

## Addendum No. 1

**PROJECT:** Lewis & Clark Regional Water System  
Banner Job No. 20000.31.01

**CONTRACT:** Rock County Pump Station & Meter Buildings

**BID DATE:** September 8, 2016 at 2:00 p.m. CDT

**ADDENDUM ISSUE DATE: September 1, 2016**

### SPECIFICATIONS

**1. SECTION 00410 – BID FORM**

*Delete and Replace:* On Page 00410-5, Delete Paragraph 7.01.A in its entirety and replace with:

A. Required Bid security in the form of a Bid Bond in an amount of five percent (5%) of the Bidder's maximum Bid price made payable to the Owner issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions or a cashier's or certified check made payable to the Owner in an amount of five percent (5%) of the Bidder's maximum Bid price. The Bid Bond shall be accompanied by a certified copy of Power-of-Attorney.

**2. SECTION 00700 – GENERAL CONDITIONS**

*Delete:* Page 16 of 62 and Page 50 of 62.

*Add:* New Page 16 of 62 and new Page 50 of 62.

**3. SECTION 00800 – SUPPLEMENTARY CONDITIONS**

*Delete and Replace:* On Page 00800-6, delete SC-5.04.C – Contractor's Insurance, in its entirety and replace with the following:

SC-5.04.C Contractor's Insurance

Add the following new paragraphs immediately after Paragraph 5.04.B:

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- C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations.
1. Worker's Compensation and related coverages under Paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions:
    - a. State: ..... Statutory
    - b. Applicable Federal (e.g. Longshoreman's): ..... Statutory
    - c. Employer's Liability: ..... Not Less than \$1,000,000 each person

In case any class of employees engaged in hazardous work under this Contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide, and shall cause each Subcontractor to provide, adequate Employer's Liability Insurance for the protection of his employees not otherwise protected.

Contractor agrees to comply with all of the provisions relating to worker's compensation contained in Minn. Stat. §§ 176.181, Subd. 2 and 176.182 that exists as of the date of this Agreement and as such may subsequently be amended, modified or replaced from time to time, with respect to the completion of the Project, and the operation or management of the Real Property and, if applicable, the Facility.

2. Contractor's Comprehensive General Liability under paragraphs 5.04.A.3 through 5.04.A.6, and Contractual Liability under paragraph 5.04.B.3 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:
  - a. Bodily Injury, Property Damage and Personal Injury (including completed operations and products liability and XCU with Employment Exclusion deleted):  
\$1,000,000..... Each Occurrence  
\$2,000,000..... Annual Aggregate
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

Combined Single Limit Bodily Injury and Property Damage:  
\$1,000,000..... Each Accident
4. Contractor's Pollution Liability Insurance: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and

completed operations. This insurance shall be maintained for no less than three years after final completion:

\$1,000,000..... Each Occurrence  
\$1,000,000..... General Aggregate

5. Excess Liability:

\$4,000,000..... Umbrella Form

D. Additional Insureds: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

4. **SECTION 00800 – SUPPLEMENTARY CONDITIONS**

Add: On Page 00800-5, add the following paragraph:

SC-5.01.A                      Performance, Payment, and Other Bonds

Delete the second sentence of Paragraph 5.01.A of the General Conditions and replace it with the following:

"These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the first year of the two-year correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Owner acknowledges that there will be a period of time after the expiration of these bonds and the end of the two-year correction period."

And as so amended, the remainder of Paragraph 5.01.A of the General Conditions remains unchanged.

5. **SECTION 00800 – SUPPLEMENTARY CONDITIONS**

Add: On Page 00800-15, add the following paragraph:

SC-13.07.A                      Correction Period

Delete part of the first sentence of Paragraph 13.07.A of the General Conditions and replace it with the following:

“If within two years after the date of Substantial Completion....”

And as so amended, the remainder of Paragraph 13.07.A of the General Conditions remains unchanged.

**6. SECTION 00800 – SUPPLEMENTARY CONDITIONS**

*Delete:* On Page 00800-16, delete SC-13.07.F – Correction Period in its entirety.

**7. SECTION 00820 – BUREAU OF RECLAMATION SUPPLEMENTAL PROVISIONS**

*Add:* On Page 00820-9, add subparagraph (e) to Paragraph 9 – Funds Available for Project Construction Earnings:

- (e) Federal funds for construction of the upgrades to the Dove Avenue Meter Building will not be available until after June 1, 2017. Contractor shall not incur expenses or bill for equipment, labor or any other items related to the upgrades to the Dove Avenue Meter Building until after June 1, 2017.

**8. SECTION 02800 – CHAIN LIKE FENCES AND GATES**

*Add:* Specification Section 02800 as attached.

**9. SECTION 04810 – Unit Masonry Assemblies, Paragraph 2.5.D.2.**

*Add:*

- A. Provide Heavy-Duty eyelets required for extra-wide cavity conditions (4” or greater span). Eyelets shall be 3-point welded (or full butt weld) for extra strength. Provide one of the following products or a product equal to the following:

- 1) H-B 270-ML: Extra Heavy Ladder Adjustable Eye.
- 2) Wirebond: Series800 Ladder Level-eye with HT Hook.

**10. SECTION 05530 – METAL GRATINGS, Paragraph 2.5.A.**

*Delete:* In paragraph in its entirety.

*Add:*

- B. Pressure-Locked, Aluminum Bar Grating: Fabricated by swaging crossbars between bearing bars.
  - 1. Bearing Bar Spacing: 1 3/16 inch o.c.
  - 2. Bearing Bar Depth: As indicated on Drawings.

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3. Bearing Bar Width: As indicated on Drawings, no less than 1/8 inch.
  4. Crossbar Spacing: 4 inches o.c.
  5. Traffic Surface: Smooth
  6. Aluminum Finish: Mill finish.
11. **SECTION 06160 – SHEATHING**  
*Add:* Specification Section 06160 as attached.
12. **SECTION 07411 – Metal Roof Panels, Paragraph 2.8.2.**  
*Add:*
  - e. S-5, Metal Roofing Innovations.
13. **SECTION 07411 – Metal Roof Panels, Paragraph 2.8.**  
*Add:*
  5. Snow guard product shall require approval from metal panel roof manufacturer prior to installation. Contractor shall verify that warranty shall not be compromised by snow guard installation.
14. **SECTION 11520 – Pumps, Section 2.1.D.5**  
*Delete:* “Cartridge mechanical seal” under the Material column.  
*Add:* “Component seal” under the Material column.
15. **SECTION 11520 – Pumps, Section 2.1.H.5**  
*Delete:* “Mechanical seal shall be John Crane Type 21 or equal” in its entirety.  
*Add:* “Mechanical seal shall be John Crane Type 1 or Type 21 to meet respective building pressure requirements.
16. **SECTION 11700 – Interior Process Piping and Valves, Section 2.1.A.1**  
*Clarification:* All gaskets shall be rated for a test pressure of 350 psi.
17. **SECTION 13833 – Primary Process Measuring Devices**  
*Clarification:* Devices labeled “Luverne” should read “Rock County”.

### DRAWINGS

1. **PLAN SHEET 2.2A**  
*Add:* Attached General Civil Details Plan Sheet 2.2A
2. **PLAN SHEETS 3.1, 3.2, & 3.3**  
*Add:* Plan General Cathodic Protection Plan Sheets 3.1, 3.2, & 3.3.

**3. PLAN SHEET 14.1**

*Delete note for Detail 4/14.1:* All pipes under floor slabs shall be encased in concrete.

*Add note for Detail 4/14.1:* All pipes under floor slabs, buried piping within a distance of 10' outside the building, or other buried piping as called out on the plans shall be encased in concrete.

**4. PLAN SHEET 1-2.1**

*Clarification:* Contractor shall provide restrained joint ductile iron pipe and fittings from the building to the existing piping connection. All exterior pipe and fittings shall be encased in concrete.

**5. PLAN SHEET 1-4.2**

*Add note for Roof Framing Plan:* Install draft stop in attic space. Draft stop shall run north/south across entire attic space, approximately 40'-0" from west wall. Draft stop material shall be 3/8" structural grade exterior plywood or other approved draft stop material per 2015 IBC.

**6. PLAN SHEET 1-4.2**

*Add note for Detail 1 / 1-4.2:* Refer to Sheet 9.1 for finish materials and detailing.

**7. PLAN SHEET 1-4.3**

*Add:* Attached Detail 1/1-4.3 to Plan Sheet 1-4.3 for connection between monorail beam and support beams.

**8. PLAN SHEET 1-14.1**

*Clarification:* Restrained Joint Ductile Iron Pipe and fittings shall be encased in concrete from building to existing connection.

**9. PLAN SHEET 2-4.2**

*Add note for Detail 1 / 2-4.2:* Refer to Sheet 9.1 for finish materials and detailing.

**10. PLAN SHEET 3-14.1**

*Delete from Pipe Schedule:*

4" Pipe: Interior Piping - Carbon Steel

8" Pipe: Interior Piping - Carbon Steel

*Add to Pipe Schedule:*

4" Pipe: Interior Piping - Ductile Iron

8" Pipe: Interior Piping - Ductile Iron

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**ATTACHMENTS**

**ADDENDUM 1 FROM WEST PLAINS ENGINEERING DATED 9-1-16**

**SPECIFICATIONS**

GENERAL CONDITIONS REPLACEMENT PAGE 16 OF 62  
GENERAL CONDITIONS REPLACEMENT PAGE 50 OF 62  
SECTION 02800 – CHAIN LINK FENCES AND GATES  
SECTION 06160 - SHEATHING

**DRAWINGS**

PLAN SHEET 2.2 A  
PLAN SHEET 3.1, 3.2, & 3.3  
DETAIL 1/1-4.3

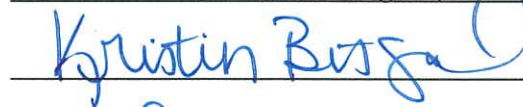
Addendum and drawings will also be available at [www.bannerassociates.com](http://www.bannerassociates.com) - follow the links under "Bid Information".

***Except as so amended herein, the remainder of the Contract Documents remain unchanged.***

Kristin Bisgard, PE #48845

I hereby certify that these plans and specifications were prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of Minnesota.

Kristin Bisgard, PE



Date: 9-1-16 Lic. No. 48845

Current Planholders list is available at [www.bannerassociates.com](http://www.bannerassociates.com) - follow the links under "Bid Information".

**END OF ADDENDUM NO. 1**

**Date:** September 1, 2016

**To:** Kristen Bisgard, Banner Associates

**From:** Chuck Hauck, PE; Mike Fisher, PE

**WPE#:** BS16009

**Project:** Lewis & Clark Rock County Pump Station and Meter Buildings **Location:** Various

**TO:** All prime contract bidders and all others to whom Drawings and Specifications have been issued by the Engineer. Acknowledge receipt of the Addendum by inserting its number and date on the Bid Form. Failure to do so may subject bidder to disqualification. This Addendum forms a part of the Contract Documents. It modifies them as follows:

#### **PRODUCT APPROVALS:**

The manufacturers and products, which are listed in the following texts, are approved for bidding. Final acceptance is contingent upon receipt and approval of final shop drawings. Manufacturer shall conform to all warranties, performances, size, etc., as the item specified. The burden of proof of the merit of the proposed substitution is upon the proposer. Those items not specifically listed by addendum shall not be approved for bidding.

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>MANUFACTURER</u>
23 3700	Louvers	Ruskin
23 3700	Wall Caps	Luxury Metals
26 5100	Type E	Chloride
26 5600	Type BE	Gardco
26 3213	Engine Generator	MTU

#### **SPECIFICATIONS:**

Section 26 2923 – Variable Frequency Motor Controllers – Part 2.04M

1. Add the following sentence to the paragraph: "The VFD supplier shall provide a factory trained technician on site during start-up to set up the Ethernet / IP communications interface and control interface data tables."

#### **DRAWINGS:**

MECHANICAL

SHEET 1-15.3

1. Install EF-4 in garage. Install 4" round exhaust duct and terminate at wall cap.
2. Coordinate exact thermostat locations with electrical gear.



#### SHEET 1-15.4

1. ROOFTOP UNIT SCHEDULE: Add note 7 to read: "MOP for RTU-1: 45 amps; MOP for RTU-2: 50 amps. Costs due to changes from these values resulting from alternate manufacturer's requirements, such as wire size, breaker size, etc., shall be the responsibility of the mechanical contractor and at no cost to the owner."

#### ELECTRICAL

#### SHEET 1-18.0

1. Clarification, Note 1 applies to the Utility Transformer located west of the building at the north side of the site plan.
2. Clarification, Note 2 applies to the Generator located west of the building at the south side of the site plan.

#### SHEET 1-18.1

1. Provide and install 60A WP disconnect and electrical connections for RTU-1 and RTU-2 (Roof Top Units). Circuit to MCC-1. Reference 1-15.3 HVAC Plan for locations of equipment. See below for more information.
2. Provide and install connections for EF-1, EF-2, EF-3 and EF-4. Reference 1-15.3 HVAC Plan for locations of equipment. Note 6 will apply to EF-1 and EF-2. See below for more information. Circuit as follows:
  - a. EF-1 circuited to LP101-31
  - b. EF-2 circuited to LP101-33
  - c. EF-3 circuited to LP101-11
  - d. EF-4 circuited to LP101-12
3. Provide and install combination starter and disconnect and connections for Gas Detection system and sensors. Locate combination starter and disconnect on east wall near EF-3. Reference 1-15.3 HVAC Plan for location of equipment. Reference note 12. See below for more information.
4. Add the following to note #8: "TOWER AND COAXIAL CABLING INFORMATION REFERENCED IN 13000 SERIES SECTION OF THE SPECIFICATION"
5. Add note 12 to SPECIFIC ELECTRICAL NOTES. Note to read "CARBON MONOXIDE DETECTOR, INTERLOCK DAMPER WITH ASSOCIATED MOTOR, AND PROVIDE NECESSARY CONTROL WIRING AND CONDUIT. PROVIDE NECESSARY RELAYS FOR THE MOTORIZED DAMPERS TO OPERATE INDEPENDENT OF FAN OPERATION (POWERED FROM LOAD SIDE). PROVIDE FVNR COMBINATION STARTER TO CONTROL FAN."
6. Provide and install connections for motorized dampers. Typical of 3. Reference 1-15.3 HVAC Plan for location of dampers. Reference note 4.
7. Provide and install connections for (2) thermostats. Reference 1-15.3 HVAC Plan for location of equipment. Reference note 5.
8. Receptacles located along the common wall between SECURITY/CONTROL ROOM 1-102 and BOOSTER STATION 1-101 to be circuited to panel LP101.
9. Receptacles located on interior and exterior of south wall of GARAGE/STORAGE ROOM 1-105 to be circuited to panel LP101.
10. Revise the conduit size in note 1 to be 4".

11. Referencing Entry 1-104, WH-1 will be located in BATHROOM 1-103. Coordinate with plumbing contractor exact location.
12. Add note number 9 by each of the HSP motors for remote speed control of the pumps.
13. Add note number 11 on the common wall between the booster station room and the chemical room, just to the north of the electric heater EH-1 in the booster station room. Provide an outlet and conduit and wire to circuit LP101-15 shown on the panel schedule.
14. Add thermostats for control of the electric heaters in the following locations for control of the nearest electric heater.
  - a. West wall of BOOSTER STATION 1-101.
  - b. East wall of BOOSTER STATION 1-101.
  - c. North wall of SECURITY/CONTROL ROOM 1-102.
  - d. West wall of BATHROOM 1-103.
  - e. East wall of CHEMICAL ROOM 1-106.
  - f. East wall of GARAGE/STORAGE ROOM 1-105.
  - g. South wall of GARAGE/STORAGE ROOM 1-105.

#### SHEET 1-18.2

1. Relocate photocell to north side of building and add to circuit LP-101-1 for control of exterior lights.
2. Light Switch in BATHROOM 1-103 to be 2-pole.

#### SHEET 1-18.3

1. Referencing MOTOR CONTROL CENTER SCHEDULE – MCC-1,
  - a. Add a 45A breaker for RTU-1 with 3#8, 1#12 GND in 1" C. Verify requirements with actual equipment provided.
  - b. Add a 50A breaker for RTU-2 with 3#6, 1#10 GND in 1 ½" C. Verify requirements with actual equipment provided.
  - c. Delete EH-2 from the schedule.
2. Referencing PANEL LP101, provide 54 pole panel in lieu of 42.
  - a. Convenience receptacles located on common wall between SECURITY/CONTROL ROOM 1-102 and BOOSTER STATION 1-101 to be circuited to breaker 35.
  - b. Convenience receptacles located in GARAGE/STORAGE ROOM 1-105 to be circuited to breaker 34.
  - c. Gas Detection System located in GARAGE/STORAGE ROOM 1-105 to be circuited to breaker 36.
  - d. Provide 6 spare 20A 1-pole breakers.
  - e. Remainder of panel to be prepared space.
3. Referencing Electric Heat Schedule,
  - a. EH-1 to be a single phase.
  - b. All EH units to be corrosion resistant and washdown rated.
4. See Revised STARTER AND DISCONNECT SCHEDULE included in this addenda.
5. Referencing LIGHTING FIXTURE SCHEDULE, fixture type BE to be type III distribution.

6. Referencing ONE-LINE DIAGRAM, Note 5 to read as follows: "PROVIDE & INSTALL A 1000 KW/1250 KVA, 480 VOLT, 3-PHASE, 4-WIRE, DIESEL GENERATOR WITH A WEATHERPROOF ENCLOSURE, A 1200A MAIN CIRCUIT BREAKER, AND A 1200A LOAD BANK TEST CIRCUIT BREAKER. PROVIDE 60A PANELBOARD FEEDER AS REQUIRED FOR BATTERY CHARGERS, TANK HEATERS, ETC. PROVIDE GENERATOR START SIGNAL AND REMOTE ANNUNCIATOR WIRING TO RTU AS REQUIRED. INSTALL PAD PER MANUFACTURERS REQUIREMENTS. PROVIDE TWO (2) 2" CONDUITS FROM GENERATOR LOCATION STUBBED UP INTO THE SECURITY/CONTROL ROOM FOR POWER AND LOW VOLTAGE WIRING REQUIREMENTS. FURNISH AND INSTALL A CONTINUOUS FUEL LEVEL SENSOR IN THE TANK TO REPORT BACK TO RTU. PROVIDE CONDUIT FROM SENSOR TO RTU AS REQUIRED."

#### SHEET 2-18.1

1. Provide and install connections for thermostat. Reference 2-15.3 HVAC Plan for location of equipment. Reference note 5.
2. Specific notes #1 and #3 to be "Not Used".
3. Add note number 9 by each of the HSP motors for remote speed control of the pumps.
4. Add note number 11 on the north wall of METER BUILDING 1-101. Provide an outlet and conduit and wire to circuit LP101-15 shown on the panel schedule. Verify exact location prior to rough-in.

#### SHEET 2-18.2

1. Light Switch in CHEMICAL ROOM 1-103 to be 3-way.

#### SHEET 1-18.3

1. Referencing PANEL LP101, Circuit #13 becomes spare.
2. Referencing Electric Heat Schedule, all EH units to be corrosion resistant and washdown rated.
3. Referencing STARTER AND DISCONNECT SCHEDULE, AC-1 to be 208V/3.
4. Referencing LIGHTING FIXTURE SCHEDULE, fixture type BE to be type III distribution.

**End of Document**

# STARTER AND DISCONNECT SCHEDULE

UNIT NO	MOTOR		STARTER			DISCONNECT			REMARKS/NOTES
	MCA/ HP	VOLT PHASE	TYPE	NEMA SIZE	ENCLOSURE TYPE	KEY FEATURES	SWITCH SIZE	FUSE SIZE	
EF-1	350W	120/1	LIGHT SWITCH	-	-	-	BY DIV 23	FUSED / NEC	INTERCONNECT W/ MOTORIZED DAMPER, NOTE 2
EF-2	80W	120/1	LIGHT SWITCH	-	-	-	BY DIV 23	FUSED / NEC	NOTE 2
EF-3	1/4	120/1	CO2 PANEL	-	-	-	BY DIV 23	FUSED / NEC	INTERCONNECT W/ MOTORIZED DAMPERS, NOTE 2
EF-4	80W	120/1	CONTINUOUS	-	-	-	BY DIV 23	FUSED / NEC	NOTE 2
WH-1	7.2kW	208/1					60	FUSED / NEC	
RTU-1	35	480/3	T-STAT	-	-	-	60 WP	FUSED / NEC	NOTE 1
RTU-2	45	480/3	T-STAT	-	-	-	60 WP	FUSED / NEC	NOTE 1
HSP-1	200	480/3	VFD IN MCC					FUSED / NEC	NOTE 3
HSP-2	200	480/3	VFD IN MCC					FUSED / NEC	NOTE 3
HSP-3	200	480/3	VFD IN MCC					FUSED / NEC	NOTE 3
FUT. HSP-4	200	480/3	VFD IN MCC					FUSED / NEC	NOTE 3
FUT. HSP-5	200	480/3	VFD IN MCC					FUSED / NEC	NOTE 3

- NOTES:
1. PACKAGED EQUIPMENT IS 3 OR 4-WIRE (NEUTRAL REQUIRED)
  2. PROVIDE CONTROL WIRING AS REQUIRED BY MECHANICAL MANUFACTURERS.
  3. PROVIDE A SHAFT GROUNDING KIT ON MOTORS WITH VFD'S.

KEY:

FVNR = FULL VOLTAGE NON-REVERSING, FVR = FULL VOLTAGE REVERSING, VFD = VARIABLE FREQUENCY DRIVE, RVS = REDUCED VOLTAGE STARTER  
 WP = WEATHERPROOF, MMS = MANUAL MOTOR STARTER WITH OVERLOAD PROTECTION & LOCK-OFF GUARD

GENERAL NOTES:

PROVIDE & FIELD INSTALL A SHAFT GROUNDING KIT ON ALL MOTORS WITH VFD'S  
 PROVIDE ALL DISCONNECTS WITH NEUTRAL KITS  
 PROVIDE ALL MOTORS OVER 5 HP WITH SOLID STATE OVERLOADS, PROVIDE ALL STARTERS WITH (2) N.O. & (2) N.C. AUXILIARY CONTACTS  
 COORDINATE EXACT REQUIREMENTS WITH MECHANICAL SHOP DRAWINGS PRIOR TO ORDERING EQUIPMENT OR RUNNING FEEDERS

## ARTICLE 5 – BONDS AND INSURANCE

### 5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. ~~These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents.~~ Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### 5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

### 5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

### 13.07 *Correction Period*

- A. ~~If within one year after the date of Substantial Completion~~ (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. repair such defective land or areas; or
  - 2. correct such defective Work; or
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## SECTION 02800 - CHAIN LINK FENCES AND GATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Chain-Link Fences: Industrial.
- B. Related Sections include the following:
  - 1. Division 31 Section "Earth Moving" for site excavation, fill, and backfill where chain-link fences and gates are located.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Minimum Post Size and Maximum Spacing for Wind Velocity Pressure: Determine based on mesh size and pattern specified, and on the following minimum design wind pressures and according to CLFMI WLG 2445:
    - a. Wind Speed: 90 mph.
    - b. Fence Height: 6 feet.
    - c. Line Post Group: IC, ASTM F 1043, Schedule 40 ASTM F 1083, RR-F191/3D Grade A.
    - d. Wind Exposure Category: C.
  - 2. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.
- B. Lightning Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

#### 1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
  - 1. Fence and gate posts, rails, and fittings.
  - 2. Chain-link fabric, reinforcements, and attachments.
  - 3. Gates and hardware.

- B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.
- C. Samples for Verification: For each type of chain-link fence and gate indicated.
- D. Product Certificates: For each type of chain-link fence, operator, and gate, signed by product manufacturer.
  - 1. Strength test results for framing according to ASTM F 1043.
- E. Qualification Data: For Installer.
- F. Field quality-control test reports.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
  - 1. Engineering Responsibility: Preparation of data for chain-link fences and gates, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

#### 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.
- B. Interruption of Existing Utility Service: Do not interrupt utility services to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect no fewer than two days in advance of proposed interruption of utility services.
  - 2. Do not proceed with interruption of utility services without Architect's written permission.

### PART 2 - PRODUCTS

#### 2.1 CHAIN-LINK FENCE FABRIC

- A. General: Height indicated on Drawings. Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM F 1345, CLFMI CLF 2445, RR-F-191/1D and requirements indicated below:
  - 1. Steel Wire Fabric: Metallic-coated wire with a diameter of 0.148 inch.
    - a. Mesh Size: 2 inches.
    - b. Weight of Metallic (Zinc) Coating: ASTM F 1345, Type I, Class 2, 2.0 oz./sq. ft. with zinc coating applied before weaving.



- c. Coat selvage ends of fabric that is metallic coated after the weaving process with manufacturer's standard clear protective coating.
2. Selvage: Knuckled at one selvage and twisted at the other.

## 2.2 INDUSTRIAL FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, ASTM F 1083 for Group IC round pipe, and the following:
  1. Group: IC, round steel pipe, yield strength 50,000 psi.
  2. Fence Height: 6 feet.
  3. Strength Requirement: Heavy industrial according to ASTM F 1043.
  4. Post Diameter and Thickness: According to ASTM F 1083.
    - a. Line Post: 2.375 inches.
    - b. End, Corner and Pull Post: 2.875 inches.
    - c. Horizontal-Slide Gate Post: According to ASTM F 1184.
- 1) Openings Wider Than 12 Feet: Steel post, 4-inch diameter, and 8.65-lb/ft. weight.
- B. Post, rails, and braces, with the exception of galvanized steel (Schedule 40 weight) or aluminum alloy (Schedule 40 weight) which conform to the requirements of ASTM F 1083, shall demonstrate the ability to withstand testing in salt spray in accordance with ASTM B 117 as follows:
  1. External: 1,000 hours with a maximum of 5% red rust.
  2. Internal: 650 hours with a maximum of 5% red rust.
  3. The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Fed. Spec. RR-F-191/3.

## 2.3 TENSION WIRE

- A. General: Provide horizontal tension wire at the following locations:
  1. Location: Extended along the bottom of fence fabric.
- B. Metallic-Coated Steel Wire: No.7 gauge marcelled tension wire complying with ASTM A 817, ASTM A 824, and the following:
  1. Metallic Coating: Type by process, with the following minimum coating weight:
    - a. Matching chain-link fabric coating weight.

## 2.4 INDUSTRIAL HORIZONTAL-SLIDE GATES

- A. General: Comply with ASTM F 1184 and RR-F-191/2D for single slide gate types.
  1. Classification: Type II Cantilever Slide, Class 1 with external roller assemblies.
  2. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1184 for materials and protective coatings.

- B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 1184 and the following:
  - 1. Gate Fabric Height: 6 feet.
  - 2. Gate Opening Width: 24 feet.
  - 3. Frame Members:
    - a. Tubular Steel: As indicated in the Plans.
      - 1) Top and Bottom Members: 2.375 inches round
      - 2) Upright Members: 1.900 inches round
  - 4. Bracing Members:
    - a. Tubular Steel: 1.66 inches round.
- C. Frame Corner Construction:
  - 1. Welded frame.
- D. Roller Guards: As required per ASTM F 1184 for Type II, Class 1 gates.
- E. Hardware: Latches permitting operation from both sides of gate, hangers, roller assemblies, and stops fabricated from galvanized steel.

## 2.5 FITTINGS

- A. General: Comply with ASTM F 626.
- B. Post and Line Caps: Provide for each post.
  - 1. Line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: Attach rails securely to each gate, corner, pull, and end post.
- D. Tension and Brace Bands: Pressed steel.
- E. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- F. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
  - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
    - a. Hot-Dip Galvanized Steel: diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.
- G. Finish:
  - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.

## 2.6 CAST-IN-PLACE CONCRETE

- A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94/C 94M.
  - 1. Concrete Mixes: Normal-weight concrete with not less than 2500 psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

## 2.7 FENCE GROUNDING

- A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.
  - 1. Material on or below Finished Grade: Copper.
  - 2. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.
- B. Connectors and Grounding Rods: Comply with UL 467.
  - 1. Grounding Rods: Copper-clad steel.
    - a. Size: 5/8 by 96 inches.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance.
  - 1. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

### 3.3 INSTALLATION, GENERAL

- A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.
  - 1. Install fencing on established boundary lines inside property line.

### 3.4 CHAIN-LINK FENCE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
  - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
  - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
    - a. Concealed Concrete: Top 2 inches below grade as indicated on Drawings to allow covering with surface material.
- C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of as indicated on Drawings.
- D. Line Posts: Space line posts uniformly at 10 feet o.c.
- E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
  - 1. Locate horizontal braces at midheight of fabric 3 feet, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.
  - 1. Top Tension Wire: Install tension wire through post cap loops.
  - 2. Bottom Tension Wire: Install tension wire within 2-inch of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- G. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave no less than 1-inch between finish grade or surface and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- H. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.
- I. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
  - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- J. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

### 3.5 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### 3.6 GROUNDING AND BONDING

- A. Fence Grounding: Install at maximum intervals of 1500 feet except as follows:
  - 1. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.
    - a. Gates and Other Fence Openings: Ground fence on each side of opening.
      - 1) Bond metal gates to gate posts.
- B. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.
- C. Fences Enclosing Electrical Power Distribution Equipment: Ground as required by IEEE C2, unless otherwise indicated.
- D. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.
- E. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
  - 2. Make connections with clean, bare metal at points of contact.
  - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
  - 4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
  - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- F. Bonding to Lightning Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

### 3.7 ADJUSTING

- A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

### 3.8 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates. Refer to Division 01 Section "Closeout Procedures."

END OF SECTION 32 3113

## SECTION 06160 - SHEATHING

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. This Section includes the following:

1. Roof sheathing.

B. Related Sections include the following:

1. Section 01300 "Submittals."

2. Section 06100 "Rough Carpentry" for nailers.

#### 1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

#### 1.3 DELIVERY, STORAGE, AND HANDLING

A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

### PART 2 - PRODUCTS

#### 2.1 WOOD PANEL PRODUCTS, GENERAL

A. Plywood: DOC PS 1.

B. Factory mark panels to indicate compliance with applicable standard.

#### 2.2 ROOF SHEATHING

A. Plywood Roof Sheathing: Exposure 1 sheathing.

1. Span Rating: Not less than 40/20.

2. Nominal Thickness: Not less than 5/8 inch.

#### 2.3 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

- B. Nails, Brads, and Staples: ASTM F 1667.

### PART 3 - EXECUTION

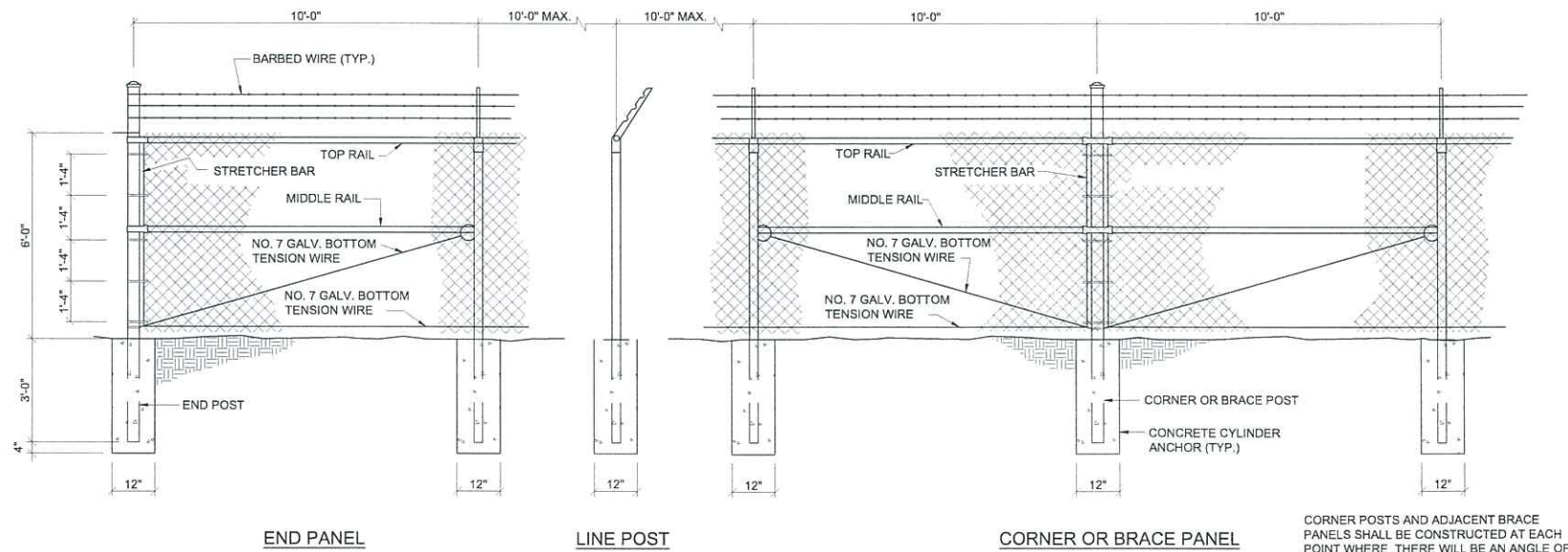
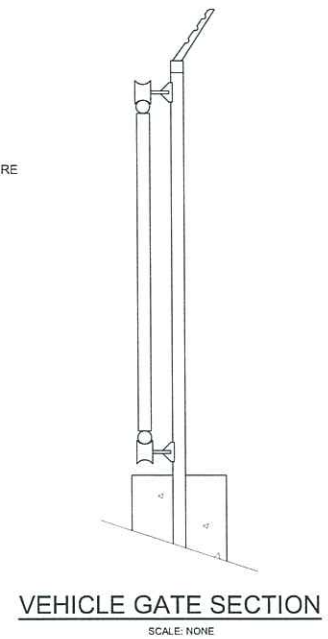
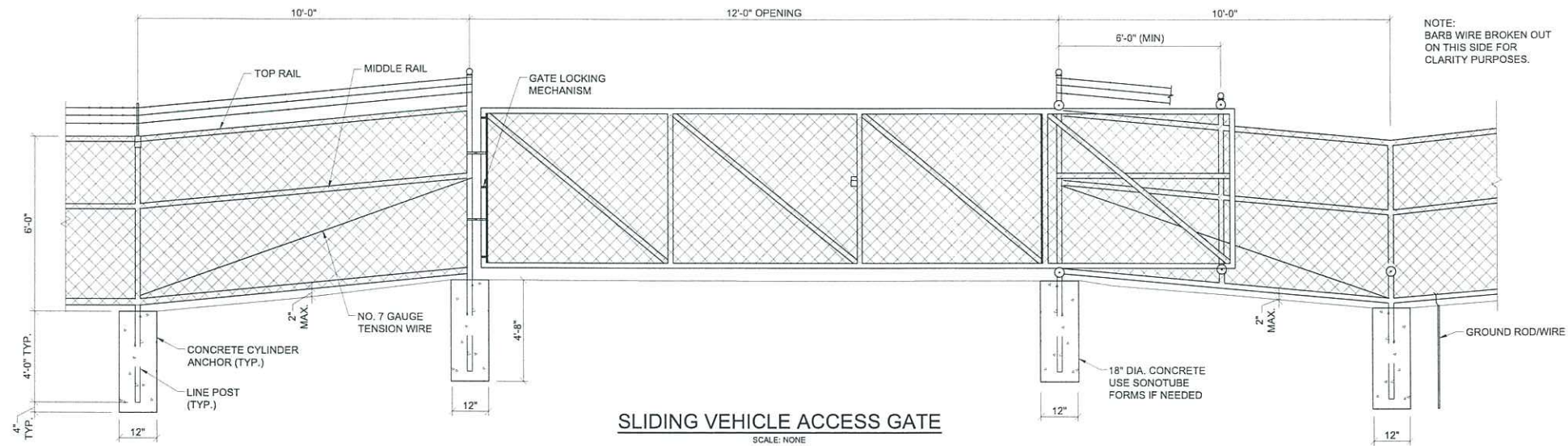
#### 3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated in Drawings.
- D. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

#### 3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30S, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
1. Roof Sheathing:
- a. Nail to wood framing.
- b. Space panels 1/8 inch apart at edges and ends.

END OF SECTION

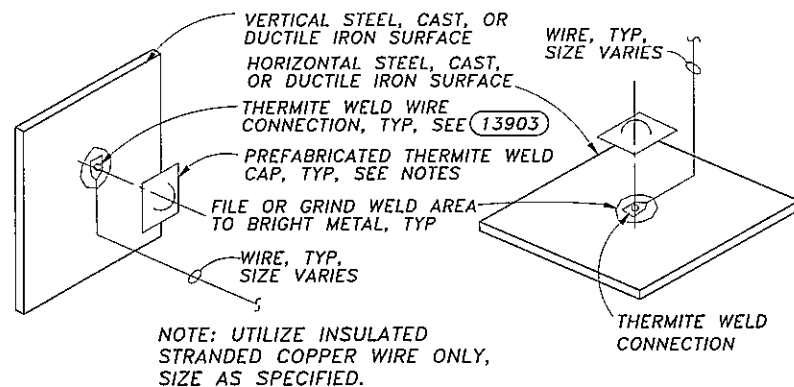


CORNER POSTS AND ADJACENT BRACE PANELS SHALL BE CONSTRUCTED AT EACH POINT WHERE THERE WILL BE AN ANGLE OF 30 DEGREES OR MORE IN THE FENCE ALIGNMENT.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of Minnesota.

Print Name: KRISTIN L. BISGARD  
Signature: *Kristin Bisgard*  
Date: 9-1-16 License #: 48845





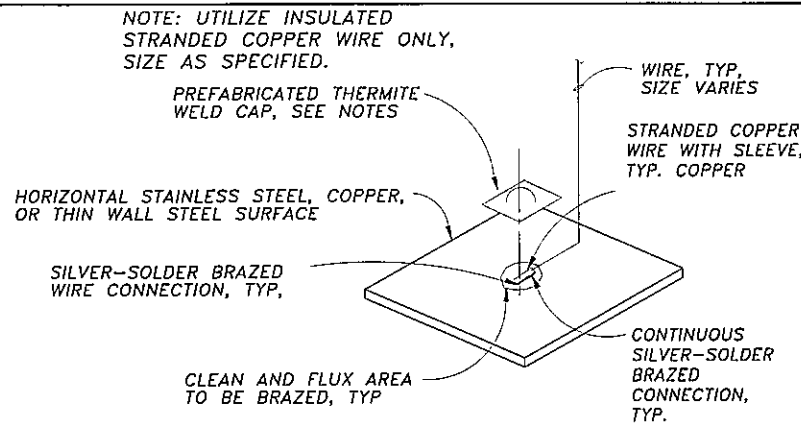
#### NOTES:

1. COPPER SLEEVE REQUIRED FOR THERMITE WELDING OF No. 10 AWG AND SMALLER WIRE AND No. 4 AND No. 2 AWG SIZE WIRES.
2. WELDER AND CARTRIDGE SIZE VARIES ACCORDING TO SURFACE SHAPE, MATERIAL, AND HORIZONTAL OR VERTICAL SURFACE. CONSULT WELDER MANUFACTURER FOR RECOMMENDED WELDER AND CARTRIDGE.
3. FOR MULTIPLE WIRE CONNECTIONS TO PIPE SEPARATE THERMITE WELD CONNECTIONS BY ONE PIPE DIAMETER MINIMUM, 2'-0" MAXIMUM.
4. WIRE CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY FOREIGN PIPELINE REPRESENTATIVE.
5. USE 15 GRAM MAXIMUM SIZE WELD CARTRIDGES FOR CONNECTIONS TO PETROLEUM AND NATURAL GAS PIPELINES OR STRUCTURES. THERMITE CONNECTIONS ONLY AS SPECIFIED & APPROVED BY OWNER. CROW'S FOOT LARGER WIRE CONNECTIONS IF SPECIFIED & APPROVED BY OWNER.
6. COAT COMPLETED THERMITE WELD CONNECTIONS WITH PREFABRICATED HANDYCAP IP, HEAT SHRINK SLEEVE, EPOXY, OR AS OWNER SPECIFIED.
7. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE SEE (13902)
8. ATTACH THERMITE WELD TO STUD OR WELD BASE PLATE IF PROVIDED OR TO DRY SIDE OF JOINT IF APPROVED BY PIPE MANUFACTURER.

### VERTICAL AND HORIZONTAL WIRE THERMITE CONNECTIONS

NTS

(13901A)



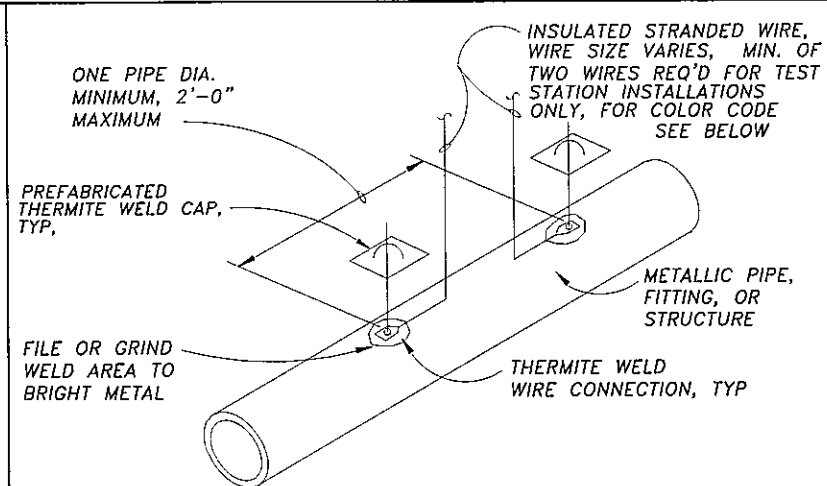
#### NOTES:

1. BRAZE (SILVER-SOLDER) COPPER WIRE ELECTRICAL CONNECTION TO COPPER, STAINLESS STEEL, AND THIN WALL STEEL (0.035" OR LESS) PIPING OR TUBING.
2. SELECT A LOCATION TO BRAZE ON FITTING EDGE OR LIP, SO AS TO NOT DAMAGE INTERNAL COATINGS, RUBBER LINING, OR GASKETS.
3. CLEAN AND PREPARE SURFACE FOR BRAZING. FLUX SURFACE WITH A SUITABLE TYPE FLUX FOR MATERIAL TYPES BEING SOLDERED IN ACCORDANCE WITH THE SILVER SOLDER MANUFACTURER'S INSTRUCTIONS.
4. BRAZE THE SLEEVED COPPER WIRE WITH A SUITABLE TYPE SILVER BRAZING ALLOY FOR THE MATERIALS BEING CONNECTED IN ACCORDANCE WITH BRAZE MATERIAL MANUFACTURER'S DIRECTIONS.
5. SILVER-SOLDER WIRE TO PROPERLY PREPARED AND FLUXED AREA IN A MANNER SO AS TO NOT LEAVE CRACKS OR CREVICES IN THE COMPLETED BRAZED CONNECTION. VISUALLY INSPECT AND TAP WITH HAMMER TO TEST ADHESION.
6. ALLOW TO COOL AND REMOVE REMAINING FLUX WITH (STAINLESS STEEL) WIRE BRUSH AND SOLVENT CLEAN (SSPC SP-1).
7. ONLY COAT CONNECTIONS TO COPPER AND THIN WALL STEEL PIPING OR TUBING IN SPECIFIED THERMITE WELD COATING METHOD. STAINLESS STEEL CONNECTIONS DO NOT NEED TO BE COATED.

### BRAZED WIRE CONNECTIONS

NTS

(13901B)



#### NOTES:

1. THERMITE WELD TO METALLIC PIPE, FITTINGS, AND STRUCTURES ONLY NOT TO PLASTIC PIPE OR FITTINGS.
2. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED.
3. UTILIZE ONE STRIP OF PURPLE TAPE TO IDENTIFY NORTH OR WEST STRUCTURES AND ONE STRIP OF GRAY TAPE TO IDENTIFY SOUTH OR EAST STRUCTURES, AS REQ'D.

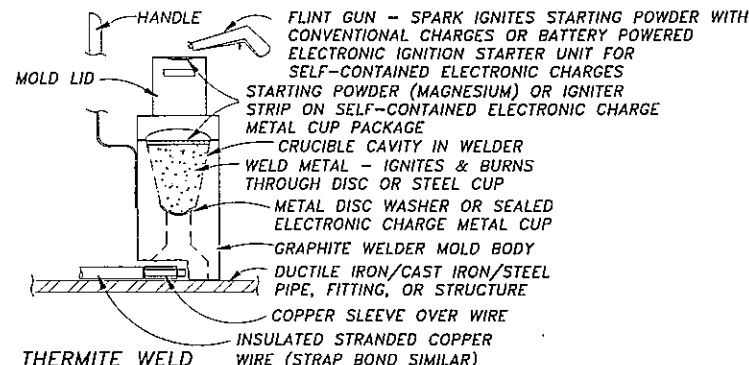
#### WIRE COLOR CODE

1. METALLIC PIPELINE OR FITTING TEST WIRES:  
WATER - BLUE  
WASTEWATER - GREEN OR PURPLE IF REUSE  
FOREIGN PIPELINES - WHITE OR AS REQUESTED BY FOREIGN COMPANY
2. UNPROTECTED METALLIC PIPELINE - BLACK
3. ANODE LEADS - BLACK -
4. REFERENCE ELECTRODE WIRES - YELLOW
5. TRACER WIRES NON-METALLIC PIPE - GREEN W/ 2 STRIPS BLACK TAPE

### PLASTIC PIPE WIRE CONNECTIONS

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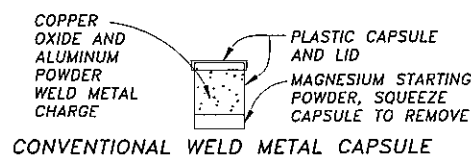
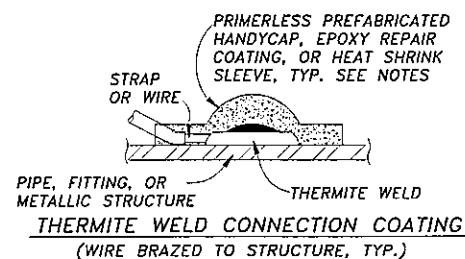
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#### THERMITE WELD

USE CAST IRON CHARGES FOR DUCTILE IRON AND CAST IRON STRUCTURES. USE STEEL CHARGES FOR STEEL STRUCTURES.

(SIMILAR SIZE AND TYPE OF CONVENTIONAL OR ELECTRONIC IGNITION TYPE CHARGES ACCEPTABLE)  
COMPLETE WELDS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS



#### CONVENTIONAL WELD METAL CAPSULE

TYPE & SIZE VARIES (MAXIMUM 25 GRAM FOR STEEL, 32 GRAM FOR CAST & DUCTILE IRON, & 15 GRAM SIZE FOR OIL & GAS TYPE PIPELINES)

#### STEP 1

#### STEP 2

#### STEP 3

#### STEP 4

#### STEP 5

#### STEP 6

- 6-A. IF CADWELD CONNECTION LOCATED AT PIPE JOINT TO BE COATED WITH HEAT SHRINK SLEEVE, APPLY MASTIC FILLER AND HEAT SHRINK SLEEVE OVER CONNECTION. NO HANDYCAP REQUIRED. IF NOT, THEN EITHER:
- 6-B. UTILIZE PRIMERLESS HANDYCAP IP OR EQUAL FOR No. 10 AWG AND SMALLER WIRE.
- 6-C. UTILIZE PRIMERLESS HANDYCAP XL-IP (EXTRA LARGE) OR EQUAL FOR No. 8 AND LARGER WIRE AND PIN WELD TYPE CONNECTIONS.
- 6-D. OR UTILIZE 100 PERCENT MOISTURE TOLERANT EPOXY REPAIR COATING (PROTAL 7125 OR EQUAL) FOR HARD TO COAT CONNECTIONS AND SPOT COATING REPAIR.
- 6-E. REPAIR PIPE OR STRUCTURE COATING DAMAGE WITH SPECIFIED AND APPROVED COATING REPAIR MATERIALS FOR ORIGINAL COATING TYPE.

### GENERAL EXOTHERMIC WELD & COATING PROCEDURES

### THERMITE WELD AND WIRE CONNECTION

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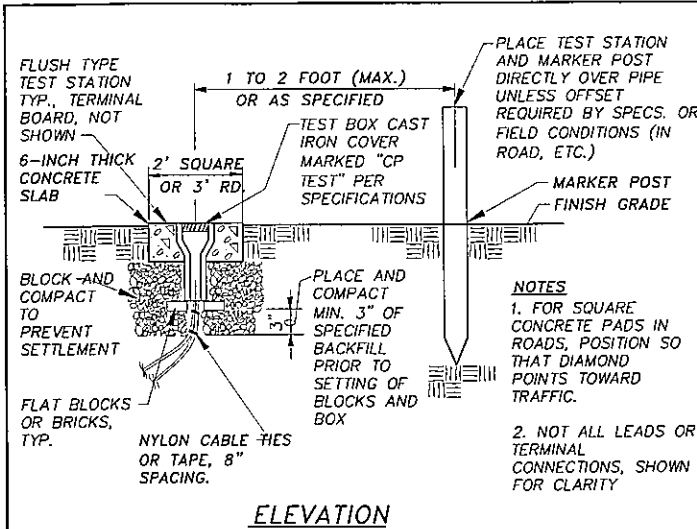
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THESE DETAILS WERE PREPARED BY RUSTNOT UNDER MY GENERAL DIRECTION BY WILLIAM S. SPICKELMIRE NACE CATHODIC PROTECTION SPECIALIST No. 2678



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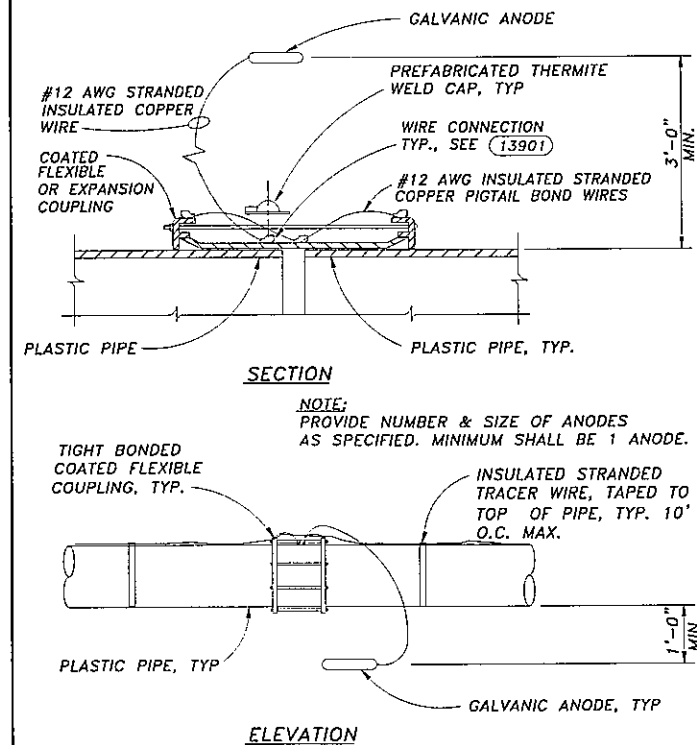
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**TYPICAL FLUSH MOUNTED TEST STATION BOX SUPPORT AND SIGNAGE**

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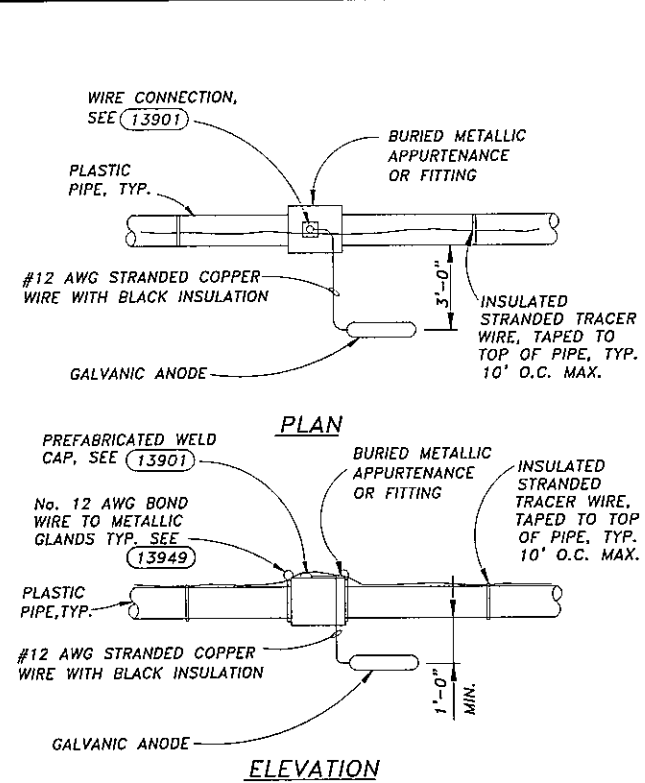
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**CORROSION PROTECTION FOR FLEXIBLE COUPLINGS ON PLASTIC PIPE**

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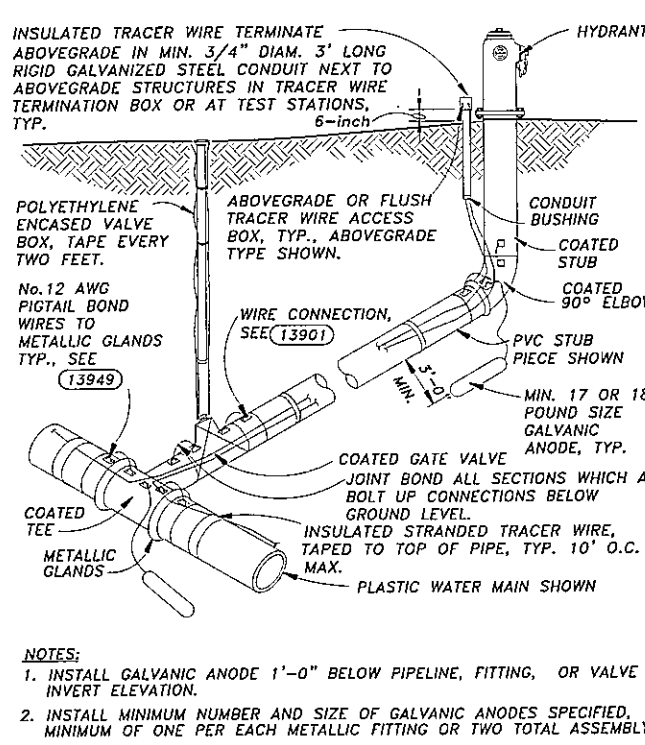
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**GALVANIC ANODE INSTALLATION AT BURIED METALLIC FITTINGS**

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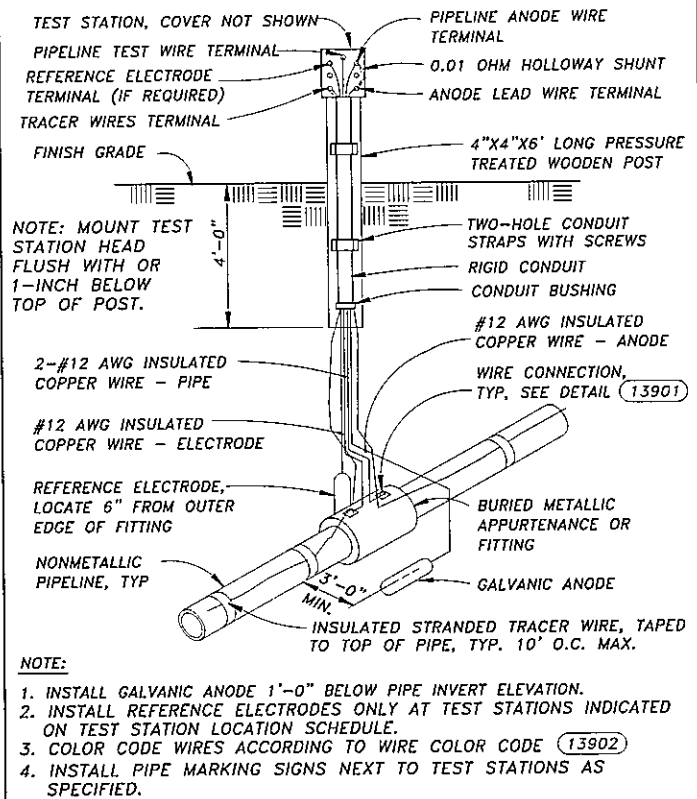
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**GALVANIC ANODE INSTALLATION AT HYDRANT ASSEMBLIES W/ PVC STUB**

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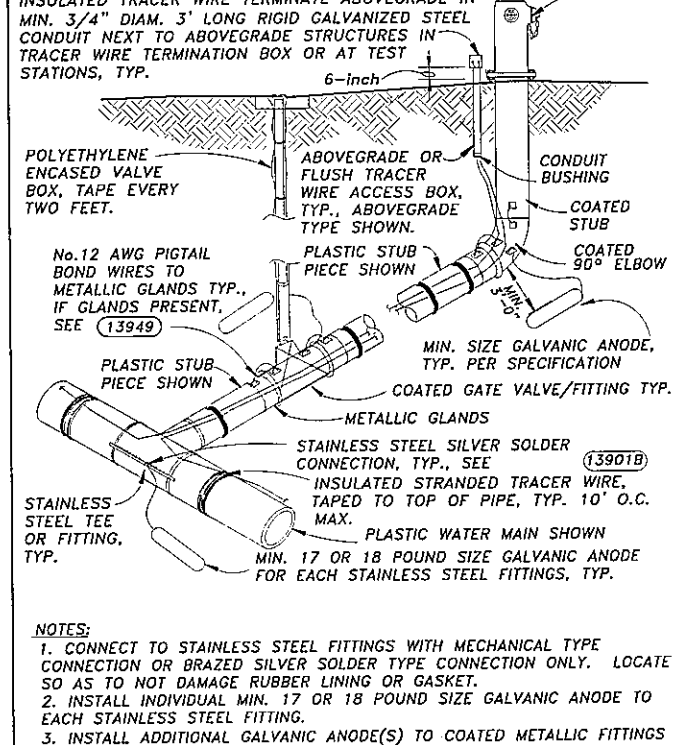


**TYPE P-GA-F (GALVANIC ANODE TO FITTING)**

**POST MOUNTED TEST STATION WITH GALVANIC ANODE**

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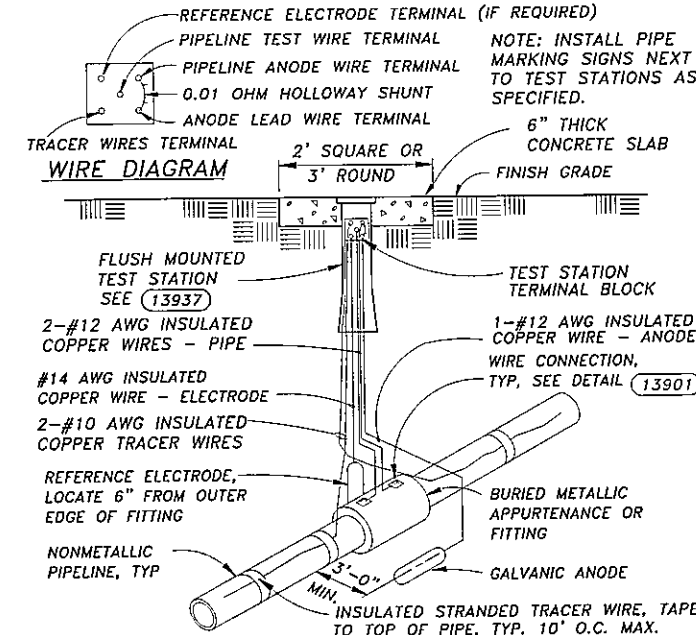
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**STAINLESS STEEL TEE AT HYDRANT WITH PLASTIC PIPE STUB**

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**TYPE F-GA-F (GALVANIC ANODE TO FITTING)**

**FLUSH MOUNTED TEST STATION WITH GALVANIC ANODE**

NTS

13942

THESE DETAILS WERE PREPARED BY RUSTNOT UNDER MY GENERAL DIRECTION BY WILLIAM S. SPICKELMIRE NACE CATHODIC PROTECTION SPECIALIST No. 2678

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**GENERAL CATHODIC DETAILS**

PROJECT TITLE: LEWIS & CLARK ROCK COUNTY PUMP STATION & METER BUILDINGS

NEAR 71ST ST. & 144TH AVE. INTERSECTION

JOB No.: 20000.31.01

DATE: AUGUST 2015

DESIGNED BY: A.R.H.

CHECKED BY: D.J.W.

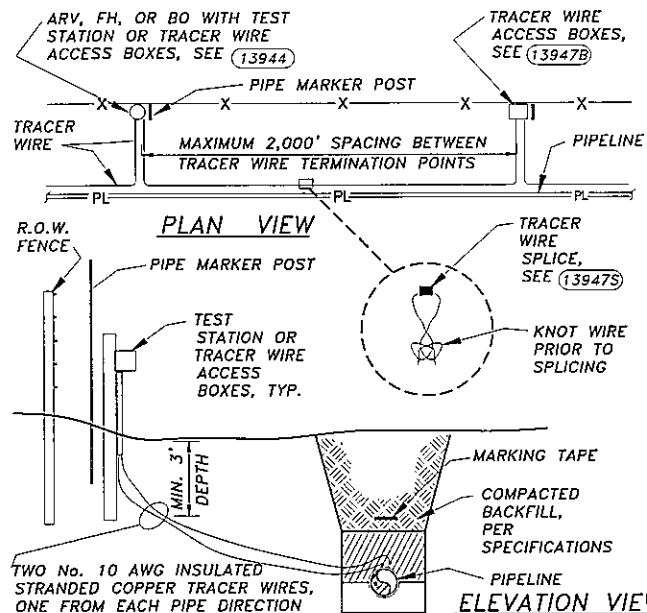
DRAWN BY: S.A.N.

SCALE: REDUCED 1/2"

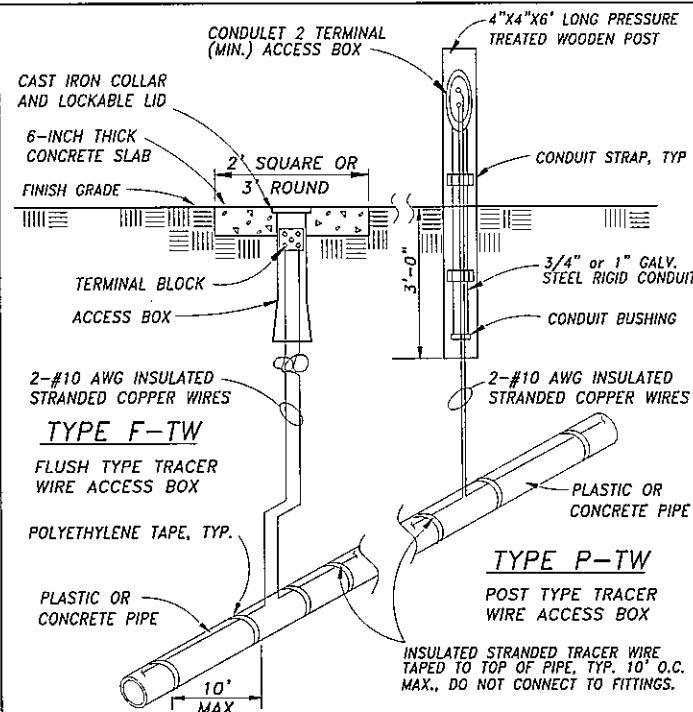
REV. DATE DESCRIPTION

1. 8-31-16 ADDENDUM NO. 1

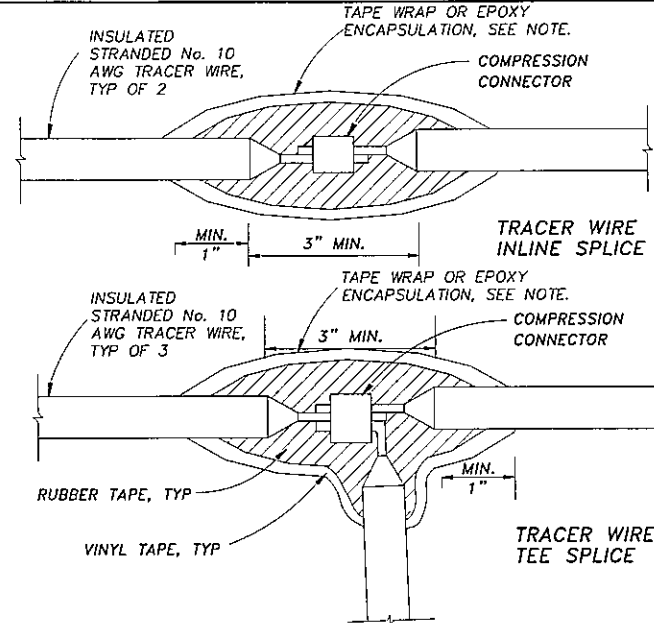
SHEET No.: 3.2



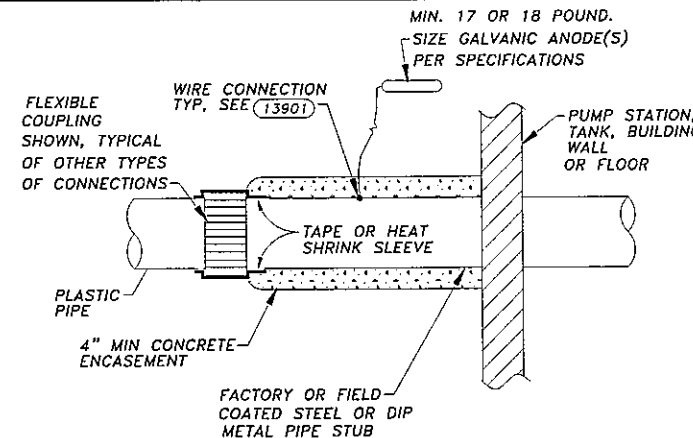
TRACER WIRE DETAIL (13947) NTS



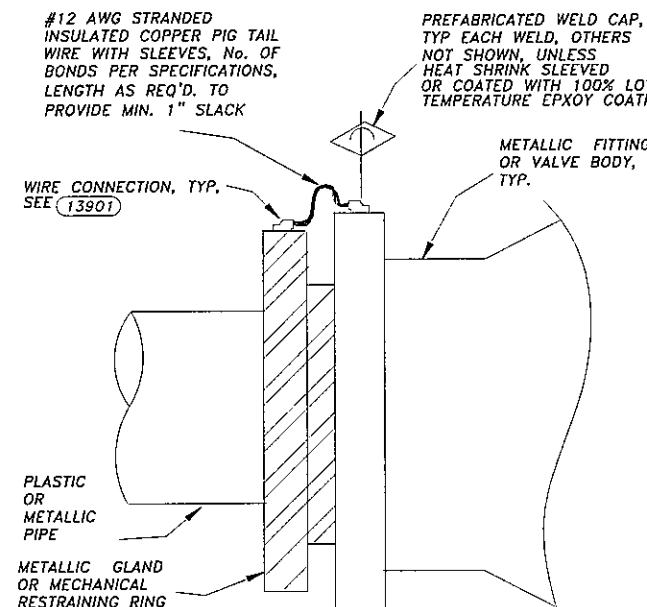
TRACER WIRE ACCESS BOXES (13947B) NTS



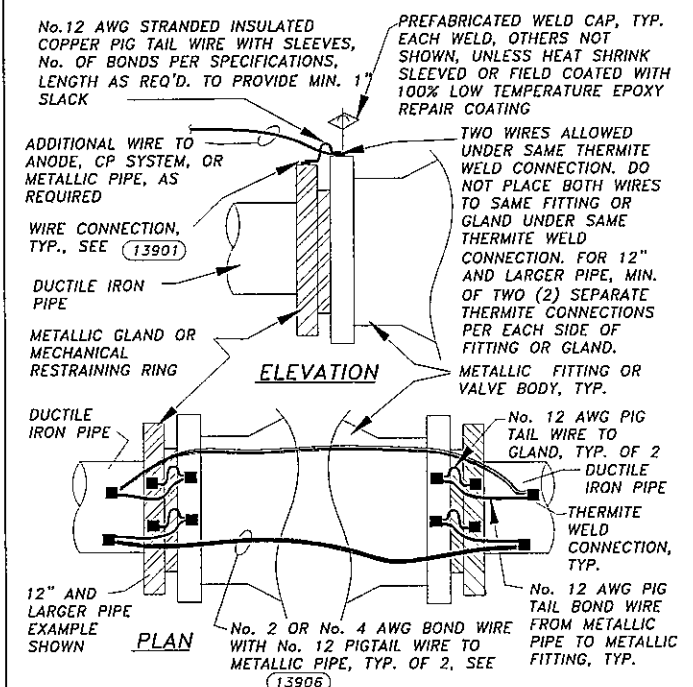
TRACER WIRE SPLICES (13947S) NTS



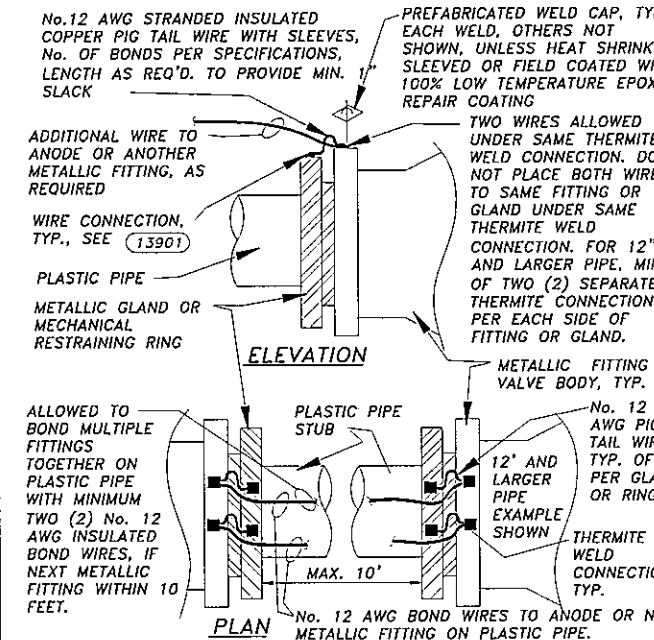
CONCRETE ENCASED METAL PIPE STUB BETWEEN PLASTIC PIPE FLEXIBLE COUPLING AND CONCRETE STRUCTURE CONNECTION (13948) NTS



METALLIC FITTING GLANDS AND MECHANICAL RESTRAINT RINGS (13949) NTS



DUCTILE IRON PIPE & FITTING GLANDS OR MECHANICAL RESTRAINT RINGS (13949M) NTS

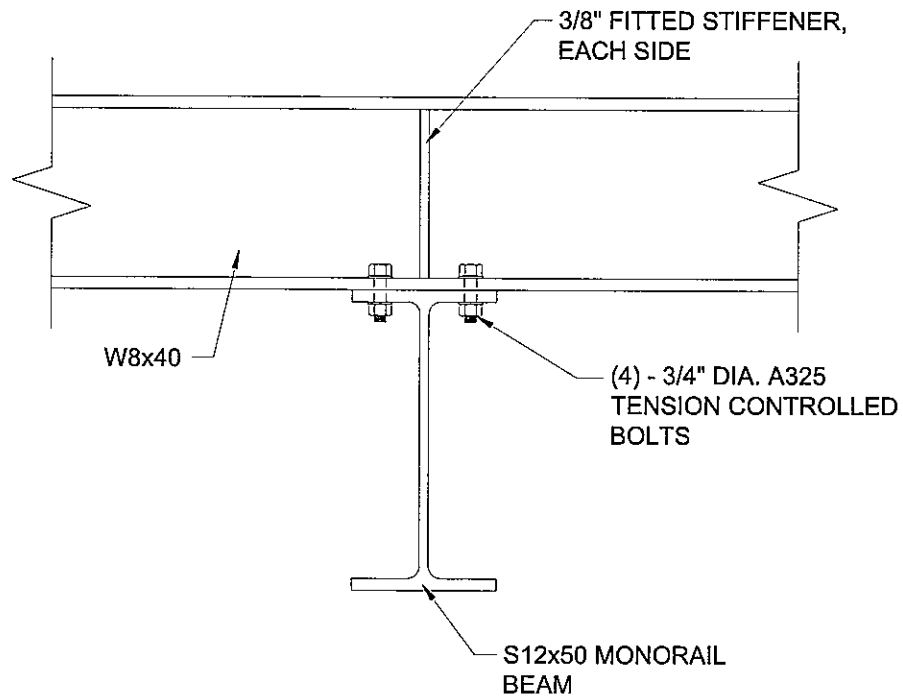


PLASTIC PIPE METALLIC FITTING GLANDS AND MECHANICAL RESTRAINT RINGS (13949P) NTS

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1  
1-4.3
**SECTION**  
 SCALE : 1 1/2" = 1'-0"

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REV.	DATE	DESCRIPTION

PROJECT TITLE :

LEWIS & CLARK ROCK COUNTY  
 PUMP STATION & METER BUILDINGS

PROJECT LOCATION :

NEAR 71ST ST. & 144TH AVE. INTERSECTION

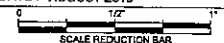
ADDENDUM NO. :

1

SHEET TITLE :

STIFFENER DETAIL

DRAWN BY: S.A.N.  
 DESIGNED BY: A.R.H.  
 CHECKED BY: A.R.H.  
 JOB NO: 20000.31.01  
 DATE: AUGUST 2016



SHEET NO. :

1-4.3