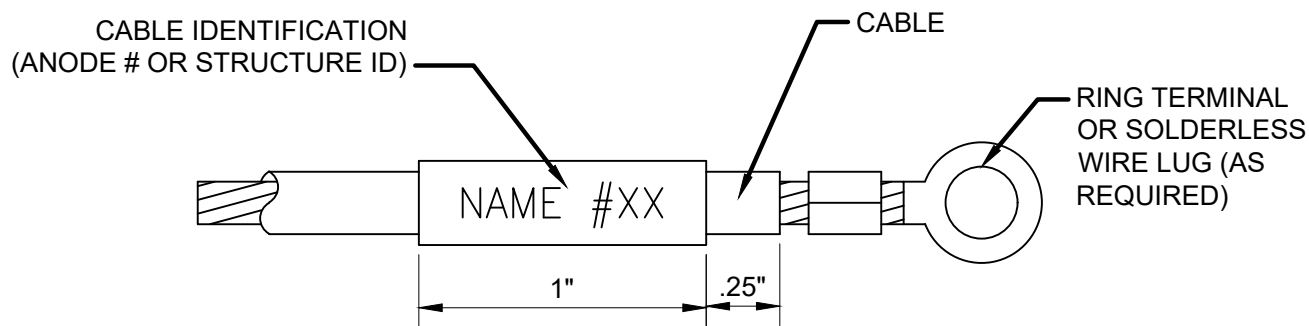
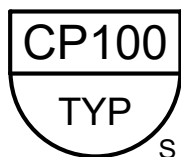




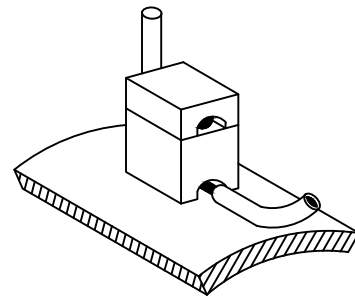
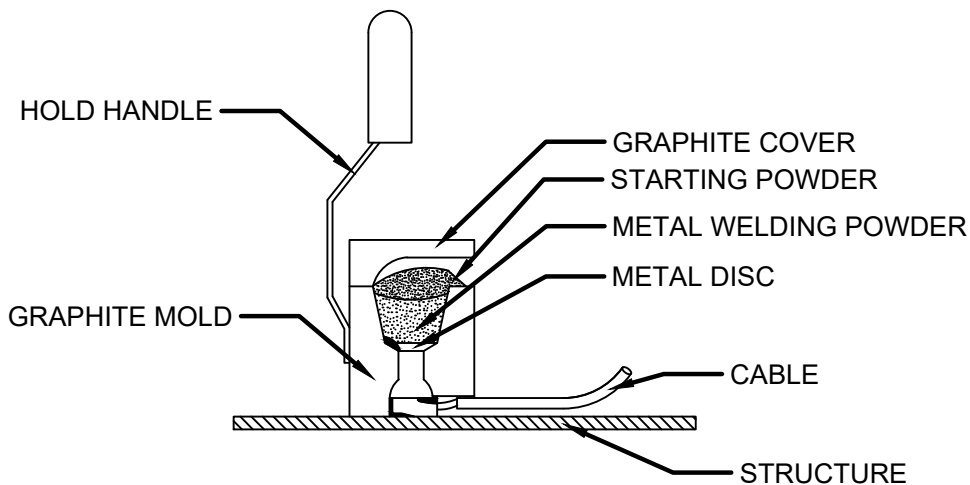
NOTES:

1. COVER CABLE ID WITH CLEAR HEAT SHRINK TUBING.
2. CABLE ID REQUIRED FOR ANODES, STRUCTURES, REFERENCES, AND ALL ADDITIONAL CABLES ENTERING TESTING UNITS.
3. ANODE NUMBERS ARE BASED ON THE LOCATION OF THE ANODE RELATIVE TO PIPE OR STRUCTURE STATIONING. IDENTIFY THE ANODE LOCATED AT THE LOWEST STATION AS "ANODE 1" AND INCREASE CONSECUTIVELY IN THE DIRECTION OF THE STATIONING.

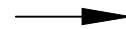


CORROSION MONITORING & CATHODIC PROTECTION

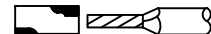
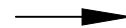
CABLE IDENTIFICATION



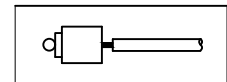
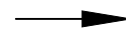
STEP 1. GRIND STRUCTURE CONNECTION AREA (3' X 3') TO BARE SHINY METAL AND CLEAN.



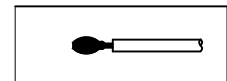
STEP 2. STRIP INSULATION FROM WIRE. ATTACH SLEEVE.



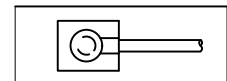
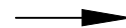
STEP 3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE WITH FLINT GUN.



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

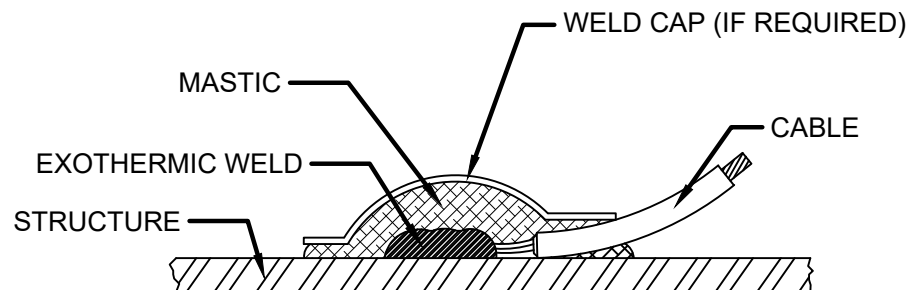


STEP 5A. FOR CONNECTION TO METALLICE STRUCTURES COVER CONNECTION WITH THERMITE WELD CAP. MAKE CERTAIN ALL COPPER IS COVERED. COAT WELD AREA WITH MASTIC COATING COMPOUND.



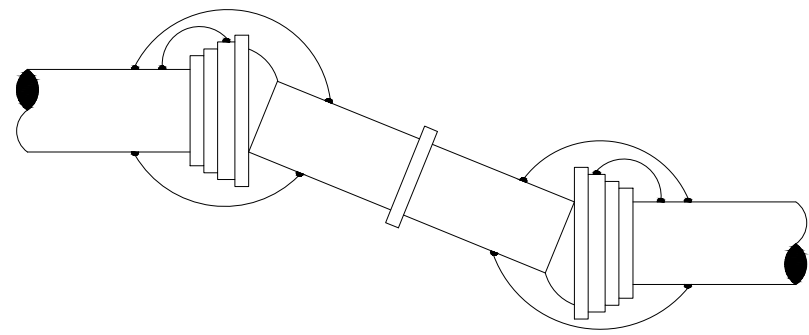
STEP 5B. FOR CONNECTIONS TO MORTAR COATED STEEL, COVER CONNECTION WITH MASTIC COATING COMPOUND BEFORE REPAIRING MORTAR COATING.

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

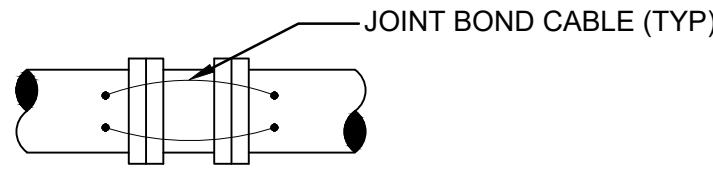


NOTES:

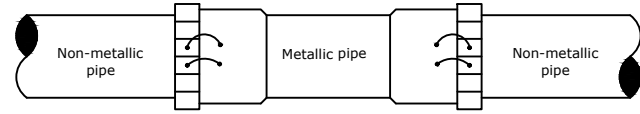
1. REFER TO CP101 FOR EXOTHERMICAL WELDING PROCEDURE.
2. CABLE SIZE MAY REQUIRE COPPER SLEEVE. SEE MANUFACTURER'S INSTRUCTIONS.



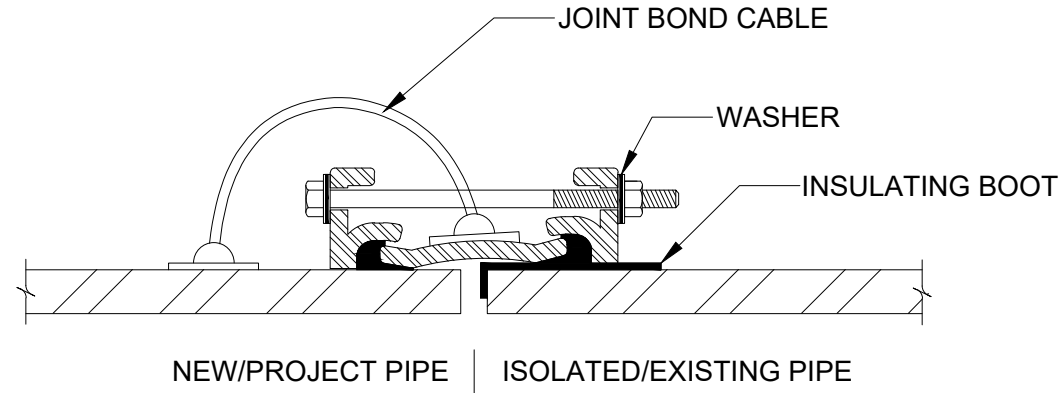
FLEXIBLE JOINT



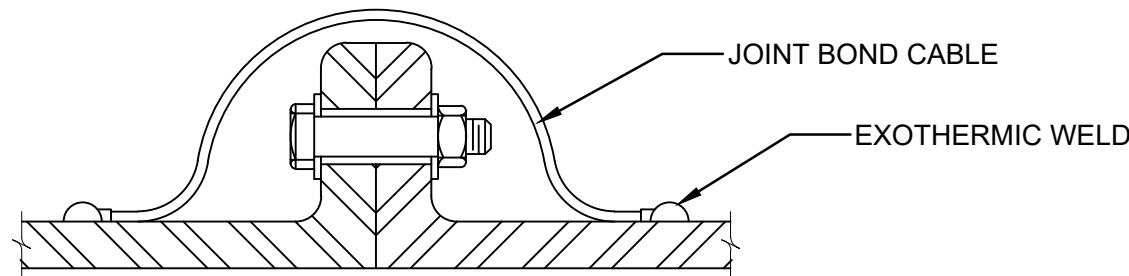
ISOLATED APPURTENANCE



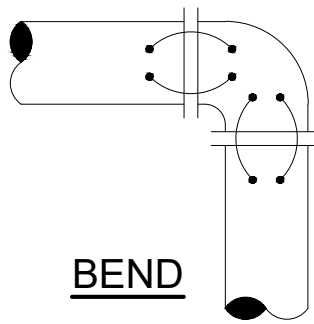
NON-METALLIC TO METALLIC



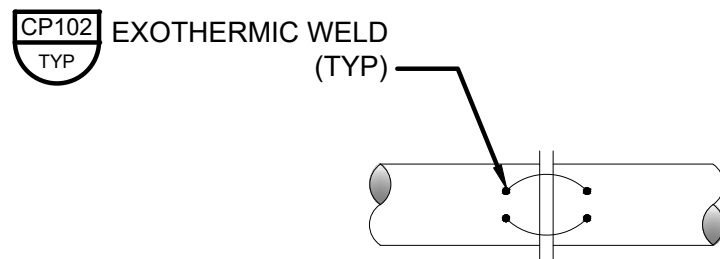
INSULATED COUPLING



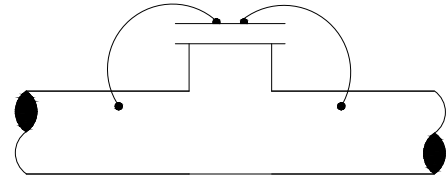
FLANGED-JOINT (NON-ISOLATING)



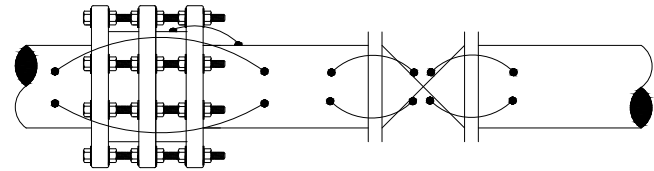
BEND



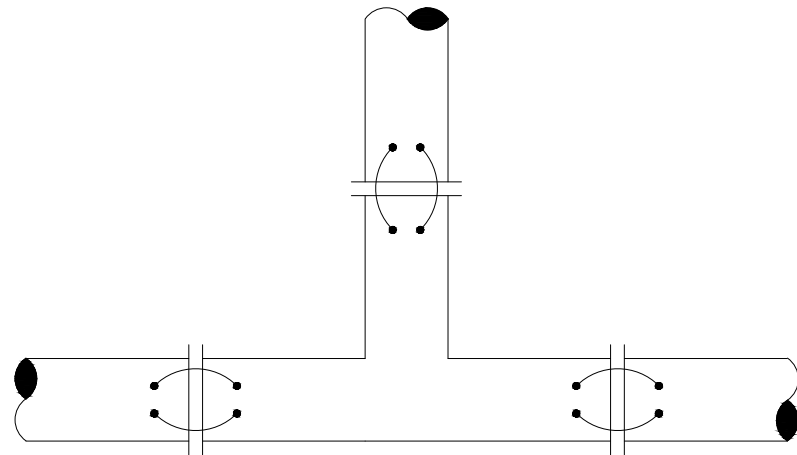
FLANGE-FLANGE



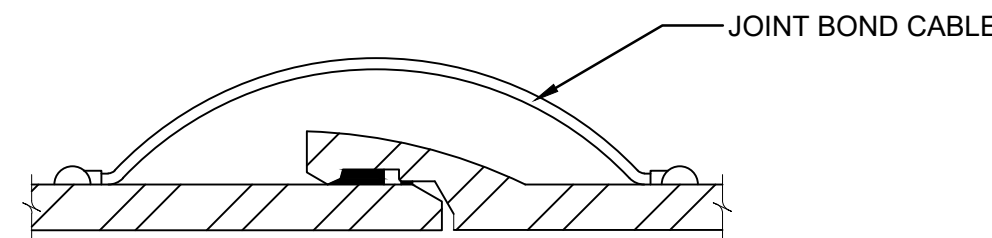
BLIND FLANGE



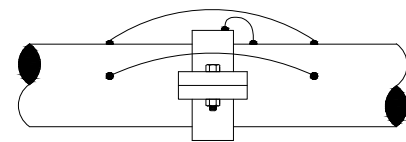
DISMANTLING JOINT WITH VALVE



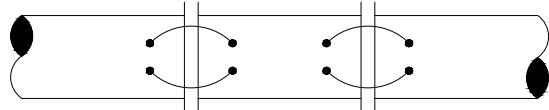
TEE



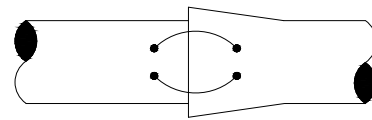
PUSH-ON JOINT



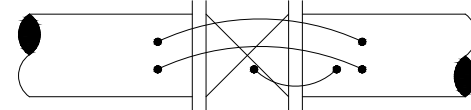
VICTAULIC COUPLING



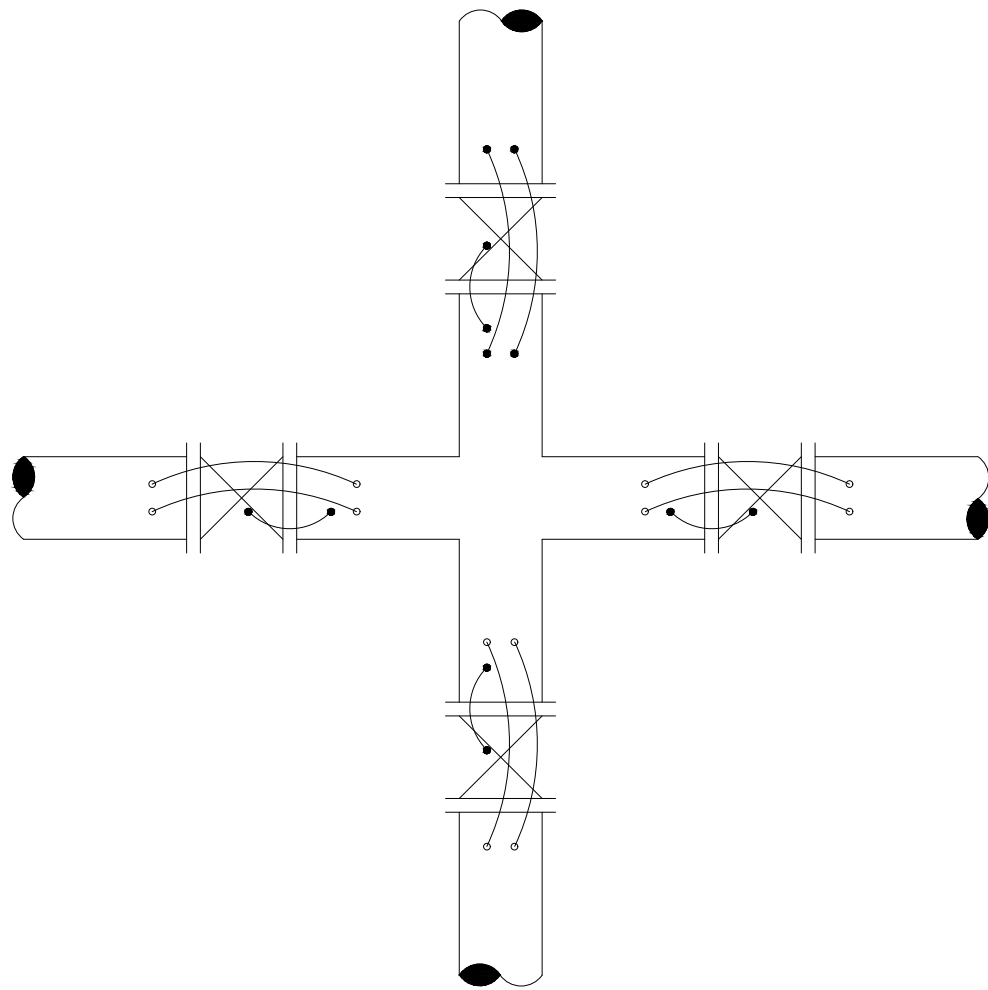
ADAPTER/SLEEVE



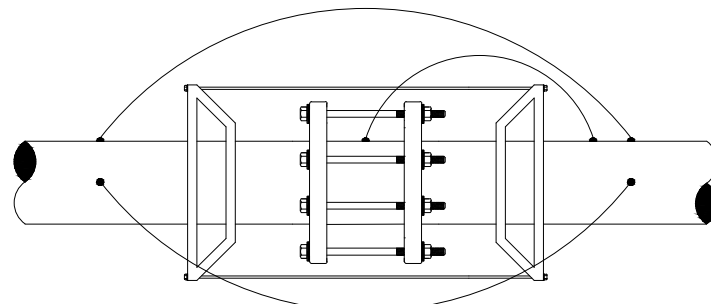
BELL & SPIGOT



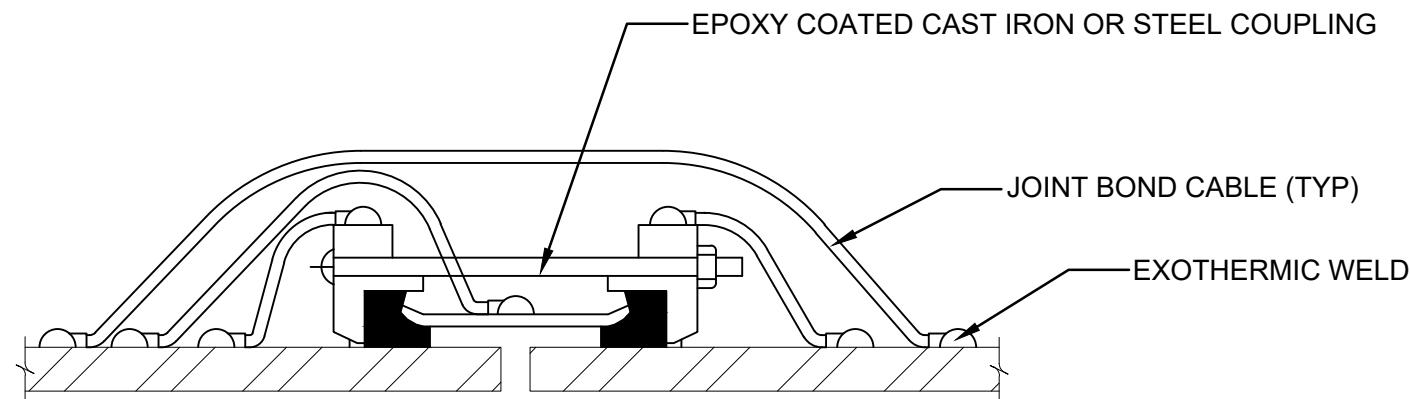
VALVE



VALVE CROSSING



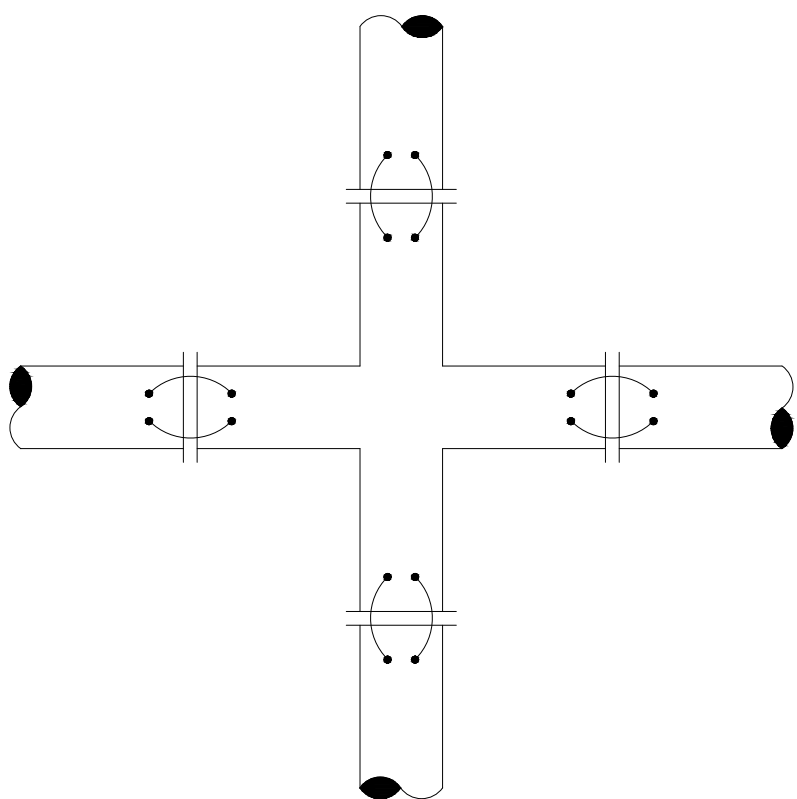
FLEX COUPLING WITH RESTRAINER



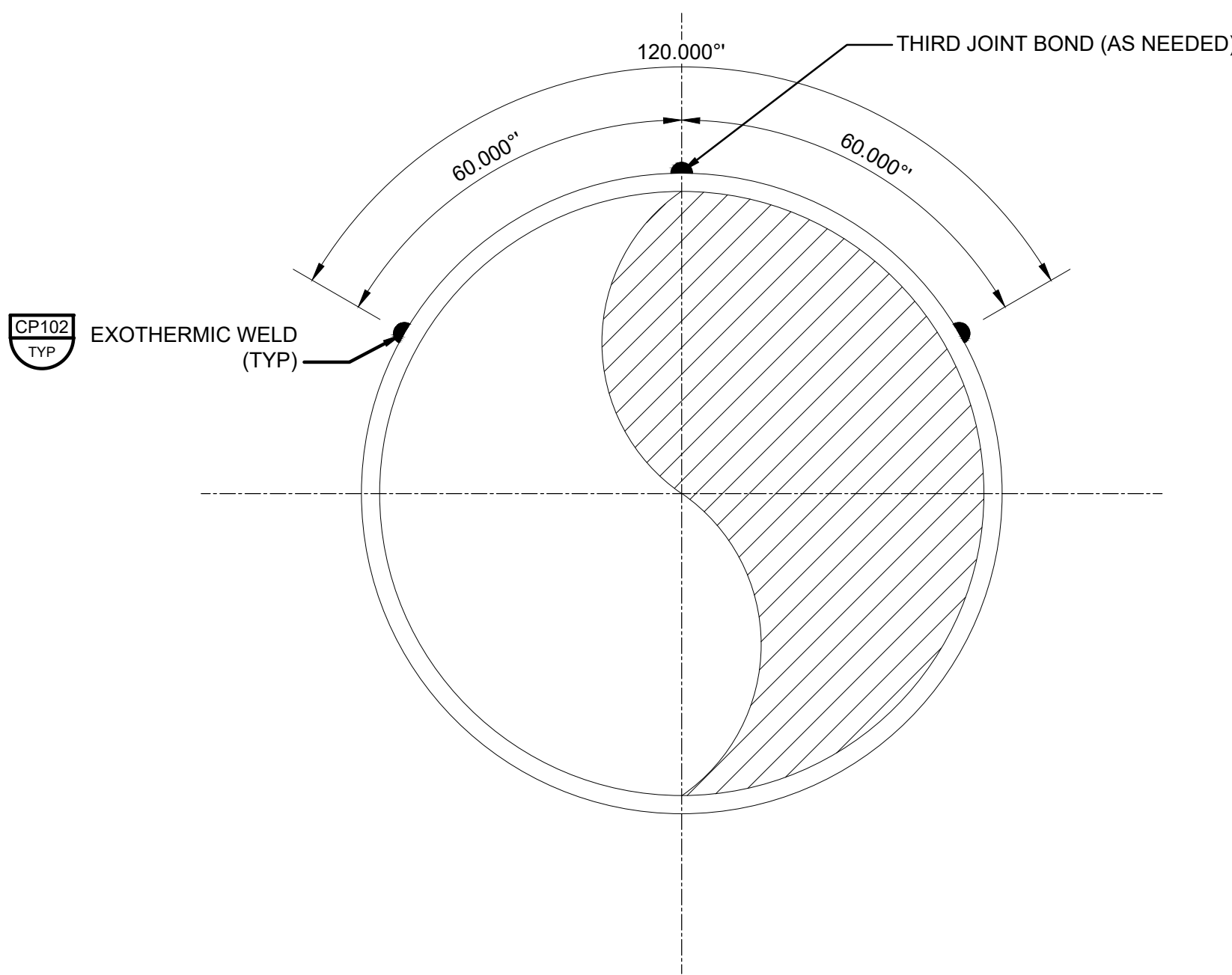
FLEXIBLE COUPLING/ MECHANICAL SLEEVE
(MULTIPLE COMPONENT)

NOTES:

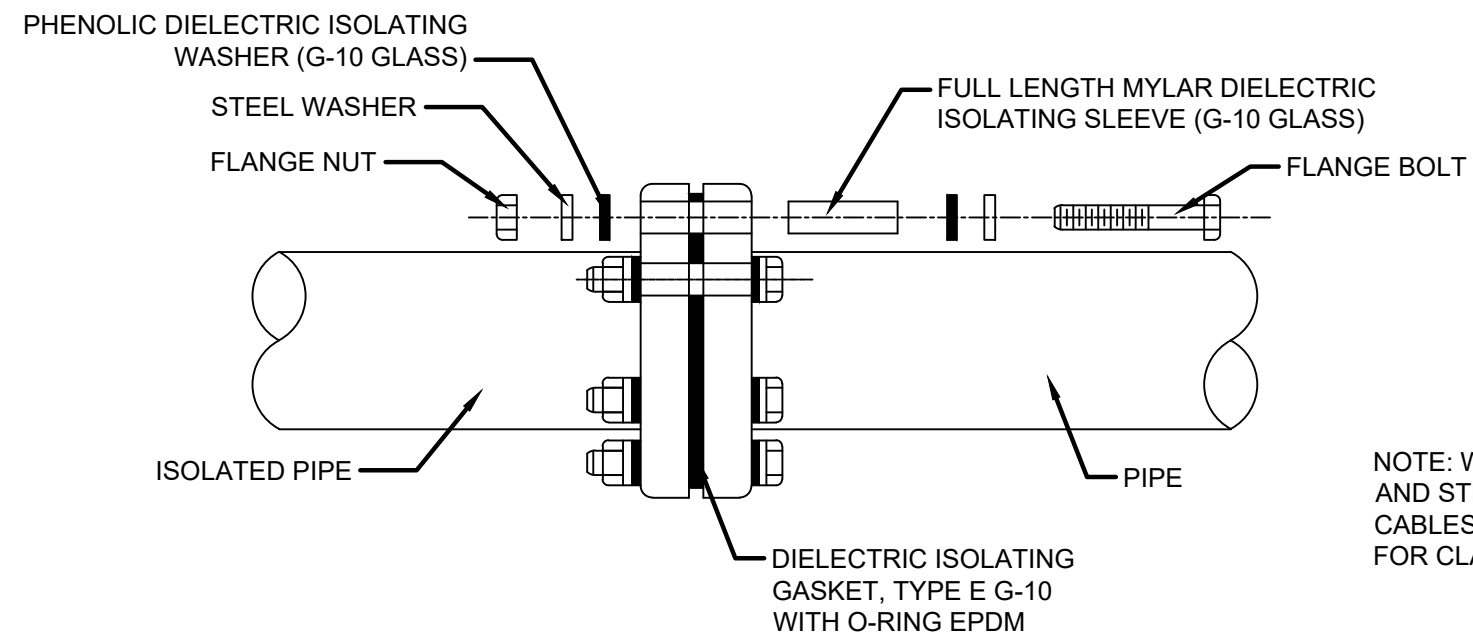
1. TYPICAL FOR NON-WELDED PIPING OR WELDED PIPING WITH MECHANICAL COUPLINGS.
2. CLEAN PIPE PRIOR TO WELDING.
3. INSULATED STRANDED COPPER BOND CABLES SHALL BE SIZED ACCORDING TO THE SPECIFICATION.
4. DO NOT BOND ACROSS ANY INSULATING FLANGES, COUPLING, OR UNIONS.
5. ALL CABLE CONNECTIONS SHALL BE MADE BY EXOTHERMIC WELDING OR PIN BRAZING, EXCEPT CABLE CONNECTIONS ON CAST IRON PIPE IN SOIL.
6. EXOTHERMIC WELDING OF BOND CABLE TO PIPE SHALL BE DONE ACCORDING TO CP101, CP102, AND MANUFACTURER INSTALLATION INSTRUCTIONS.
7. TWO OF BOND CABLES PER JOINT.
8. BOND CABLES SHALL BE INSTALLED WITH ALLOWANCE FOR FULL ALLOWABLE JOINT MOVEMENT. BOND CABLES ACROSS FLEXIBLE PORTIONS OF FLEXIBLE JOINTS SHALL BE PROVIDED WITH AN ADDITIONAL 24" OF EXCESS CABLE.
9. BOND WIRES SHALL BE SPACED A MINIMUM OF 6" APART.
10. WAX TAPE FOR BURIED BOLTED FITTINGS PER AWWA C217.



CROSS



PIPE SECTION VIEW

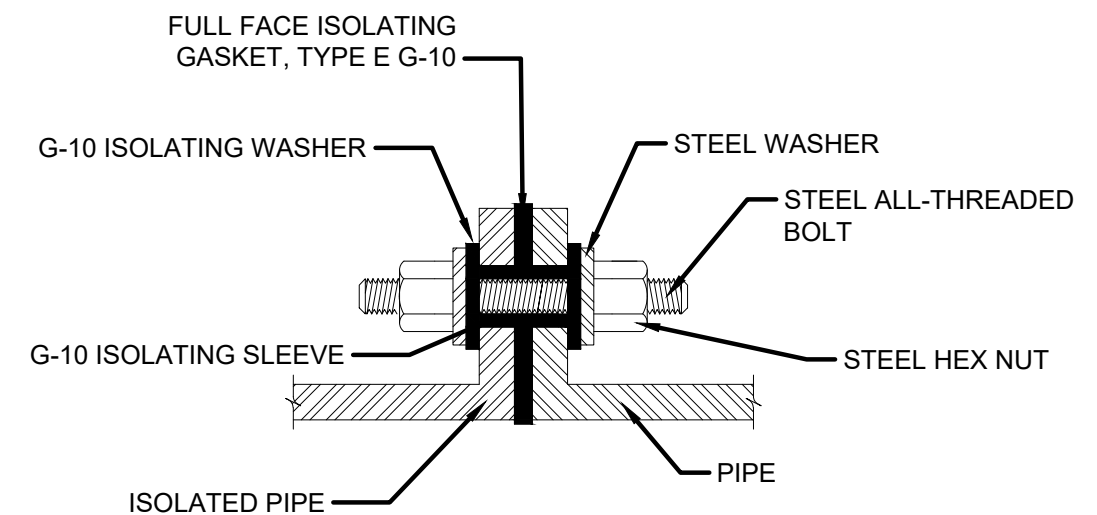


TOP VIEW ISOLATION JOINT FLANGE KIT

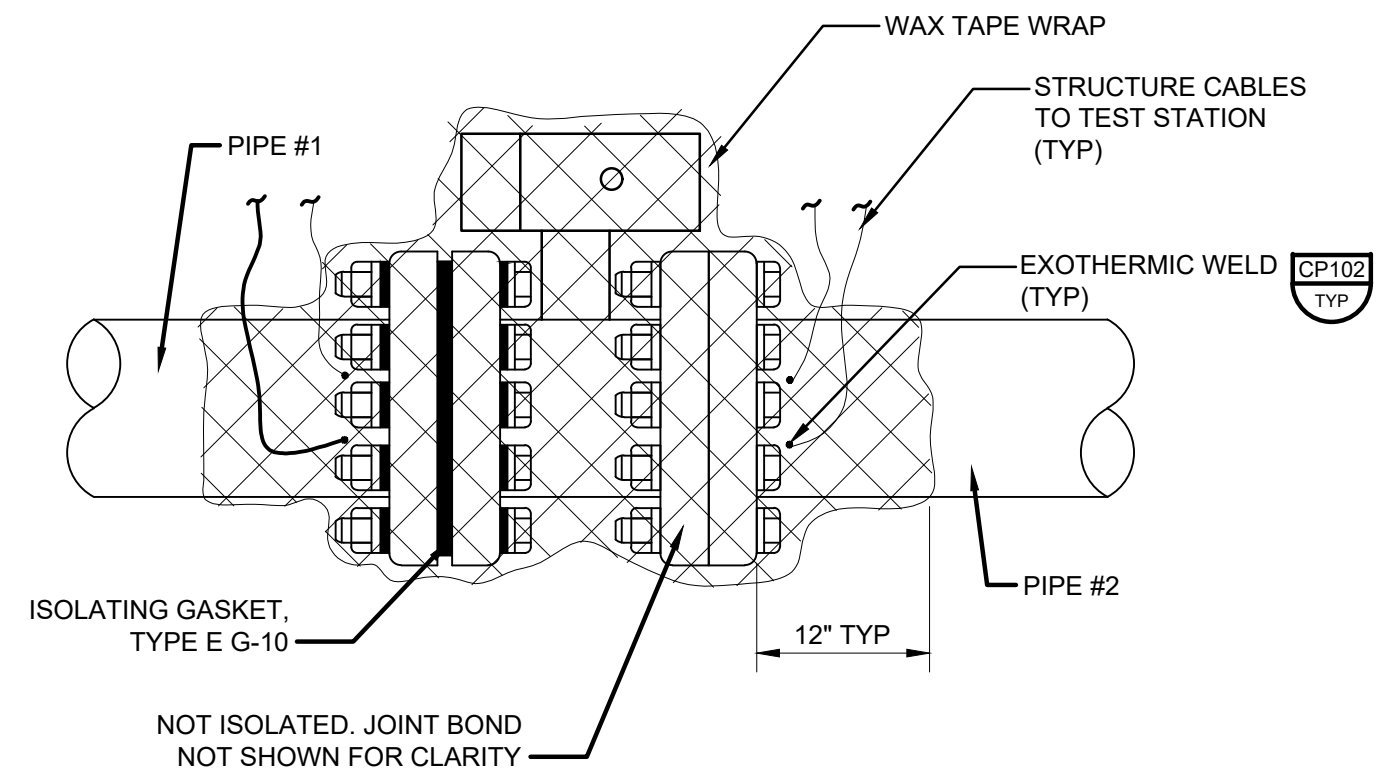
NOTES:

1. TYPICAL FOR NON-WELDED PIPING OR WELDED PIPING WITH MECHANICAL COUPLINGS.
2. FULL LENGTH ISOLATING SLEEVES REQUIRED FOR ALL THRU-FLANGE BOLTS OR STUDS.
3. ISOLATION IS TO BE TESTED PRIOR TO BURIAL AND TESTED AFTER BURIAL TO INSURE ISOLATION.
4. BURIED ISOLATION FLANGES ARE TO BE WRAPPED WITH WAX TAPE. DAMAGE COATINGS REPAIRED PER SPECIFICATION.
5. ALL ISOLATION FLANGES REQUIRE AN IJFK TEST STATION PER SPECIFICATION.
6. FOR NOMINAL PIPE DIAMETERS UP TO 36", PROVIDE ONE ISOLATING AND ONE STEEL WASHER ON EITHER SIDE OF FLANGE BOLT. FOR PIPE DIAMETERS GREATER THAN 36", ISOLATING WASHERS SHALL BE INSTALLED SANDWICHED BETWEEN A PAIR OF MATCHING STEEL WASHERS AT BOTH SIDES OF FLANGE BOLT.

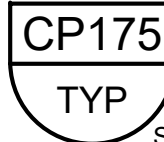
NOTE: WAX TAPE WRAP AND STRUCTURE CABLES NOT SHOWN FOR CLARITY.



SIDE VIEW ISOLATION JOINT FLANGE KIT

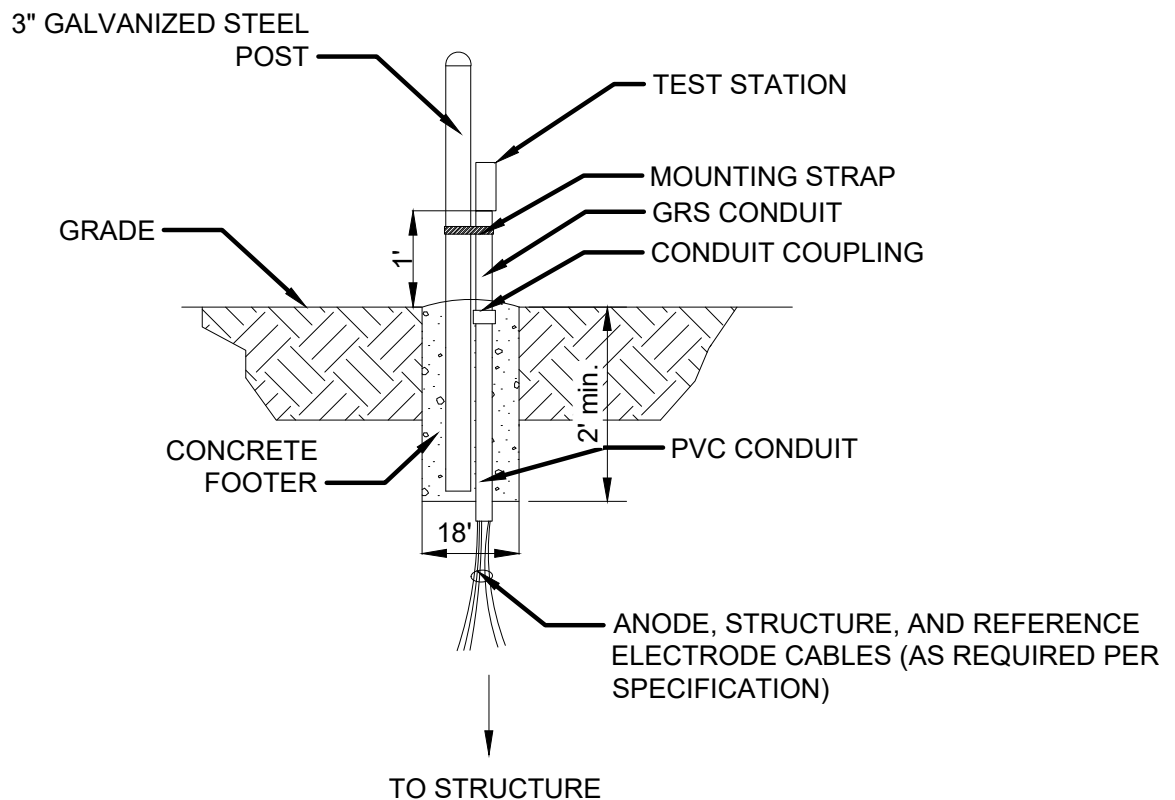


WAX TAPE WRAP EXAMPLE



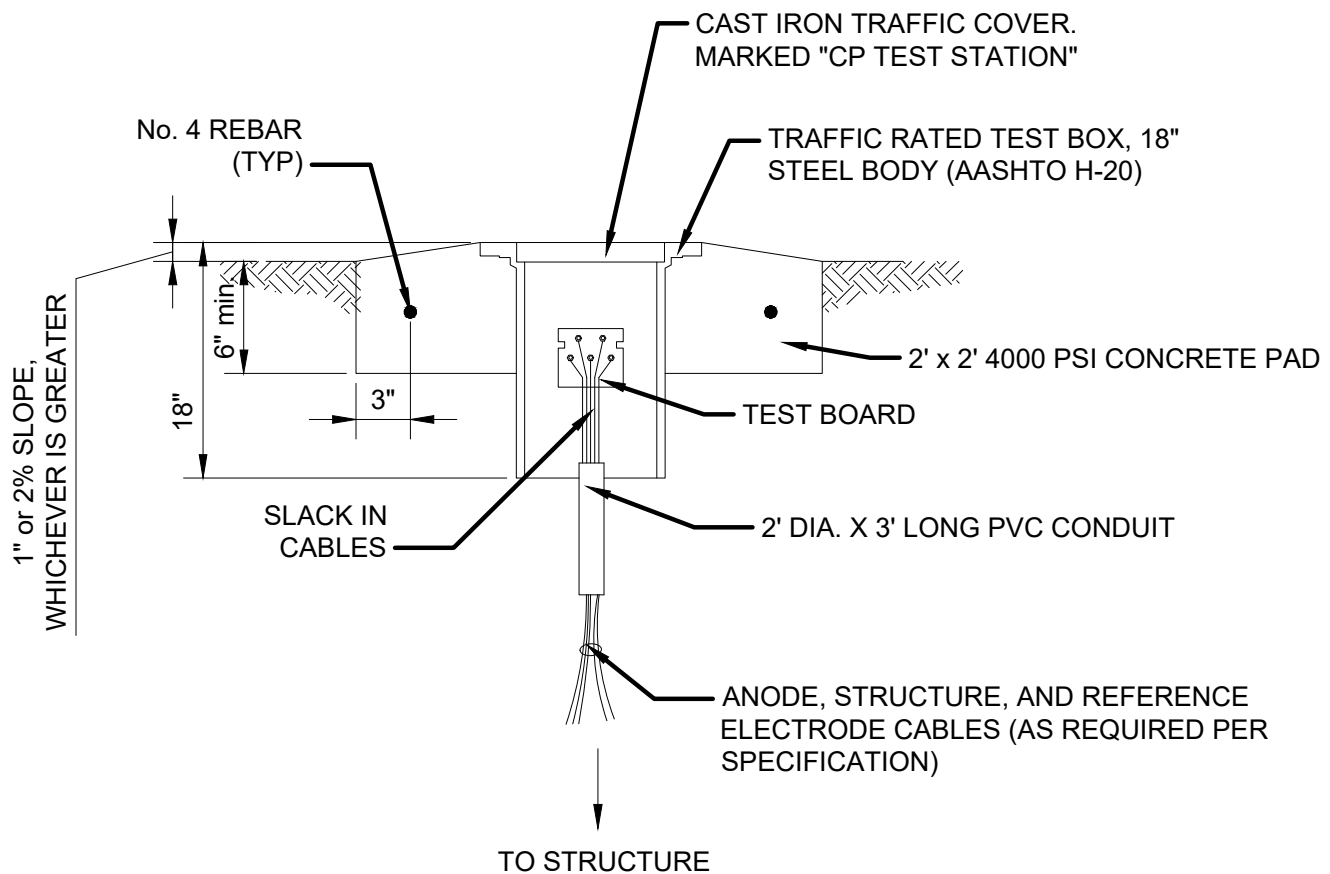
ISOLATION JOINT FLANGE KIT DETAILS





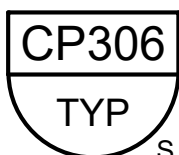
NOTES:

1. EXTEND DEPTH OF CONCRETE FOOTER TO MIN REQUIRED FOR CLIMATES WITH HIGHER FREEZE/THAW DEPTH REQUIREMENTS.
2. IF ABOVE GROUND TEST STATION IS NOT ALLOWED AND A TRAFFIC RATED TEST STATION IS REQUIRED, REFER TO CP306.

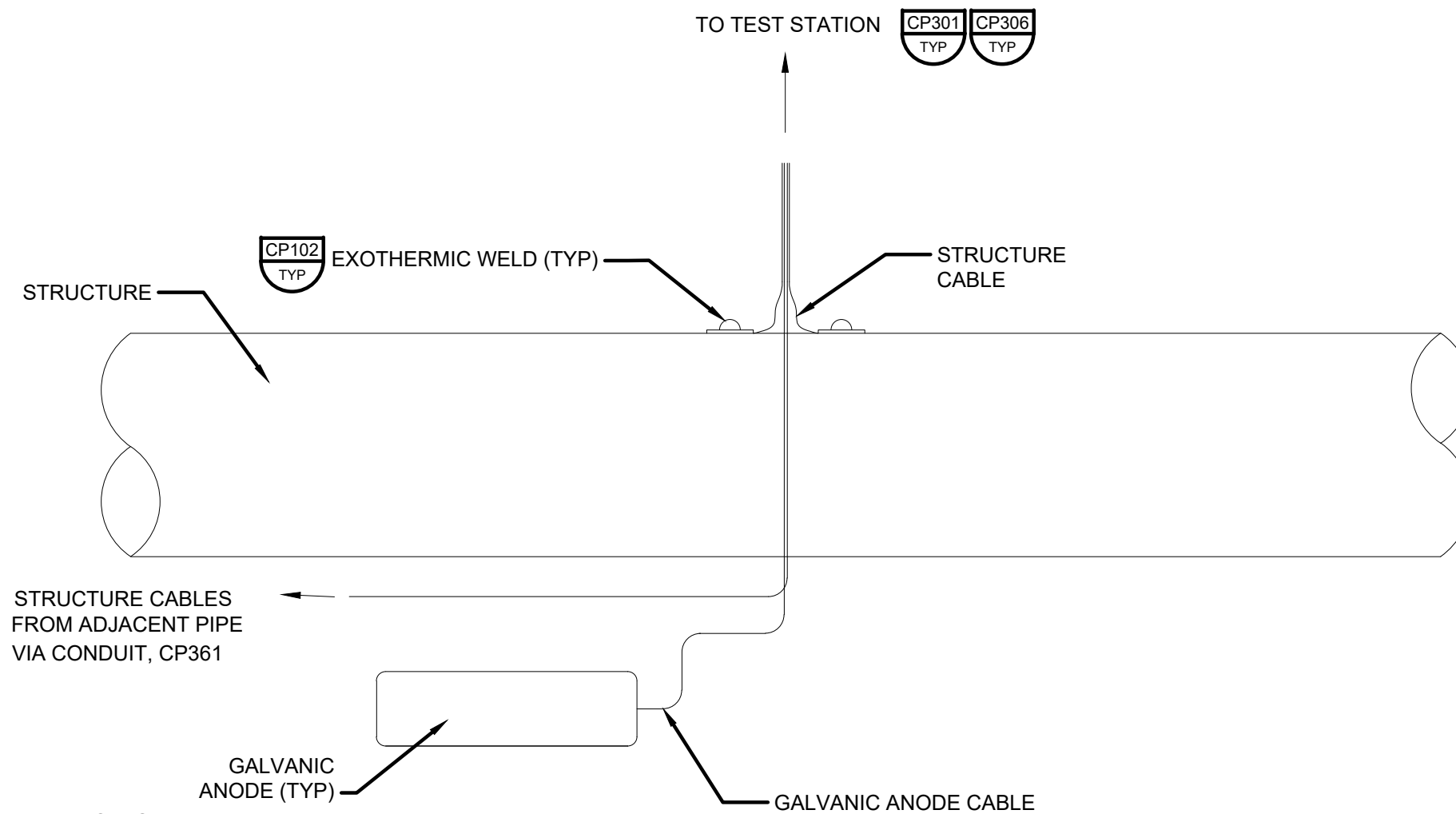


NOTES:

1. PROVIDE 18" SLACK IN CABLES TO ALLOW TEST BOARD TO BE LIFTED 2' OUT OF THE FLUSH SERVICE BOX.
2. BOTTOM OF TEST BOX SHALL BE NATIVE SOIL. DO NOT PLACE ROCK, SAND, OR GRAVEL IN TEST BOX.
3. TEST BOX TO BE FIELD LOCATED +/- 5' FROM STATIONING GIVEN ON DRAWINGS. DO NOT INSTALL TEST STATION IN TRAFFIC LANES OR PARKING STALLS.
4. WRAP ENTIRE TEST BOX BODY WITH POLYETHYLENE TAPE PRIOR TO CASTING CONCRETE PAD.
5. PROVIDE ENOUGH SLOPE AWAY FROM TEST STATION TO PROVIDE DRAINAGE AWAY FROM TEST BOX.
6. EXTEND DEPTH OF CONCRETE PAD TO MIN REQUIRED FOR CLIMATES WITH HIGHER FREEZE/THAW DEPTH REQUIREMENTS.
7. CONCRETE PAD SHALL BE RATED TO 4500 PSI IN CLIMATES WITH FREEZE/THAW CONDITIONS (I.E. MOUNTAIN REGIONS, COLD NORTHERN CLIMATES).

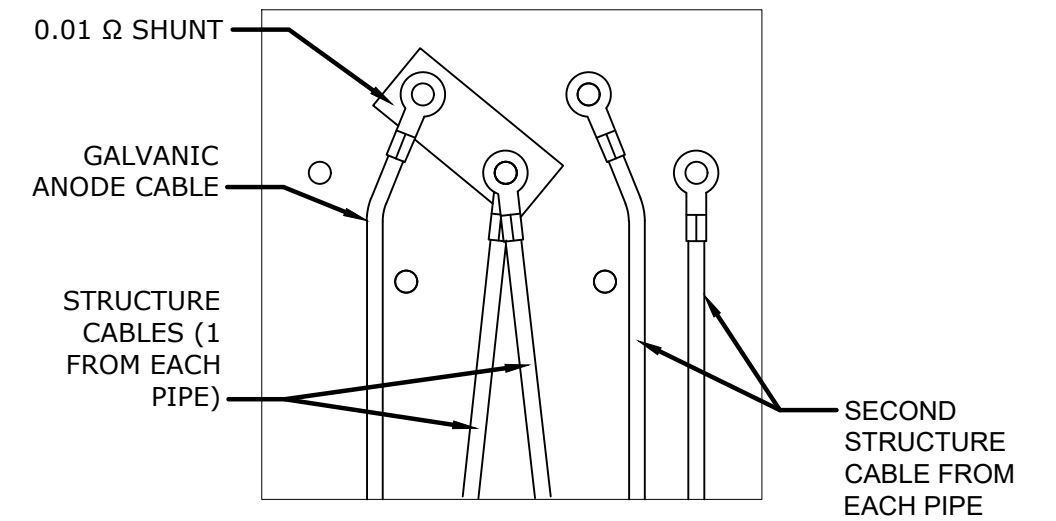


AT GRADE TRAFFIC RATED TEST STATION

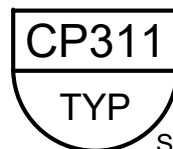


NOTES:

1. PROVIDE 18" SLACK IN CABLES TO ALLOW FOR STRUCTURE SETTLEMENT AND MOVEMENT.
2. ROUTE ALL WIRES THROUGH RIGID PVC UNDERGROUND AND GRP ABOVE GROUND TO TEST STATION. REFER TO CP361.
3. ANODE ALIGNMENT TO PIPE PER CP363.
4. REFER TO THE SPECIFICATIONS FOR CABLE SIZES AND COLOR. REFER TO CP100 FOR CABLE LABEL INSTRUCTIONS.
5. FOR TEST STATIONS RECEIVING STRUCTURE CABLES FROM MULTIPLE PIPES, ROUTE 2 STRUCTURE CONTINUITY CABLES VIA CONDUIT, CP361.
6. TERMINAL BOARD LAYOUT SHOWS AN EXAMPLE FOR STRUCTURE CABLES COMING FROM TWO PIPES INTO THE TEST STATION. TWO TOTAL STRUCTURE CABLES PER PIPE. CAN ALSO BE CALLED CONTINUITY CABLE.

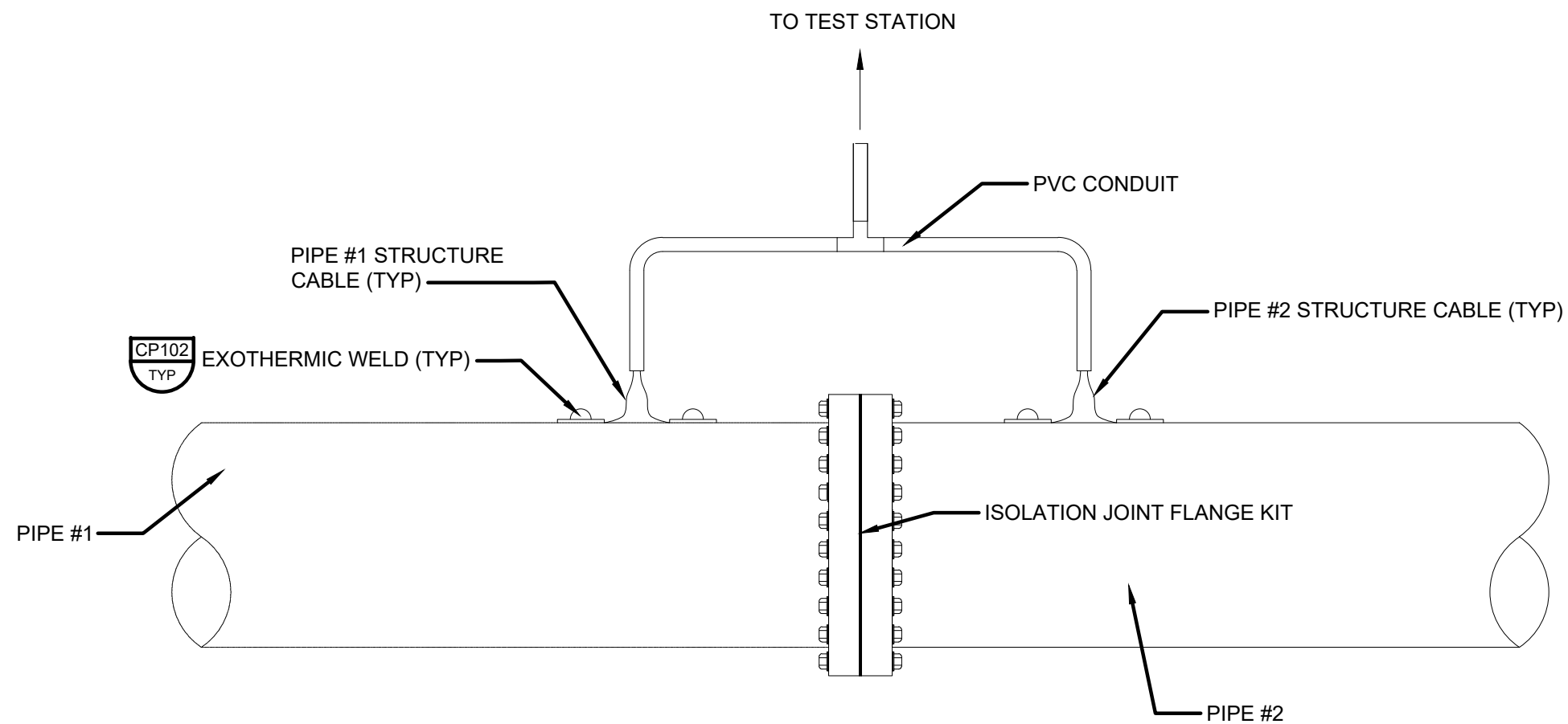


CATHODIC PROTECTION TEST STATION TERMINAL BOARD LAYOUT



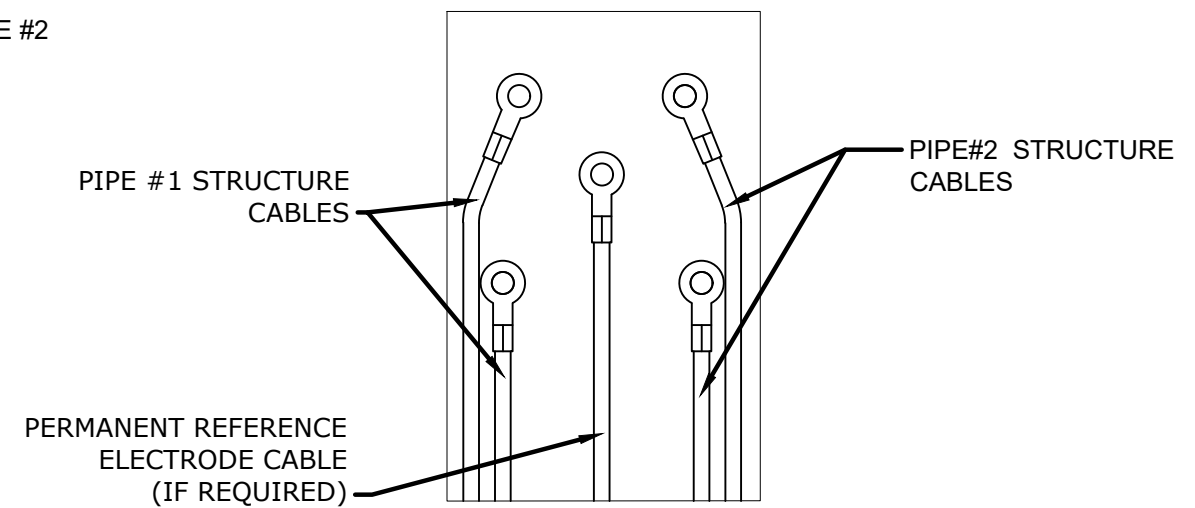
CATHODIC PROTECTION TEST STATION

S

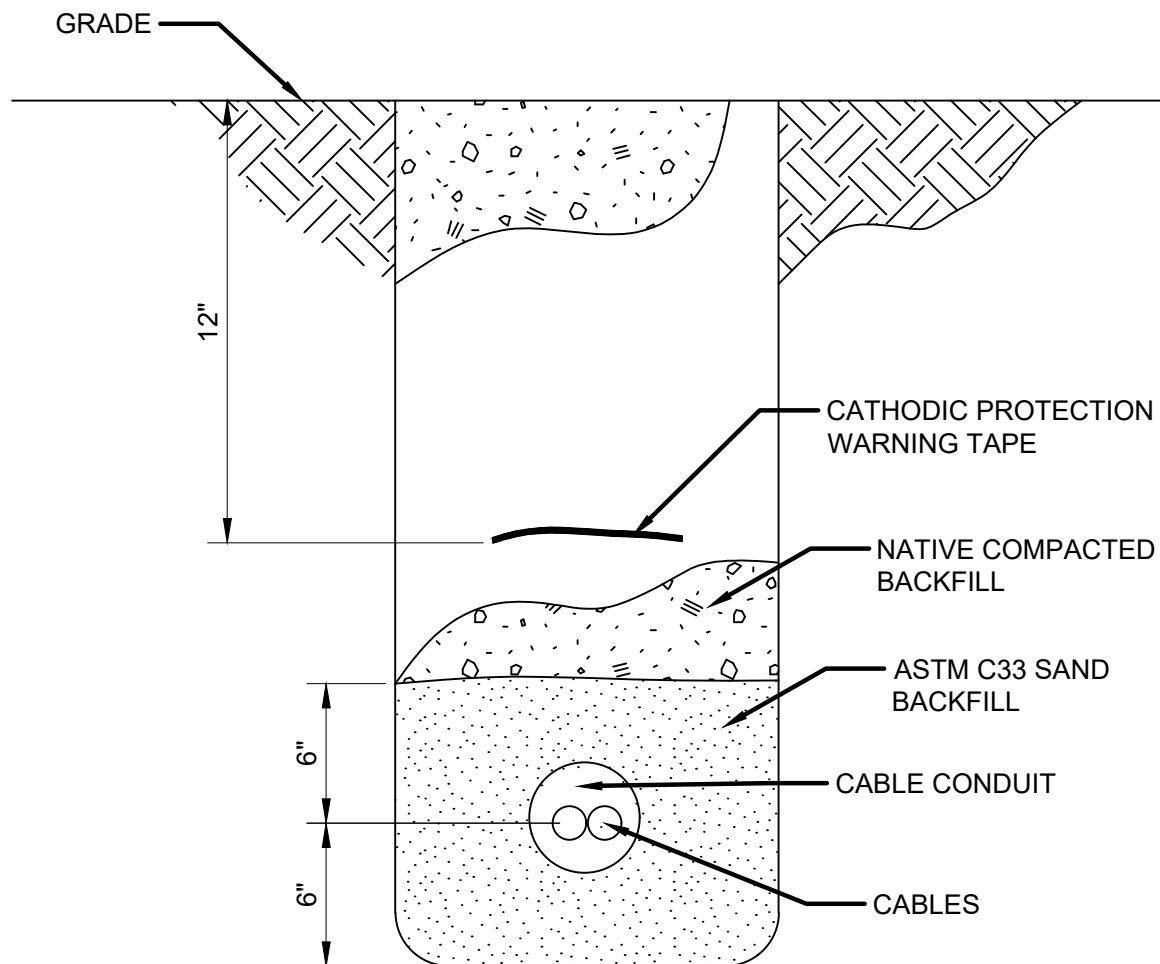


NOTES:

1. PROVIDE 18" SLACK IN CABLES TO ALLOW FOR STRUCTURE SETTLEMENT AND MOVEMENT.
2. ROUTE ALL WIRES THROUGH RIGID PVC UNDERGROUND AND GRP ABOVE GROUND TO TEST STATION.
3. TYPE, NUMBER, AND PLACEMENT OF ANODES PER SPECIFICATION REQUIREMENTS.
4. REFERENCE ELECTRODE AND COUPON (IF REQUIRED) NOT SHOWN, FOR CLARITY.
5. REFER TO THE SPECIFICATIONS FOR CABLE SIZES AND COLOR.
6. REFER TO CP100 FOR CABLE LABEL INSTRUCTIONS.

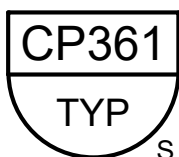


IJFK TEST STATION TERMINAL BOARD LAYOUT



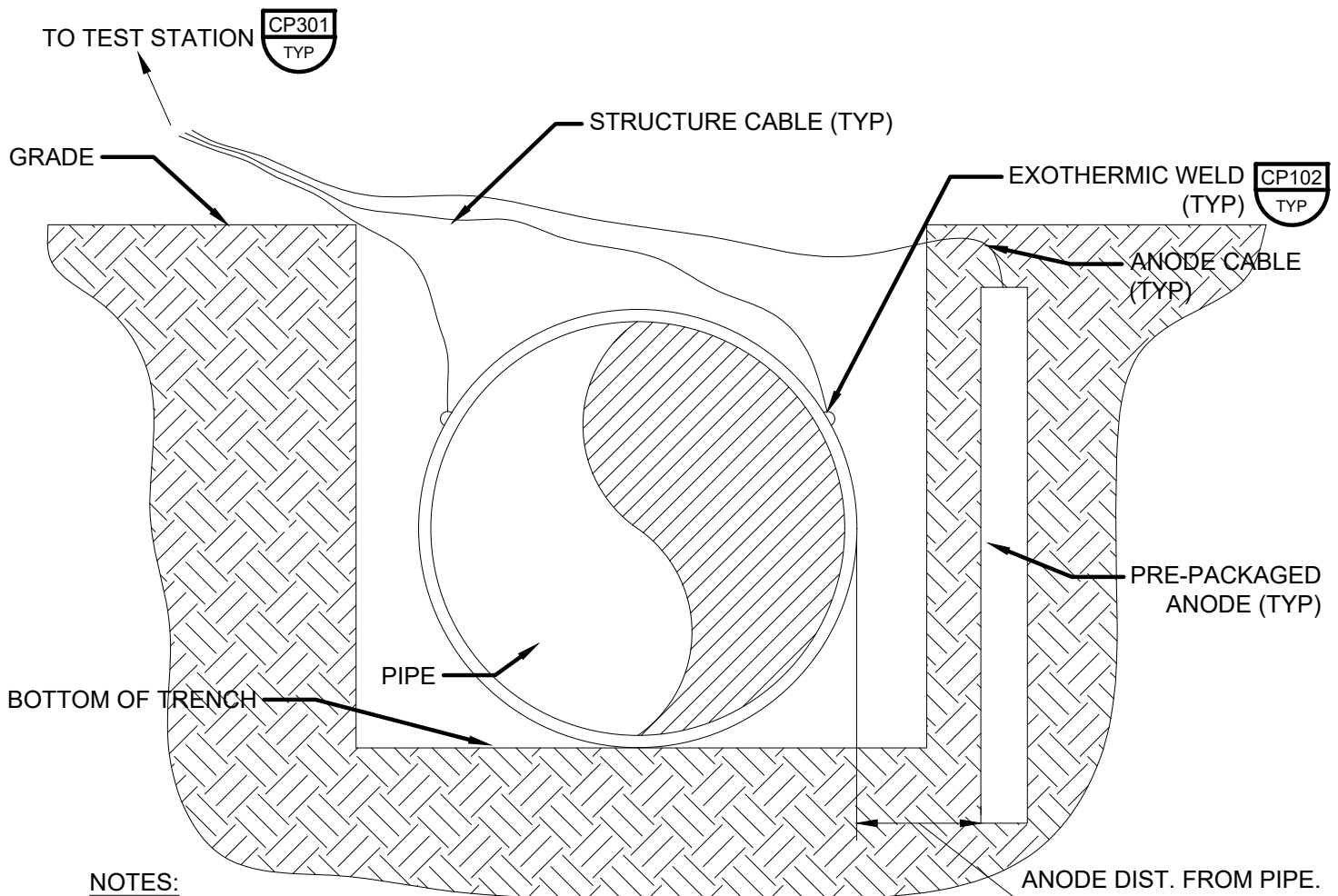
NOTES:

1. CABLE CONDUIT TRENCH DETAIL USED FOR STRUCTURE AND ANODE CABLES IN IMPRESSED CURRENT CATHODIC PROTECTION SYSTEMS.
2. MINIMUM BURIAL DEPTH IS 36 INCHES (42 INCHES IN AGRICULTURAL FIELDS).
3. BACKFILL TRENCH WITH NATIVE ROCK-FREE MATERIAL.
4. DO NOT COMPACT BACKFILL WITH WATER.
5. CARE SHALL BE TAKEN DURING BACKFILL TO PROTECT CABLE AND INSULATION. INSULATION SHALL NOT BE CUT, NICKED, OR BROKEN. IF CABLE INSULATION IS DAMAGED, REPLACEMENT IS REQUIRED.



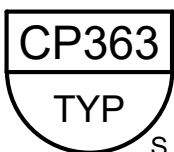
CATHODIC PROTECTION INSTALLATION

CABLE CONDUIT TRENCH DETAILS

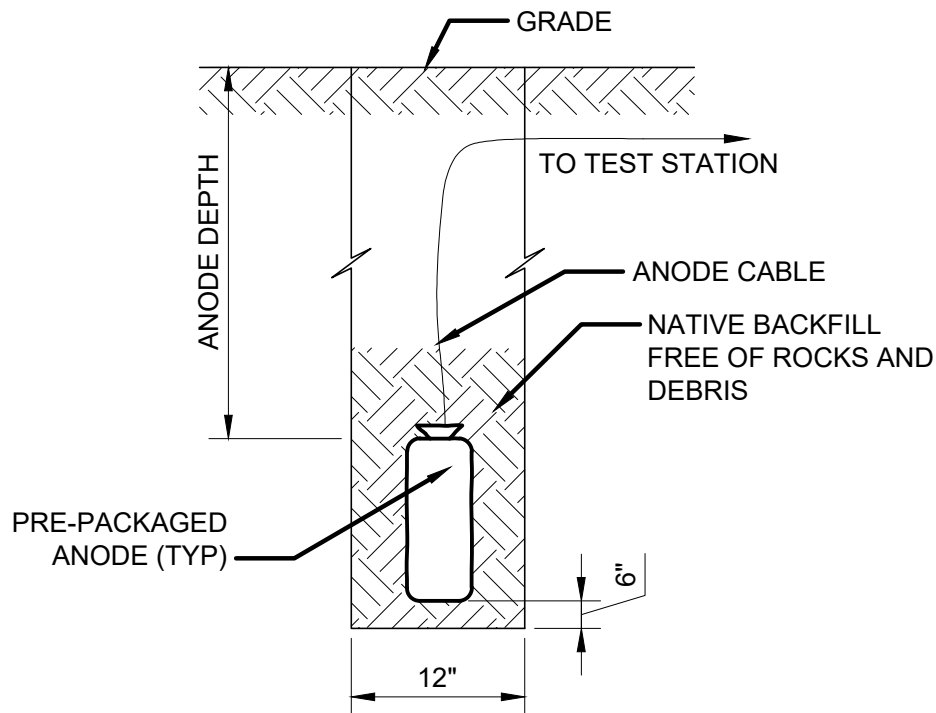


NOTES:

1. 18" SLACK IN ANODE AND STRUCTURE CABLES TO ALLOW FOR STRUCTURE SETTLEMENT AND MOVEMENT.
2. REFER TO THE SPECIFICATIONS FOR CABLE SIZES AND COLOR.
3. CARE SHALL BE TAKEN DURING BACKFILL TO PROTECT CABLE AND INSULATION. INSULATION SHALL NOT BE CUT, NICKED, OR BROKEN. IF CABLE INSULATION IS DAMAGED, REPLACEMENT IS REQUIRED.
4. ANODE TO BE INSTALLED IN NATIVE SOIL ALONG WITH CLOTH BAG OF ANODE BACKFILL. BACKFILL TO 6" AROUND ANODE WITH THE NATIVE SOIL.
5. ANODE IN VERTICAL LAYOUT PER CP371.



CONFIGURATION OF ANODES AND PIPE IN TRENCH



NOTES:

1. TYPE OF ANODE AS SPECIFIED.
2. 18" SLACK IN ANODE CABLES.
3. CABLE SIZE AND INSULATION AS SPECIFIED.
4. TOP OF ANODE 3' BELOW GRADE.
5. CARE SHALL BE TAKEN DURING BACKFILL TO PROTECT ANODE CABLE AND INSULATION. INSULATION SHALL NOT BE CUT, NICKED, OR BROKEN. IF CABLE INSULATION IS DAMAGED, REPLACEMENT IS REQUIRED.