THRASHER

ENGINEERING
ARCHITECTURE
FIELD SERVICES

PADEN CITY MUNICIPAL WATER WORKS
TYLER/WETZEL COUNTY, WEST VIRGINIA

WATER SYSTEM IMPROVEMENTS
CONTRACT #2 – PROPOSED WATER STORAGE TANK UPGRADES

ADDENDUM #1

February 25, 2021

THRASHER PROJECT #101-010-01202

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Thursday, February 11, 2021 on the above-referenced project, a copy of the sign in sheet is included in this Addendum. The following are clarifications and responses to questions posed by contractors for the above reference project.

A. GENERAL

1. **THE BID FORM HAS BEEN REVISED. YOU MUST USE THE REVISED BID FORM WHEN PREPARING YOUR BID PACKAGE FOR THIS PROJECT.**

B. SPECIFICATIONS

Specification section 260500 has been added as part of this Addendum.
Specification section 260526 has been added as part of this Addendum.
Specification section 260543 has been added as part of this Addendum.

C. DRAWINGS

Sheet 12A has been added as part of this Addendum.
Sheets 13, 14, 15, 16, & 18 have been updated as part of this Addendum.

D. QUESTIONS AND RESPONSES

QUESTION

1. **Was it mandatory to attend the Pre-Bid Conference?**

RESPONSE

No.

QUESTION

2. **Is there any new equipment or accessories required for the telemetry relocations?**

RESPONSE

The equipment from the South Tank site will be reused at the North Tank site. The Contractor will be responsible for all ancillary cables, wires, etc. to make the connection complete.

QUESTION

3. **If there are costs from the power company for disconnecting the old service and reconnecting to a new service, will that be paid for by the owner?**

RESPONSE

Yes, the Owner will pay any fees from electric provider.

QUESTION

4. **Is this project subject to any Wage Rates?**

RESPONSE

No.

QUESTION

5. **If they are part of Contract #2, can the telemetry/electrical backboard details, service pole details, 120 VAC equipment specification be provided?**

RESPONSE

Details and Specifications have been added as part of this Addendum.

QUESTION

6. **Who is the Funding Agency?**

RESPONSE

USDA Rural Development.

QUESTION

7. **Are AIS Requirements applicable?**

RESPONSE

Yes.

QUESTION

8. **Is a Job Trailer required for this Contract?**

RESPONSE

No, Job Trailer will **NOT** be required for this Contract.

QUESTION

9. **Does the existing tank paint contain lead?**

RESPONSE

No, the existing tank paint was tested and did not contain lead.

QUESTION

10. **Are the existing tank foundations staying in place or being removed with the tanks?**

RESPONSE

Foundations at the South Tank site shall be cut to ground level and covered with material. Foundation at North Tank site shall be removed.

QUESTION

11. **Who is responsible for concrete testing?**

RESPONSE

Concrete testing is the responsibility of the Contractor.

E. CLARIFICATIONS

1. (The Bid Form (C-410) has been revised and included with this Addendum. **YOU MUST USE THE REVISED BID FORM INCLUDED WITH THIS ADDENDUM WHEN PREPARING YOUR BID PACKAGE.**

2. The Method of Award has been revised.

If at the time this contract is to be awarded, the lowest total bid submitted by a qualified, responsive, responsible Bidder does not exceed the amount of funds then estimated by the Owner, as available to finance the contract, the construction contract will be awarded. If such bids exceed such amount, the Owner may reject all bids.

The owner may award the contract on the Total Bid submitted by a qualified responsible Bidder less the amount(s) of the Deductive Alternate(s), as listed in the contract to produce the lowest bid within the funds available for financing. **The application of Deductive Alternates will NOT change the low bidder for awarding purposes. Deductive alternates on Contract #2 will be applied first.**

3. The bidding process is a two (2) envelope system. Envelope No. 1 must have the following information presented on the front:

Name and address of Bidder
Bid on City of Paden City Water System Improvements Project Contract #1 Proposed Water Line Replacement
Received by the City of Paden City

Envelope No. 2 labeled "Bid Proposal" shall be placed inside of Envelope #1

Envelope No. 1 will be opened first and the Bid Opening Requirement items will be checked for compliance as outlined on the Bid Opening Checklist (BOR-1). If such documents are found to be in order, Envelope No. 2 "Bid Proposal", will be opened and will be publicly read aloud. If the documents required to be contained in Envelope No. 1 **are not in order**, Envelope No. 2 "Bid Proposal", **will not be opened** and the Bid will be considered non-responsive.

4. Sealed Bids for the construction of the Water System Improvements Project will be received by Paden City Municipal Water Works, at the office of The Thrasher Group, Inc, located at 600 White Oaks Blvd, Bridgeport, WV 26330 until 2:00 pm. local time on March 4, 2021 at which time the Bids received will be opened and read via Microsoft Teams teleconference for visual at the following address https://tinyurl.com/PadenCityBidOpening or audio at Call-in Number: 1-304-935-0841; Conference Number 394 423 025#.

5. Mailed/Shipped bid packages shall be sent to The Thrasher Group, Inc., 600 White Oaks Blvd, Bridgeport, Harrison County, West Virginia 26330. The Thrasher Group's phone number is (304) 624-4108. Bidders should **not** assume guaranteed early (10:30 am) delivery is available and shall be mailed/shipped in sufficient time. **It is the Bidder's responsibility to deliver the Bid on time.**

6. All work is to be coordinated through the Engineer and the City to ensure no disruption to the existing collection or water distribution system.

7. Engineer's Approved Equal means material, equipment, or method approved by the engineer for use in the work, as being acceptable as an equivalent in essential attributes to the material, equipment, or method specified in the contract documents.

8. Deductive Alternative Unit Prices shall be the same Unit Prices as used in the Base Bid.

9. The Tank Ladder design has been updated as part of this Addendum.

10. The Engineer's Estimate is $1,600,000.

11. **Plan Sheets #12A, 13, 14, 15, 16, & 18 have been updated as part of this Addendum.**

12. **Specification Sections 260500, 260526, & 260543 have been added as a part of this Addendum.**

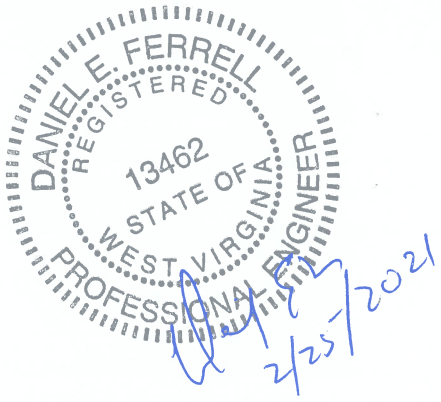
If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until 2:00 p.m. on March 4, 2021 at 600 White Oaks Blvd, Bridgeport, WV 26330. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE THRASHER GROUP, INC.

DANIEL E. FERRELL P.E
Project Manager

Enclosures: Pre Bid Conference Sign In Sheet
C-410 Bid Form
Specification 260500
Specification 260526
Specification 260543
Plan Sheets



PADEN CITY MUNICIPAL WATER WORKS
WETZEL/TYLER COUNTIES, WEST VIRGINIA
CONTRACT #1 – PROPOSED WATER LINE REPLACEMENT
CONTRACT #2 – PROPOSED TANK REPLACEMENT

PRE-BID CONFERENCE
Thursday, February 11, 2021

Thrasher Project #101-010-1202

Name	Representing	Phone #	Email Address
Dan Ferrell	TTG		
Logan Alastanos	TTG		
Phil Lantz	TTG		
Cody Turner	TTG		
Larry Morris	McK Const		
Tony Classon	J F Allen		
Rob Lafon	FAMCO		
Kyle Piatt	Bear Contracting		
Mid Atlantic	Storage Systems		

Name	Representing	Phone #	Email Address
Frank	James White Const		
Chris Combs	CJ Hughes		
Jim	Caliber Contracting		
Harry Taylor	USDA		
Josh	Paden City		
Jeremy White	Specialty Groups		
Fred Rader	MOVRC		
Will	Alex Paris		

PADEN CITY MUNICIPAL WATER WORKS
TYLER/WETZEL COUNTIES, WEST VIRGINIA
PROPOSED
WATER SYSTEM IMPROVEMENT PROJECT
CONTRACT #2 – PROPOSED TANK REPLACEMENT
THRASHER PROJECT #010-01202

BID FORM

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Paden City Municipal Water Works
208 West Main Street
Paden City, WV 26159

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work and including all AIS requirements.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

GENERAL

The Bidder shall take notice of and shall be responsible for any local or state taxes levied and applicable, and the cost for the same shall be included as part of the submitted Bid.

The total Bid cost stated includes a complete operating installation including furnishing and installation of any and all changes or additions in plans, piping, mechanical work, additional electrical work, accessories, controls, etc. necessary to accommodate alternative equipment systems or materials used in construction.

BID PROPOSAL

The Bidder agrees to perform all required Work described in the detailed Specifications and as shown on the Plans for the complete construction and placing in satisfactory operation the Water System Improvement Project – Contract #2 – Proposed Tank Replacement. The Project "Sequence of Construction" has been detailed in the Drawings and Specification Division 1, Project Summary, Section 011000. The Bidder agrees to perform all the Work proposed for the total of the following Bid prices.

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

PROPOSED
WATER SYSTEM IMPROVEMENT PROJECT
CONTRACT #2 – PROPOSED TANK REPLACEMENT
FOR THE

PADEN CITY MUNICIPAL WATER WORKS
TYLER/WETZEL COUNTIES, WEST VIRGINIA

THRASHER PROJECT #010-01202

BID SCHEDULE

NOTE: Bid Unit PRICE amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. Bids shall include sales tax and all other applicable taxes and fees.

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
1	LS	Mobilization/Demobilization		
		_____ Dollars		
		_____ Cents	_____	_____

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
2	LS	Erosion and Sediment Control _____ Dollars _____ Cents	_____	_____
3	LS	Demolition of the Existing North Tank _____ Dollars _____ Cents	_____	_____
4	LS	Demolition of Existing Overhead Electric Line & Service Entrance Pole _____ Dollars _____ Cents	_____	_____
5	LS	Demolition of Existing Three (3) South Tanks _____ Dollars _____ Cents	_____	_____
6	LS	Test Pit _____ Dollars _____ Cents	_____	_____
7	2 EA	Cut & Plug Existing Water Line, Complete _____ Dollars _____ Cents	_____	_____
8	LS	Site Grading and Preparation _____ Dollars _____ Cents	_____	_____
9	LS	Site Access Road Grading and Preparation _____ Dollars _____ Cents	_____	_____
10	1,300 LF	42" Diameter Drilled Caissons _____ Dollars _____ Cents	_____	_____

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
11	2 EA	470,000 Gallon Water Storage Tank Concrete Foundation Slab, Complete in Place _____ Dollars _____ Cents	_____	_____
12	2 EA	470,000 Gallon Water Storage Tank, Complete in Place _____ Dollars _____ Cents	_____	_____
13	1 EA	Concrete Valve Vault, Complete in Place, Including All Necessary Vault Drains _____ Dollars _____ Cents	_____	_____
14	40 LF	8" Water Pipe 235 _____ Dollars _____ Cents	_____	_____
15	LS	New Overhead Electric Service, Including New Service Entrance Pole _____ Dollars _____ Cents	_____	_____
16	LS	Radio Telemetry _____ Dollars _____ Cents	_____	_____
17	580 LF	6' Chain Link Fence with (2) 8' Swing Gates _____ Dollars _____ Cents	_____	_____
18	LS	6" of Crusher Run Stone _____ Dollars _____ Cents	_____	_____
19	LS	Trees as shown on Sheet 11A _____ Dollars _____ Cents	_____	_____

TOTAL BID: _____

($)

(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

NOTE: THE CONTRACTOR'S UNIT PRICES SHALL INCLUDE PURCHASE AND INSTALLATION, COMPLETE IN PLACE, PER BID ITEM IN ACCORDANCE WITH THE DETAILED SPECIFICATIONS.

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ORDER OF DEDUCTIVE ALTERNATIVES

NOTICE TO BIDDER: Unit prices used in Deductive Alternates must be the same unit prices used in the Base Bid.

DEDUCTIVE ALTERNATE #1

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
5	LS	Demolition of Existing Three (3) South Tanks _____ Dollars _____ Cents (Words)	_____ (Figures)	_____ (Figures)

TOTAL DEDUCTIVE ALTERNATE #1: _____

_____ ($_____)

DEDUCTIVE ALTERNATE #2

Item	Quantity	Description with Unit Price Written	Unit Price	Total Price
19	LS	Trees as shown on Sheet 11A _____ Dollars _____ Cents (Words)	_____ (Figures)	_____ (Figures)

TOTAL DEDUCTIVE ALTERNATE #2:_____

_____($_____)

_____

METHOD OF AWARD

If at the time this contract is to be awarded, the lowest total bid submitted by a qualified, responsible Bidder does not exceed the amount of funds then estimated by the Owner, as available to finance the contract, the construction contract will be awarded. If such bids exceed such amount, the Owner may reject all bids.

The owner may award the contract on the Total Bid submitted by a qualified responsible Bidder less the amount(s) of the Deductive Alternate(s), as listed in the contract to produce the lowest bid within the funds available for financing. **The application of Deductive Alternates will not change the low bidder for awarding purposes. Deductive alternates on Contract #2 will be applied first.**

A. Unit prices have been computed in accordance with paragraph 13.03.A of the General Conditions.

B. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Bid Opening Requirements

Note: Bid Opening Requirements (BOR-12) includes the American Iron and Steel Certification which needs to be filled out and signed by the Contractor. This certification also references two (2) attachments located in the Supplemental General Conditions (C-800) which were issued as part of RUS Bulletin 1780-35.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____
(where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

SECTION 260500 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Supporting devices for electrical components.
2. Electrical identification.
3. Cutting and patching for electrical construction.
4. Touchup painting.

1.2 SUBMITTALS

A. Product Data: For electrical-metering equipment.

B. Shop Drawings: Dimensioned plans and sections or elevation layouts of electricity-metering equipment.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.4 COORDINATION

A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow.

1. Set inserts and sleeves in all components as they are constructed.

B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.

C. Coordinate electrical service connections to components furnished by utility companies.

1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for electricity-metering components.
2. Comply with requirements of authorities having jurisdiction and of utility company providing electrical power and other services.

D. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.

E. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

F. Where electrical identification markings and devices will be concealed by acoustical ceilings and similar finishes, coordinate installation of these items before ceiling installation.

1.5 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services:

1. Notify Engineer at least seven days in advance of proposed utility interruptions. Identify extent and duration of utility interruptions.
2. Indicate method of providing temporary utilities.
3. Do not proceed with utility interruptions without Engineer's written permission.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

A. Material: Cold-formed steel, with corrosion-resistant coating.

B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.

C. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch-diameter slotted holes at a maximum of 2 inches o.c., in webs.

1. Channel Thickness: Selected to suit structural loading.
2. Fittings and Accessories: Products of the same manufacturer as channel supports.

D. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.

E. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.

F. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.

G. Expansion Anchors: Carbon-steel wedge or sleeve type.

H. Toggle Bolts: All-steel springhead type.

I. Powder-Driven Threaded Studs: Heat-treated steel.

2.2 ELECTRICAL IDENTIFICATION

A. Identification Devices: A single type of identification product for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.

B. Raceway and Cable Labels: Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway and cable size.

1. Type: Preprinted, flexible, self-adhesive, vinyl. Legend is overlaminated with a clear, weather- and chemical-resistant coating.
2. Color: Black letters on orange background.
3. Legend: Indicates voltage.

C. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick.

D. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:

1. Not less than 6 inches wide by 4 mils thick.
2. Compounded for permanent direct-burial service.
3. Embedded continuous metallic strip or core.
4. Printed legend that indicates type of underground line.

E. Tape Markers for Wire: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

F. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.

G. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes. Engraved legend in black letters on white background.

H. Interior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Preprinted, aluminum, baked-enamel-finish signs, punched or drilled for mechanical fasteners, with colors, legend, and size appropriate to the application.

I. Exterior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch, galvanized-steel backing, with colors, legend, and size appropriate to the application. 1/4-inch grommets in corners for mounting.

J. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.3 TOUCHUP PAINT

A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.

B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

A. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.

B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.

3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, U-channel system components.

B. Dry Locations: Steel materials.

C. Support Clamps for PVC Raceways: Click-type clamp system.

D. Selection of Supports: Comply with manufacturer's written instructions.

E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.

3.3 SUPPORT INSTALLATION

A. Install support devices to securely and permanently fasten and support electrical components.

B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.

C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.

E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

F. Install 1/4-inch- diameter or larger threaded steel hanger rods, unless otherwise indicated.

G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1-1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Simultaneously install vertical conductor supports with conductors.

J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box.

K. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.

L. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.

M. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:

1. Wood: Fasten with wood screws or screw-type nails.
2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
3. New Concrete: Concrete inserts with machine screws and bolts.
4. Existing Concrete: Expansion bolts.
5. Instead of expansion bolts, threaded studs driven by a powder charge and provided with lock washers may be used in existing concrete.
6. Steel: Welded threaded studs or spring-tension clamps on steel.

    a. Field Welding: Comply with AWS D1.1.

7. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
8. Light Steel: Sheet-metal screws.
9. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.4 IDENTIFICATION MATERIALS AND DEVICES

A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

C. Self-Adhesive Identification Products: Clean surfaces before applying.

D. Identify raceways and cables with color banding as follows:

1. Bands: Pretensioned, snap-around, colored plastic sleeves or colored adhesive marking tape. Make each color band 2 inches wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.
2. Band Locations: At changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

E. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.

F. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 12 inches below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, use a single line marker. If width of common trench or concrete envelope

exceeds 16 inches (400 mm), use multiple line markers spaced 16 inches (400 mm) on center.

G. Color-code 240/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:

1. Phase A: Black.
2. Phase B: Red.
3. Phase C: Blue.
4. Neutral: White.
5. Ground: Green.

H. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

I. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch- high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.5 UTILITY COMPANY ELECTRICITY-METERING EQUIPMENT

A. Contractor shall coordinate with utility company for installation of electric meter. Provide grounding and empty conduits as required by utility company.

3.6 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing firestopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.7 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work, including the following:

1. Supporting devices for electrical components.

2. Electrical identification.
3. Electrical metering components.
4. Electrical demolition.
5. Cutting and patching for electrical construction.
6. Touchup painting.

3.8 REFINISHING AND TOUCHUP PAINTING

A. Refinish and touch up paint.

1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.9 CLEANING AND PROTECTION

A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.

B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 260526 - GROUNDING AND BONDING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.2 SUBMITTALS

A. Field Test Reports: Submit written test reports to include the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1. Comply with UL 467.

B. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE C2.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Grounding Conductors, Cables, Connectors, and Rods:

a. Apache Grounding/Erico Inc.
b. Boggs, Inc.
c. Chance/Hubbell.

d. Copperweld Corp.
e. Dossert Corp.
f. Erico Inc.; Electrical Products Group.
g. Framatome Connectors/Burndy Electrical.
h. Galvan Industries, Inc.
i. Harger Lightning Protection, Inc.
j. Hastings Fiber Glass Products, Inc.
k. Heary Brothers Lightning Protection Co.
l. Ideal Industries, Inc.
m. ILSCO.
n. Kearney/Cooper Power Systems.
o. Korns: C. C. Korns Co.; Division of Robroy Industries.
p. Lightning Master Corp.
q. Lyncole XIT Grounding.
r. O-Z/Gedney Co.; a business of the EGS Electrical Group.
s. Raco, Inc.; Division of Hubbell.
t. Robbins Lightning, Inc.
u. Salisbury: W. H. Salisbury & Co.
v. Superior Grounding Systems, Inc.
w. Thomas & Betts, Electrical.

2.2 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 16 Section "Conductors and Cables."

B. Equipment Grounding Conductors: Insulated with green-colored insulation.

C. Grounding Electrode Conductors: Stranded cable.

D. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.

E. Bare Copper Conductors: Comply with the following:

1. Solid Conductors: ASTM B 3.
2. Assembly of Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.

2.3 CONNECTOR PRODUCTS

A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.

C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

2.4 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel.

1. Size: 3/4 by 120 inches (19 by 3000 mm) in diameter.

PART 3 - EXECUTION

3.1 APPLICATION

A. In raceways, use insulated equipment grounding conductors.

B. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells.

C. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

D. Ground Rod Clamps at Test Wells: Use bolted pressure clamps with at least two bolts.

E. Underground Grounding Conductors: Use tinned- copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade or bury 12 inches above duct bank when installed as part of the duct bank.

3.2 EQUIPMENT GROUNDING CONDUCTORS

A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

B. Install equipment grounding conductors in all feeders and circuits.

C. Busway Supply Circuits: Install insulated equipment grounding conductor from the grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

D. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.

E. Signal and Communication Systems: For telephone, alarm and data, and other communication systems, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.

2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

F. Metal Poles Supporting Outdoor Lighting Fixtures: Provide a grounding electrode in addition to installing a separate equipment grounding conductor with supply branch-circuit conductors.

G. Service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

3.3 INSTALLATION

A. Ground Rods: Install at least Two rods spaced at least 6 feet (1.83 m) from each other and located at least the same distance from other grounding electrodes.

1. Drive ground rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
2. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make connections without exposing steel or damaging copper coating.

B. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

C. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

D. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

E. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.

F. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.

G. Bond each aboveground portion of gas piping system upstream from equipment shutoff valve.

3.4 CONNECTIONS

A. Connections at Test Wells: Use compression-type connectors on conductors and make bolted- and clamped-type connections between conductors and ground rods.

B. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

C. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

D. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

END OF SECTION 260526

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SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Rigid nonmetallic duct.
   2. Duct accessories.

1.2 DEFINITIONS

A. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.

B. Duct: A single duct or multiple ducts. Duct may be either installed singly or as component of a duct bank.

C. Duct Bank:

   1. Two or more ducts installed in parallel, with or without additional casing materials.
   2. Multiple duct banks.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

PART 2 - PRODUCTS

2.1 RIGID NONMETALLIC DUCT

A. Underground Plastic Utilities Duct: Type EPC-80-PVC RNC, complying with NEMA TC 2 and UL 651, with matching fittings complying with NEMA TC 3 by same manufacturer as duct.

B. Solvents and Adhesives: As recommended by conduit manufacturer.

2.2 DUCT ACCESSORIES

A. Underground-Line Warning Tape: Install Red tape as shown in details.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate layout and installation of duct with final arrangement of other utilities, site grading, and surface features as determined in the field. Notify Engineer if there is a conflict between areas of excavation and existing structures or archaeological sites to remain.

3.2 UNDERGROUND DUCT APPLICATION

A. Duct for Electrical Feeders 600 V and Less: RNC Type EPC-80-PVC, direct-buried unless otherwise indicated.

3.3 EARTHWORK

A. Excavation and Backfill: Comply with Section 312000 "Earth Moving", but do not use heavy-duty, hydraulic-operated, compaction equipment.

B. Restoration: Replace area after construction vehicle traffic in immediate area is complete.

C. Restore surface features at areas disturbed by excavation, and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

D. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Section 329200 "Turf and Grasses".

E. Cut and patch existing pavement in the path of underground duct, duct bank, and underground structures according to "Cutting and Patching" Article in Section 017000 "Execution and Closeout Requirements".

3.4 DUCT AND DUCT-BANK INSTALLATION

A. Where indicated on Drawings, install duct, spacers, and accessories into the duct-bank configuration shown. Duct installation requirements in this Section also apply to duct bank.

B. Install duct according to NEMA TCB 2.

C. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches, both horizontally and vertically, at other locations unless otherwise indicated.

1. Duct shall have maximum of two 90 degree bends or the total of all bends shall be no more 180 degrees between pull points.

D. Joints: Use solvent-cemented joints in duct and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent duct do not lie in same plane.

E. Sealing: Provide temporary closure at terminations of duct with pulled cables. Seal spare duct at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.

F. Pulling Cord: Install 200-lbf- test nylon cord in empty ducts.

G. Direct-Buried Duct and Duct Bank:

1. Excavate trench bottom to provide firm and uniform support for duct. Comply with requirements in Section 312000 "Earth Moving" for preparation of trench bottoms for pipes less than 6 inches in nominal diameter.
2. Width: Excavate trench 6 inches wider than duct on each side.
3. Depth: Install top of duct at least 36 inches below finished grade unless otherwise indicated.
4. Set elevation of bottom of duct bank below frost line.
5. Elbows: Install manufactured duct elbows for stub-ups, at building entrances, and at changes of direction in duct direction unless otherwise indicated.
6. After installing first tier of duct, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inches over duct and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction.

    a. Place minimum 3 inches of sand as a bed for duct. Place sand to a minimum of 6 inches above top level of duct.

H. Underground-Line Warning Tape: Bury non-conducting underground line specified in Section 260553 "Identification for Electrical Systems" approximately 12 inches below grade. Align tape parallel to and within 3 inches of centerline of duct bank.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Demonstrate capability and compliance with requirements on completion of installation of underground duct, duct bank, and utility structures.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide a minimum 12-inch- long mandrel equal to duct size minus 1/4 inch. If obstructions are indicated, remove obstructions and retest.

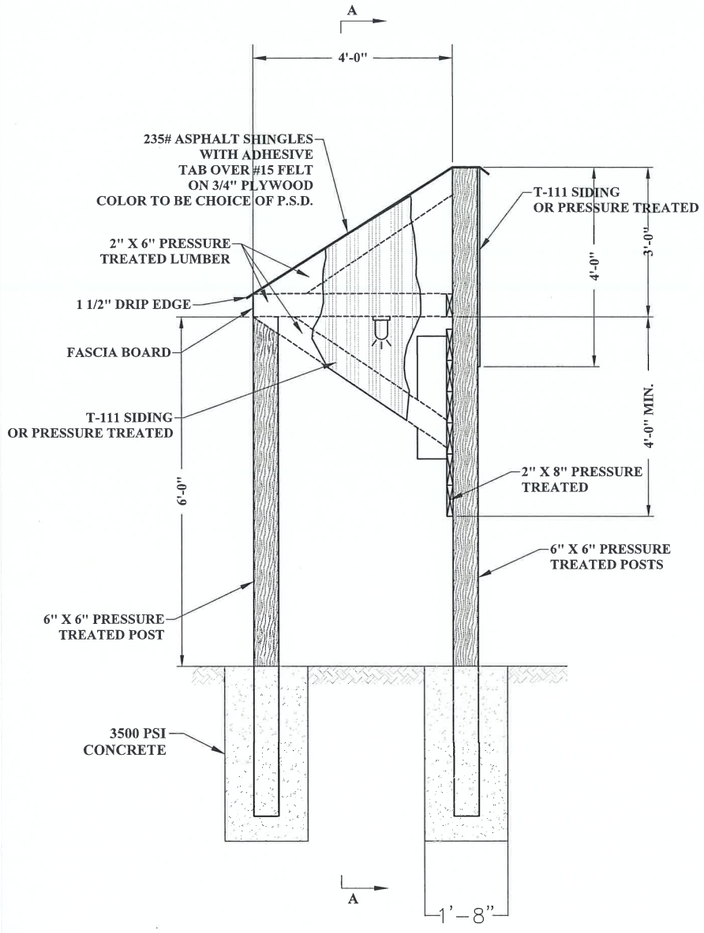
B. Correct deficiencies and retest as specified above to demonstrate compliance.

C. Prepare test and inspection reports.

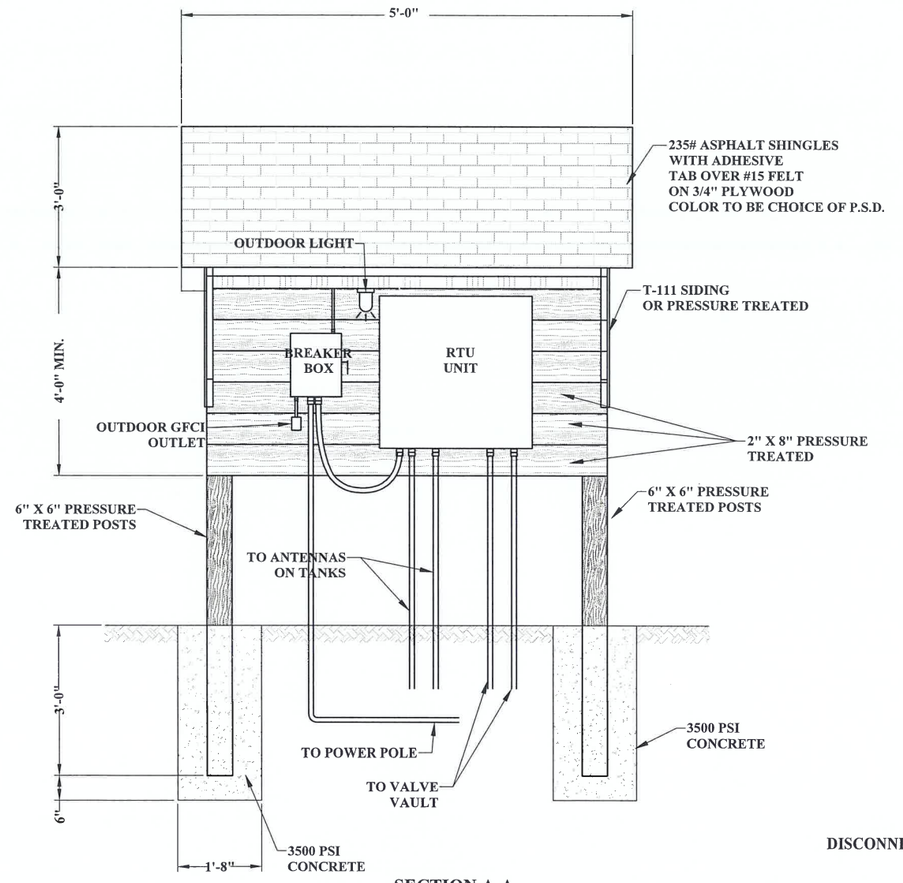
3.6 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of duct until duct cleaner indicates that duct is clear of dirt and debris. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

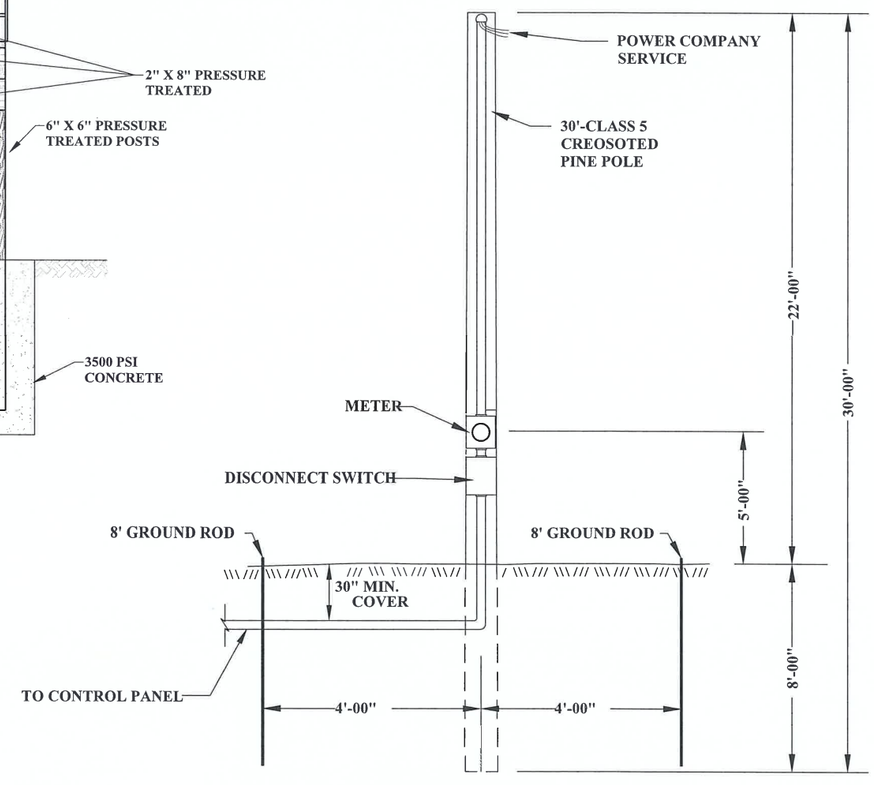
END OF SECTION 260543



PROPOSED TANK TELEMETRY PANEL DETAIL
NOT TO SCALE



SECTION A-A
NOT TO SCALE



TYPICAL UNDERGROUND ELECTRICAL SERVICE
NOT TO SCALE

ADDENDUM #1

NO.	BY	DATE	DESCRIPTION
1	AS	2/18/21	ADDENDUM #1

WEST VIRGINIA 811

SCALE: AS NOTED	
DRAWN: W. MCKINSEY	DATE: 7/19
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

THRASHER
600 WHITE OAKS BLVD. P.O. BOX 940
BRIDGEPORT WV 26330
www.thrashereng.com
PHONE (304) 624-4108
FAX (304) 624-7831

PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-1202

PADEN CITY MUNICIPAL WATER WORKS
WATER SYSTEM IMPROVEMENT PROJECT
PROPOSED WATER STORAGE TANK UPGRADES
TYLER/WETZEL COUNTIES, WEST VIRGINIA
PROPOSED TELEMETRY PANEL

SHEET No.
12A

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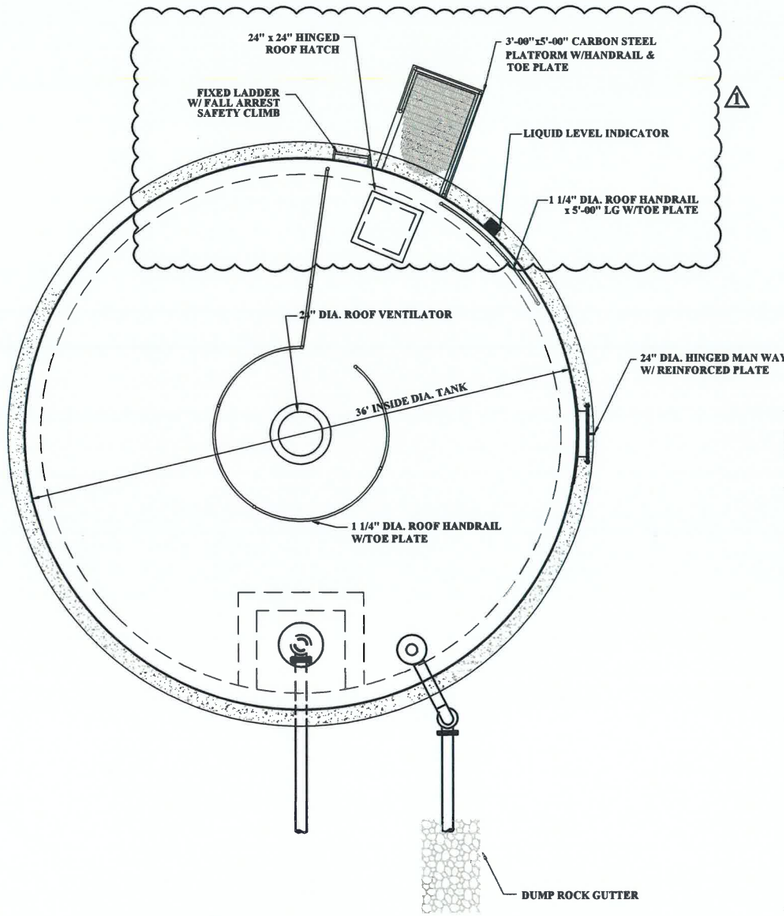
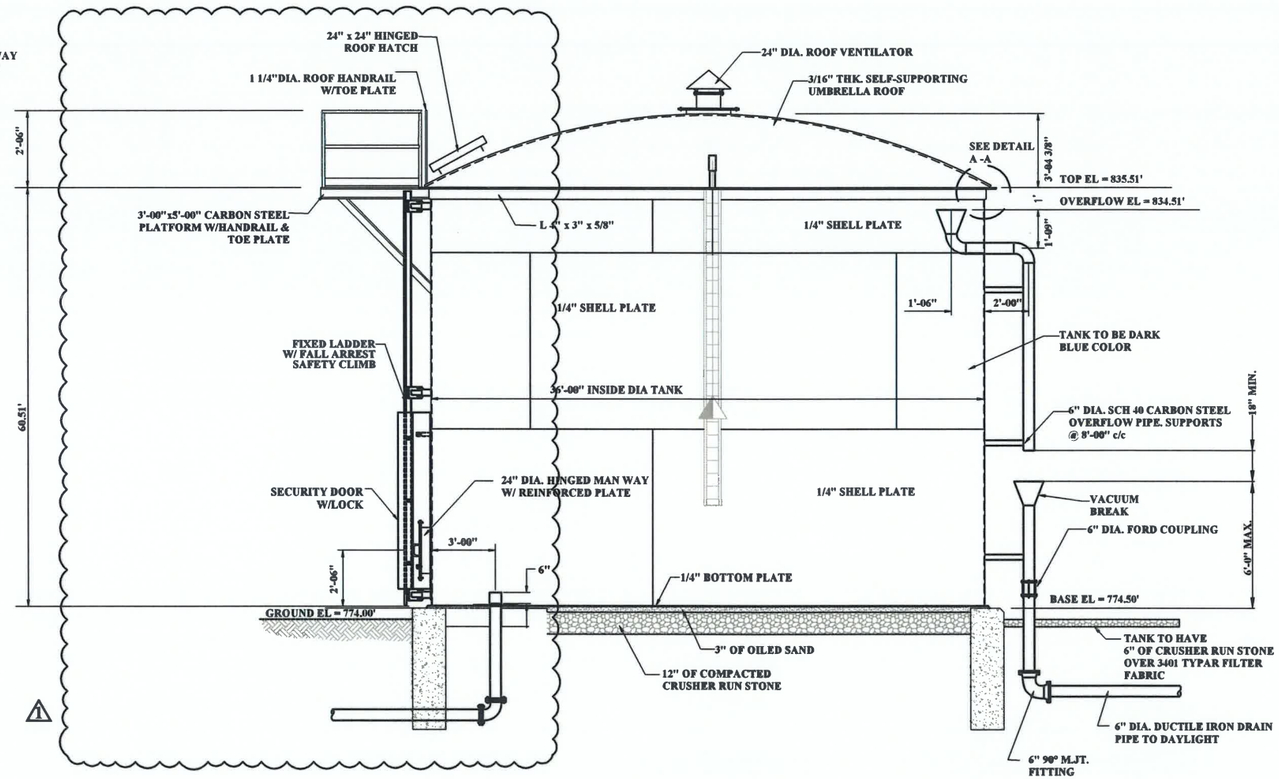


NORTH 470,000 GALLON WELDED STEEL RESERVOIR

NOT TO SCALE



ELEVATION VIEW
NORTH 470,000 GALLON WELDED STEEL RESERVOIR
NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1. ALL WATER LINES ARE TO BE PLUGGED AT THE END OF EACH WORKING DAY BY MEANS OF A MECHANICAL JOINT CAP OR PLUG IN ORDER TO AVOID ROCKS, ANIMALS OR OTHER OBJECTS FROM ENTERING.
2. THE TANK FOUNDATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH AWWA STD. D-103 SEISMIC ZONE 0, AND 100 MPH WIND VELOCITY.
3. CONTRACTOR SHALL ASSUME A 3000 PSF SOIL BEARING CAPACITY.

NO.	BY	DATE	DESCRIPTION
1	AS	2/24/21	ADDENDUM #1

WEST VIRGINIA 811

SCALE: AS NOTED	
DRAWN: W. MCKINSEY	DATE: 7/19
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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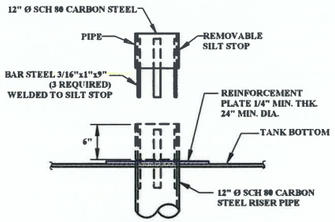
PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-1202

PADEN CITY MUNICIPAL WATER WORKS
WATER SYSTEM IMPROVEMENT PROJECT
PROPOSED WATER STORAGE TANK UPGRADES
TYLER/WETZEL COUNTIES, WEST VIRGINIA
WELDED STEEL TANK DETAILS

SHEET No. 13



SILT STOP DETAIL FOR WELDED STEEL TANK
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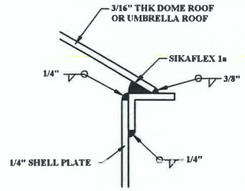

WELDED STEL TANK
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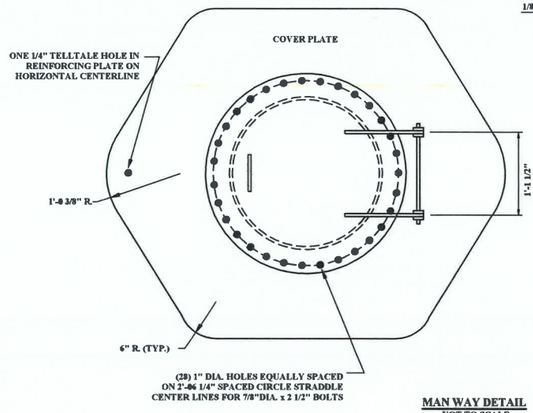

MAN WAY DETAIL
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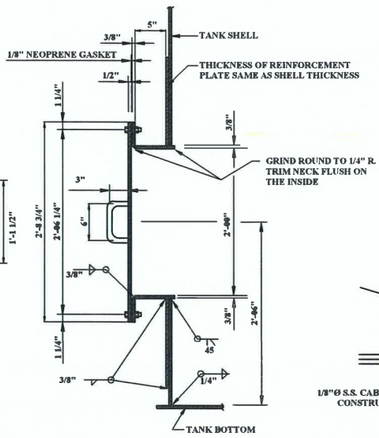

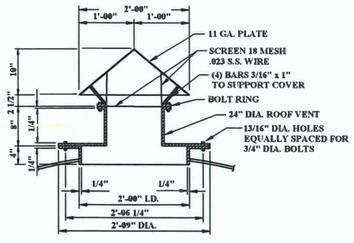

DETAIL OF ROOF VENT
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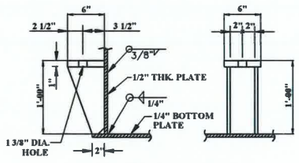

ANCHOR CHAIR DETAIL
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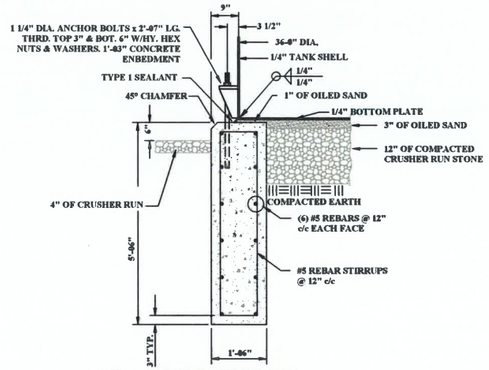

WELDED STEEL TANK FOUNDATION
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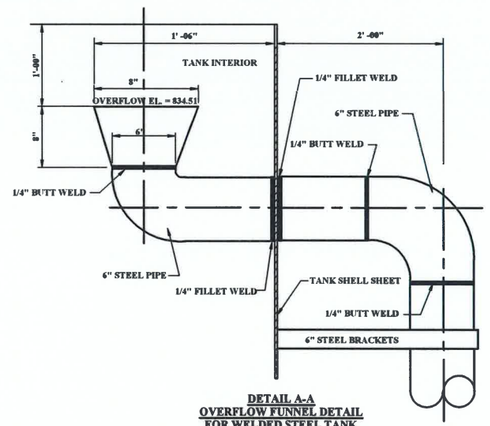

DETAIL A-A
OVERFLOW FUNNEL DETAIL FOR WELDED STEEL TANK
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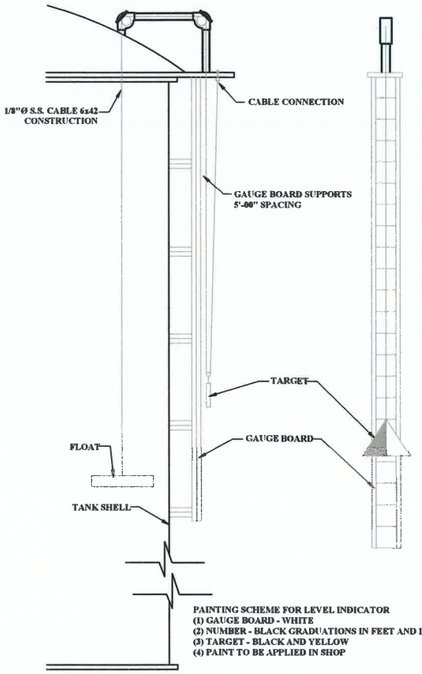

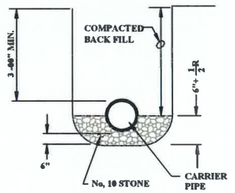

BEDDING FOR RIGID PIPE IN ROCK DETAIL
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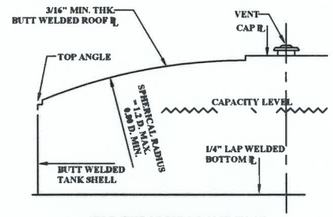
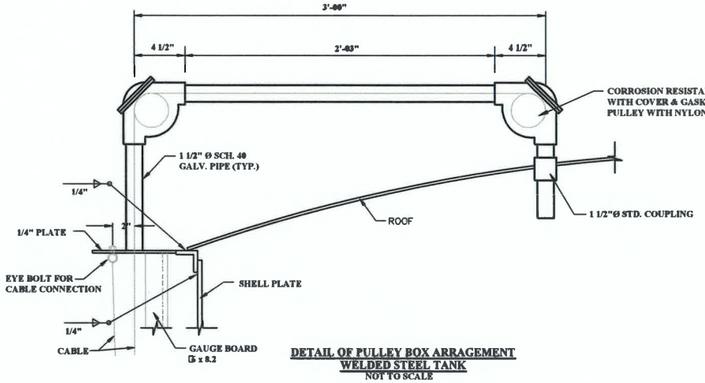


SELF SUPPORTING DOME ROOF (OR UMBRELLA ROOF) WELDED TANKS
NOT TO SCALE



DETAIL OF PULLEY BOX ARRAGEMENT WELDED STEEL TANK
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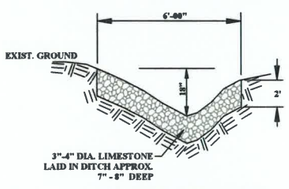
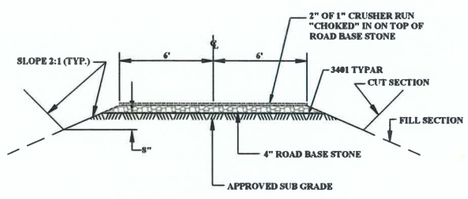


DUMP ROCK GUTTER DETAIL
NOT TO SCALE

TYPICAL STONE AROUND TANK DETAIL
NOT TO SCALE



TYPICAL ACCESS ROAD DETAIL SECTION VIEW
NOT TO SCALE

1

NO.	SY	DATE	DESCRIPTION
1	AS	2/24/21	ADDENDUM #1

WEST VIRGINIA 811

SCALE: AS NOTED	
DRAWN: W. MCKINSEY	DATE: 7/19
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-1202

PADEN CITY MUNICIPAL WATER WORKS
WATER SYSTEM IMPROVEMENT PROJECT
PROPOSED WATER STORAGE TANK UPGRADES
TYLER/WETZEL COUNTIES, WEST VIRGINIA
WELDED STEEL TANK DETAILS

SHEET No. 14

LAYOUT TAB: WS2
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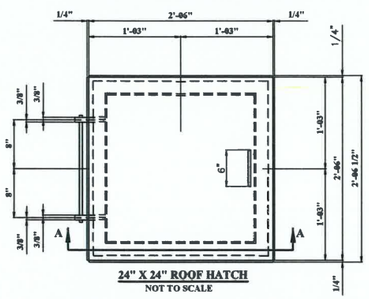
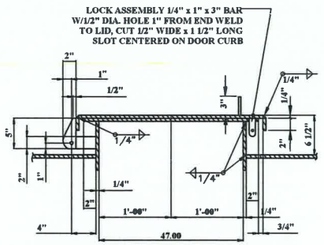
PLOT DATE/TIME: 2/24/2021 3:33 PM
USER: andrew sayre

SPAN AND 12" CENTERS LONG SPAN
ALL CONCRETE IS TO BE 3000 PSI MIX DESIGN.

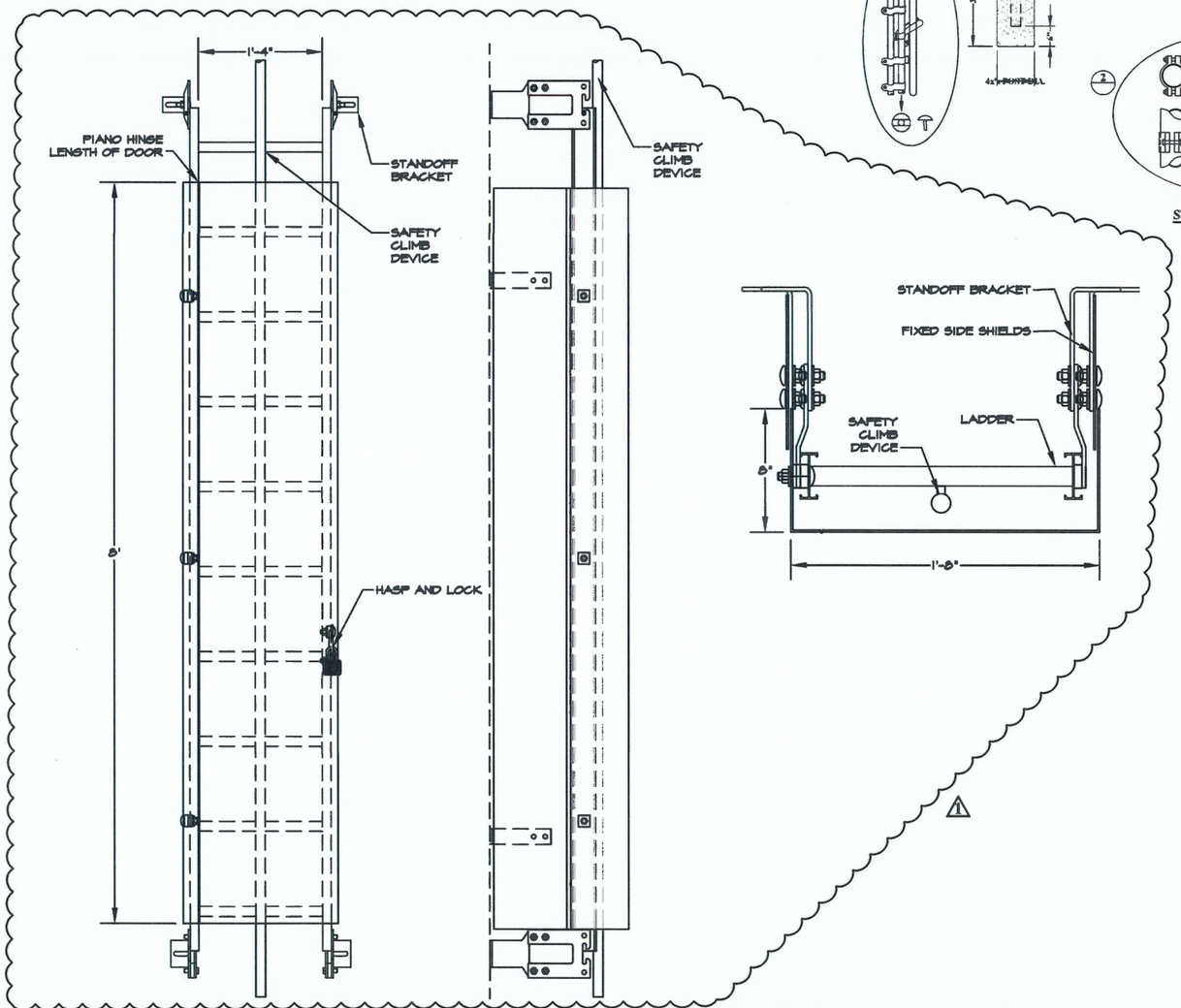


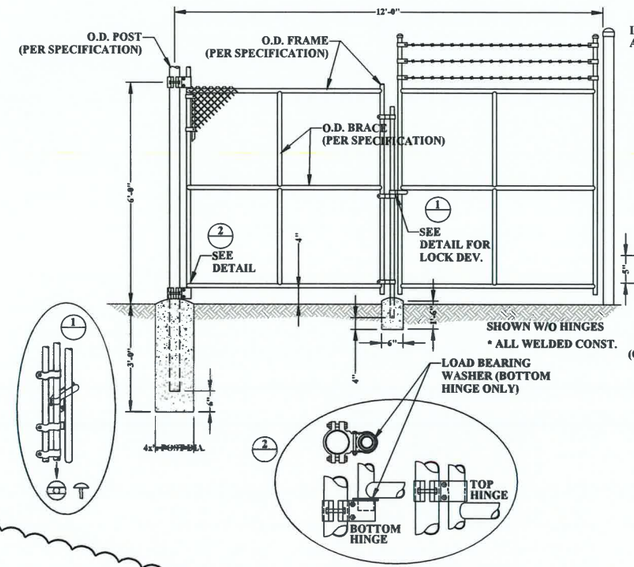
24" X 24" ROOF HATCH
NOT TO SCALE

LOCK ASSEMBLY 1/4" x 1" x 3" BAR W/1/2" DIA. HOLE 1" FROM END WELD TO LID, CUT 1/2" WIDE x 1 1/2" LONG SLOT CENTERED ON DOOR CURB

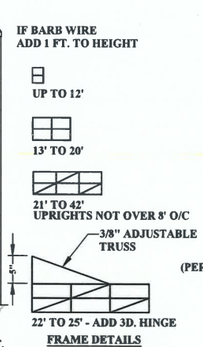


24" X 24" ROOF HATCH A-A
NOT TO SCALE

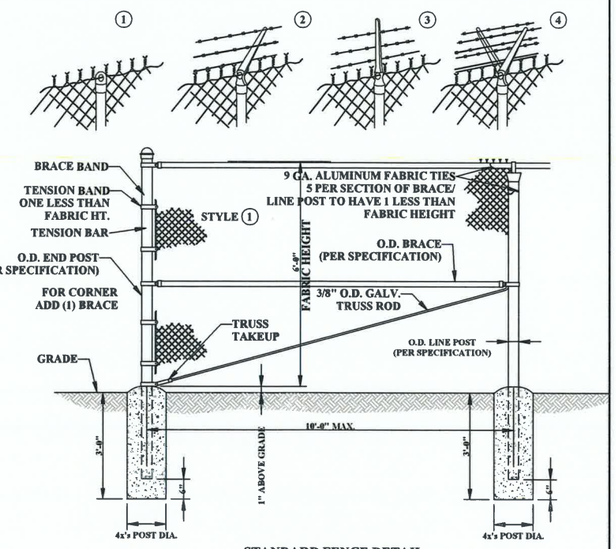




STANDARD DOUBLE DRIVE GATE DETAIL



FRAME DETAILS
(ONLY 1/2 OF GATE SHOWN)



STANDARD FENCE DETAIL WITH TOP RAIL

STYLES OF FENCE
DESCRIPTION (ALL W/TOP RAIL)

1. NO BARB WIRE WITH TOP RAIL
2. THREE STRANDS BARB WIRE AT 45° ANGLE (REQUIRED)
3. THREE STRANDS BARB WIRE VERTICAL
4. SIX STRANDS BARB WIRE WITH TOP RAIL

END POST DETAIL

STANDARD FITTINGS DETAIL

NO.	BY	DATE	DESCRIPTION
1	AS	2/24/21	ADDENDUM #1

WEST VIRGINIA 811

SCALE: AS NOTED	
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PHASE No.	
CONTRACT No.	2
PROJECT No.	101-010-1202

PADEN CITY MUNICIPAL WATER WORKS
WATER SYSTEM IMPROVEMENT PROJECT
PROPOSED WATER STORAGE TANK UPGRADES
TYLER/WETZEL COUNTIES, WEST VIRGINIA
WELDED STEEL TANK/LADDER DETAILS

SHEET No. 15

LAYOUT TAB: WS3
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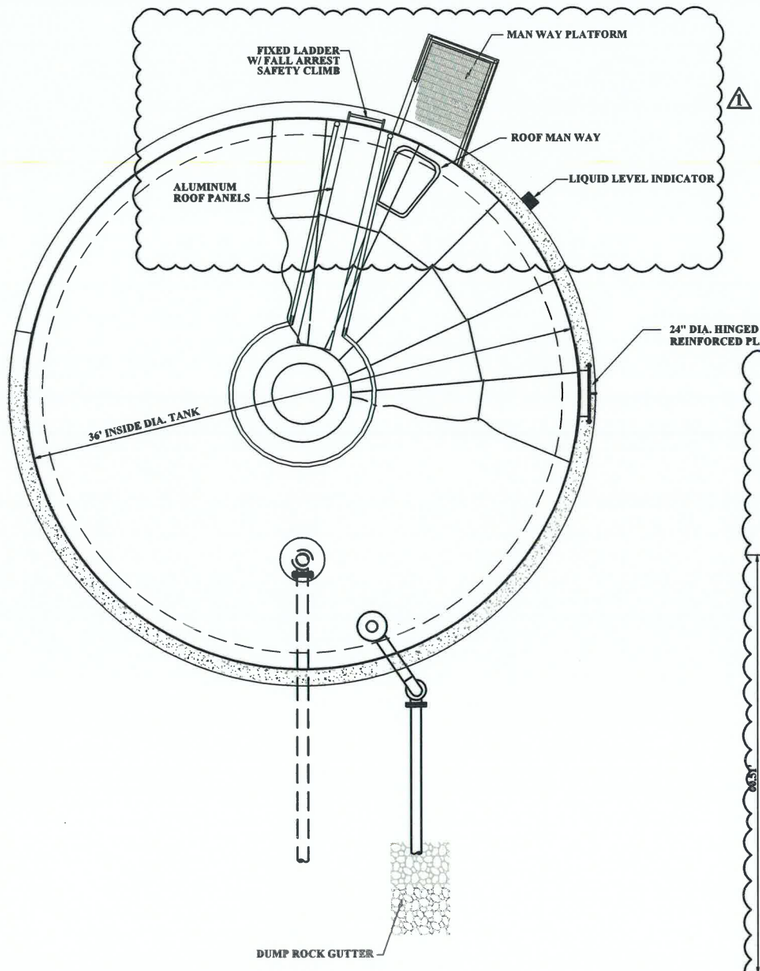
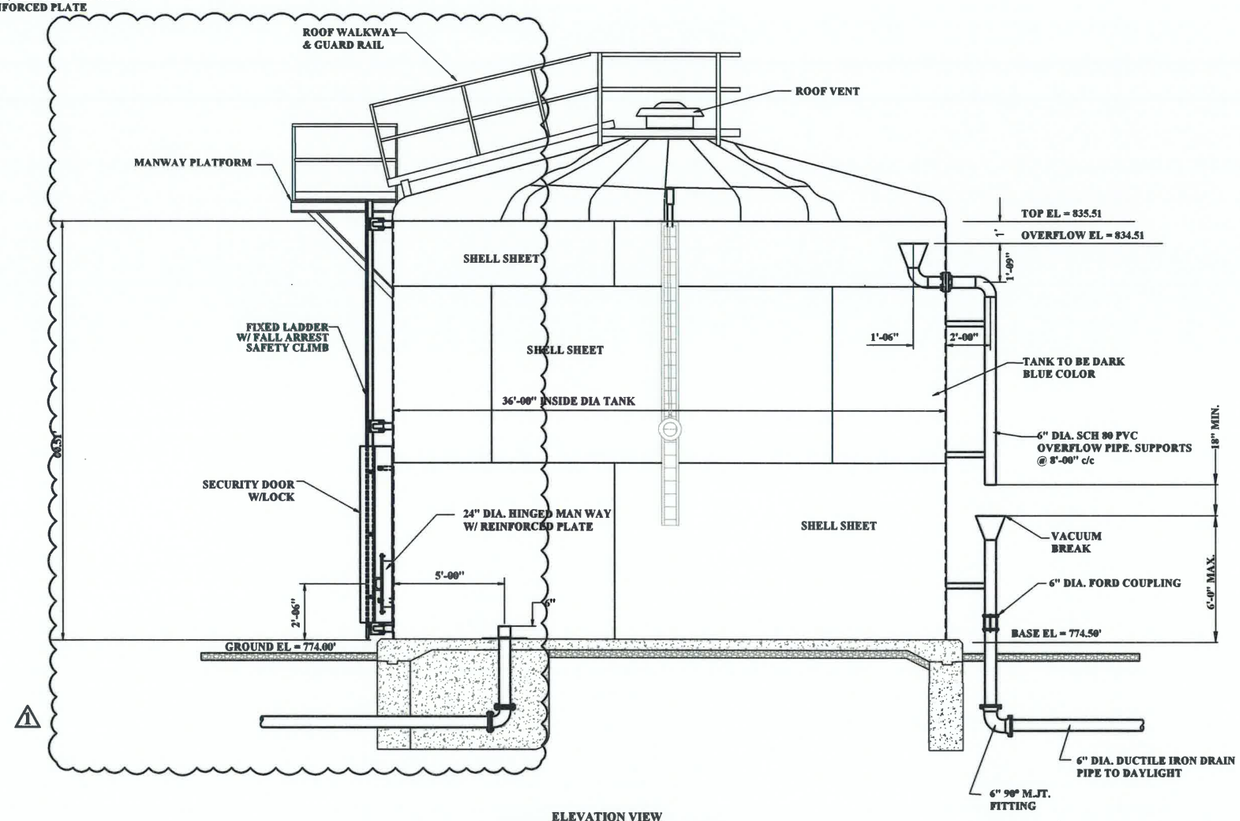
USER: andrew sayre



PLAN VIEW
NORTH 471,000 GALLON GLASS LINED BOLTED STEEL RESERVOIR
NOT TO SCALE



ELEVATION VIEW
NORTH 470,000 GALLON GLASS LINED BOLTED STEEL RESERVOIR
NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1. ALL WATER LINES ARE TO BE PLUGGED AT THE END OF EACH WORKING DAY BY MEANS OF A MECHANICAL JOINT CAP OR PLUG IN ORDER TO AVOID ROCKS, ANIMALS OR OTHER OBJECTS FROM ENTERING.
2. THE TANK FOUNDATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH AWWA STD. D-103 SEISMIC ZONE 0, AND 100 MPH WIND VELOCITY.
3. CONTRACTOR SHALL ASSUME A 3000 PSF SOIL BEARING CAPACITY.

NO.	BY	DATE	DESCRIPTION
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WEST VIRGINIA 811

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PADEN CITY MUNICIPAL WATER WORKS
WATER SYSTEM IMPROVEMENT PROJECT
PROPOSED WATER STORAGE TANK UPGRADES
TYLER/WETZEL COUNTIES, WEST VIRGINIA
GLASS LINED TANK DETAIL

SHEET No. 16

LAYOUT TAB: GL1
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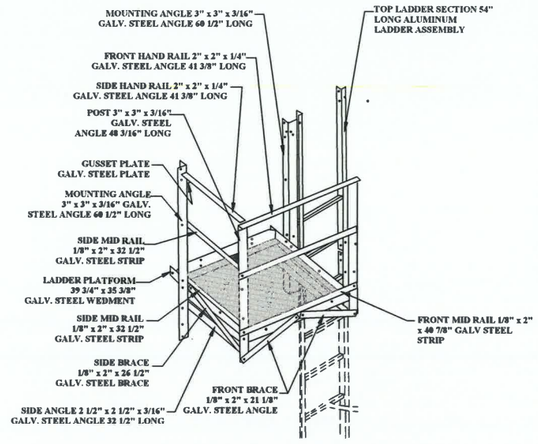
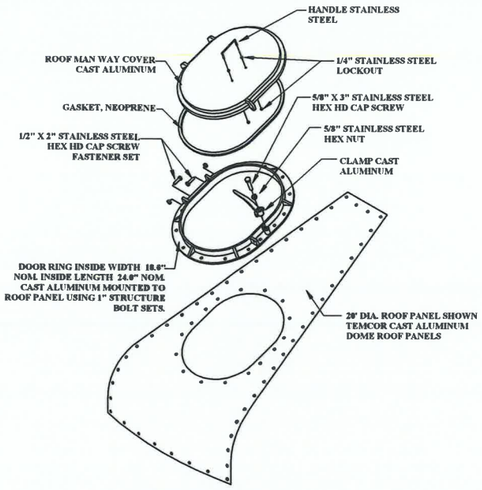
USER: andrew sayre

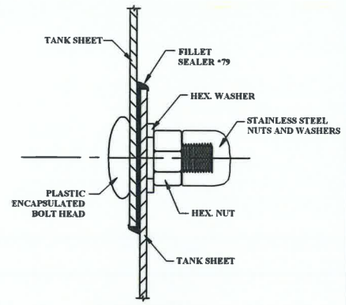


NOTE: LADDER SECTION ABOVE STEP-OFF PLATFORM ASSEMBLY ARE DEPENDENT UPON TANK HEIGHT AND TANK REQUIREMENTS

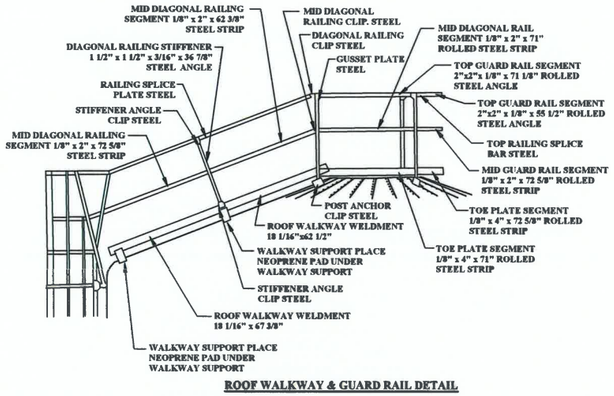
MAN WAY PLATFORM
NOT TO SCALE



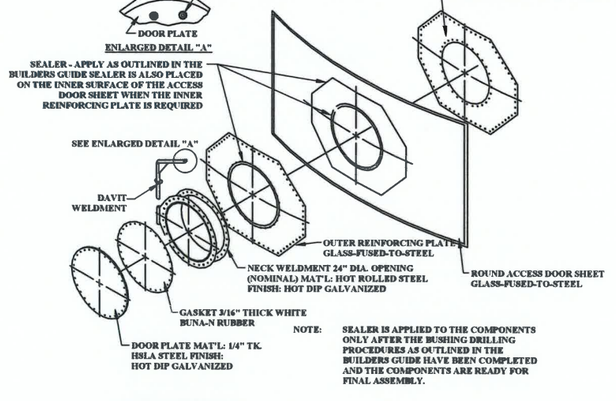
ROOF MAN WAY DETAIL
NOT TO SCALE



TYPICAL SECTION OF BOLTED TANK SHEET
NOT TO SCALE

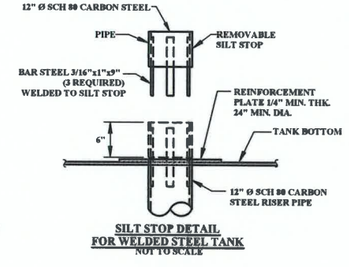


ROOF WALKWAY & GUARD RAIL DETAIL



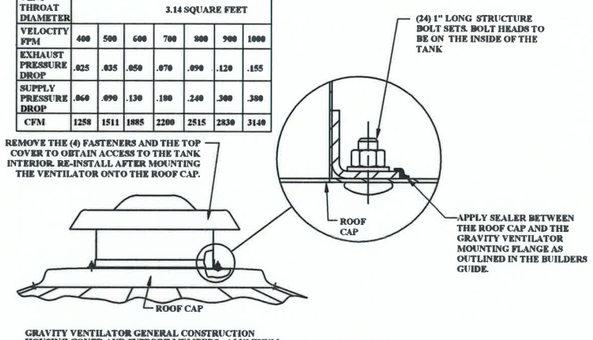
NOTE: SEALER IS APPLIED TO THE COMPONENTS ONLY AFTER THE BUSHING DRILLING PROCEDURES AS OUTLINED IN THE BUILDERS GUIDE HAVE BEEN COMPLETED AND THE COMPONENTS ARE READY FOR FINAL ASSEMBLY.

ACCESS DOOR DETAIL
NOT TO SCALE



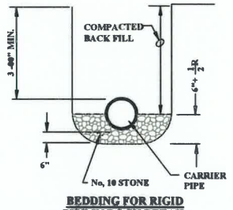
SILT STOP DETAIL FOR WELDED STEEL TANK
NOT TO SCALE

VENT CAPACITY CHART							
VENT THROAT DIAMETER	3.14 SQUARE FEET						
VELOCITY FPM	400	500	600	700	800	900	1000
EXHAUST PRESSURE DROP	.025	.035	.050	.070	.090	.120	.155
SUPPLY PRESSURE DROP	.060	.090	.130	.180	.240	.300	.380
CFM	1258	1511	1885	2200	2515	2830	3140

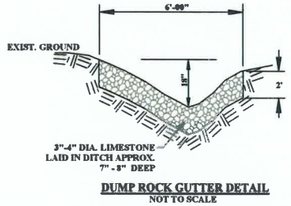


GRAVITY VENTILATOR GENERAL CONSTRUCTION
HOUSING COVER AND SUPPORT MEMBERS - ALUMINUM
INSECT SCREEN - 23 TO 25 MESH .0135"/.0145" DIA. POLYESTER MONOFILAMENT WIRE
BIRD SCREEN - .063 THICK ALUMINUM, .5 X .75 EXPANDED MESH

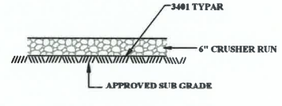
VENT DETAIL
NOT TO SCALE



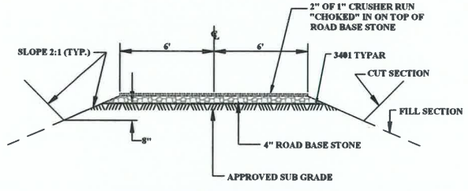
BEDDING FOR RIGID PIPE IN ROCK DETAIL
NOT TO SCALE



DUMP ROCK GUTTER DETAIL
NOT TO SCALE



TYPICAL STONE AROUND TANK DETAIL
NOT TO SCALE



TYPICAL ACCESS ROAD DETAIL
SECTION VIEW
NOT TO SCALE

NO.	BY	DATE	DESCRIPTION
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WEST VIRGINIA 811

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PADEN CITY MUNICIPAL WATER WORKS WATER SYSTEM IMPROVEMENT PROJECT PROPOSED WATER STORAGE TANK UPGRADES TYLER/WETZEL COUNTIES, WEST VIRGINIA GLASS LINED TANK DETAILS

SHEET No. 18

LAYOUT TAB: GL3
CAD FILE: R:\010\010-1202-PADEN CITY WATER IMPROVEMENTS PROJECT-PADEN CITY-\Drawing\CONTRACT #2\C2-002 TANK DETAILS - Copy.dwg
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USER: andrew sayre