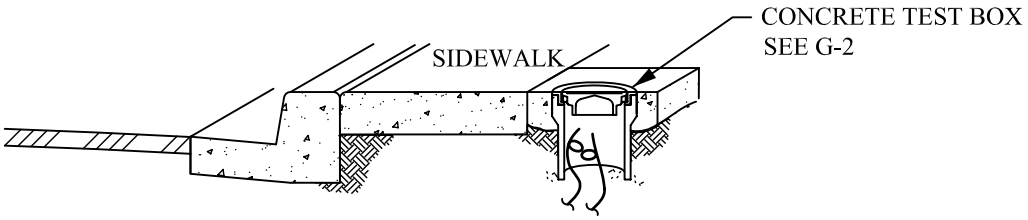
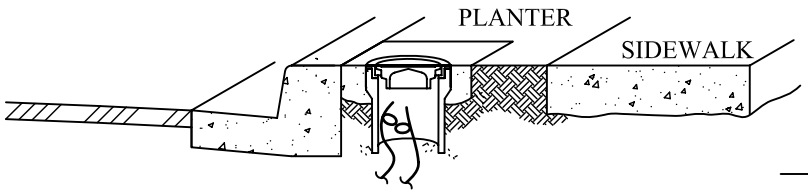
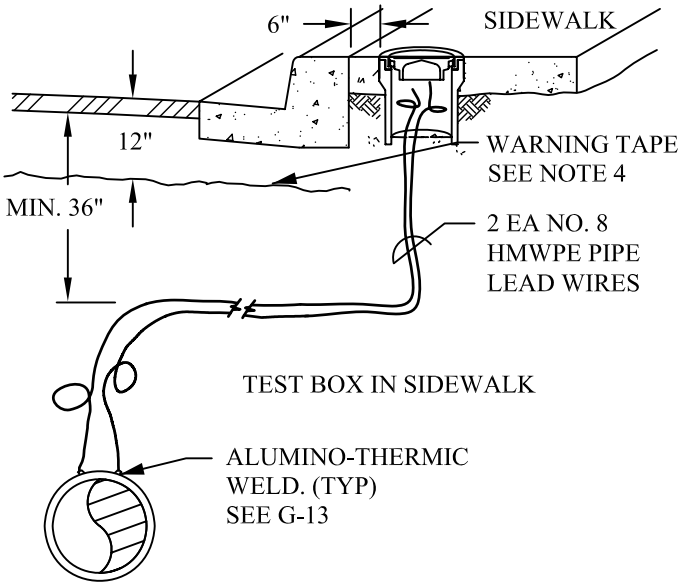


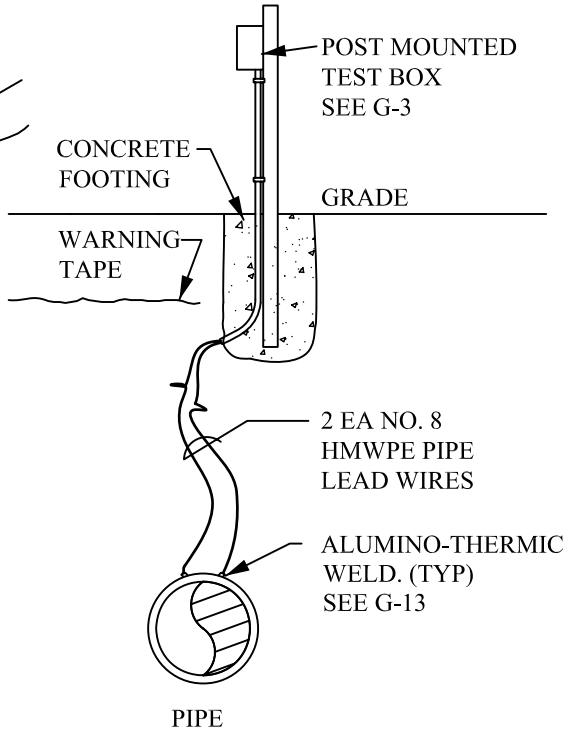
TEST BOX BEYOND SIDEWALK



TEST BOX IN PLANTER



AT GRADE TEST STATION
(SEE G-2)



POST MOUNTED TEST STATION
(SEE G-3)

NOTES:

1. PLACE AT GRADE BOX AT ONE OF THE THREE LOCATIONS SHOWN. PER DRAWINGS OR PER DIRECTION FROM DISTRICT'S REPRESENTATATIVE. FOR ROAD WITHOUT CURB PLACE AT-GRADE CTS BEYOND PAVEMENT OUT OF TRAFFIC LANES BUT WITHIN EASEMENT.
2. USE POST-MOUNTED CTS IN UNDEVELOPED SITES. LACE DIRECTLY OVER PIPE WHERE POSSIBLE, OR AS DIRECTED BY DISTRICT'S REPRESENTATIVE.
3. PROVIDE SAND BEDDING AND BACKFILL IN WIRE TRENCHES. SEE STD SPEC. 02223.
4. WARNING TAPE SHALL BE 6" WIDE, 4 MIL THICK INERT PLASTIC WARNING TAPE PRINTED WITH "CAUTION: CATHODIC PROTECTION CABLE BELOW".
5. USE SIMILAR MOUNTING FOR MULTI-WIRE CTS.

OLIVENHAIN MUNICIPAL WATER DISTRICT

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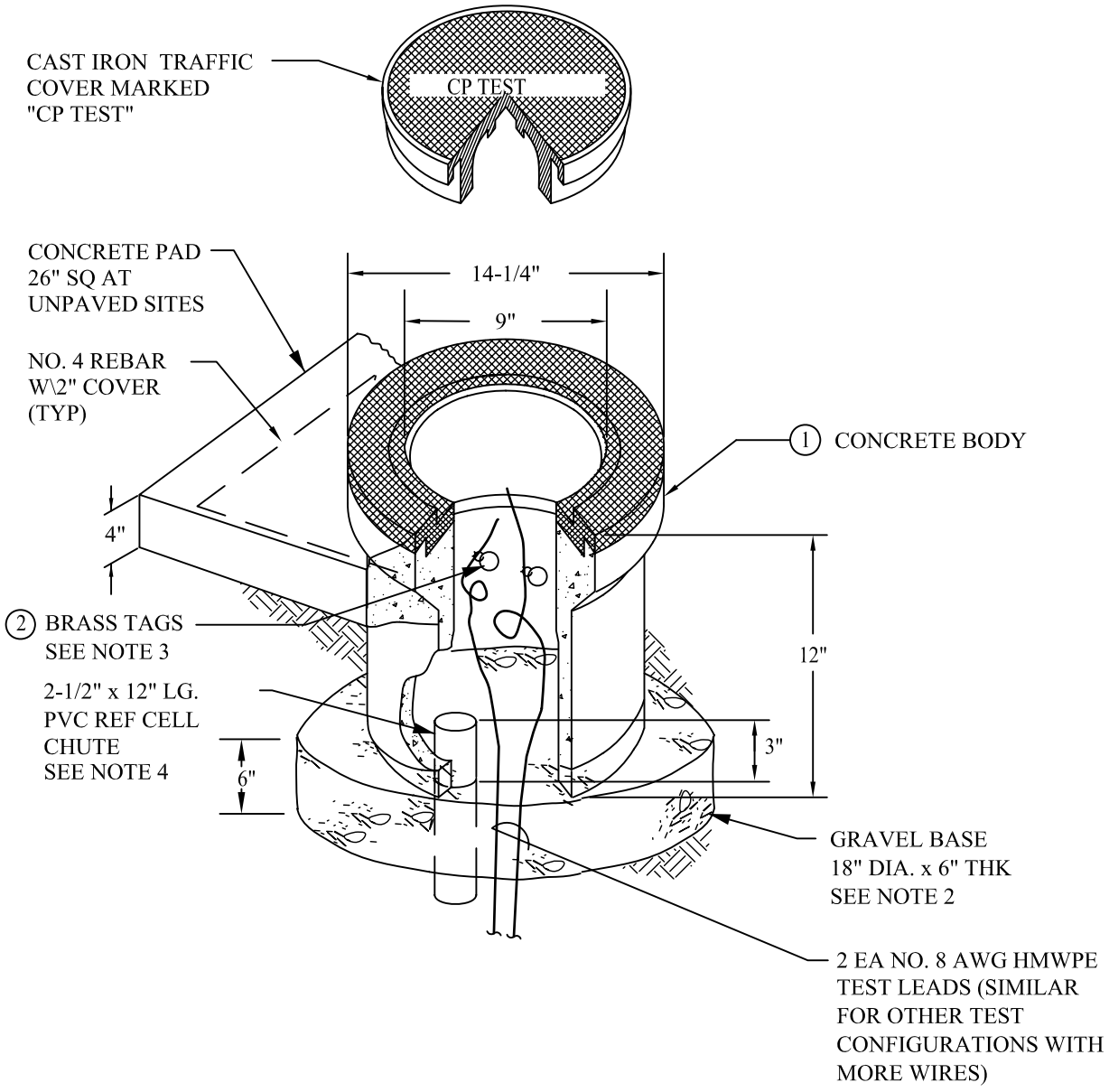
2-WIRE CATHODIC TEST STATION (CTS)

STD DWG NO.
G-1
JUNE 2008



NOTES:

1. ALL WIRES SHALL HAVE 18" MIN. SLACK IN BOX.
2. BOTTOM OF TEST BOX SHALL BE 3/4" GRAVEL BASE\LEACH FIELD.
3. FIRMLY STAMP BRASS TAGS "OMWD, SIZE AND SERVICE" (EXAMPLE: OMWD 24" RW). USE 1/4" HIGH CHARACTERS. SECURELY ATTACH BRASS TAGS TO TEST LEADS WITH BARE NO. 14 COPPER WIRE.
4. FILL PVC REF CELL CHUTE WITH NATIVE SOIL, NOT GRAVEL.

ITEM	DESCRIPTION	SPEC/DWG
1	CHRISTY G5 TRAFFIC VALVE BOX	13110
2	18 GA, 1-1/2" DIA WITH 1/16" OFFSET HOLE	13110

OLIVENHAIN MUNICIPAL WATER DISTRICT

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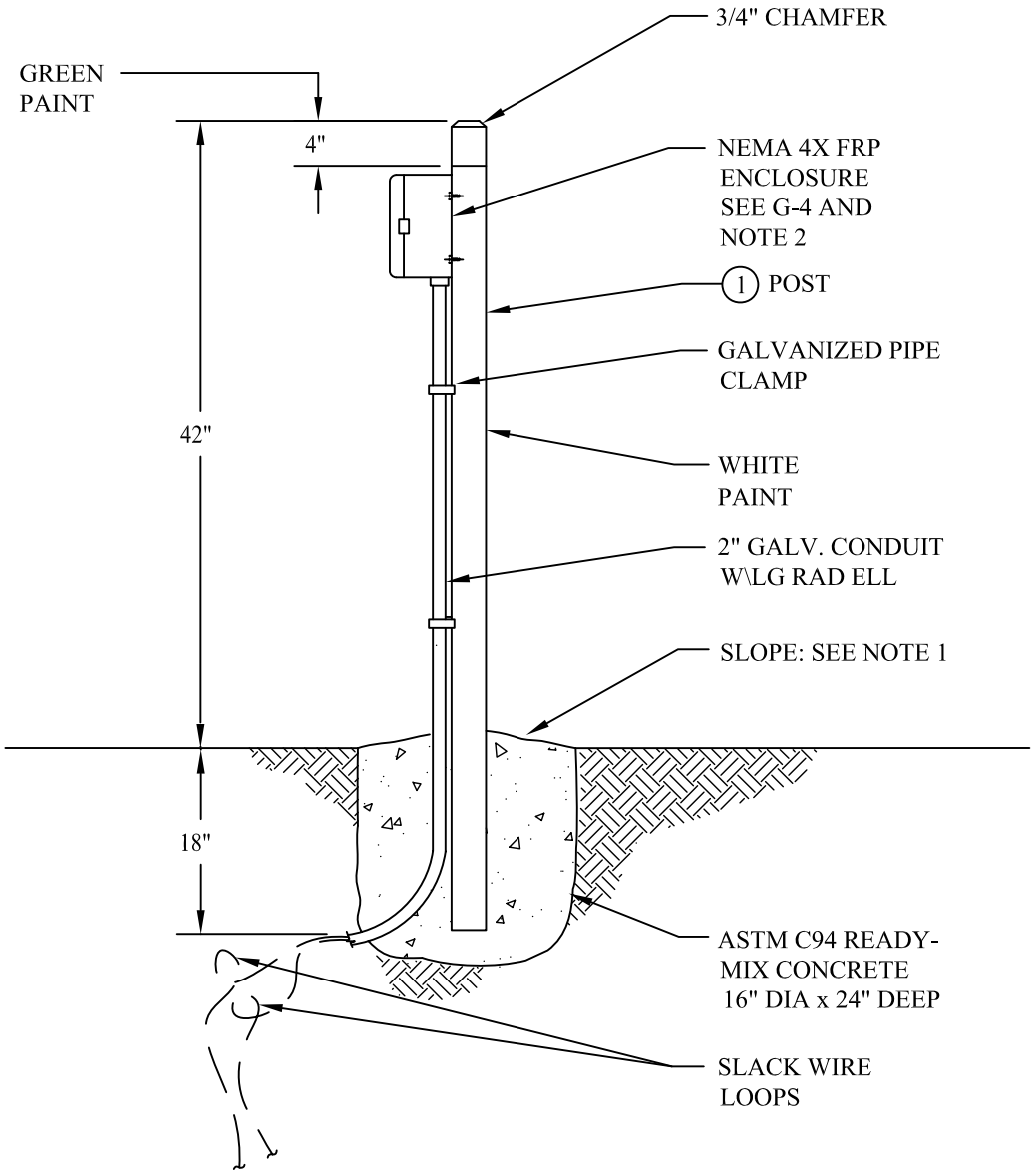
AT - GRADE TEST BOX

STD DWG NO.
G-2
JUNE 2008



NOTE:

1. SLOPE CONCRETE SLIGHTLY TO PREVENT WATER FROM POOLING NEXT TO POST.
2. ATTACH FRP BOX TO POST WITH 1 1/2 " NO. 10 WOOD SCREWS.

ITEM	DESCRIPTION	SPEC/DWG
1	CONSTRUCTION HEART REDWOOD 4" x 4" x 5' LONG	13110

OLIVENHAIN MUNICIPAL WATER DISTRICT

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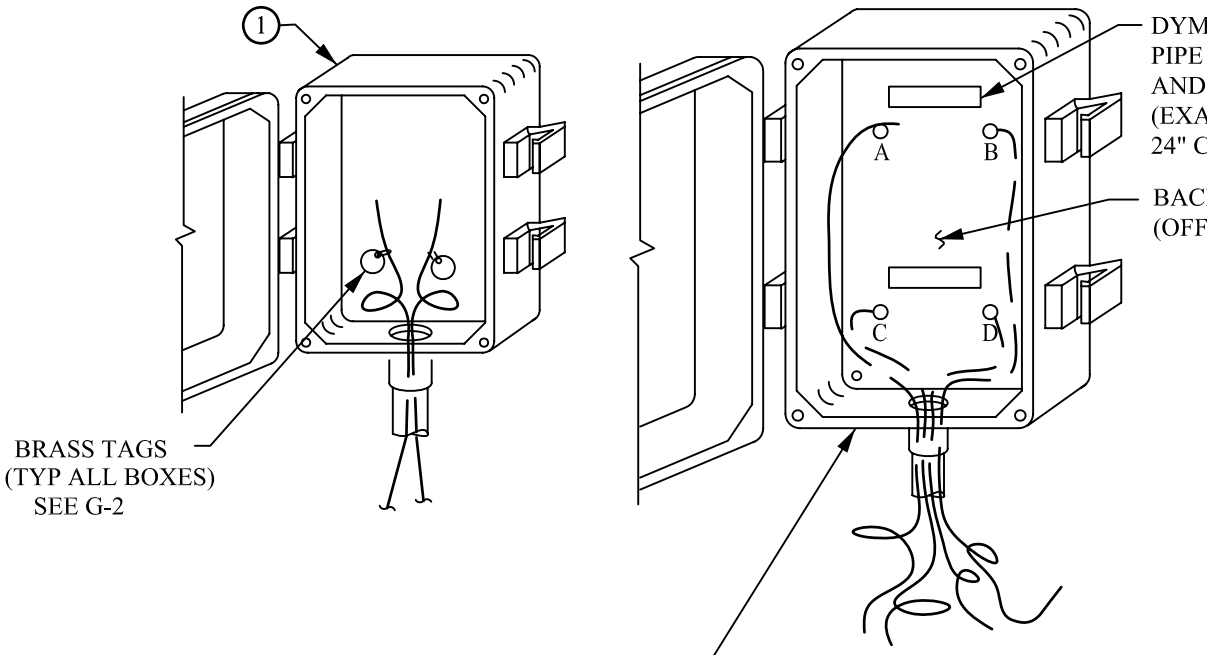
POST - MOUNTED TEST BOX

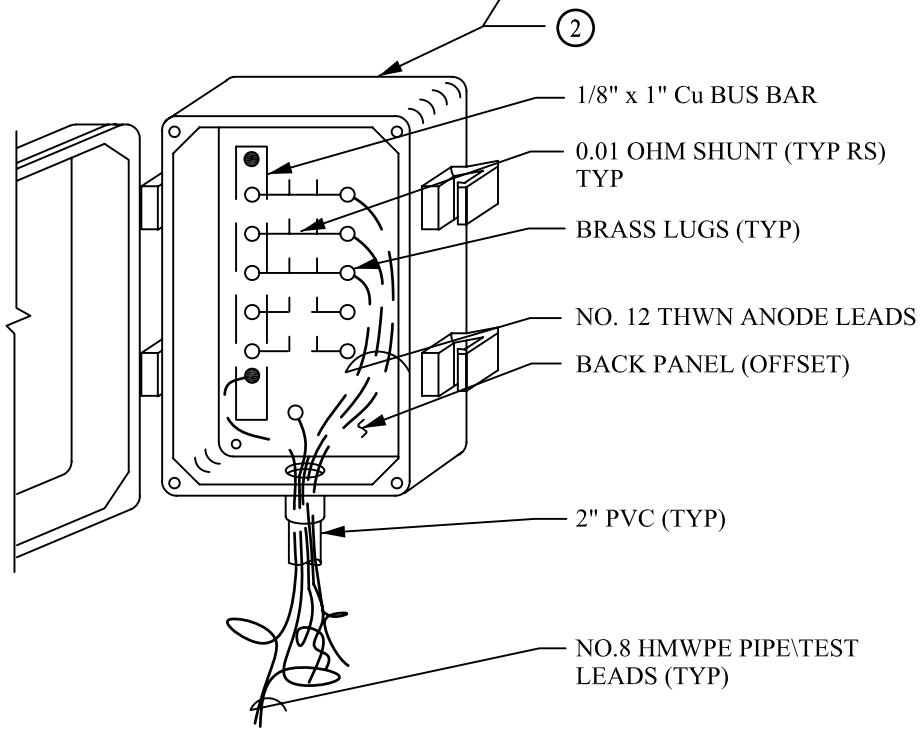
STD DWG NO.
G-3
JUNE 2008



2-WIRE CTS

4-WIRE CTS

(2 PIPE INSULATOR OR CASING CTS)



1 TO 5 ANODE CTS

NOTE:

1. FIX TO POST WITH 1-1/2" NO. 10 WOOD SCREWS. SEE G-3

ITEM	DESCRIPTION	SPEC/DWG
1	HOFFMAN 4X FRP ENCLOSURE (A-645JFGQRR) 5.5" x 4" x 5"	13110
2	HOFFMAN 4X FRP ENCLOSURE (A-865JFGQRR) W\COMPOSITE PANEL OFFSET W\PANEL EXTENDER (A-PE100) 7.5" x 6" x 5.25"	13110

OLIVENHAIN MUNICIPAL WATER DISTRICT

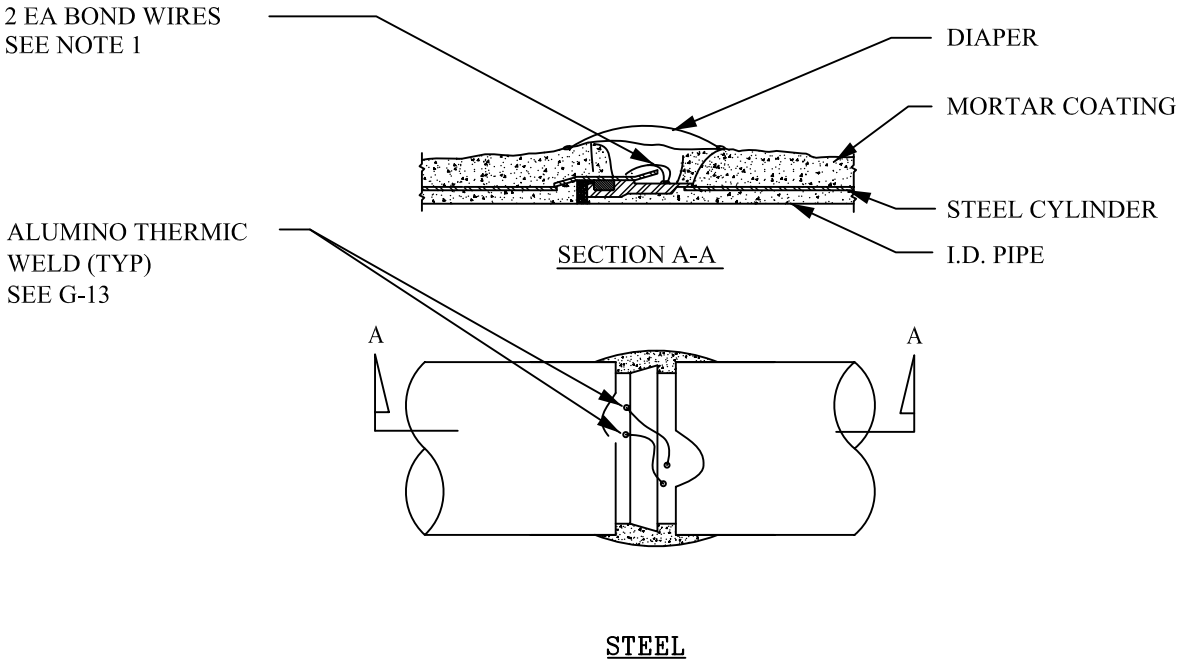
DeC CONSULTANTS, INC

WIRING IN POST-MOUNTED TEST BOX

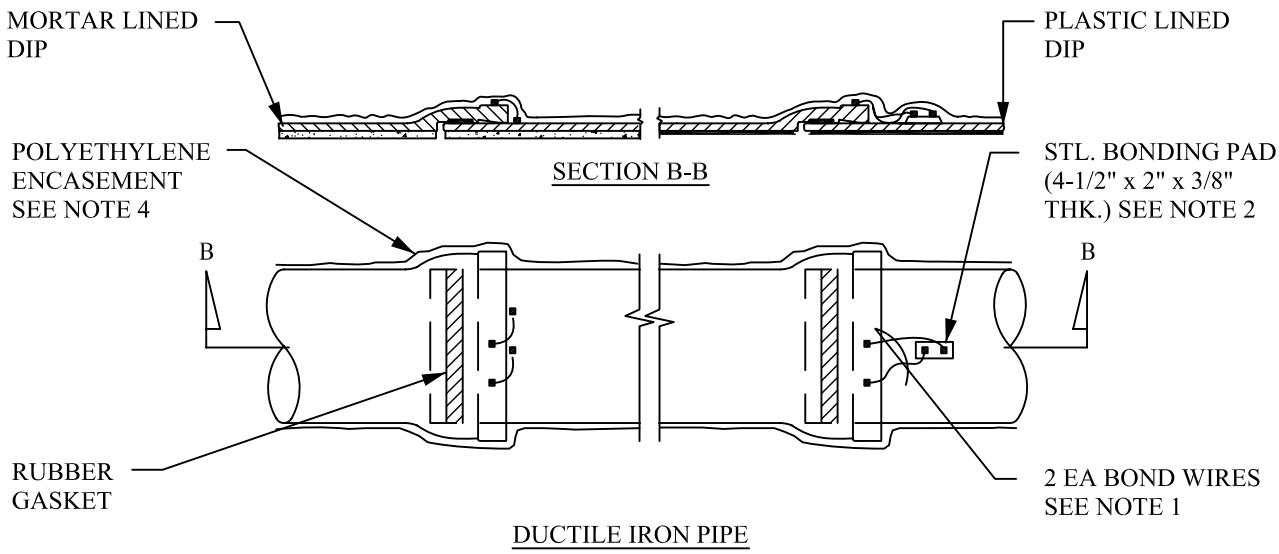
STD DWG NO.

G-4

JUNE 2008



STEEL



DUCTILE IRON PIPE

NOTES:

1. BOND WIRE SIZE:

PIPE DIA	WIRE SIZE
≥ 18"	NO. 2 AWG HMWPE (OR AS SPECIFIED ON DRAWINGS)
> 18"	NO. 4 AWG HMWPE

BOND WIRES TO BE AS SHORT AS POSSIBLE.

2. PADS TO BE INSTALLED ON PLASTIC LINED DIP BY PIPE SUPPLIER BEFORE APPLICATION OF COATING OR LINING. PADS TO BE FULLY SEAL WELDED.
3. ALL BONDED PIPE REACHES SHALL BE CONTINUITY TESTED.
4. POLYETHYLENE ENCASEMENT SHOWN FOR REFERENCE ONLY. SEE DRAWINGS AND STD SPECS FOR DIP COATING REQUIREMENTS.

OLIVENHAIN MUNICIPAL WATER DISTRICT

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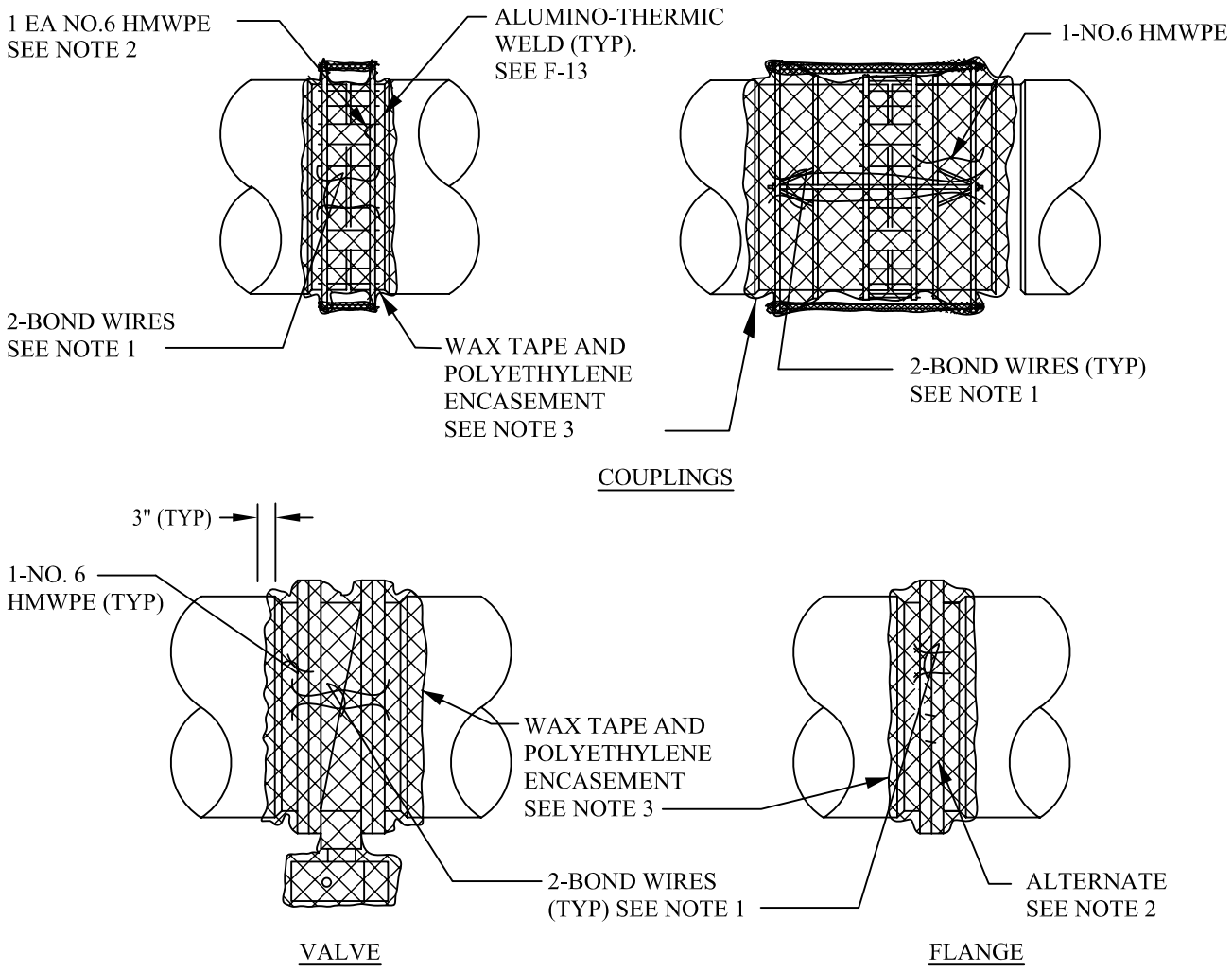
PIPE JOINT BONDING

STD DWG NO.
G-5
JUNE 2008



NOTES:

1. BOND WIRE SIZE:

PIPE DIA	WIRE SIZE
≥ 18"	NO. 2 AWG HMWPE
< 18"	NO. 4 AWG HMWPE

2. WIRES CAN BE WELDED DIRECTLY TO PIPE CYLINDER OR FLANGE. JUMPER FROM PIPE TO COUPLING CAN BE BRAZED TO FOLLOWER.
3. WRAP ALL RODS, BOLTS & IRREGULAR SURFACES. PER STD. SPEC SECTIONS 09952 AND 09954.
4. CARE SHALL BE TAKEN WHEN BACKFILLING TRENCH TO PREVENT DAMAGE TO WAX TAPE SYSTEM.

OLIVENHAIN MUNICIPAL WATER DISTRICT

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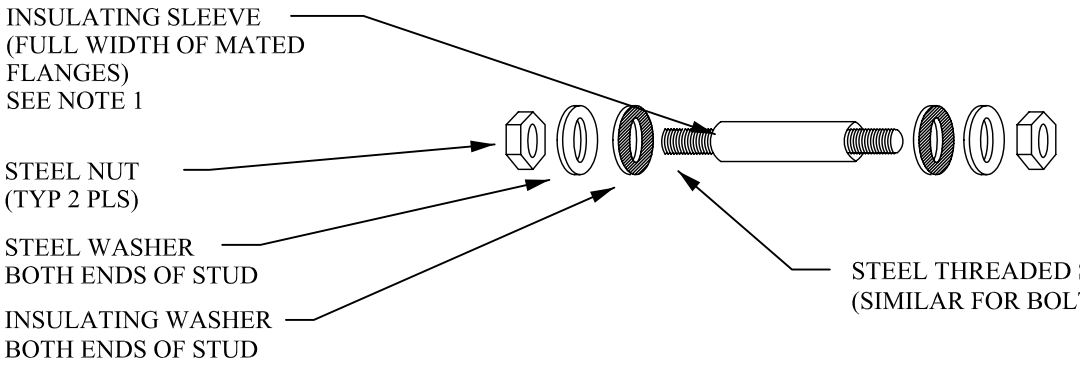
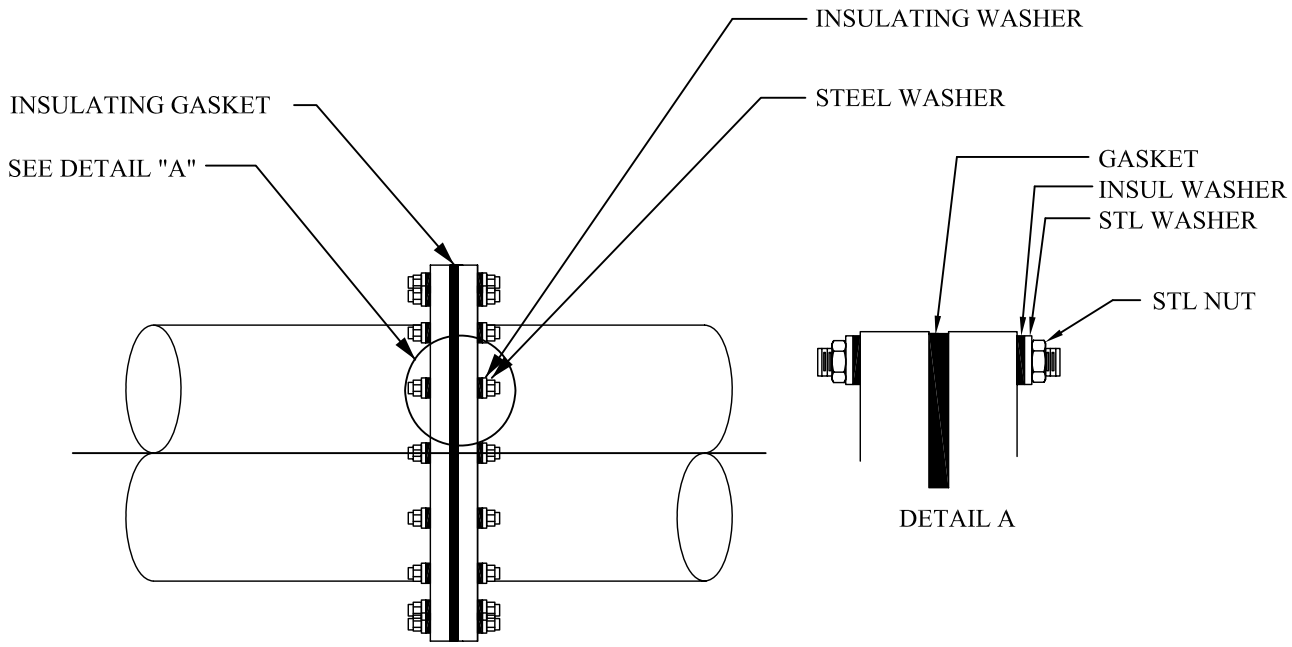
MECHANICAL JOINT BONDING

STD DWG NO.
G-6
JUNE 2008





NOTES:

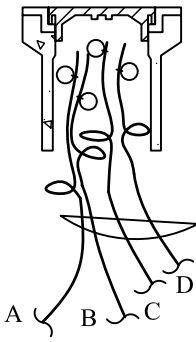
1. USE HALF WIDTH SLEEVES AT THREADED FLANGE BOLTS.
2. INSULATING MATERIALS:
   -GASKET - 12" AND GREATER- TYPE "E" FULLFACED PHENOLIC WITH RECTANGULAR NITRILE OR VITON O-RING SEAL. (PSI LINEBACKER OR EQUAL).
   12" OR LESS - TYPE "E" FULLFACED NEOPRENE FACED PHENOLIC.
   -SLEEVE 1/32-INCH THICK, FULL LENGTH TUBE, LAMINATED G-10 GLASS.
   -WASHER 1/8-INCH THICK LAMINATED G-10 GLASS SHEET.
3. ALIGN FLANGE PROPERLY AND FOLLOW GASKET MANUFACTURER BOLT TIGHTENING SEQUENCE INSTRUCTIONS.
4. DO NOT PAINT OUTER SURFACE OF FLANGE WITH METALLIC PIGMENTED OR CONDUCTIVE PAINTS.
5. TEST MATED FLANGE WITH GAS ELECTIONICS MODEL 601 INSULATION CHECKER (OR EQUIVALENT) PRIOR TO ACCEPTANCE. SEE STD. SPEC. 13110.

OLIVENHAIN MUNICIPAL WATER DISTRICT

DeC Consultants, Inc

ABOVE-GRADE INSULATING FLANGE

STD DWG NO.
G-7
JUNE 2008



FOR POST-MOUNTED CTS
WIRING SEE G-3

FOR AT-GRADE BOX LOCATION
SEE G-1.

HMWPE TEST WIRES
SEE NOTE 3

INSULATING SLEEVE
(FULL LENGTH)

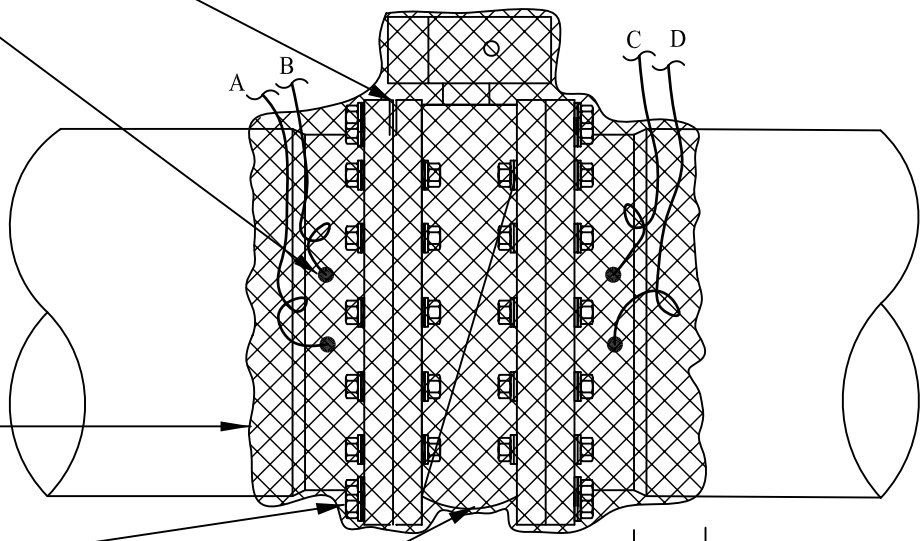
INSULATING WASHER
BOTH ENDS OF STUD

STEEL NUT & WASHER
BOTH ENDS OF STUD

STEEL THREADED STUD
(SIMILAR FOR BOLTS)

INSULATING GASKET
TYPE 'E'

ALUMINO-THERMIC
WELD (TYP)
SEE G-13



WAX TAPE WRAP AND
POLYETHYLENE ENCASEMENT
SEE G-6

THREADED BOLT AT
BONNET AND BASE
SEE NOTE 2

VALVE (SIMILAR FOR
FLANGE PAIR WITHOUT
VALVE)

3" TYP

NOTES:

1. FOR INSULATING MATERIALS SEE STD DWG G-7.
2. FULL LENGTH INSULATING SLEEVES REQUIRED AT ALL THRU-FLANGE BOLTS OR STUDS. HALF LENGTH SLEEVES REQUIRED AT THREADED BOLT HOLES AT VALVE BONNET AND BASE.
3. UNLESS OTHERWISE INDICATED ON DRAWINGS WIRES A & C ARE NO. 2 HMWPE, WIRE B IS NO. 6 HMWPE, AND WIRE D IS NO. 8 HMWPE.

OLIVENHAIN MUNICIPAL WATER DISTRICT

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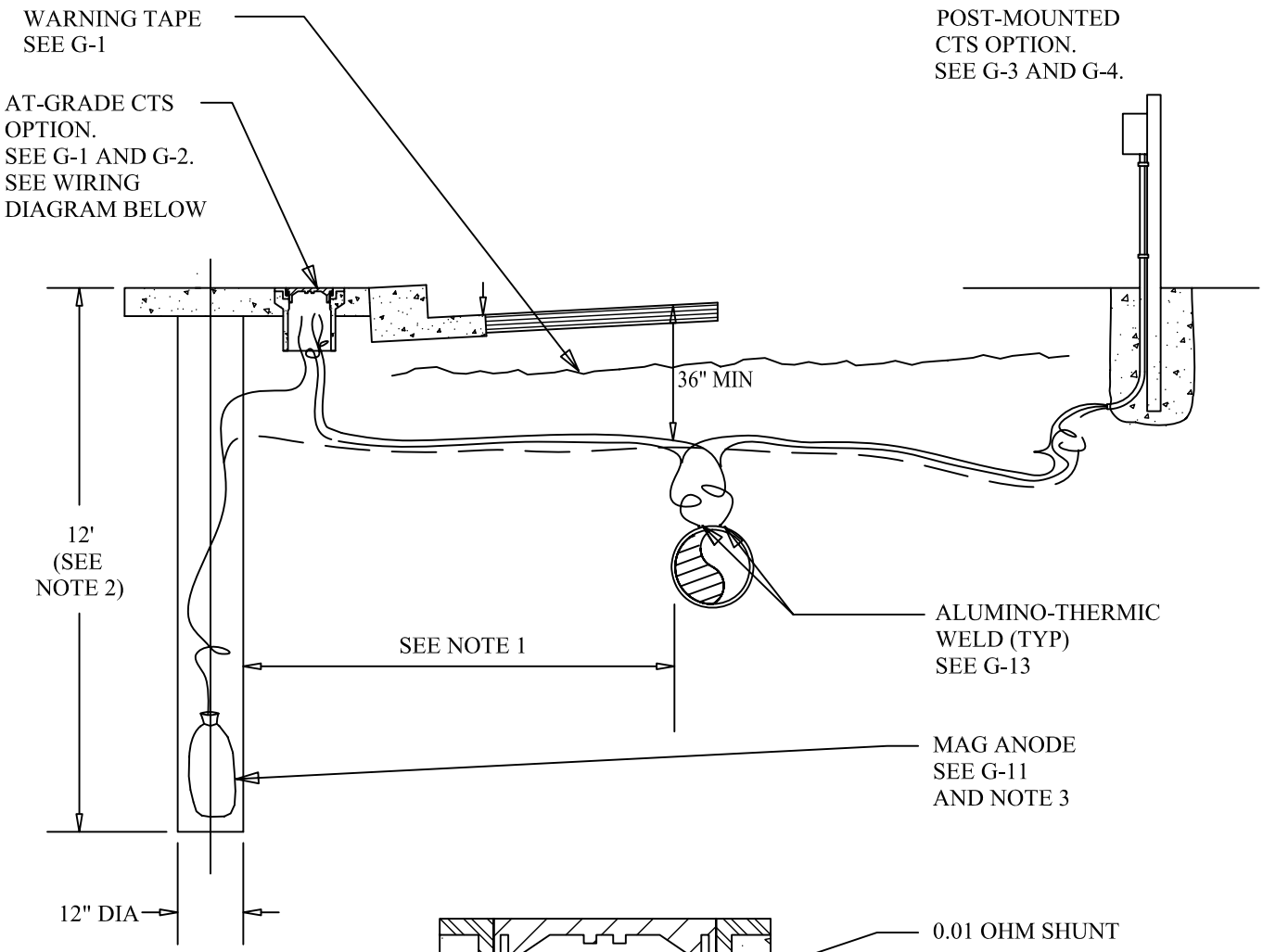
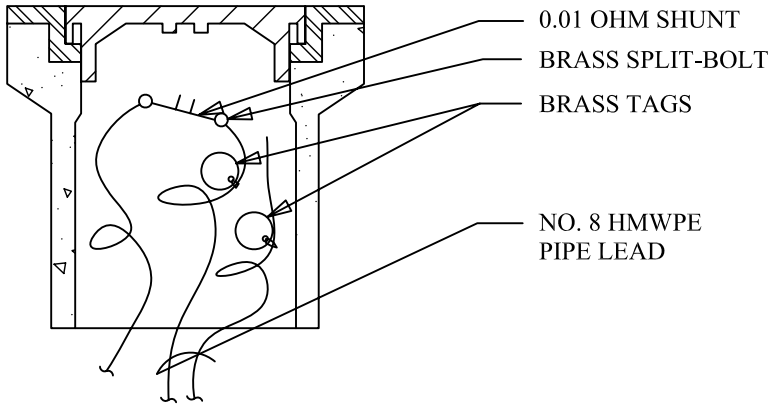
BURIED INSULATING FLANGE

STD DWG NO.
G-8
JUNE 2008





AT-GRADE CTS WIRING
(SEE G-1 AND G-2)

NOTES:

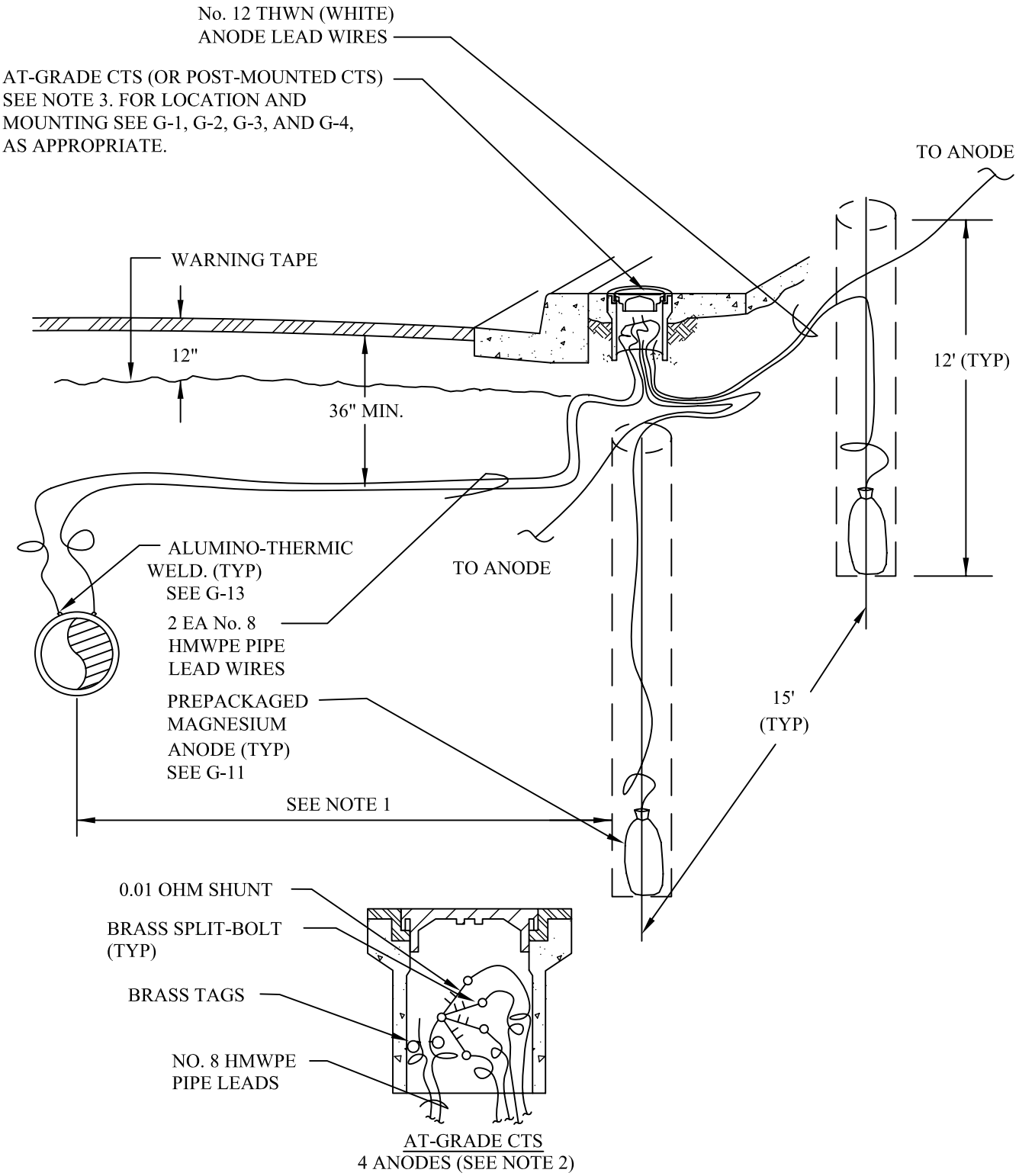
1. HORIZONTAL ANODE DISTANCE FROM PIPE SHALL BE MAXIMUM ALLOWABLE WITHIN OMWD RIGHT-OF-WAY OR AS INDICATED IN THE DRAWINGS. DO NOT INSTALL ANODE SUCH THAT A FOREIGN METALLIC PIPELINE EXISTS BETWEEN ANODE AND PIPE. MINIMUM OFFSET IS 8' UNLESS OTHERWISE SPECIFIED ON DRAWINGS.
2. DEPTH IS 12' UNLESS OTHERWISE INDICATED ON DRAWINGS.
3. LOCATE ANODE, AND TEST BOX PER DRAWINGS OR DISTRICT REPRESENTATIVES DIRECTION.
4. INSTALL EITHER AT-GRADE CTS OR POST-MOUNTED CTS AS DEFINED ON DRAWINGS.

OLIVENHAIN MUNICIPAL WATER DISTRICT

DeC Consultants, Inc

SINGLE ANODE INSTALLATION

STD DWG NO.
G-9
JUNE 2008



AT-GRADE CTS
4 ANODES (SEE NOTE 2)

NOTES:

1. HORIZONTAL ANODE DISTANCE FROM PIPE SHALL BE MAXIMUM ALLOWABLE WITHIN OMWD RIGHT-OF-WAY OR AS INDICATED IN THE DRAWINGS. DO NOT INSTALL ANODE SUCH THAT A FOREIGN METALLIC PIPELINE EXISTS BETWEEN ANODE AND PIPE. MINIMUM OFFSET IS 8' UNLESS OTHERWISE SPECIFIEED ON DRAWINGS.
2. WIRING FOR 4 ANODES SHOWN. USE SIMILAR WIRING FOR 2 TO 5 ANODES
3. INSTALL EITHER AT-GRADE CTS OR POST-MOUNTED CTS AS DEFINED ON DRAWINGS.

OLIVENHAIN MUNICIPAL WATER DISTRICT

DeC Consultants, Inc

MULTIPLE ANODE INSTALLATION

STD DWG NO.
G-10
JUNE 2008

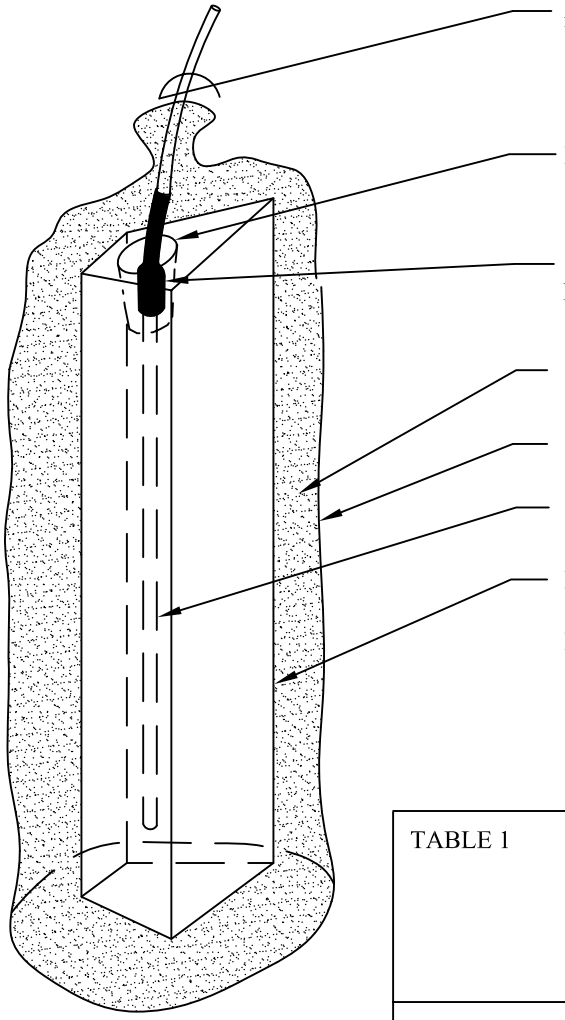


TABLE 1 BACKFILL COMPOSITION

75% GYPSUM
20% BENTONITE
5% SODIUM SULFATE

TABLE 2 MAGNESIUM ANODE ALLOY COMPOSITION
HIGH & STANDARD POTENTIALS

Element	HIGH POTL Weight %	STANDARD POTL Weight %
Al	.01 Max	5.3 to 6.7
Mn	0.05 to 1.3	0.15 to 0.30
Zn	0.002 Max	2.5 to 3.5
Cu	0.02 Max	0.02 Max
Ni	0.001 Max	0.002 Max
Fe	0.025 Max	0.003 Max
Si	0.002 Max	0.10 Max
Other	0.05 each Max and 0.3 Total Max	0.05 each Max and 0.3 Total Max
Mg	Balance	Balance

NOTES:
1. SEE STD SPEC 13110 FOR ANODE SOAKING AND INSTALLATION REQUIREMENTS.
2. USE HIGH POTENTIAL ANODES UNLESS STANDARD POTENTIAL ANODES ARE REQUIRED ON DRAWINGS.
3. SEE DRAWINGS FOR ANODE WEIGHT.

OLIVENHAIN MUNICIPAL WATER DISTRICT

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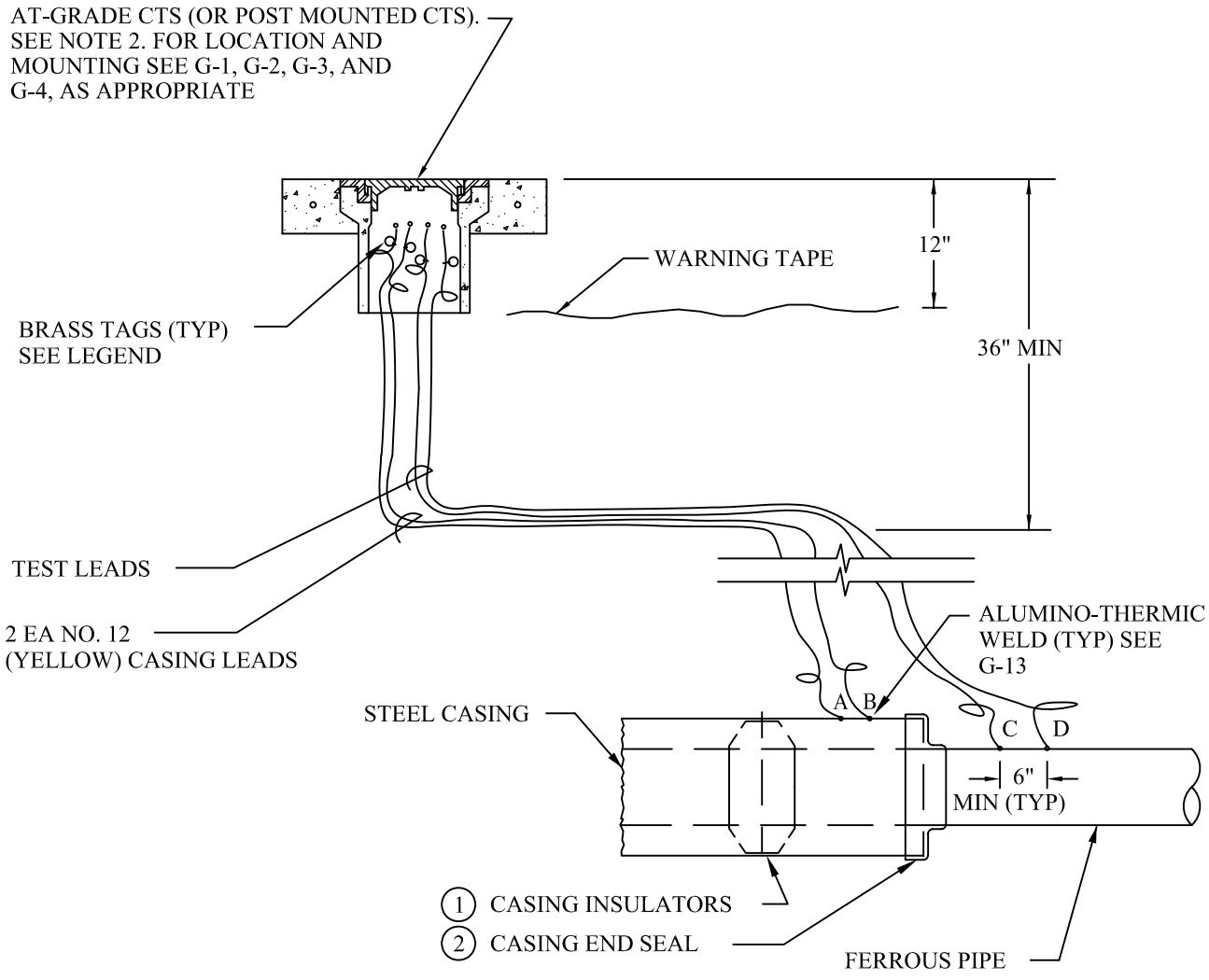
MAGNESIUM ANODE

STD DWG NO.
G-11
JUNE 2008



BRASS TAG LEGEND

WIRE	SIZE	ID STAMP
A	No. 12 (YEL) THWN	CASING
B	No. 12 (YEL) THWN	CASING
C	No. 8 HMWPE	OMWD, SIZE, SERVICE
D	No. 8 HMWPE	OMWD, SIZE, SERVICE

NOTE:

1. PROVIDE ELECTRICAL\METALLIC ISOLATION BETWEEN THE CASING AND THE CARRIER PIPE.
2. INSTALL EITHER AT-GRADE CTS OR POST-MOUNTED CTS AS DEFINED ON DRAWINGS.

ITEM	DESCRIPTION	SPEC/DWG
1	PSI MODEL A12 G-2 OR EQUAL	13110
2	HEAT SHRINK OR MECH LINK TYPE	13110

OLIVENHAIN MUNICIPAL WATER DISTRICT

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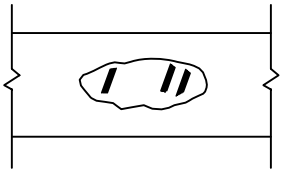
4 - WIRE TEST STATION FOR PIPE CASING

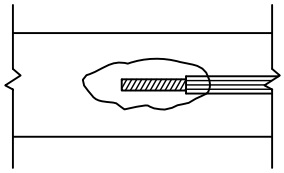
STD DWG NO.
G-12
JUNE 2008

STEP 1



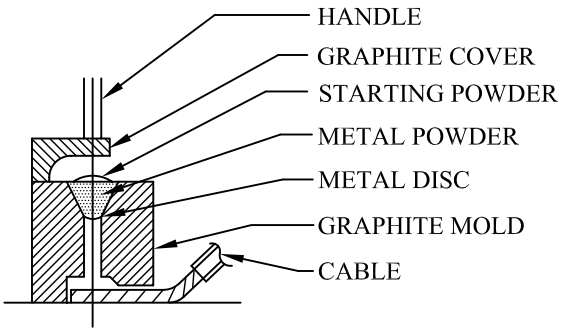
CHIP AWAY MORTAR
IF NECESSARY
FILE\GRIND SURFACE TO
BRIGHT METAL
AND CLEAN

STEP 2



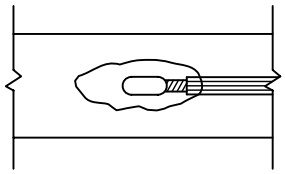
STRIP INSULATION
FROM WIRE

STEP 3



HOLD WELDER FIRMLY
WITH OPENING AWAY
FROM OPERATOR,
IGNITE STARTING POWDER

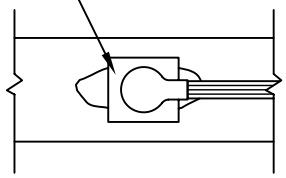
STEP 4



REMOVE SLAG
FROM CONNECTION
AND TEST
SEE NOTE 4

WELD CAP

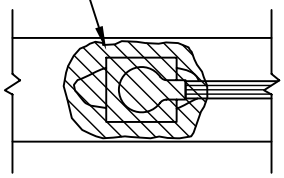
STEP 5



APPLY 2 COATS PRIMER
AND COVER CONNECTION
WITH PRE-FORMED WELD
CAP

BITUMINOUS COATING

STEP 6



COAT WITH BITUMINOUS
COMPOUND SEE NOTE 3

NOTES:

1. WELDER SHOWN IS FOR HORIZONTAL SURFACES; FOR VERTICAL SURFACES SIDE WELDER IS REQUIRED.
2. ATTACH 1 WIRE PER WELD ALL WIRE WELDS SHALL BE 6 INCHES APART, MINIMUM.
3. ALL EXPOSED METAL (STRUCTURE, WIRE, & WELD) SHALL BE COVERED WITH 2 COATS OF PRIMER AND AN ELASTOMERIC WELD CAP, THEN OVER-COATED WITH BITUMINOUS COMPOUND OVERLAPPING PIPE COATING BY 2 INCHES MIN.
4. ALL WELDS SHALL BE TESTED BY STRIKING THE WELD WITH A 2 LB HAMMER WHILE PULLING FIRMLY ON WIRE. ANY WELDS BROKEN OR LOOSENED SHALL BE RE-WELDED AND RE-TESTED. THE SURFACE MUST BE RE-GROUND AND CLEAN BEFORE RE-WELDING. ALL WELD SLAG SHALL BE REMOVED FROM THE WELD.

OLIVENHAIN MUNICIPAL WATER DISTRICT

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ALUMINO - THERMIC WELD

STD DWG NO.
G-13
JUNE 2008