

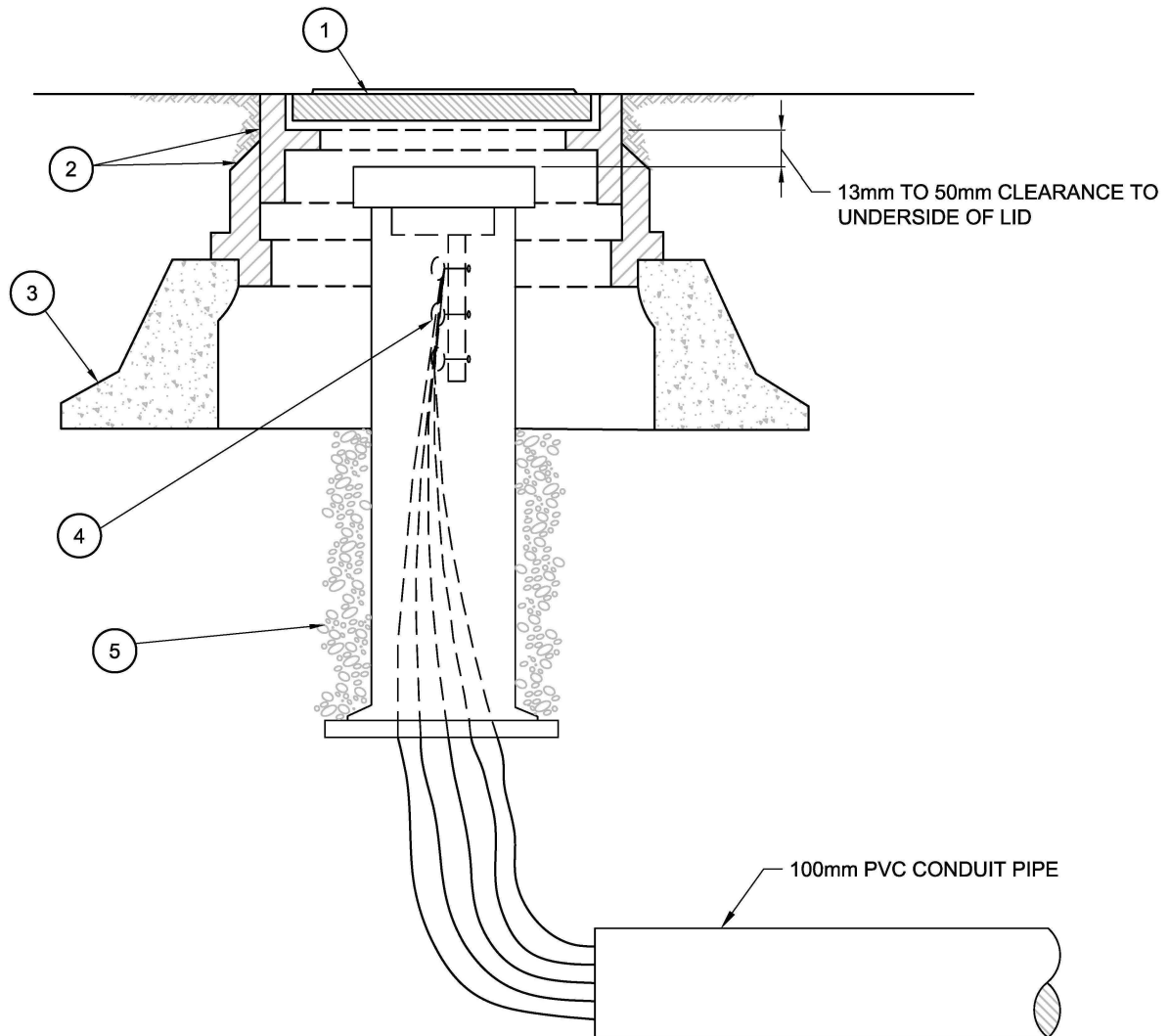
Cathodic Protection

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REV.	REVISION DATE	APPROVED

DRAWING INDEX
CATHODIC PROTECTION

ISSUE DATE: SEPTEMBER 2018
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LEGEND:

1. WATERWORKS CAST IRON VALVE BOX LID (PAINT RED) (REFER TO DWG W15.2)
2. WATERWORKS CAST IRON TELESCOPIC VALVE BOX (REFER TO DWG W15.1)
3. PRECAST CONCRETE VALVE BOX BASE (REFER TO DWG W19.9)
4. HEAVY DUTY CATHODIC PROTECTION TERMINAL BOX
A.B.S. OR P.V.C. TUBE SECTION, MINIMUM 100mm I.D. 450mm LONG,
A.B.S. OR P.V.C. LOCKING LID
5. GRAVEL BEDDING

NOTES:

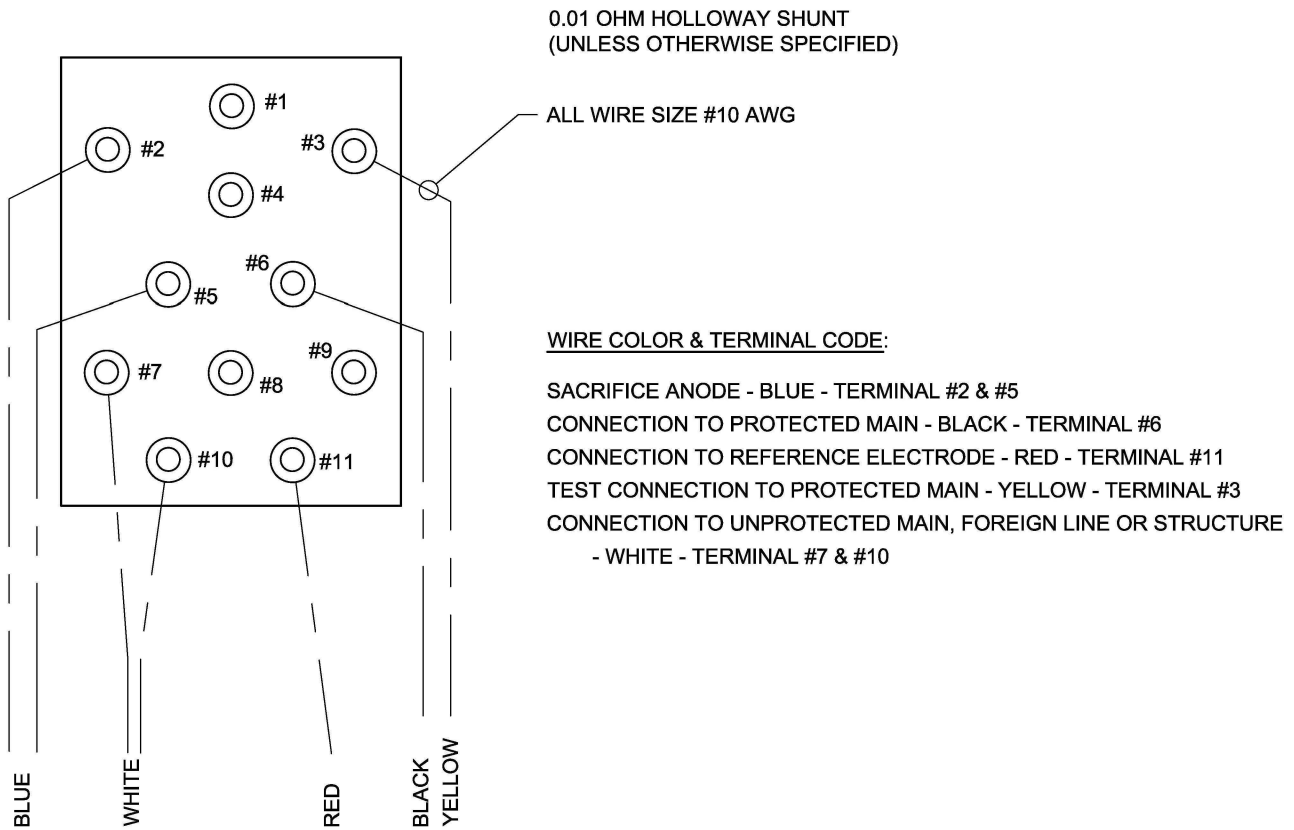
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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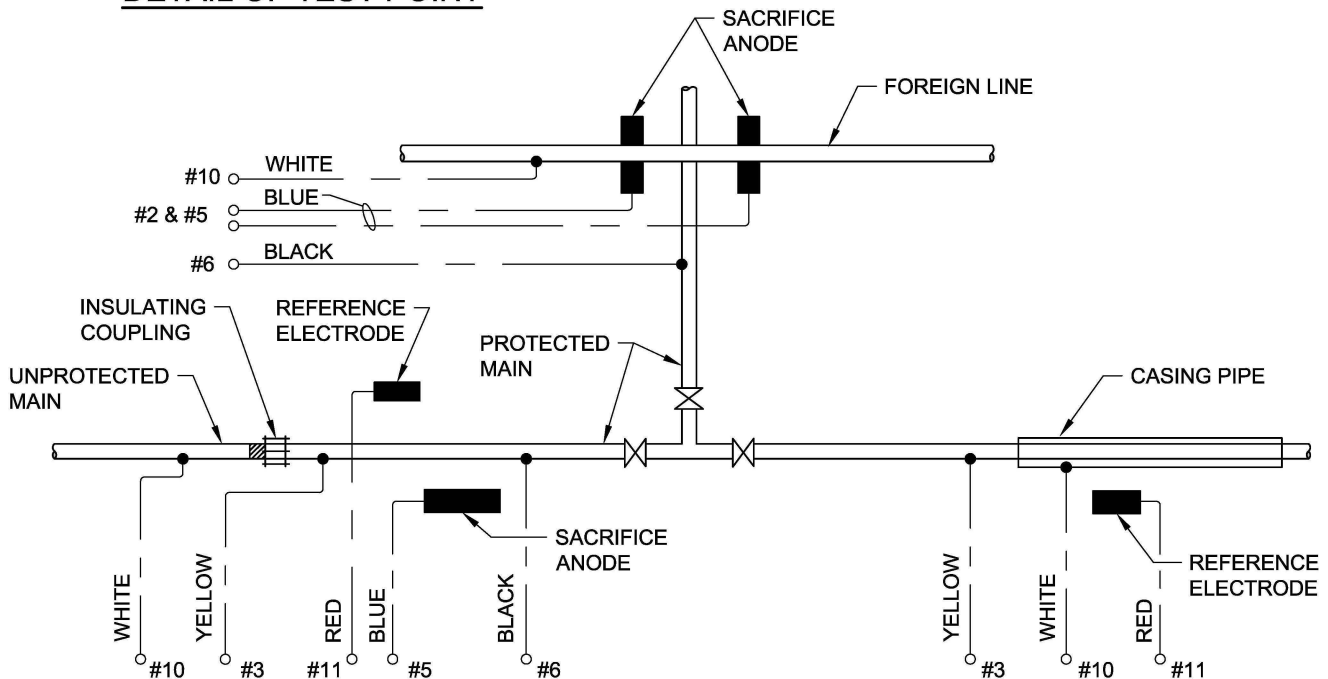
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CATHODIC PROTECTION
GROUND LEVEL TEST POINT

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DETAIL OF TEST POINT



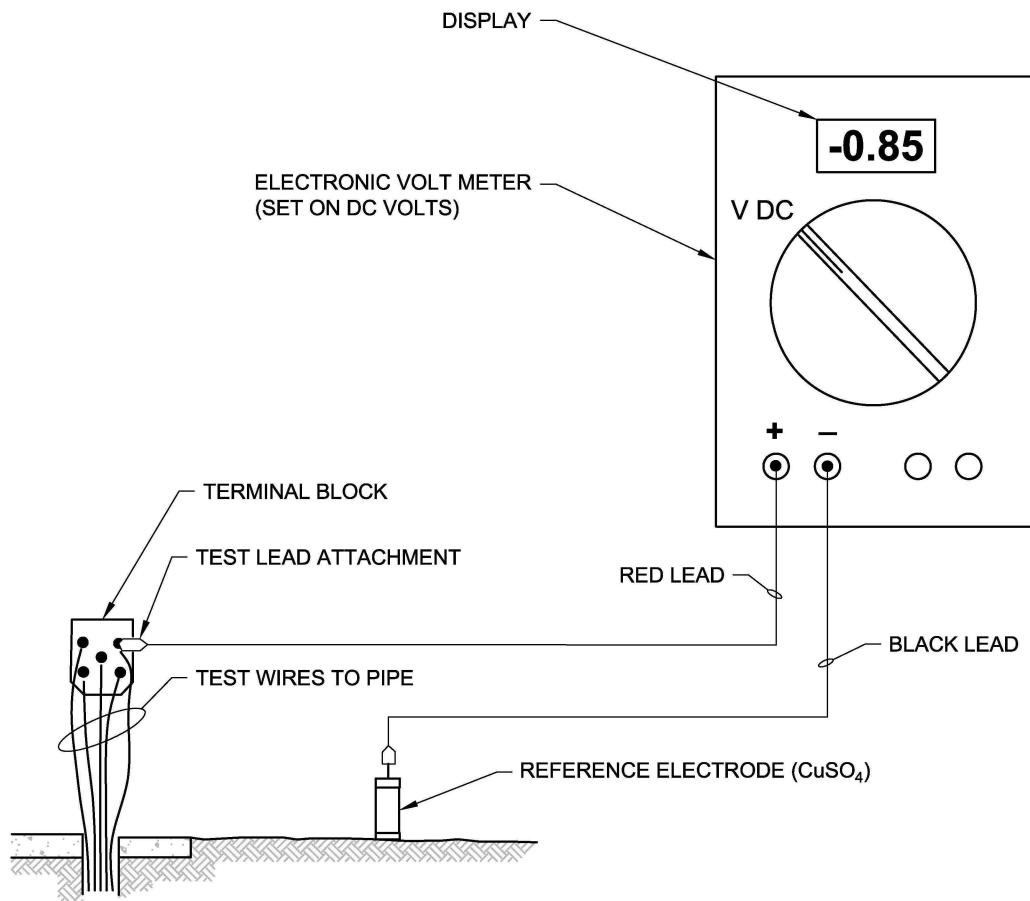
SCHEMATIC WIRE LAYOUT

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**CATHODIC PROTECTION
TEST POINT DETAILS**

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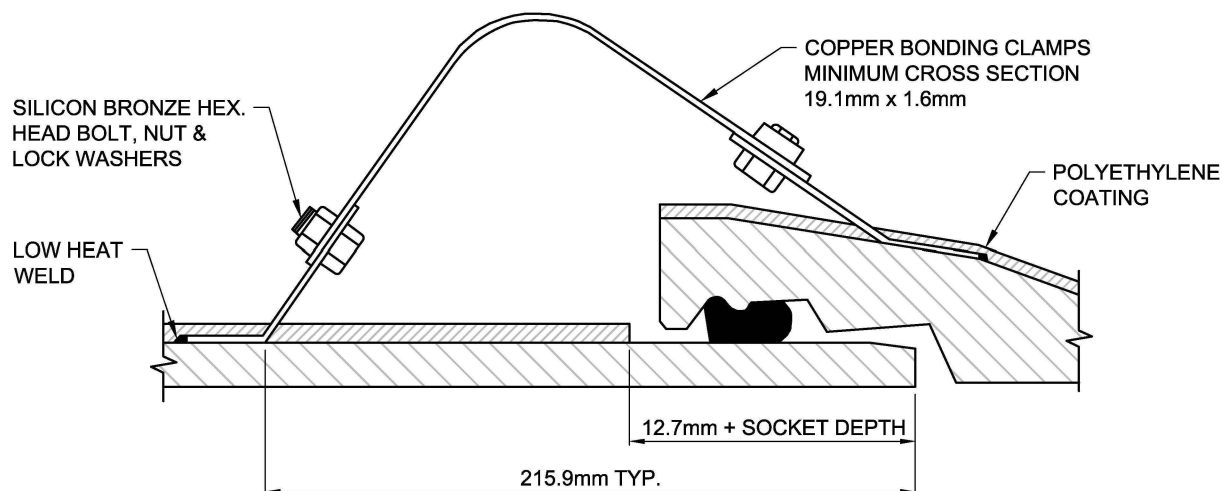


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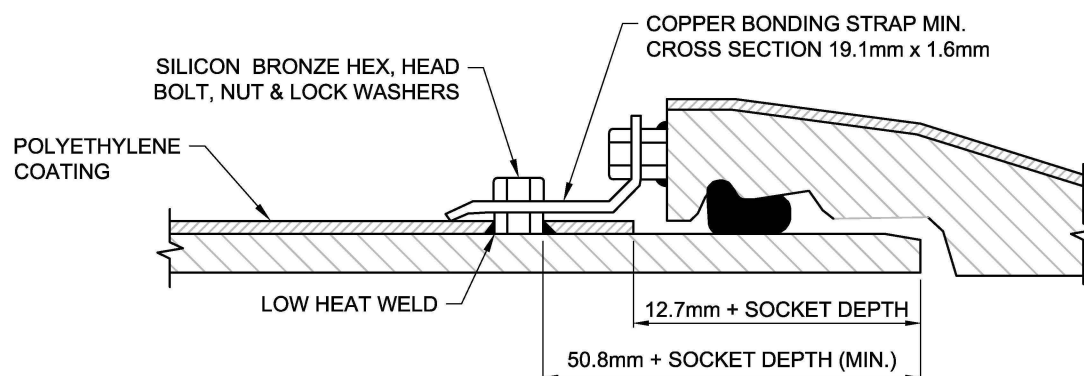
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CATHODIC PROTECTION
POTENTIAL TESTS

ISSUE DATE: SEPTEMBER 2018
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TYPE A



TYPE B

NOTES FOR WRAPPING THE COMPLETE JOINTS (TYPE B ONLY):

1. ENSURE THAT ALL DIRT, GREASE AND FOREIGN SUBSTANCE ARE REMOVED FROM THE COPPER STRAPS, BOLTS AND NUTS.
2. ONCE THE PIPE JOINT HAS BEEN COMPLETED, THE COPPER STRAP SHALL THEN BE BOLTED INTO PLACE. THE BOLTS SHALL BE TIGHTENED TO A SNUG POSITION BUT SHALL NOT BE OVER TORQUED.
3. THE ENTIRE JOINT, INCLUDING COPPER STRAP AND BOLTS, TO A MINIMUM LENGTH OF 75mm TO EITHER SIDE OF EACH BOLT, SHALL BE COATED WITH ONE THIN APPLICATION OF POLYKEN #927 PRIMER OR ENGINEER APPROVED EQUAL. ENSURE THAT ALL PIPE SURFACES ARE CLEAN PRIOR TO THE APPLICATION OF THE PRIMER.
4. ONCE THE PRIMER HAS BEEN APPLIED AND "FLASHED", THE JOINT SHALL THEN IMMEDIATELY BE WRAPPED WITH 50mm POLYKEN #931 TAPE OR ENGINEER APPROVED EQUAL. TAPE SHALL BE APPLIED ONLY TO SURFACES COATED WITH A PRIMER.
5. THE POLYKEN #931 TAPED JOINT SHALL THEN BE COVERED WITH A 100mm POLYKEN #900 TAPE OR ENGINEER APPROVED EQUAL. THE POLYKEN #900 TAPE SHALL BE APPLIED ONLY TO SURFACES THAT HAVE BEEN COATED WITH THE POLYKEN #931 TAPE OR ENGINEER APPROVED EQUAL TAPE.
6. ALL TAPE SHALL BE APPLIED WITH 50% OVERLAP AND A TENSION OF APPROXIMATELY 40LBS.
7. THE WRAPPED JOINT SHALL THEN BE INSPECTED, BY USING A JEEP DETECTOR, TO ENSURE THAT IT IS COMPLETELY FREE OF HOLIDAYS OR DISCONTINUITIES. IF HOLIDAYS OR DISCONTINUITIES EXIST UPON INSPECTION, THEY SHALL BE WRAPPED WITH POLYKEN #900 TAPE OR ENGINEER APPROVED EQUAL AND INSPECTED ONCE AGAIN TO ENSURE COMPLETE INTEGRITY OF THE JOINT.

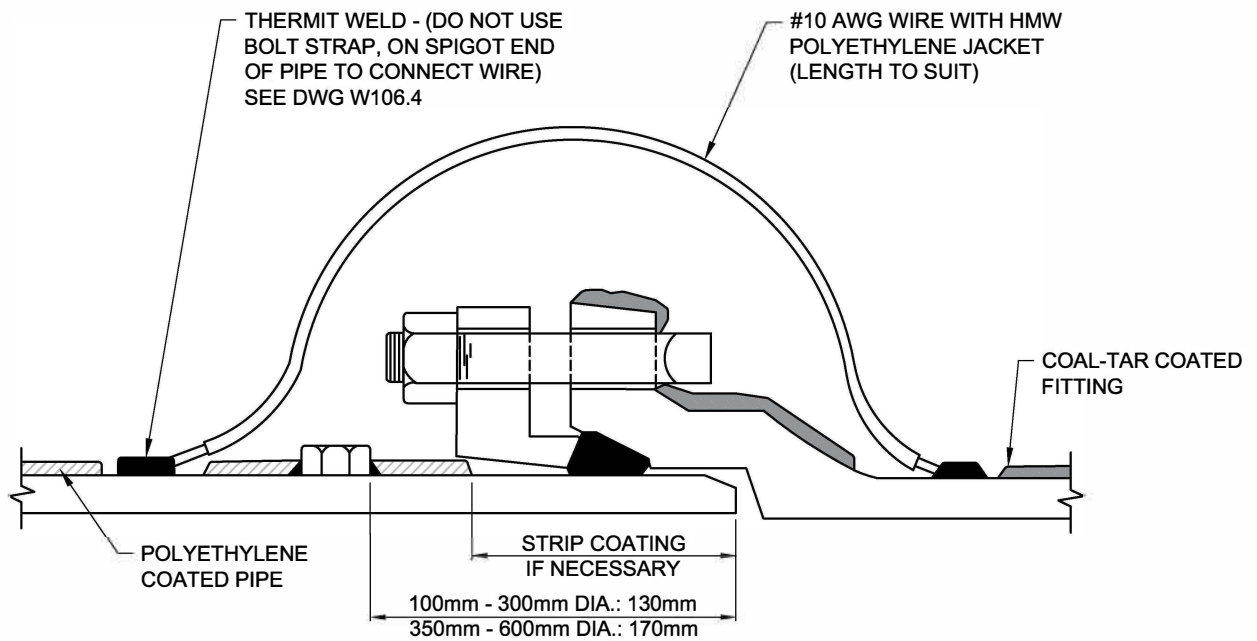
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**CATHODIC PROTECTION
ELECTRICAL BONDING STRAPS**

ISSUE DATE: SEPTEMBER 2018

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PIPE TO FITTING / VALVE JOINT

NOTES:

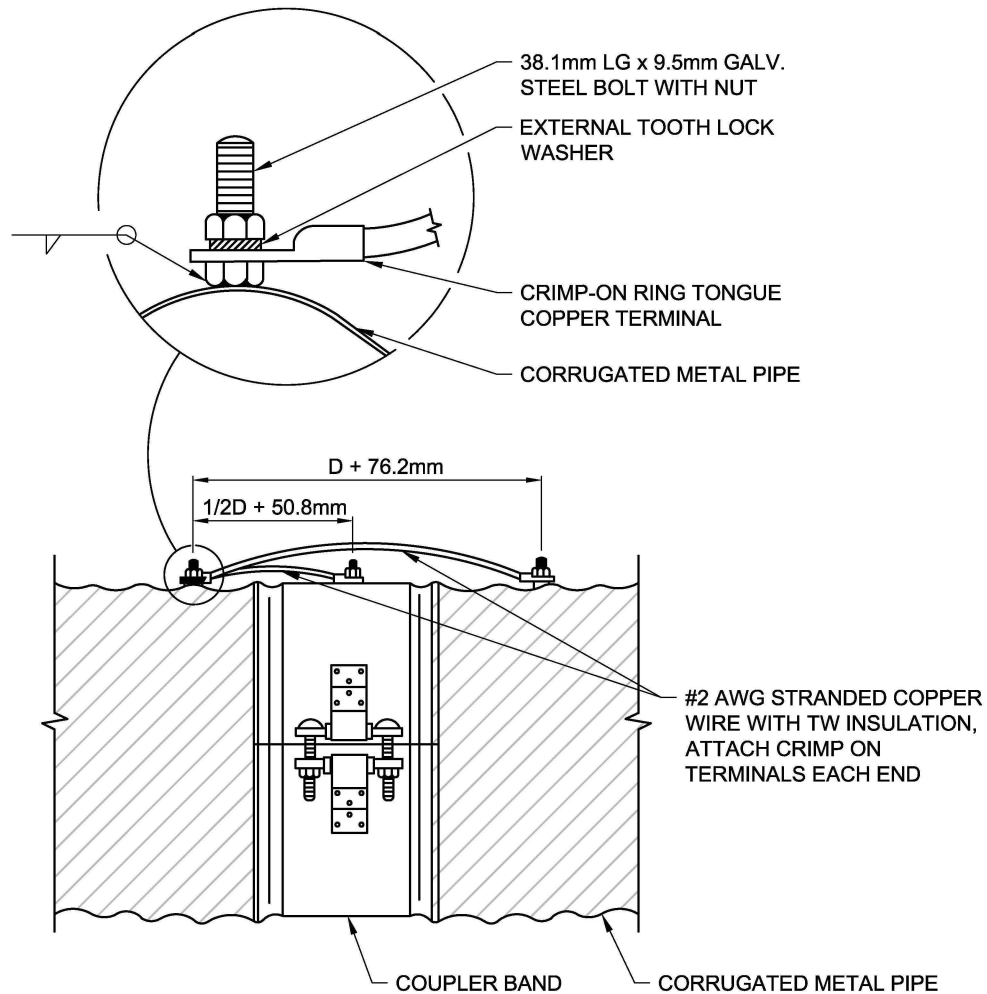
1. PROTECT ENTIRE JOINT WITH HAND APPLIED COAL-TAR ENAMEL COATING. SEE CONSTRUCTION SPECIFICATION.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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**CATHODIC PROTECTION
ELECTRICAL BONDING STRAPS**

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CORRUGATED METAL PIPE JOINT BOND

NOTES:

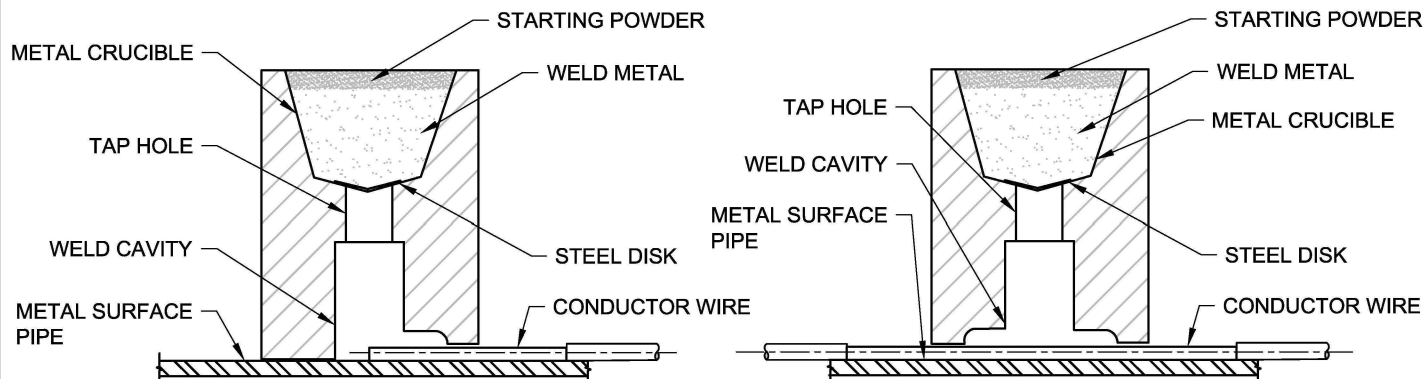
1. DO NOT COAT STUD THREADS DURING PIPE FABRICATION.
2. AFTER BOND WIRE IS INSTALLED, APPLY TWO COATS OF COLD APPLIED COAL TAR MASTIC ON STUDS AND TERMINALS.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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**CATHODIC PROTECTION
ELECTRICAL BONDING STRAPS**

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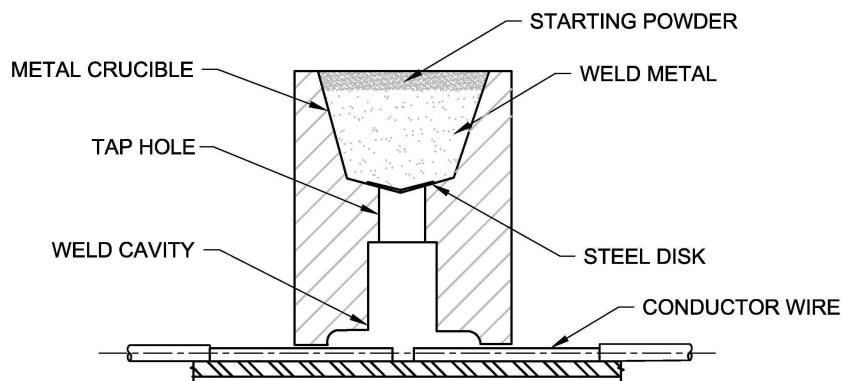


**WELDING OF TERMINATED
CONDUCTOR WIRE**

HORIZONTAL CABLE TO HORIZONTAL PIPE
"CADWELD" TYPE HBA MOLD

**WELDING OF CONTINUOUS
CONDUCTOR WIRE**

HORIZONTAL CABLE TO HORIZONTAL PIPE
"CADWELD" TYPE MOLD



CABLE TO CABLE CONNECTION

"CADWELD" TYPE SS & TYPE TPS MOLDS

NOTES:

FOR FASTENING OF HORIZONTAL COPPER CONDUCTOR WIRE TO HORIZONTAL PIPE SURFACE OR OTHER HORIZONTAL CABLES:

1. CABLE SHALL BE "BRIGHT-CLEAN" AND DRY. USE APPROVED SOLVENT TO REMOVE GREASE . REMOVE CORROSION PRODUCTS WITH WIRE BRUSH.
2. REMOVE A SMALL AREA OF COATING ON THE PIPE OR FITTING WHERE A COATING EXISTS.
3. THOROUGHLY CLEAN THE AREA TO BE WELDED AND FILE THE METAL UNTIL A SHINY, ROUGHENED SURFACE APPROXIMATELY 75mm SQUARE IS OBTAINED.
4. USE "CADWELD" XF-19 ALLOY FOR DUCTILE IRON PIPE AND CA25 CARTRIDGE SIZE FOR #10 WIRE OR ENGINEER APPROVED EQUAL.
5. USE "CADWELD" XF-19 ALLOY FOR DUCTILE IRON PIPE , AND CA32 CARTRIDGE SIZE FOR #2 WIRE OR ENGINEER APPROVED EQUAL.
6. USE "CADWELD" CA-15 OR ENGINEER APPROVED EQUAL FOR CABLE CONNECTIONS.
7. REMOVE ALL SLAG OFF THE COMPLETED WELD AND FILE SMOOTH ANY SHARP EDGES.
8. ENSURE THAT ALL WIRES WELDED TO THE PIPE OR FITTING SURFACE ARE SECURELY FASTENED, AND THEN COAT AND TAPE THE WELD AND ANY AREA ADJACENT THAT HAS THE COATING REMOVED IN ACCORDANCE WITH DWG W106.1 TO DWG W106.3.
9. "CADWELD" SLEEVES ARE REQUIRED FOR #10 OR #2 WIRES.
10. CAUTION - WET CABLE OR SURFACES CAN CAUSE MOLTEN METAL TO BE BLOWN OUT OF THE MOLD.

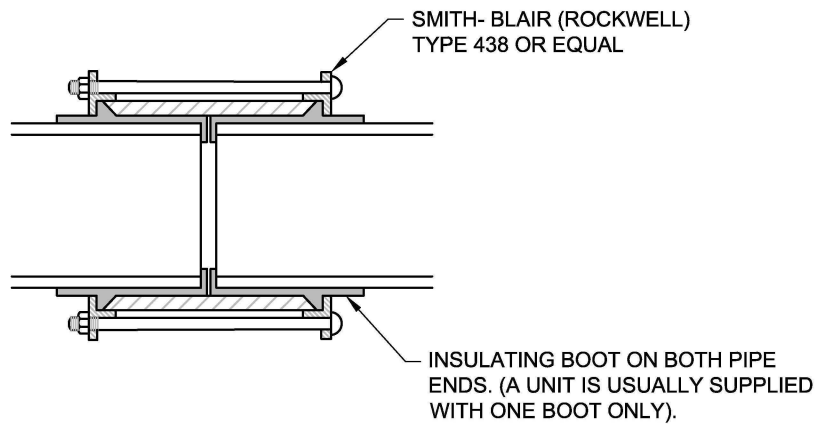
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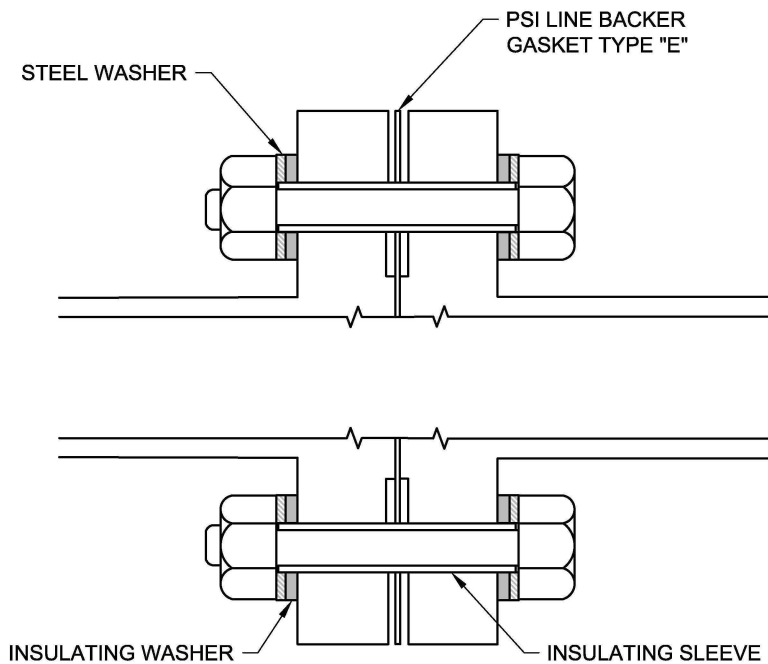
**CATHODIC PROTECTION
THERMAL WELD PROCESS "CADWELD"**

ISSUE DATE: SEPTEMBER 2018

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CAST INSULATING COUPLING



PSI FLANGE INSULATION

NOTE:

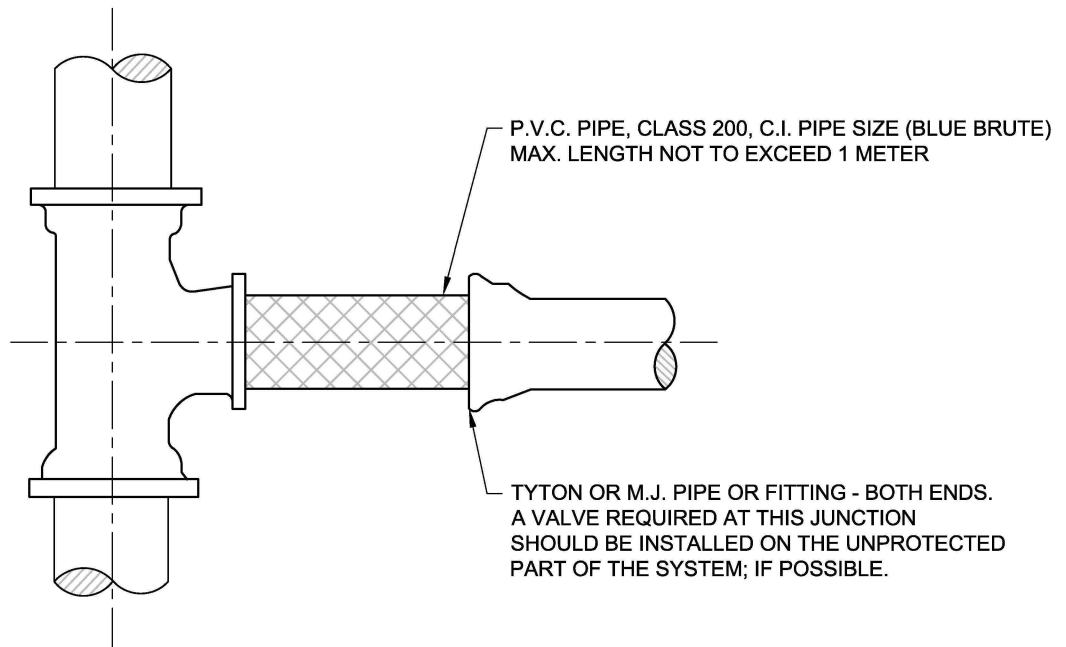
1. TEST POINT WIRING REQUIRED. SEE DWGS W104.1 & W105.1

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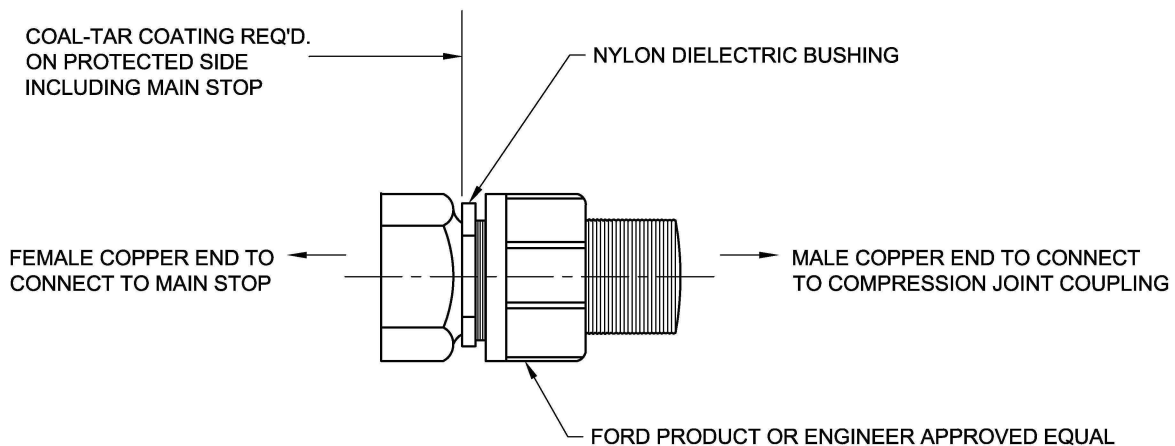
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CATHODIC PROTECTION
STANDARD INSULATING COUPLINGS & JOINTS

ISSUE DATE: SEPTEMBER 2018
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P.V.C. PIPE JOINT



SERVICE INSULATOR
20mm, 25mm, 40mm, & 50mm

NOTE:

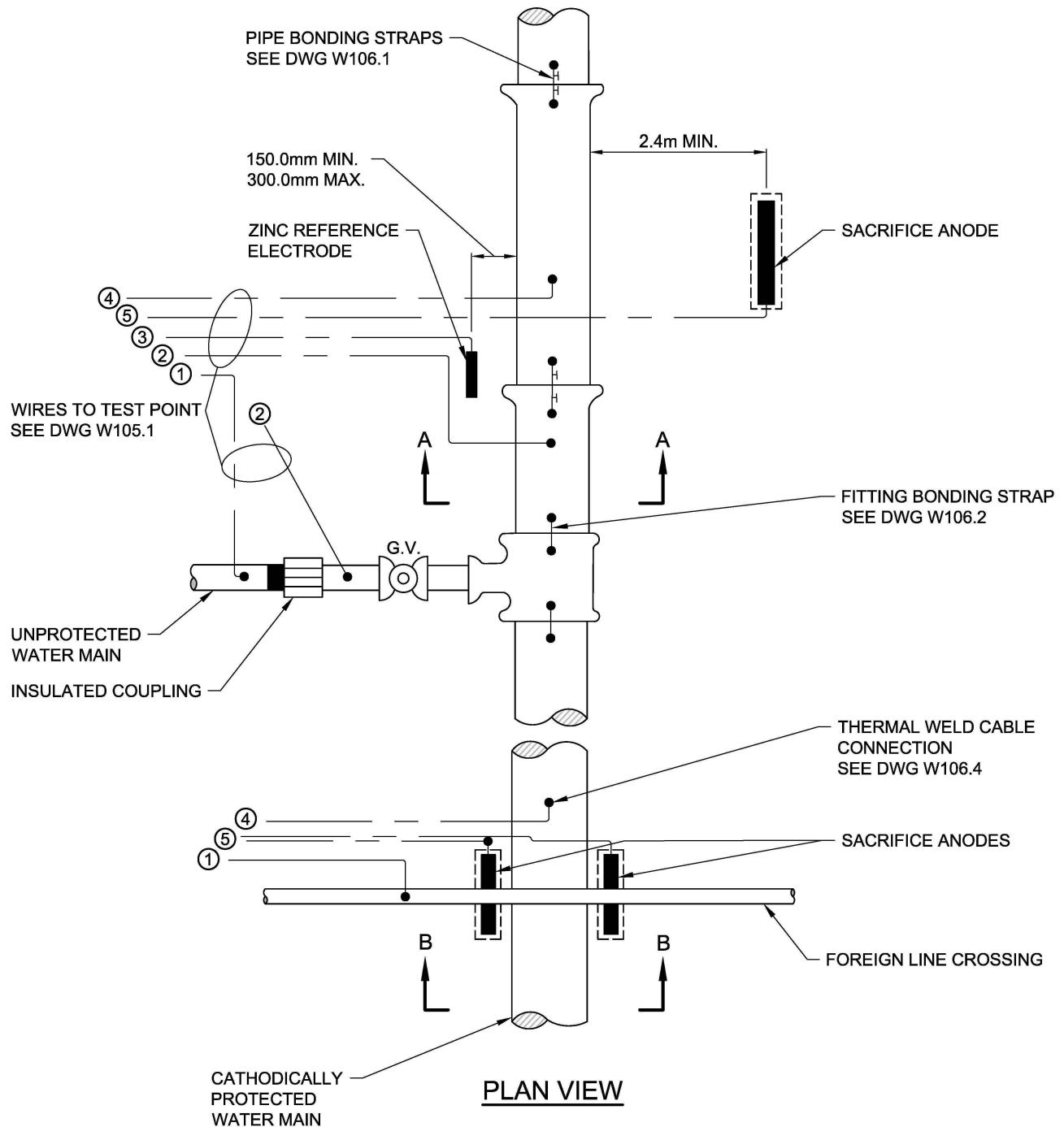
1. NO TEST POINTS REQUIRED.

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CATHODIC PROTECTION
STANDARD INSULATING COUPLINGS & JOINTS

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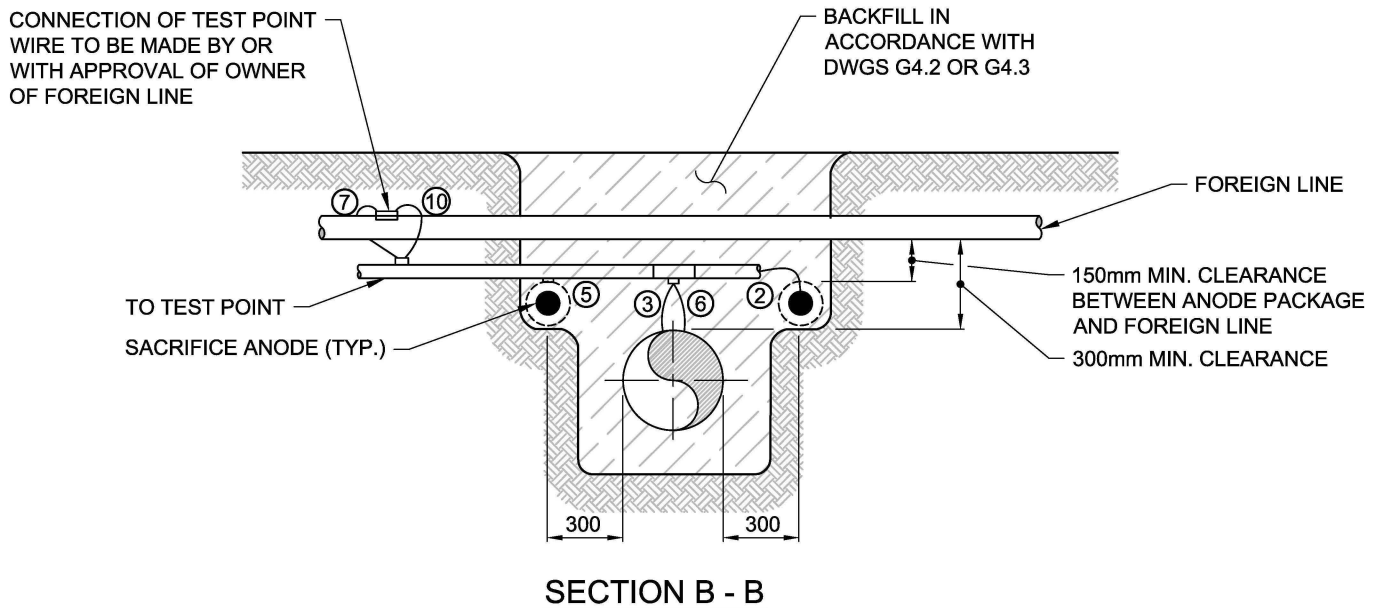
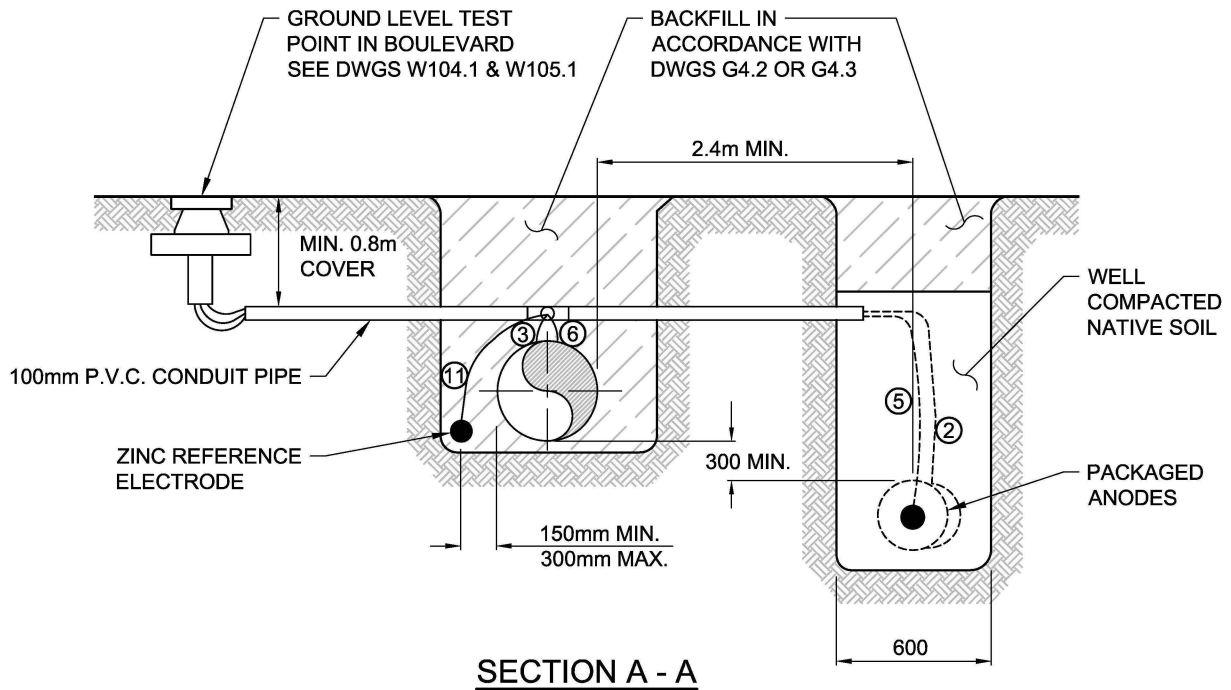
1. SEE DWG W115.2 FOR SECTIONS A-A AND B-B.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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**CATHODIC PROTECTION
HORIZONTAL ANODE INSTALLATION**

ISSUE DATE: SEPTEMBER 2018
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NOTE:

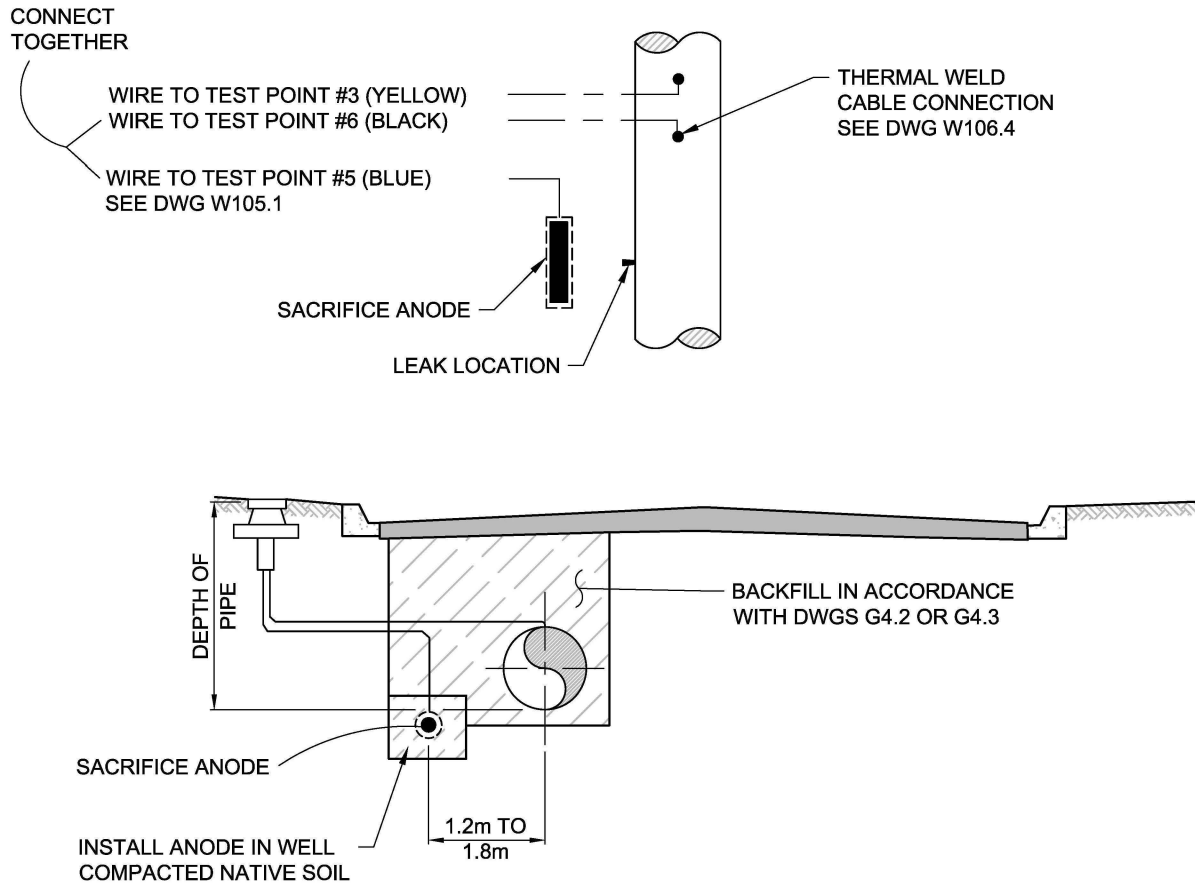
1. SEE DWG W115.1 FOR PLAN VIEW.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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**CATHODIC PROTECTION
HORIZONTAL ANODE INSTALLATION**

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LEAK REPAIR - STEEL MAINS

NOTES:

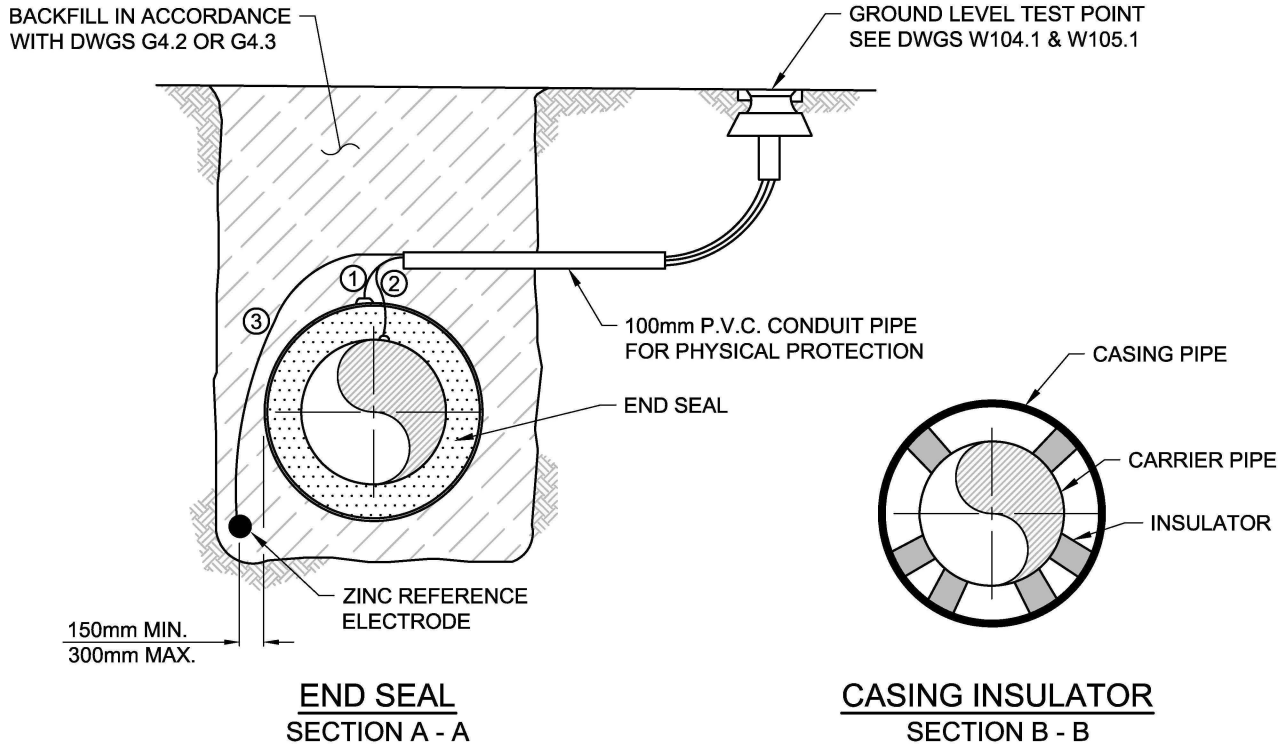
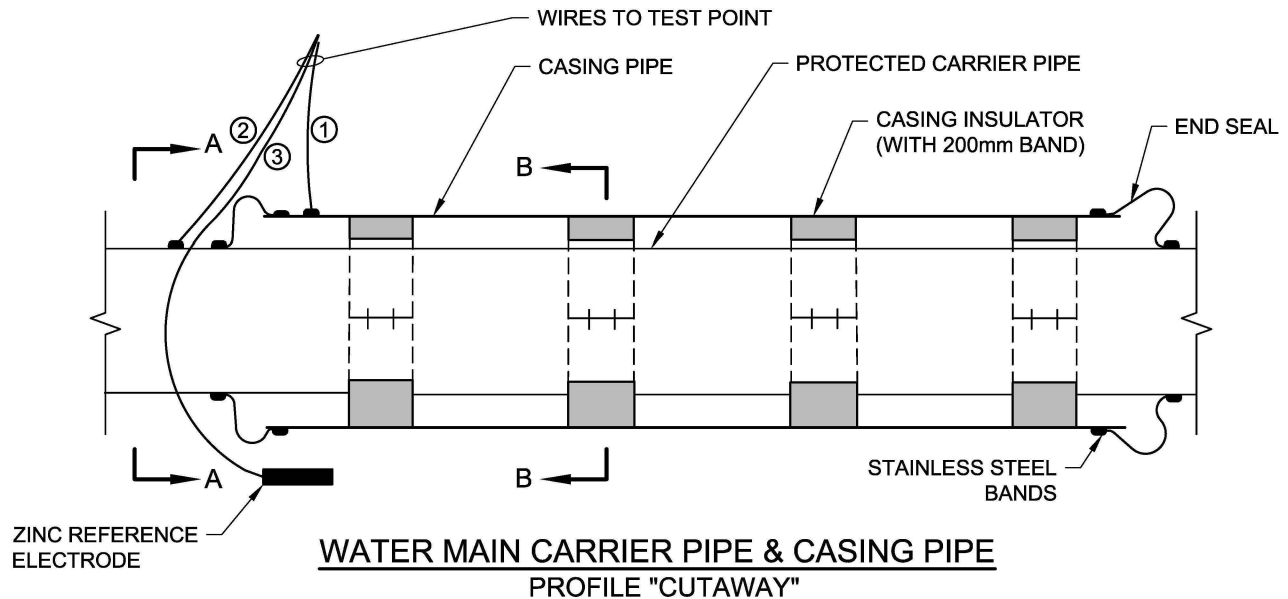
1. SACRIFICIAL ANODES SHALL BE OF THE HIGH POTENTIAL MAGNESIUM TYPE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
2. ALL ELECTRICAL TEST POINTS AND ANODE CABLES TO BE 7 STRAND #10AWG RWU INSULATED COPPER WIRE.
3. ALL TEST WIRES AND CABLE TO BE INSTALLED IN 100mm DIAMETER P.V.C. CONDUIT PIPE.
4. REMOVE THE PLASTIC BAG FROM PACKAGED ANODES, LEAVING THE CLOTH BAG OR MOISTURE ABSORBING CARDBOARD TUBE INTACT.
5. TO INITIATE THE OPERATION OF THE ANODES, POUR A MINIMUM OF 8 LITERS OF WATER ON EACH ANODE.
6. INSTALL SACRIFICE ANODE ON SIDE OF MAIN ON WHICH REPAIRS ARE MADE.
7. IF EXCAVATION IS MADE ON BOTH SIDES OF MAIN, INSTALL TWO SACRIFICE ANODES, ONE ON EACH SIDE OF THE MAIN.
8. INSTALL 14.5kg PACKAGED HIGH POTENTIAL MAGNESIUM ANODES UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
9. INSTALL TEST POINT BOX IN BOULEVARD WHERE PRACTICAL .
10. IF TEST POINT EXISTS WITHIN 300m OF LEAK, SACRIFICE ANODE TO BE CONNECTED DIRECTLY TO MAIN.
11. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

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CATHODIC PROTECTION HORIZONTAL ANODE INSTALLATION

ISSUE DATE: SEPTEMBER 2018
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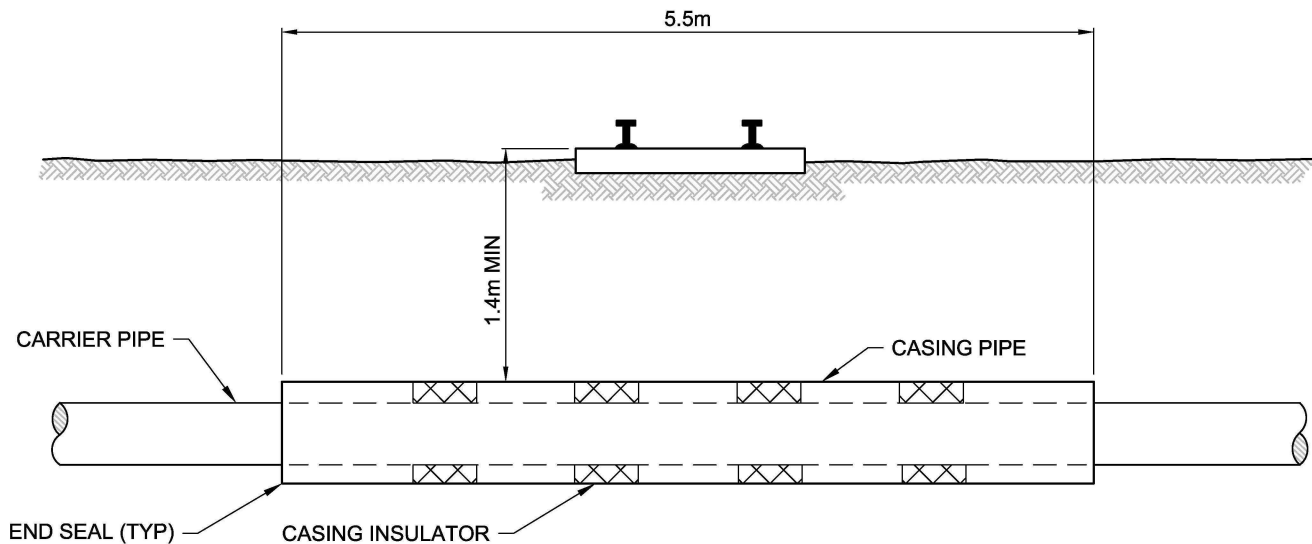


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CATHODIC PROTECTION
RAILWAY CROSSING INSTALLATION

ISSUE DATE: SEPTEMBER 2018
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CROSS SECTION AT MAIN

NOTES:

CASING INSULATORS AND END SEALS SHALL BE INSTALLED AS FOLLOWS:

1. EACH UNDERGROUND TRACK CROSSING SHALL BE COMPRISED OF 2 END SEALS AND 4 CASING INSULATORS.
2. THE FOUR CASING INSULATORS SHALL BE DISTRIBUTED EVENLY ALONG THE LENGTH OF THE CASING PIPE.
3. THE CASING INSULATORS SHALL BE INSTALLED AS SHOWN IN THE ABOVE CROSS SECTION.
4. TEST POINT CONNECTIONS TO THE CARRIER PIPE SHALL BE ATTACHED USING THE THERMAL WELD PROCESS IN ACCORDANCE WITH W120.1 AND SHALL BE COATED WITH ONE THIN APPLICATION OF PRIMER #927 OR ENGINEER APPROVED EQUAL AND WRAPPED WITH POLYKEN #931 TAPE OR ENGINEER APPROVED EQUAL.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

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RAILWAY CROSSING INSTALLATION**

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