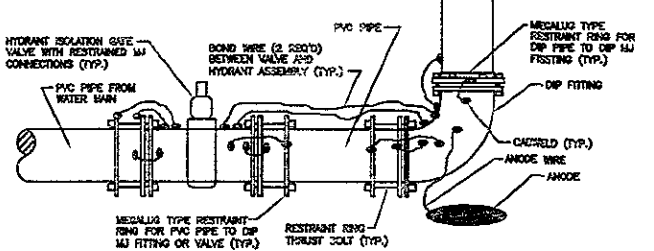
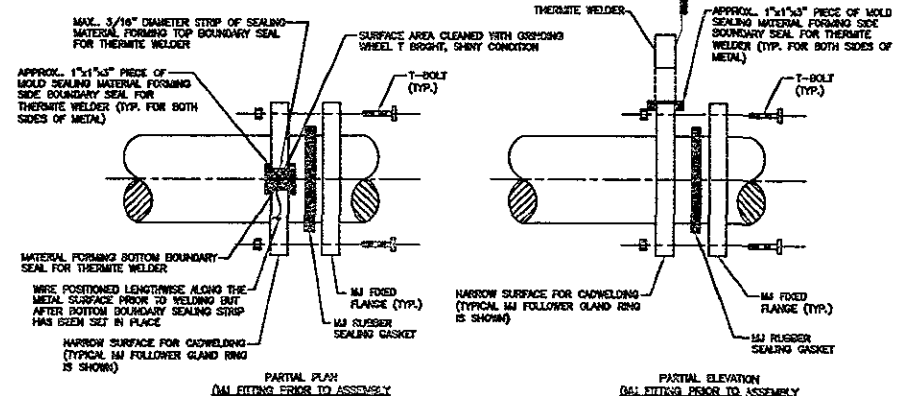


- NOTES:**
1. A MINIMUM OF SIX INCHES OF SLACK SHALL BE PROVIDED AT EACH END OF THE ANODE WIRE.
 2. ONE 30 LB. (BARE WT.) PACKAGED ZINC ANODE SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY A MINIMUM OF THREE (3) FEET OFFSET FROM THE PIPE AT A DEPTH EQUAL TO PIPE SPRINGLINE OR GREATER.
 3. ANODE SHALL BE PLACED IN NATIVE SOILS NOT IN ANY IMPORTED BACKFILL MATERIAL SUCH AS SQUEEZE, SAND OR GRAVEL.
 4. ANODE WIRE - #12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 5. BOND WIRES SHALL BE INSTALLED AS SHOWN TO THE TOP CENTERLINE OF THE FITTINGS AND THEIR CATHODE CONNECTIONS COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 6. THE BOND WIRES BETWEEN THE HYDRANT RISER AND THE 90 DEGREE FITTING SHALL BE INSTALLED PRIOR TO PLACEMENT OF THE HYDRANT ASSEMBLY IN THE EXCAVATION. THIS WILL ENABLE ATTACHMENT OF THE BOND WIRES TO THE RISER AND 90 DEGREE FITTING WHEN THEY ARE IN A VERTICAL POSITION WHILE LYING ON THE GROUND.
 7. THE ANODE AND ITS WIRE MUST NOT BE COVERED WITH ANY CONCRETE (NOT SHOWN) THAT HAS BEEN PLACED BENEATH THE 90 DEGREE ELL FOR HYDRANT SUPPORT.
 8. VALVE BOX BONNET AND RISER SHALL BE ENCASED IN A DOUBLE STRIP OF 8 MIL THICK POLYETHYLENE. VALVE BOX BONNET AND RISER MUST NOT PHYSICALLY CONTACT THE VALVE BODY OR OPERATOR. ONLY THE NON-METALLIC VALVE BOX ADAPTER MAY TOUCH ANY PORTION OF THE VALVE ITSELF.

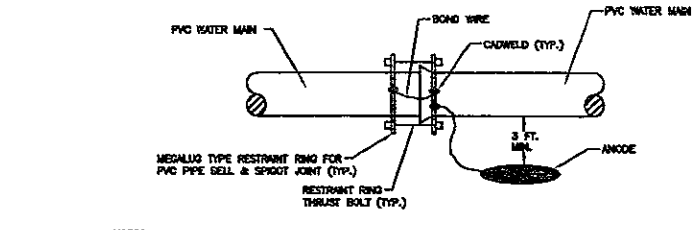


FIRE HYDRANT WITH ANODE
N.T.S.



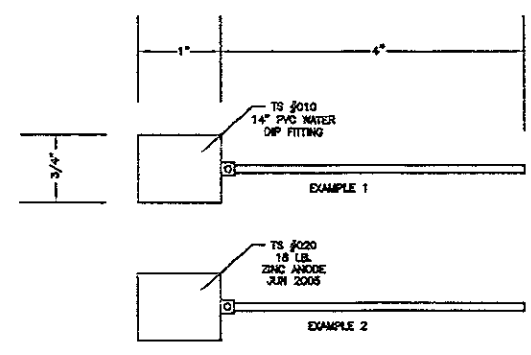
- NOTES:**
1. THE NARROW METAL SURFACE REQUIRES THE USE OF SEALING MATERIAL TO PREVENT MOLTEN WELD METAL FROM LEAKING DOWN THE SIDE OF THE METAL RING AND DAMAGING THE RUBBER GASKET OF AN MJ FITTING OR THE PIPE ITSELF IF PVC IS BEING INSTALLED. REFER TO THE PROJECT TECHNICAL SPECIFICATIONS FOR A DETAILED DESCRIPTION OF THE USE OF MOLD SEALING MATERIAL FOR COMPLETING EXOTHERMIC (THERMITE) WELDS.
 2. THE TOP AND BOTTOM BOUNDARY SEALING STRIPS LAD ACROSS THE METAL SURFACE MUST BE A MINIMUM OF ONLY 3/16" DIAMETER IN THICKNESS. THESE STRIPS MUST BE POSITIONED PRIOR TO PLACING THE WELDER ONTO THE METAL SURFACE AS THE WELDER MUST BE FIRMLY PUSHED DOWN INTO THE STRIPS TO FORM A TIGHT SEAL.
 3. THE TWO 1 1/2" x 3" SIDE SEALS OF SEALING MATERIAL MUST BE POSITIONED AFTER THE WELDER IS PLACED ONTO THE METAL SURFACE. THIS MATERIAL MUST BE PACKED TIGHTLY IN POSITION BETWEEN THE WELDER TO PREVENT LEAKAGE.
 4. TO SIMPLIFY THE INSTALLATION ON MJ FITTINGS, IT IS RECOMMENDED THAT THE WIRE BE CATHODED TO THE MJ FOLLOWER GLAND RING PRIOR TO DOLTING THE GLAND RING TO THE MJ FLANGE. CATHODE THE OTHER END OF THE BOND WIRE TO THE BODY OF THE DIP FITTING AFTER THE MJ CONNECTION HAS BEEN BOLTED TOGETHER AND TIGHTENED. THIS ATTACHMENT OF THE WIRE PRIOR TO FITTING ASSEMBLY IS NOT NECESSARY FOR ANODE RESTRAINT RINGS.
 5. CLEAN AND COAT CATHODES AND BOLT HARDWARE AS DETAILED IN THE PROJECT SPECIFICATIONS AFTER THE FITTING HAS BEEN FULLY INSTALLED AND AFTER ALL CATHODING IS COMPLETE.
 6. THIS DETAIL IS APPLICABLE TO ANY NARROW SURFACE INCLUDING MJ FOLLOWER GLAND RINGS (SHOWN), PIPE FLANGES, AND "MEGALUG" TYPE JOINT RESTRAINT RINGS.

THERMITE WELD TO NARROW METAL SURFACE
N.T.S.



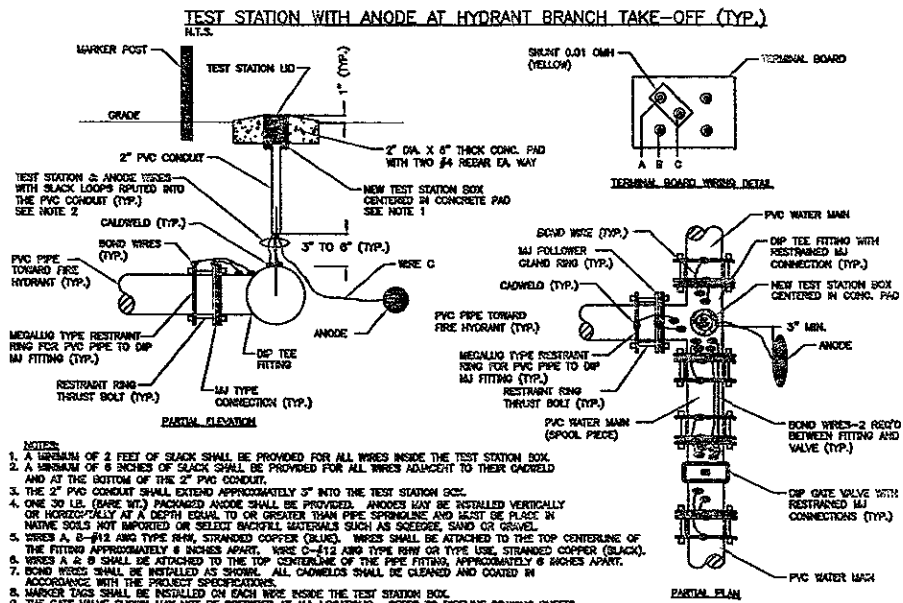
- NOTES:**
1. A MINIMUM OF SIX INCHES OF SLACK SHALL BE PROVIDED AT EACH END OF THE ANODE WIRE.
 2. ONE 12 LB. (BARE WT.) PACKAGED ZINC ANODE SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY A MINIMUM OF THREE (3) FEET OFFSET FROM THE PIPE FITTING AT A DEPTH EQUAL TO PIPE SPRINGLINE OR GREATER.
 3. ANODE SHALL BE PLACED IN NATIVE SOILS NOT IN ANY IMPORTED BACKFILL MATERIAL SUCH AS SQUEEZE, SAND OR GRAVEL.
 4. ANODE WIRE - #12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 5. BOND WIRE AND ANODE WIRE SHALL BE INSTALLED AS CLOSE AS PRACTICAL TO THE TOP CENTERLINE OF THE RESTRAINT RINGS AND THEIR CATHODE CONNECTIONS COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 6. A MAXIMUM DISTANCE BETWEEN TWO JOINT RESTRAINTS THAT CAN BE BONDED AND CATHODICALLY PROTECTED BY A SINGLE ANODE IS NINE (9) FEET.

PVC BELL & SPIGOT JOINT WITH MEGALUG TYPE RESTRAINT AND ANODE (TYP.)



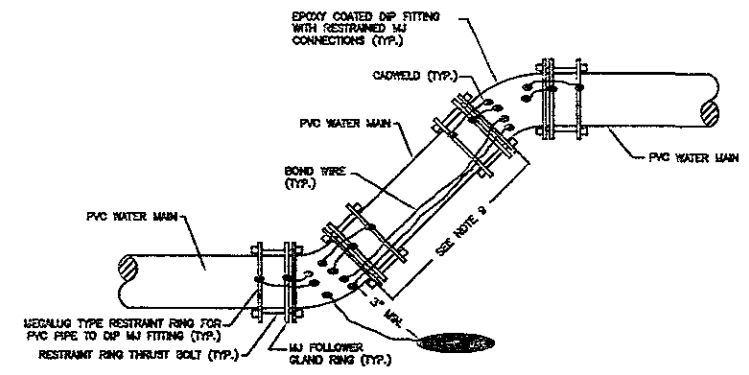
- NOTES:**
1. MARKER TAGS SHALL BE PANDUIT CORP. NO. "PLF114".
 2. MARKING PENS SHALL BE PANDUIT CORP. PART NO. "PPX-0" TEST STATION NUMBERING SHALL BE AS DETAILED IN THE TS SCHEDULE AND SHOWN ON THE DRAWINGS.

WIRE MARKER TAG
N.T.S.



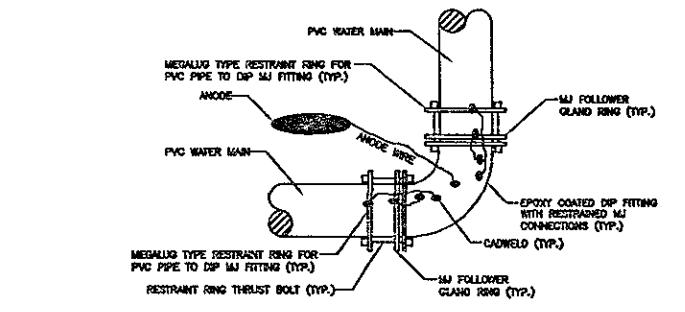
- NOTES:**
1. A MINIMUM OF 2 FEET OF SLACK SHALL BE PROVIDED FOR ALL WIRES INSIDE THE TEST STATION BOX.
 2. A MINIMUM OF 6 INCHES OF SLACK SHALL BE PROVIDED FOR ALL WIRES ADJACENT TO THEIR CATHODE AND AT THE BOTTOM OF THE 2" PVC CONDUIT.
 3. THE 2" PVC CONDUIT SHALL EXTEND APPROXIMATELY 3" INTO THE TEST STATION BOX.
 4. ONE 30 LB. (BARE WT.) PACKAGED ZINC ANODE SHALL BE PROVIDED. ANODES MAY BE INSTALLED VERTICALLY OR HORIZONTALLY AT A DEPTH EQUAL TO OR GREATER THAN PIPE SPRINGLINE AND MUST BE PLACED IN NATIVE SOILS NOT IMPORTED OR SELECT BACKFILL MATERIALS SUCH AS SQUEEZE, SAND OR GRAVEL.
 5. WIRES A, B-#12 AWG TYPE RHW, STRANDED COPPER (BLACK). WIRES SHALL BE ATTACHED TO THE TOP CENTERLINE OF THE FITTING APPROXIMATELY 8 INCHES APART. WIRE C-#12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 6. WIRES A & B SHALL BE ATTACHED TO THE TOP CENTERLINE OF THE PIPE FITTING, APPROXIMATELY 6 INCHES APART, IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 7. BOND WIRES SHALL BE INSTALLED AS SHOWN. ALL CATHODES SHALL BE CLEANED AND COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 8. MARKER TAGS SHALL BE INSTALLED ON EACH WIRE INSIDE THE TEST STATION BOX.
 9. THE GATE VALVE SHOWN MAY NOT BE SPECIFIED AT ALL LOCATIONS. REFER TO PIPELINE DRAWING SHEETS TO DETERMINE IF THE MAINLINE VALVE IS SPECIFIED FOR INSTALLATION AT EACH HYDRANT TEE.
 10. THIS DETAIL IS APPLICABLE IF THE MAINLINE PIPE FITTING IS A TEE AS SHOWN OR IF IT IS A 90 DEGREE BEND.
 11. VALVE BOX BONNET AND VALVE BOX RISER MUST NOT PHYSICALLY CONTACT THE VALVE BODY OR OPERATOR. ONLY THE NON-METALLIC VALVE BOX ADAPTER MAY TOUCH ANY PORTION OF THE VALVE ITSELF. VALVE BOX BONNET AND RISER SHALL BE ENCASED IN A DOUBLE STRIP OF 8 MIL THICK POLYETHYLENE ENCASUREMENT.

TEST STATION WITH ANODE AT HYDRANT BRANCH TAKE-OFF (TYP.)
N.T.S.



- NOTES:**
1. A MINIMUM OF SIX INCHES OF SLACK SHALL BE PROVIDED AT EACH END OF THE ANODE WIRE.
 2. ONE 30 LB. (BARE WT.) PACKAGED ZINC ANODE SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY A MINIMUM OF THREE (3) FEET OFFSET FROM THE PIPE FITTING AT A DEPTH EQUAL TO PIPE SPRINGLINE OR GREATER.
 3. ANODE SHALL BE PLACED IN NATIVE SOILS NOT IN ANY IMPORTED BACKFILL MATERIAL SUCH AS SQUEEZE, SAND OR GRAVEL.
 4. ANODE WIRE - #12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 5. BOND WIRES SHALL BE INSTALLED AS SHOWN AND THEIR CONNECTIONS COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 6. THE ANODE AND ITS WIRE MUST NOT BE COVERED WITH ANY CONCRETE (NOT SHOWN) THAT MAY BE PLACED BENEATH THE FITTING.
 7. THIS DETAIL IS APPLICABLE FOR ALL TWO ADJACENT BURIED DIP FITTINGS (BENDS, TEES, VALVES, COUPLINGS, ETC.). THE MJ T-BOLTS ARE NOT SHOWN.
 8. A MAXIMUM DISTANCE BETWEEN FITTINGS THAT CAN BE BONDED TOGETHER AND CATHODICALLY PROTECTED BY A SINGLE ANODE SHALL BE NINE (9) FEET.

TWO DIP FITTINGS WITH ANODE (TYP.)
N.T.S.



- NOTES:**
1. A MINIMUM OF SIX INCHES SLACK SHALL BE PROVIDED AT EACH END OF THE ANODE WIRE.
 2. ONE 18 LB. (BARE WT.) PACKAGED ZINC ANODE SHALL BE INSTALLED VERTICALLY OR HORIZONTALLY A MIN. OF (3) FEET OFFSET FROM THE PIPE FITTING AT A DEPTH EQUAL TO PIPE SPRINGLINE OR GREATER.
 3. ANODE SHALL BE PLACED IN NATIVE SOILS NOT IN ANY IMPORTED BACKFILL MATERIAL SUCH AS SQUEEZE, SAND OR GRAVEL.
 4. ANODE WIRE - #12 AWG TYPE RHW OR TYPE USE, STRANDED COPPER (BLACK).
 5. BOND WIRES SHALL BE INSTALLED AS SHOWN AND THEIR CONNECTIONS COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATION.
 6. THE ANODE AND ITS WIRE MUST NOT BE COVERED WITH ANY CONCRETE (NOT SHOWN) THAT MAY BE PLACED BENEATH THE FITTING.
 7. THIS DETAIL IS APPLICABLE FOR ALL SIGNAL BURIED DIP FITTINGS (BENDS, TEES, VALVES, COUPLINGS, ETC.).
 8. THE MJ T-BOLTS ARE NOT SHOWN.

SINGLE DIP FITTING WITH ANODE (TYP.)
N.T.S.



CITY OF RAPID CITY
ENGINEERING SERVICES
PUBLIC WORKS DEPARTMENT

Scale: 1" = 20'
Designed By: _____
Design Date: _____
Internal Job No: W08-1742
Surveyed By: _____
Survey Date: _____

SIXTH STREET WATER MAIN
FRANKLIN ST. TO SAINT CHARLES ST.
CITY OF RAPID CITY PROJECT NO. W08-1742

Sheet Title
CATHODIC PROTECTION DETAILS