. THE PRIMER SHALL BE A BLEND OF PETROLEUM, PLASTICIZER AND CORROSION INHIBITORS THAT IS EASILY FORMABLE OVER IRREGULAR SURFACES SUCH AS TRENTON #1 WAX-TAPE OR APPROVED EQUAL. THE OUTER COVERING SHALL BE A PLASTIC WRAPPER CONSISTING OF THREE (3), EACH 50 GAUGE, CLEAR PVC, HIGH CLING MEMBRANES WOUND TOGETHER AS A SINGLE SHEET SUCH AS TRENTON POLY-PLY OR APPROVED EQUAL.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
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6" BLOW-OFF ASSEMBLY

REVISION NO.	BY	DATE	APPROVED

P-RW-003

SHEET 1 OF 2

CONSTRUCTION ITEMS / MATERIALS LIST

ITEM NO.	SIZE AND DESCRIPTION
1	4" X 2 1/2" BRONZE WHARF HEAD HYDRANT. (JONES MODEL NO.J-344 H.P. OR APPROVED EQUAL)
2	4" NIPPLE
3	6" X 4" COMPANION FLANGE.
4	BREAK OFF CHECK VALVE (LONG BEACH IRON WORKS LB400 OR APPROVED EQUAL)
5	6" STEEL SCH. 40 PIPE, CML & CMC
6	6" STEEL 90° ELBOW, CML & CMC (LONG RADIUS)
7	6" GATE VALVE FLANGED
8	VALVE BOX ASSEMBLY PER DRAWING P-RW-010
9	VALVE STEM EXTENSION IF REQUIRED PER DRAWING P-RW-012
10	CONCRETE THRUST BLOCK PER DRAWING P-PS-007
11	BREAK AWAY BOLTS

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
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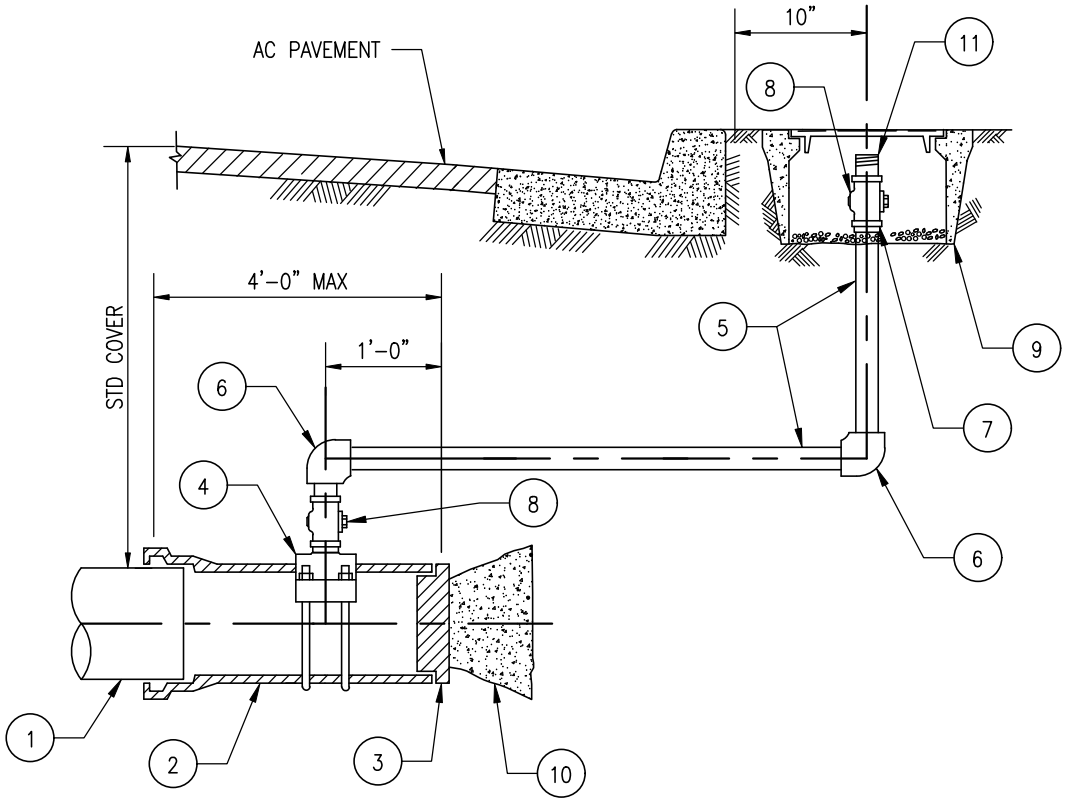
6" BLOW-OFF ASSEMBLY

REVISION NO.	BY	DATE	APPROVED

P-RW-003

SHEET 2 OF 2



MATERIALS:

1	4", 6", 8", 10" OR 12" PVC OR DUCTILE IRON PIPE
2	D.I. OR PVC SPOOL
3	D.I.P. PLUG
4	2" SERVICE SADDLE
5	2" BRASS OR COPPER TUBING (LENGTH AS NEEDED)
6	2" BRASS OR COPPER 90 ELBOW
7	2" M.I.P. X SWEAT COPPER ADAPTER, AS NEEDED
8	2" BRASS BALL CORP. STOP, FIP X FIP
9	METER BOX, SIMILAR TO DWG. P-RW-005, WITH NO READING LID
10	THRUST BLOCK PER DWG. P-PS-007
11	2" BRASS NIPPLE WITH THREAD PROTECTOR

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
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PERMANENT END OF LINE BLOW-OFF & CHLORINATION ASSEMBLY

REVISION			
NO.	BY	DATE	APPROVED

P-RW-004

SHEET 1 OF 1

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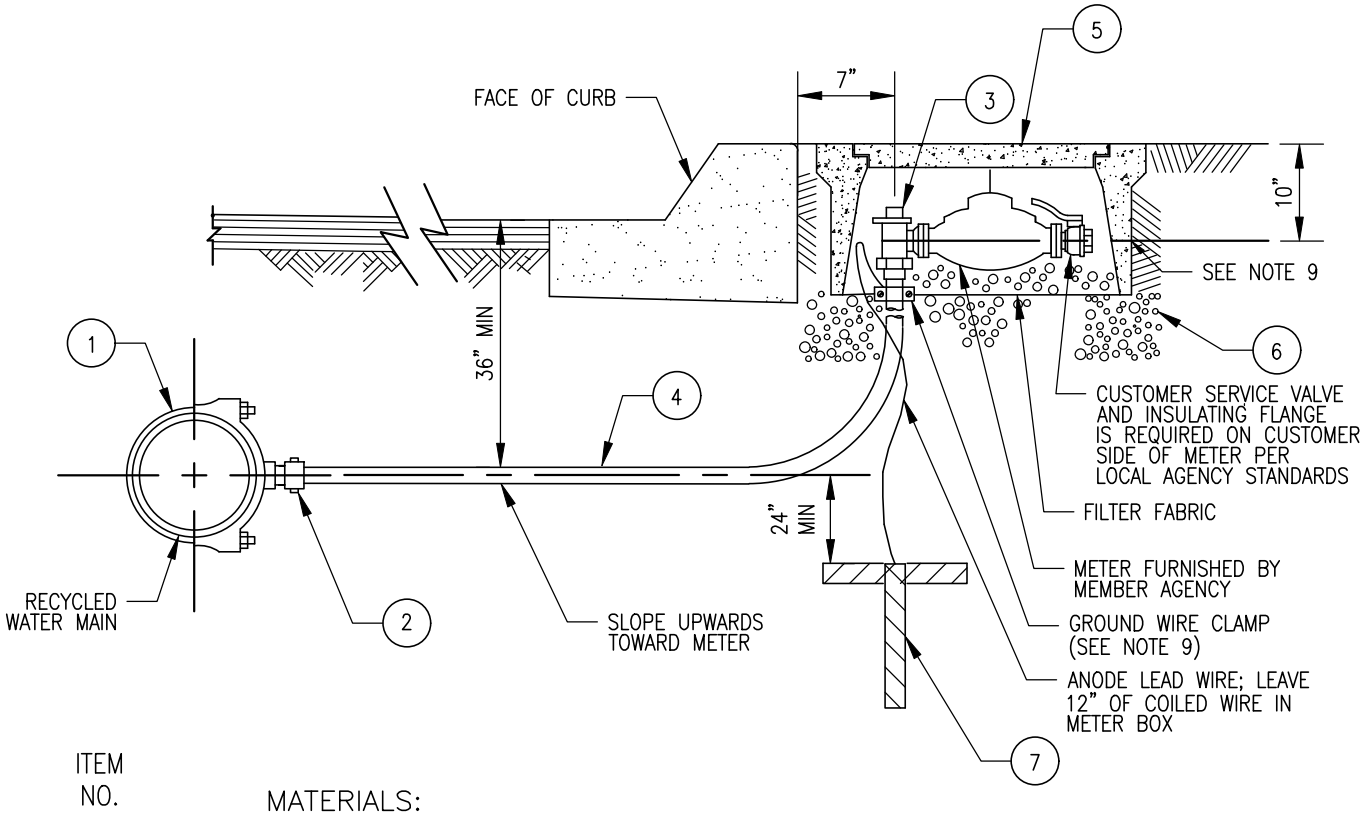

ITEM NO.

MATERIALS:

1. SERVICE SADDLE PER STANDARD DETAIL P-RW-008.
2. CORPORATION STOP
3. 1" X3/4" BRONZE ANGLE METER STOP W/LOCKWING (COMPRESSION TYPE) (JONES J-4201, MUELLER H-14258, FORD KV43-342-W OR APPROVED EQUAL)
4. 1" COPPER TUBING TYPE K SOFT (MUELLER, HALSTEAD, OR APPROVED EQUAL).
5. METER BOX W/ READING LID FOR 1" METERS (BROOKS 38-S, EISEL 438, J&R 5 1/2, QUAZITE PC1342 BA, ARMORCAST A6001946 AD PC, OR APPROVED EQUAL).
6. 3/8" ROCK, 6" MIN THICKNESS
7. ZINC ANODE AND LEAD WIRE.
   ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 2 FEET FROM THE COPPER SERVICE.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

Inland Empire Utilities Agency

1" COPPER RECYCLED WATER SERVICE INSTALLATION

REVISION NO.	BY	DATE	APPROVED

P-RW-005

SHEET 1 OF 2

NOTES:

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING. TAPPED COUPLINGS ARE NOT PERMITTED.
2. SET TOP OF METER BOX PER THE LOCAL AGENCY STANDARD REQUIREMENTS.
3. THE RECYCLED WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
4. ALL SPLICES OF COPPER TUBING SHALL BE SILVER SOLDER CONNECTIONS.
5. METER BOX READING LID FOR ALL RECYCLED WATER SERVICES SHALL BE PAINTED PER THE LOCAL AGENCY STANDARD SPECIFICATIONS.
6. FOR END OF LINE SERVICE INSTALLATION SEE STANDARD DETAIL P-RW-003.
7. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH BRASS SCREWS AS MANUFACTURED BY DOTTIE, OR APPROVED EQUAL.
8. THIS DETAIL IS A TYPICAL INSTALLATION. SERVICE INSTALLATION SHALL CONFORM TO THE LOCAL AGENCY STANDARDS.
9. CHECK WITH LOCAL AGENCIES/JURISDICTIONS FOR THE DEPTH AND FOOTPRINT OF METER BOX.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

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1" COPPER RECYCLED WATER SERVICE INSTALLATION

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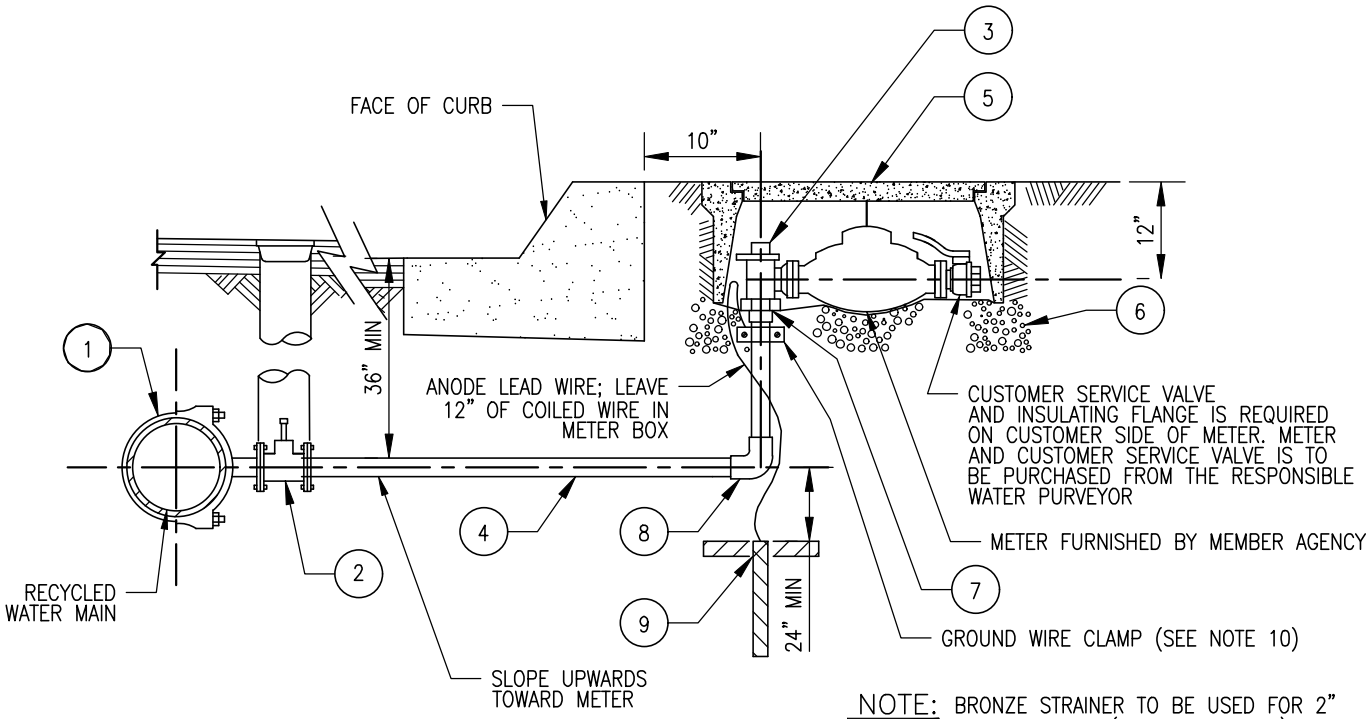
NO.	BY	DATE	APPROVED

P-RW-005

SHEET 2 OF 2



NOTE: BRONZE STRAINER TO BE USED FOR 2" TURBO METERS (RECYCLED WATER).

ITEM NO.	MATERIALS:
1	SERVICE SADDLE PER STANDARD DETAIL P-RW-008.
2	2" FLANGED GATE VALVE AND VALVE BOX PER STANDARD DETAIL P-RW-010.
3	2" BRONZE ANGLE METER STOP W/LOCKWING F.I.P. X FLANGE (JONES J-1527-F, MUELLER H-14286, FORD FV13-777W, OR APPROVED EQUAL).
4	2" COPPER TUBING TYPE K SOFT (ANACONDA, PHELPS-DODGE, OR APPROVED EQUAL).
5	METER BOX W/READING LID FOR 2" METER (IF IEUA IS TO SUPPLY) (BROOKS 66-S, EISEL 666 B, J&R 6B, QUAZITE PC-2436 BA, ARMORCAST A6001640 AD PC, OR APPROVED EQUAL)
6	3/8" ROCK, 6" MIN
7	2" ADAPTER, MALE I.P. X SWEAT
8	2" COPPER 90° ELBOW SWEAT
9	ZINC ANODE, AND LEAD WIRE. ANODE IS TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 2 FEET FROM THE COPPER SERVICE.

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
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2" COPPER RECYCLED WATER SERVICE INSTALLATION

REVISION NO.	BY	DATE	APPROVED

P-RW-006

SHEET 1 OF 2

NOTES:

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING. TAPPED COUPLINGS ARE NOT PERMITTED.
2. SET TOP OF METER BOX PER THE LOCAL AGENCY STANDARD REQUIREMENTS.
3. THE RECYCLED WATER SERVICE SHOULD EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
4. ALL SPLICES OF COPPER TUBING SHALL BE SILVER SOLDER CONNECTIONS.
5. METER BOX READING LID FOR ALL RECYCLED WATER SERVICES SHALL BE PAINTED PER THE LOCAL AGENCY STANDARD SPECIFICATIONS.
6. ANGLE METER STOP MAY BE SUBSTITUTED FOR THE FEMALE IRON PIPE STYLE WITH MALE IRON BY SWEAT ADAPTERS AS SHOWN.
7. ALL SWEAT JOINTS SHALL BE SILVER SOLDER (EXCEPT AS NOTED).
8. A 1" BYPASS LINE WITH LOCKING CURB STOP MAY BE REQUIRED FOR INSTALLATIONS NEEDING A CONTINUOUS SERVICE.
9. FOR END OF LINE SERVICE INSTALLATION SEE STANDARD DETAIL P-RW-003.
10. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH BRASS SCREWS AS MANUFACTURED BY DOTTIE, OR APPROVED EQUAL.
11. THIS DETAIL IS A TYPICAL INSTALLATION. SERVICE INSTALLATION SHALL CONFORM TO THE LOCAL AGENCY STANDARDS.
12. CHECK WITH LOCAL AGENCIES/JURISDICTIONS FOR THE DEPTH AND FOOTPRINT OF METER BOX.

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

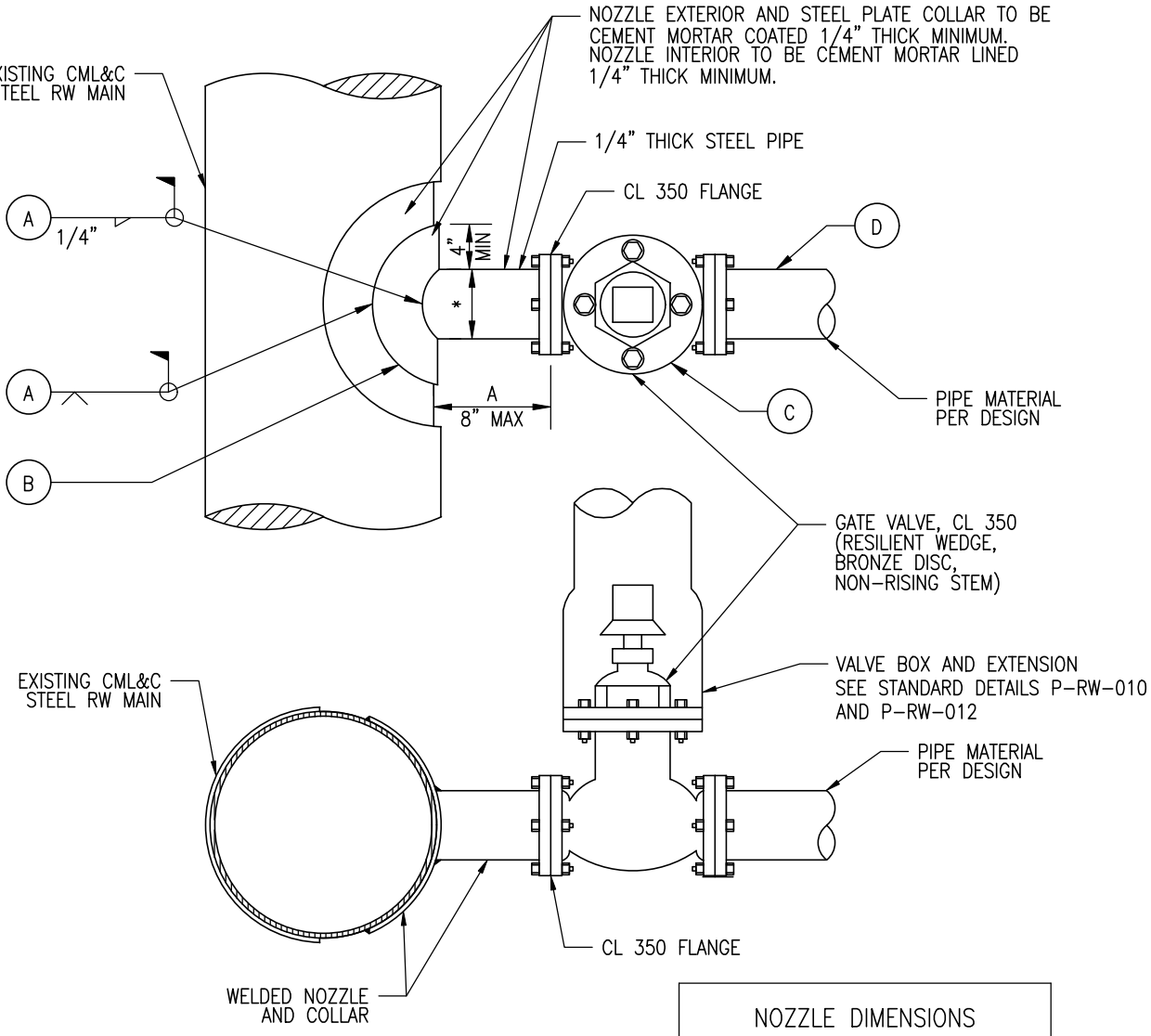
Inland Empire Utilities Agency

2" COPPER RECYCLED WATER SERVICE INSTALLATION

REVISION			
NO.	BY	DATE	APPROVED

P-RW-006

SHEET 2 OF 2



NOZZLE DIMENSIONS	
* TAP SIZE	DIMENSION "A"
4 IN	5 3/4 IN
6 IN	6 IN
8 IN	6 3/4 IN
10 IN	7 IN
12 IN	7 1/2 IN

CONSTRUCTION NOTES:

- (A) FILLET WELD NOZZLE AND COLLAR TO PIPE WALL
- (B) AIR TEST NOZZLE AND COLLAR
- (C) INSTALL VALVE
- (D) INSTALL PIPE

CML&C STEEL PIPE CONNECTION

SCALE: NOT TO SCALE

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LATERAL CONNECTION OF 4" AND LARGER

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P-RW-007

SHEET 1 OF 2

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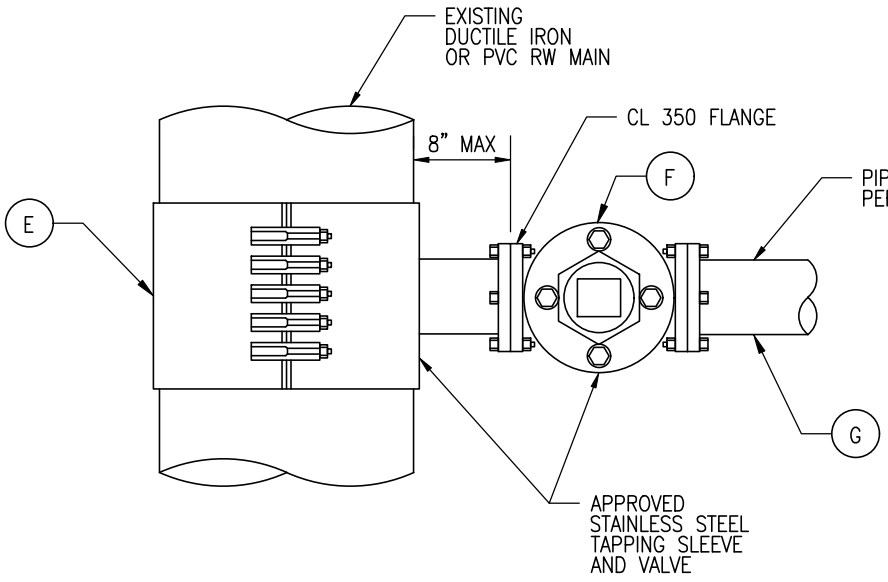

CONSTRUCTION NOTES:

- (E) INSTALL TAPPING SLEEVE
- (F) INSTALL TAPPING VALVE
- (G) INSTALL PIPE

DUCTILE IRON OR PVC PIPE CONNECTION

GENERAL NOTES:

1. "HOT-TAPS" LESS THAN 1/2 THE SIZE OF THE TRANSMISSION MAIN REQUIRE A STAINLESS STEEL TAPPING SLEEVE AND VALVE ON A DIP/PVC PIPE OR A WELDED STEEL OUTLET AND COLLAR ON STEEL PIPE. THE STEEL COLLAR PLATE AND OUTLET PIPE THICKNESS SHALL BE 1/4" MINIMUM OR AS DETERMINED BY IEUA.
2. FILLET WELDS SHALL BE PER AWWA C-206, "FIELD WELDING OF STEEL WATER PIPE."
3. CONNECTIONS LARGER THAN 1/2 SIZE OF THE MAIN LINES REQUIRE THE INSTALLATION OF A TEE AND VALVE ASSEMBLY OF THE SAME MATERIAL AS THE MAIN. THE CONNECTION SIZE MAY BE EXCEPTIONALLY INCREASED TO MAXIMUM 3/4 SIZE OF THE MAIN LINE, BY SPECIAL APPROVAL OF IEUA.
4. CONNECTIONS SMALLER THAN 4" REQUIRE THE REVIEW AND APPROVAL BY IEUA.

SCALE: NOT TO SCALE

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LATERAL CONNECTION OF 4" AND LARGER

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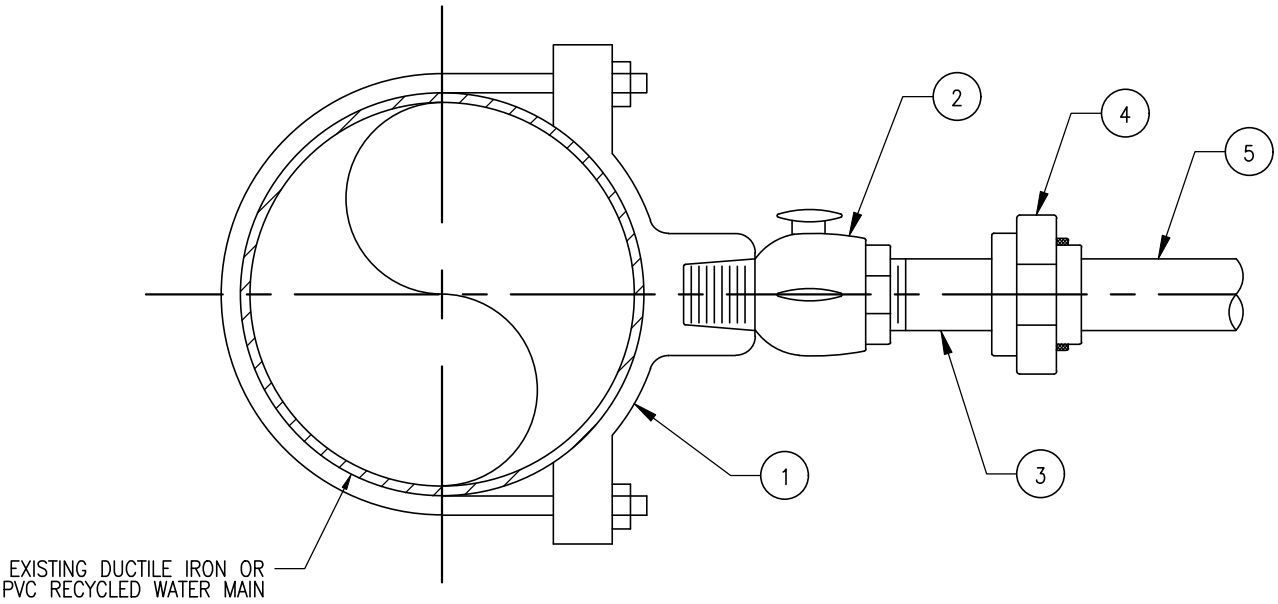
SHEET 2 OF 2



MATERIALS:

1. SERVICE SADDLE WITH F.I.P. OUTLET,
   SINGLE STRAP BRONZE FOR DUCTILE IRON PIPE MAINS,
   CAST BRONZE FOR PVC MAINS
   (JONES MUELLER, FORD, OR APPROVED EQUAL)
2. BRONZE CORPORATION STOP MALE I.P. X F.I.P.
3. NIPPLE MALE I.P. X MALE I.P., BRONZE, FOR DUCTILE IRON PIPE MAINS ONLY (OR APPROVED EQUAL)
4. DIELECTRIC UNION F.I.P. X SWEAT (EPCO, CENTRAL, OR APPROVED EQUAL), FOR DUCTILE IRON PIPE MAINS ONLY
5. COPPER SERVICE TUBING

DUCTILE IRON OR PVC PIPE CONNECTION

SCALE: NOT TO SCALE

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LATERAL CONNECTION FOR
2" AND SMALLER COPPER SERVICE

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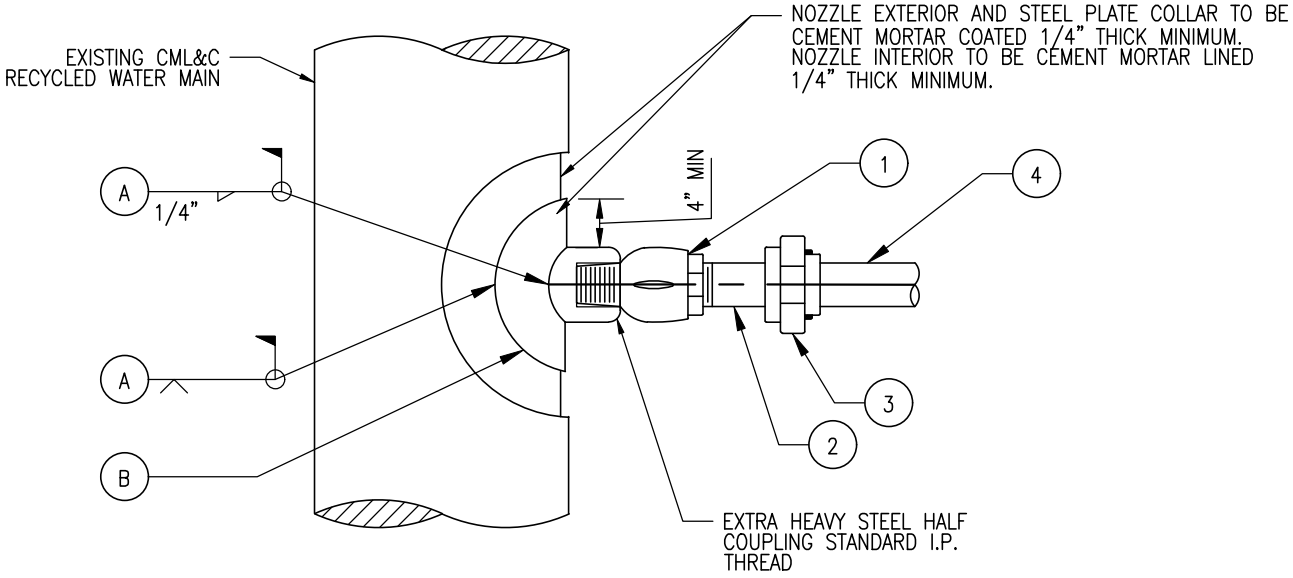
P-RW-008

SHEET 1 OF 2



MATERIALS:

1. BRONZE CORPORATION STOP MALE I.P. X F.I.P. (OR APPROVED EQUAL)
2. NIPPLE MALE I.P. X MALE I.P., BRONZE.
3. DIELECTRIC UNION F.I.P. X SWEAT (EPCO, CENTRAL, OR APPROVED EQUAL)
4. COPPER SERVICE TUBING

CONSTRUCTION NOTES:

A. FILLET WELD NOZZLE AND COLLAR TO PIPE WALL

B. AIR TEST NOZZLE AND COLLAR

CML&C STEEL PIPE CONNECTION

SCALE: NOT TO SCALE

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LATERAL CONNECTION FOR 2" AND SMALLER COPPER SERVICE

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P-RW-008

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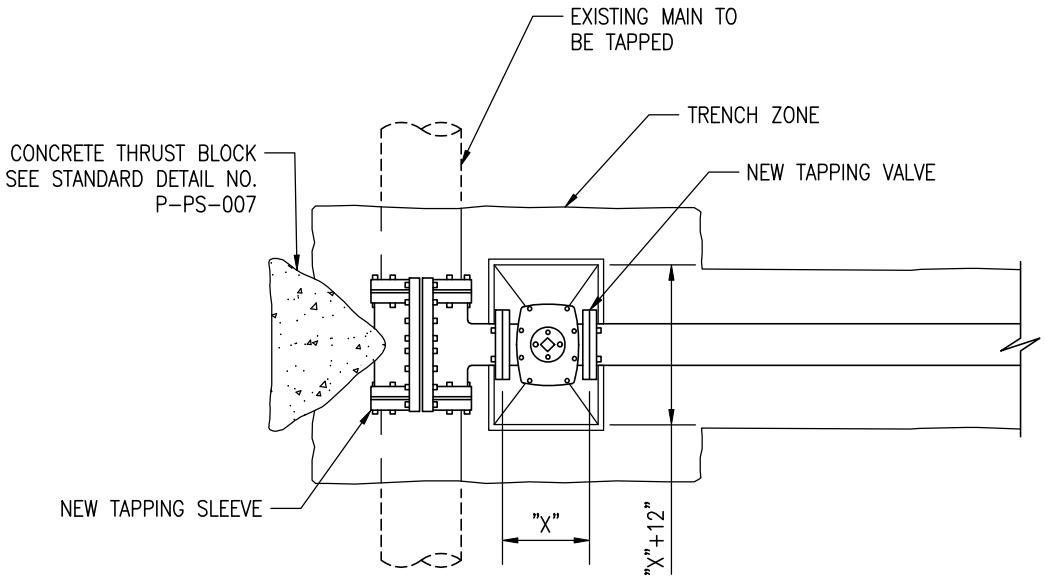
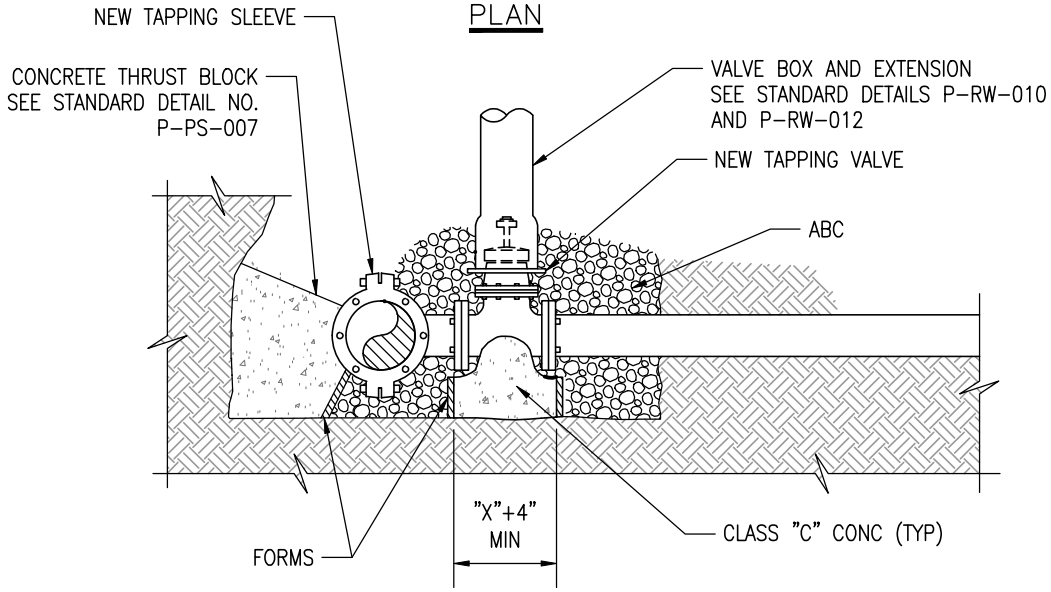


PLAN



ELEVATION

NOTES:

1. INSTALL PERMANENT THRUST BLOCKING UNDER VALVE BEFORE TAP IS MADE. JOINTS AND BOLTS SHALL BE CLEAR OF CONCRETE.

2. TAPPING SLEEVE TO BE PLACED 18" MIN FROM ANY BELL, COUPLING, VALVE, OR FITTING.

SCALE: NOT TO SCALE

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TAPPING SLEEVE

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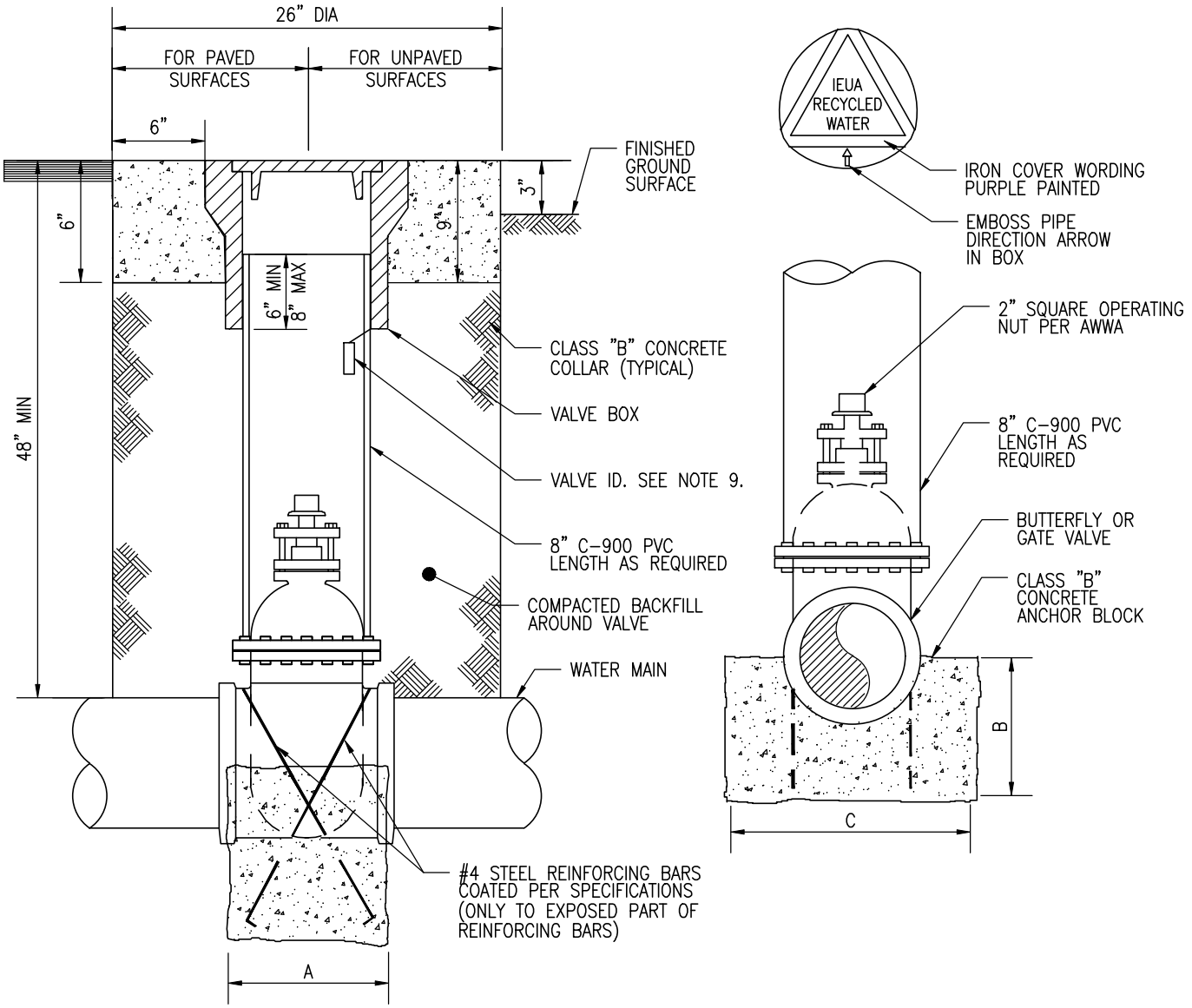

VALVE BOX DETAIL

SCALE: NOT TO SCALE

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VALVE BOX DETAIL

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P-RW-010

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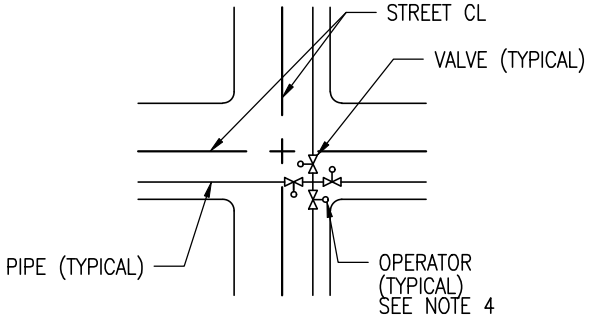

TYPICAL BUTTERFLY VALVE OPERATOR POSITION

VALVE SIZE	DIMENSION A	DIMENSION B
6" OR SMALLER	12"	12"
8"	13"	14"
10"	14"	16"
12"	14"	18"
18"	22"	24"
30"	34"	36"

DIMENSION "C"= TRENCH WIDTH PLUS 2X PIPE DIAMETER

NOTES:

1. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 4 FEET.
2. BUTTERFLY VALVE OPERATORS SHALL BE LOCATED ON THE LEFT-HAND SIDE OF THE VALVE (AT THE TEE OR CROSS), LOOKING THROUGH THE VALVE TOWARD THE PIPE END.
3. VALVES TO BE LOCATED ADJACENT TO FITTINGS WHEREVER POSSIBLE.
4. VALVES BOLTED TO FITTINGS WILL NOT REQUIRE ANCHOR BLOCKS.
5. PROVIDE HEAVY DUTY CAST-IRON VALVE CAP, MARKED AS INDICATED, PAINTED PURPLE. VALVE LID SHALL BE TRIANGULAR SHAPED, TRAFFIC RATED VALVE BOX COVER SHALL HAVE A CIRCULAR ADAPTER CHRISTY CONCRETE PRODUCTS G4 BOX/G4C OR APPROVED EQUAL.
6. STAMP INTERIOR OF VALVE LID SKIRT WITH VALVE SIZE AND TYPE (G.V. FOR GATE VALVES, B.F.V. FOR BUTTERFLY VALVES). LETTERING SHALL BE BLACK AND A MINIMUM OF 3" IN HEIGHT.
7. STAMP CONCRETE COLLAR WITH DIRECTION ARROW, VALVE TYPE (SEE NOTE 6), RW, VALVE SIZE AND DEPTH.
8. PROVIDE VALVE STEM EXTENSIONS TO 18" BELOW GRADE AND BONNET DUST COVERS.
9. VALVE NUMBER PER STANDARD P-RW-013. VALVE NUMBER SHALL BE PLACED ON THE PVC STEM.

SCALE: NOT TO SCALE

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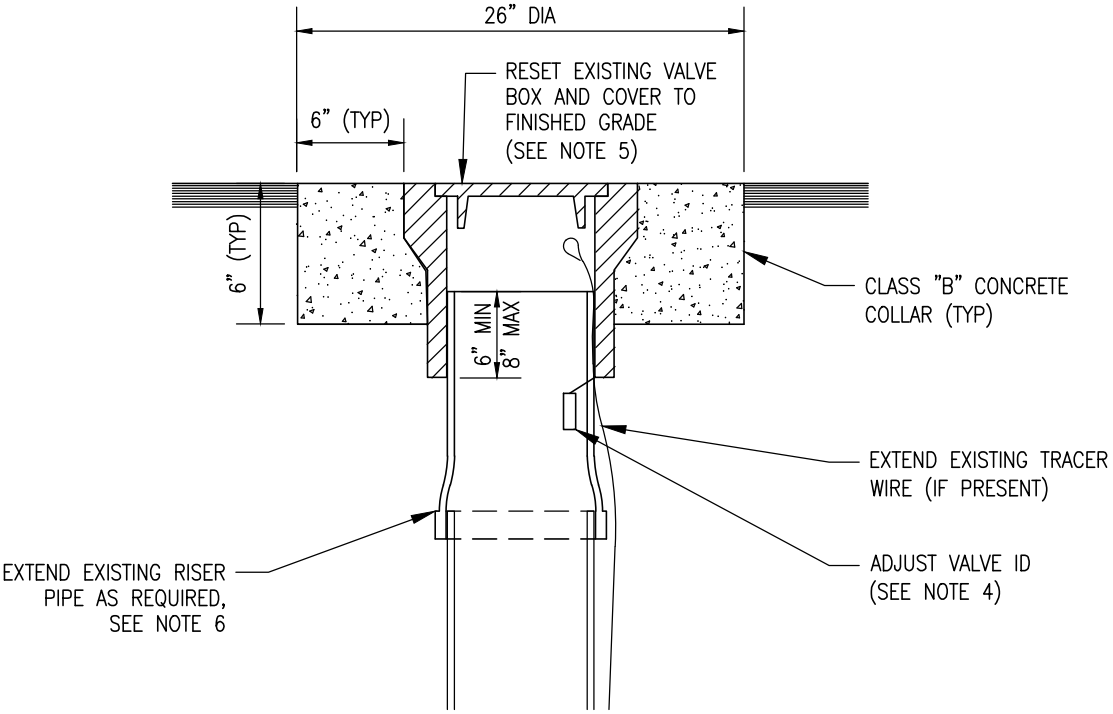
VALVE BOX DETAIL

REVISION NO.	BY	DATE	APPROVED

P-RW-010

SHEET 2 OF 2



NOTES:

1. THE CONTRACTOR SHALL COMPLETELY DEMOLISH EXISTING CONCRETE COLLAR TO DEPTH OF 6".
2. IN VEHICULAR AREA, EXISTING NON-TRAFFIC RATED UTILITY BOXES AND COVERS SHALL BE REPLACED WITH TRAFFIC RATED BOXES AND COVERS PER STANDARD P-RW-010.
3. ADJUSTED CONCRETE COLLAR MAY BE POURED MONOLITHICALLY WITH NEW CONCRETE PAVING.
4. PROVIDE VALVE ID PER STANDARD P-RW-013 IF NOT PRESENT. VALVE NUMBER PROVIDED BY IEUA.
5. VALVE BOX AND COVER TO BE REPLACED IF NOT PER STANDARD P-RW-010.
6. RISER PIPE SHALL BE COLORED BASED ON CONVEYANCE PIPE FLUID AS FOLLOWS:
   PURPLE = RECYCLED WATER
   BLUE = WATER
   GREEN = SEWER
   WHITE = OTHERS

SCALE: NOT TO SCALE

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VALVE BOX ADJUSTMENT TO GRADE

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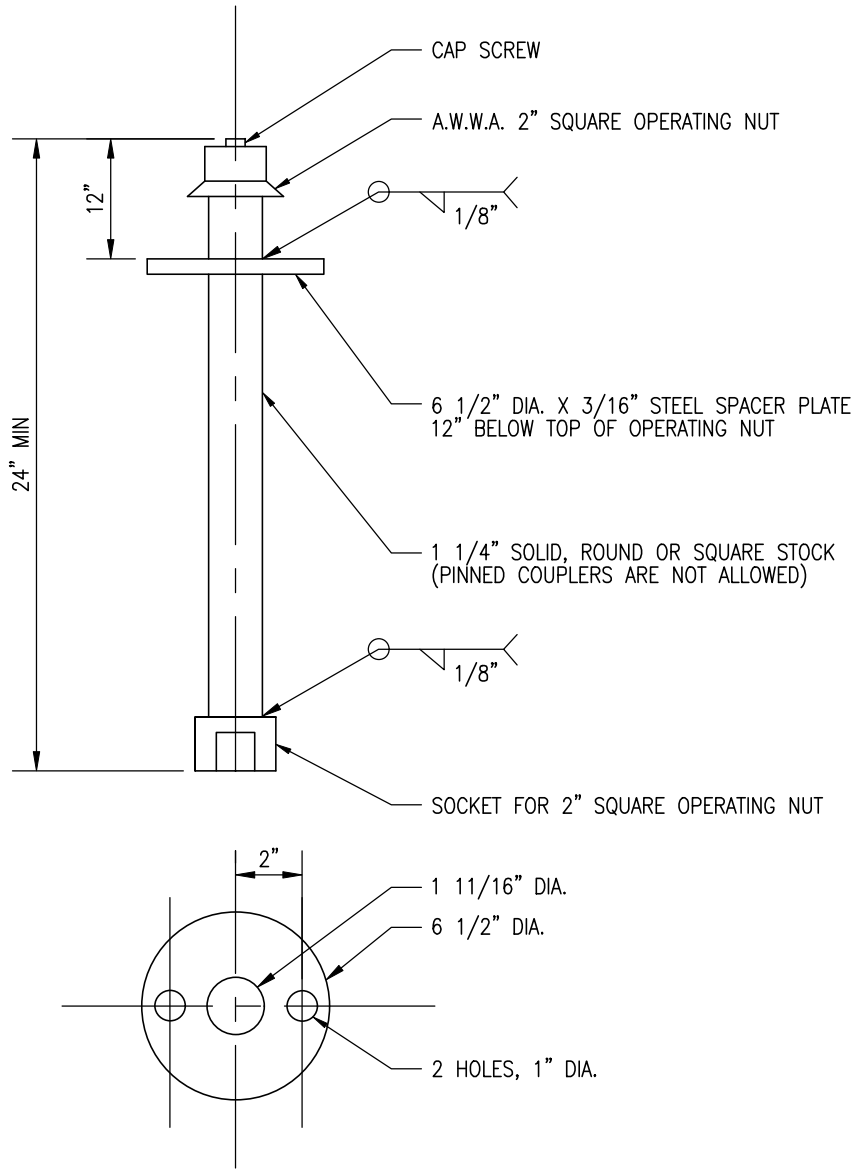
P-RW-011

SHEET 1 OF 1



SPACER PLATE

PLAN

NOTES:

1. PROVIDE VALVE STEM EXTENSION WHEN DEPTH TO OPERATING NUT EXCEEDS 48" (FABRICATE EXTENSION TO FIELD MEASUREMENT – SEE NOTE 2.
2. NO VALVE STEM EXTENSION SHALL BE LESS THAN 2 FEET IN LENGTH. TERMINATE EXTENSION 24" FROM FINISHED GRADE.
3. PROVIDE ADDITIONAL SPACER PLATE WHEN DISTANCE TO BOTTOM SOCKET EXCEEDS 5 FEET.

SCALE: NOT TO SCALE

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VALVE STEM EXTENSION

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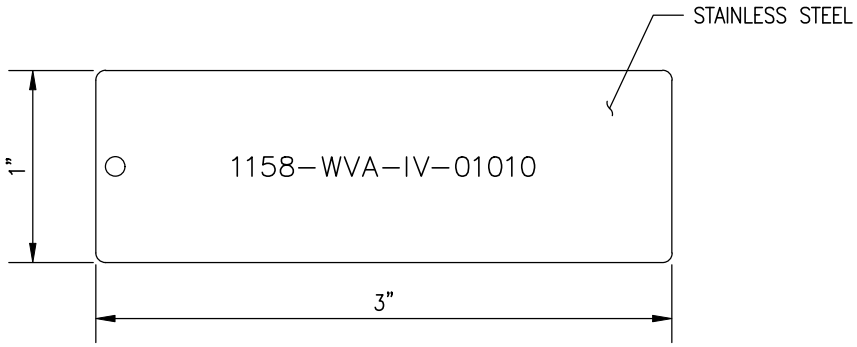
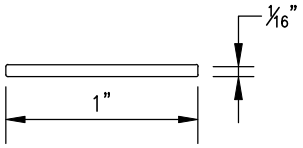
P-RW-012

SHEET 1 OF 1



PLAN



ELEVATION

NAMING CONVENTION EXAMPLE

1158–WVA–AR–00000
1158–WVA–BO–00000
1158–WVA–CP–00000
1158–WVA–MW–00000
1158–WVA–IV–00000
1158–WVA–MV–00000
1158–WVA–LV–00000
1158–WVA–PV–00000

(1) (2) (3) (4)

1158–WVA–IV–00000
A B C

NOTES:

1. 1158 IDENTIFIES PRESSURE ZONE
2. WVA WINEVILLE PIPELINE SEGMENT A OR B
3. ASSET/APPURTENANCE IDENTIFICATION
4. (A) IDENTIFIES WHAT PAGE THE ASSET CAN BE FOUND IN
   (B) WHAT NUMBER THE ASSET IS IN SEQUENTIAL ORDER
   (C) USED FOR FUTURE IF NEEDED

SCALE: NOT TO SCALE

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STAINLESS STEEL VALVE ID TAGS

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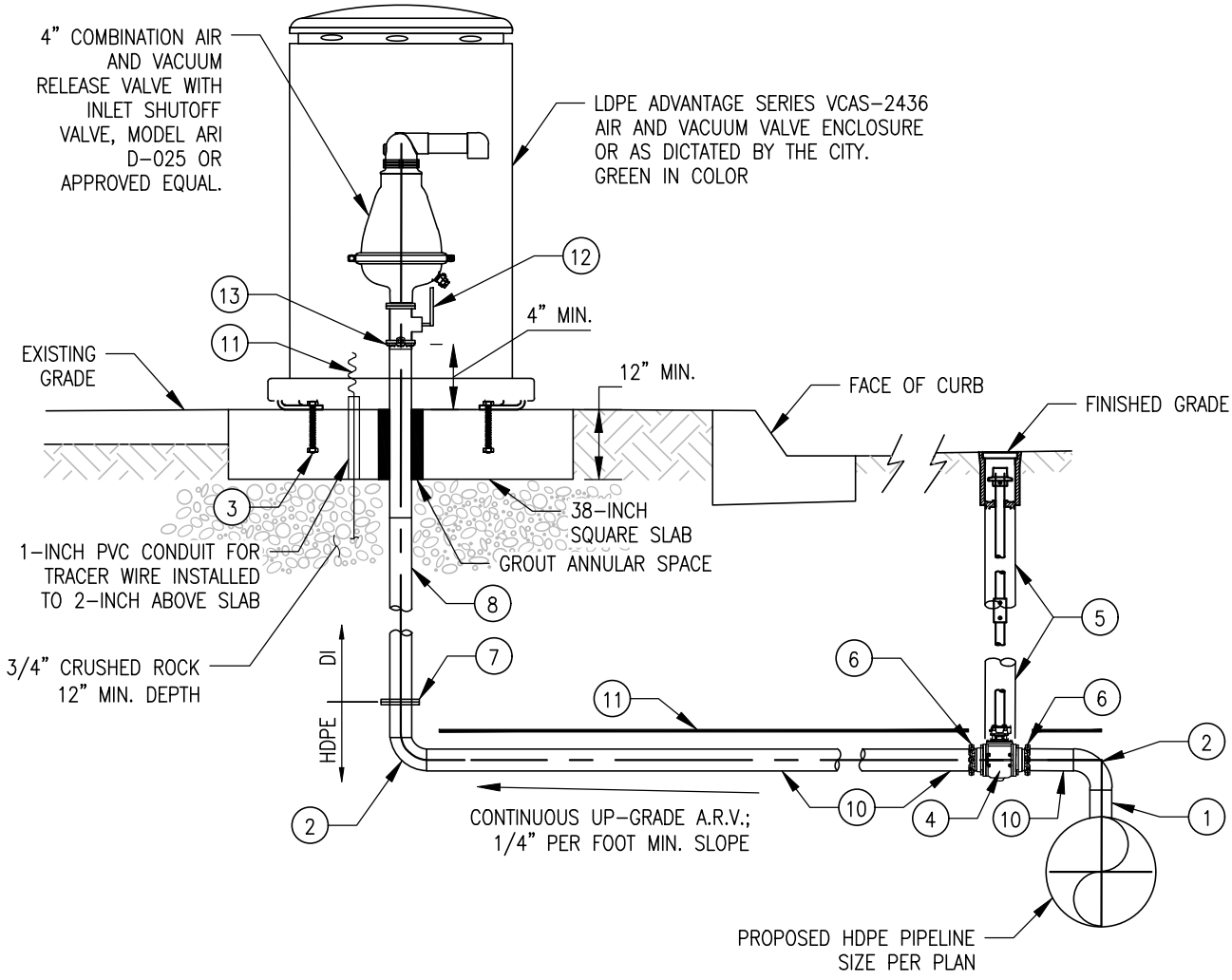
P-RW-013

SHEET 1 OF 1

NOTES:

1. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 4 FEET.
2. VALVE BOX AND COVER SHALL BE MARKED "IEUA SEWER".
3. ALL BURIED BOLTS SHALL BE TYPE 316 STAINLESS STEEL.
4. HDPE SHALL BE DR 9 MINIMUM DUCTILE IRON PIPE SIZE.
5. RESTORE CURB, GUTTER, SIDEWALK AND CURB RAMPS PER CONTRACT DOCUMENTS.
6. FOR AIR RELEASE & VACUUM VALVES LOCATED IN UNPAVED AREAS, CONSTRUCT PROTECTION POSTS AROUND THE VALVE ENCLOSURE.
7. NUTS, BOLTS, DUCTILE IRON PIPE, FLANGES, VALVES, FITTINGS, AND COUPLINGS SHALL BE WRAPPED WITH WAX TAPE (TRENTON #1 OR EQUAL) AND POLYETHYLENE ENCASEMENT (TWO LAYERS OF 8-MIL THICK POLYETHYLENE).
8. ADJACENT AIR VALVE TO BE OFFSET BY 5 FEET MINIMUM.
9. 4" SIZE SHOWN. THIS STANDARD DETAIL IS SUITABLE FOR 3" OR 4" ASSEMBLY. DESIGN ENGINEER IS REQUIRED TO SIZE AIR VALVE.
10. SUITABLE FOR PIPELINES UP TO 30". MODEL AND SIZE OF AIR VAC SHALL BE CONFIRMED WITH PROJECT REQUIREMENTS FOR SURGE AND POTENTIAL FOR REPTURE.
11. SEE PLAN VIEW STANDARD DRAWING P-RW-001 FOR BOLLARD PLACEMENT.
12. PIPE SHALL BE INSTALLED UNDER EXISTING POTABLE WATER PIPELINES WITH MINIMUM 1 FT CLEARANCE.



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3" AND 4" SEWER FORCE MAIN COMBINATION AIR VACUUM VALVE

REVISION NO.	BY	DATE	APPROVED

P-SS-001

SHEET 1 OF 2

MATERIAL LIST FOR COMBINATION AIR VACUUM VALVE	
ITEM	DESCRIPTION
1	ELECTROFUSION BRANCH SADDLE WITH OUTLET
2	HDPE 90° ELBOW
3	1/2" SST BOLT AND WASHER, 4" MINIMUM EMBEDMENT, TYP OF 3
4	FLANGED PLUG VALVE WITH 2" SQ. OPERATING NUT
5	STANDARD VALVE BOX INSTALLATION PER STANDARD DRAWING P-RW-010. AMEND COVER STENCILING PER NOTE 2.
6	RESTRAINED FLANGE COUPLING ADAPTER, EBAA IRON SERIES 2100 OR EQUAL WITH PIPE STIFFENERS
7	BUTT FUSION FLANGE ADAPTER WITH DI BACKING RING
8	DI SPOOL, PE X FLG; LENGTH AS REQUIRED
9	COMBINATION AIR AND VACUUM RELEASE VALVE, MODEL ARI D-025 OR APPROVED EQUAL.
10	HDPE PIPE; LENGTH AS REQUIRED
11	WARNING TAPE AND TRACER WIRE PER SPECIFICATIONS
12	FLANGED PLUG VALVE WITH HANDEL
13	FLANGE ADAPTER, EBAA IRON SERIES 1000 OR EQUAL WITH PIPE STIFFENERS

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3" AND 4" SEWER FORCE MAIN COMBINATION AIR VACUUM VALVE

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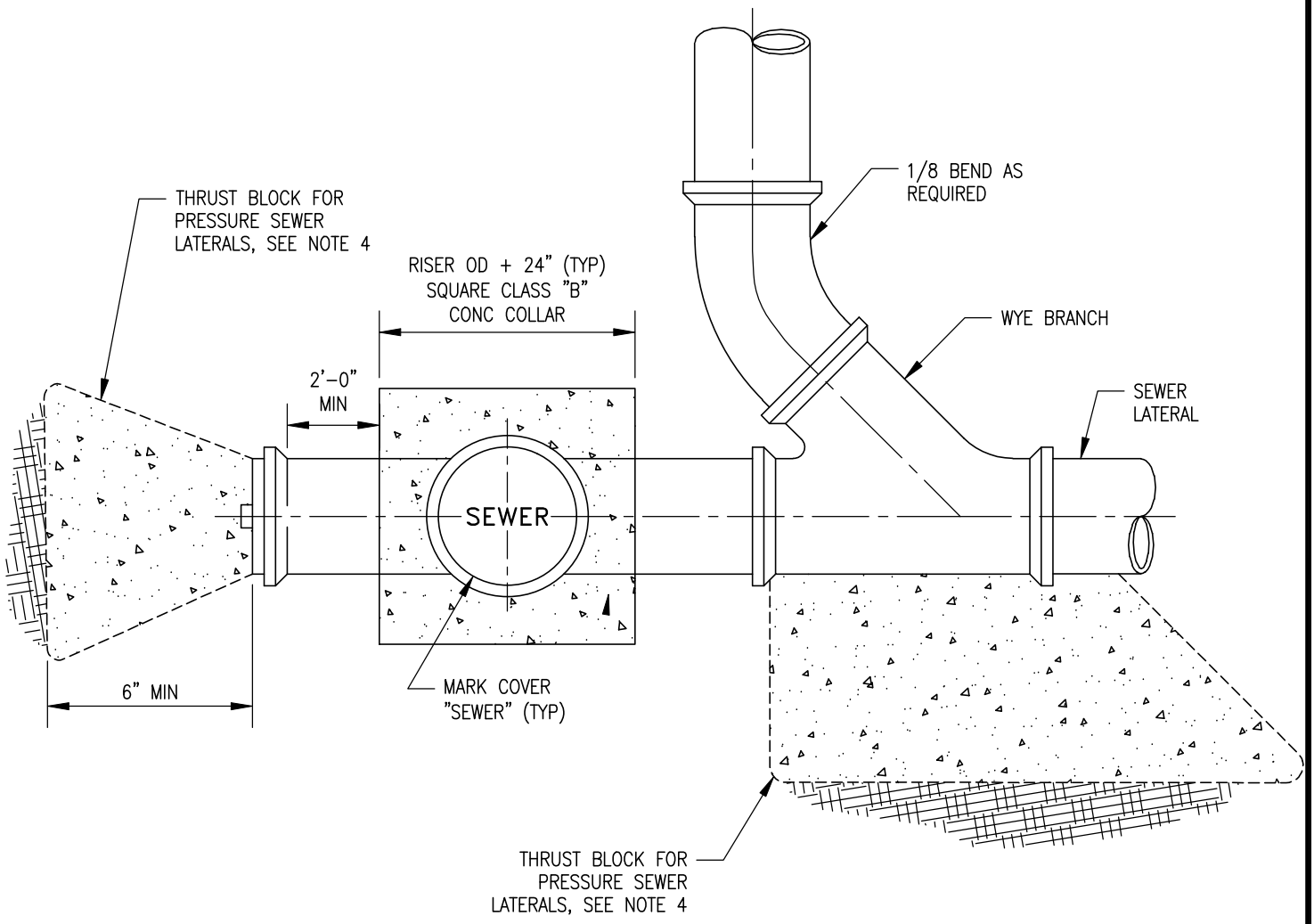
P-SS-001

SHEET 2 OF 2

NOTES

1. CLEANOUT DETAIL FOR 4" AND 6" GRAVITY AND PRESSURE SEWER SERVICE LATERALS. CLEANOUTS FOR SEWER FORCE MAINS SHALL BE PER STANDARD DETAIL P-MH-002.
2. CLEANOUT RISER PIPE SIZE TO MATCH SEWER PIPE SIZE.
3. INSTALL FITTINGS AND REDUCERS AS REQUIRED.
4. FOR CLEANOUTS ON PRESSURE SEWER LATERALS, PROVIDE CONCRETE THRUST BLOCKS, JOINTS AND FITTINGS, SCREW ON BRASS PLUG OR FLANGED END PIPE WITH BLIND FLANGE CAP TO WITHSTAND THE FIELD TEST PRESSURE. SEE SHEET 3 FOR CLEANOUT BOX ON PRESSURE SEWER LATERALS. PROVIDE THRUST BLOCKS PER STANDARD DETAIL P-PS-007.



PLAN

SCALE: NOT TO SCALE

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SEWER CLEANOUT GRAVITY AND PRESSURE LATERAL

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P-SS-002

SHEET 1 OF 3

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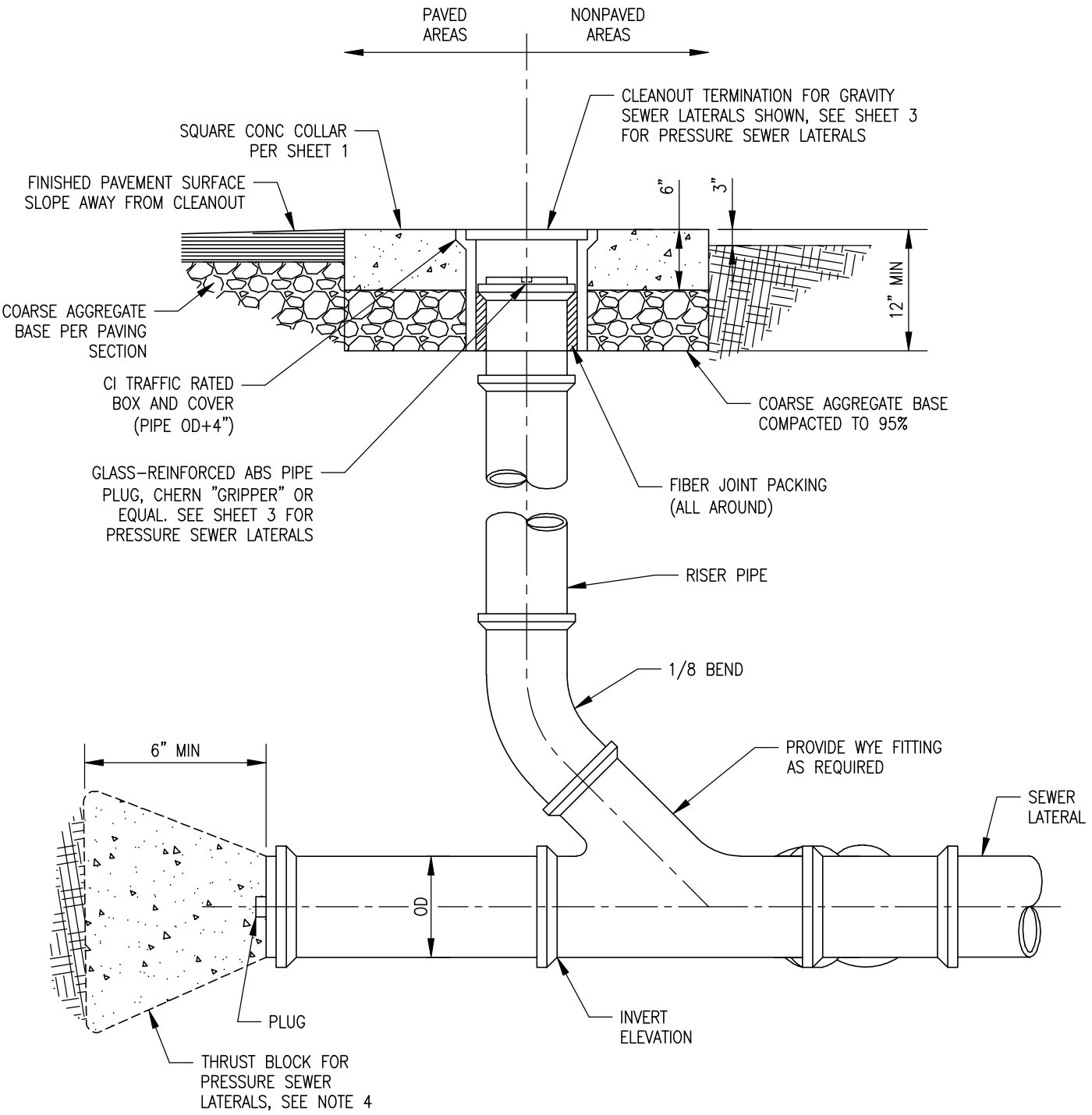

ELEVATION

SCALE: NOT TO SCALE

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SEWER CLEANOUT GRAVITY AND PRESSURE LATERAL

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P-SS-002

SHEET 2 OF 3

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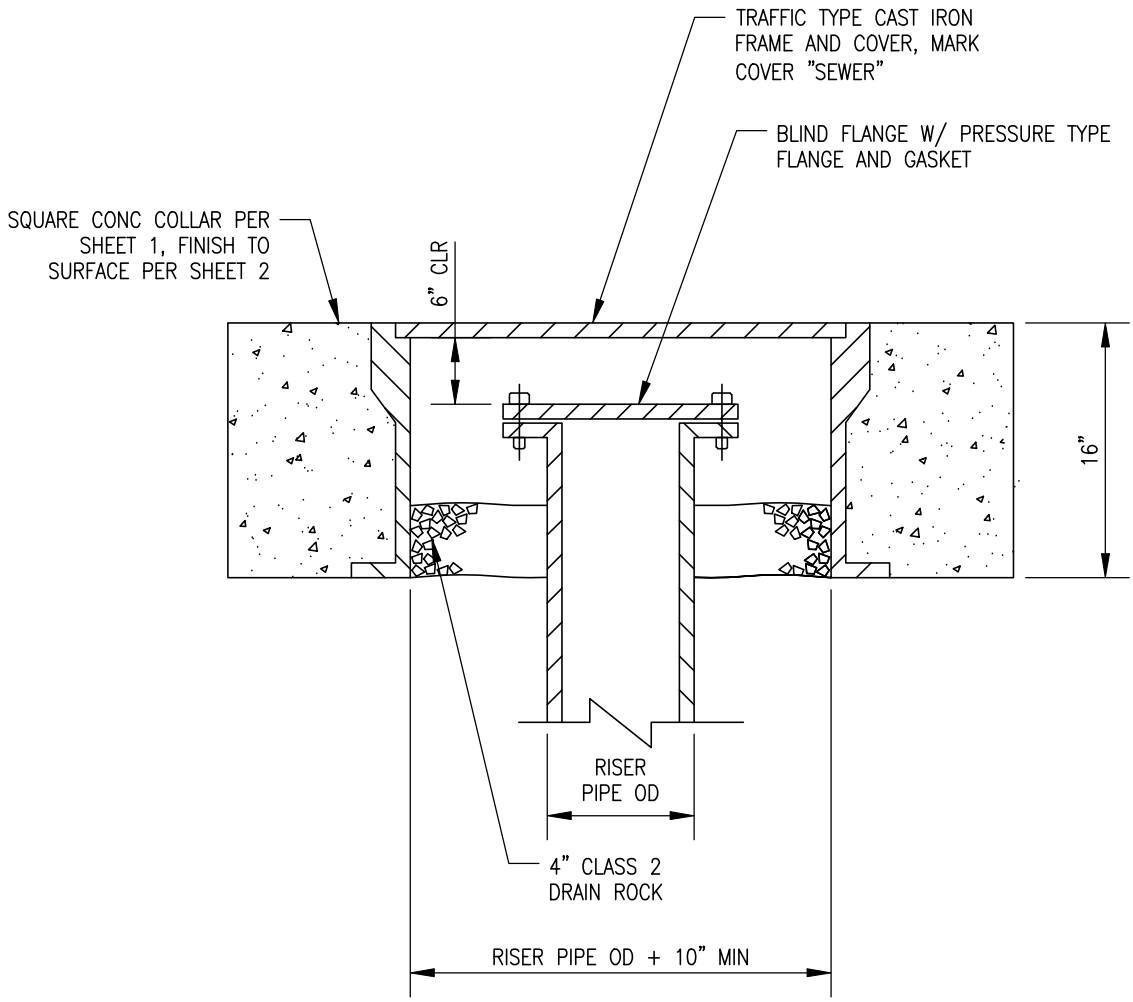

CLEANOUT BOX FOR PRESSURE SEWER LATERALS

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SEWER CLEANOUT GRAVITY AND PRESSURE LATERAL

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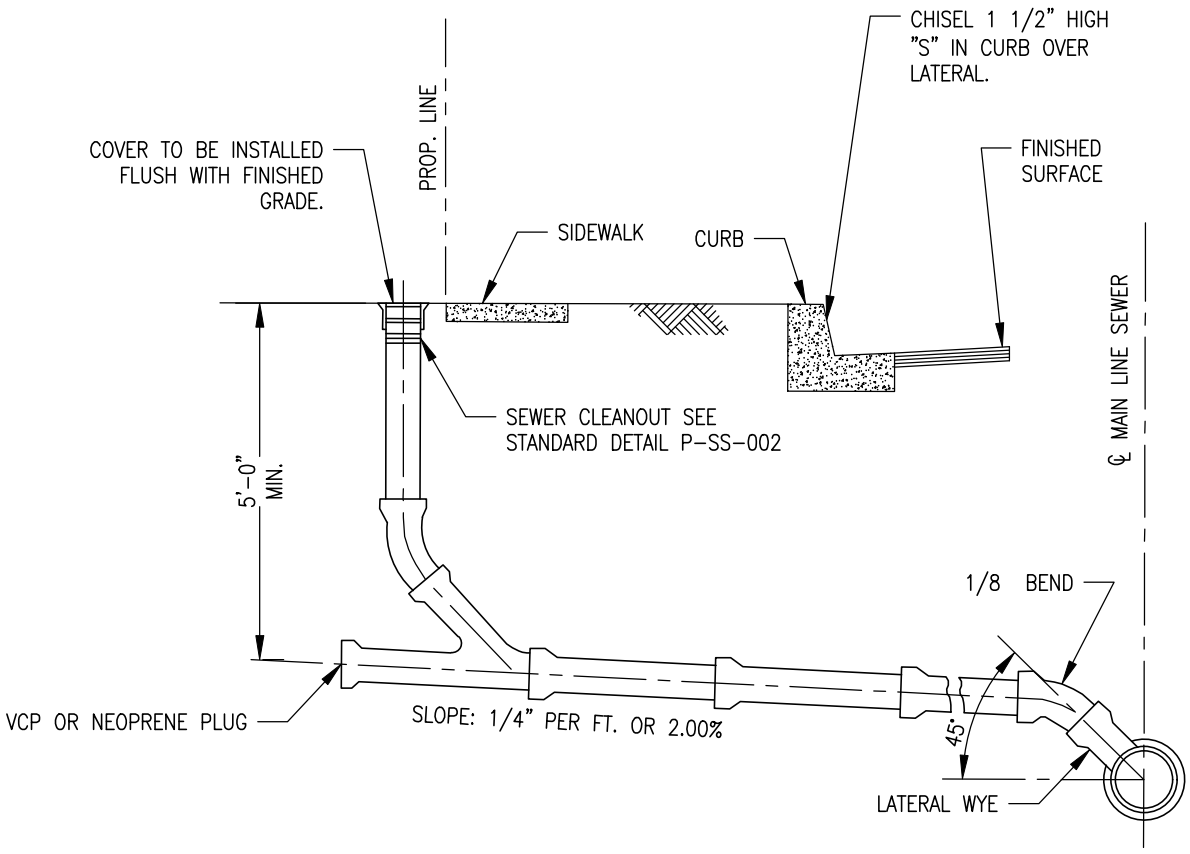
P-SS-002

SHEET 3 OF 3

G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA PHASE 1 AND 2 STD DETAILS\IEUA PHASE 1 AND 2 STD DETAILS\P-SS-002.dwg Oct 07, 2025 - 9:56am



NOTES:

1. FOR SLOPES LESS THAN 1/4" PER FOOT, APPROVAL IS REQUIRED BY ENGINEER.
2. THE LATERAL SHALL BE BEDDED PER STANDARD DRAWING P-PS-002, CLASS B, UNLESS NOTED OTHERWISE.
3. FOR SEWER CLEANOUT RISER, USE PIPE OF THE SAME DIAMETER AND MATERIAL USED IN THE ADJOINING SEWER LINE.
4. SINGLE FAMILY RESIDENCES SHALL HAVE 4" DIAMETER VITRIFIED CLAY PIPE (VCP) SEWER LATERALS. ALL OTHERS SHALL BE 6" OR GREATER.
5. WHERE DIRECTED BY THE ENGINEER, THE CLEANOUT SHALL BE INSTALLED ON THE PUBLIC PROPERTY SIDE OF THE PROPERTY LINE.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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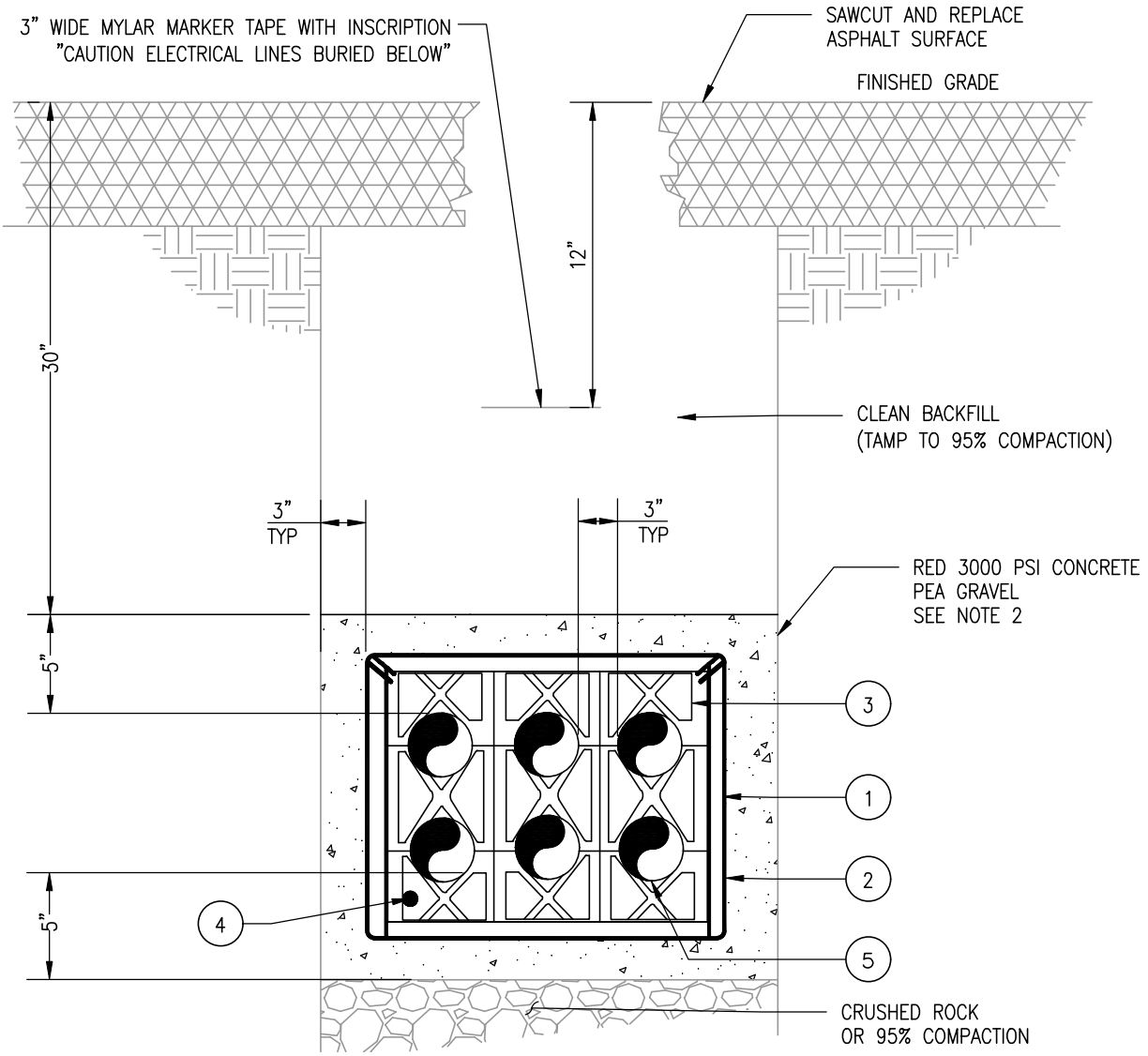
SEWER LATERAL CONNECTION ON NEW SEWER

REVISION			
NO.	BY	DATE	APPROVED

P-SS-003

SHEET 1 OF 1



NOTES:

1. DIMENSIONS SHOWN ARE MINIMUM.
2. RED CONCRETE COLOR ADDITIVE SHALL BE: BRICK RED "COLORFUL" BY OWL MFG., ARCADIA, CA OR CORAL RED "CHROMIX C-22" BY L.M. SCOFIELD CO, LOS ANGELES, CA OR APPROVED EQUAL.

KEY NOTES:

1. CONSULTANT SHALL CONFIRM THAT REINFORCEMENT REQUIREMENTS SATISFY PROJECT CONDITIONS. PROVIDE MINIMUM #4 REINFORCING STEEL 12" MAXIMUM ON CENTER AROUND ENTIRE PERIMETER OF DUCT BANK (MIN. 12" OVERLAP).
2. #4 REINFORCING STEEL HOOPS 36" MAXIMUM ON CENTER ALONG LENGTH OF DUCT BANK (MIN. 12" OVERLAP).
3. PVC CONDUIT SPACERS ON 5' CENTERS (MAXIMUM) LOCATE 12" FROM HOOPS.
4. GROUND CONDUCTOR SHALL RUN CONTINUOUSLY THROUGH MANHOLES AND SHALL CONTINUE FROM DUCT BANK INTO SWITCHGEAR OR BUILDING GROUNDING SYSTEM AND SHALL BE BONDED TO EACH RIGID METAL CONDUIT. SIZE TO BE #2/0 MINIMUM.
5. REFER TO DUCT BANK AND CONDUIT SCHEDULES FOR CONDUIT REQUIREMENTS.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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APPROVED BY:
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ELECTRICAL DUCT BANK CONCRETE ENCASED AND REINFORCED

REVISION NO.	BY	DATE	APPROVED

C-DB-001

SHEET 1 OF 1

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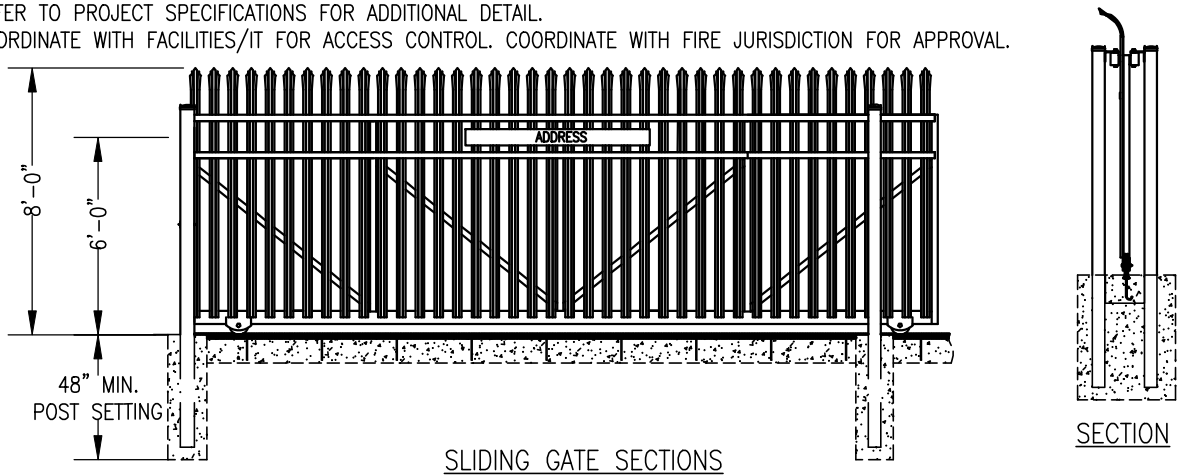
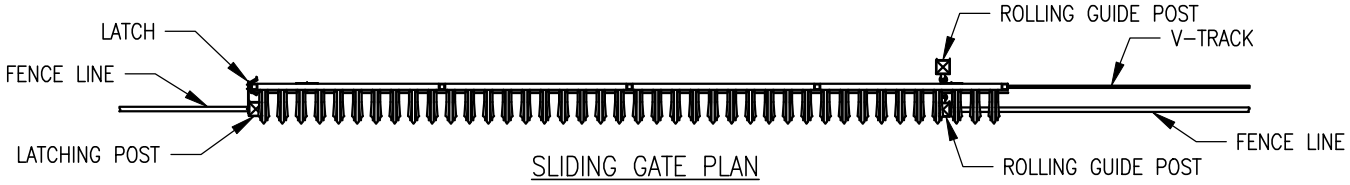
NOTES:

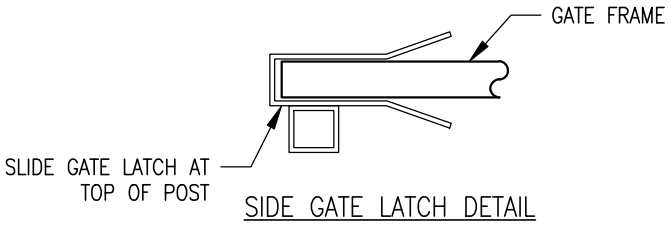
1. MANUFACTURER: AMERISTAR OR APPROVED EQUAL
2. MAKE: PASSPORT IS GAUNTLET HIGH SECURITY SLIDING GATE AND IMPASSE II GAUNTLET FENCE.
3. STRUCTURAL CALCULATIONS SHALL BE SIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN CALIFORNIA.
4. REINFORCING OF CONCRETE TO BE DETERMINED BY A STRUCTURAL ENGINEER LICENSED IN CALIFORNIA.
5. DESIGN ENGINEER SHALL PROVIDE A TURNING ANALYSIS TO CONFIRM 20' WIDE GATE IS SUFFICIENT FOR SITE ACCESS.
6. DETAIL APPLIES TO BOTH MOTORIZED OR MANUAL GATE OPERATORS.
7. CONCRETE FOOTING SHALL BE 2500 PSI MIN. @ 28 DAYS, FOOTINGS TO DRAIN AWAY FROM POST.
8. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL DETAIL.
9. COORDINATE WITH FACILITIES/IT FOR ACCESS CONTROL. COORDINATE WITH FIRE JURISDICTION FOR APPROVAL.



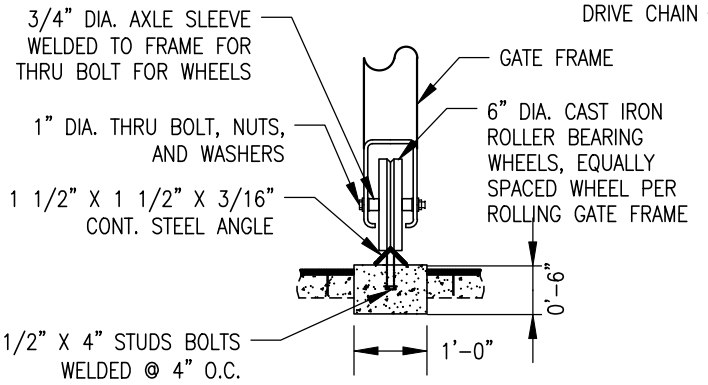
SLIDING GATE SECTIONS



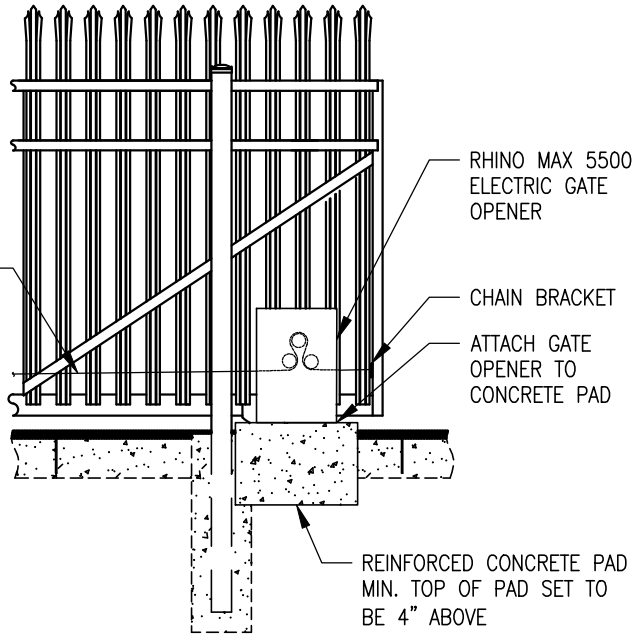
SLIDING GATE PLAN



SIDE GATE LATCH DETAIL



WHEEL AND ANGLE DETAIL



MOTORIZED GATE OPENER

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
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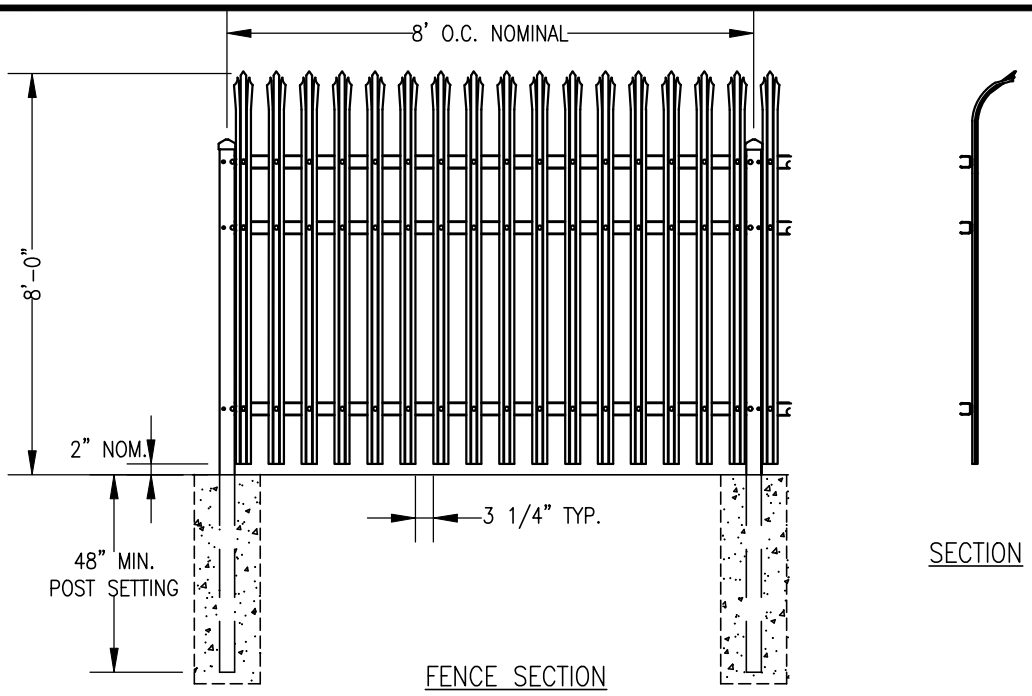
Inland Empire Utilities Agency

TUBULAR STEEL FENCE & ROLLING AND SWING GATE DETAIL

REVISION			
NO.	BY	DATE	APPROVED

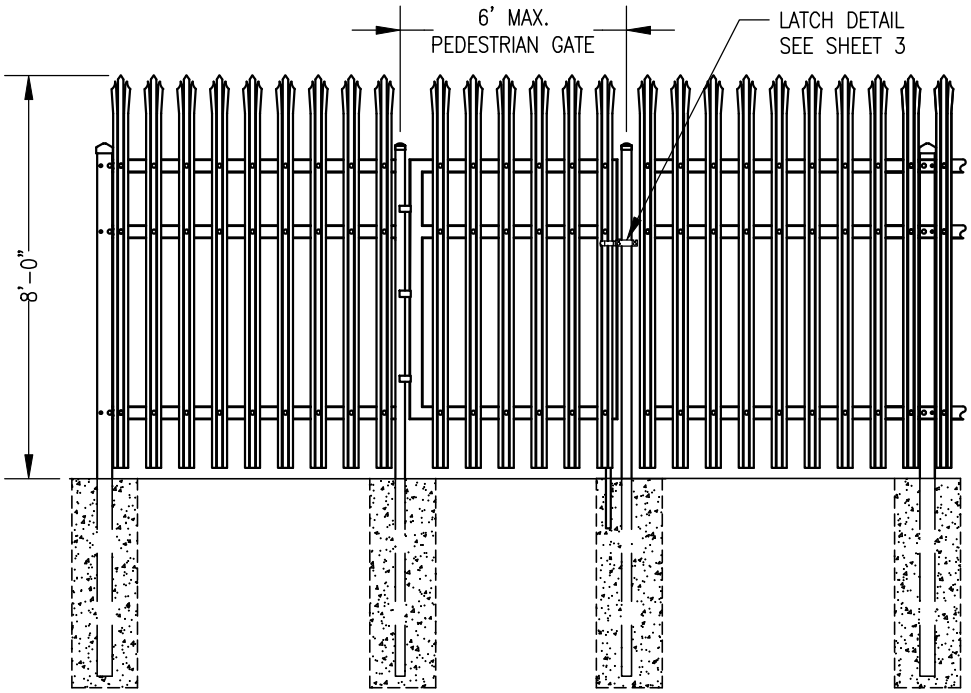
C-EW-001

SHEET 1 OF 3



SECTION

FENCE SECTION



PEDESTRIAN GATE

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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TUBULAR STEEL FENCE & ROLLING AND SWING GATE DETAIL

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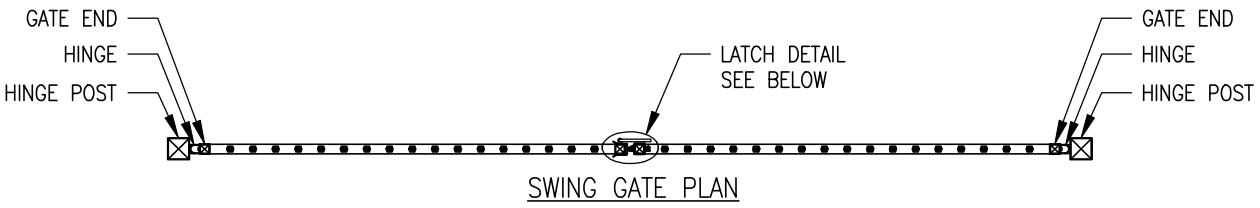
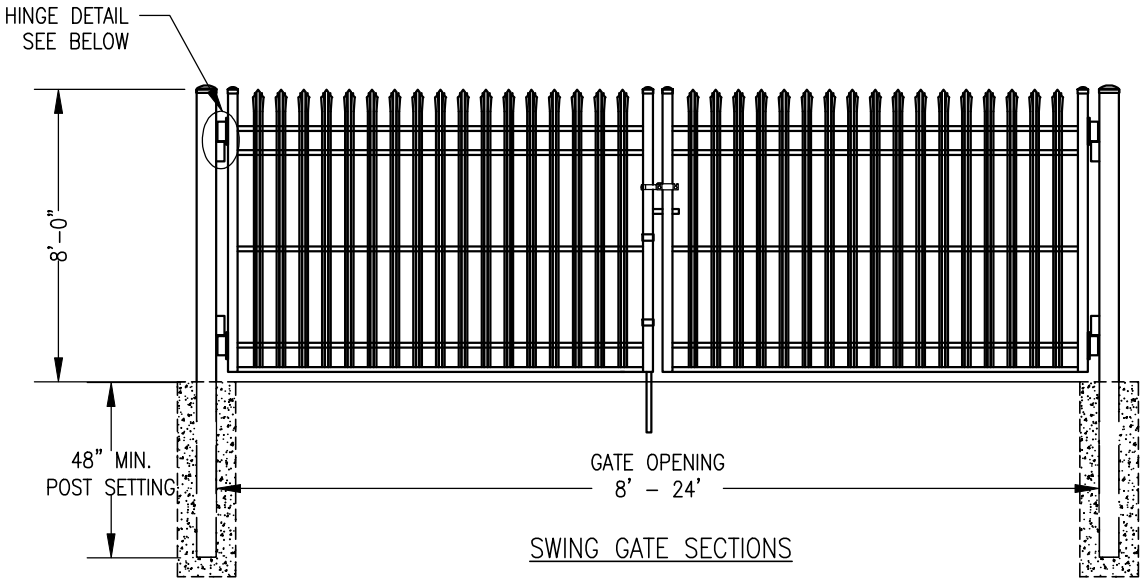
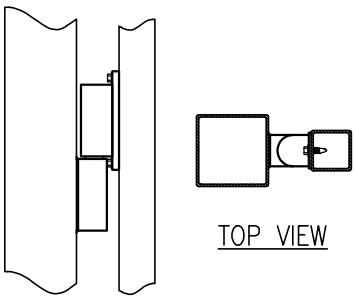
SHEET 2 OF 3



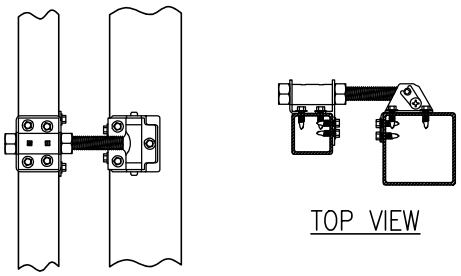
SWING GATE PLAN



SWING GATE SECTIONS



HINGE DETAIL



LATCH DETAIL

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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TUBULAR STEEL FENCE & ROLLING AND SWING GATE DETAIL

REVISION			
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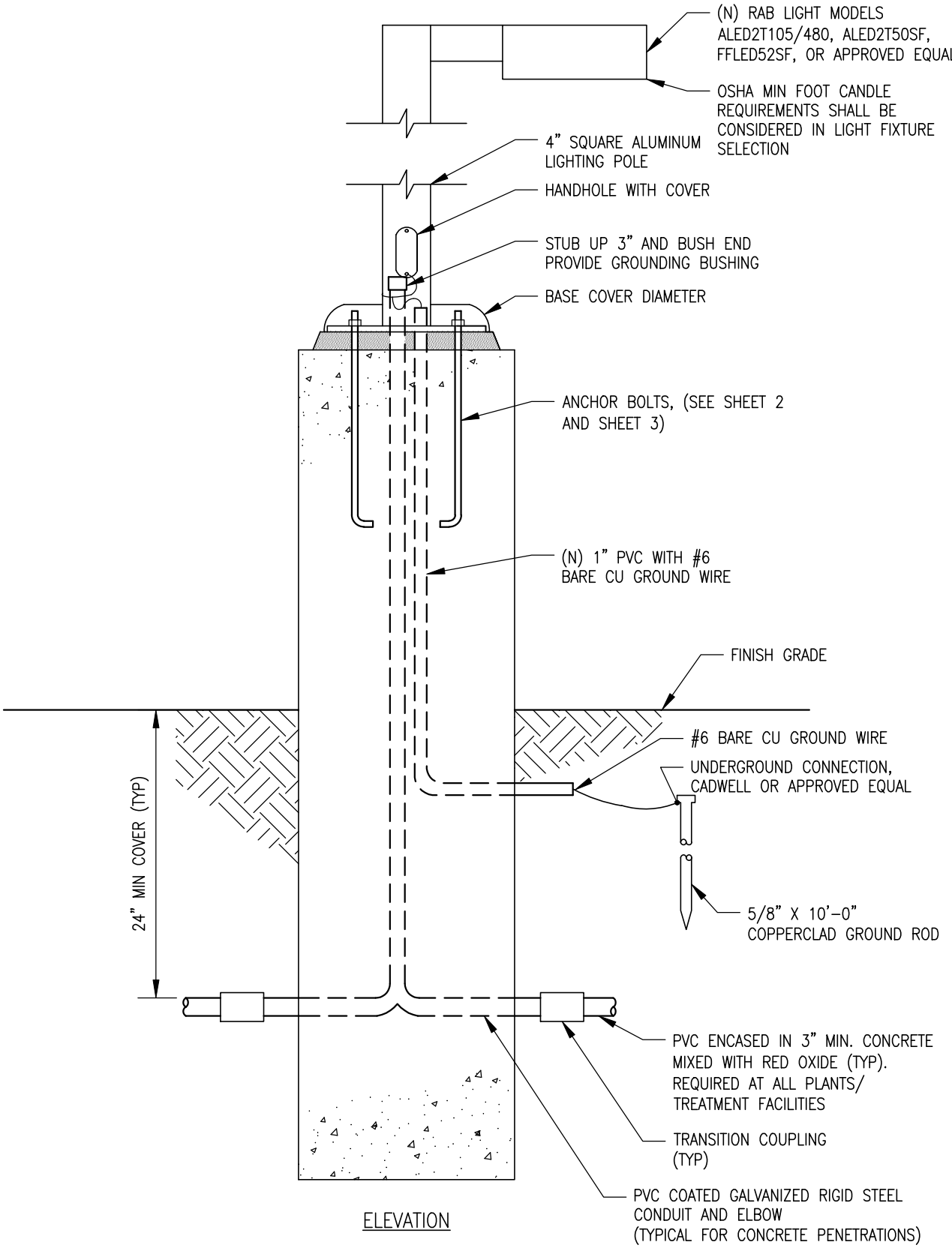
SHEET 3 OF 3



ELEVATION

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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LIGHTING POLE ELECTRICAL

REVISION			
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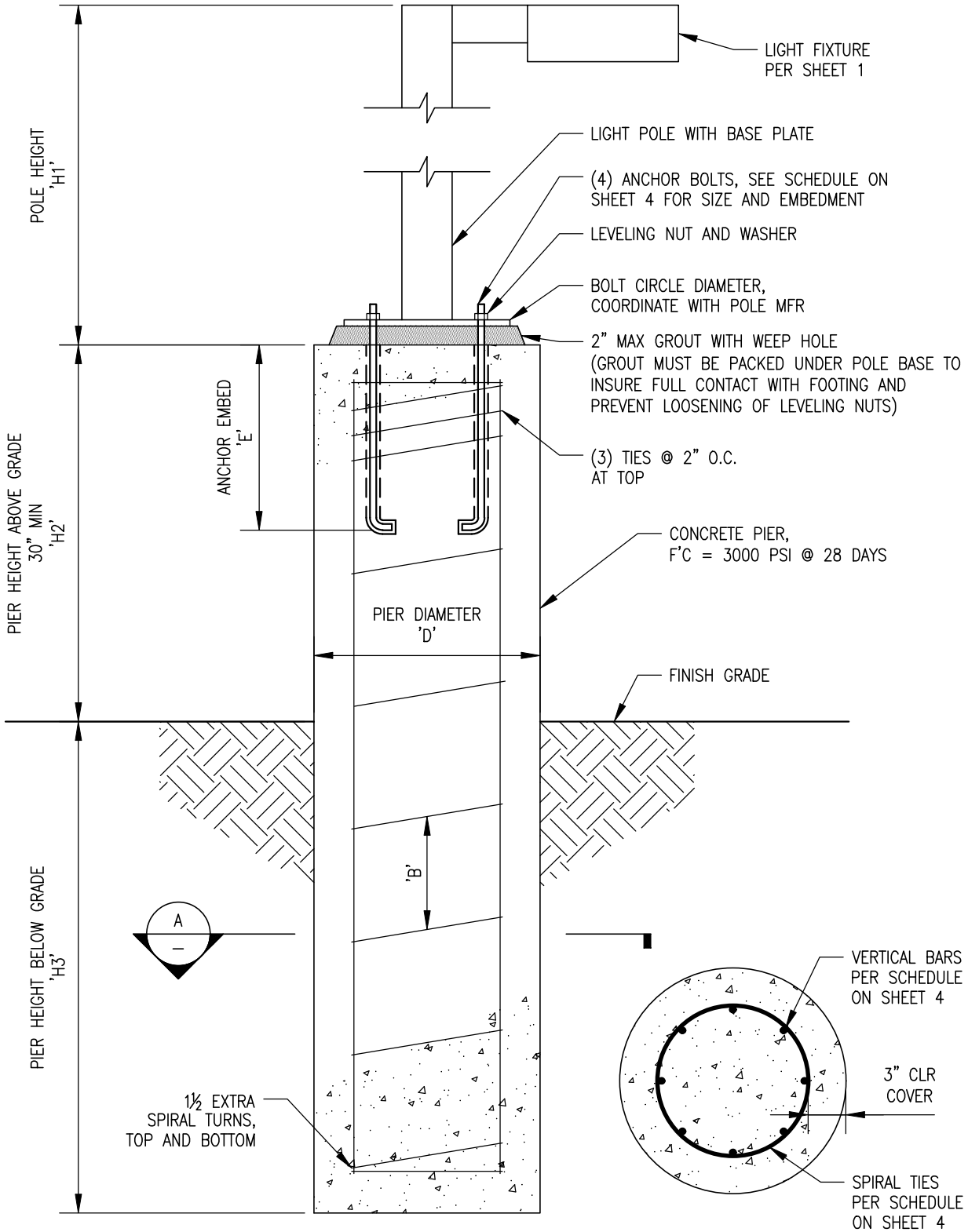
C-LP-001

SHEET 1 OF 4



SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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LIGHTING POLE ELECTRICAL

REVISION			
NO.	BY	DATE	APPROVED

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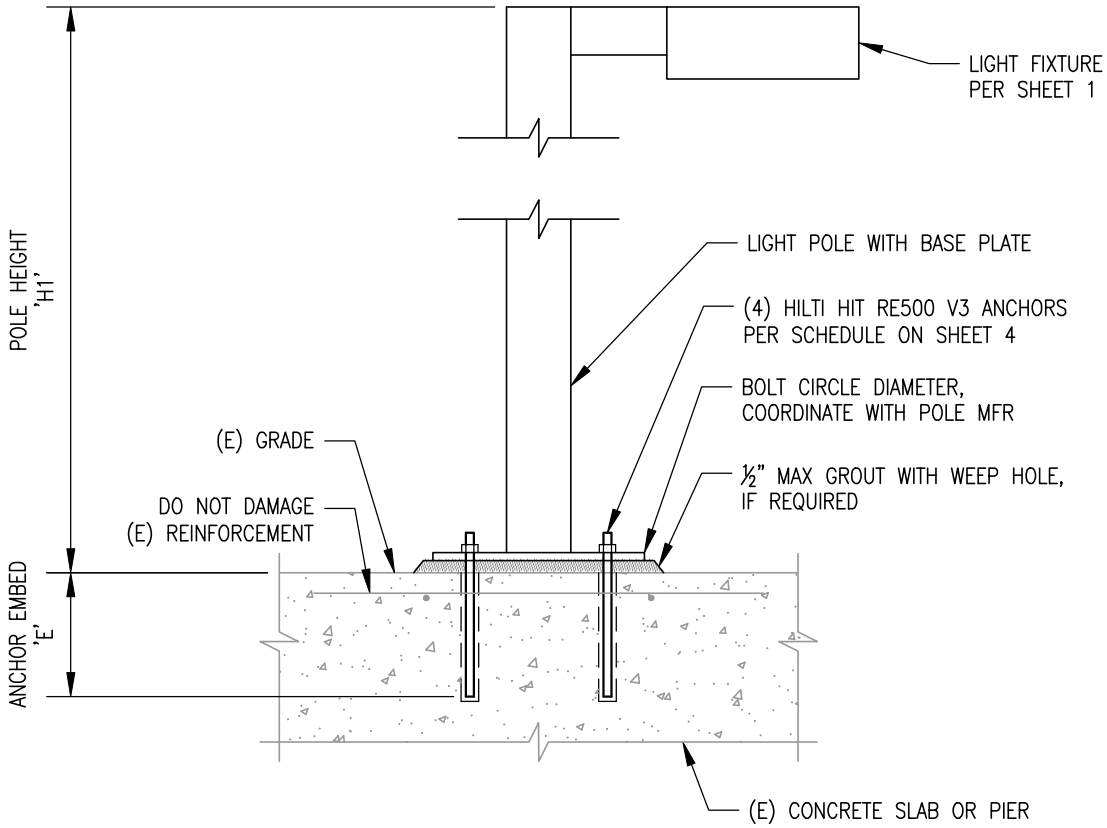
SHEET 2 OF 4



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SHEET 3 OF 4

POST BASE SCHEDULE									
NEW/EXISTING CONCRETE BASE	POLE HEIGHT 'H1' (FT)	PIER DIAMETER 'D' (IN)	PIER HEIGHT ABOVE GRADE 'H2' (IN)	PIER EMBEDMENT 'H3' (FT)	VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL BAR SPACING 'B' (IN)	ANCHOR DIAMETER (IN)	ANCHOR EMBED 'E' (IN)
NEW	25	30	30	6	8 #6	#4	12	1	36
NEW	10	24	30	4	6 #6	#4	12	3/4	18 3/4
NEW	25	18*	30	7	4 #5	#3	9	1	36
NEW	10	16*	30	4	4 #5	#3	8	3/4	18 3/4
*REDUCED PIER DIAMETER WITH IEUA APPROVAL, IF REQUIRED DUE TO SITE CONSTRAINTS.									

SEISMIC DESIGN CRITERIA

- SITE CLASS: D
- OCCUPANCY CATEGORY: II
- IMPORTANCE FACTOR: 1.0
- STRUCTURE TYPE: STEEL ORDINARY CANTILEVER COLUMN

WIND DESIGN CRITERIA:

- BASIC WIND SPEED: 110 MPH
- OCCUPANCY CATEGORY: II
- EXPOSURE CATEGORY: C
- IMPORTANCE FACTOR: 1.0
- WIND DIRECTIONALITY FACTOR: 0.9–0.95

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. JULY 2025
MANAGER OF ENGINEERING DATE

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C81075 DATE

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LIGHTING POLE ELECTRICAL

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SHEET 4 OF 4

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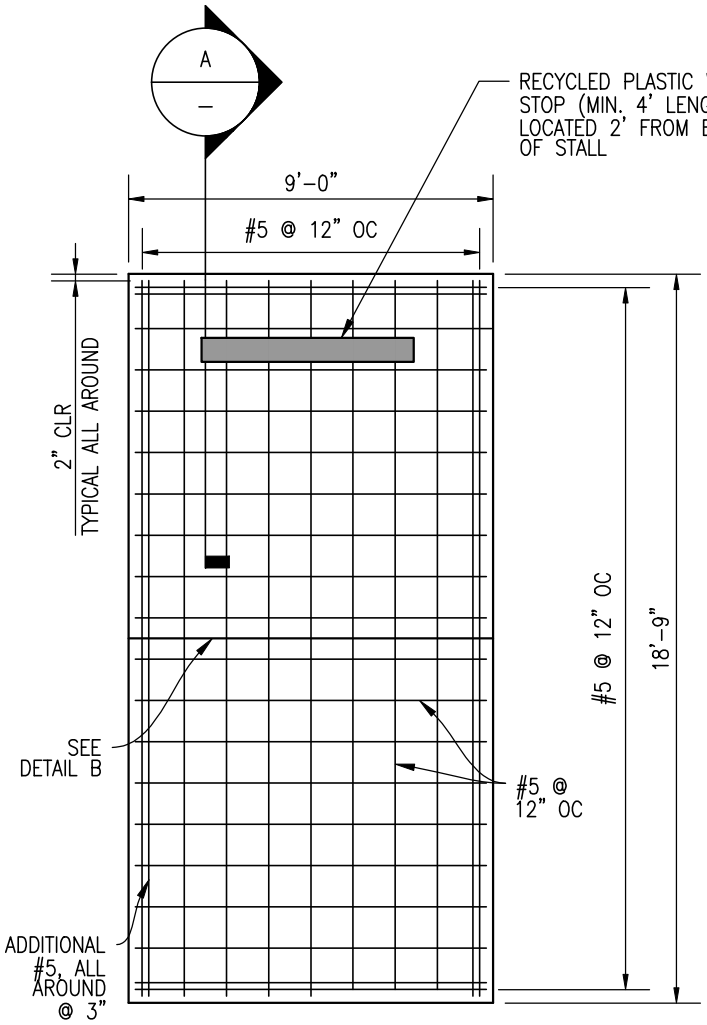
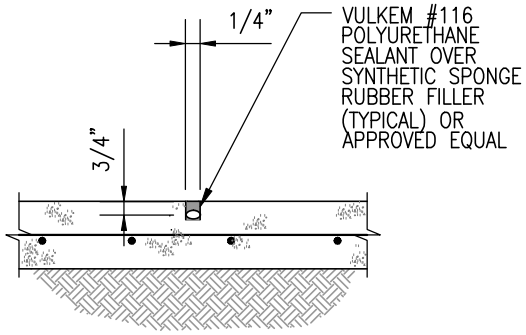
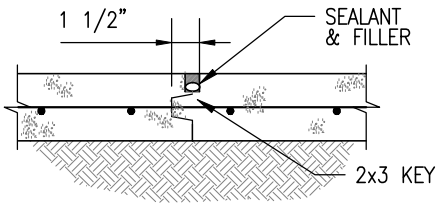


PLAN – 1 STALL



CONTROL JOINT



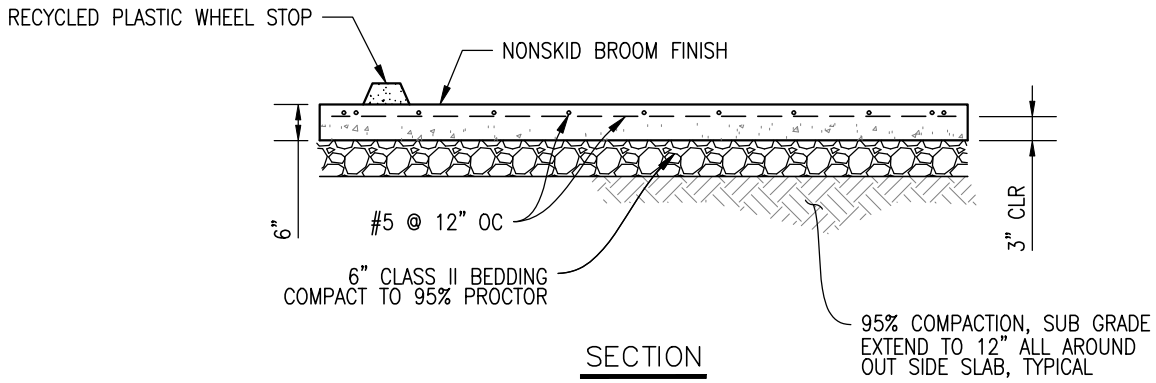
CONSTRUCTION JOINT

NOTES:

1. PROVIDE CONSTRUCTION OR CONTROL JOINT @ 13'-6" O.C. MAX. CONSTRUCTION JOINTS SHALL BE INSTALLED AS INDICATED.

JOINTS IN REINFORCED CONCRETE EXTERIOR PAVEMENTS & SIDEWALKS

DETAIL B



SECTION

DETAIL A

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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MANAGER OF ENGINEERING — DATE

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PARKING STALL AND SLAB

REVISION			
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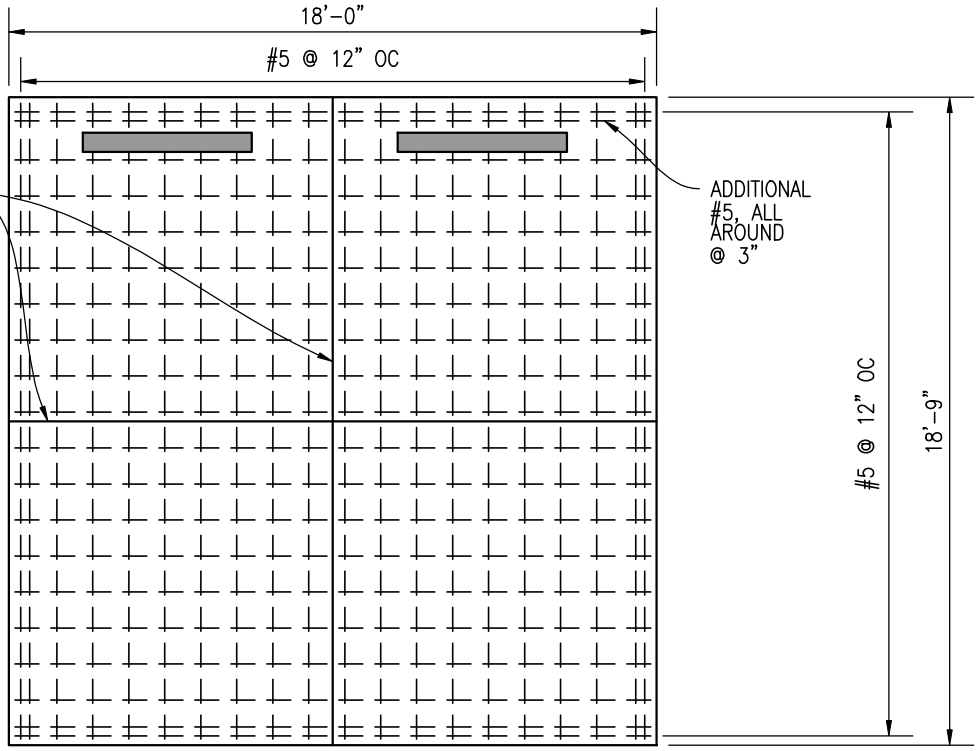
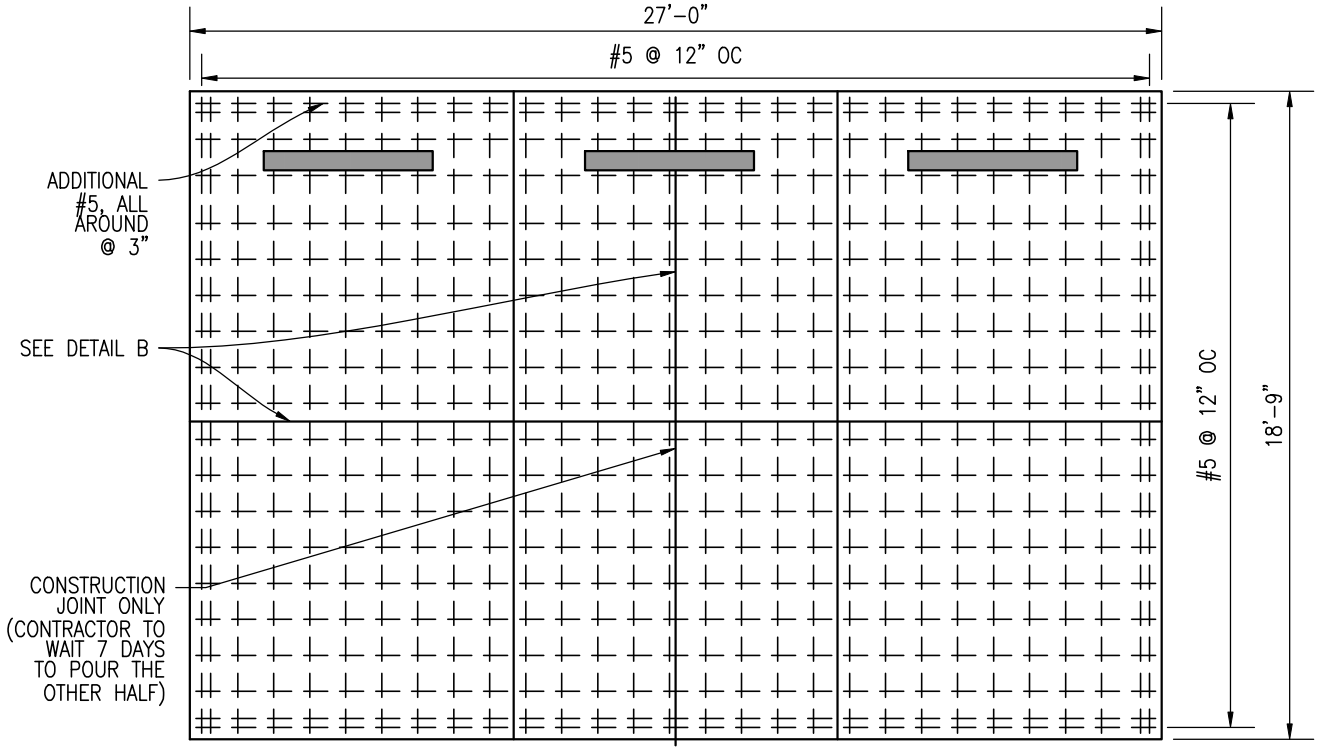
SHEET 1 OF 3



NOTES:
1. FOR ADDITIONAL INFORMATION SEE DETAILS "A" & "B".

PLAN – 2 STALL



PLAN – 3 STALL

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

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APPROVED BY:
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PARKING STALL AND SLAB

REVISION			
NO.	BY	DATE	APPROVED

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SHEET 2 OF 3

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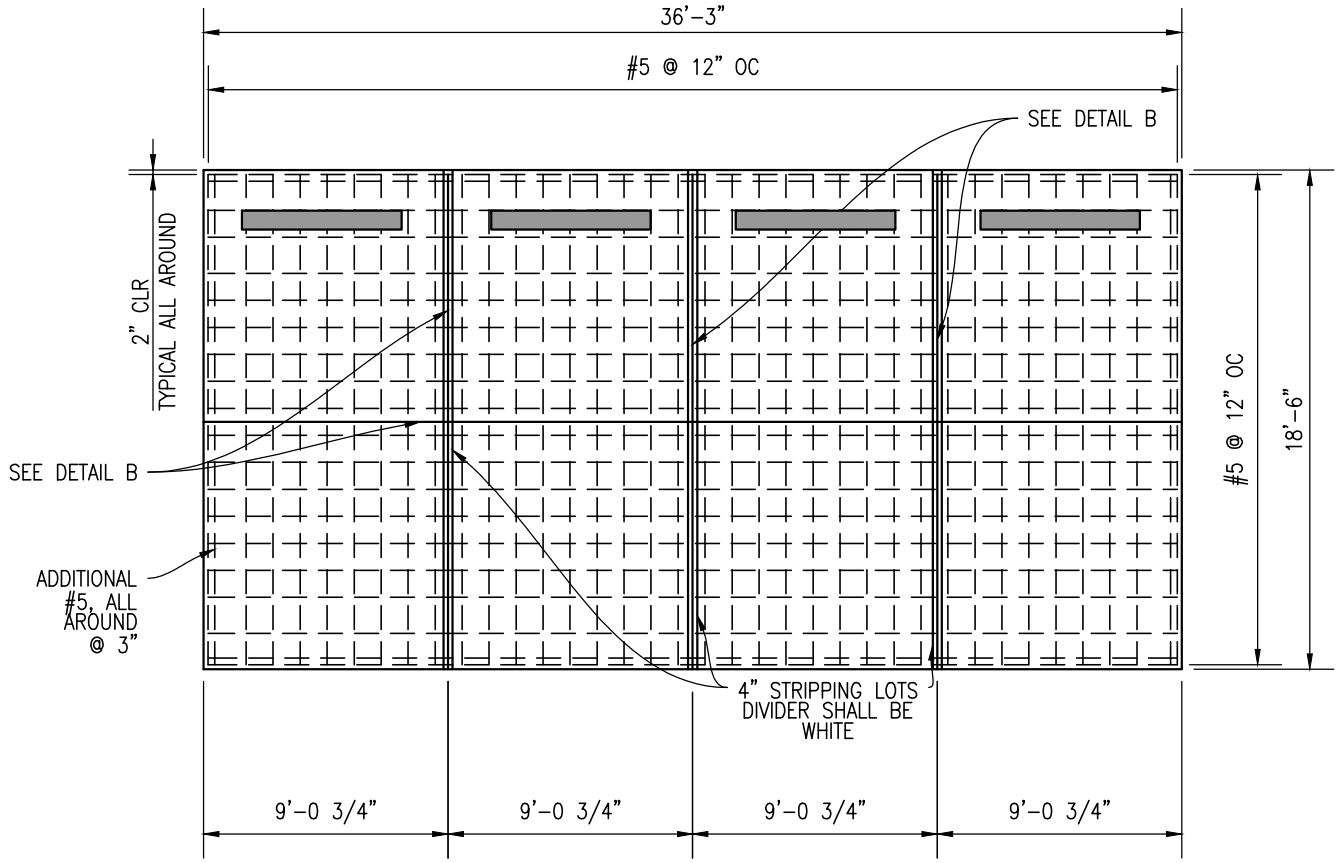

PLAN – 4 STALL

NOTES:

1. DATE STAMP EACH CONCRETE SLAB, TO MATCH SIZE/STYLE OF EXISTING.
2. STRIPE PARKING STALL USING WHITE WITH REFLECTIVE GLASS BEADS PAINT. PER SECTION 214 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND PROJECT SPECIFICATIONS.
3. REMOVE AND REINSTALL WHEEL STOPS. COORDINATE INSTALLATION WITH AGENCY.
4. CONTRACTOR SHALL REMOVE TREE ROOTS (12" CLEARANCE FROM SLAB) THAT MAY EXIST IN THE AREA AND ADD ROOT BARRIERS.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
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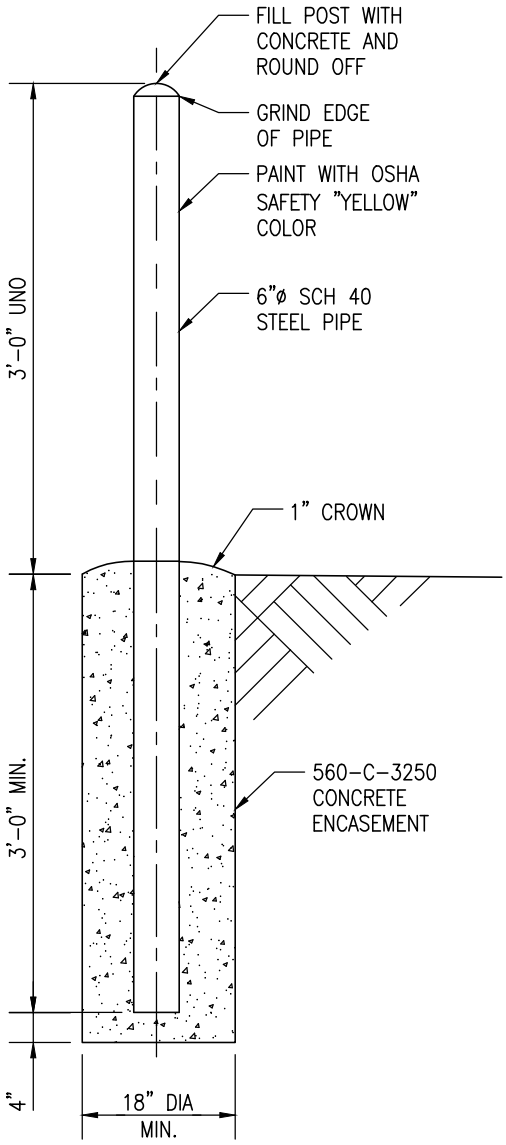
PARKING STALL AND SLAB

REVISION			
NO.	BY	DATE	APPROVED

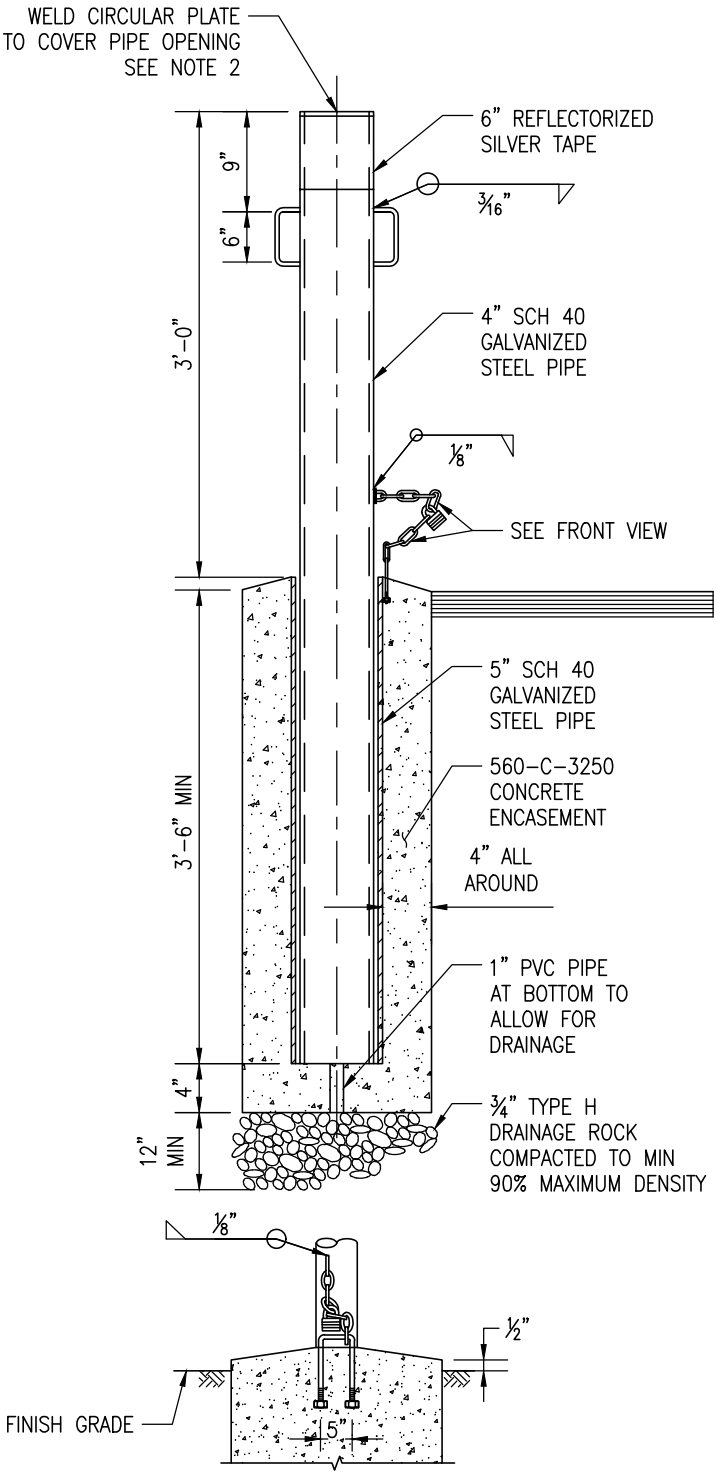
C-PS-001

SHEET 3 OF 3



TYPE A:

PERMANENT



FRONT VIEW

TYPE B:

REMOVABLE

NOTES:

1. PROVIDE TYPE "A" PERMANENT GUARD POST UNLESS OTHERWISE INDICATED.
2. WELD PLATE TO COVER TOP OF PIPE OPENING BEFORE GALVANIZING.

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:

JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

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APPROVED BY:

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GUARD POST DETAIL

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SHEET 1 OF 1

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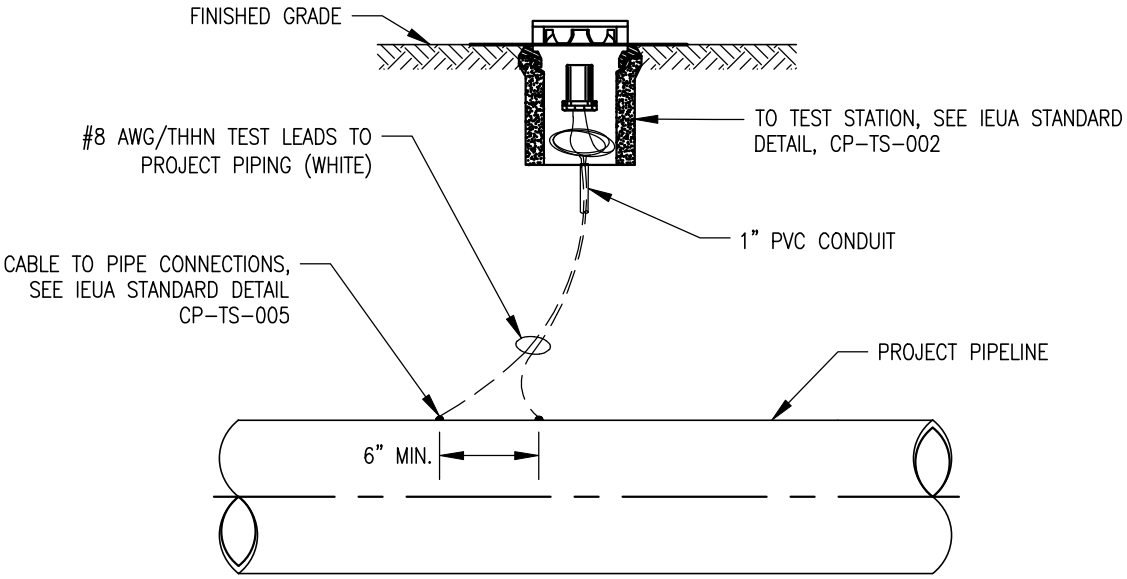
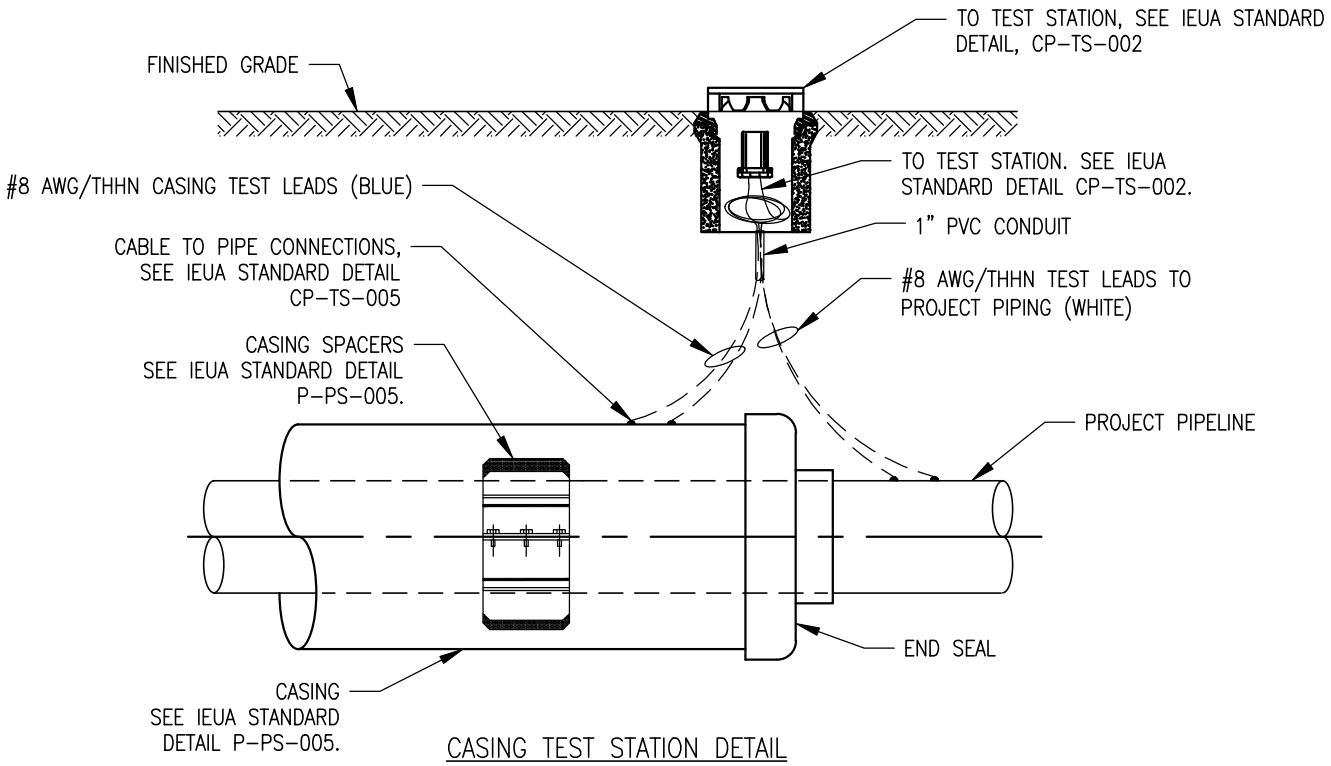
NOTES:

1. WIRES SHALL BE WELDED TO TOP (HORIZONTAL) SURFACE OF PIPE.
2. ALL TEST LEADS ARE CONTAINED IN 1 INCH SCHEDULE 40 PVC PIPE.



MONITORING TEST STATION DETAIL



CASING TEST STATION DETAIL

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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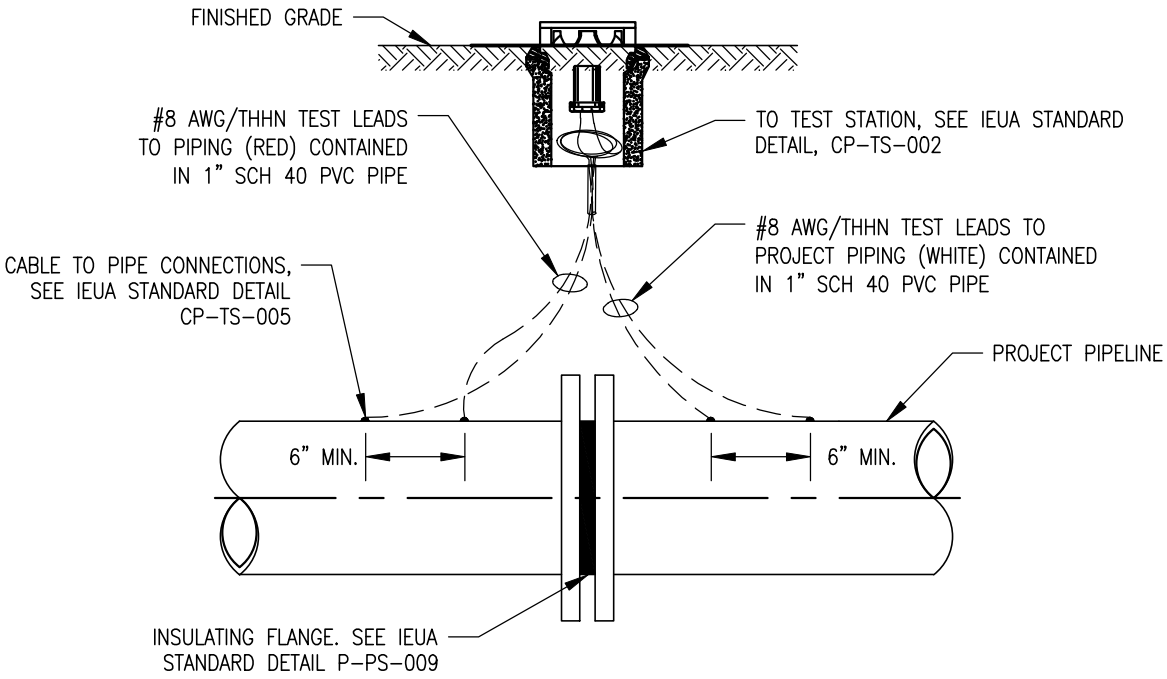
TEST STATION DETAILS

REVISION NO.	BY	DATE	APPROVED

CP-TS-001

SHEET 1 OF 2



INSULATING TEST STATION DETAIL

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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TEST STATION DETAILS

REVISION			
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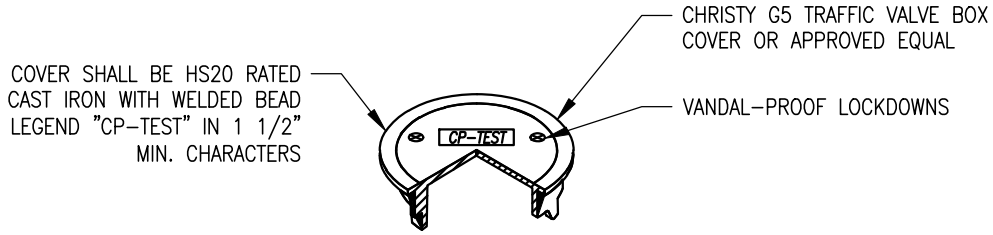
CP-TS-001

SHEET 2 OF 2

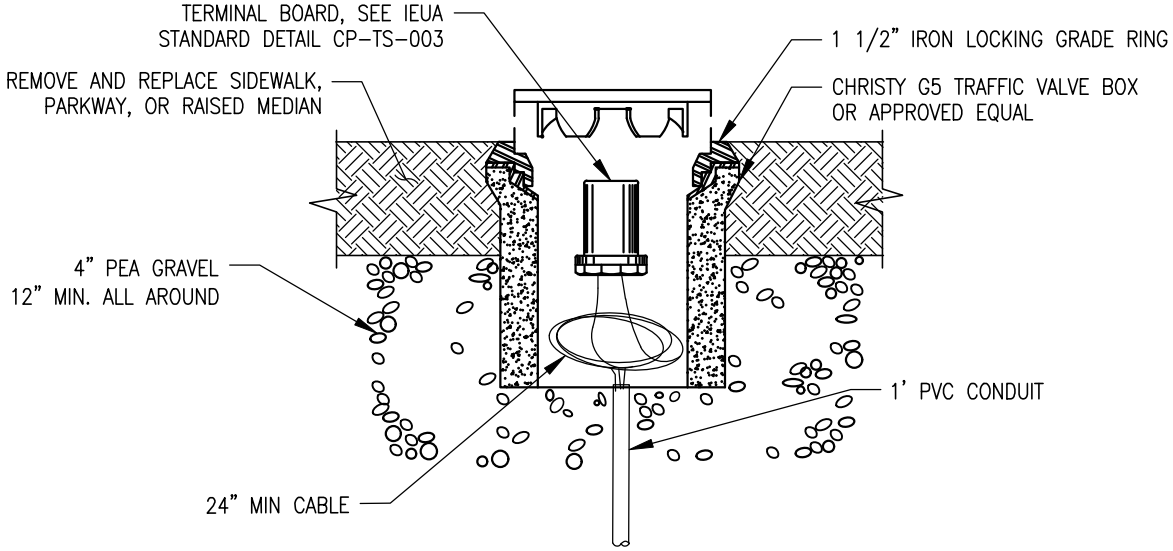
G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA STD DETAILS PHASE 3\CP-TS-001 Test Station Details.dwg Oct 07, 2025 - 3:36pm

NOTES:

1. FOR TEST STATIONS INSTALLED CROSS COUNTRY OR IN UNPAVED AREAS, A UTILITY MARKER SHALL BE INSTALLED ADJACENT TO TEST STATION AND APPURTENANCES.
2. FOR TEST STATION LOCATION, REFER TO SHEET 2.
3. INSTALL REINFORCED CONCRETE AROUND BOX WHEN IN PARKWAY.
4. MINIMUM OF 18" SLACK IN CABLES SHALL BE PROVIDED TO ALLOW REMOVAL OR TERMINAL BOX.
5. SEAL THE END OF THE LOWER PIECE OF THE TERMINAL BOX WITH SEALING PUTTY.
6. INSTALL TAG WITH PIPELINE STATION AND TERMINAL BOARD ID



CONCRETE TEST BOX LID



FLUSH MOUNTED TEST STATION CONCRETE TEST BOX

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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CONCRETE TEST BOX TEST STATION DETAIL

REVISION NO.	BY	DATE	APPROVED

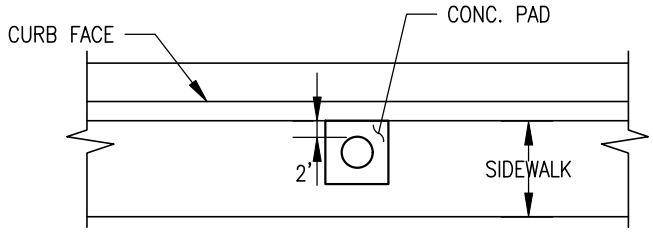
CP-TS-002

SHEET 1 OF 2

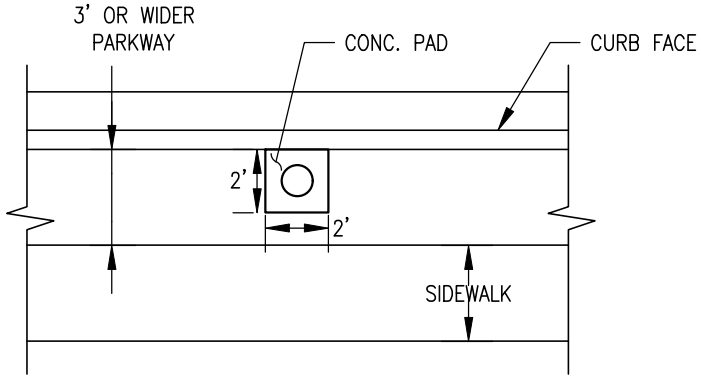
G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA STD DETAILS PHASE 3\CP-TS-002 Concrete Test Box Test Station.dwg Oct 07, 2025 - 3:37pm

NOTES:

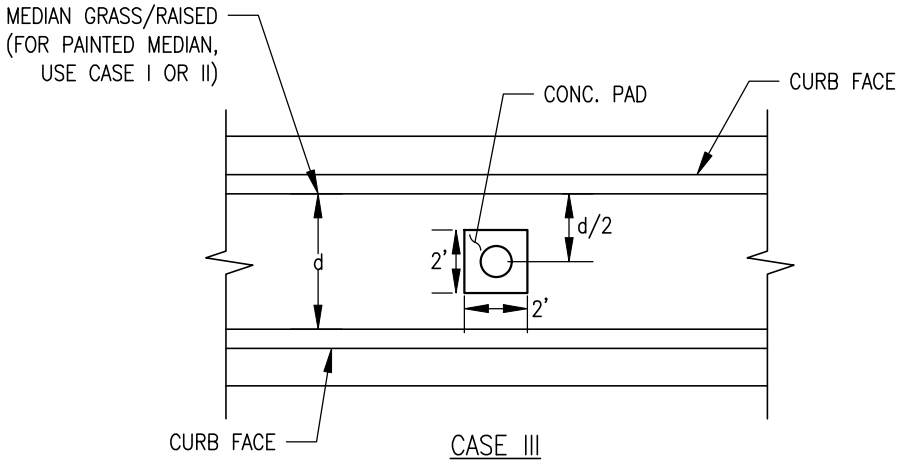
1. USE CASE I OR CASE II FOR PIPE CLOSEST TO THE CURB.
2. USE CASE III FOR PIPE CLOSE TO THE CENTER MEDIAN WHERE MEDIAN IS RAISED AND DISTANCE OF GREATER THAN 10'.
3. FOR CASE IV (UNIMPROVED AREAS), USE CARSONITE CTS TEST STATIONS AND INSTALL POST 5' MINIMUM FROM PIPELINE, APPROX. 3' BELOW GRADE.
4. IF DIFFERENT FROM THESE FOUR CASES, IEUA SHALL DETERMINE THE TEST STATION LOCATION.



CASE I



CASE II



CASE III

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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DESIGN BY: GHD, INC.
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CONCRETE TEST BOX TEST STATION DETAIL

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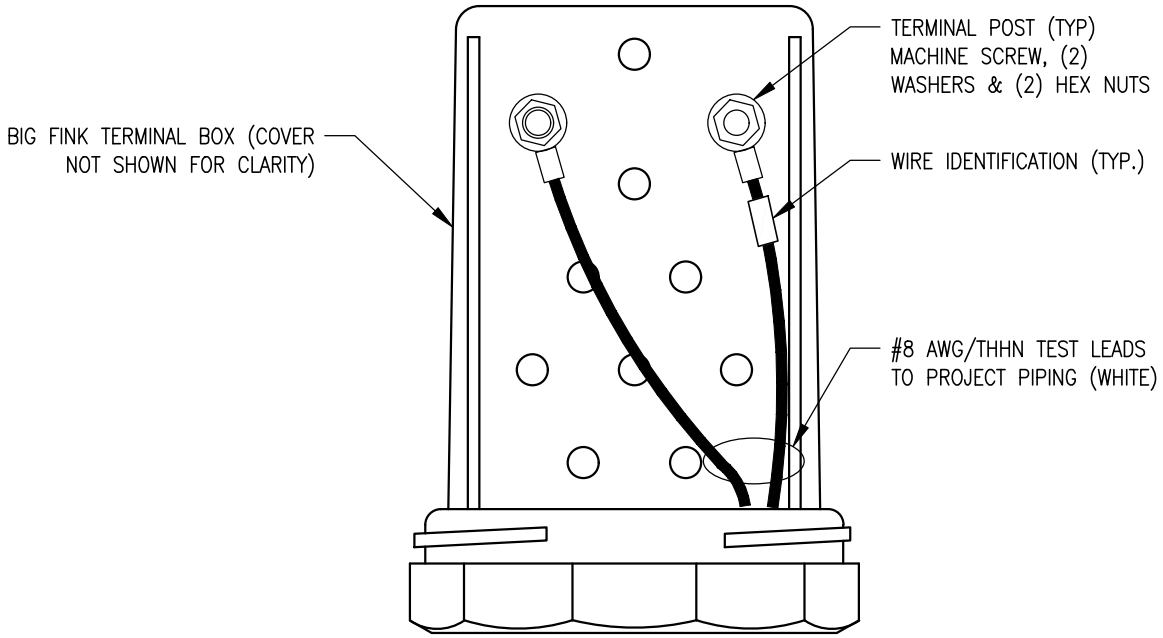
CP-TS-002

SHEET 2 OF 2

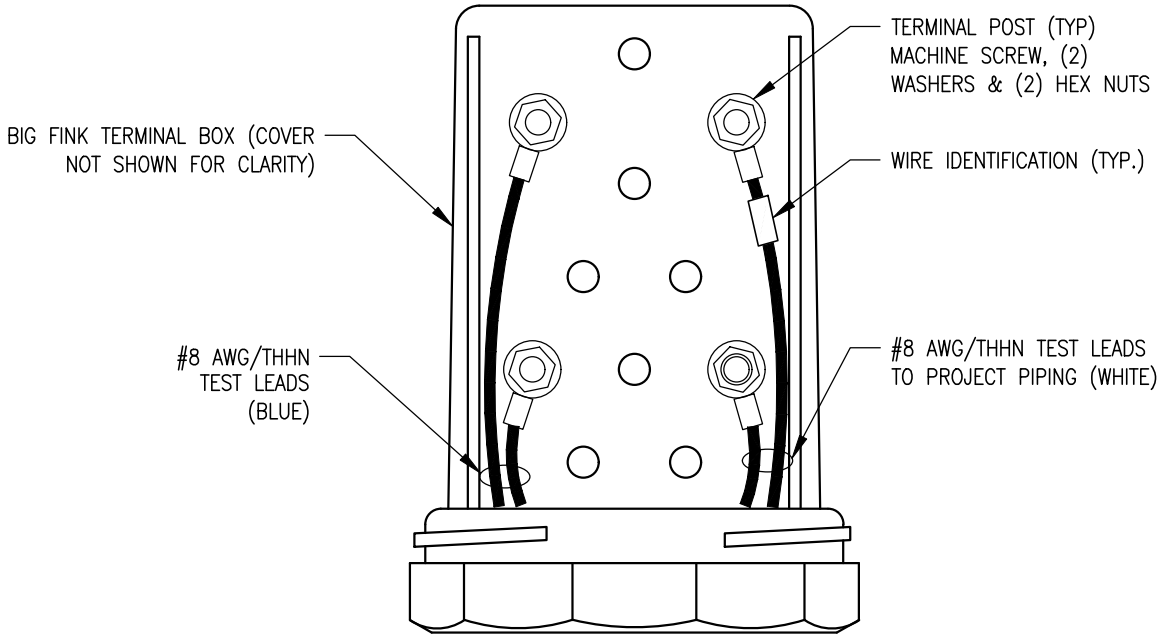
G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA STD DETAILS PHASE 3\CP-TS-002 Concrete Test Box Test Station.dwg Oct 07, 2025 - 3:38pm

NOTES:

1. LEAVE SUFFICIENT SLACK (3 FEET MIN.) IN LEAD WIRE COILED WITHIN TEST BOX.



MONITORING TEST STATION TERMINAL BOARD



CASING TEST STATION TERMINAL BOARD

SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
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Inland Empire Utilities Agency

TERMINAL BOARD DETAILS

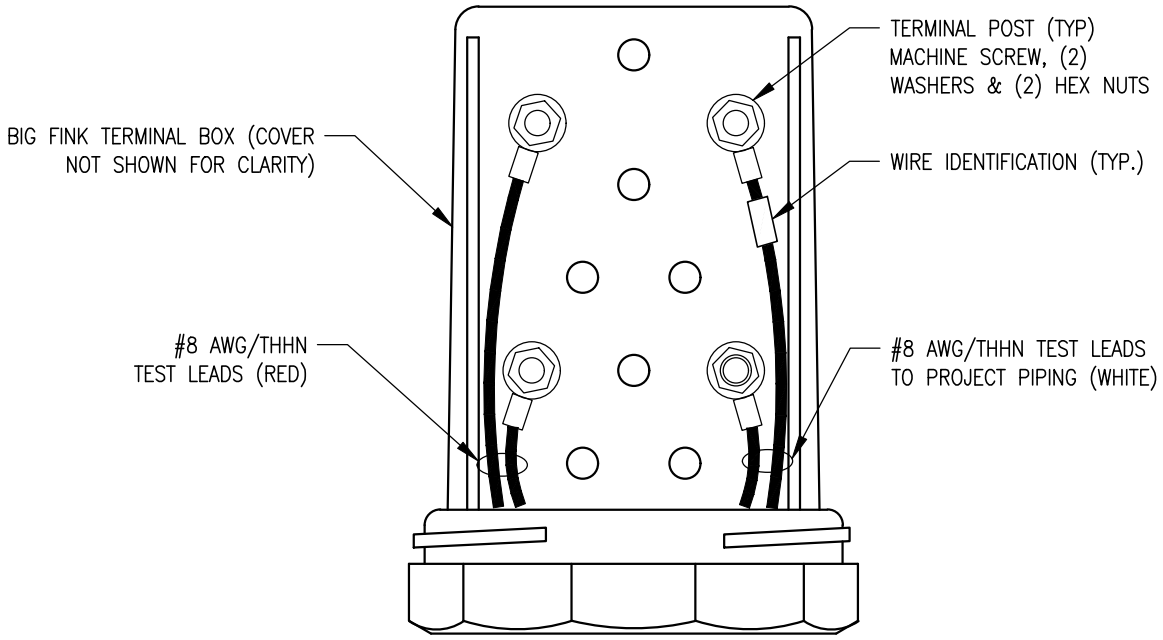
REVISION			
NO.	BY	DATE	APPROVED

CP-TS-003

SHEET 1 OF 2

NOTES:

1. LEAVE SUFFICIENT SLACK (3 FEET MIN.) IN LEAD WIRE COILED WITHIN TEST BOX.



INSULATING TEST STATION TERMINAL BOARD

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:

JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.

APPROVED BY:

CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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TERMINAL BOARD DETAILS

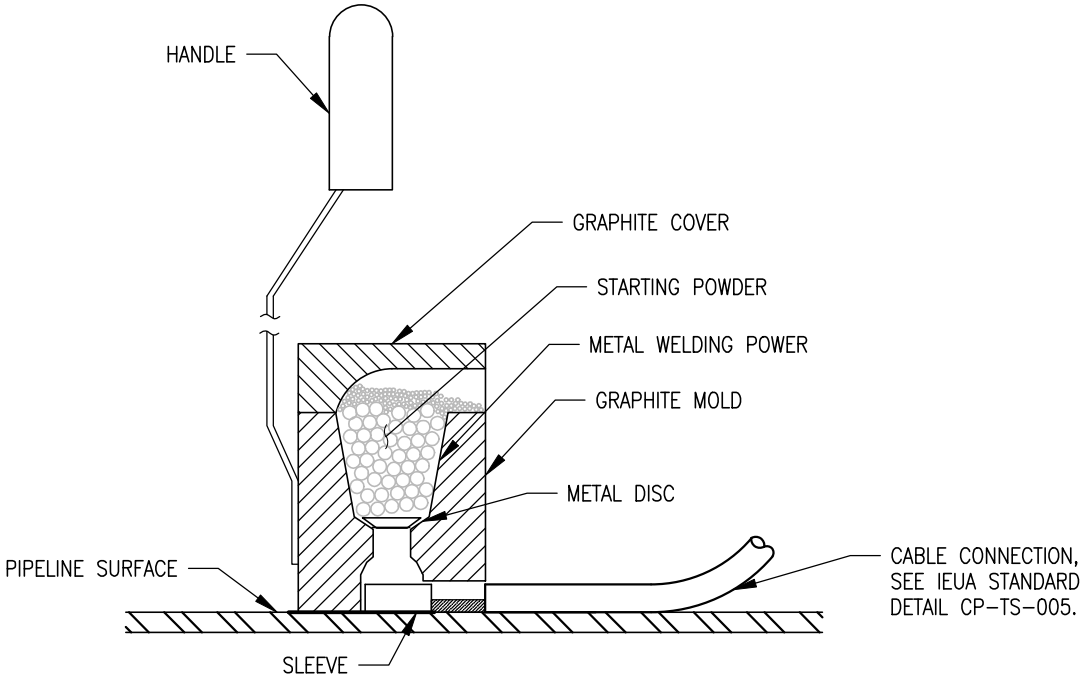
REVISION			
NO.	BY	DATE	APPROVED

CP-TS-003

SHEET 2 OF 2

NOTES:

1. PROCEDURE SHOWN IS TO BE USED AS A GENERAL GUIDE ONLY.
2. CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS.



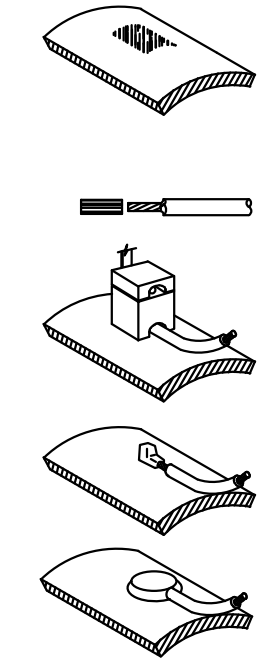
STEP 1. FILE STRUCTURE CONNECTION AREA (3" + 3" MIN.) TO BARE SHINY METAL AND CLEAN.

STEP 2. STRIP INSULATION FROM WIRE. ATTACH SLEEVE REQUIRED ON #6 AWG WIRE OR SMALLER.

STEP 3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE WITH FLINT GUN.

STEP 4. REMOVE SLAG FROM CONNECTION AND PEEN WELD FOR SOUNDNESS.

STEP 5. COVER CONNECTION AND EXPOSED STRUCTURE SURFACE WITH EPOXY COATING COMPOUND.



SCALE: NOT TO SCALE

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MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
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CHRIS BARTLEMAN, P.E. — JULY 2025
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EXOTHERMIC WELD DETAIL

REVISION			
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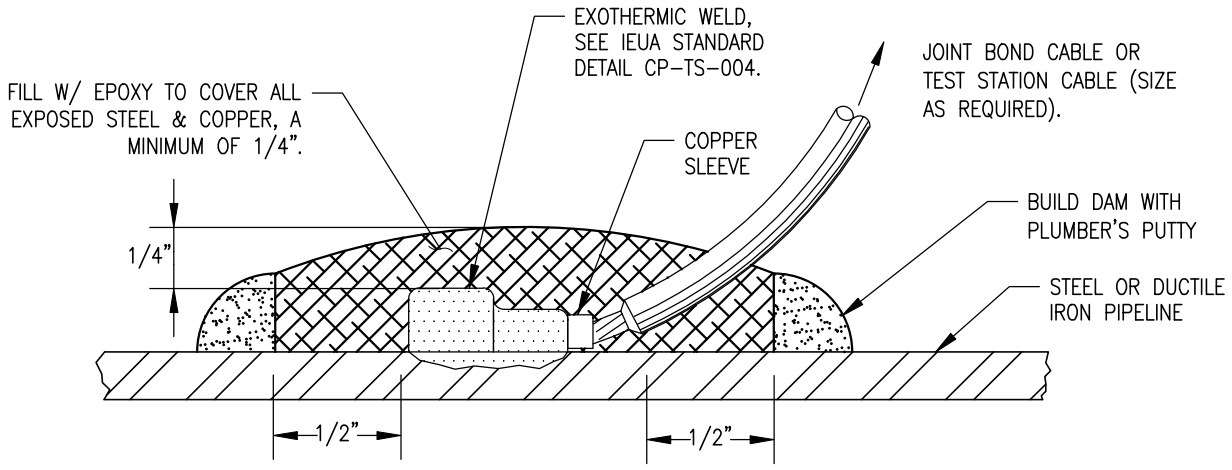
CP-TS-004

SHEET 1 OF 1

NOTES:

1.



SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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CABLE CONNECTION DETAIL

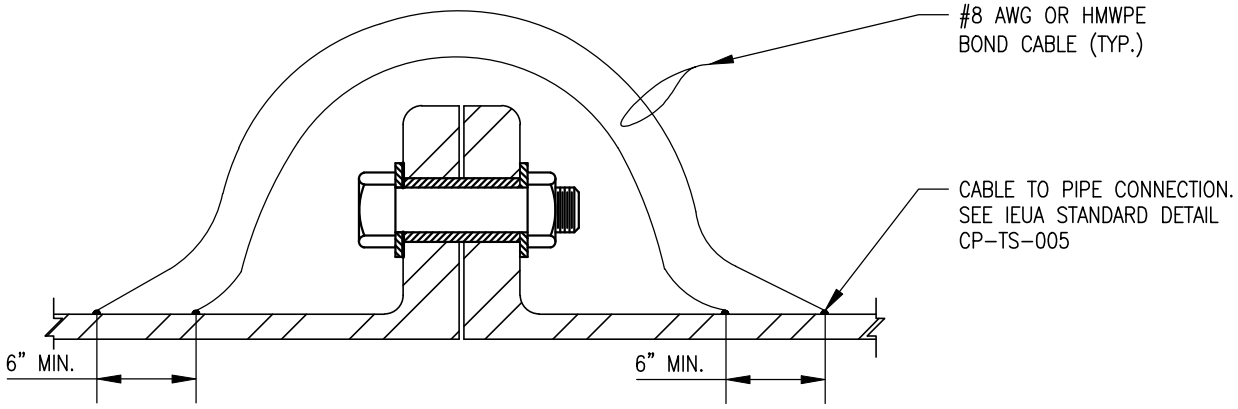
REVISION			
NO.	BY	DATE	APPROVED

CP-TS-005

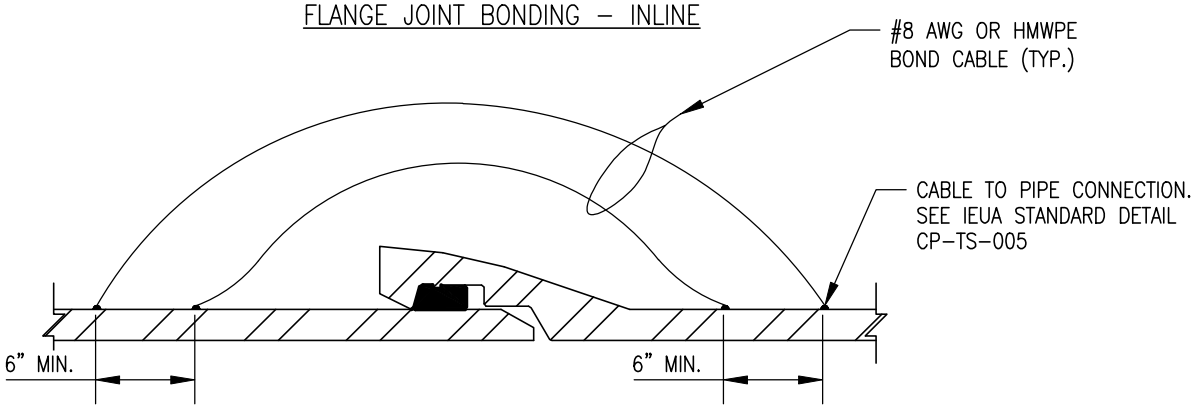
SHEET 1 OF 1

NOTES:

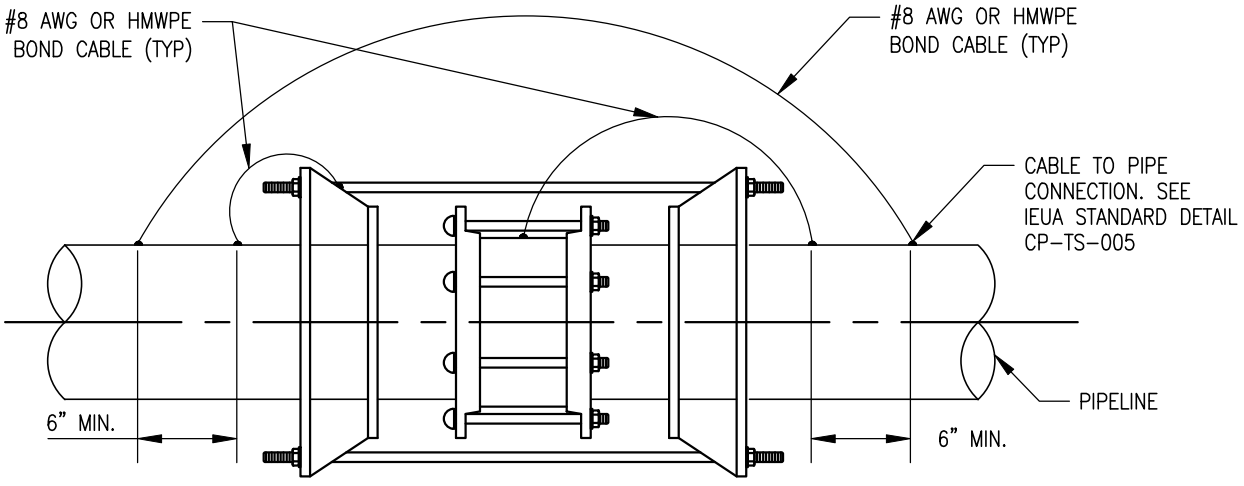
1. ALL MECHANICAL JOINTS, EXCEPT IFJ, SHALL BE BONDED TO PROVIDE CONTINUITY.
2. PROVIDE ENOUGH SLACK IN THE BOND CABLES FOR JOINT MOVEMENT.
3. THIS DETAIL IS APPLICABLE TO DUCTILE IRON PIPING ONLY.



FLANGE JOINT BONDING – INLINE



PUSH-ON JOINT BONDING – INLINE



FLEXIBLE COUPLING WITH RESTRAINER

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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JOINT BONDING INLINE DETAIL

REVISION			
NO.	BY	DATE	APPROVED

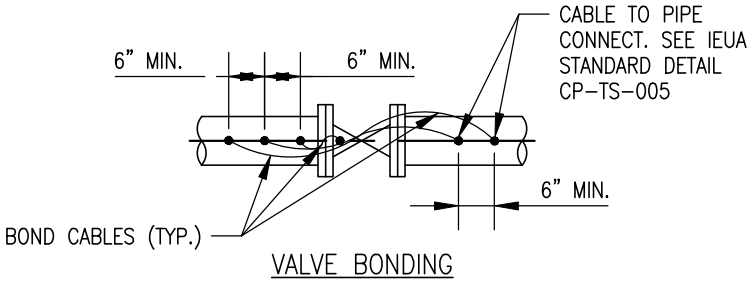
CP-TS-006

SHEET 1 OF 1

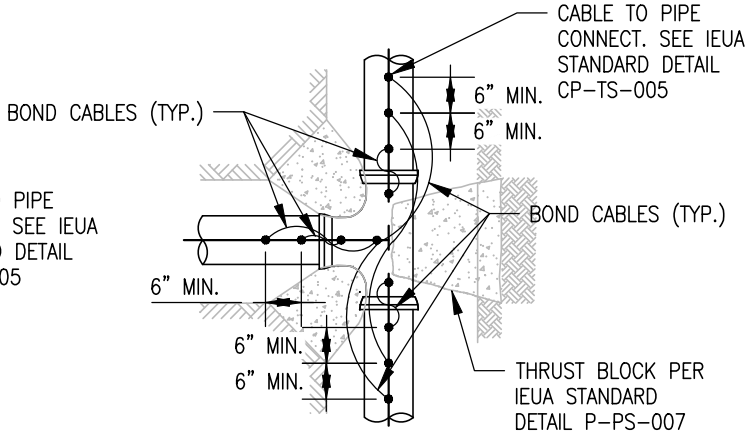
G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA STD DETAILS PHASE 3\CP-TS-006 Joint Bonding Inline.dwg Oct 07, 2025 - 3:44pm

NOTES:

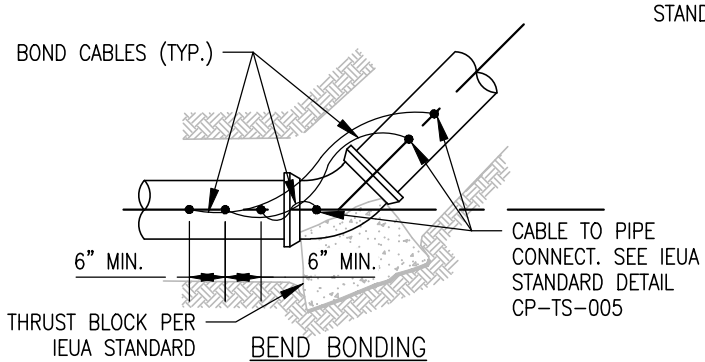
1. ALL BOND WIRES SHALL BE MIN. #8 AWG. STANDARD COPPER WIRE WITH HMWPE INSULATION.
2. PROVIDE ENOUGH SLACK IN THE BOND CABLES FOR JOINT MOVEMENT.
3. MINIMUM WELD SPACING SHALL BE 6" AND OUTSIDE OF THRUST BLOCKS.



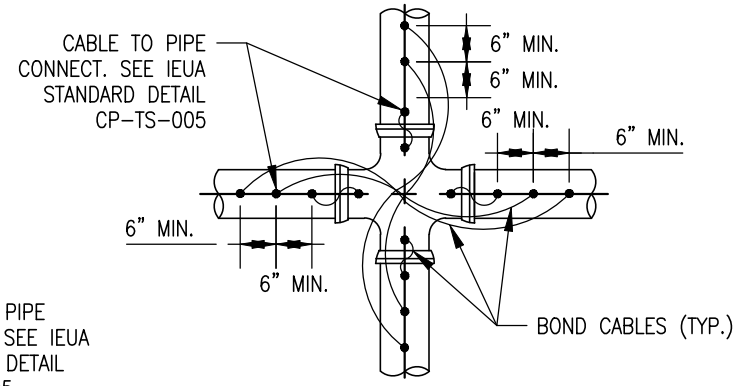
VALVE BONDING



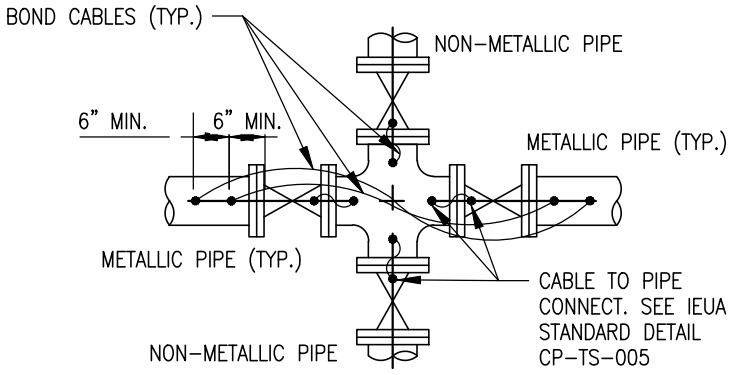
TEE BONDING



BEND BONDING



CROSS BONDING



VALVE CROSS BONDING
METALLIC PIPE TO NON-METALLIC PIPE

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:

JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.

APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

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JOINT BONDING PIPE FITTINGS DETAIL

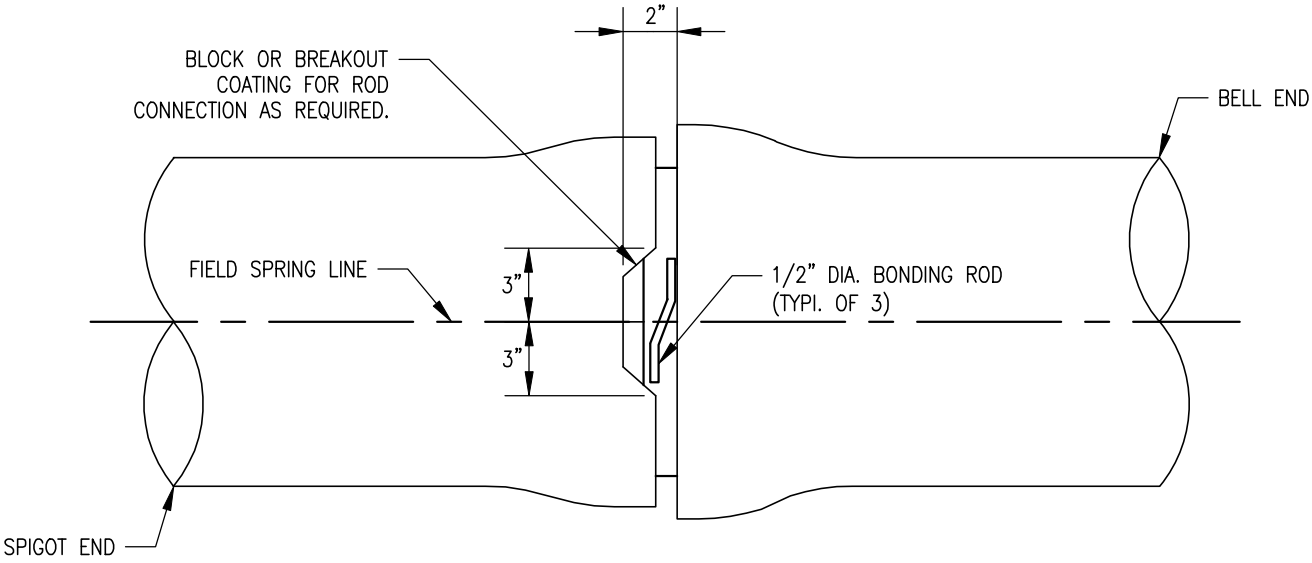
REVISION			
NO.	BY	DATE	APPROVED

CP-TS-007

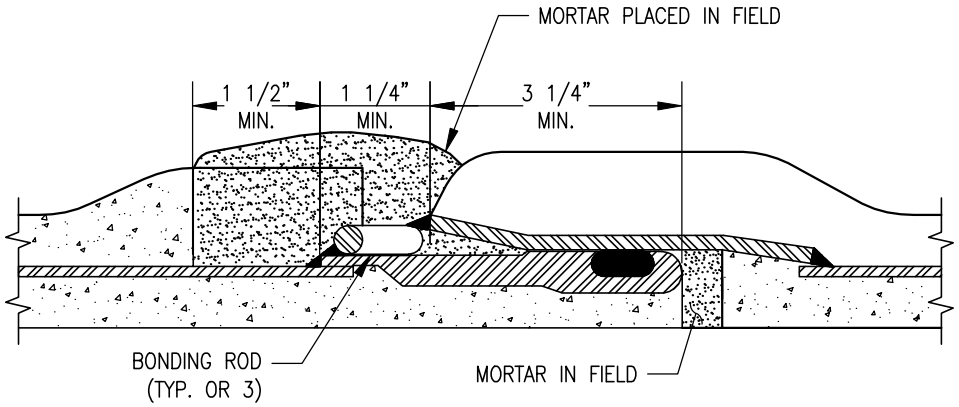
SHEET 1 OF 1

NOTES:

1. INSTALL THREE (3) BONDING RODS PER JOINT INSTALLED AT 120° SPACING.



SIDE VIEW



BONDING ROD DETAIL

SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

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MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
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C81075 — DATE

Inland Empire Utilities Agency

JOINT BONDING CML&C STEEL PIPE DETAIL

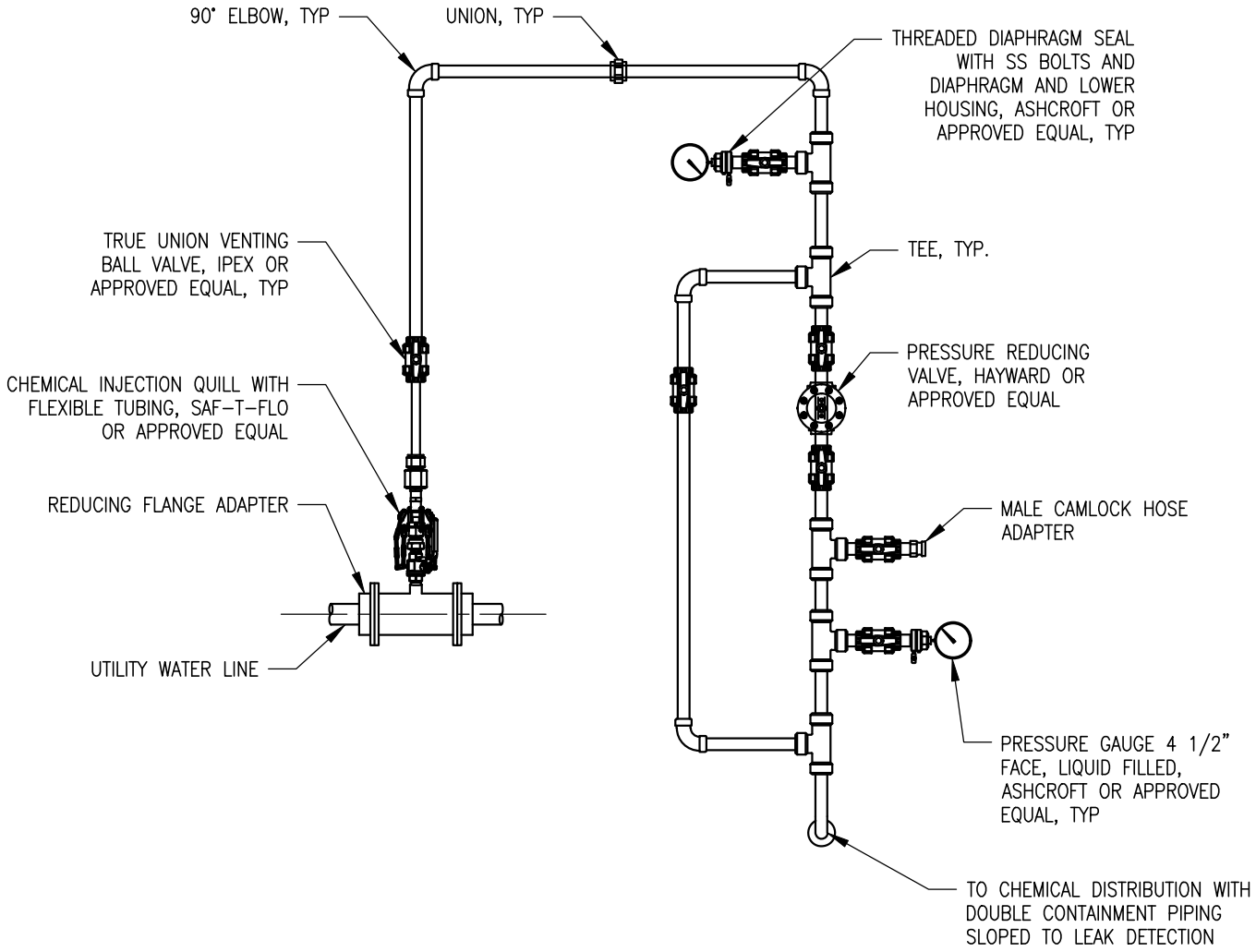
REVISION			
NO.	BY	DATE	APPROVED

CP-TS-008

SHEET 1 OF 1

NOTES:

1. SUITABLE FOR 1–2" CHEMICAL INJECTION PIPELINES.
2. THIS CONFIGURATION IS TYPICAL OF DUTY AND STANDBY.
3. ALL PIPE AND FITTINGS SHALL BE CPVC WITH SOLVENT WELDS.
4. SEALS TO BE EDPM.
5. PIPE SUPPORTS WILL BE STAINLESS STEEL UNISTRUT AND BRACKETS.
6. RECOMMENDED TO BE LOCATED OUT OF DIRECT SUNLIGHT OR COATED WITH YELLOW PAINT PER SPECIFICATIONS.



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Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

Inland Empire Utilities Agency

SODIUM HYPOCHLORITE INJECTION PIPING DETAIL

REVISION			
NO.	BY	DATE	APPROVED

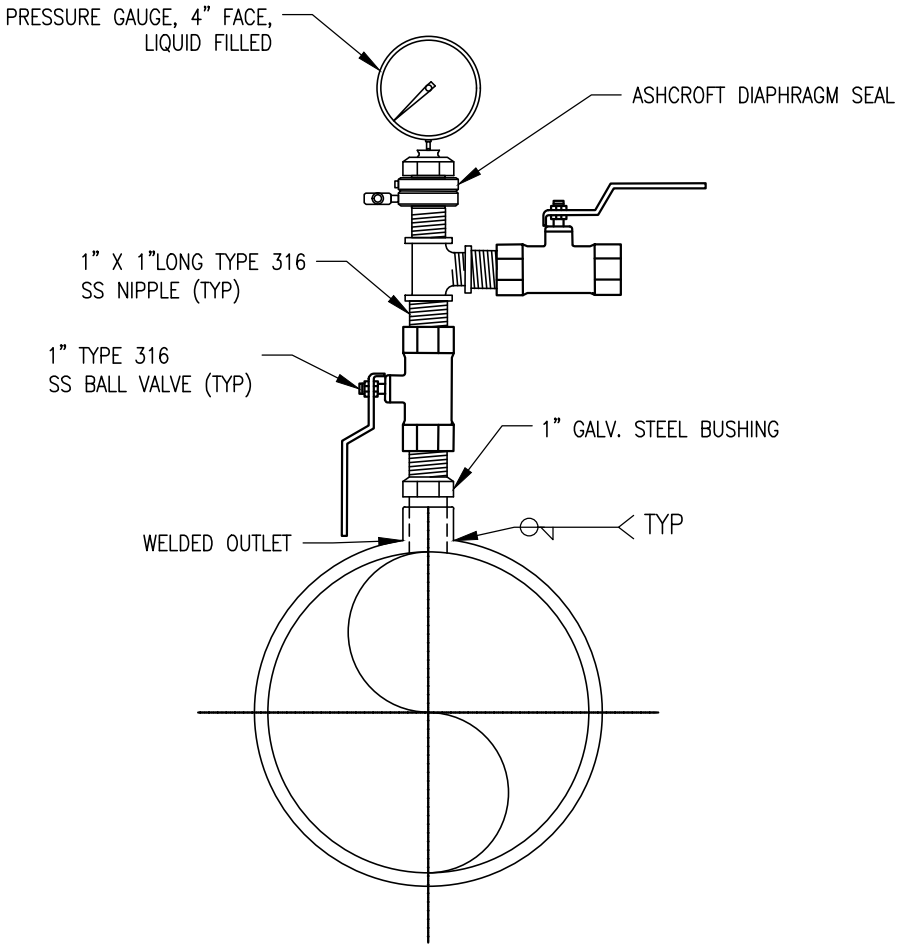
F-PC-001

SHEET 1 OF 1

G:\EN\1-Engineering Standard Details\CAD FILES PHASES 1-3\IEUA STD DETAILS PHASE 3\F-PC-001.dwg Oct 07, 2025 - 4:05pm

NOTES:

1. NOT FOR CHEMICAL USE.
2. INSTALL WELDED OUTLET FOR STEEL PIPE APPLICATIONS.
3. INSTALL A DIAPHRAGM SEAL IN WASTEWATER APPLICATIONS.
4. SPECIFIC APPLICATIONS SUCH AS SLUDGE REQUIRE A MINIMUM OF 0.5 INCH PIPING AND VALVES.



SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
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PRESSURE GAUGE DETAIL

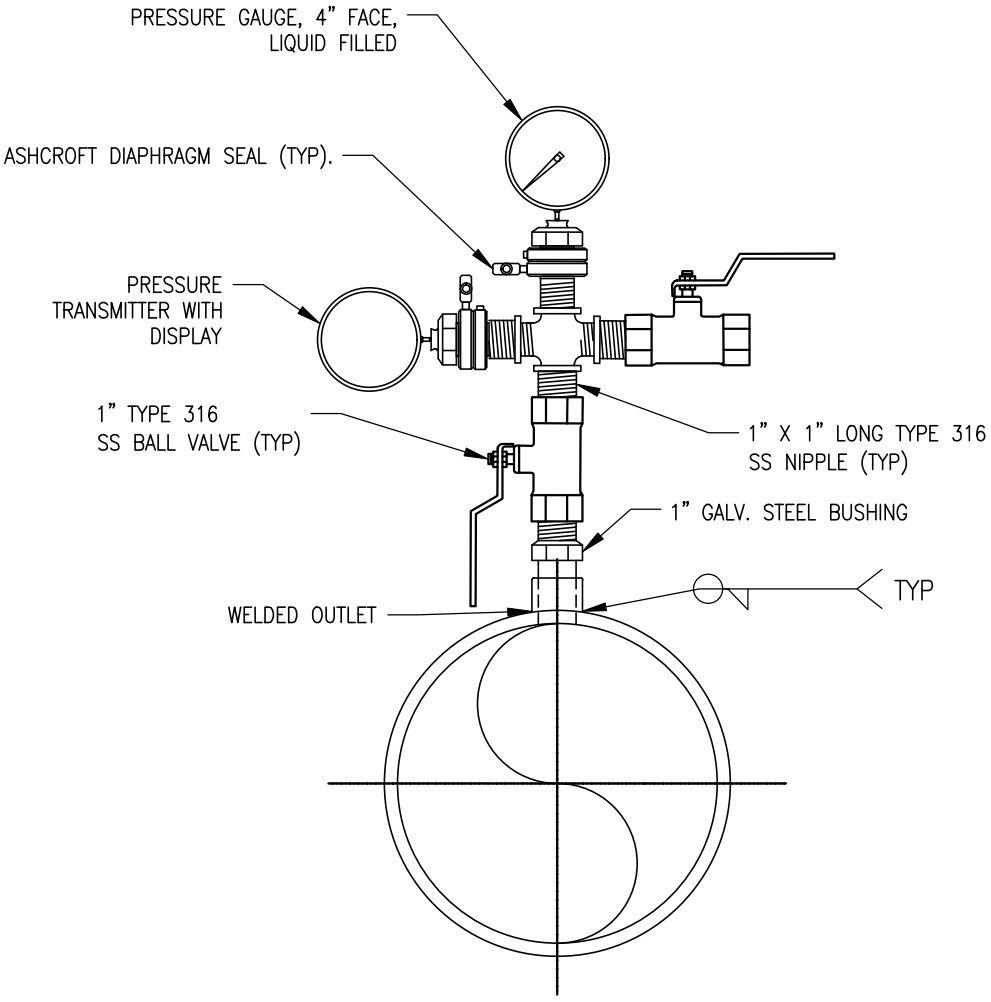
REVISION			
NO.	BY	DATE	APPROVED

F-PG-001

SHEET 1 OF 1

NOTES:

1. NOT FOR CHEMICAL USE.
2. INSTALL WELDED OUTLET FOR STEEL PIPE APPLICATIONS.
3. INSTALL A DIAPHRAGM SEAL IN WASTEWATER APPLICATIONS.
4. SPECIFIC APPLICATIONS SUCH AS SLUDGE REQUIRE A MINIMUM OF 0.5 INCH PIPING AND VALVES.



SCALE: NOT TO SCALE

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A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

Inland Empire Utilities Agency

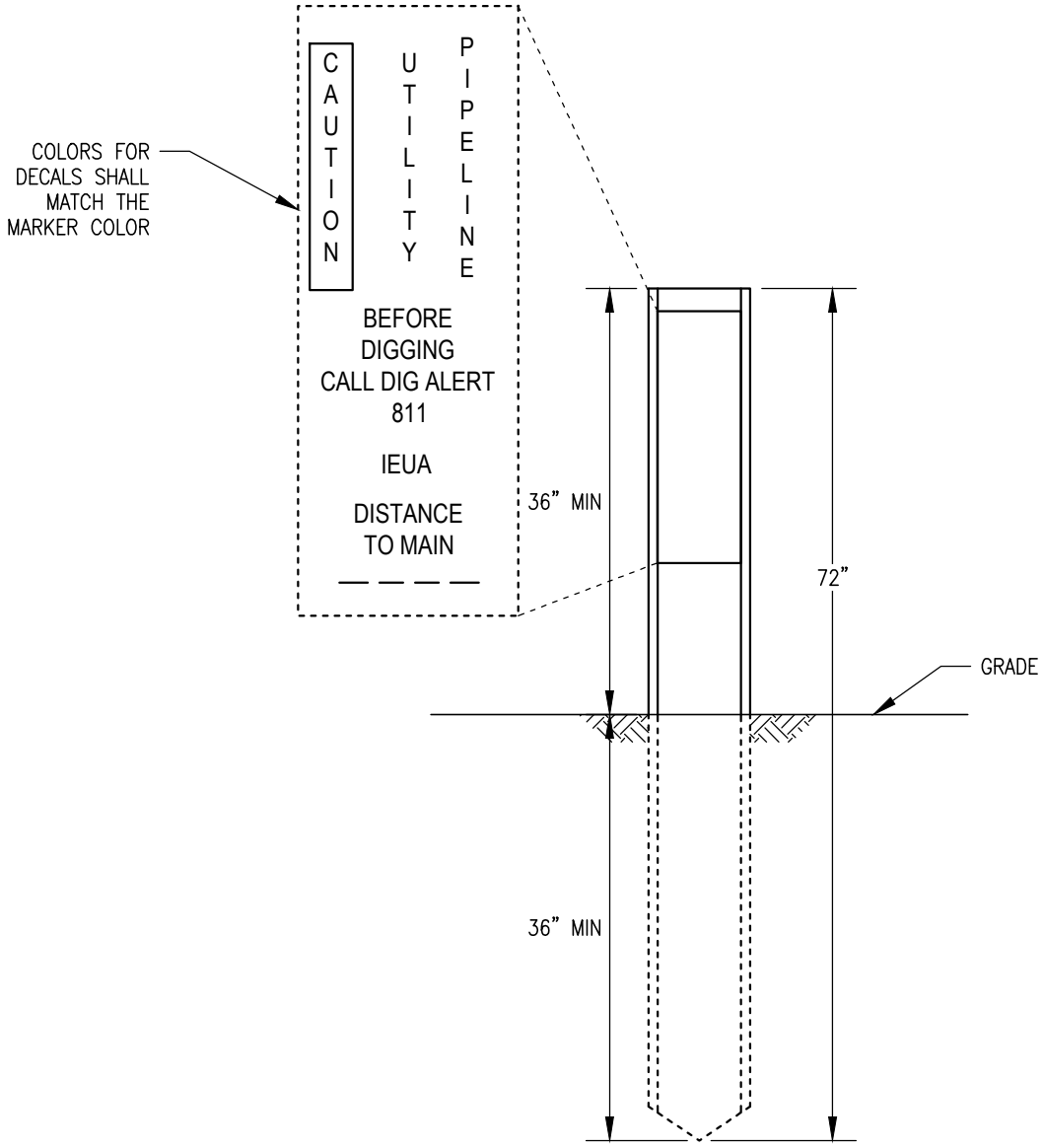
PRESSURE GAUGE & TRANSMITTER DETAIL

REVISION			
NO.	BY	DATE	APPROVED

SHEET 1 OF 1
F-PG-002
SHEET 1 OF 1

NOTES:

1. MARKERS ARE REQUIRED WHEN UTILITY VALVES LOCATED OUTSIDE OF PAVEMENT OR IN AN EASEMENT NOT ADJACENT TO THE RIGHT-OF-WAY.
2. MARKERS SHALL BE CARSONITE HIGH PERFORMANCE UTILITY MARKER MADE OF FIBERGLASS COMPOSITE.
3. MARKERS SHALL BE GREEN FOR WASTEWATER AND PURPLE FOR RECLAIMED WATER.
4. ADDITIONAL MARKERS SHALL BE INSTALLED AS NEEDED SO THAT THE DISTANCE BETWEEN MARKERS DOES NOT EXCEED 1000 FEET.



SCALE: NOT TO SCALE

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MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

Inland Empire Utilities Agency

UTILITY MARKER POST DETAIL

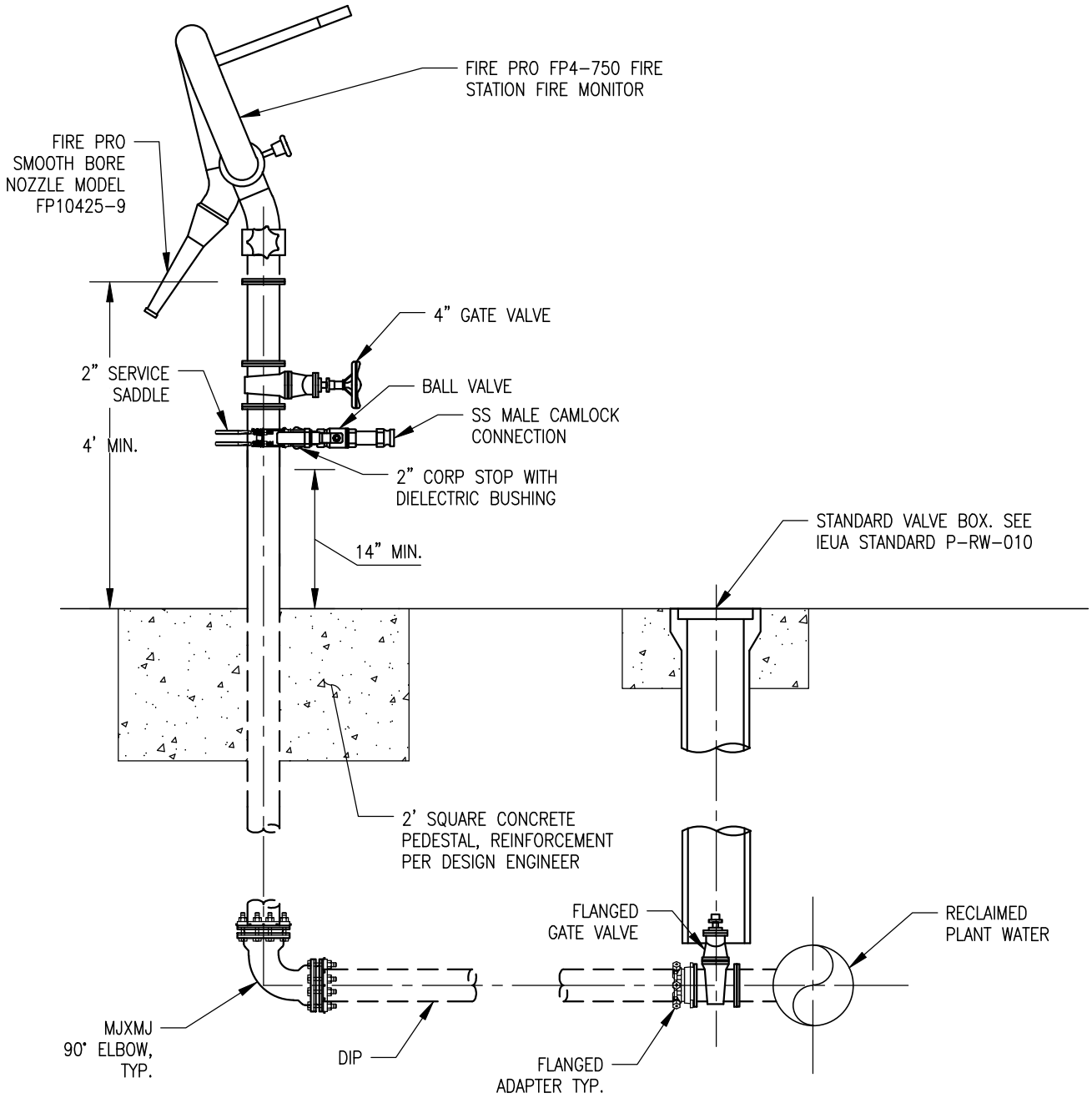
REVISION			
NO.	BY	DATE	APPROVED

F-UW-001

SHEET 1 OF 1

NOTES:

1. COAT ALL ABOVE GRADE PIPE AND APPURTENANCES PER PROJECT SPECIFICATIONS.



SCALE: NOT TO SCALE

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APPROVED BY:

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MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.

APPROVED BY:

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C81075 — DATE

Inland Empire Utilities Agency

WATER CANNON DETAIL

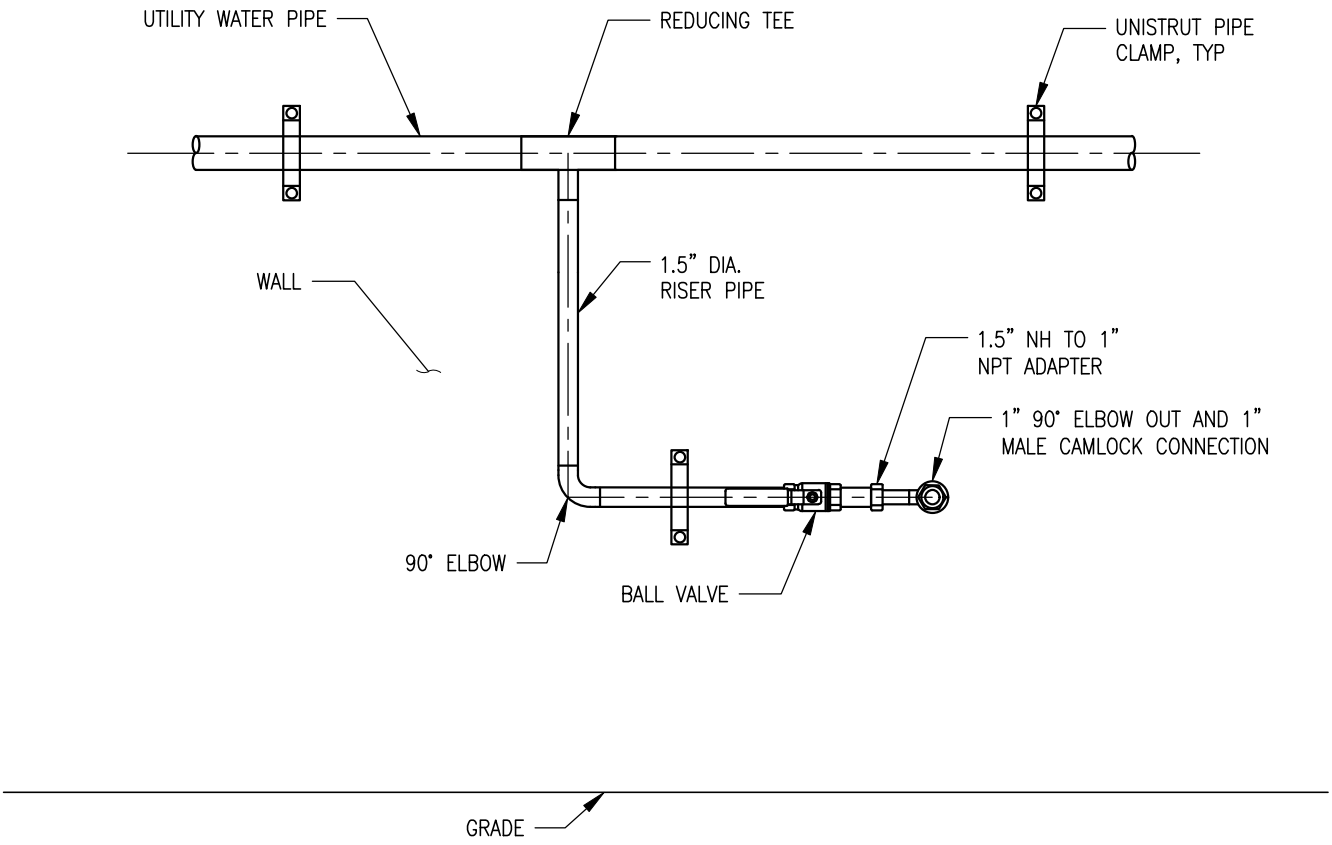
REVISION			
NO.	BY	DATE	APPROVED

F-UW-002

SHEET 1 OF 1

NOTES:

1. SUITABLE FOR 1" TO 2" APPLICATIONS.
2. PIPE SHALL BE STAINLESS STEEL, COPPER, BRONZE, OR BRASS AND PIPE APPURTENANCES SHALL BE BRASS, BRONZE, OR STAINLESS STEEL.
3. MOUNTING BRACKET AND PIPE SHALL BE COATED WITH EPOXY PAINT PER SPECIFICATIONS.
4. INSTALL DIELECTRIC COUPLINGS AND PROPER ISOLATION BETWEEN DISSIMILAR METALS.



SCALE: NOT TO SCALE

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

APPROVED BY:
JASON MARSEILLES, P.E. — JULY 2025
MANAGER OF ENGINEERING — DATE

DESIGN BY: GHD, INC.
APPROVED BY:
CHRIS BARTLEMAN, P.E. — JULY 2025
C81075 — DATE

Inland Empire Utilities Agency

UTILITY WALL MOUNTED WATER HOSE BIBB DETAIL

REVISION NO.	BY	DATE	APPROVED

F-UW-003

SHEET 1 OF 1

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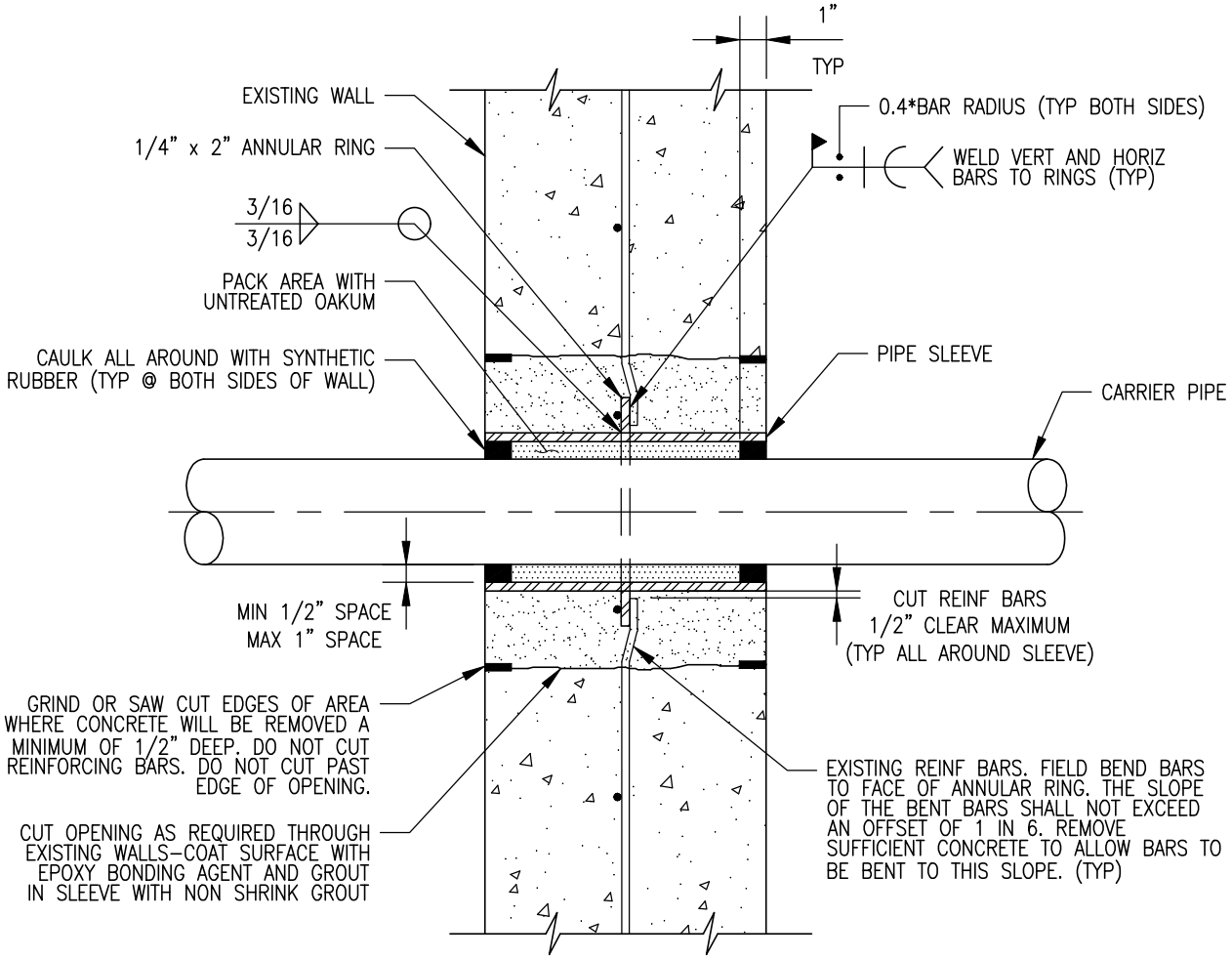

NOTES:

1. THIS DETAIL APPLIES TO ABOVE GROUND APPLICATIONS.
2. FOR NEW CONSTRUCTION, SLEEVES SHALL BE CAST INTO WALL. BLOCKOUTS AND SUBSEQUENT GROUTING IN SLEEVES SHALL NOT BE PERMITTED UNTIL A KEYED WATERSTOP JOINT IS PROVIDED.
3. 6" DIA SLEEVES AND SMALLER SHALL BE SCHEDULE 40 MIN STEEL PIPE.
4. 8" DIA SLEEVES AND LARGER SHALL BE 1/4" THICK STEEL PIPE.
5. NEOPRENE LINK SEALS WITH STAINLESS STEEL BOLTS MAY BE SUBSTITUTED FOR OAKUM AND RUBBER SEAL. SLEEVE DIAMETER SHALL BE PER LINK SEAL MANUFACTURER'S RECOMMENDATION.
6. SLEEVE SHALL BE HOT–DIPPED GALVANIZED AFTER FABRICATION.

SCALE: NOT TO SCALE

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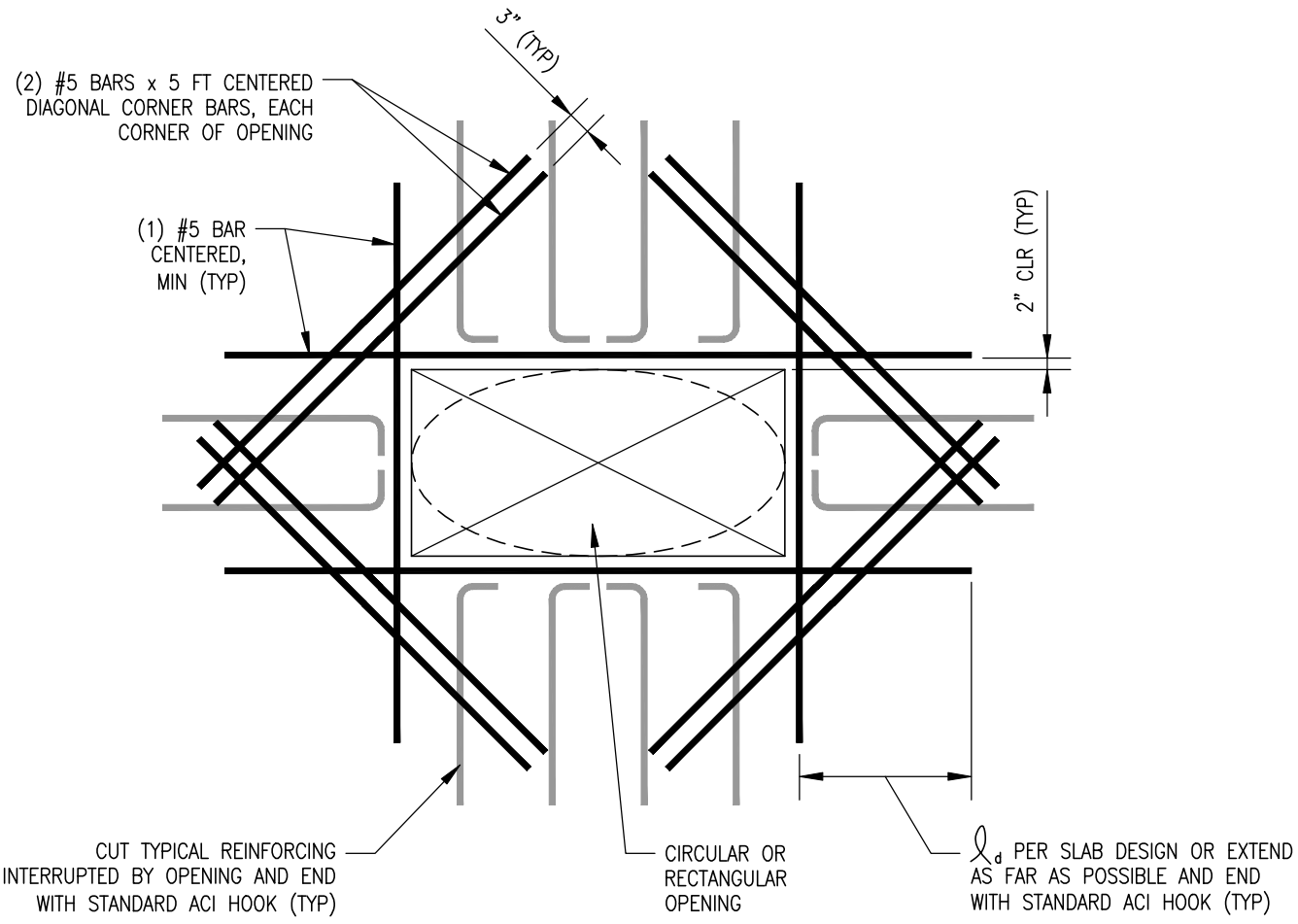
WALL PENETRATION

REVISION NO.	BY	DATE	APPROVED

F-WP-001

SHEET 1 OF 1



NOTES:

1. FOR ROUND OPENING USE CIRCUMSCRIBING RECTANGLE FOR REINFORCING APPLICATION.
2. PROVIDE EXTRA BARS (NOT SHOWN) PARALLEL TO SIDES OF OPENINGS EQUAL TO AREAS OF INTERRUPTED SLAB BARS. EXTEND FULL LENGTH OF SPAN AND/OR LENGTH OF INTERRUPTED BARS AS APPLICABLE.
3. PLACE ADDITIONAL REINFORCING IN SAME PLANE AS INTERRUPTED REINFORCING FOR EACH MAT OF REINFORCING.
4. TYPICAL AT OPENINGS UP TO 4'–0" MAXIMUM, UNLESS NOTED OTHERWISE.
5. ℓ_d = DEVELOPMENT LENGTH PER ACI STANDARDS.
6. WALL OR SLAB SUPPORT PIPE THROUGH OPENING TO BE DESIGNED PER ACI STANDARD TO SUPPORT MAXIMUM LOAD OF PIPE.

SCALE: NOT TO SCALE

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REINFORCING AT OPENINGS

REVISION			
NO.	BY	DATE	APPROVED

F-WP-002

SHEET 1 OF 1