ADDENDUM NO. 2
TO THE CONTRACT DOCUMENTS
for the construction of the
NAMPA WWTP PHASE I UPGRADES:
GROUP A—LIQUID STREAM UPGRADES

Date: February 20, 2015
Project No.: 480770

**To All Planholders and/or Prospective Bidders:**

The following changes, additions, and/or deletions are hereby made a part of the Contract Documents for the construction of the Nampa WWTP Phase I Upgrades: Group A—Liquid Stream Upgrades, dated December 2014, as fully and completely as if the same were fully set forth therein:

A. PART 3, SPECIFICATIONS

1. Section 01 31 30, Construction and Schedule Constraints, Subparagraph 1.06.F.2: REPLACE Subparagraph 2 with the following:

   "2. During the non-TASCO campaign season, there are two acceptable operational modes. Mode 1 includes one trickling filter, two aeration basins, and either Primary Clarifier 2 or 3. Mode 2 includes two trickling filters, one aeration basin, and either Primary Clarifier 2 or 3. Exceptions to the two modes include Exception A – Complete Plant Shutdowns that require a more widespread outage for critical process tie-ins. Exception B – A single shutdown of all trickling filters for up to 48 hours is acceptable if both Aeration Basin 1 and Aeration Basin 2 are online and Primary Clarifier 1 and primary Clarifier 2 are online.

2. Section 02 41 00, Demolition, Paragraph 3.06.B: ADD Subparagraph 9.

   "9. Gate, stem, and operator for Trickling Filter Recycle Pump Station Gate 1."

3. Section 26 42 01, Pipe Bonding[1]: ADD in its entirety.

4. Section 33 05 16.13, Precast Concrete Utility Structure, make the following changes:

   a. Paragraph 3.02.B: DELETE "Section 31 23 16, Excavation" and ADD "ISPWC Section 204 Structural Excavation and Compacting Backfill".

   b. Paragraph 3.02.C: DELETE "Section 31 23 23, Fill and Backfill, and Section 31 23 23.15 Trench Backfill" and ADD "ISPWC Section 204 Structural Excavation and Compacting Backfill and Section 306 Trench Backfill".

5. Section 40 27 00, Process Piping – General:

   a. Subparagraph 3.06.B.2: DELETE "Section 31 23 23.15, Trench Backfill" and ADD "ISPWC Section 206 Trench Backfill".

   b. ADD a new paragraph to 3.06 as follows:

      "E. Maintain clearance between potable and non-potable water line crossings in accordance with ISPWC 405 and SD407."

   c. CHANGE subparagraph 3.09.E.2 to read as follows:

      "2. Quantity of Concrete: Sufficient to cover bearing area on pipe and provide required soil bearing area based on the pipe diameter, type of fitting, test pressure given in the Pipe Schedule on the Drawings, and an allowable soil bearing pressure of 1,000 pounds per square foot."

B. DRAWINGS

1. Drawing 050-CY-110: CHANGE the callout for "Keynote 12" at the lower right of the Drawing to a "Keynote 6" call out.

2. Drawing 050-CY-301:

   a. Detail A, CHANGE the outside width of the vault in the LID PLAN from "8'-0"" to "10'-0"".

   b. Detail A, CHANGE the dimensions from the inside of the vault walls to the pipe centerline to 3'-9"+/- and 5'-3"+/- in the VAULT PLAN.

   c. Detail A, CHANGE the vault depth on the left side to 10'-6"+/- from the top of the vault to the vault floor, and CHANGE the vault depth to 9'-10" from underside of lid to floor in Section A-A.

3. Drawing 050-CY-303[2]: REPLACE in its entirety.

C. DESIGN DETAILS

1. Design Detail 2642-840[3]: ADD in its entirety.

2. Design Detail 2648-843[4]: ADD in its entirety.

3. Design Detail 2642-910[5]: ADD in its entirety.

4. Design Detail 2642-930[6]: ADD in its entirety.

5. Design Detail 4005-542[7]: ADD in its entirety.

D. SUPPLEMENTARY INFORMATION

1. Section Record Drawings of Existing Facilities: ADD attached drawing of Abandoned Chlorine Contact Basin[8].

Pre-bid Meeting was held on February 18, 2015. Attached is the documentation from the meeting for the use of the bidders.[9]

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 2 in the Bid Form or by submitting the Addendum with the bid package. Bid Forms submitted without acknowledgment or without this Addendum will be considered in nonconformance.

CH2M HILL

Gregg Vail Thompsson

Project Manager

**END OF ADDENDUM**

[1] Section 26 42 01, Pipe Bonding
[2] Drawing 050-CY-303
[3] Design Detail 2642-840
[4] Design Detail 2648-843
[5] Design Detail 2642-910
[6] Design Detail 2642-930
[7] Design Detail 4005-542
[8] Record Drawing, 1964-1965 Sewerage Project, Chlorine Contact Basin, Sheet 27 of 50
[9] Pre-bid Meeting Documentation

- Prebid Meeting Slide Presentation
- Construction Sequence
- Meeting Sign-In Sheet
- Bidder Questions with Responses

# SECTION 26 42 01
# PIPE BONDING

## PART 1 GENERAL

### 1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American National Standards Institute (ANSI).
2. American Water Works Association (AWWA):
   a. C110, Ductile-Iron and Gray-Iron Fittings for Water.
   b. C205, Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 in. (100 mm) and Larger - Shop Applied.
   c. C217, Petrolatum and Petroleum Wax Tape Coatings for the Exterior of Connections and Fittings for Steel Water Pipelines.
3. NACE International (NACE): SP0169, Control of External Corrosion on Underground or Submerged Metallic Piping Systems.
4. National Electrical Manufacturers Association (NEMA):
   a. WC 70, Nonshielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
5. NSF International (NSF).
6. The Society for Protective Coatings (SSPC):
   a. SP 1, Solvent Cleaning.
   b. SP 10, Near-White Blast Cleaning.

### 1.02 DEFINITIONS

A. Electrical Isolation: Condition of being electrically isolated from other metallic structures (including, but not limited to, piping, reinforcement, casings) and the environment as defined in NACE SP0169.

B. Electrically Continuous Pipeline: Pipeline that has a linear electrical resistance equal to or less than the sum of the resistance of the pipe plus the maximum allowable bond resistance for each joint as specified in this section.

C. Ferrous Metal Pipe: Pipe made of steel or iron, or pipe containing steel or iron as a principal structural material, except reinforced concrete pipe.

D. Lead, Lead Wire, Joint Bonds, Pipe Connecting Wires, Cable: Insulated copper conductor; the same as wire.

1.03 SUBMITTALS

A. Action Submittals: Catalog cuts and information for products proposed for use.

B. Informational Submittals:

1. Manufacturer's Certificate of Compliance, in accordance with Section 01 61 00, Common Product Requirements**.**
2. Field Test Reports, including results of insulator testing.
3. Qualifications of Cathodic Protection Specialist.

1.04 QUALITY ASSURANCE

A. Cathodic Protection Specialist Qualifications: NACE International certified.

## PART 2 PRODUCTS

2.01 WIRES

A. Conform to applicable requirements of NEMA WC 70.

B. Joint Bond:

1. General: Single-conductor, stranded copper wire with 600-volt HMWPE insulation. Supply joint bonds complete with formed copper sleeve on each end of wire.
2. Push-On, Mechanical, or Flanged Joints: 2 AWG wires, 18 inches long.
3. Flexible Coupling Joints: 2 AWG wires, 24 inches long, with two 12-inch-long THHN insulated 12 AWG wire pigtails, as manufactured by Erico Products Inc. (Cadweld), Cleveland, OH.

2.02 THERMITE WELD MATERIALS

A. General:

1. Thermite weld materials consist of wire sleeves, welders, and weld cartridges according to weld manufacturer's recommendations for each wire size and pipe or fitting size and material.
2. Welding materials and equipment shall be product of a single manufacturer. Interchanging materials of different manufacturers is not acceptable.

B. Molds: Graphite; ceramic "One-Shot" molds not acceptable.

C. Adapter Sleeves:

1. For 12 AWG and 2 AWG wires.
2. Prefabricated factory sleeve joint bonds or bond wires with formed sleeves made in field are acceptable. Attach field-formed joint bond sleeves with appropriate size and type of hammer die furnished by thermite weld manufacturer.
3. Extend wire conductor 1/4 inch beyond end of sleeve.

D. Cartridges: Cast-iron thermite weld cartridges for cast and ductile iron pipe and fittings.

1. Maximum Cartridge Size: 25 grams for steel and 32 grams for cast and ductile iron materials, respectively.

E. Welders and Cartridges: For attaching copper wire to pipe material:

| Pipe Material | Weld Type | Cartridge Size, Max. |
|---|---|---|
| 4 AWG Wire and Smaller: | | |
| Ductile Iron | HB, VH, HE | 32 gm |
| 2 AWG Joint Bonds: | | |
| Ductile or Cast Iron | FC | 32 gm |

F. Welding Materials Manufacturers:

1. Erico Products Inc. (Cadweld), Cleveland, OH.
2. Continental Industries, Inc. (Thermo-Weld), Tulsa, OK.

G. Thermite Weld Coating:

1. Thermite Weld Caps: Prefabricated weld cap with coating and suitable primer, such as Handy Cap II with Royston Primer 747, as manufactured by Royston Laboratories, Inc.
2. Use products recommended by pipe or fitting coating manufacturer to repair spot damage at thermite weld connections not covered by standard pipeline coating repair procedure or thermite weld cap.

2.03 ANCILLARY MATERIALS

A. Mastic Coating: TC Mastic (Brush Applied) as manufactured by Tapecoat Co., Evanston, IL.

B. Wire Connectors: One-piece, tin-plated crimp-on lug connector as manufactured by Burndy Co. or Thomas and Betts.

C. Compression Connectors:

1. For in-line, tap, and multisplice furnish "C" taps made of conductive wrought copper, sized to fit wires being spliced.
2. Manufacturer and Product: Burndy; Type "YC."

D. Electrical Tape:

1. Linerless rubber high-voltage splicing tape and vinyl electrical tape suitable for moist and wet environments.
2. Manufacturer and Products: 3M Products; Scotch 130 C and Scotch 88.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. Construct system of pipe joint bonds to form an electrically continuous piping network.

### 3.02 PIPE JOINT BONDING

A. Electrically bond joints of buried steel and iron pipe, including vault and manhole piping and fittings, and including restrained joints, except joints specified to be threaded, welded, or insulated.

B. Install two joint bond wire assemblies at each joint that requires bonding.

C. Use thermite weld process for electrical connection of wires to pipe and fittings.

D. Test each bonded joint for continuity.

E. Joint bonds for cast-iron soil pipe and fittings and high silicon cast-iron pipe and fittings shall be in accordance with manufacturer's recommendations. Bronze wedges are not an acceptable method of achieving electrical continuity.

### 3.03 WIRE CONNECTIONS

A. Thermite Weld:

1. Use thermite weld method for electrical connection of copper wire to steel, ductile, and cast-iron surfaces. Observe proper safety precautions,

welding procedures, thermite weld material selection, and surface preparation recommended by welder manufacturer. Ensure that pipe or fitting wall thickness is of sufficient thickness that thermite weld process will not damage integrity of pipe or fitting wall or protective lining.

2. After weld connection has cooled, remove slag, visually inspect, and physically test wire connection by tapping with a hammer; remove and replace defective connections.
3. On pipe and fittings with dielectric linings, make weld connection on shop tab provided or on a thick metal section to minimize damage to lining and coating. After weld is made, coat weld with coating repair material.
4. Install prefabricated thermite weld cap over each completed connection. Repair exposed metal surfaces not covered by thermite weld cap in accordance with coating manufacturer's recommendations. Repair damage to pipe lining in accordance with lining applicator's recommendations.

## 3.04 WIRE INSULATION REPAIR

A. Handle wires with care. Splices for damage to wire insulation shall be required by spirally wrapping (50 percent overlap, minimum) with two coats of high-voltage rubber splicing tap and two layers of vinyl electrical tape. Make wire splices with suitable sized compression connectors or mechanically secure and solder with rosin cored 50/50 solder. Splices shall be approved by Engineer.

## 3.05 FIELD QUALITY CONTROL

A. Electrical Continuity Testing:

1. Provide necessary equipment and materials, and make electrical connections to pipe as required to test continuity of bonded joints.
2. Conduct continuity test on buried joints that are required to be bonded. Test electrical continuity of joint bonds after bonds are installed but before backfilling of pipe.
3. Have Cathodic Protection Specialist monitor tests of bonded joints.
4. Test electrical continuity of completed joint bonds using either a digital low resistance ohmmeter or by Calculated Resistance Method, at Contractor's option.
    a. Digital Low Resistance Ohmmeter Method:
        1) Provide the following equipment and materials:
            a) One Biddle Model 247001 digital low resistance ohmmeter.

b) One set of duplex helical current and potential hand spikes, Biddle Model No. 241001, cable length as required.
c) One calibration shunt rated at 0.001 ohm, 100 amperes, Biddle Model No. 249004.

2) Test Procedure:
a) Measure resistance of joint bonds with low resistance ohmmeter in accordance with manufacturer's written instructions.
b) Use helical hand spikes to contact pipe on each side of joint, without touching thermite weld or bond.
c) Clean contact area to bright metal by filing or grinding and without surface rusting or oxidation.
d) Record measured joint bond resistance on test form described herein.
e) Repair damaged pipe coating.

b. Calculated Resistance Method:
1) Provide the following equipment and materials:
a) One dc ammeter (meter or clamp-on) with full scale reading of 100 amperes and a minimum resolution of 1 ampere or a 100-ampere shunt with a voltmeter as specified herein.
b) One high resistance electronic voltmeter with a dc low range of 200 millivolts full scale to a dc high range of 20 volts full scale and capable of a minimum resolution of 1 millivolt (two voltmeters are required if a shunt is used).
c) One knife switch, safety switch, or time controlled relay suitable for test current.
d) Two electrical probes for the voltmeter.
e) Insulated wire suitable for carrying the test current, length as required.
f) One dc power supply with a steady capacity of 50 amperes minimum; storage batteries are not an acceptable power supply.
g) Test Procedure: Either tightly clamp or thermite weld current wire connections to the pipe. Determine wire size for the test current, and do not exceed 1,000 feet in length.

c. Apply a minimum direct current of 50 amperes.
d. Measure voltage drop across each joint with voltmeter by contacting pipe on each side of joint. Voltmeter connections to bond wire or thermite welds will not be acceptable.

e. Measure current applied to test span and voltage drop across joint simultaneously.
f. Record measured voltage drop and current for each joint of test form described herein and calculate bond resistance in accordance with the following formula:

$$R = \frac{E}{I}$$

Where:

R = Resistance of the joint bond.
E = Measured voltage drop across the joint, in volts.
I = Test current applied to the pipe test span, in amperes.

5. Joint Bond Acceptance:
   a. Joint Bond Resistance: Less than or equal to the maximum allowable bond resistance values in Table 1.

**Table 1**

| Joint Type | Max. Allowable Resistance | |
|---|---|---|
| | 1 Bond/Joint | 2 Bonds/Joint |
| Push-On or Mechanical | 0.000325 ohm | 0.000162 ohm |
| Flexible Coupling | 0.000425 ohm | 0.000212 ohm |

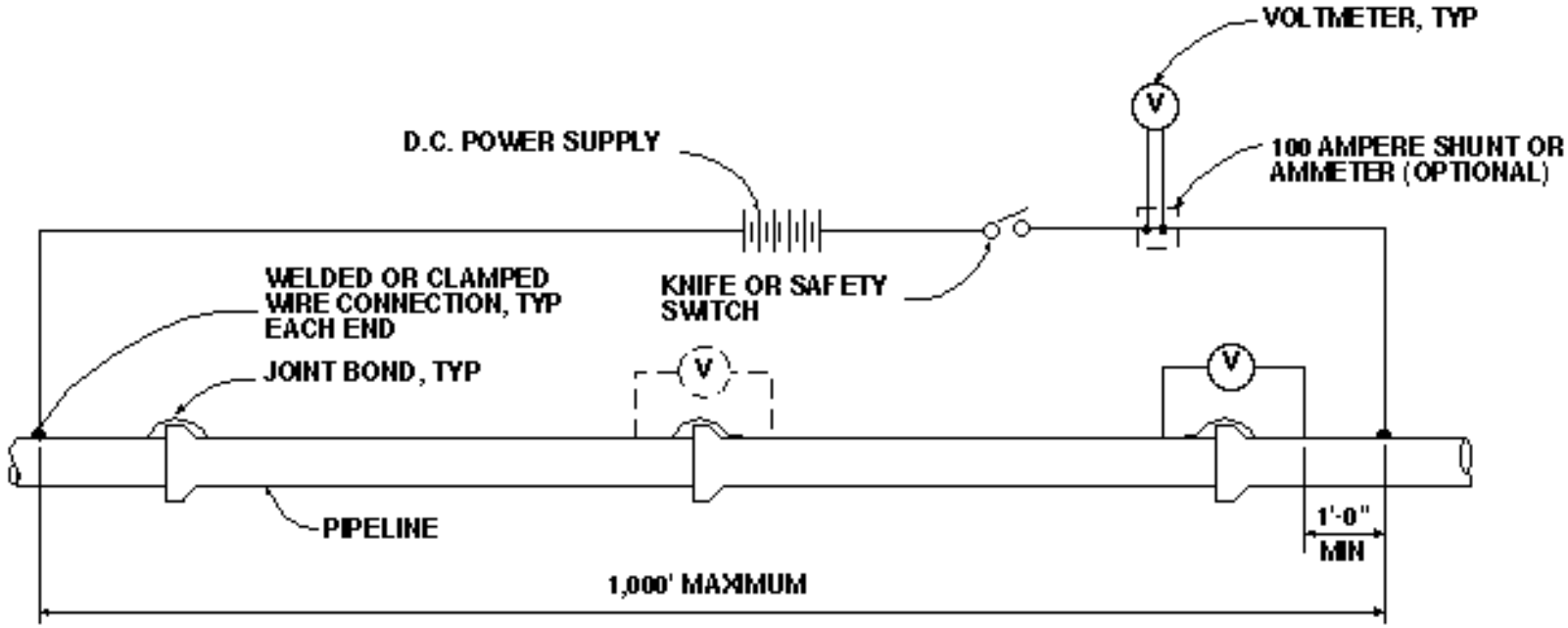
   b. Replace joint bonds that exceed the allowable resistance. Retest replacement joint bonds for compliance with bond resistance.
   c. Repair defective joint bonds discovered during energizing and testing.
6. Record Tests of Each Bonded Pipeline:
   a. Description and location of pipeline tested.
   b. Starting location and direction of test.
   c. Date of test.
   d. Joint type.
   e. Test current and voltage drop across each joint and calculated bond resistance (Calculated Resistance Method only).
   f. Measured joint bond resistance (Digital Low Resistance Ohmmeter method only).
   g. Record test information on a form that includes information listed above.

3.06 SUPPLEMENT

A. The supplement listed below, following "End of Section," are a part of this Specification.

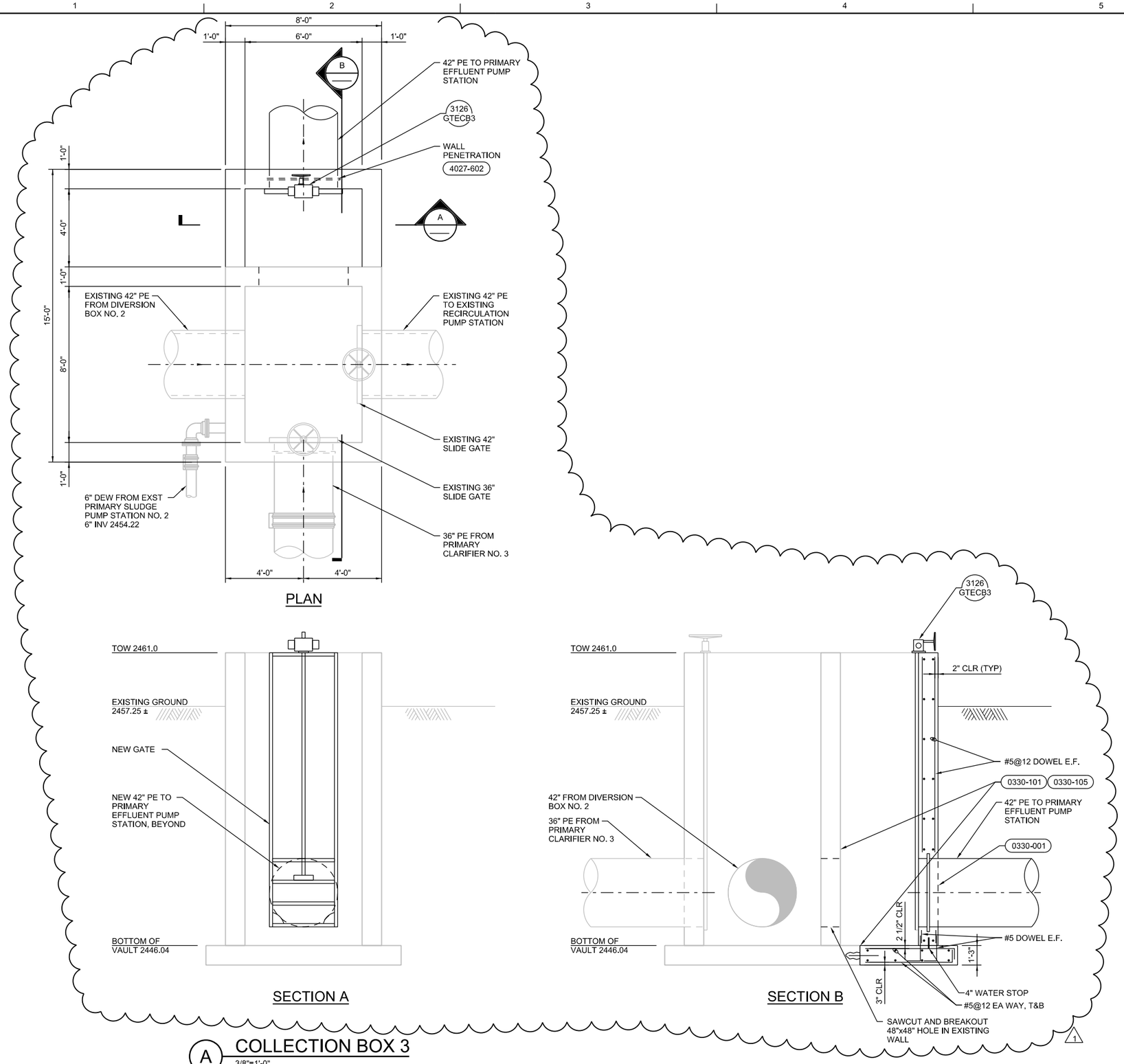
1. Joint Bond Continuity Test Schematic.

**END OF SECTION**




JOINT BOND CONTINUITY TEST SCHEMATIC

DTE195.SP 10M-17-85/mbb




# A COLLECTION BOX 3

3/8"=1'-0"

ORIGINAL DOCUMENT SIGNED BY REGISTRANT ON DECEMBER 16, 2014.

PROFESSIONAL ENGINEER REGISTERED 13300 STATE OF IDAHO AMANDA MARIE SMITH

ORIGINAL DOCUMENT STORED AT CH2MHILL/BOISE, ID.

| NO. | DATE | DSGN | DR | CHK | APVD | BY | APVD |
|---|---|---|---|---|---|---|---|
| 1 | 2015/02/16 | A THOMPSON | A TOLMAN | B ROBERTS | G THOMPSON | AT | AT |

REVISION — 1 ADDENDUM 2



NAMPA WWTP PHASE 1 UPGRADES
PROJECT GROUP A
CITY OF NAMPA
NAMPA, IDAHO

CH2MHILL®

CIVIL

COLLECTION BOX 3 PLANS, SECTIONS AND DETAILS

AS NOTED

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

| | |
|---|---|
| DATE | DECEMBER 2014 |
| PROJ | 480770 |
| DWG | 050-CY-303 |
| SHEET | 50 of 157 |

BID DOCUMENTS

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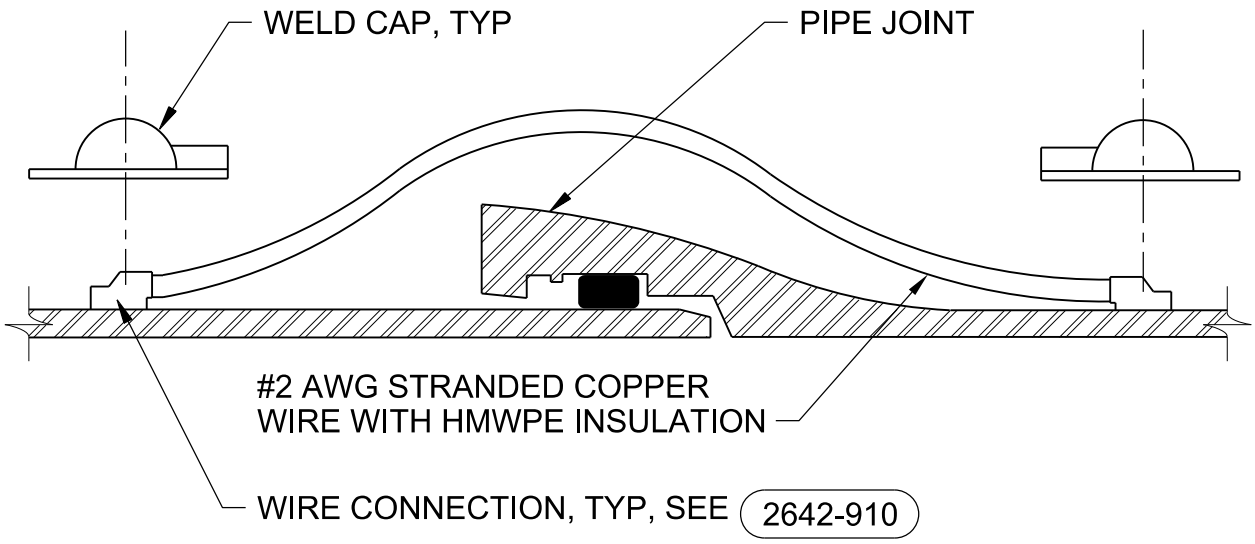


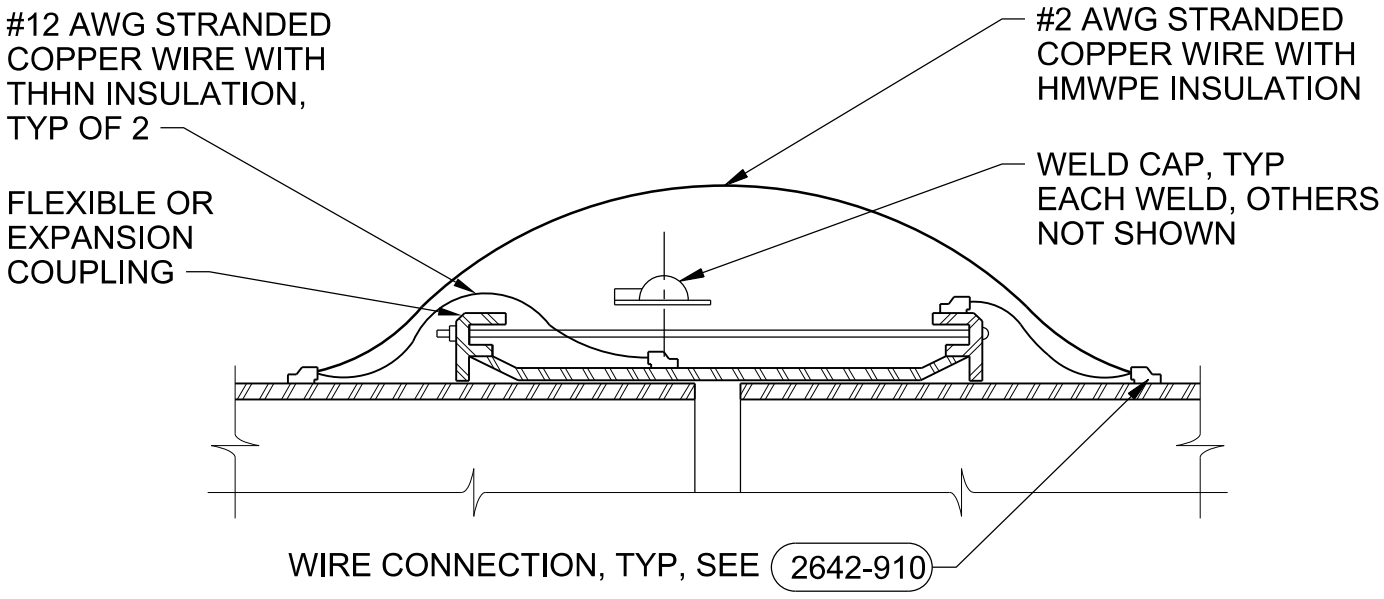

# PUSH-ON JOINT BOND

NTS

2642-840



CH2MHILL



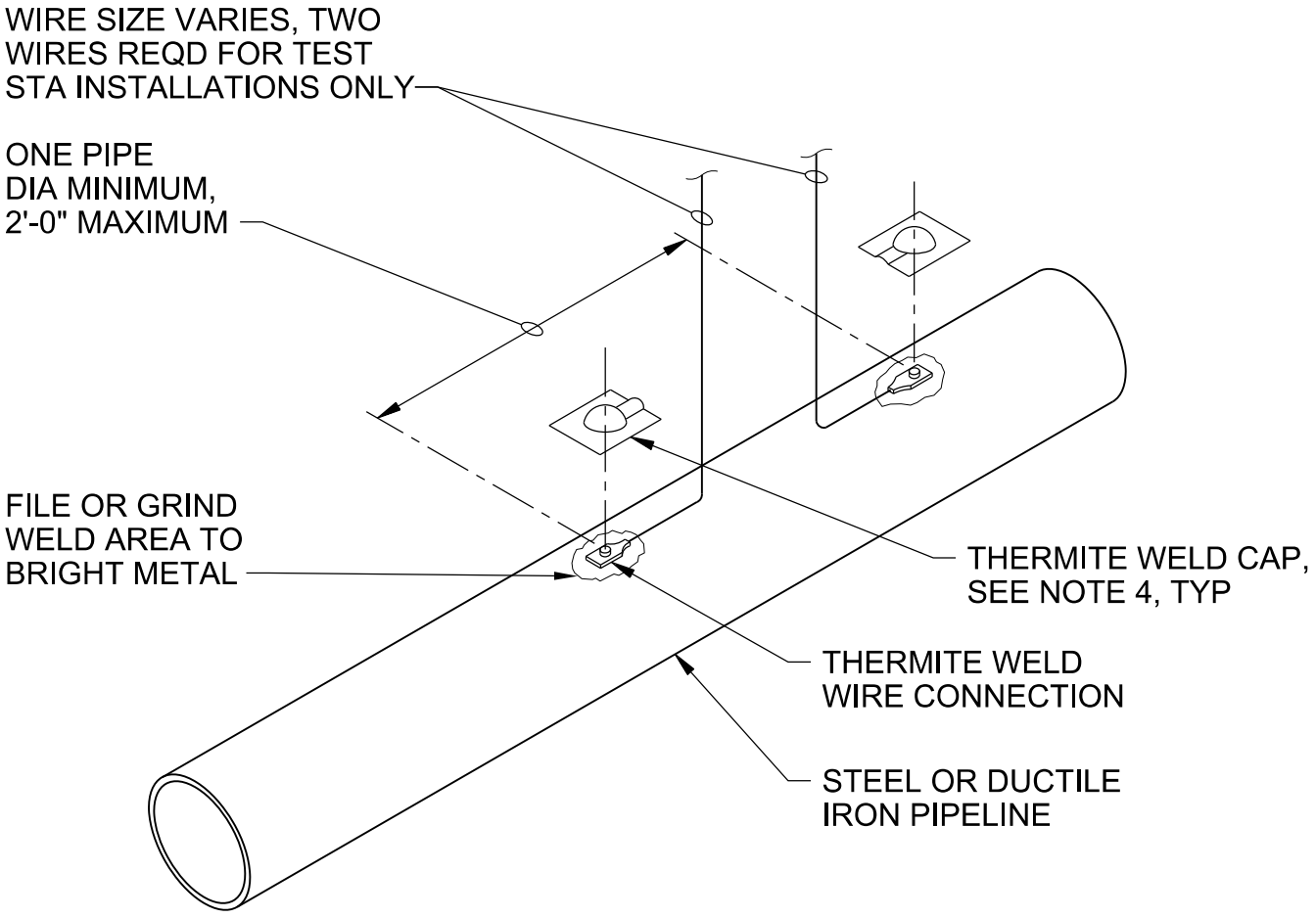

# FLEXIBLE JOINT BOND

NTS

2642-843



CH2MHILL




NOTES:

1. COPPER SLEEVE REQUIRED FOR THERMITE WELDING OF #10 AWG AND SMALLER WIRE.
2. USE COPPER SLEEVE ON #2 AWG JOINT BONDING WIRES.
3. WELDER AND CARTRIDGE SIZE VARIES ACCORDING TO WIRE SIZE AND PIPE MATERIAL, CONSULT WELDER MANUFACTURER FOR RECOMMENDED WELDER AND CARTRIDGE.
4. COAT WELD AREA AND FILL RECESS ON THERMITE WELD CAP WITH COLD APPLIED COAL TAR MASTIC AND APPLY CAP TO WELD.

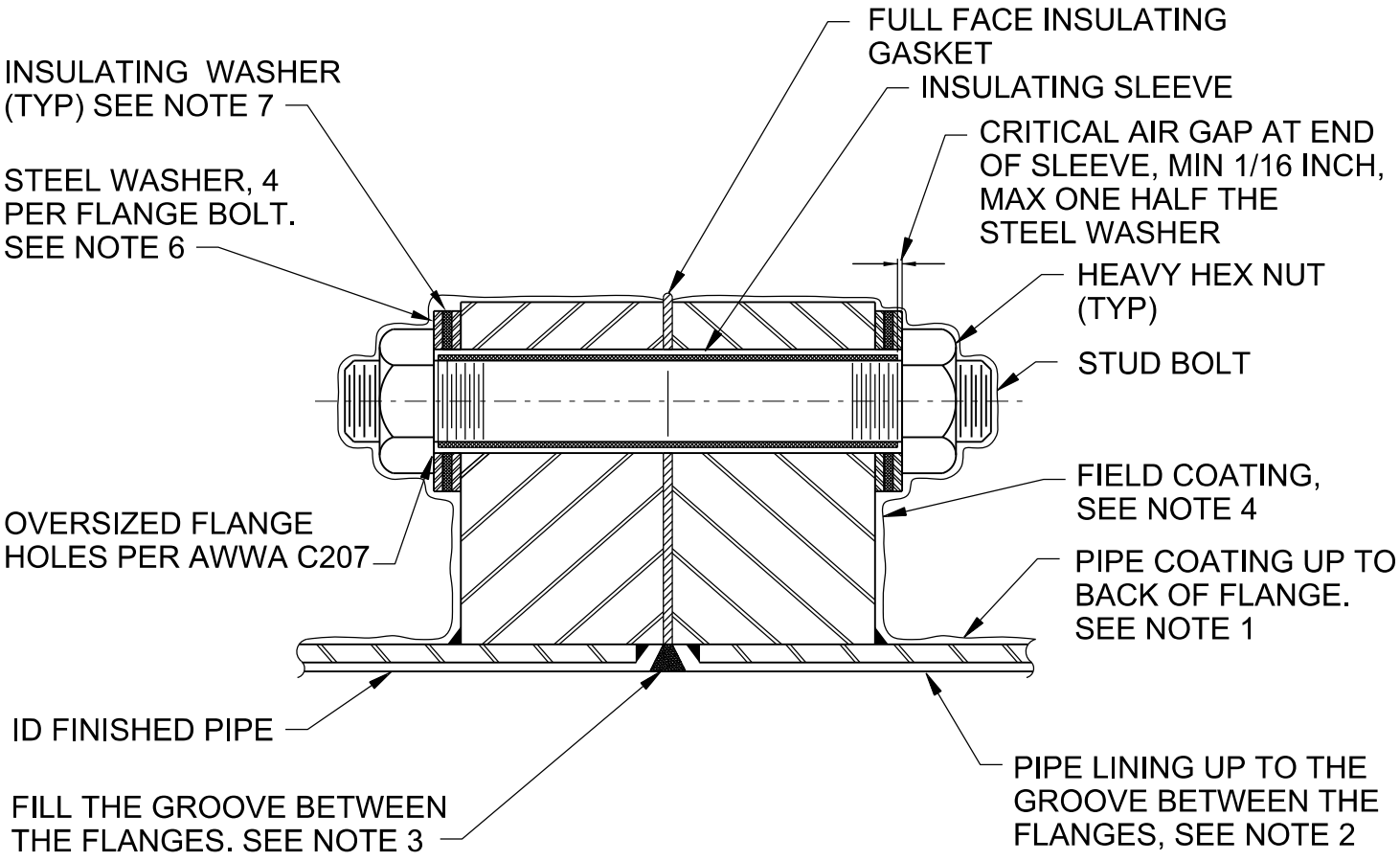
# WIRE CONNECTION FOR STEEL AND DUCTILE IRON PIPE

NTS

2642-910



CH2MHILL




NOTES:

1. THE PIPE COATING ON EACH SIDE OF THE INSULATED FLANGE SHALL BE THE SAME IN TYPE, THICKNESS, AND QUALITY UP TO THE BACK SIDE OF THE RESPECTIVE FLANGE.
2. THE LINING ON THE PIPE SHALL BE THE SAME IN TYPE, THICKNESS, AND QUALITY UP TO THE INSULATED FLANGE JOINT.
3. FOR PIPE LARGER THAN 24 INCH DIAMETER , FILL THE INSULATED FLANGE'S INTERNAL GAP WITH A MATERIAL COMPATIBLE WITH THE PIPE LINING.
4. COAT JOINTS AS SPECIFIED AFTER INSTALLATION.
5. NOT USED.
6. FOR PIPE SMALLER THAN 36 INCH DIAMETER DELETE INNER STEEL WASHERS.
7. FOR BURIED OR SUBMERGED INSULATING FLANGE, DO NOT INSTALL INSULATING WASHER ON PROTECTED SIDE OF FLANGE.

# INSULATED FLANGES

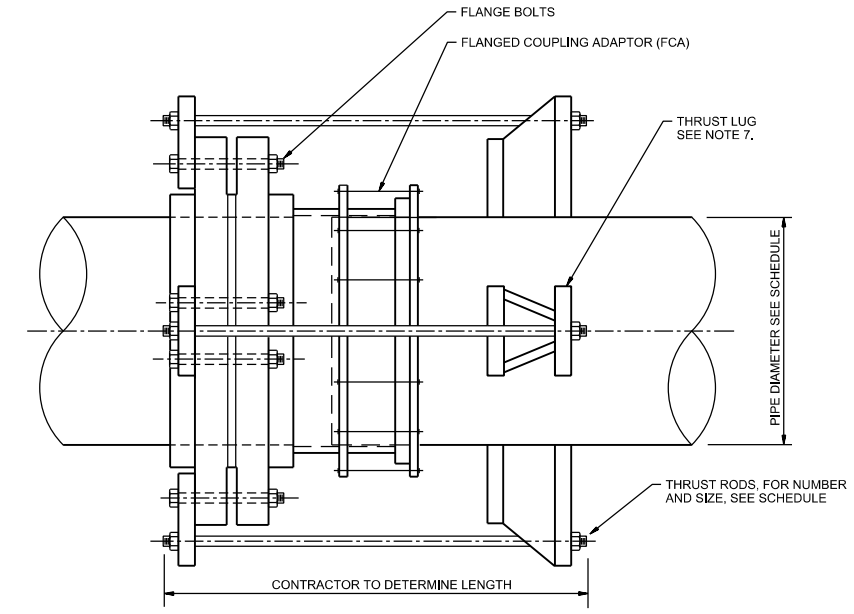
NTS

2642-930

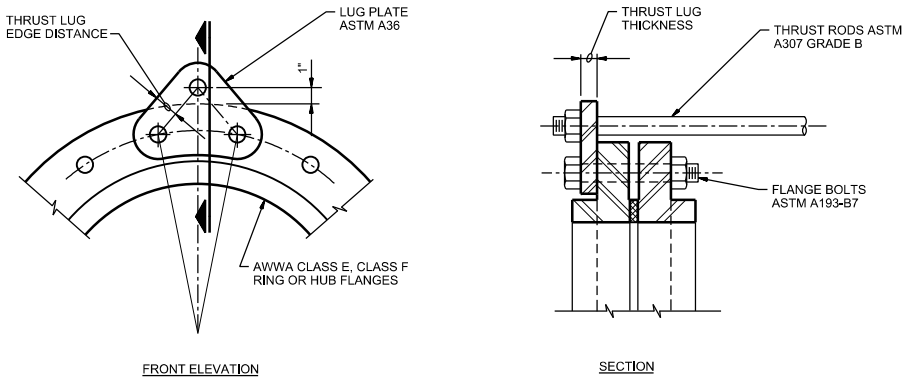
480770-NAMPA WWTP PHASE 1 UPGRADES - PROJECT GROUP A

# THRUST TIE FOR STEEL PIPE

NTS




PLAN




FRONT ELEVATION

SECTION

LUG

NOTES:

1. THRUST RODS SHALL CONFORM TO ASTM A307 GRADE B. NUTS SHALL CONFORM TO ASTM A563.
2. LUG PLATES SHALL CONFORM TO ASTM A36.
3. THRUST ROD NUTS SHALL BE TIGHTENED GRADUALLY AND EQUALLY IN STAGES TO PREVENT UNEVEN ALIGNMENT AND TO ALLOW EQUAL STRESS ON ALL RODS UNDER PRESSURE. TIGHTEN UNTIL SNUG. THREADS SHALL PROTRUDE FROM NUTS. PEEN THREADS AFTER TIGHTENING NUTS.
4. LUG PLATES SHALL BE EQUALLY SPACED AROUND PIPE.
5. PROVIDE CATHODIC PROTECTION FOR COUPLINGS AS NOTED ON PLANS OR IN THE SPECIFICATIONS.
6. CONTRACTOR SHALL USE SCHEDULE DATA FOR ONLY THOSE PIPE SIZES AND TEST PRESSURES SPECIFIED IN THIS CONTRACT.
7. FOR THRUST LUG DIMENSIONS SEE LUG SCHEDULE ON DETAIL 15540. ADJUST HEIGHT OF THRUST ROD LUG SO THAT THRUST ROD IS PARALLEL TO PIPE AXIS.

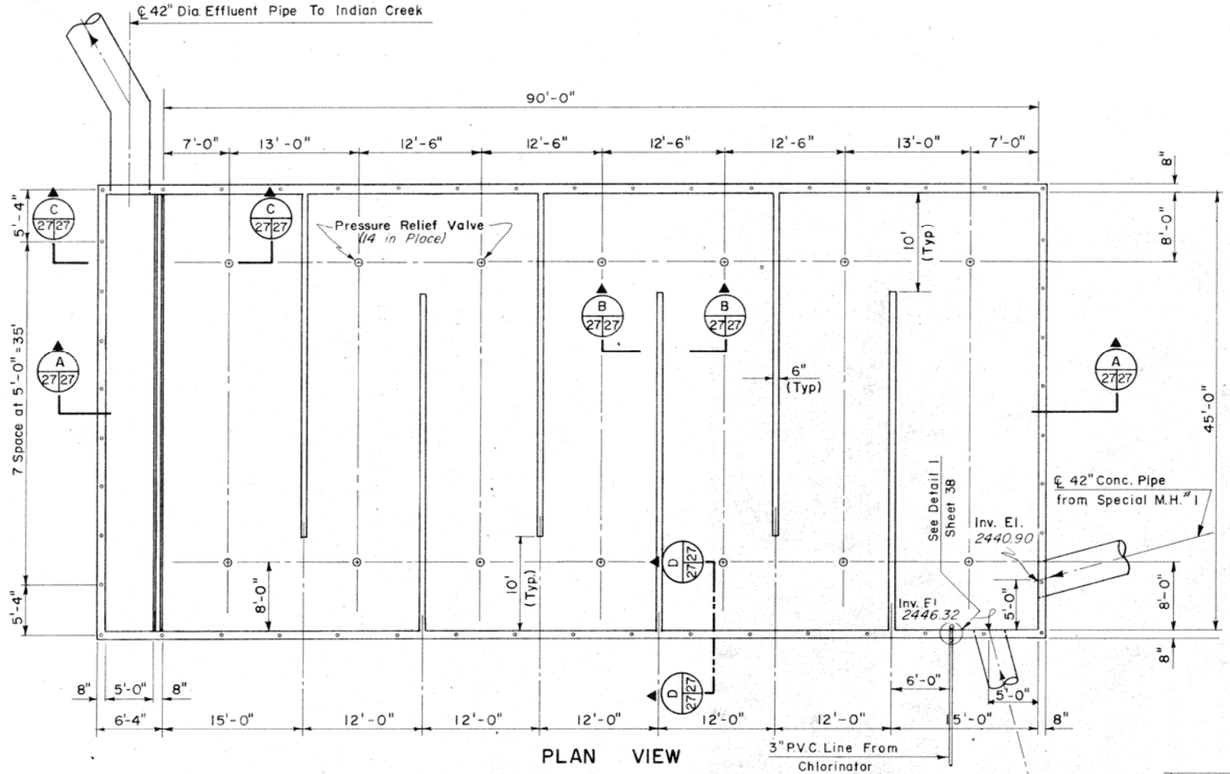
IF YOU HAVE A PIPE SIZE OR PRESSURE NOT IN THE TABLE, CONTACT CHRIS SUNDBERG/SEA AND THE CALCS AND SCHEDULE WILL BE PROVIDED.

## THRUST ROD AND LUG PLATE SCHEDULE

| WORKING PRESSURE (PSI) | AWWA C207 FLANGE CLASS | NUMBER OF THRUST RODS | PUBLISHED FLANGE THICKNESS (IN) | REQ'D RING FLANGE THICKNESS (IN) | THRUST ROD DIA. (IN) | THRUST ROD FORCE (KIPS) | THRUST LUG THICKNESS (IN) | THRUST LUG EDGE DISTANCE (IN) | REQ'D FLANGE BOLT SPEC |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 6" Class E | 4 | 1.31 | 0.67 | 0.63 | 1.2 | 0.25 | 1.50 | A 193, B7 |
| 100 | 6" Class F | 6 | 1.31 | 0.75 | 0.63 | 1.0 | 0.25 | 1.50 | A 193, B7 |
| 100 | 8" Class E | 4 | 1.50 | 0.80 | 0.63 | 2.0 | 0.38 | 1.50 | A 193, B7 |
| 100 | 8" Class F | 6 | 1.31 | 0.87 | 0.63 | 1.5 | 0.38 | 1.50 | A 193, B7 |
| 100 | 10" Class E | 6 | 1.56 | 0.63 | 0.63 | 2.0 | 0.38 | 1.50 | A 193, B7 |
| 100 | 10" Class F | 8 | 1.50 | 0.99 | 0.63 | 1.7 | 0.38 | 1.50 | A 193, B7 |
| 100 | 12" Class E | 6 | 1.75 | 1.08 | 0.63 | 3.0 | 0.38 | 1.50 | A 193, B7 |
| 100 | 12" Class F | 8 | 1.63 | 1.13 | 0.63 | 2.4 | 0.38 | 1.53 | A 193, B7 |
| 100 | 14" Class E | 6 | 1.88 | 1.17 | 0.63 | 3.5 | 0.38 | 1.50 | A 193, B7 |
| 100 | 14" Class F | 10 | 1.94 | 1.26 | 0.63 | 2.5 | 0.38 | 1.53 | A 193, B7 |
| 100 | 16" Class E | 6 | 2.00 | 1.30 | 0.63 | 3.6 | 0.38 | 1.50 | A 193, B7 |
| 100 | 16" Class F | 10 | 2.14 | 1.37 | 0.63 | 3.1 | 0.38 | 1.69 | A 193, B7 |
| 100 | 18" Class E | 8 | 2.13 | 1.37 | 0.63 | 4.2 | 0.50 | 1.53 | A 193, B7 |
| 100 | 18" Class F | 12 | 2.25 | 1.49 | 0.63 | 3.2 | 0.50 | 1.69 | A 193, B7 |
| 100 | 20" Class E | 10 | 2.38 | 1.49 | 0.63 | 4.1 | 0.50 | 1.53 | A 193, B7 |
| 100 | 20" Class F | 12 | 2.33 | 1.61 | 0.63 | 3.9 | 0.50 | 1.69 | A 193, B7 |
| 100 | 22" Class E | 10 | 2.50 | 1.58 | 0.63 | 4.9 | 0.50 | 1.69 | A 193, B7 |
| 100 | 22" Class F | 12 | 2.50 | 1.72 | 0.63 | 4.7 | 0.50 | 1.69 | A 193, B7 |
| 100 | 24" Class E | 10 | 2.63 | 1.70 | 0.63 | 5.8 | 0.50 | 1.69 | A 193, B7 |
| 100 | 24" Class F | 12 | 2.69 | 1.85 | 0.63 | 5.6 | 0.50 | 2.00 | A 193, B7 |
| 100 | 30" Class E | 14 | 2.88 | 2.02 | 0.75 | 6.3 | 0.50 | 1.69 | A 193, B7 |
| 100 | 30" Class F | 14 | 3.15 | 2.16 | 0.75 | 7.3 | 0.50 | 2.31 | A 193, B7 |
| 100 | 36" Class E | 16 | 3.13 | 2.34 | 0.75 | 7.9 | 0.63 | 2.00 | A 193, B7 |
| 100 | 36" Class F | 16 | 3.46 | 2.46 | 0.88 | 8.9 | 0.50 | 2.63 | A 193, B7 |
| 100 | 42" Class E | 18 | 3.38 | 2.65 | 0.88 | 9.5 | 0.63 | 2.00 | A 193, B7 |
| 100 | 42" Class F | 18 | 3.81 | 2.76 | 0.88 | 10.5 | 0.63 | 2.63 | A 193, B7 |
| 100 | 48" Class E | 20 | 3.50 | 2.93 | 0.88 | 10.1 | 0.63 | 2.00 | A 193, B7 |
| 100 | 48" Class F | 20 | 4.50 | 3.08 | 1.00 | 12.8 | 0.63 | 2.63 | A 193, B7 |
| 200 | 6" Class E | 4 | 1.31 | 0.95 | 0.63 | 2.5 | 0.38 | 1.50 | A 193, B7 |
| 200 | 6" Class F | 6 | 1.31 | 1.06 | 0.63 | 2.1 | 0.38 | 1.50 | A 193, B7 |
| 200 | 8" Class E | 4 | 1.50 | 1.14 | 0.63 | 4.0 | 0.50 | 1.50 | A 193, B7 |
| 200 | 8" Class F | 6 | 1.31 | 1.24 | 0.63 | 3.2 | 0.38 | 1.50 | A 193, B7 |
| 200 | 10" Class E | 6 | 1.56 | 1.32 | 0.63 | 4.1 | 0.50 | 1.50 | A 193, B7 |
| 200 | 10" Class F | 8 | 1.50 | 1.40 | 0.63 | 3.4 | 0.50 | 1.50 | A 193, B7 |
| 200 | 12" Class E | 6 | 1.75 | 1.53 | 0.63 | 6.0 | 0.50 | 1.50 | A 193, B7 |
| 200 | 12" Class F | 8 | 1.63 | 1.59 | 0.63 | 4.7 | 0.50 | 1.53 | A 193, B7 |
| 200 | 14" Class E | 6 | 1.88 | 1.66 | 0.75 | 7.3 | 0.63 | 1.50 | A 193, B7 |
| 200 | 14" Class F | 10 | 1.94 | 1.78 | 0.63 | 5.0 | 0.50 | 1.53 | A 193, B7 |
| 200 | 16" Class E | 6 | 2.00 | 1.83 | 0.75 | 7.2 | 0.63 | 1.50 | A 193, B7 |
| 200 | 16" Class F | 10 | 2.14 | 1.94 | 0.75 | 6.3 | 0.63 | 1.69 | A 193, B7 |
| 200 | 18" Class E | 8 | 2.13 | 1.94 | 0.75 | 8.3 | 0.63 | 1.53 | A 193, B7 |
| 200 | 18" Class F | 12 | 2.25 | 2.11 | 0.75 | 6.5 | 0.63 | 1.69 | A 193, B7 |
| 200 | 20" Class E | 10 | 2.38 | 2.11 | 0.75 | 8.2 | 0.63 | 1.53 | A 193, B7 |
| 200 | 20" Class F | 12 | 2.33 | 2.27 | 0.75 | 7.8 | 0.63 | 1.69 | A 193, B7 |
| 200 | 22" Class E | 10 | 2.50 | 2.24 | 0.88 | 9.7 | 0.63 | 1.69 | A 193, B7 |
| 200 | 22" Class F | 12 | 2.50 | 2.44 | 0.88 | 9.3 | 0.75 | 1.69 | A 193, B7 |
| 200 | 24" Class E | 10 | 2.63 | 2.41 | 0.88 | 11.6 | 0.75 | 1.69 | A 193, B7 |
| 200 | 24" Class F | 12 | 2.69 | 2.62 | 0.88 | 11.1 | 0.75 | 2.00 | A 193, B7 |
| 200 | 30" Class E | 14 | 2.88 | 2.86 | 1.00 | 12.6 | 0.75 | 1.69 | A 193, B7 |
| 200 | 30" Class F | 14 | 3.15 | 3.05 | 1.00 | 14.6 | 0.75 | 2.31 | A 193, B7 |
| 200 | 36" Class E | 16 | 3.13 | 3.31 | 1.13 | 15.7 | 0.75 | 2.00 | A 193, B7 |
| 200 | 36" Class F | 16 | 3.46 | 3.47 | 1.13 | 17.7 | 0.75 | 2.63 | A 193, B7 |
| 200 | 42" Class E | 18 | 3.38 | 3.75 | 1.13 | 19.0 | 0.88 | 2.00 | A 193, B7 |
| 200 | 42" Class F | 18 | 3.81 | 3.90 | 1.25 | 21.1 | 0.88 | 2.63 | A 193, B7 |
| 200 | 48" Class E | 20 | 3.50 | 4.14 | 1.25 | 20.2 | 0.88 | 2.00 | A 193, B7 |
| 200 | 48" Class F | 20 | 4.50 | 4.35 | 1.38 | 25.5 | 0.88 | 2.63 | A 193, B7 |
| 300 | 6" Class E | 4 | 1.31 | 1.16 | 0.63 | 3.7 | 0.50 | 1.50 | A 193, B7 |
| 300 | 6" Class F | 6 | 1.31 | 1.30 | 0.63 | 3.1 | 0.50 | 1.50 | A 193, B7 |
| 300 | 8" Class E | 4 | 1.50 | 1.39 | 0.63 | 6.1 | 0.50 | 1.50 | A 193, B7 |
| 300 | 8" Class F | 6 | 1.31 | 1.51 | 0.63 | 4.8 | 0.50 | 1.50 | A 193, B7 |
| 300 | 10" Class E | 6 | 1.56 | 1.62 | 0.63 | 6.1 | 0.50 | 1.50 | A 193, B7 |
| 300 | 10" Class F | 8 | 1.50 | 1.72 | 0.63 | 5.1 | 0.50 | 1.50 | A 193, B7 |
| 300 | 12" Class E | 6 | 1.75 | 1.88 | 0.88 | 9.0 | 0.63 | 1.50 | A 193, B7 |
| 300 | 12" Class F | 8 | 1.63 | 1.95 | 0.75 | 7.1 | 0.63 | 1.53 | A 193, B7 |
| 300 | 14" Class E | 6 | 1.88 | 2.03 | 0.88 | 10.9 | 0.75 | 1.50 | A 193, B7 |
| 300 | 14" Class F | 10 | 1.94 | 2.18 | 0.75 | 7.5 | 0.63 | 1.53 | A 193, B7 |
| 300 | 16" Class E | 8 | 2.00 | 2.24 | 0.88 | 10.8 | 0.75 | 1.50 | A 193, B7 |
| 300 | 16" Class F | 10 | 2.14 | 2.38 | 0.88 | 9.4 | 0.63 | 1.69 | A 193, B7 |
| 300 | 18" Class E | 8 | 2.13 | 2.38 | 1.00 | 12.5 | 0.75 | 1.53 | A 193, B7 |
| 300 | 18" Class F | 12 | 2.25 | 2.58 | 0.88 | 9.7 | 0.75 | 1.69 | A 193, B7 |
| 300 | 20" Class E | 10 | 2.38 | 2.59 | 1.00 | 12.2 | 0.75 | 1.53 | A 193, B7 |
| 300 | 20" Class F | 12 | 2.33 | 2.78 | 0.88 | 11.7 | 0.75 | 1.69 | A 193, B7 |
| 300 | 22" Class E | 10 | 2.50 | 2.74 | 1.00 | 14.6 | 0.75 | 1.69 | A 193, B7 |
| 300 | 22" Class F | 12 | 2.50 | 2.99 | 1.00 | 14.0 | 0.88 | 1.69 | A 193, B7 |
| 300 | 24" Class E | 10 | 2.63 | 2.95 | 1.13 | 17.3 | 0.88 | 2.00 | A 193, B7 |
| 300 | 24" Class F | 12 | 2.69 | 3.21 | 1.13 | 16.7 | 0.88 | 2.00 | A 193, B7 |
| 300 | 30" Class E | 14 | 2.88 | 3.50 | 1.13 | 19.0 | 0.88 | 1.69 | A 193, B7 |
| 300 | 30" Class F | 14 | 3.15 | 4.06 | 1.25 | 21.8 | 0.88 | 2.31 | A 193, B7 |
| 300 | 36" Class E | 16 | 3.13 | 4.26 | 1.25 | 23.6 | 1.00 | 2.00 | A 193, B7 |
| 300 | 36" Class F | 16 | 3.46 | 4.46 | 1.38 | 26.6 | 0.88 | 2.63 | A 193, B7 |
| 300 | 42" Class E | 18 | 3.38 | 4.59 | 1.38 | 28.5 | 1.00 | 2.00 | A 193, B7 |
| 300 | 42" Class F | 18 | 3.81 | 4.78 | 1.50 | 31.6 | 1.00 | 2.63 | A 193, B7 |
| 300 | 48" Class E | 22 | 3.50 | 5.07 | 1.50 | 30.2 | 1.13 | 2.00 | A 193, B7 |
| 300 | 48" Class F | 20 | 4.50 | 5.33 | 1.63 | 38.3 | 1.13 | 2.63 | A 193, B7 |

CH2MHILL

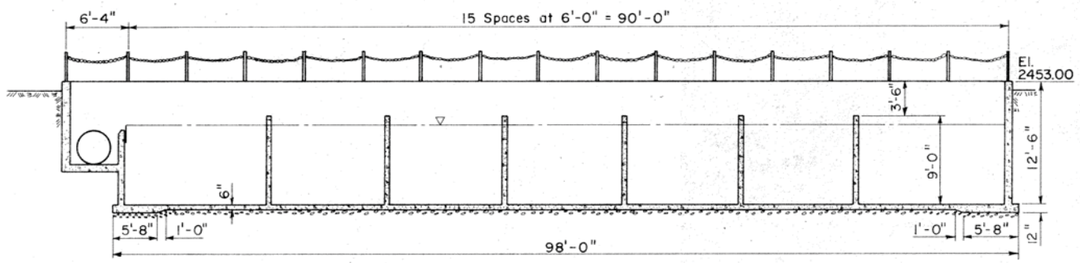
4005-542




PLAN VIEW

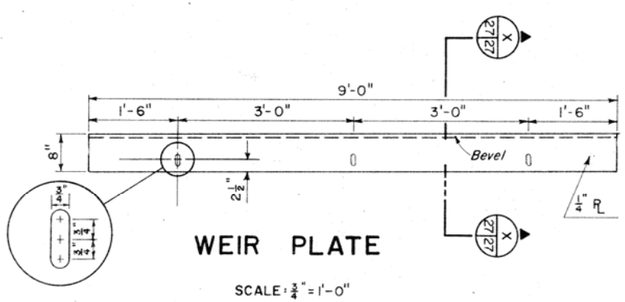
## CHLORINE CONTACT BASIN

SCALE: $\frac{1}{8}$" = 1'-0"



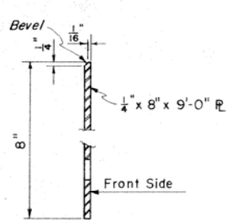

SECTION A 27|27

SCALE: $\frac{1}{8}$"=1'-0"




## WEIR PLATE

SCALE: $\frac{3}{4}$" = 1'-0"

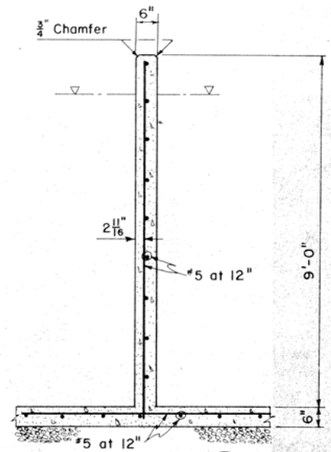



SECTION X 27|27

N.T.S.

NOTE:

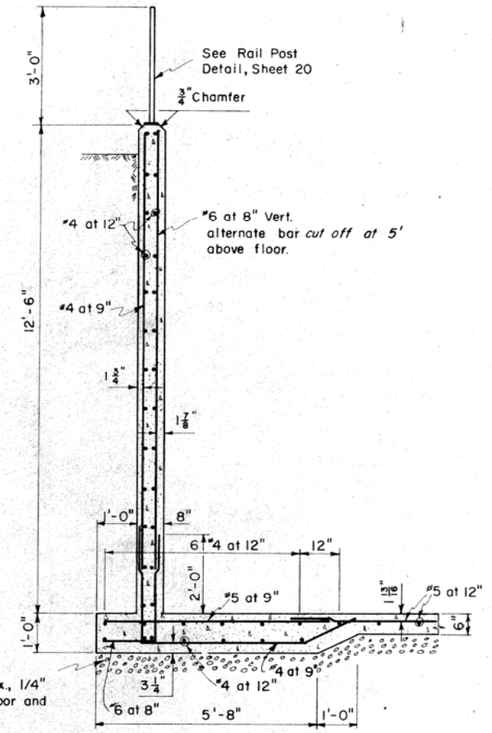
Horiz. reinforcing *bars are bent and extended* a minimum of 2'-0" into exterior wall.




SECTION B 27|27

## TYPICAL INTERIOR BAFFLE WALL

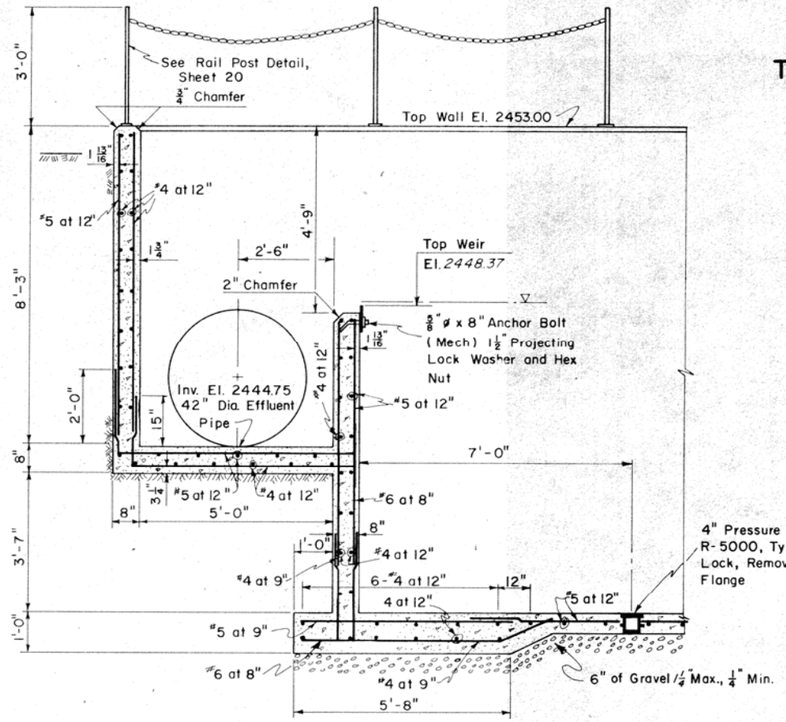
SCALE: $\frac{1}{2}$" = 1'-0"




SECTION D 27|27

## TYPICAL EXTERIOR WALL SECTION

SCALE: $\frac{1}{2}$" = 1'-0"




SECTION C 27|27

SCALE: $\frac{1}{2}$" = 1'-0"

NOTE

1. *Waterstop placed in all exterior wall construction joints.*

William W. Briggs 4-9-65

REGISTERED PROFESSIONAL ENGINEER 13471 4-9-65 STATE OF IDAHO HAROLD J. COX

Harold J. Cox 4-9-65

AS-BUILT

| | | | |
|---|---|---|---|
| 1964-65 SEWERAGE PROJECT CITY OF NAMPA, IDAHO | | | |
| CHLORINE CONTACT BASIN PLAN VIEW & DETAILS | | | |
| JOHNSON, UNDERKOFLER & W.W. BRIGGS — Consulting Engineers — Nampa, Idaho | | | |
| DES. H.J.C. | DR. K.P.H. | CK. W.W.B. | SHEET 27 OF 50 |
| SCALE: AS SHOWN | DATE: JAN., 1965 | | DWG. NO. D650111-27 |

06-D0040