

1. The three pump shafts shall be made electrically continuous by installing #8 AWG THWN/THHN single conductor stranded copper wire as shown. The wires shall be attached per the wire to structure detail attached.
2. Six (6) 40lb High Potential Magnesium Anodes (Packaged) shall be installed 5 feet off the building face and spaced 8 feet apart as shown. The anodes shall be installed in an 8 inch diameter drilled hole and at a depth of 10 feet from finished grade to bottom of anode.
3. Anode cables shall be placed in a trench with a minimum 2 feet cover and terminate in the junction box. Anode cables shall be #12 AWG THWN/THHN stranded copper wire and long enough to extend to the junction box with out splice connections.
4. Structure connection shall be attached to the nearest shaft plate per the wire to structure weld detail. The structure connection cable shall be #8 AWG THWN/THHN single conductor stranded copper wire.

PLAN
1/4" = 1'-0"

AS-RECORDED

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PEPPER LAWSON CONSTRUCTION, INC.
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HOUSTON, TX 77218
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HDR
HDR Engineering, Inc.
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COLORADO RIVER
WATER SUPPLY
PROJECT

CONTRACT NO. 5
WATER TREATMENT PLANT

**HIGH SERVICE PUMP STATION
PROCESS**

PLAN

Date	JANUARY 2004	Project No.	09669-1958	Drawing No.	04D-01	Issue	Z
Scale	AS NOTED	File Name	04D-01.DWG				

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Magnesium™ Soil Anodes



High Potential Magnesium

SuperMag High Potential Magnesium Anodes from Galvotec Alloys, Inc. offers typical high working driving potentials of -1.70 volts or better vs. copper/copper sulfate reference electrode, providing more current output per pound than AZ-63 alloy magnesium anodes. This alloy is the best choice for engineered systems in high resistivity soils.



Laboratory- Testing

Our modern laboratory is equipped with the best state of the art equipment available. Our technicians and inspectors are well trained and experienced. A Chemical Analysis is provided for every heat. Each heat is analyzed throughout production to insure consistency. Electrochemical testing is performed routinely on randomly selected heats as a quality assurance procedure, utilizing the ASTM-G-97 test method.



Production - Quality Control

Our production facilities offer the best possible working environment available in the industry. Our personnel are experienced in all phases of the foundry operation. Quality Control in our foundry begins on the foundry floor, where the first line of inspection is the casting and molding crew, our lab technicians, inspectors and managers complete the quality team. Our quality control staff carefully monitors raw material, core materials, packaging and all aspects of production. Laboratory and field investigations prove that Galvotec SuperMag anodes perform consistently.

Packaging- Availability

Anodes are supplied in backfill to meet the customers' specifications. The typical backfill material consists of 75% gypsum, 20% bentonite and 5% sodium sulfate. Standard sizes and shapes are warehoused. Anodes are available packaged and unpackaged with or without leads as per customers' specifications.



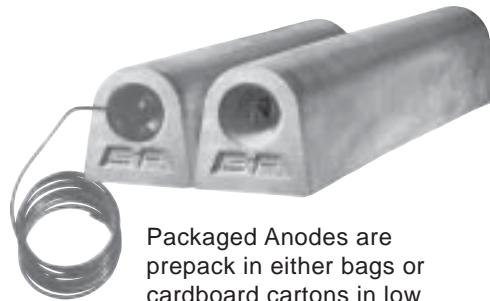
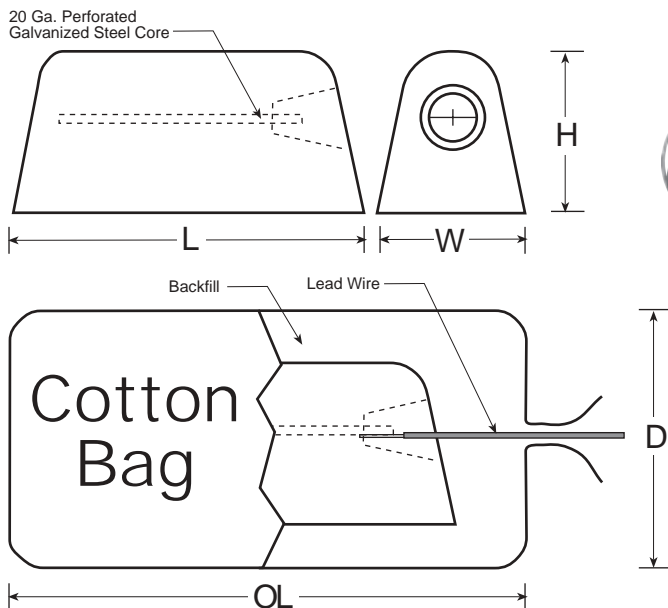
Magnesium SuperMAG™ High Potential Anodes



Galvotec Alloys produces High Potential anodes under our trademark SuperMAG™. Chemical analysis and potential tests are performed on every heat.

PRODUCT NO.	MODEL NO.	Weight				Anode Dimensions									
		BARE		PKDG.		Width (W)		Height (H)		Length (L)		Diameter (D)		Overall Length (OL)	
		lbs	kg	lbs	kg	in	mm	in	mm	in	mm	in	mm	in	mm
GA-MG-3 HP	3D3	3	1.4	8	3.6	3.50	89	3.75	95	5.00	127	6.0	152	10	254
GA-MG-5 HP	5D3	5	2.3	17	7.7	3.50	89	3.75	95	8.50	216	6.0	152	12	305
GA-MG-9 HP	9D3	9	4.1	27	12.2	3.50	89	3.75	95	14.00	356	6.0	152	17	432
GA-MG-17 HP	17D3	17	7.7	45	20.4	3.50	89	3.75	95	25.75	654	7.5	191	34	864
GA-MG-20 HP	20D2	20	9.1	70	31.8	2.75	70	3.00	76	59.75	1518	5.0	127	66	1676
GA-MG-32 HP	32D5	32	14.5	70	31.8	5.50	140	5.00	127	20.50	521	8.0	203	28	711
GA-MG-32 HP	32D3	32	14.5	94	42.2	3.50	89	3.75	95	45.25	1140	6.5	165	52	1326
GA-MG-40 HP	40D3	40	18.1	96	43.5	3.50	89	3.75	95	59.75	1518	6.5	165	66	1676
GA-MG-48 HP	48D3	48	21.8	100	45.4	3.50	89	3.75	95	51.00	1297	8.0	203	38	965
GA-MG-60 HP	4x4x60	60	27.2	125	56.7	4.00	102	4.00	102	60.00	1524	7.0	178	64	1626

Other shapes, sizes and weights available on request.



Packaged Anodes are prepack in either bags or cardboard cartons in low resistivity, quick wetting, prepared backfill consisting of 75% hydrated gypsum, 20% bentonite, and 5% sodium sulphate.

Connecting Wire: Standard 10 feet of solid or stranded #12 AWG Copper Lead Wire/THWN/THNN.



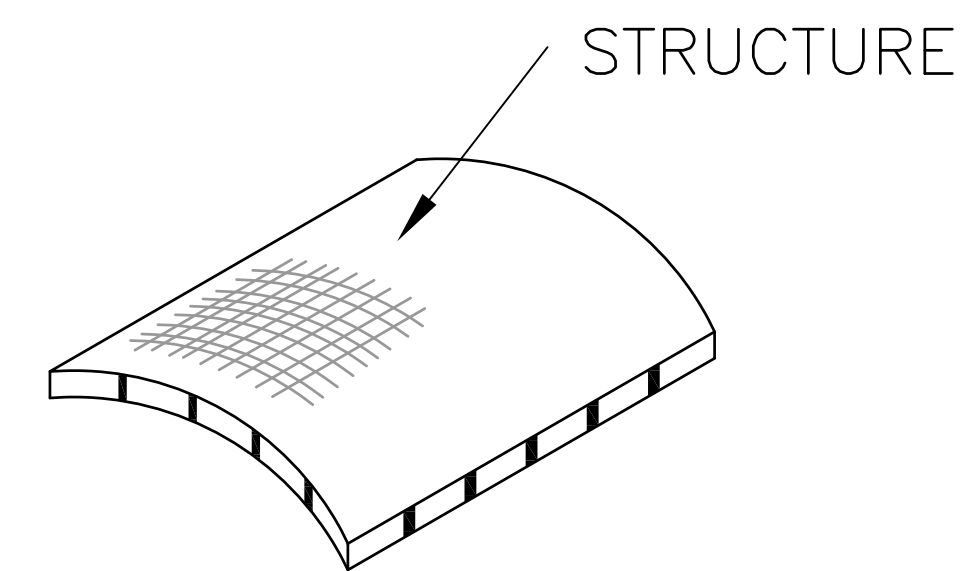
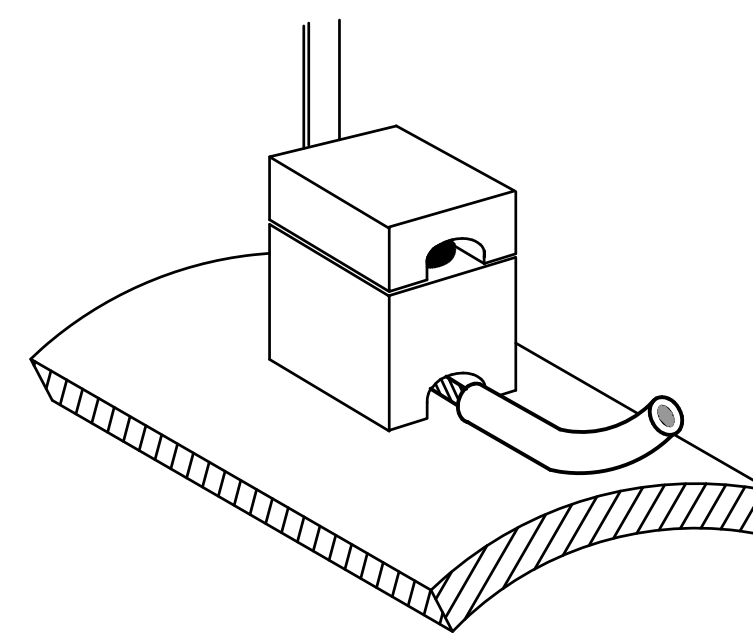
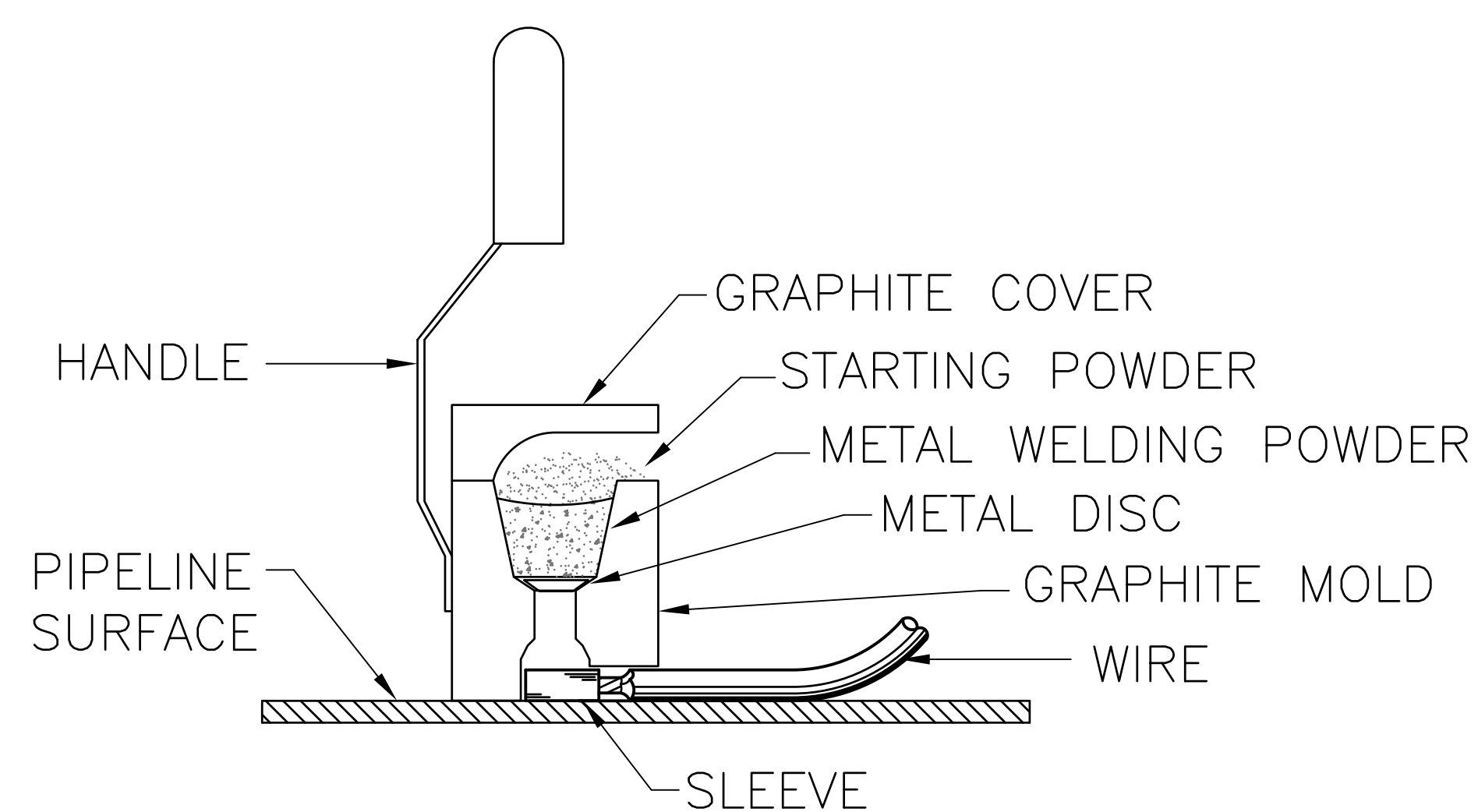
Typical Electrochemical Properties

Amps/Hrs./Lb.	500-580
Efficiency	50-58%
Closed Circuit Potential	-1.50 to -1.75v
Open Circuit Potential	-1.70 to -1.78v

Alloy Compositions	
Element	%
Aluminum (Max.)	0.01
Manganese (Min)	0.50 - 1.30
Iron (Max.)	0.03
Nickel (Max.)	0.001
Copper (Max.)	0.02
Other (Max.)	0.30
Magnesium	Balance

For the very best in Magnesium Anodes – specify SuperMAG™.

NOTE: While statements contained herein are believed to be accurate, they are offered as suggestions only and no warranty or representation is intended. Galvotec Alloys products are sold subject to the terms and conditions appearing on our printed order acknowledgment.



1. DEGREASE AND CLEAN STRUCTURE TO BARE, BRIGHT METAL WITH MECHANICAL DEVICES.
2. STRIP WIRE INSULATION AND ATTACH FROM WIRE AND ATTACH A BAC M1 COMPRESSION TERMINAL OR APPROVED EQUAL.

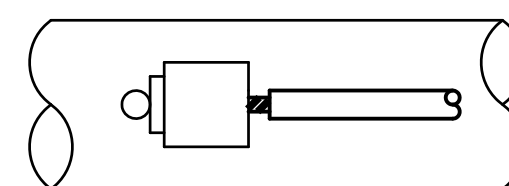
STEP 1. GRIND STRUCTURE CONNECTION AREA (3"x3") TO BARE SHINY METAL AND CLEAN.



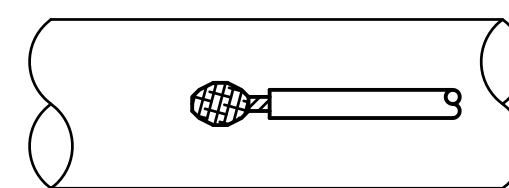
STEP 2. STRIP INSULATION FROM WIRE. ATTACH SLEEVE



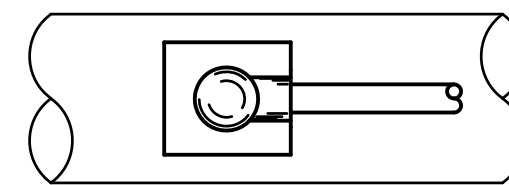
STEP 3. HOLD MOLD FIRMLY WITH OPENING AWAY OPERATOR & IGNITE WITH FLINT GUN.



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

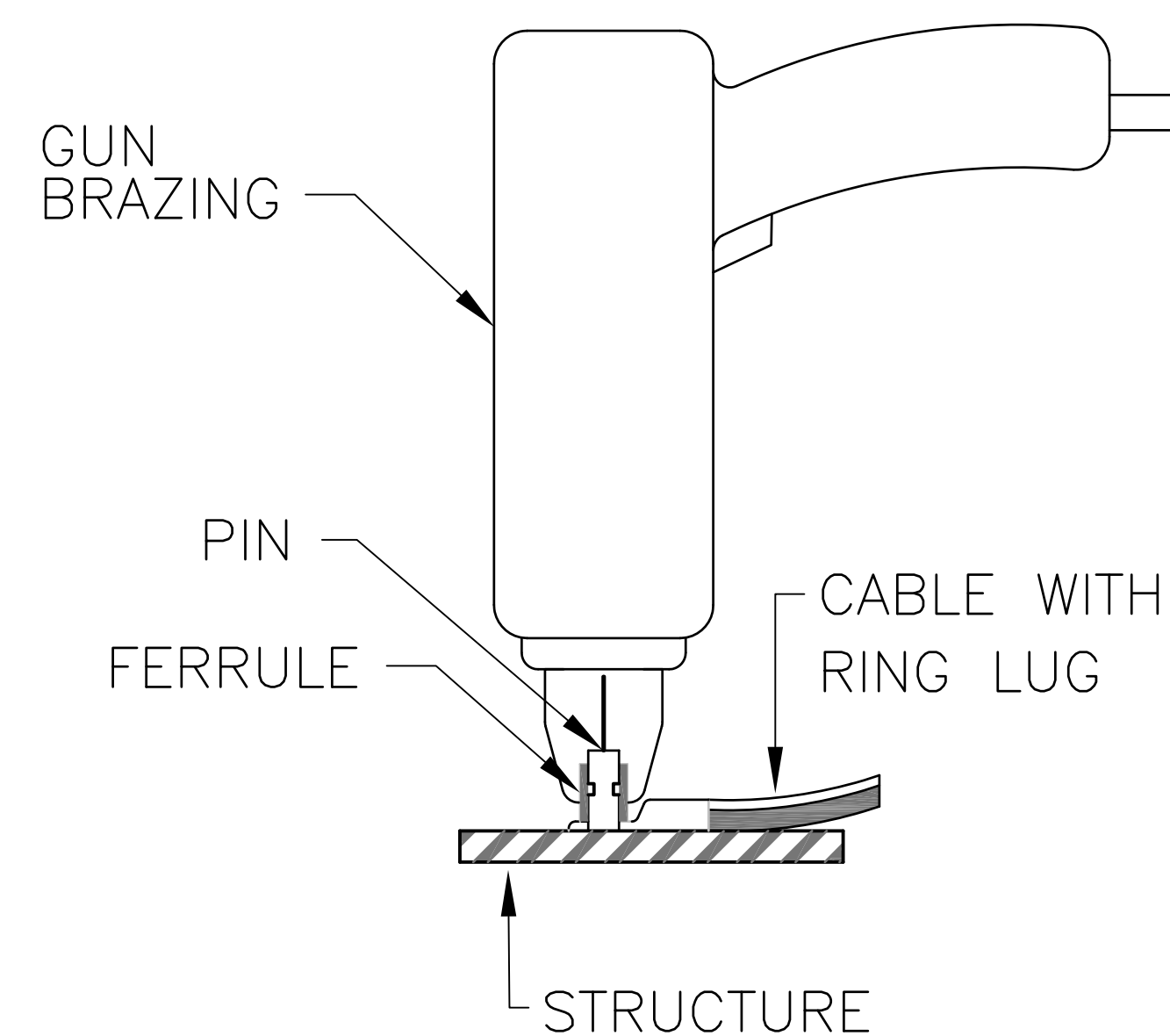
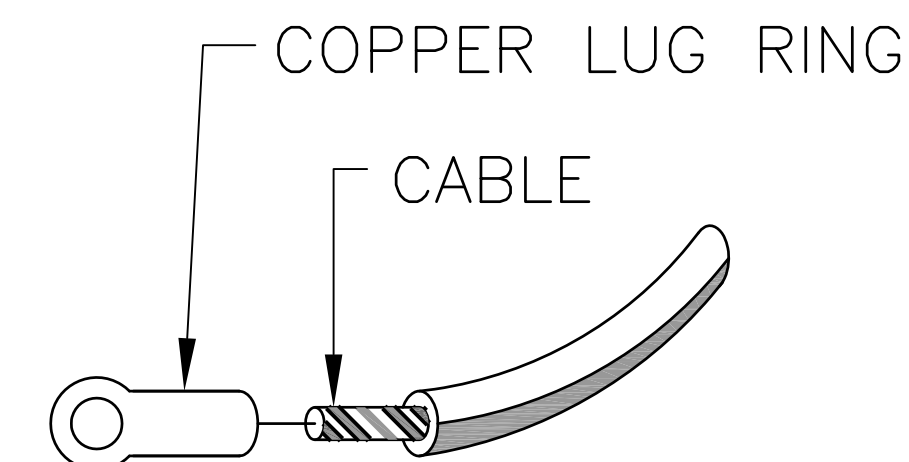


STEP 5. COVER CONNECTION AND EXPOSED STRUCTURE SURFACE WITH A WELD CAP AND BITUMINOUS COATING COMPOUND.



NOTE:

PROCEDURE SHOWN ABOVE IS TO BE USED AS A GENERAL GUIDE ONLY. CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS. ALL WELDS SHALL BE A MINIMUM OF 6" APART.



3. LOAD THE BRAZING GUN WITH A DIRECT BRAZING PIN AND FERRULE. USE A THREADED TYPE CONNECTION FOR ABOVE-GROUND USE ONLY.

4. BRAZE THE CABLE TO THE PIPE. EXTRA MATERIAL REQUIRED FOR DI OR CI PIPE.

5. TEST BRAZE BY BREAKING OFF THE SHANK OF THE PLAIN PIN WITH A HAMMER.

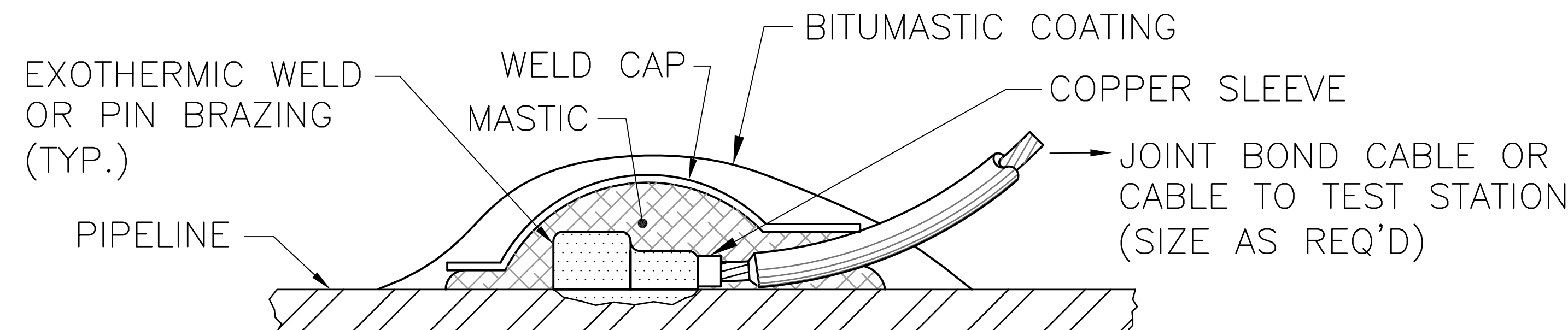
6. COVER CONNECTION WITH MASTIC FILLED WELD CAP AND BITUMASTIC COATING 80% SOLIDS BY VOLUME OVER WELD CAP AND ALL EXPOSED METAL.

PIN BRAZING

7. ALL WELDS SHALL BE A MINIMUM OF 6" APART.

8. ALLOW WELD COATING TO CURE PER MANUF. RECOM. BEFORE BURIAL.

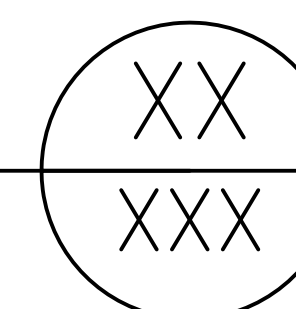
EXOTHERMIC WELD

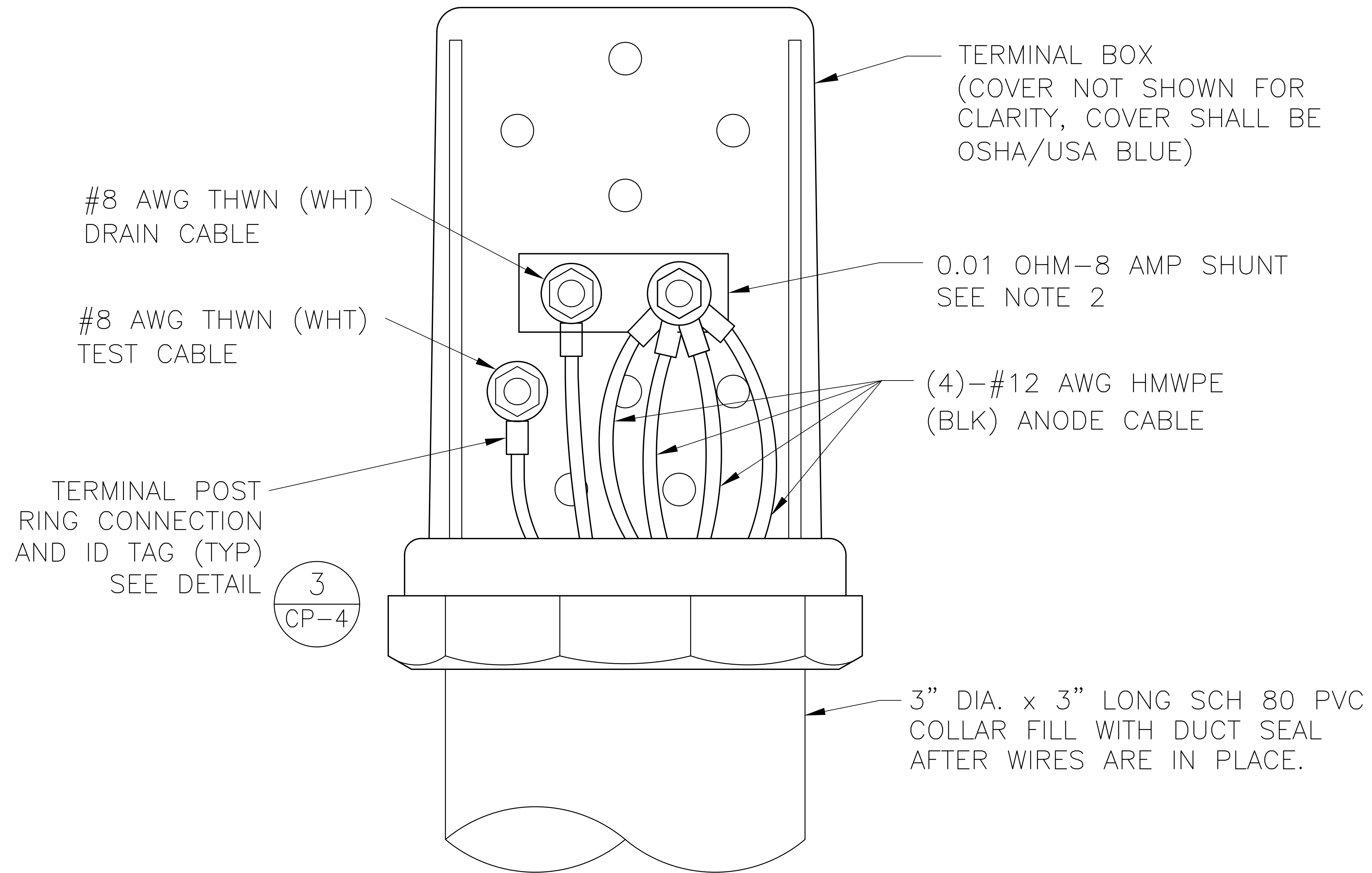


WIRING-TO-STRUCTURE WELD DETAIL

SCALE: NTS

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NOTE:

1. USE THE APPROPRIATE TERMINAL BOARD AT EACH TEST STATION AS SPECIFIED IN THE PLAN SHEETS.
2. DO NOT CONNECT SHUNT BETWEEN PIPE AND ANODES DURING CONSTRUCTION. SHUNT TO BE CONNECTED AFTER THE FREE-CORRODING POTENTIALS HAVE BEEN RECORDED BY THE CONTRACTOR'S CORROSION ENGINEER DURING FIELD TESTING.

TERMINAL BOARD

SCALE: NTS

