

ADDENDUM NO. 1

December 9, 2022

Medina County Sanitary Engineers

2023 Elevated Water Storage Tanks and Lime Silo Rehabilitation Project

**** REMINDER ****

Separate sealed bids will be received at the **Medina County Sanitary Engineer Office** located at **791 W. Smith Road, Medina, Ohio 44256 (south entrance)** until **1:30 p.m. Eastern Standard Time on Tuesday, December 13, 2022**, at which time said bids will be opened and publicly read aloud.

This addendum must be attached to bid documents for the 2023 Elevated Water Storage Tanks and Lime Silo Rehabilitation Project, and be a part thereof:

- 1.) Registration of contractors with the Medina County Sanitary Engineers as referenced in Section 102.01 of the Bidding Requirements and Conditions to bid and perform work is waived for this project.
- 2.) The Schedule of Values for each of the items is to be completed and submitted with the bid. Please Note: **Bid bond is required to be submitted with the bid.**
- 3.) Labor and Materials cost need NOT be broken out for the purposes of this bid. The requirements of 102.05 are waived in this instance. The Schedule of Values for each Part and the Bid Summary need be completed and included in the submission.
- 4.) Replace Part 2 Technical Specifications with attached document and utilize the replacement Part 2 Technical Specifications document's Schedule of Values.
- 5.) The second line on the Bid form may be left blank if there is no alternate DBA for the bidder.
- 6.) The Form of Noncollusion Affidavit begins with project name, the bidder's principle officer's name, and the corporate name.
- 7.) Prevailing Wage Rate Skilled Crafts document, as attached, are updated by the Ohio Department of Labor Wage and Hour Administration. Highlighted rate sections in the attached Prevailing Wage Rate document are established and updated by the Wage and Hour Administration.

SECTION 00 00 40

PROJECT SUMMARY

PART 1 – GENERAL

This Project Summary is an overview of the entire Project and is intended but is not guaranteed, to place all project specifics in one location to aid Bidders.

1.01 SCHEDULE, LIQUIDATED DAMAGES and SPECIAL DAMAGES

The Contractor shall abide by the following schedule:

Commence work on or after May 1, 2023.

Work days are Monday through Friday only.

Substantial Completion by November 3, 2023, including cure and disinfection time.

The tank may be out-of-service a maximum of 55 days.

Liquidated damages are applicable and begin after 55 days out-of-service or after Substantial Completion date whichever is the earlier date. Liquidated damages at \$1,250/calendar day shall apply after this date. Ready for Final Payment Date shall be thirty (30) days after date Substantial Completion Date based on out-of-service days or scheduled Substantial Completion, or as adjusted by Change Order; or actual Substantial Completion if earlier. Liquidated damages after Ready for Final Payment Date of \$250/day shall apply. Liquidated damages are cumulative if damages from Substantial Completion and Ready for Final Payment overlap. In addition, Special Damages, fines, or Set-offs may also apply per Bid/Agreement Form.

1.02 SCOPE of WORK

Tank Information:

The structure is a 500,000 gallon fluted column with an estimated high-water level of 165 ft. located at 852 Medina Rd. in Medina, Ohio.

The work includes:

Exterior: Abrasive blast clean to a SSPC-SP6 commercial standard within containment and apply a four (4) coat zinc epoxy urethane fluoropolymer system. The coating is to be a two-tone system.

Wet Interior: Abrasive blast clean to a SSPC-SP10 near-white metal standard and apply a three (3) coat zinc epoxy system. Apply a polyurethane caulk to the roof lap seams. The cathodic protection system shall be removed and reinstalled by the owner's vendor, coordination and payment is the contractor's responsibility.

Dry Interior: Abrasive blast clean the entire top of the top platform, the entire access tube, and spot failures throughout to a SSPC-SP6 commercial standard. Apply a three (3) coat epoxy in the access tube and a spot two (2) coat epoxy system to the rest of the prepared surfaces.

Foundation: Abrasive blast clean and apply a two (2) coat epoxy system.

Mixer: Install a mechanical mixer.

Repairs:

- 1) Replace the bowl manway gasket.
- 2) Replace the wet interior roof hatch.
- 3) Replace the access tube roof hatch.
- 4) Install a swing gate at the top platform opening.
- 5) Install deflector bars on the fill/draw pipe.
- 6) Install a flap gate on the overflow discharge.
- 7) Install a mud valve.
- 8) Install a fall prevention device on the wet interior ladder.
- 9) Replace vent with a frost-free roof vent.
- 10) Install a roof handrail with a painter's railing.
- 11) Remove the cage from the bottom column ladder section.
- 12) Repair the wet interior platform.
- 13) Replace dry interior and aviation light bulbs.

1.03 MISCELLANEOUS

- A. The antenna owner will temporarily remove the antennas and cables prior to the start of the project.
- B. The power lines immediately next to the structure will be removed or temporarily relocated prior to the start of the project. The Owner will coordinate removal or relocation with the utility.
- C. Due to supply chain issues, the Owner reserves the right to require that the Contractor is to have all of the required coating for the project delivered to the site or to the Owner's storage facility prior to the tank being taken out-of-service and commencement of the project.

SECTION 00 54 00
SCHEDULE OF VALUES

PART 1

1.01 LINE ITEMS

A. Bidder agrees to perform all work as described in the Contract Documents, including all labor and material for the following items – Section 05 00 00:

1. <u>WET INTERIOR ROOF HATCH</u>	_____	_____
	_____	\$
2. <u>ACCESS TUBE ROOF HATCH</u>	_____	_____
	_____	\$
3. <u>SWING GATE</u>	_____	_____
	_____	\$
4. <u>OVERFLOW FLAP GATE</u>	_____	_____
	_____	\$
5. <u>MUD VALVE</u>	_____	_____
	_____	\$
6. <u>FALL PREVENTION DEVICE</u>	_____	_____
	_____	\$
7. <u>ROOF VENT</u>	_____	_____
	_____	\$
8. <u>ROOF HANDRAIL AND PAINTER’S RAILING</u>	_____	_____
	_____	\$
9. <u>WET INTERIOR PLATFORM REPAIR</u>	_____	_____
	_____	\$

B. Bidder agrees to perform all work as described in the Contract Documents, including all labor and material for the following items – Section 09 00 00:

10. EXTERIOR REPAINT WITH CONTAINMENT
_____ \$

11. WET INTERIOR REPAINT
_____ \$

12. SEAM SEALER
_____ \$

13. DRY INTERIOR SPOT REPAINT
_____ \$

C. Bidder agrees to perform all work as described in the Contract Documents, including all labor and material for the following items – Section 13 00 00:

14. MIXER
_____ \$

PROJECT TOTAL INCLUDING #1 THROUGH #14:
_____ \$

D. ESTIMATED COST ALREADY INCLUDED IN EXTERIOR AND DRY INTERIOR PAINTING TO PROTECT AND WORK AROUND ANTENNAS AND CABLES. OWNER RESERVES THE RIGHT TO DELETE THIS AMOUNT IF THE ANTENNAS AND CABLES ARE REMOVED.
_____ \$

SECTION 00 91 17
ADDITIONS TO GENERAL CONDITIONS

PART 1 – GENERAL

GENERAL PURPOSE OF THESE ADDITIONS TO GENERAL CONDITIONS

- A. These Additions to the General Conditions were prepared by Dixon Engineering, Inc. using paragraphs from Engineering Joint Contract Documents Committee (EJCDC) General Conditions GC-700 -18 which were modified by DIXON as they relate to the coating industry. The General Conditions of this Contract were prepared by the Owner. These Additional General Conditions are intended to supplement the Owner's General Conditions as they relate to this specific project. Two examples are:
1. The Owner's General Conditions detail the payment process, how to submit a Request for Payment application, what form to use and when and where to submit the application. These Additions detail how DIXON calculates approval of a pay request, no payment for stored materials, percentage complete calculation methodology, etc.
 2. In the General Conditions Liquidated Damages are defined, when, where and amount. In these Additions the method of calculating claimed wind and weather days is detailed.
- B. This Addition to General Conditions follow the EJCDC format and the Article numbers reflect the Article number in the 2018 edition of the EJCDC General Conditions. Note that not all Articles or subsections are referenced.

DISCREPANCIES BETWEEN OWNER'S GENERAL CONDITIONS AND THESE ADDITIONS.

- A. If the conflict is administrative in nature, then the Owner's General or Supplemental Conditions govern. Examples are Pay Request procedures, filing a Claim, etc.
- B. If the conflict is of a technical nature, then these Additions govern.
- C. An issue determined to be in conflict in a specific item does not void other non-conflicting paragraphs in the same Article number.
- D. Bidders are required to familiarize themselves with all the General and Supplemental Conditions of the contract, as well as these Additions.
- E. In all cases of discrepancies between the General Conditions, the Supplemental Conditions, these Additions, the Technical Specifications and/or the Drawings, the Engineer is to be notified. The specifications are to govern over the drawings.
- F. If Work proceeds without Contractor obtaining proper interpretations of the conflicting issues from the Engineer, any installed Work that is not in accordance with the specification, and best practices are to be replaced at no additional cost and other costs that may occur are also the responsibility of the Contractor if they were aware of the conflict.

ARTICLE 1 DEFINITIONS AND TERMINOLOGY

1.01 DEFINED TERMS

- A. Construction Industry Definitions: These definitions are taken from the EJCDC General Conditions C-700-18, the 2018 edition and some were modified by DIXON to be specific to the coating industry.
1. *Bulletin*—If time permits, a Bulletin is issued prior to a Change Order. A Bulletin is an inquiry of the Contractor of the cost to complete the work described in the Bulletin. It is intended as the basis of a Change Order if all parties reach agreement. A Bulletin may be considered as the same as a Change Proposal except that a Bulletin is generated by the Engineer because it generally requires specifications to be addressed.
 2. *Change Order* is a written order to the contractor signed by the owner, issued after execution of the contract, authorizing a change in the work or an adjustment in the contract sum or the contract time. A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 3. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 4. *Constituent of Concern (CC)*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead based paint (as defined by the HUD/EPA standard) hazardous waste, and any substance, product, waste, or other material. Lead, chrome, and other by-products of paint removal, as well as strippers, new coatings, and thinners, are to be included in this definition. Coating industry related CC, from new or from previous projects cannot be the basis of Contract Termination or Change Proposal by the Contractor.
 5. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor. A Shop Drawing is not a Drawing and is not part of the Contract Documents.
 6. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 7. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

8. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
9. *Hold Point*—A point in the construction sequence when the Contractor is required to stop work on that portion of the project until Work has been Site reviewed by RPR or Project Manager.
10. *Non-Conformance Report*—A report written by the Engineer or Resident Project Representative, to document the Contractor’s Work that does not meet requirements of the specifications or contract.
11. *Performance Specifications* –Specifications that require the manufacturer or supplier of equipment, materials, or systems to design, manufacture, deliver, and install products to achieve specific results under stipulated conditions of operation and in environments described in applicable Specification Sections.
12. *Ready for Final Payment* – This term is used to define a time when Liquidated Damages begin, separate from Liquidated damages for failure to meet Substantial Completion Date. Ready for Final Payment Date is generally listed 30 days after Substantial Date. All punch list items are to be completed, Site cleaned and restored, and equipment removed. At the option of the Owner this LD may be in addition (cumulative) with an LD for failure to meet Substantial Completion Date.
13. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
14. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment. The Schedule of Value Form is supplied in these Bidding Documents as Section 00 06 00. This Schedule is to be submitted with the Bid. Adjustment of Schedule of Values by Engineer will not change the total Bid as calculated by the Contractor completing the Schedule of Values.
15. *Set-Off*—Owner may withhold from payment including Final Payment an amount equal to additional expenses incurred by Owner which were the responsibility of the Contractor. Such expenses may include additional engineering expenses related to excess review of incomplete submittals of shop drawings, pay requests, or bonds and insurance, excess Requests for Information, excess tests and inspections and return visit to site to complete a reinspection of a previously failed inspection, increase inflation in Engineering fees that result from Contractor delaying project into the next season; additional expenses incurred by Owner resulting from Contractor failure to clean site, rehabilitate Site and other construction related expenses resulting from Contractor not completing their contractual obligations.
16. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
17. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

18. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals
 19. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof. On tank projects, date of substantial completion is the date the tank is, or would have been returned to service, except for voluntary delay by Owner. Date of Substantial Completion is after complete cure, disinfection, and testing.
 20. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.
- B. *Defective*:
1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
 - d. All work completed that is rejected by an unresolved non-conformance report.

ARTICLE 2 PRELIMINARY MATTERS

2.03 BEFORE STARTING CONSTRUCTION

- A. Preliminary Schedules: Within 10 days after the Effective Date of the Agreement (or as otherwise specifically required by the Contract Documents), Contractor is to submit to Engineer for timely review:
 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract

2.04 PRECONSTRUCTION CONFERENCE

A. Preconstruction Conference is herein called Preconstruction Meeting:

1. The Engineer will schedule a Preconstruction Meeting to be attended by Owner, Engineer, and Contractor. Prior to beginning any Work, Contractor is to submit to the Engineer, a Project Schedule and all other required Submittals for the project. If the schedule is aggressive, working overtime, weekends, and/or holidays, that time is to be reflected in the Project Schedule. Once the project has begun, the Contractor is to carry the Project Schedule to completion without delay.
2. Attend a Preconstruction Meeting that may be scheduled by the Owner at a mutually agreeable time after contract preconditions, bonds, certificates of insurance, and other requirements have been met.
3. A corporate officer, or someone with legal authority to obligate the company/corporation, project manager (if different from officer), and the intended superintendent is to attend. If project superintendent does not attend the meeting, it is to be the Contractor's responsibility to supply the information discussed at the meeting to the field superintendent.
4. The Owner will be represented by the project contact person, and the Engineer by the Project Manager, or a Contract Administrator.
5. All containment, personal hygiene, and lead control issues required in this contract will be reviewed. Be prepared to commit designated "Competent Person(s)" to responsibilities of confined space, scaffold rigging, lead, etc.

B. Progress Meetings:

1. The Project Manager or Owner will schedule Progress Meetings to be held on the job Site whenever needed to supply information necessary to prevent job interruptions, to observe the Work, or to inspect completed Work. The Contractor is to be represented at each progress meeting by persons with full authority to act for the Contractor in regard to all portions of the Work.

ARTICLE 3 CONTRACT DOCUMENTS: INTENT REQUIREMENTS, REUSE

3.01 INTENT

- #### **A.**
- The drawings and specifications are intended to include all Work and materials necessary for completion of the Work. Any incidental item of material, labor, or detail required for the proper execution and completion of the Work and omitted from either the drawings or specifications or both, but obviously required by governing codes, local regulations, trade practices, operational functions, and good workmanship, is to be provided as a part of the contract Work without extra cost, even though not specifically detailed or mentioned.

ARTICLE 4 COMMENCEMENT AND PROGRESS OF THE WORK

4.01 COMMENCEMENT OF CONTRACT TIMES

- A. Contractor is to start to perform the Work on the date when the Contract Times commence to run. No Work is to be done at the Site prior to such date except as recommended immediately following or by written authorization of the Owner AND the Engineer (Engineer must be able to schedule appropriate RPR for Project.) Contract time is governed by out-of-service time. The Contractor is encouraged to deliver equipment to the Site prior to Contract Start. The Site will be available up to two (2) weeks prior to agreed drainage date. Contractor is also encouraged to rig the structure, complete containment installation, and complete weld repairs that do not affect the wet interior prior to draining of the tank. The amount of Work completed is to have been approved at the Preconstruction Meeting. Since the tank is not out of service these dates do not apply against Out of Service time but may require scheduling RPR services (see Section 00 91 19.01 Scheduling for RPR Services.)
- B. Delaying Work start for the convenience of the Contractor may require Owner to Set off inflation increased Engineering or RPR expenses against Contractor's Request for Payment.

4.05 DELAYS IN CONTRACTOR'S PROGRESS

- A. Liquidated Damages
 - 1. Contract time is governed by out-of-service time.
 - 2. On tank projects, date of substantial completion is the date the tank is or would have been returned to service, except for voluntary delay by Owner. Date of substantial completion is after complete cure, disinfection, and testing. A voluntary delay in filling by Owner, or delay that is no fault of the Contractor may extend Substantial Completion date.
 - 3. Abnormal weather conditions are defined as weather conditions that are at variance with the routine. An example of the determination procedure and of the required claim format is:
 - Project length: 45 days
 - Substantial completion date: June 30th.
 - Start date: May 16th.
 - 3 years of data* 2019, 2020, 2021
 - Average number of rain/wind days: 9
 - Actual number of rain/wind days**: 12
 - Claim for time extension: 3 days
 - 4. *Submit weather history from nearest weather reporting station for three (3) previous years from the same time period. Submit formal, by simple claim (use format above).
 - 5. **Rain/wind day is a rain or wind day where either rain and/or wind conditions exceeded safe Work conditions or were outside the parameters of good paint

- practices. Wind days are winds in excess of 20 mph for over four (4) hours during normal Work hours, and rain days having measurable precipitation.
6. Weather Claim Evaluation: Engineer will evaluate claim and make sole determination as to whether days meet criteria. Engineer will disallow dates where Work could have been completed on the interior; dates that result from the Contractor's Work practices (i.e. complete wet interior first and then move to exterior). Good weather days not used will count against claim.
 7. Claimed rain/wind days that occur after the scheduled Substantial Completion Date or an extended Substantial Completion Date will not be awarded. Days past Substantial Completion and good weather days that were not used for Productive Work will be considered "days within the control of the Contractor."

ARTICLE 5 SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENT CONDITIONS

5.02 USE OF SITE AND OTHER AREAS

A. Site:

1. Protection - The Contractor is responsible for the protection of property during the period of construction and is to exercise care to prevent damage to structures, utility services, storm and sanitary drainage systems, lawns, trees, plant material, fences, walks, drives, roadways, and other improvements in and adjacent to the area of Work under the contract. Any damage to property resulting from the Contractor's operations is to be repaired or replaced by the Contractor at their expense.
2. The Contractor is to be responsible for all injury to Work in process of construction, and for all property or materials stored at the premises that may be damaged or stolen while the Work is in his care, at Contractor's expense.
3. The Contractor is to confine the apparatus, the storage of materials, and the operations of his Workers to limits indicated by law, ordinance, permits, or direction of the Engineer, and is not to unreasonably encumber the premises with his materials.
4. Maintenance
 - a. Provide labor and material necessary to maintain the Site in a safe condition.
 - b. Keep the premises free from accumulation of waste materials, rubbish, and other debris resulting from the Work.
 - c. At completion of the Work, remove all waste materials, rubbish, and debris from about the premises, as well as all tools, construction equipment, machinery, and surplus materials.
 - d. At the Contractor's expense, repair damage that may have occurred to any permanent structure completed under the contract Work, or to private or public property.

- e. Notify the Owner of your intentions and the reasons why, if it is necessary to protect adjacent houses, cars, etc. During clean-up these areas will be considered as part of the Site and is to be cleaned accordingly.
 - f. Failure to continually maintain the Site or to immediately clean the Site after a complaint or project completion may result in the Owner completing the Work by hire or by the Owner's forces. All cost would be responsibility of the Contractor, subject to Set off.
 - g. Restore Site to preconstruction condition:
 - i. Refill holes and level area around the construction Site for the Site to the original grade.
 - ii. Bring soil to a friable condition by disking, harrowing, or otherwise loosening and mixing to a depth of 3 in. – 4 in. Thoroughly break all lumps and clods.
 - iii. Rake area to be seeded. Sow seed at a minimum rate of 220 lbs./acre.
4. Cleaning - Prior to Substantial Completion of the Work Contractor is to clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work, but prior to Ready for Final Payment, Contractor is to remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and is to restore to original condition all property not designated for alteration by the Contract Documents.

5.03 SUBSURFACE AND PHYSICAL CONDITIONS

- A. Locations of all buried utility service lines in or adjacent to the Work area that are not shown on the drawings will be located by the Contractor through the local utility locating agency and marked with warning stakes. The Contractor is to be responsible for the protection of all utility service lines that are to remain. Damage to any such utility service lines, pipes, etc. resulting from the Contractor's operations are to be repaired or replaced by the Contractor at their expense. Underground Work in the coating industry involves drilling for anchors for containment systems. The painting of pit piping will be considered subsurface Work. For this type of Work the Contractor must rely on Utility Locating Services and not Technical Data from Owner, or in the case of pits, a visual inspection. Contractor is to notify each utility before digging for anchors or for any reason. Before starting, call in advance or/as required by the individual agencies: Call 811 or appropriate agency in the state of the project.
- B. Rough Surfaces in the Wet Interior: The wet interiors of steel structures are subject to corrosion. Based on the age of the tank, maintenance history of the tank, and other factors, the inside of the tank may be pitted. The degree or severity or extent of this pitting will not be considered a hidden condition. No claim of extra for blasting or coating application will be accepted or reviewed. If pit welding or pit filling is completed, that will be done at the bid unit price or a negotiated price. The Owner and Engineer will determine and authorize the extent of pit filling. There will likely be as

many or more, unfilled pits than the number authorized for repair. Contractor cannot rely on pit filling to eliminate some of the application techniques needed for pitted tanks. Back rolling of a spray application may be necessary and will be considered Good Painting Practice and not a Differing Physical Condition.

5.06 HAZARDOUS ENVIRONMENTAL CONDITIONS AT SITE

- A. Contractor is not responsible for removing or remediating any Hazardous Environmental Condition (Constituents of Concern) encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the Scope of the Work or eventually identified as being caused or created by the Contractor.
- B. Power Lines – Antennas – Electrical Wiring
 - 1. If overhead power lines present an unsafe Work condition as determined by OSHA, Owner or utility, the Contractor at their expense and coordination, is to have the utility temporarily relocate, move, or cover lines, eliminating the hazard.
 - 2. Unless stated differently in Contract Documents, protect all antennas, controls, cables, and associated property of Owner’s equipment or material on, in or near the structure during Work. Design construction procedures to maintain operation of antenna system. If antennas are removed from the structure protect all telecommunication equipment remaining in place.
 - 3. Unless stated differently in the Contract Documents, protect all electrical lines and controls including 110/220 V. service lines, cathodic wiring, lights, globes, outlets, and service boxes. Protect associated property of private telecommunication companies (911, school buses, etc.) from damage during Work. Design construction procedures to maintain operation of telecommunication systems.

ARTICLE 6 BONDS AND INSURANCE

6.01 PERFORMANCE, PAYMENT, AND MAINTENANCE BONDS (NOT BID BONDS)

- A. Supply a Maintenance (Warranty) Bond for two (2) years at 50% of the contract price, to ensure any repair work required or detected as a result of the (13) months (1 year) Post Construction inspection. The repair scheduling may be delayed several months for Contractor’s schedule or Owner’s operational requirements. This bond is to remain in effect until repairs have been completed and accepted. Per Technical Specifications, if repairs exceed 10% of any area, then the warranty and bond are to be extended another year. The maintenance (warranty) bond must be issued by the same surety that issues the performance bond.

ARTICLE 7 CONTRACTOR'S RESPONSIBILITIES

7.01 CONTRACTOR'S MEANS AND METHODS OF CONSTRUCTION

- A. Contractor is to supervise, direct, control, and have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, and the safety precautions and programs incident thereto.
- B. Any plan or methods of accomplishing the work suggested to the contractor by the Engineer or other representative of the Owner, but not specified or required, is to be used at the contractor's own risk and responsibility. The Engineer and Owner assume no responsibility.
- C. Contractor is to comply with Laws and Regulations applicable to the performance of the Work.
- D. Contractor is to perform the Work in accordance with the Contract Documents. Contractor's obligation to perform under terms of Contract and complete the Work in accordance with the Contract Documents is absolute.
- E. Contractor is to be responsible for the acts or omissions of Contractor and of any Subcontractor, any Supplier, and of any other individual or entity performing any of the Work.

7.02 SUPERVISION AND SUPERINTENDENCE

- A. Contractor is to supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
 - 1. At all times during the progress of the Work, Contractor is to assign a competent resident superintendent who is to not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.
 - 2. Resident superintendent is to be fluent in English to the level of competency to complete responsibilities of the Contractor and to communicate with the RPR. Superintendent is to also be fluent or have access to a translator on site, for the primary language of all of the Workers. Degree of fluency in English and language of workers to be sufficient so that superintendent's employees can adequately and safely complete their duties.
 - 3. No employee of Contractor, Subcontractor, or Supplier may be on the Project Site who cannot be directed by a Superintendent, or translator in regards to work assignments, safety issues, or who cannot understand safety signage

7.03 LABOR; WORKING HOURS

- A. Provide equipment of sufficient size and power to expedite the project so that all deadlines are met. Personnel and crew size also is to be sufficient to meet required deadlines.
- B. If, in the sole opinion of the Engineer, there is insufficient equipment or personnel to complete the project, the Engineer will notify the Contractor and Owner, and a

Project Meeting will be held within twenty-four (24) hours for the purpose of contract termination, unless a reasonable cause is given to the contrary.

7.05 “OR EQUALS”

- A. Whenever an article, material, or item of equipment is described by a performance specification, written as a proprietary product, or uses the name of a manufacturer or vendor, the term “or equal” if not inserted, is to be implied. The specific article, material, or item of equipment mentioned is to be understood as indicating the minimum requirements for fulfilling contract obligations in regard to type, function, standard of design and efficiency. See Section 09 97 13, Part 2, Substitution of Coatings, which is to govern over this clause where conflicting, relative to coatings, grouts, and fillers only. Other exceptions are when the specifications state that only the proprietary item will be permitted.

7.11 LAWS AND REGULATIONS

- A. Contractor is responsible for all permits and requirements of local, state, and federal agencies. This includes building, electrical, labor, OSHA, etc. The only permits not included are from health agencies for interior painting, cathodic protection installation and mixer installation which is the responsibility of the Owner.
- B. Display all wage requirements and other permits on a temporary board.
- C. Attach to the superintendent’s copy of the specifications copies of other permits that do not require display.

7.13 SAFETY AND PROTECTION

- A. Conform to the Occupational Safety and Health Standards of the United States Department of Labor and local safety agencies. This is to be made a condition of each subcontract as entered into pursuant to this contract.
- B. Removal of lead based paint and painting of structures are recognized as very dangerous Work, and it is further recognized the painting industry has extensive safety training programs available.
- C. Contractor is to designate a qualified and experienced safety representative at the Site whose duties and responsibilities are to be the prevention of accidents and the maintaining and supervising of safety precautions and programs. Contractor’s Safety Representative is to have the authority to supersede Contractor’s foreman and is to stop work if the Work being completed is in violation of Contractor’s or Owner’s safety program, or OSHA regulations.
- D. Monitor and be responsible for all safety practices.
- E. The Engineer and Owner is to have full access to the Site. Contractor is to make personnel and equipment available to the Owner and Engineer/RPR to expedite observations.

- F. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.
- G. Contractor is responsible for security, safety, etc. on the Site until all his equipment is removed and all keys are returned.

7.16 SUBMITTALS

- A. A sample of the Owner's/Engineer's Submittal Checklist is included as an attachment. The checklist is intended for Engineers use, but is included as a reference for the Contractor. Contractor submittals are to include all items requested in the Technical Specifications whether listed in the Submittal Checklist or not.
- B. All submittals are to be sent to the Owner as one package (unless a separate Schedule of Submittals is included and approved by the Engineer). All required resubmittals are also to be resubmitted as one package and any delinquent resubmittal must be identified by a new Schedule of Submittals. Failure to include a Schedule of Submittals for delinquent items will be justification by Engineer to consider submittal incomplete. Delinquent items will be considered reviewed and rejected.

7.17 CONTRACTOR'S GENERAL WARRANTY AND GUARANTEE

- A. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights:
 - 1. Observations and/or Daily Observation Reports by Engineer/RPR;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal;
 - 6. the issuance of a notice of acceptability by Engineer;
 - 7. the end of the correction period;
 - 8. any inspection, test, or approval by others; or
 - 9. any correction of defective Work by Owner.

7.19 DELEGATION OF PROFESSIONAL DESIGN SERVICES

- A. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor is to cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are

not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

ARTICLE 10 ENGINEER'S STATUS DURING CONSTRUCTION

10.07 LIMITATIONS ON ENGINEER'S AUTHORITY AND RESPONSIBILITIES

A. Engineer's Responsibilities

1. Engineer will be Owner's representative during the construction period.
2. Engineer's Project Manager (PM) will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work, and will endeavor to guard Owner against defective Work.
3. Engineer will identify all Set-off expenses incurred against Engineer in their invoice to Owner.
4. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

B. The Resident Project Representative's (RPR) Responsibilities

1. If the Owner retains Engineer to provide RPR services, the RPR will be Engineer's representative at the Site to assist in observing the progress and quality of the Work. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The authority of any RPR will be as directed by the Engineer.
2. Neither Engineer's authority or responsibility under any provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise

such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them. No Agreement between the Owner and Engineer and nothing in this Contract is to imply or construct a third party beneficiary status to the Contractor.

- C. Engineer/RPR is to have the authority to stop Work in the event continuation of Work under a noncompliance situation, such as incomplete containment, may result in the violation of environmental laws, create a potential tort, or may result in the covering of defective or unaccepted Work (Nonconformance) product. This authority to stop work transfers back to the Owner after the Owner has been notified and returns to the Site.

ARTICLE 11 CHANGES TO THE CONTRACT

11.02 CHANGE ORDERS

- A. A Change Order is a written order to the Contractor signed by the Owner, issued after execution of the contract, authorizing a change in the work or an adjustment in the contract sum or the contract time. The cost or credit to the Owner resulting from a change in the work is to be determined in one or more of the following ways:
 - 1. By mutual acceptance of a lump sum;
 - 2. By unit prices stated in the Contract Documents or subsequently agreed upon;
 - 3. By actual itemized cost and fixed fees as set forth in 2 above. Cost is to be limited to the following: cost of materials, cost of labor, and cost of overhead.
- B. A Bulletin will be issued in most cases before a Change Order. A Bulletin will request prices and other information from the Contractor. Prices requested in a Bulletin are subject to negotiation with the Owner.

11.04 FIELD ORDERS

- A. A field modification is written by the Engineer to the Contractor for purposes of clarification of the specifications or plans. A field modification is limited to items that do not change the scope of the project.
- B. Field modifications do not affect either the project cost or completion date.
- C. Field modifications become part of the Contract Documents and become binding upon the Contractor if they fail to object within three (3) working days after receiving the modification. A field modification may be used as the basis of a project cost change or contract extension if all parties agree on the field modification form to a potential future claim of either party or that the field modification will be complied with, but under protest.

ARTICLE 15 PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 AND 15.06 PROGRESS AND FINAL PAYMENTS

- A. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- B. Measurement of payment will be considered based on the Schedule of Values submitted with the Contractor's bid. The Schedule of Values will be reviewed by the Engineer prior to Notice of Award. If the Engineer determines the Schedule of Values is not acceptable, the Engineer will use the Contractor's Schedule to reallocate values. The Engineer's reallocation interest will be to maintain a sufficient value for Work completed toward the end of the project, to avoid frontloading values. The Engineer will assign values high enough to bring in another Contractor to finish Work in case of default. When evaluating the Schedule of Values, the Engineer will consider that material delivered to the Site has no value until properly applied. The Contractor has five (5) days to appeal the reallocated Schedule of Values.
- C. Pay request(s) is to be made on form(s) supplied by the Owner or Engineer or required by Owner. If no form is supplied, use AIA form.
- D. Owner will make progress payments once each month during performance of the Work, in which the Contractor files an application for payment.
 1. All such payments will be compared with the Schedule of Values,
 2. or in the case of unit price Work, based on the number of units completed, or
 3. if lump sum item is less than 100% completed then allocated as follows:
 - a. On the wet interior, surface preparation by abrasive blast cleaning will be considered equal to 40% of the line item Work and cost and each coat 20%.
 - b. On the exterior, surface preparation by abrasive blast cleaning inside containment will be considered equal to 40% of the line item Work and cost and each coat 10%, with another 10% for demobilization, and 10% for waste disposal.
 - c. Dry interior and repairs will not be broken down. 100% completion is required before they will be considered for payment.
 - d. Mobilization is included in the surface preparation allotment for items in 3 above.
 4. Owner is entitled to impose a set-off or withholding against payment based on any of the following:
 - a. Third party claims, have been made or there is reasonable evidence indicating probable filing of claims against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or

- b. Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from Workplace injuries, adjacent property damage, non-compliance with Laws and Regulations (Special Damages, see Article 18 below), and patent infringement or,
- c. Damage caused by the Contractor to the Owner or to another Site approved Contractor or;
- d. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other Work at or adjacent to the Site or;
- e. an event that would constitute a default by Contractor and therefore justify a termination for cause or;
- f. defective Work not remedied;
 - i. requiring correction or replacement including additional inspection costs
 - ii. requiring correction or replacement
 - iii. Owner has been required to correct defective Work or
 - iv. has accepted defective Work
- g. persistent failure to carry out the Work in accordance with the Contract Documents.
- h. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is contractually responsible or responsible for creating the condition;
- i. the Contract Price has been reduced by Change Orders;
- j. failure of the Contractor to make payments properly to subcontractors, or for labor, materials, or equipment or;
- k. liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- l. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or Ready for Final Payment or;
- m. reasonable evidence that the Work cannot be completed for the unpaid balance of the contract sum, or within the contract time or;
- n. Contractor has failed to provide and maintain required bonds or insurance or;
- o. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
- p. Owner has incurred extra charges or Engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to complete field observations that were determined to be failed;
- q. other items entitling Owner to a Set-off against Payment

- r. The Owner may also decline to make payment including an item previously approved for payment, because of subsequently discovered evidence or subsequent observations, as may be necessary in their opinion to protect against loss by Set-off amount previously recommended.
5. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner is to promptly pay Contractor the amount so withheld, or any adjustment agreed to by Owner and Contractor, if Contractor remedies the reasons for such action.
 - a. The reduction imposed is to be binding on Contractor unless Contractor duly submits a Change Proposal contesting the reduction.
 - b. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss.
6. Owner may decide against Set-off as a remedy, but in so doing, Owner does not waive any remaining remedies.
7. Neither the Owner nor the Engineer are under any requirements or obligations to notify the bonding company at project conclusion of Set-offs or other remedies chosen.
8. If the Owner/Engineer prepare an accounting Change Order at Project Conclusion it will be considered signed by Contractor, unless the Contractor files a Change Proposal within five days protesting the Set-off. If appeal is rejected, the Change Order will be considered signed unless further appeals per the appeals process are claimed.

15.08 CORRECTION PERIOD

- A. Within thirteen (13) months from the date of substantial completion, the structure will be inspected by the Owner and/or their representative.
- B. The inspection will be performed in accordance with the applicable portions of AWWA D-102-17 Standard for Painting Steel Water Storage Tanks and industry standards.
- C. The Owner will establish a date of inspection and may or may not notify the Contractor in advance. The Contractor's attendance will not be required.
- D. The Owner will select a third party inspection firm (either Engineer or project representative) to document inspection.
- E. Any failed Work will be documented and the Contractor will be notified of necessary repair (method and extent). The Owner reserves the right to require inspection of the repair Work and possibly a second warranty inspection, dependent on degree of failure.
- F. This warranty will automatically be extended until the tank is ice-free (if applicable) and the warranty inspection can be performed. The Contractor guarantees that the

system is free from defects due to faulty materials or Workmanship and the Contractor is to make the necessary correction to correct these defects. If the amount of rework exceeds ten percent (10%) of a portion of the project, then the Owner reserves the right to have the warranty period extended one (1) year for the entire portion of the Work.

- G. Cost for one (1) year warranty inspection will be the responsibility of the Owner.
- H. Cost for a second warranty inspection and repair inspections will be the responsibility of the Contractor and guaranteed by Contractor's Performance and Maintenance Bond (see Article 6)
- I. The Owner retains all contractual remedies. The warranty is not to be considered an exclusive remedy.
- J. If the Owner conditionally accepts Work which was observed or found to be in noncompliance, then the Owner has the right to withhold from final payment an amount equal to the cost to redo the Work if it fails the subsequent Warranty Observation, as well as an additional amount for additional Engineering services.
- K. Contractor is to pay for additional expenses for RPR or Engineering or other Owner related expenses resulting from the failed Warranty. The Maintenance Bond is to remain in full effect, but Engineer will notify Contractor first. Failure to respond positively within two weeks will trigger notification and claim to bonding company.

ARTICLE 16 SUSPENSION OF WORK AND TERMINATION

16.02 AND 16.03 TERMINATION for CAUSE AND FOR CONVENIENCE

- A. The Owner may terminate the contract when the approved progress schedule is not met because of failure of the Contractor to exercise diligence and effectively perform all required work, or when the progress of the work is unacceptable to the owner.
- B. In the absence of a project Progress Schedule, the determination regarding the Contractor's diligence will be based on the Engineer's opinion, correspondence, and field reports.
- C. The Owner may terminate the contract when in the opinion of the Engineer the Non-conformance report(s) indicate the Contractor is unable or unwilling to complete the contract within the terms of the contract.

ARTICLE 18 MISCELLANEOUS

18.02 LIMITATION OF DAMAGES

- A. Contractor is to reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for Engineering, construction observation, inspection, and administrative services needed after the time specified in the Project Summary for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

- B. After Contractor achieves Substantial Completion, if Contractor is to neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor is to reimburse Owner for the actual costs reasonably incurred by Owner for Engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), and if necessary to hire other Contractors to complete portions of the Work, until the Work is completed and ready for final payment.
- C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

SUBMITTAL CHECKLIST

PROJECT: Medina County, OH 500,000 Gallon Fluted Column (Rt. 18) Rehabilitation

CONTRACTOR: _____

DIXON PROJECT MANAGER: _____

Specification Section	Title	Date Received	Date Reviewed	Accepted	Reviewed with comments	Rejected
Metal Repairs						
05 00 00	PDS and SDS- Welding Rod					
05 00 00	Welder's Certification					
05 00 00	Expansion Joint Replacement - Temporary Pipe Support Plan					
05 00 00	PDS- Manway Gasket - potable water contact					
05 00 00	PDS- Roof Hatch Gasket, PDS and SDS - adhesive					
05 00 00	PDS- Overflow Screen					
05 00 00	PDS- Mud Valve and Discharge Hose					
05 00 00	PDS- Swing Gate					
05 00 00	PDS- Vent Screen					
05 00 00	PDS- Fall Prevention Device					
05 00 00	SDS- Joint Compound for threaded fittings and rigging couplings					
05 00 00	PDS- Light Bulbs					
Steel Coating						
09 97 13	OSHA Safety and Health Program					
09 97 13	OSHA Safety certifications for site personnel					
09 97 13	Designated OSHA Competent Person					
09 97 13	Fall Prevention Plan					
09 97 13	Site Specific Fall Prevention Plan					
09 97 13	Certifications for spiders, scaffolding, stages, etc.					
09 97 13	SDS and PDS- Coatings, Thinners, Coating Additives, and Caulking					
09 97 13	SDS and PDS- Cleaners and Degreasers					
09 97 13	SDS and PDS- Chlorine					
09 97 13	SDS and PDS- Abrasives, additives and pretreatments					
09 97 13	Ventilation Design Plan					
09 97 13	Dehumidication/Heat Design Plan					
Containment- Flexible Frame System						
09 97 13.11.01	Containment Plan					
09 97 13.11.01	Design calculations, installation sequencing, operation procedures					
Mixing System- Gridbee						
13 32 12	Manufacture Qualification Document					
13 32 12	List of Supplied Equipment					
13 32 12	Manufacturer Product Sheets					
13 32 12	Electric Power Source Requirements					
13 32 12	Warranty Statement					
13 32 12	Operation Manuals					

TABLE of CONTENTS
TECHNICAL SPECIFICATIONS

Section 00 91 18 – Definitions for Technical Specifications1

Section 00 91 19.01 – Scheduling for RPR Services 2-6

Section 00 91 19.02 – Contractor’s Financial Responsibility for RPR..... 7-9

Section 01 50 00 – Temporary Construction Facilities and Utilities 10-12

Section 01 53 43 – Protection of Environment 13-15

Section 05 00 00 – Metal Repairs..... 16-24

Drawing 01 30 Inch Wet Interior Roof Hatch

Drawing 02 30 Inch Access Tube Roof Hatch

Drawing 03 Fill/Draw Pipe Deflector Bar

Drawing 04 8 Inch Overflow Flap Gate

Drawing 05 Mud Valve

Drawing 06a 16 Inch Pressure Vacuum Roof Vent

Drawing 06b 16 Inch Pressure Vacuum Roof Vent

Drawing 06c 16 Inch Pressure Vacuum Roof Vent

Drawing 06d 16 Inch Pressure Vacuum Roof Vent

Drawing 07a Roof Handrail

Drawing 07b Painter’s Railing

Section 09 97 13 – Steel Coating 25-37

Section 09 97 13.10 – Steel Coating Surface Preparation..... 38-41

Section 09 97 13.11.01 – Containment – Flexible Frame..... 42-47

Section 09 97 13.13.16 – Wet Interior Steel Coating – 3 Coat Zinc Epoxy 48-50

Section 09 97 13.19.06 – Dry Interior Steel Coating – Epoxy System 51-52

Section 09 97 13.23.15 – Exterior Steel Coating – 4 Coat Zinc Epoxy 53-54

Fluoropolymer Repaint

Section 09 97 23.23.03 – Concrete Foundation Coating – 2 Coat Epoxy55

Section 13 32 12 – Mixing System - Gridbee 56-60

SECTION 00 91 18

DEFINITIONS for TECHNICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 DEFINITIONS FOR TECHNICAL SPECIFICATIONS

- A. Wet Interior: Internal surfaces, excluding inaccessible areas, to the roof, shell, bottom, accessories, and appurtenances that are exposed to the stored water or its vapor. Examples are the interior of the roof, sidewall, bowl, and exterior of the access tube within the tank.
- B. Dry Interior: Surfaces of the finished structure, excluding inaccessible areas, that are not exposed to the elemental atmosphere or the stored water or its vapor. Examples are the interior of the access tube, interior of the column, and underside of the bowl above the column.
- C. Exterior: External surfaces, excluding inaccessible areas, of the roof, sidewall, column, accessories, and appurtenances that are exposed to the elemental atmosphere.
- D. Inaccessible Areas: Areas of the finished structure that, by virtue of the configuration of the completed structure, cannot be accessed to perform surface preparation or coating application (with or without the use of scaffolding, rigging, or staging). Inaccessible areas include such areas as the contact surfaces of roof plate lap joints, underside of roof plates where they cross supporting members, top surface of rafters directly supporting roof plates, contact surfaces of bolted connections, underside of column baseplates, contact surfaces of mating parts not intended to be removed or disassembled during routine operation or maintenance of the structure and inside of risers less than a nominal 36 in. diameter.
- E. Sidewall: Vertical walls to the weld seam of the roof.
- F. Access Tube: Cylindrical tube extending from top of the column to the roof through the tank, including all steel appurtenances (i.e. ladder, overflow pipe, brackets, etc.)
- G. Condensate Platform: Platform that covers entire area of the dry column and used to collect and stop condensation from entering the bottom of the column.
- H. Top Platform: Landing area directly under tank's access tube.
- I. Intermediate Platforms: Partial landings between top platform and condensate (bottom) platform.
- J. Roof: Very top of the structure, including top seam of sidewall.
- K. Bottom: Lower area of the tank proper shaped like a bowl. Also section that extends up to the sidewall.
- L. Column: Center support whether concrete or steel.

SECTION 00 91 19.01
SCHEDULING FOR RPR SERVICES

PART 1 – COMMUNICATION

1.01 RESIDENT PROJECT REPRESENTATIVE (RPR) SERVICES

- A. DIXON provides three types of RPR services or any combination of the three:
1. Hold Point Site Visits (sometimes called Critical Phase Visits) where RPR Services are for defined Hold Point, where Work stops until that portion of Work is reviewed on Site by a professional RPR.
 2. Full Time RPR is a professional RPR staying in lodging away from home and living on per diem expenses.
 3. Daily RPR is a professional RPR living at home and traveling to Site on a daily basis.
 4. Based on the type of project the RPR services may change from Daily or Full Time to Hold Point or from Hold Point to Daily or Full Time.
 5. Intended Beneficiary: The onsite observation services for this project are for the benefit of the Owner. There are no intended benefits to the contractor, or any other third parties. Contractor still provides quality control (QC).

1.02 HOLD POINT OBSERVATIONS AND MEETINGS

- A. Each hold point requires an onsite visit for Observation. Example: If the contractor coats over or otherwise makes work inaccessible for Observation, the Work will be considered failed. Remove Work and recoat or repair in accordance with this specification. At least two (2) new hold points, surface preparation and coating, may be created when work fails after the primer has been applied.
- B. Stop Work and schedule Observation times for the following Hold Points as a minimum. Additional Hold Points may be determined at the Preconstruction Meeting. Each Hold Point requires a Site visit and observation. Schedule of Hold Points – Preliminary:
1. Hold Point Meeting: The Preconstruction Meeting is the initial hold Point. The Preconstruction Meeting will not be scheduled until five (5) days after all required submittals are received and reviewed by the Engineer and no exceptions are taken to the shop drawings.
 2. Hold Point - Prior to draining tank:
 - a. To ensure all Section of 01 50 00 and 01 53 43 environmental requirements are met.
 - b. To ensure all containment, ventilation, decontamination, and blasting equipment are on-site and in working order.
 3. Hold Points – Section 05 00 00 – Metal Repairs:
 - a. To locate or quantify repairs as necessary.

- b. To review surface preparation prior to welding and review all products prior to installation.
- c. After welding is complete for quality assurance.
- 4. Hold Points – Sections 09 97 13 – Steel Coating and 09 97 13.10 Steel Coating Surface Preparation:
 - a. After completed erection of containment if applicable.
 - b. Prior to surface preparation to set the standard.
 - c. Prior to primer application to verify cleanliness, profile, thoroughness, and ambient conditions for coating application.
 - d. Prior to application of each successive coat for quality assurance and ambient conditions for the next coat.
 - e. Prior to final coat to verify all non-conformance issues have been resolved.
 - f. Scheduled pre-final Observation: Allow engineer access to all locations so a complete punch list can be prepared. Final coat on ladders or other access points can be delayed until after this Observation and included as a punch list item.
 - g. Scheduled final Observation: After ALL punch list items have been completed (including painting ladders), provide access to all items on the punch list.

1.03 SCHEDULING FOR RPR SERVICES FOR HOLD POINT OBSERVATIONS

- A. Prior to First Observation 48 hours advance Notice is required
- B. All Subsequent Hold Points shall be scheduled by 6:00 P.M (Eastern Time) the previous day.
 - 1. Scheduling with a Central Contract Administrator. Names and phone numbers of a Contract Administrator and a Second Contract Administrator will be given to the Contractor during the Preconstruction Meeting.
- C. The Contract Administrator may be contacted by cell phone. If no answer a voice mail may be left with all details of RPR request included, or
- D. The Contract Administrator may be contacted by text to their cell phone.
- E. If the Contract Administrator is not available, DIXON’s Corporate Office may be contacted during regular working hours at 1-800-327-1578.
- F. Scheduling through a Project Manager is not an alternative.
- G. Scheduling through an RPR is not an alternative for Hold Point Observation.

1.04 SCHEDULING FOR RPR SERVICES FOR FULL TIME OF DAILY OBSERVATIONS

- A. Productive Work
 - 1. Do not start, continue, or complete any Productive Work if RPR is not present on the project site.

2. Productive Work includes, but is not limited to, all elements of abrasive blast cleaning, power washing, high pressure water jetting or high/low pressure water cleaning, power tool cleaning, rigging, painting, metal repairs, concrete repairs, punch list items, and clean-up.
3. Preparation, mobilization, and containment erection, and other non-productive work does not require observation if completed before the structure is removed from service, nor does demobilization after tank is returned to service.
4. But if containment erection is completed while other productive work progresses, an RPR is required.
5. If welding is completed for contracted work (antenna rails, painter's rails, ladders, etc.) during containment erection welding, then contracted work is considered Productive Work and an RPR shall be present. Any spot painting during containment erection is also considered Productive Work.
6. After the project has been completed and after all punch list items have been completed, cure time and site clean-up, excluding any waste coating or abrasive issues, are not considered Productive Work.
7. After the Project has been completed; complaints from Owner or neighbors concerning health, environmental, or damage issues, or if there are still waste coating or waste abrasive issues, these are considered Productive Work requiring an RPR even after the structure is returned to service.
8. Essentially all work completed between out-of-service date and Substantial Completion Date, excluding cure and disinfection, is considered Productive Work and requires the presence of an RPR.

1.05 SCHEDULING WITH A CENTRAL CONTRACT ADMINISTRATOR

- A. The Contract Administrator may be contacted by cell phone. If no answer a voice mail may be left with all details of RPR request included or
- B. The Contract Administrator may be contacted by text to their cell phone.
- C. If the Contract Administrator is not available DIXON's Corporate Office may be contacted during regular working hours at 1-800-327-1578.
- D. Scheduling through a Project Manager is not an alternative.

1.06 SCHEDULING THROUGH ONSITE RPR

- A. Scheduling through on site RPR completing Full Time or Daily RPR Services may be considered a properly completed Request if completed by the foreman and RPR before leaving site. If not completed on site then schedule through the Central Contract Administrator.

1.07 SUMMARY OF SCHEDULING HOLD POINT OBSERVATIONS

- A. Contract Administrator
 1. by phone

- 2. by text
- 3. by voice mail
- B. Second Contract Administrator
 - 1. by phone
 - 2. by text
 - 3. by voice mail
- C. Corporate Office during work hours
 - 1. by phone
 - 2. NO voicemail
- D. Do NOT contact Project Manager

1.08 SUMMARY OF SCHEDULING FOR FULL TIME OR DAILY OBSERVATIONS

- A. Contract Administrator
 - 1. by phone
 - 2. by text
 - 3. by voice mail
- B. Second Contract Administrator
 - 1. by phone
 - 2. by text
 - 3. by voice mail
- C. Corporate Office during work hours
 - 1. by phone
 - 2. NO voicemail
- D. RPR on site
- E. Do NOT contact Project Manager

1.09 CONTRACTOR'S RESPONSIBILITIES

- A. The Engineer and Owner shall have full access to the Site at reasonable times for their Observation, testing, and Contractor's personnel and equipment shall be available to the Owner and Engineer/RPR to expedite Observations. Provide Owner, Engineer/RPR proper and safe conditions for such access, including rigging, and advise them of contractor's site safety procedures and programs so that they may comply as applicable.
- B. Contractor is responsible for all of Contractor's manpower needs and scheduling and Work to be completed. RPR is to be available to expedite the project and complete their services with minimal interference of the Contractor's Work. Successful project completion is dependent on Contractor's proper scheduling and use of RPR services.
- C. Contractor is financially responsible for efficient scheduling of RPR services, See Section 00 91 19.02.

1.10 DELAY IN ARRIVAL OF RPR

- A. RPRs for Hold Point, Full – Time or Daily observations may be delayed by traffic or other reason from arriving at the scheduled time. Contractor shall contact Contract Administrator immediately if the RPR has not arrived at the scheduled time.
- B. The Contract Administrator will locate the missing RPR, return to the Contractor with a revised arrival time, and discuss with Contractor what other Work can be completed until RPR arrives for Observation.

1.11 REJECTED DEFECTIVE WORK

- A. All Productive Work completed without an RPR present shall be considered Defective Work and rejected per the General Conditions. This includes Work completed:
 - 1. Without proper scheduling an RPR
 - 2. Prior to the scheduled arrival of the RPR
 - 3. When Day has been scheduled as a No Workday
 - 4. When RPR is delayed and Contract Administrator has not been notified.

1.12 NON-CONFORMANCE REPORTS (NCR)

- A. The RPR will issue a non-conformance report for every performance item, material, or equipment supplied, and/or environmental situation that fails to meet requirements of the specifications.
- B. All Work in non-conformance will be considered Defective Work to be replaced, repaired per terms of the General Conditions.
- C. Do not start Work until all required equipment and RPR is on-site.
- D. Immediately correct all environmental non-conformance to prevent an accident. If an incident has already occurred, contact the proper governmental environmental agency and conduct an immediate clean-up per their direction.
- E. If the Nonconformance is issued because of equipment specified but not delivered, repaired or replaced then the financial Set-off will be 140% * of the rental value of equipment in non-conformance (i.e. non-working decontamination trailer, hand wash facilities, are filtration units, etc.).
- F. If the Nonconformance issued is because of noncompliance with environmental equipment or practices the Set-off will be 140%* of the estimated cost of compliance. *The costs of items E. and F. above are damage estimates. The cost of equipment will be the rental charge from a reputable local dealer with 40% extra being for operation cost. Cost of environmental compliance is the estimated cost of compliance. The extra 40% is potential risk to the owner for non-conformance. In no situation will the Owner assume liability.
- G. All additional Engineering/RPR expenses incurred because of a nonconformance report is subject to Set off by Owner.

SECTION 00 91 19 .02

CONTRACTOR'S FINANCIAL RESPONSIBILITY FOR RPR

PART 1 - PROGRESS SCHEDULE and RPR SCHEDULE

1.01 GENERAL

A. Contractor is financially responsible for the proper and efficient use of RPR services.

1.02 PROGRESS SCHEDULE

- A. Per the General Conditions a Progress Schedule is required to be submitted. At the Preconstruction meeting the Contractor shall submit a preliminary Progress Schedule. This General Conditions of this contract as-bid restricts Work to 40 hours/ 8 hours per day, 5 days per week. If the Owner has prior approved a more open schedule it is noted in the Project Summary. Either prior approved in the Project Summary or not; a Progress Schedule more aggressive than Monday through Friday, regular working hours, will require submittal and discussion, at Preconstruction Meeting.
- B. Once the Owner, at the Preconstruction meeting accepts a more aggressive schedule the Contractor is responsible for all of the Contractor's manpower scheduling and Critical Path Work to maintain the Schedule.
- C. Contractor shall complete a minimum 8 hours per day of Productive Work, which should be calculated into the Schedule.

1.03 HOLD POINTS AND RPR SERVICES

- A. Fees for Hold Point RPR Services are contracted with the Owner at a Unit Price and are calculated to include the following: travel time to and from Site, reimbursable expenses, observation and report time. Time required for Contractor to repair or redo small areas that failed Observation, are not included in the unit price. Failure may be minimal compared to all Work observed, but failed Work still must be observed before proceeding. For minor failures that can be quickly repaired, the Contractor may entirely at their option:
1. Accept a Non-Conformance for failed Observation.
 2. Request, the RPR wait for a reasonable period while repairs are completed.
 3. Proceed with the next phase for all areas which have not failed, and "work around" failed areas. The failed areas would then be observed at the next Hold Point.
- B. The Fee for extended onsite time, or a new Hold Point is the responsibility of the Contractor.

1.03.1 FULL TIME OR DAILY RPR SERVICES

- A. It is the intention of the Owner, that the RPR fees be used to observe Productive Work. Productive Work is defined in previous Section 00 91 19 .01 Scheduling for RPR Services, with examples. The Owner will pay for all RPR service fees generated observing Productive Work that meets specification requirements. Normally this will be the first time for most observations. But if Observation fails, then the Owner pays for second observation, if it passes.

- B. The Contractor will pay all RPR and/or Engineer fees generated by failed Observations of Productive Work.
- C. Availability of RPR and RPR's ability to timely perform the required Services are dependent on Contractor's communication. RPR is to be available to meet the Progress Schedule demands and complete RPR services with minimal interference of the Contractor's Work, if Contractor properly scheduled RPR Services.

1.03.2 FULL TIME OR DAILY RPR SERVICES

- A. Contractor Pays for RPR or Engineering Services resulting from:
 - 1. Productive Work on a Holiday
 - 2. Failed or Improper Scheduling,
 - 3. Failure to Request Observation per Section 00 91 19 .01,
 - 4. Less than 8 hours per day or On-Call Time as a result of:
 - a. Premature Request for RPR Services,
 - b. No show or late start,
 - c. Rejection of Work and/or Non-Conformance reports,
 - d. Equipment failure, insufficient manpower, materials or equipment
 - e. Weather reasons per 1.04.B.03

1.04 RPR FEE CALCULATIONS FOR FAILED OBSERVATIONS

- A. The basis for Fees assessed to Contractor is based on the Owner/DIXON contract. Fees will be calculated in the same manner as in Owner/Engineer Agreement, i.e. if the RPR is working at an overtime rate for Owner, then fee for unproductive services will be documented at the same rate
 - 1. Hold Point for Welding or Coating Observation, or extra Progress Meetings
 - a. The same Unit Price Fee as would be charged to Owner for each respective Observation or meeting. Note the fee will be determined by the Contract and may vary between types of Hold Point services.
 - b. Extended time at site charged at Regular Rate (See definition below)
 - 2. Daily Observation shall be the same fee as charged to Owner from the Owner/DIXON contract.
 - a. Minimum workday is 8 hours plus travel time
 - b. reimbursable mileage
 - 3. Fulltime Observation Fee shall be the same as charged to Owner for the same Service.
 - a. Minimum workday is 8 hours
 - b. Minimum work week is 40 hours
 - c. Reimbursable expenses/ Per Diem
 - 4. Fees common to Full Time, Daily and Hold Points with extended stays, and On-Call Time
 - a. Regular Pay for RPR is charged at the rate matching the RPR's experience and qualifications.
 - b. Overtime Rate is 1.5 times Regular Rate
 - 1) For all time worked on the actual holiday
 - 2) Weekend work by RPR

- 3) For time over 40 hours. (The standard work week for overtime (over 40) begins on Monday as Sunday is already paid at overtime rate.)
- B. Fees of misused or unnecessary Engineer/RPR Services will be documented and submitted to the Owner for Set off.
- C. The right to Set-off is a contracted right of Owner per the General Conditions, or Additions to General Conditions, and the right to enforce those rights are at the Owner's discretion.

1.05 ON-CALL TIME

- A. RPR's are professional personnel that get paid a minimum of 8 hours per day even though the Contractor's operations or methods results in less than an 8 hour day.
- B. If the Contractor has scheduled a Workday, and if RPR is not free to spend the day at RPR's discretion or to be reassigned; then the RPR will be considered On-Call.
 1. The RPR will be considered, if scheduled, on-call every morning and day unless work is cancelled per Section 00 19 91.01.
 2. For Daily observation the On - Call time will not exceed 8 hours, any travel time should occur within that 8 hours.
 - a. Late Starts - Agreed start time will be scheduled with the Contract Administrator at the Preconstruction Meeting.
 - b. The RPR's on-call time starts at the agreed start time, if RPR is on Site and available to Work, and On Call time continues until Work starts.
 3. For weather reasons
 - a. 8 hours if adverse weather conditions were clearly forecast
 - b. Two hours plus time worked up to 8 hours or actual time worked if greater; if forecast was less than 20% weather meeting definition of a weather day.
 4. For reasons other than weather, eight (8) hours will be considered minimum On-Call Time. This includes, but is not limited to, equipment failure, insufficient materials, damaged containment, etc.
- C. Actual charged on-call time will be eight (8) hours, minus the number of hours actually worked.
- D. Overtime, Weekend, Holiday pay requirements apply to all on-call time pay. On-call hours will count towards forty (40) hour week triggering overtime at forty (40) hours.
- E. If Work is cancelled per requirements in Section 00 19 91.01 (by prior night) in advance and RPR is notified in advance, there is no on call time.
- F. If contractor schedules days off per Scheduling requirements, the inspector will return to his/her home base and there will be no show time charges. Based on the Contract the RPR may be entitled to Mobilization or Demobilization.

SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES and UTILITIES

PART 1 – GENERAL

1.01 SUMMARY

- A. The Contractor is fully responsible to provide and maintain temporary facilities and utilities required for construction as described herein, and to remove the same upon completion of work.

1.02 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. National Fire Protection Association (NFPA): NFPA No. 70-93.
 - 2. National Electrical Code (NEC) and local amendments thereto.
 - 3. Comply with any and all federal, state, and local codes and regulations, and utility company requirements.

PART 2 – PRODUCTS

2.01 TEMPORARY ELECTRICITY and LIGHTING

- A. Supply temporary lighting sufficient to enable Contractor to safely access all work areas.
- B. Electrical requirements shall be the responsibility of the Contractor. No service available to Contractor.
- C. Provide, maintain, and remove temporary electric service facilities.
- D. Facilities exposed to weather shall be weatherproof-type and electrical equipment enclosure locked to prevent access by unauthorized personnel.
- E. Contractor is to pay for and arrange for the installation of temporary services.
- F. Patch affected surfaces and structures after temporary services have been removed.
- G. Provide explosion-proof lamps, wiring, switches, sockets, and similar equipment required for temporary lighting and small power tools.

2.02 WATER for CONSTRUCTION

- A. Owner will provide water required for cleaning and other purposes.
- B. Water use shall not exceed usage that might endanger the Owner's water system's integrity.

2.03 SANITARY FACILITIES

- A. Provide temporary sanitary toilet facilities conforming to state and local health and sanitation regulations, in sufficient number for use by Contractor's employees.

- B. Maintain in sanitary condition and properly supply with toilet paper.
- C. Remove from site before final acceptance of work.

2.04 TEMPORARY FIRE PROTECTION

- A. Provide and maintain in working order a minimum of two (2) fire extinguishers and such other fire protective equipment and devices as would be reasonably effective in extinguishing fires.

2.05 DAMAGE to EXISTING PROPERTY

- A. Contractor is responsible for replacing or repairing damage to existing buildings, sidewalks, roads, parking lot surfacing, and other existing assets.
- B. Owner has the option of contracting for such work and having cost deducted from contract amount if the Contractor is not qualified to complete repairs, or fails to act in a timely manner.

2.06 SECURITY

- A. Security is not provided by Owner.
- B. Contractor shall be responsible for loss or injury to persons or property where work is involved, and shall provide security and take precautionary measures to protect Contractor's and Owner's interests.

2.07 TEMPORARY PARKING

- A. Parking for equipment and Contractor employees shall be designated and approved by Owner.
- B. Make arrangements for parking area for employees' vehicles.
- C. Any costs involved in obtaining parking area shall be borne by the Contractor.

PART 3 – EXECUTION

3.01 GENERAL

- A. Contractor shall maintain and operate all temporary systems to ensure continuous service.
- B. Contractor shall modify and extend systems as work progress requires.

3.02 REMOVAL

- A. Completely remove temporary material and equipment when no longer required.
- B. Clean and repair damage caused by temporary installation or use of temporary facilities.
- C. Restore existing or permanent facilities used for temporary services to specified, or original condition.

3.03 BARRIERS and ENCLOSURES

- A. The Contractor shall furnish, install, and maintain as long as necessary, adequate barriers, warning signs or lights at all dangerous points throughout the work for protection of property, workers, and the public. The Contractor shall hold the Owner harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the work under the contract.

SECTION 01 53 43
PROTECTION of ENVIRONMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Contractor in executing work shall maintain work areas, on-and-off site, free from environmental pollution that would be in violation of federal, state, or local regulations.
- B. The Contractor is responsible for any and all clean-up that may be necessary and all applicable costs for the same.

1.02 LAWS and REGULATIONS

- A. Environmental regulations may be met with different available technologies. It is the Contractor's sole responsibility to comply with these and all applicable environmental regulations.
- B. If a contamination occurs work will stop until cleanup is complete.

1.03 PROTECTION of SEWERS

- A. Take adequate measures to prevent impairment of operation of existing sewer system. Prevent construction material, pavement, concrete, earth, or other debris from entering sewer or sewer structure.

1.04 PROTECTION of WATERWAYS

- A. Observe rules and regulations of local and state agencies, and agencies of U.S. government prohibiting pollution of any lake, stream, river, or wetland by dumping of refuse, rubbish, dredge material, or debris therein.
- B. Provide containment that will divert flows, including storm flows and flows created by construction activity, to prevent loss of residues and excessive silting of waterways or flooding damage to property.
- C. Comply with procedures outlined in U.S. EPA manuals entitled "Guidelines for Erosion and Sedimentation Control Planning and Implementation," Manual EPA-72-015 and "Processes, Procedures, and Methods to Control Pollution Resulting from all Construction Activity," Manual EPA 43019-73-007.

1.05 DISPOSAL of EXCESS EXCAVATED and OTHER WASTE MATERIALS

- A. Dispose waste material in accordance with federal and state codes, and local zoning ordinances.

- B. Unacceptable disposal sites include, but are not limited to, sites within wetland or critical habitat, and sites where disposal will have detrimental effect on surface water or groundwater quality.
- C. Make arrangements for disposal subject to submission of proof to Engineer that Owner(s) of proposed site(s) has valid fill permit issued by appropriate government agency and submission of haul route plan, including map of proposed route(s).
- D. Provide watertight conveyance for liquid, semi-liquid, or saturated solids that have potential to leak during transport. Liquid loss from transported materials is not permitted, whether being delivered to construction site or hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at selected disposal site.

1.06 PROTECTION of AIR QUALITY

- A. Contain paint aerosols and VOCs by acceptable work practices.
- B. Minimize air pollution by requiring use of properly operating combustion emission control devices on construction vehicles and equipment used by Contractor, and encouraging shutdown of motorized equipment not actually in use.
- C. Trash burning not permitted on construction site.
- D. If temporary heating devices are necessary for protection of work, they shall not cause air pollution.

1.07 PROTECTION from FUEL and SOLVENTS

- A. Protect the ground from spills of fuel, oils, petroleum distillates, or solvents by use of containment system.
- B. Total paint, thinner, oils, and fuel delivered to and stored on-site cannot exceed supplied capacity of spill containment provided (i.e. fuel and oil to be sized to exceed possible spill).
- C. Provide proper containment unit under fuel tank and oil reservoirs for all equipment and fuel storage tanks.
- D. Barrels of solvents, even for cleaning, are prohibited. Do not deliver paint thinners in containers greater than five (5) gallons.
- E. Disposal of waste fluids shall be in conformance with federal, state, and local laws and regulations.

1.08 USE of CHEMICALS

- A. Chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of U.S. EPA, U.S. Department of Agriculture, state, or other applicable regulatory agency.

- B. Use of such chemicals and disposal of residues shall be in conformance with manufacturer's written instructions and applicable regulatory requirements.

1.09 NOISE CONTROL

- A. Conduct operations to cause least annoyance to residents in vicinity of work, and comply with applicable local ordinances.
- B. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines.
- C. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.
- D. Route vehicles carrying materials over such streets as will cause least annoyance to public and do not operate on public streets between hours of 6:00 P.M. and 7:00 A.M., or on Saturdays, Sundays, or legal holidays unless approved by Owner.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 HAZARDOUS MATERIALS PROJECT PROCEDURES

- A. Applicable Regulations:
 - 1. RCRA, 1976 – Resource Conservation and Recovery Act: This federal statute regulates generation, transportation, treatment, storage and disposal of hazardous wastes nationally.
- B. Use the Uniform Hazardous Waste Manifest (shipping paper) to use an off-site hazardous waste disposal facility.
- C. Federal, State and local laws and regulations may apply to the storage, handling and disposal of hazardous materials and waste.

SECTION 05 00 00 **METAL REPAIRS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Steel and Miscellaneous Repairs.

1.02 REFERENCES

- A. AWWA D100 Weld Standard
- B. AWS Weld Standard
- C. API 650 Standard

1.03 OMISSIONS

- A. The specifications include all work and materials necessary for completion of the work. Any incidental item(s) of material, labor, or detail(s) required for the proper execution and completion of the work are included.

1.04 DEFINITIONS

- A. Ground Flush: Ground even with adjacent metal with no transition. This preparation is intended for all removed items.
- B. Ground Smooth: Ground welds to the point that no cuts or scratches occur when rubbing your hand over the weld. Rebuild with weld any concavity discovered during grinding. This preparation is intended for all newly added steel.

1.05 WORK INCLUDED

- 1) Replace the bowl manway gasket.
- 2) Replace the wet interior roof hatch.
- 3) Replace the access tube roof hatch.
- 4) Install a swing gate at the top platform opening.
- 5) Install deflector bars on the fill/draw pipe.
- 6) Install a flap gate on the overflow discharge.
- 7) Install a mud valve.
- 8) Install a fall prevention device on the wet interior ladder.
- 9) Replace vent with a frost-free roof vent.
- 10) Install a roof handrail with a painter's railing.
- 11) Remove the cage from the bottom column ladder section.
- 12) Repair the wet interior platform.
- 13) Replace dry interior and aviation light bulbs.

1.06 WORKMANSHIP

- A. Provide material and workmanship necessary to produce a first-class job.
- B. All weld spatter is to be removed prior to coating application.
- C. All removed steel items are to be ground flush with surrounding surface. All new welds are to be ground smooth.
- D. The Contractor is to properly dispose of all removed items.

1.07 WELDER QUALIFICATIONS

- A. Certified for type and position of weld specified.
- B. The welder shall be specialized in industrial or heavy commercial welding and experienced in rigging and elevated work.

1.08 SUBMITTALS

- A. Submit the following ten (10) days prior to the preconstruction meeting:
 - 1. Provide for employees one (1) copy of all data sheets at the job site for employee access.
 - 2. Provide an electronic copy to the Engineer.
 - 3. No work may commence without the complete filing. All SDS are to conform to requirements of SARA (EPCRA) Right-to-Know Act.
 - 4. Safety Data Sheets (SDS) and Product Data Sheets:
 - a. Safety Data Sheets (SDS) for all chemicals or products that contain chemicals.
 - b. Product Data Sheets (PDS) or Technical Data Sheets (TDS) for all items.
 - 5. Welder's certification.
 - 6. Expansion Joint Replacement – Temporary Pipe Support Plan.

1.09 WORK SEQUENCING

- A. The following is NOT a ways-and-means decision of the Contractor. It is accepted and good painting practice and shall be completed by the Contractor in this specified fashion:
 - 1. Complete ahead of all cutting and welding all surface preparation, such as removal of heavy metal bearing coating in the immediate area.
 - 2. Complete all welding repairs prior to commencement of any power washing or abrasive blast cleaning.
 - 3. Do not install non-painted items (i.e. vents, etc.) or store on or in the tank until after painting has been completed.
 - 4. Remove existing items that are not to be painted after water cleaning, store in a secure location.
 - 5. Disassemble appurtenances with mating surfaces (i.e. overflow flap gate, vent flange, etc.), surface prepare and coat mating surfaces and reassemble after topcoat is dry.

6. Remove fall prevention devices in areas to be coated before painting, and reinstall after completion. Supply temporary fall prevention devices with steel cables during blasting and painting.

1.10 NEW STEEL COATING

- A. The new carbon steel and weld burn surfaces are to be prepared and coated in accordance with Sections 09 97 13 and 09 97 13.10.

PART 2 – PRODUCTS

2.01 STEEL PLATING and OTHER STRUCTURAL SHAPES

- A. General Steel: ASTM – A36.
- B. General Stainless Steel: ASTM – 316.
- C. Threading on all couplings and plugs to meet NPT standards.

2.02 BOLTS and NUTS

- A. Stainless Steel
 1. ASTM F594G – 316 Stainless Steel Bolts.
 2. ASTM F594G – 316 Stainless Steel Nuts.
- B. Galvanized Steel
 1. ASTM A307 Grade A zinc coated Steel Bolts.
 2. ASTM A307 Grade A zinc coated Nuts.

2.03 WELDS

- A. Final – E70XX Electrodes.
- B. Root – E60XX Electrodes.
- C. Wire – ER70S Electrodes.

2.04 MANWAY GASKET

- A. Manway gaskets for manways in contact with potable water.
- B. Gaskets to meet ASTM D2000 and NSF 61 requirements. Gaskets to be ¼ inch thick Ethylene Propylene Diene (EPDM) AB-576 item number 386-16-482 as manufactured/supplied by American Biltrite www.american-biltrite.com (888) 275-7075, or approved equal.

2.05 ROOF HATCH GASKET

- A. Roof hatch manway gaskets for access points above the high-water level (not in contact with potable water).

- B. There are two options:
1. Full sheet adhered to the interior of the hatch cover:
Gaskets to be meet ASTM D2000 requirements. Gaskets to be ¼ inch thick Ethylene Propylene Diene (EPDM) AB-553 item number 354-16-362 as manufactured/supplied by American Biltrite www.american-biltrite.com (888) 275-7075, or approved equal.
 2. Gasket adhered to the edge of the hatch curb:
EPDM foam and vinyl rubber Water and Weather Resistant Rubber Push-on Seal as manufactured/supplied by McMaster-Carr. www.mcmaster.com (562) 692-5911, or approved equal.
- C. Adhesive for gasket to be 3M Super Weather strip and Gasket Adhesive as Manufactured by 3M www.3m.com (888) 364-3577, or approved equal.

2.06 OVERFLOW SCREEN

- A. 316 stainless steel wire, twenty-four (24) mesh or smaller.
- B. Manufactured/supplied by McMaster-Carr. www.mcmaster.com (562) 692-5911, manufactured by McNichols www.mcnichols.com (877) 219-6821, or approved equal.

2.07 SWING GATE

- A. Universal Swing Gate as manufactured by SafeRack www.saferack.com (313) 246-9496 or approved equal.

2.08 VENT SCREEN

- A. Aluminum wire, maximum twenty-four (24) mesh or smaller.
- B. Manufactured/supplied by McMaster-Carr. www.mcmaster.com (562) 692-5911, manufactured by McNichols www.mcnichols.com (877) 219-6821, or approved equal.

2.09 MUD VALVE

- A. Babco-NFW 4 in. x 2.5 in. No Freeze Valve with a wrench.
- B. Manufactured/supplied by Superior Sales & Service, Inc. www.superiorsales.com (402) 296-1010.
- C. Discharge hose, smooth, clear PVC. Nutriflow series.
- D. Manufactured/supplied by Goodyear Engineered Products www.goodyearhose.com (866) 711-4673 or approved equal.

2.10 FALL PREVENTION DEVICE

- A. Cable-Type system as manufactured/supplied by DBI Sala, www.fall-protection-products.com (941) 894-0564 or approved equal.

1. System: Lad-Saf Model and all connecting clips, etc.
2. Wet interior ladders:
 - a. Rung, 2 User Stainless Steel #6116632.
 - b. Cable to be 3/8 in. stainless steel #6107XXX (last 3 numbers for ordering are for the length of cable needed)
 - c. Cable Guides #6100401.

2.11 JOINT COMPOUND FOR THREADED FITTINGS AND RIGGING COUPLINGS

- A. Great White Pipe Joint Compound as Manufactured by Oatey www.oatey.com (800) 321-9532, or approved equal.

2.12 LIGHT BULBS

- A. Dry interior bulbs to be bright white LED bulbs with a minimum brightness of 800 lumens and a color of light at a minimum of 5,000K and a minimum rated life of 25,000 hours., size A19.
- B. The aviation light bulbs to be LED with a minimum brightness of 1600 lumens and a color of light at a minimum of 5,000K, and a minimum rated life of 25,000 hours.

PART 3 - EXECUTION

3.01 MANWAY GASKET

- A. Replace the bowl manway gasket with a new gasket.
- B. Contractor is to ensure that the manway does not leak, including returning to reseal the gasket as needed after the Owner refills the tank.
- C. Payment is incidental to the project.

3.02 WET INTERIOR ROOF HATCH

- A. Replace the existing wet interior hatch.
- B. Furnish and install a 30 in. diameter hinged hatch.
- C. Weld a 16 in. x 3 in. x 3/4 in. diameter rung on the roof for a hand-hold. Location to be determined by the Engineer.
- D. The handhold is to be located on the ladder side of the opening.
- E. The Owner is to supply a lock or the Contractor to supply nut and bolt to install on the roof hatch hasp.
- F. Install the gasket after the exterior coating is dry to the touch. Install roof hatch gasket using adhesive.
- G. See Drawing 01.
- H. Payment is a separate line item "Wet Interior Roof Hatch" which the Owner reserves the right to delete.

3.03 ACCESS TUBE ROOF HATCH

- A. Remove the existing access tube roof hatch.
- B. Furnish and install a 30 in. diameter hinged hatch.
- C. Weld a 16 in. x 3 in. x $\frac{3}{4}$ in. diameter rung on the roof for a hand-hold. Location to be determined by the Engineer.
- D. The handhold is to be located on the ladder side of the opening.
- E. See Drawing 02.
- F. Payment is a separate line item "Access Tube Roof Hatch" which the Owner reserves the right to delete.

3.04 SWING GATE

- A. Furnish and install a swing gate at the gap between the handrails near the top platform ladder opening.
- B. Install gate per manufacturers recommendations. Adjust the swing gate width and tension after installation to ensure the gate operates properly and remains closed during normal conditions.
- C. The swing gate hinge is to be at the vertical handrail post. The handrail angles may need to be notched to allow the gate to swing properly.
- D. Install a 3 in. x $\frac{1}{4}$ in. plate as a catch for the swing gate as needed so the resting position of the gate is parallel to the handrail. Round off the corners of the plate. Weld using $\frac{3}{16}$ in. full fillet welds.
- E. Contactor is responsible for any installation of additional structure and welding needed for mounting. Any cutting will require approval from the Engineer.
- F. Payment is a separate line item "Swing Gate" which the Owner reserves the right to delete.

3.05 FILL/DRAW PIPE DEFLECTOR BARS

- A. Furnish and install deflector bars on the fill/draw pipe.
- B. See Drawing 03.
- C. Payment is incidental to the project.

3.06 OVERFLOW FLAP GATE with SCREEN

- A. Construct and install a new overflow flap gate at the pipe discharge.
- B. The flap gate shall allow for closed positioning during non-flow conditions, and open operation during overflow conditions.
- C. Field verify existing overflow pipe dimensions.
- D. Use steel plates as weights attached to the lever arm to assure complete closure at end of cycle, number may need to be more than shown on the drawing to ensure complete closure.

- E. Install PVC or plastic washers and/or spacers between the hinge bolts and lever arm, use enough washers to ensure a snug fit without damaging the coating during movement.
- F. The existing flange at the discharge is to be replaced to match the designed 1.5 inch flange on the flap or the flap design is to be modified to match the existing flange.
- G. See Drawing 04.
- H. Payment is a separate line item “Overflow Flap Gate” which the Owner reserves the right to delete.

3.07 MUD VALVE

- A. Install a frost-free mud valve in the lowest section of the mud settling area. Locate on the bowl next to the access tube in a location where it can be operated from the ladder to the bowl manway.
- B. Coupling shall be a heavy or extra heavy coupling and shall not extend more than $\frac{3}{8}$ in. into wet interior surfaces.
- C. The hose is to discharge into the overflow pipe. Cut a hole in the overflow (or use the existing opening, enlarge as needed).
- D. Contractor to ensure that the discharge hose does not kink. Install adaptors (i.e. steel elbow etc.) as needed to prevent kinking.
- E. See Drawing 05.
- F. Payment is a separate line item “Mud Valve” which the Owner reserves the right to delete.

3.08 FALL PREVENTION DEVICE

- A. Furnish and install a cable-type fall prevention device on the wet interior ladder.
- B. Devices to be installed after the topcoat is dry to the touch. Use temporary safety lines during construction.
- C. The device is to extend 4 ft. above the wet interior platform.
- D. Install cable guides every 15 ft. on center.
- E. Payment is a separate line item “Fall Prevention Device” which the Owner reserves the right to delete.

3.09 FROST-FREE ROOF VENT

- A. Remove the existing roof vent.
- B. Furnish and install a new frost-free roof vent on the existing flange.
- C. See Drawings 06a-06d.
- D. Payment is a separate line item “Roof Vent” which the Owner reserves the right to delete.

3.10 ROOF HANDRAIL and PAINTER'S RAILING

- A. Install a 25 ft. diameter handrail, and a 28 ft. diameter painter's railing on the roof. Field verify dimensions prior to fabrication. The intention is that the painter's railing diameter be 3-4 ft. larger than the handrail around the entire circumference.
- B. All butt weld sections on the painters railing to be at a stand-off.
- C. Install couplings with brass plugs located at every other painter's railing stand-off. Caulk the underside of the coupling. All threaded fittings to be coated with pipe joint compound.
- D. See Drawing 07a-07b.
- E. Payment is a separate line item "Roof Handrail and Painter's Railing" which the Owner reserves the right to delete.

3.11 LADDER CAGE REMOVAL

- A. Remove the cage from the bottom column ladder from the ground to the condensate platform.
- B. Any broken points-of-connection shall be cut smooth.
- C. Cut all braces and lugs. Grind all lugs flush with adjacent base metal. In the event the base metal is gouged by cutting of the ladder, build-up affected areas to original steel thickness. Grind all re-welding flush with adjacent surfaces.
- D. Payment is incidental to the project.

3.12 WET INTERIOR PLATFORM REPAIR

- A. Weld patch plates on the wet interior platform as needed. Abrasive blast clean the platform (or the corroded surfaces on the platform at a minimum), replace steel with patch plates that is less than half of the original thickness.
- B. Plate to be in-line with a thickness equal to the surrounding steel, and rolled to the same radius. The estimated thickness is 1/4 inches. Field verify thickness.
- C. Weld plate flush with the surrounding steel using a full penetration groove weld. If the plate is against the support or access tube, then weld using a 1/4 inch full penetration fillet weld.
- D. Payment is a separate line item "Wet Interior Platform Repair" based on three (3) 12 sq. in. plates, which the Owner reserves the right to delete.

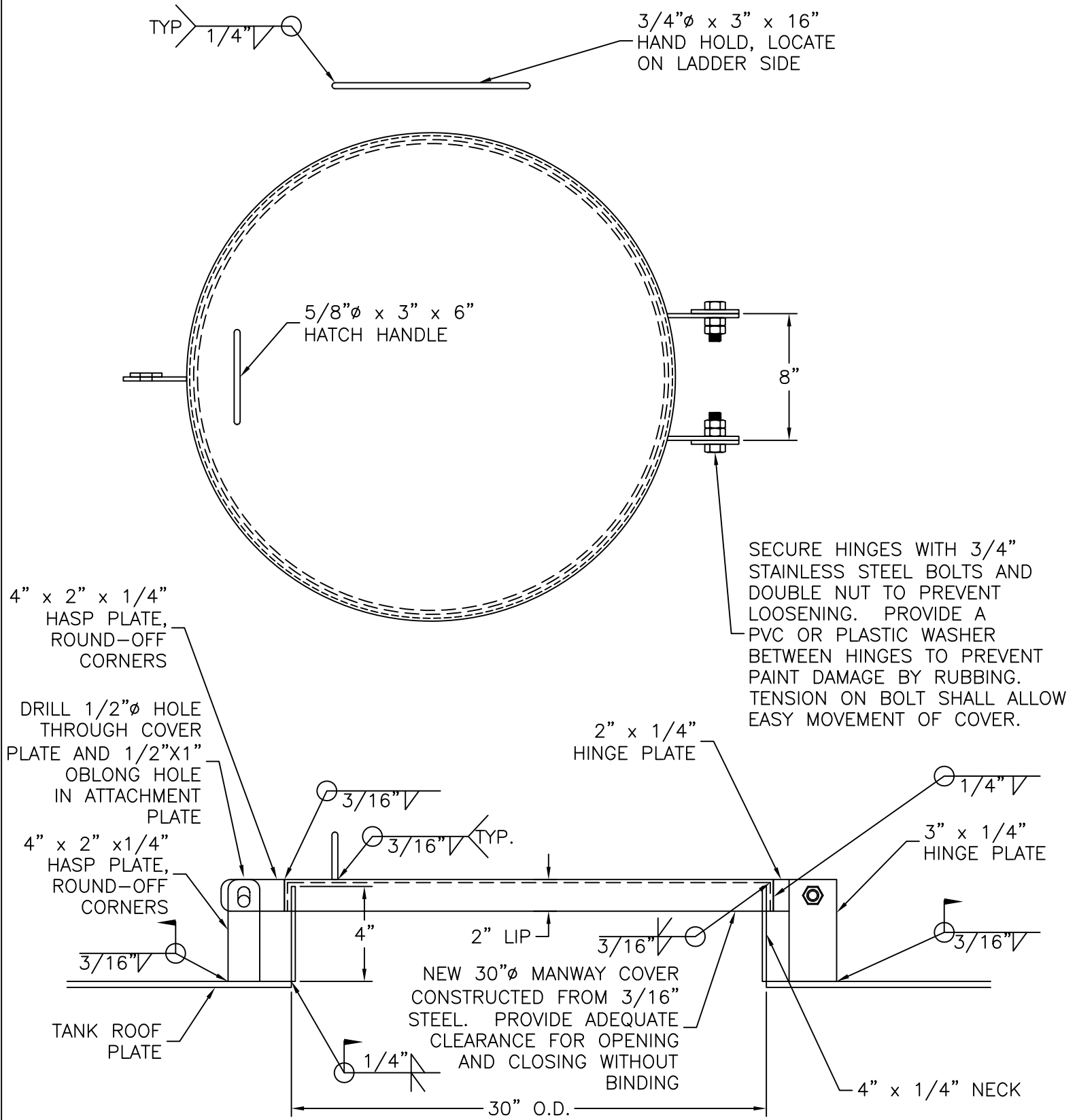
3.13 REPLACE LIGHT BULBS

- A. Replace all dry interior and aviation light bulbs with LED light bulbs.
- B. Change all of the bulbs whether the existing are operational or not. Change bulbs after all blast and paint equipment has been removed from the tank.
- C. All bulbs to have the same color and brightness throughout the dry interior.
- D. Payment is incidental to the project.

PART 4 – SPECIAL PROVISIONS

4.01 WELD PREPARATION PRIOR to COATING

- A. Prepare all new welds per NACE RPO 0178 prior to coating application. Grind welds to category D.



NOTES:

1. LOCATION OF THE MANWAY TO BE DETERMINED BY THE ENGINEER.
2. INSTALL A GASKET ON THE COVER.

Note: Drawing not to scale.



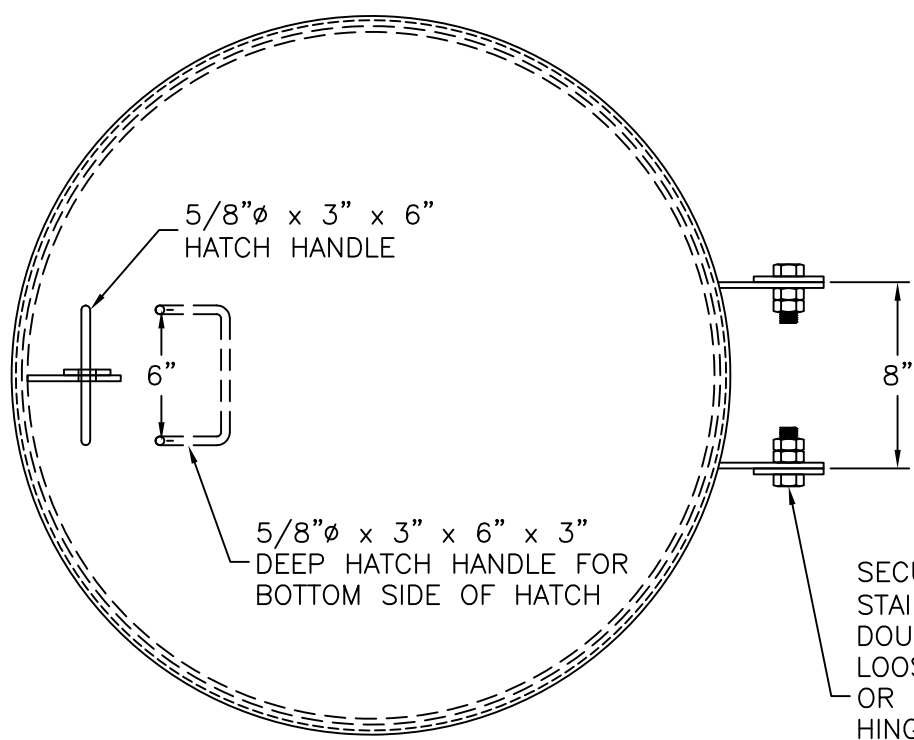
Medina County, OH 500,000 F.C.

30" Wet Interior Roof Hatch

Drawn By: TMF Date: 11/01/22

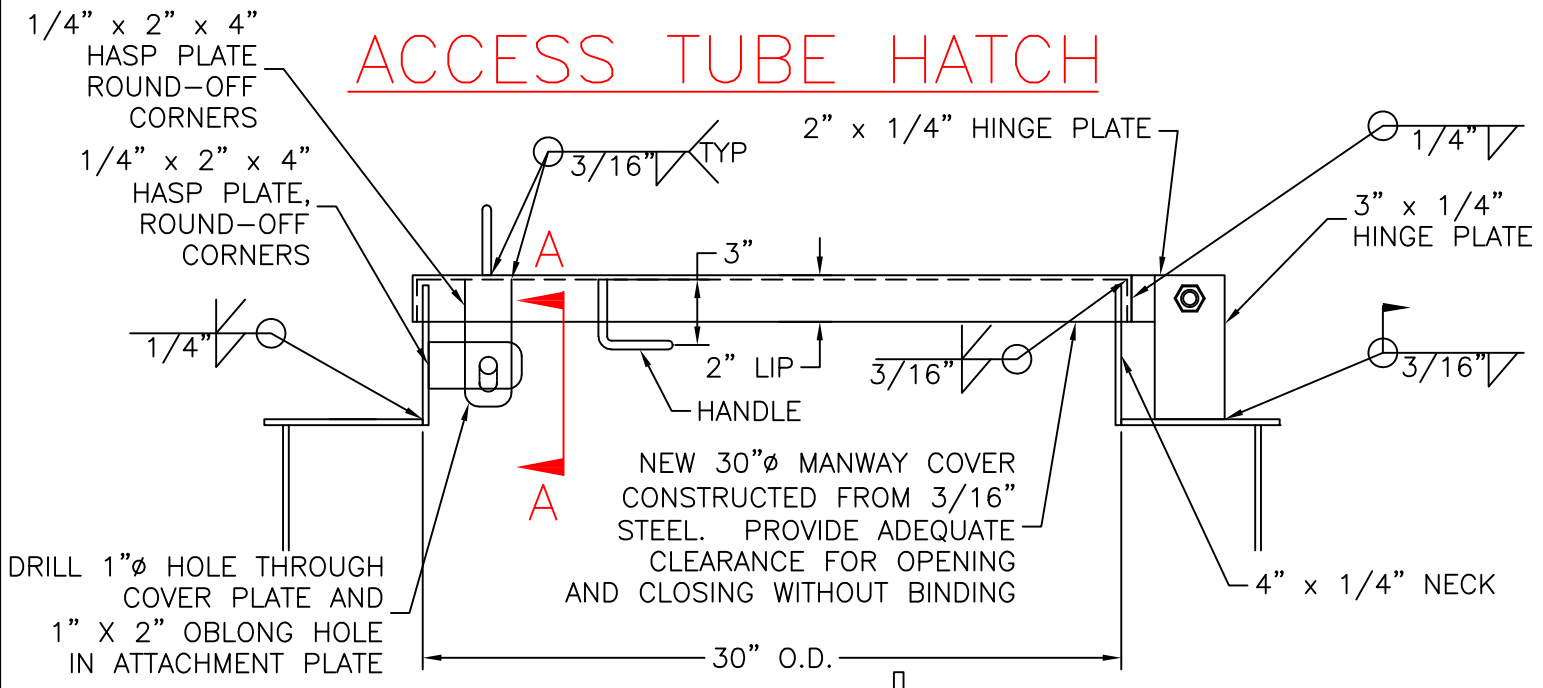
Checked By: JVR DWG: 01

TYP $1/4"$ $3/4"$ ϕ x 3" x 16"
HAND HOLD, LOCATE
ON LADDER SIDE

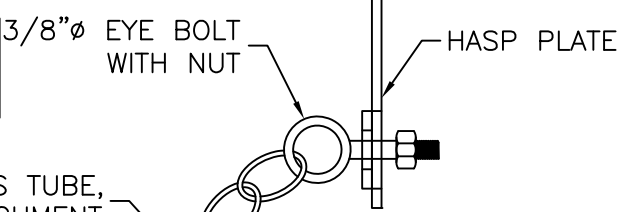


SECURE HINGES WITH $3/4"$ STAINLESS STEEL BOLTS AND DOUBLE NUT TO PREVENT LOOSENING. PROVIDE A PVC OR PLASTIC WASHER BETWEEN HINGES TO PREVENT PAINT DAMAGE BY RUBBING. TENSION ON BOLT SHALL ALLOW EASY MOVEMENT OF COVER

ACCESS TUBE HATCH



NOTE:
LOCATION OF THE MANWAY TO BE
DETERMINED BY THE ENGINEER.

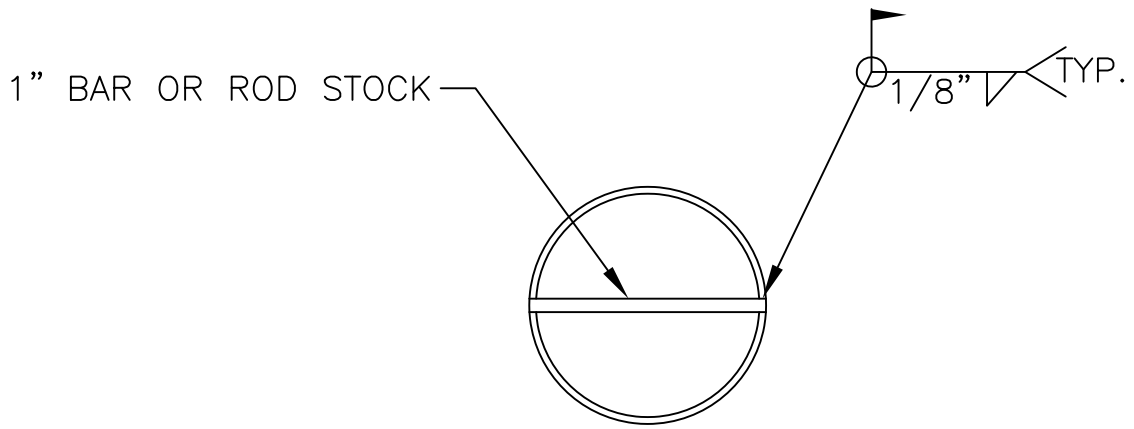


CHAIN WELDED TO ACCESS TUBE,
LEAVE SLACK FOR EASY ATTACHMENT

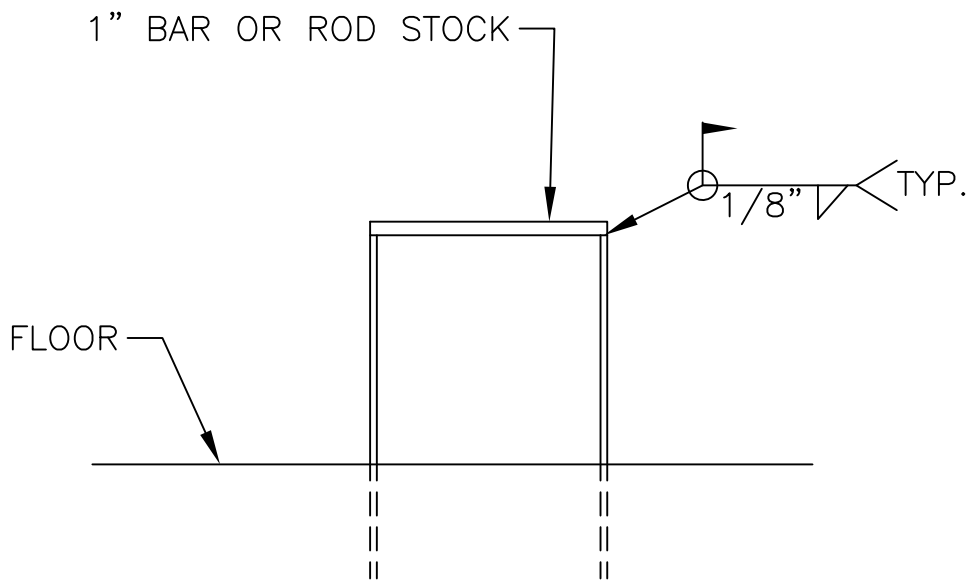
SECTION A-A

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Medina County, OH 500,000 F.C.	
30" Access Tube Roof Hatch	
Drawn By: TMF	Date: 11/01/22
Checked By: JVR	DWG: 02




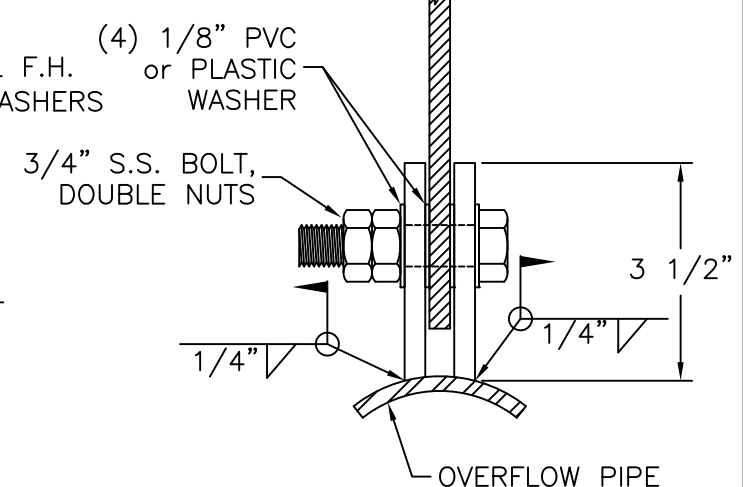
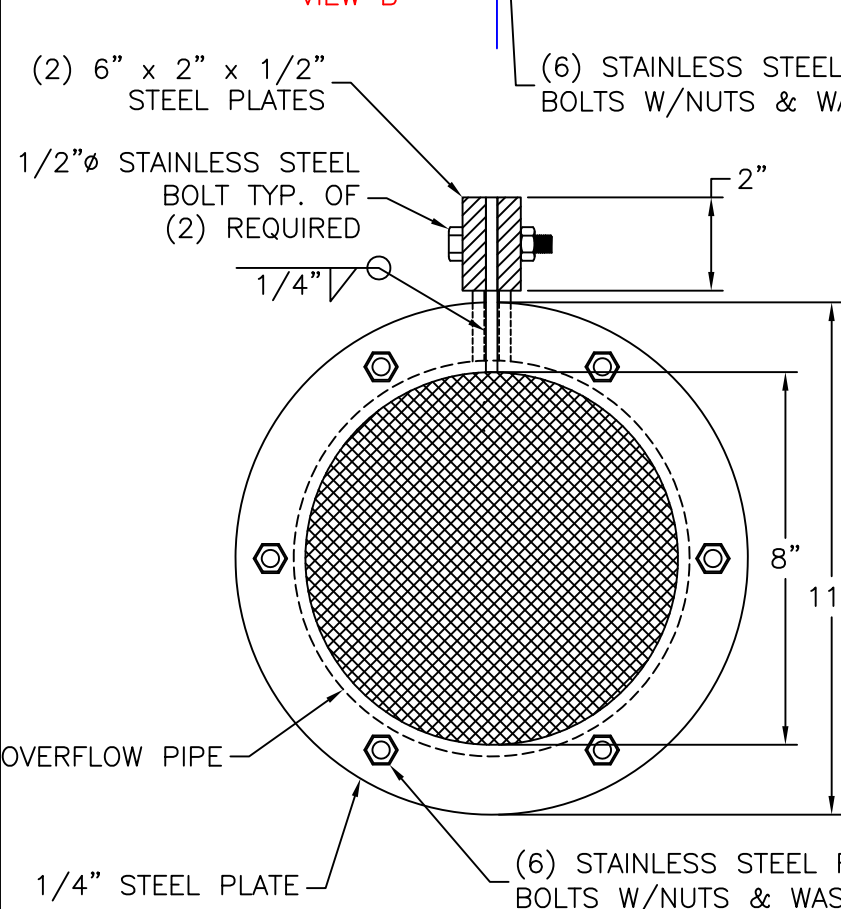
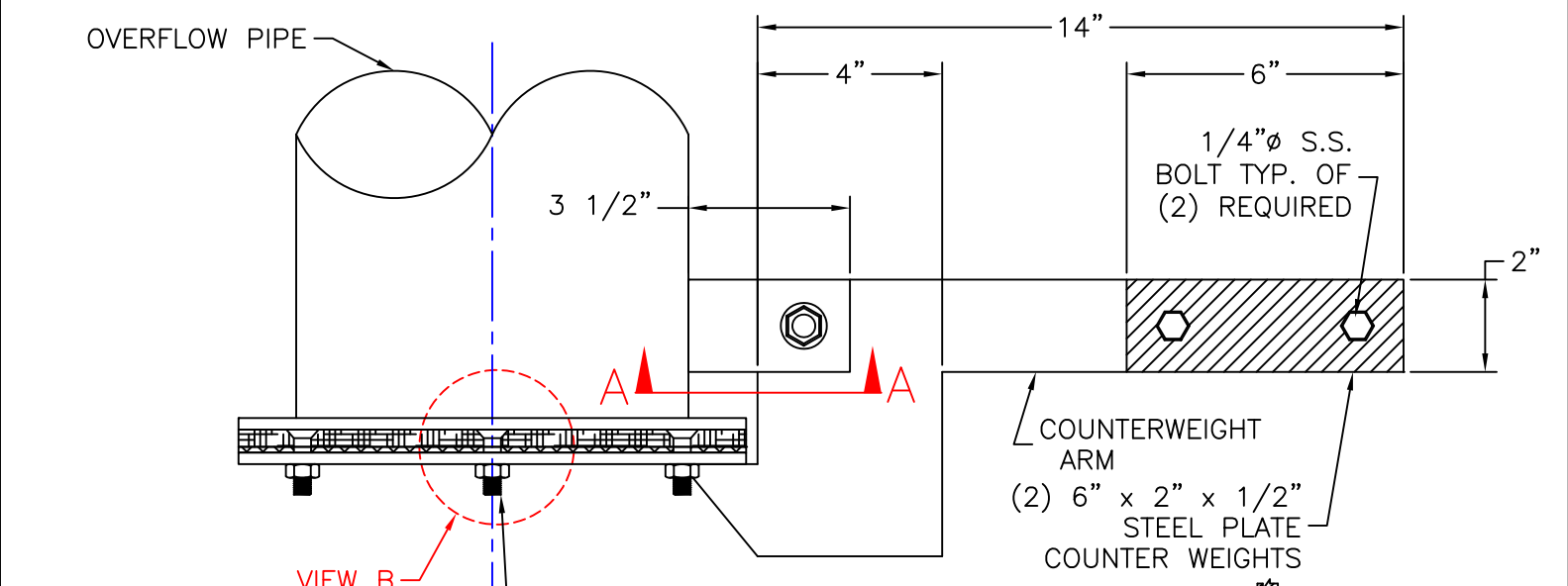
PLAN VIEW



SIDE VIEW

Note: Drawing not to scale.

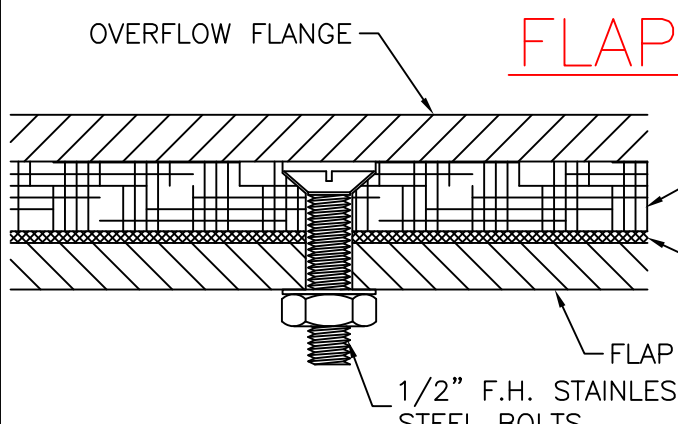
	
Medina County, OH 500,000 F.C.	
Fill/Draw Pipe Deflector Bar	
Drawn By: TMF	Date: 11/01/22
Checked By: JVR	DWG: 03



SECTION A-A



ISO VIEW



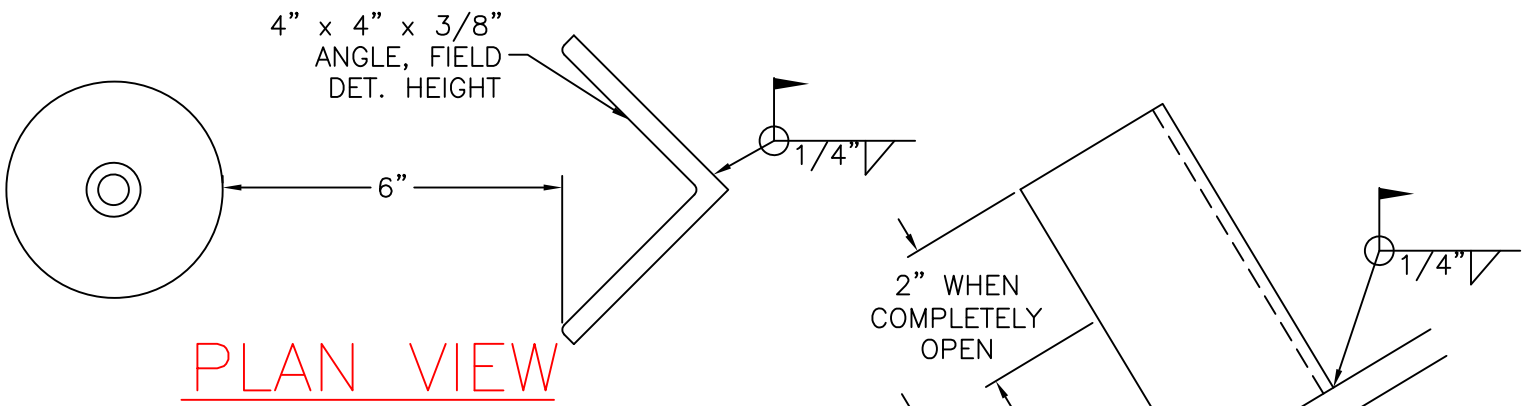
VIEW B

FLAP GATE

NOTE:
 CONTRACTOR TO VERIFY
 OVERFLOW PIPE SIZE IS
 8"Ø PRIOR TO CONSTRUCTION

Note: Drawing not to scale.

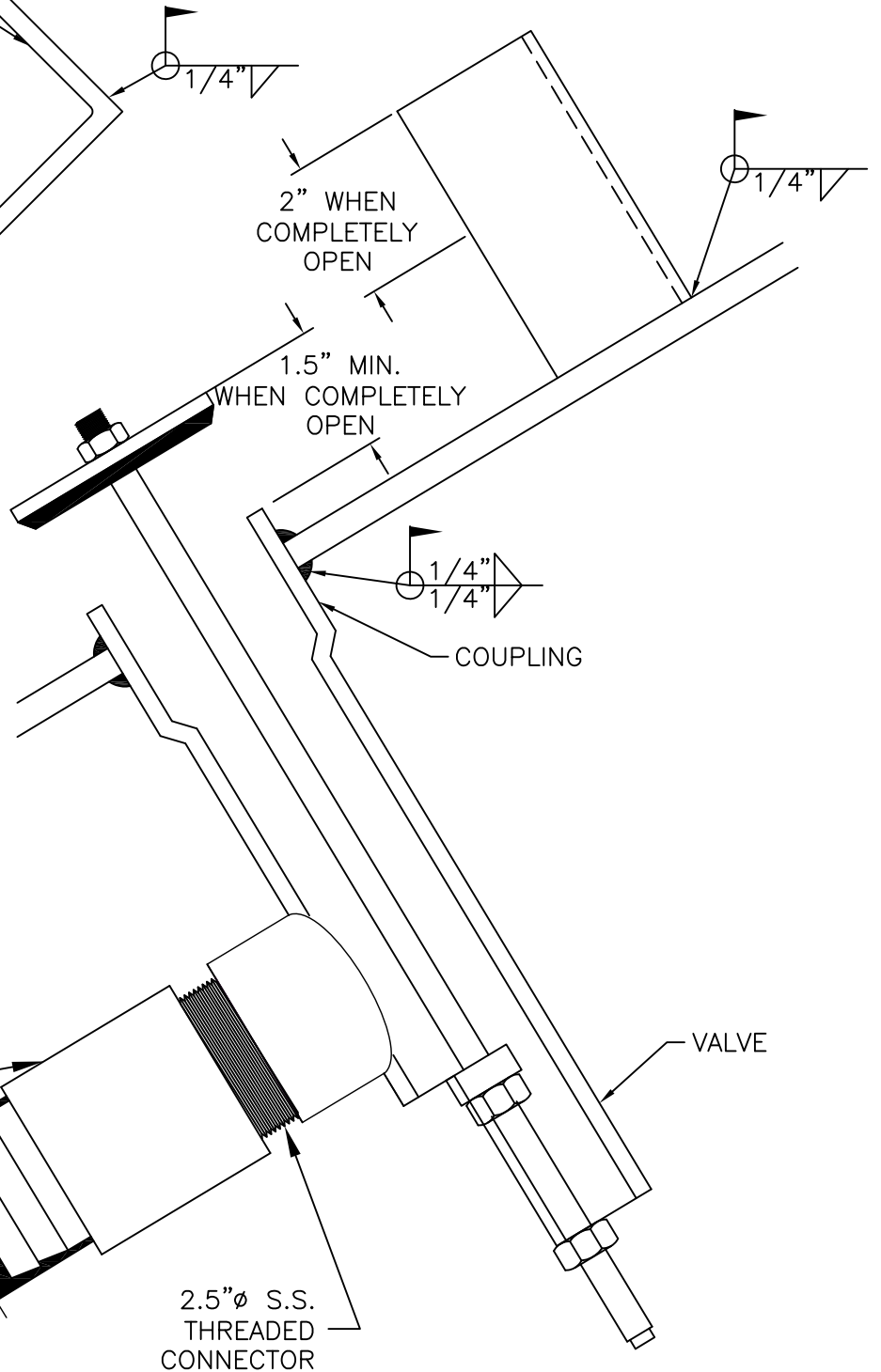
Drawn By: TMF	Date: 11/01/22
Checked By: JVR	DWG: 04



PLAN VIEW

NOTES:

1. THE THREADED FEMALE COUPLING IS TO BE 2 1/2" LONG SCH. 80, EXTEND 3/8" INTO THE BOWL.
2. INSTALL AS CLOSE TO THE ACCESS TUBE AS POSSIBLE.
3. THREADED CONNECTIONS ARE TO BE SEALED WITH PIPE JOINT COMPOUND (OATEY GREAT WHITE OR APPROVED EQUAL).
4. VALVE AND PIPING IS NOT TO INTERFERE WITH LADDER ACCESSIBILITY.
5. VALVE TO BE EQUIPPED WITH A HANDLE.



2.5"Ø S.S. BARBED FITTING TYP. OF (2)

2.5"Ø S.S. THREADED CONNECTOR

2.5"Ø HOSE, FIELD DETERMINE LENGTH REQ'D, INSTALL 22° OR 30° THREADED PIPE SECTION AS NEEDED TO ENSURE THE HOSE DOESN'T KINK

2.5"Ø SCH. 40 THREADED DRAIN PIPE FIELD DETERMINE LENGTH REQ'D

EXISTING OVERFLOW PIPE, CUT HOLE TO ACCEPT MUD VALVE DRAIN PIPE

Note: Drawing not to scale.



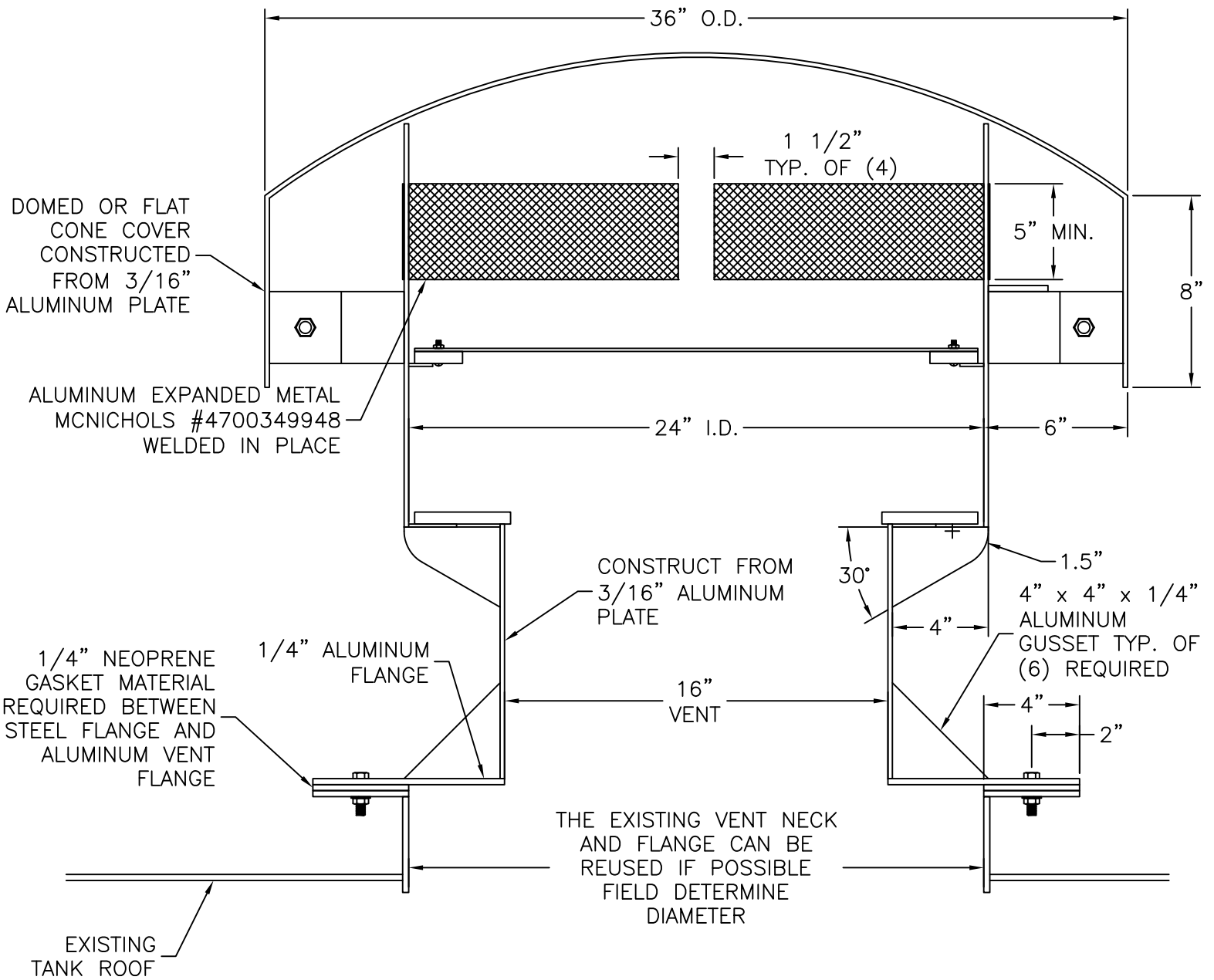
Medina County, OH 500,000 F.C.

Mud Valve

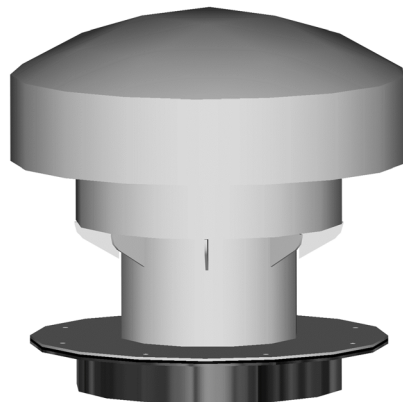
Drawn By: TMF Date: 11/01/22

Checked By: JVR DWG: 05

MUD VALVE



FROST FREE ROOF VENT on EXISTING PAINTER'S HATCH



ISO VIEW

Note: Drawing not to scale.

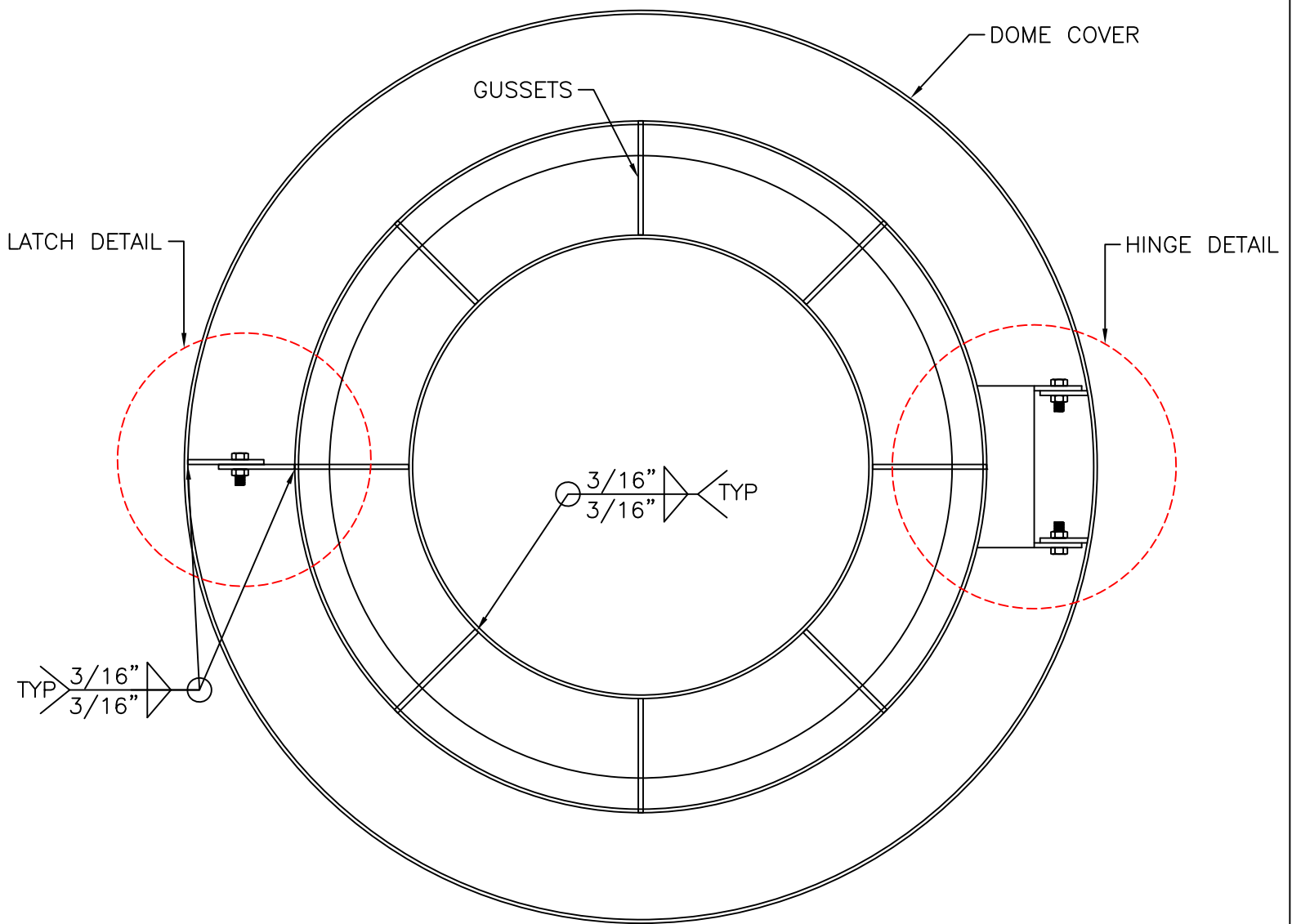


Medina County, OH 500,000 F.C.

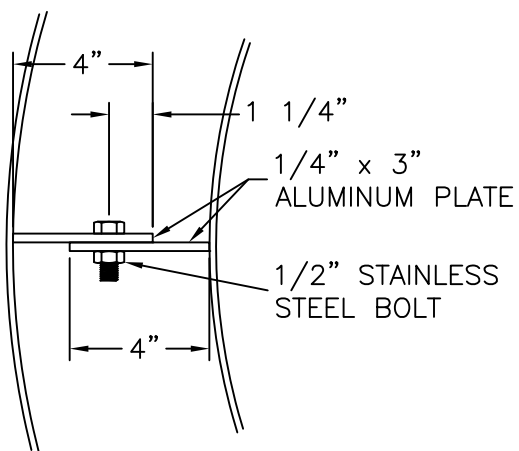
16" Pressure Vacuum Roof Vent

Drawn By: TMF Date: 11/01/22

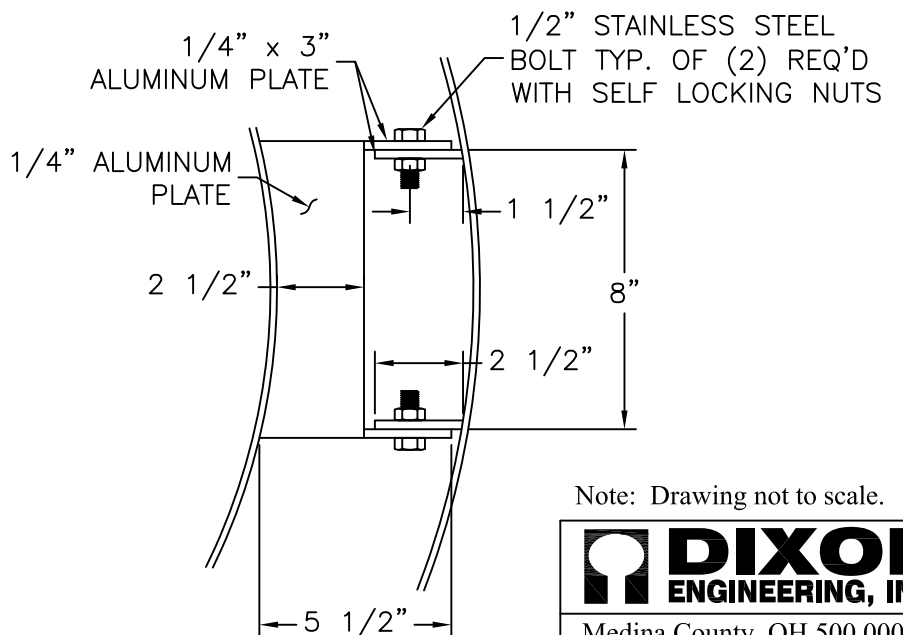
Checked By: JVR DWG: 06a



PLAN VIEW



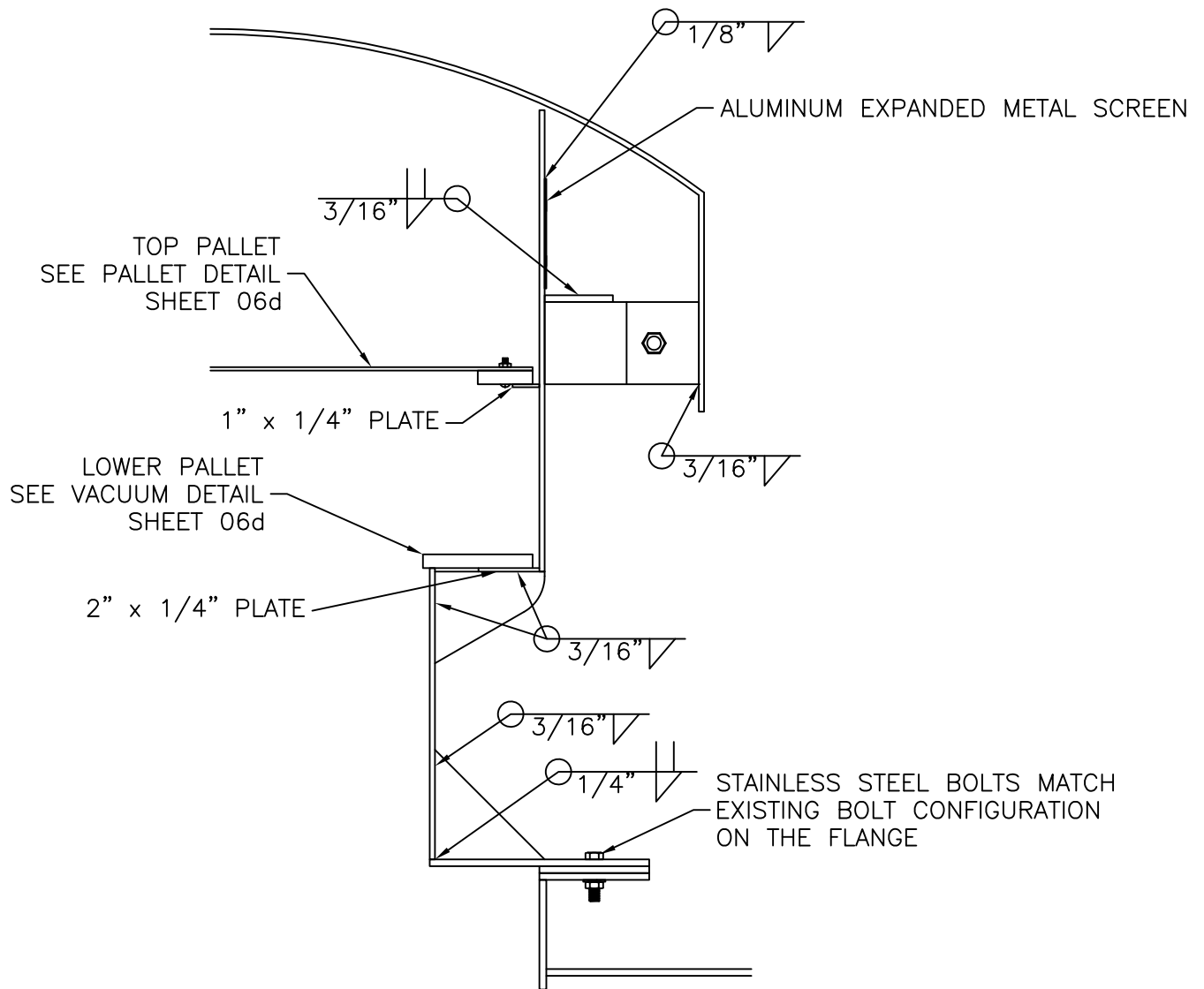
LATCH DETAIL



HINGE DETAIL


Note: Drawing not to scale.

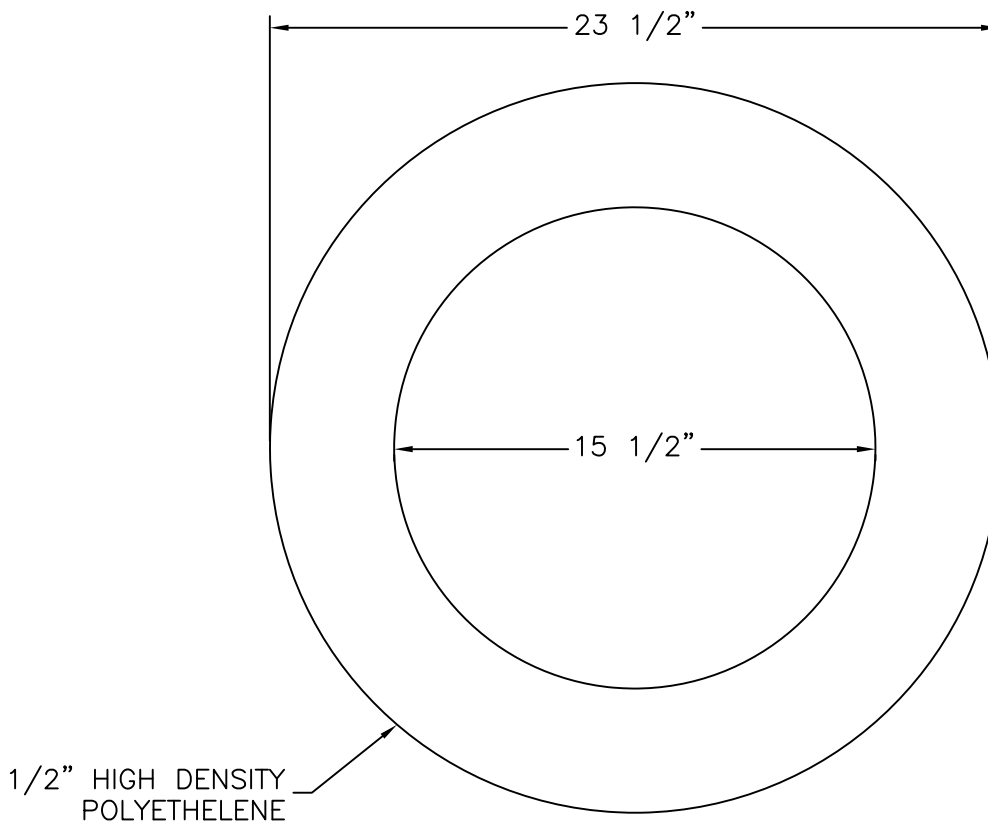
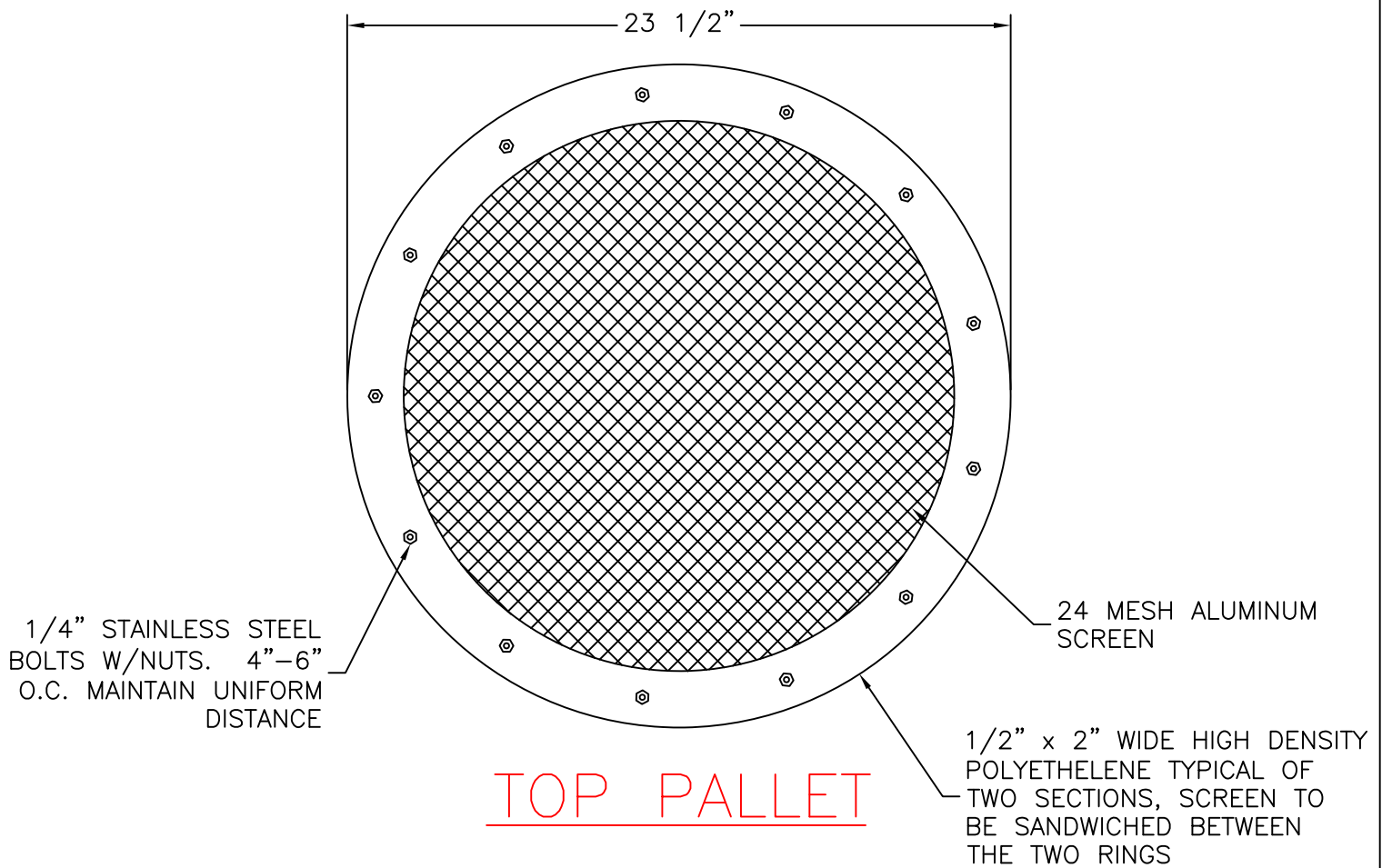
DIXON ENGINEERING, INC.	
Medina County, OH 500,000 F.C.	
16" Pressure Vacuum Roof Vent	
Drawn By: TMF	Date: 11/01/22
Checked By: JVR	DWG: 06b



WELDING DETAIL

Note: Drawing not to scale.

	
Medina County, OH 500,000 F.C.	
16" Pressure Vacuum Roof Vent	
Drawn By: TMF	Date: 11/01/22
Checked By: JVR	DWG: 06c



Note: Drawing not to scale.

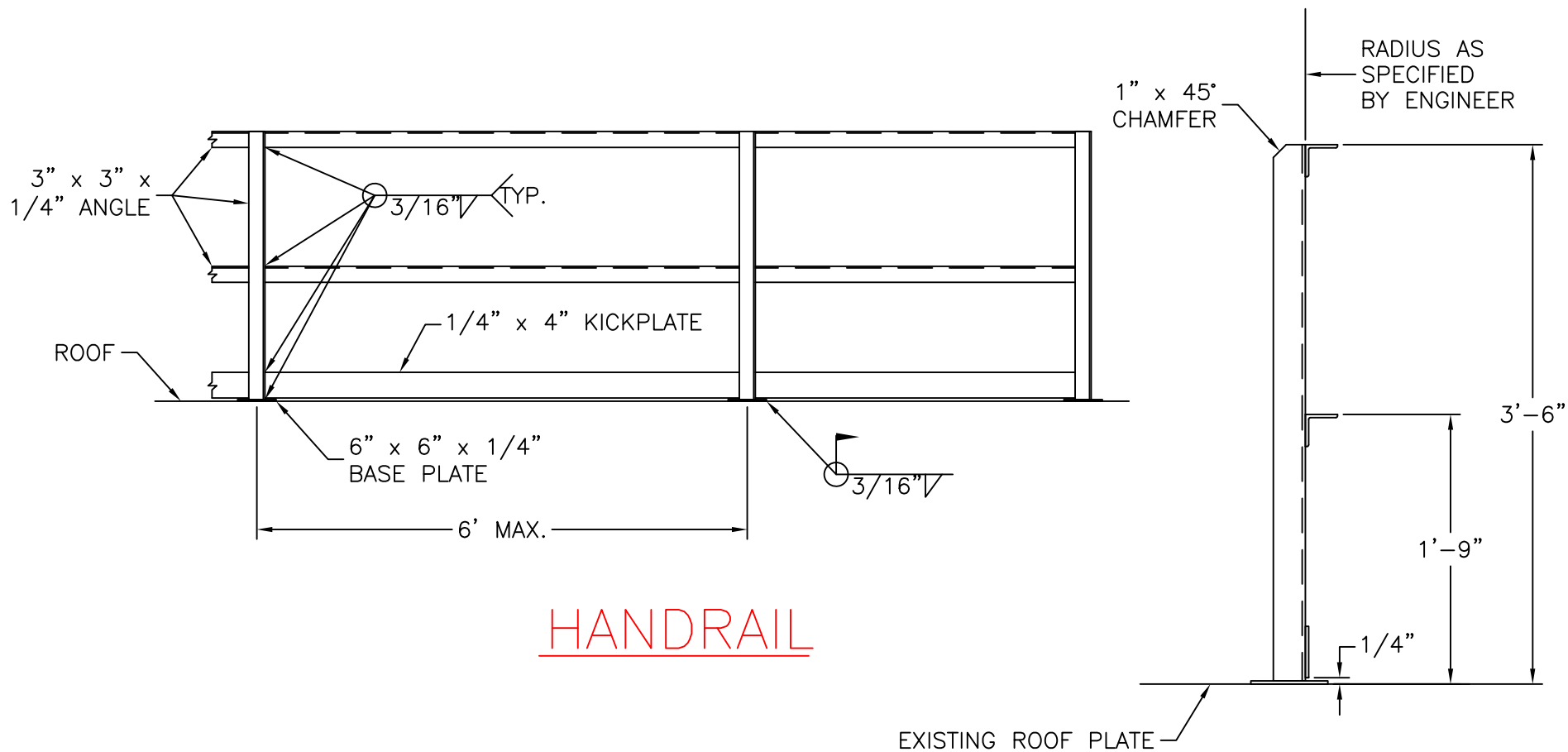


Medina County, OH 500,000 F.C.

16" Pressure Vacuum Roof Vent

Drawn By: TMF Date: 11/01/22

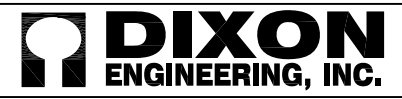
Checked By: JVR DWG: 06d



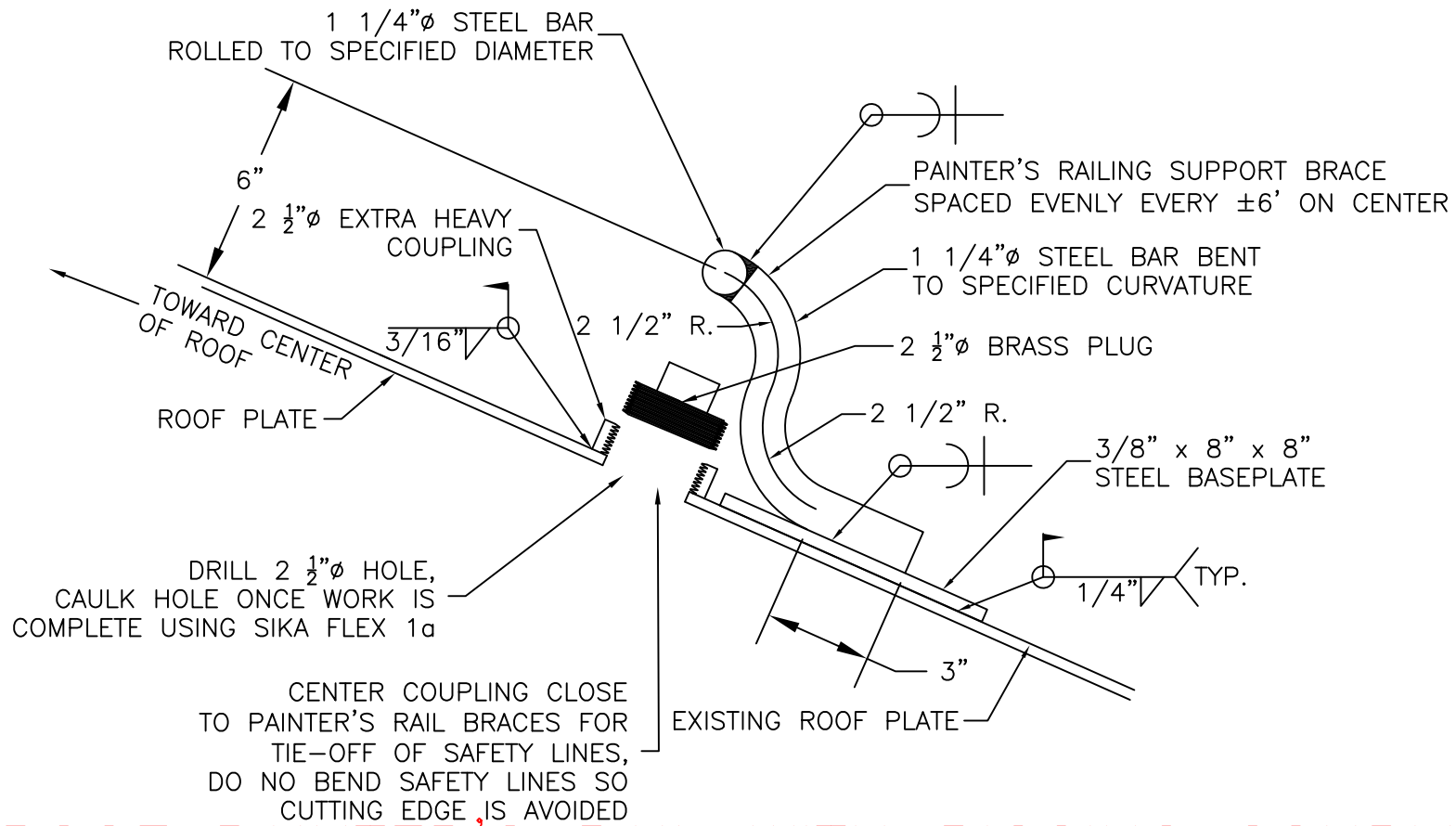
HANDRAIL

- NOTES:**
- HANDRAIL AND POST ARE TO BE CONSTRUCTED OF 3" x 3" x 1/4" STRUCTURAL STEEL ANGLE. POST BASE PLATES SHALL BE 6" x 6" x 1/4" STEEL PLATE. MIDRAIL SHALL BE 3" x 3" x 1/4" STRUCTURAL STEEL ANGLE. ALL WELDS SHALL BE 3/16" CONTINUOUS FILLET WELDS; ALL AROUND.
 - SPACING BETWEEN MOUNTING PADS SHALL NOT EXCEED 6'. IT MAY BE NECESSARY TO USE MORE THAN THE NUMBER OF PADS SHOWN.

Note: Drawing not to scale.



Medina County, OH 500,000 F.C.	
Roof Handrail	
Drawn By: TMF	Date: 11/01/22
Checked By: JVR	DWG: 07a



ROOF PAINTER'S RAIL WITH RIGGING COUPLINGS

NOTE:

1. PROVIDE COUPLING AT PAINTER'S RAIL BRACES (ONE AT EVERY OTHER BRACE).
2. ALL WELDED CONNECTION POINTS FOR THE 1 1/4" ROLLED STEEL BAR MUST BE COMPLETED AT A PAINTER'S RAIL BRACE.
3. THREADED CONNECTIONS ARE TO BE SEALED WITH PIPE JOINT COMPOUND (OATEY GREAT WHITE OR APPROVED EQUAL).



ISO VIEW

Note: Drawing not to scale.

DIXON
ENGINEERING, INC.

Medina County, OH 500,000 F.C.

Painter's Railing

Drawn By: TMF | Date: 11/01/22

Checked By: JVR | DWG: 07b

SECTION 09 97 13 **STEEL COATING**

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Painting of steel structures.
- B. Interior cleaning and disinfection.

1.02 REFERENCES

- A. AWWA Standards:
 - 1. D102 – 17 Painting Steel Water Storage Tanks.
 - 2. C652 – Disinfection of Water Storage Facilities.
 - 3. C655 – Field Dechlorination.
- B. NSF/ANSI
 - 1. NSF/ANSI 60 and 600.

1.03 WORK INCLUDED

- A. Exterior: Apply a four (4) coat zinc epoxy urethane fluoropolymer system. The coating is to be a two-tone system.
- B. Wet Interior: Apply a three (3) coat zinc epoxy system, apply a polyurethane caulk to the roof lap seams. The cathodic protection system is to be removed, and reinstalled by the owner's vendor, coordination and payment is the contractor's responsibility.
- C. Dry Interior: Apply a three (3) coat epoxy in the access tube, and a spot two (2) coat epoxy system to the rest of the prepared surfaces.

1.04 EXISTING CONDITIONS

- A. Exterior: Unknown system presumed to be the original system applied in 1992.
- B. Wet Interior: Presumed to be an epoxy system applied in 1992.
- C. Dry Interior: Presumed to be an epoxy system applied in 1992. The bottom of the column (below the condensate platform) is covered with insulation.

1.05 OMISSIONS or INCIDENTAL ITEMS

- A. It is the intent of these specifications to coat the structure for the purpose of corrosion protection on wet interior surfaces. It is the intent to coat the exterior for corrosion protection and aesthetics.
- B. Any small or incidental items not specifically detailed in the schedule, but obviously a part of the work are included in the work at no additional cost to the Owner.

- C. Engineer, as interpreter of the specifications, will determine if disputed items fall under this category. Prevailing custom and trade practices will be considered in this determination.

1.06 PAINTER QUALIFICATIONS

- A. Contractor shall complete all coating and surface preparation.
- B. Painter shall be specialized in industrial or heavy commercial painting.
- C. ALL CONTRACTORS SHALL BE PREQUALIFIED with Dixon Engineering for projects of this size and complexity.

1.07 SUBMITTALS

- A. Submit the following with your annual prequalification:
 - 1. Occupational Safety and Health Programs and certification that all site personnel have been trained as required by law.
- B. Submit the following ten (10) days prior to the preconstruction meeting:
 - 1. Provide for employees one (1) copy of all data sheets at the job site for employee access.
 - 2. Provide an electronic copy to the Engineer.
 - 3. No work may commence without the complete filing. All SDS are to conform to requirements of SARA (EPCRA) Right-to-Know Act.
 - 4. Safety Data Sheets (SDS) and Product Data Sheets:
 - a. Furnish from all suppliers Safety Data Sheets and product data sheets for all applicable materials including but not limited to, coatings, thinners, additives, cleaners, caulking, degreasers, chlorine, abrasives, abrasive additives, and pretreatments.
 - 5. Ventilation Design Plan. Include airflow calculations, Dust Collector size, fan size, and number of fans.
 - 6. Dehumidification/Heat Design Plan. Include airflow calculations, equipment size, number of units used, connection details, and power source.
 - 7. Fall Prevention Plan and Site Specific Fall Hazard Evaluation:
 - a. Site specific plan to contain a description and/or generic drawing of the existing structure and appurtenances of this structure and reflect safety changes specified for this project.
 - b. Certifications for all spiders, scaffolding, stages, etc. to be used on the project. All certifications to be current, less than one (1) year old.
- C. Submit the following at the preconstruction meeting:
 - 1. Designated OSHA Competent Person and qualifications, if not previously submitted.
- D. Submit the following within two (2) weeks of project completion with final pay request:

1. Waste manifest, waste hauler and disposal facility. Required only if waste is determined to be hazardous.
2. Waivers of lien.
3. Copies of any formal worker safety or environmental citations received on the project.

1.08 OWNER RESPONSIBILITY

- A. Drain the structure with a seven (7) day notice after Contractor meets all precedent conditions of the contract.
- B. Fill the tank and draw samples and test after chlorination; responsibility of good results remains with the Contractor. Poor test results could result in added costs to Contractor, including re-chlorination, cost of water, plus possible liquidated damages.

1.09 DELIVERY and STORAGE of MATERIAL

- A. Due to supply chain issues, the Owner reserves the right to require that the Contractor is to have all of the required coating for the project delivered to the site or to the Owner's storage facility prior to the tank being taken out-of-service and commencement of the project.
- B. Submit manufacturer's invoice, with or without paint cost, to the Engineer for review. This submittal will be used to identify the quantity of paint recommended by the manufacturer for a job of this size and design and will be used to check the quantity actually delivered to the project.
- C. Cover bulk materials subject to deterioration because of dampness, weather, or contamination, and protect while in storage.
- D. Maintain materials in original, sealed containers, unopened and with labels plainly indicating the manufacturer's name, brand, type, grade of material, and batch numbers.
- E. Remove from the work site containers that are broken, opened, water marked, and/or contain caked, lumpy, or otherwise damaged materials. They are unacceptable.
- F. Store the material in a climate controlled designated area where the temperature will not exceed the manufacturer's storage recommendations. Heat the storage area to the manufacturer's recommended minimum mixing temperature.
- G. Keep equipment stored outdoors from contact with the ground, away from areas subject to flooding, and covered with weatherproof plastic sheeting or tarpaulins.
- H. Store all painting materials in a location outside the structure.
- I. Do not store or have on-site unapproved material, material from different manufacturers, or materials from different projects.

1.10 ACCESS and RPR SAFETY

- A. Provide access to all portions of the project where work is being completed. Access must be close enough and secure enough to allow RPR to use equipment without extensions.
- B. Provide personnel to assist with access and to ensure Contractor's access equipment is safely used.
- C. Provide separate fall protection devices and safety lines for the Owner and observers. Limit fall to 5 ft. vertically.
- D. New safety tie-off points have been added as part of this project, see Section 05 00 00 Metal Repairs. Do not rig equipment from these points. Provide separate fall protection cables and safety grabs for each tie-off point. The Contractor can install additional rigging couplings for staging. Coupling design for the additional couplings is to match those designed for safety lines.
 - 1. Tie-off points are located on the roof for wet interior safety.
- E. These specifications require the Contractor to supply a separate fall protection cable and safety grab for each tie-off point for the observer's use. The Contractor is encouraged to provide a separate cable and tie-off for each worker. The cables may be connected to the same tie-off point as the RPR, but a separate cable and safety grab are required for each user.

1.11 OBSERVATION and TESTING

- A. Prior to the scheduled observation, remove all dust, spent abrasive, and foreign material from the surface to be coated.
- B. The Contractor is to furnish an instrument for measuring the wet film thickness, and also a calibrated instrument for measuring dry film thickness of each field coat of paint. The dry film thickness testing gauge shall be the magnetic type as manufactured by Elcometer Co., or the Nordson Gauge Co.; spring loaded model with two percent (2%) accuracy margin over a range of one-to-twenty-one (1-100) mils or equal.
- C. The Engineer will furnish and operate observation equipment for their own use as quality assurance.
- D. Certify to the Owner that the specified paint has been applied at the paint manufacturer's recommended coverage, and to the specified thickness required. Also, certify that the paint has been applied in accordance with this contract.
- E. Take all necessary steps, including dry striping by brush or roller, to ensure a holiday-free coating system.
- F. The wet interior coatings are subject to low or high voltage holiday testing.
- G. The Owner and Engineer reserve the right to perform destructive testing under conditions deemed necessary. Testing may include, but is not limited to, the Tooke

thickness test and adhesion testing. Any damage caused by these tests will be corrected to specifications at the Contractor's expense.

1.12 CLIMATIC CONDITIONS

- A. Do not apply paint when the temperature, as measured in the shade, is below the manufacturer's required ambient and surface temperatures.
- B. Do not apply paint to wet or damp surfaces, or during rain, snow, or fog.
- C. Do not apply paint when it is expected the relative humidity will exceed 85%, or the surface temperature is less than 5° above dew point, or the air temperature will drop below the manufacturer's requirements for proper cure. Anticipate dew or moisture condensation, and if such conditions are prevalent, delay painting until the observer is satisfied the surfaces are dry.

1.13 APPLICATION

- A. Complete all painting and surface preparation in strict accordance with these specifications, approved paint manufacturer's specifications, and good painting practices per SSPC.
- B. Apply each coating at the rate and in the manner specified by the manufacturer. Check the wet film thickness every 200 sq. ft. to ensure each coat applied meets the dry film thickness range requirements.
- C. Allow sufficient time for each coat of paint to dry and cure. Allow a minimum of twenty-four (24) hours between coats, unless product requirements have a maximum time less than 24 hours.
- D. Apply exterior coating by brush and roller only with the exception of work performed while the containment is deployed. Prime coat can be applied using spray application when the containment is in operation, all other coats are to be brush and rolled. Even with prior approval, responsibility for damage to any property caused by spray application still remains with the Contractor.
- E. Coatings shall be applied using methods to eliminate roller or spray marks in the finished product on the exterior.
- F. Painting may be delayed because of poor coverage or the potential damage from overspray and/or dry spray. In all cases, responsibility for damages rests with the Contractor.
- G. The Contractor is responsible for the appearance of the finished project and is warned to prevent contact with any freshly applied coating. Removal of rigging shall be completed so not to mar or damage the coating.
- H. Stripe the wet interior prior to the application of the final coat.
- I. Additional coats required for coverage or to eliminate roller marks, spray marks and to repair dry spray and overspray are the responsibility of the Contractor at no additional cost to the Owner.

- J. Use of pole extension on spray guns is prohibited for all paint application.
- K. Mixing of partial kits is not permitted. All partial cans of coating must be removed from the site.
- L. Mixing blades to be clean. The Engineer has the right to reject mixing blades based on cleanliness or paint build-up. Do not use the same mixing blade for different coatings (i.e. epoxy and urethane coatings).

1.14 PRESSURE RELIEF VALVES

- A. Furnish two (2) pressure relief valves.
- B. The valves shall be Aquatrol series 69F1 or approved equal.
- C. Valves will need to be fitted with hydrant thread adaptor. Valves to be adjustable with range a minimum of 30 to 90 psi. Set valve at 60 psi.
- D. Supply three (3) days prior to draining of the structure.
- E. After work to the structure and successful disinfection have been completed, the Owner will return the valves to the possession of the Contractor.
- F. Cost shall be incidental to project cost.

PART 2 – PRODUCTS

2.01 COLOR

- A. Exterior Coatings:
 - 1. Supply the Engineer with a color chart to allow the Owner ample time for the exterior topcoat color selection.
 - 2. Factory tint the intermediate coat(s) for all areas of the structure if similar to the finish coat. Tinting shall be sufficient to allow visibility of the dissimilar color from 1 ft., and from 100 ft.
 - 3. The Owner shall select or verify the topcoat color at the preconstruction meeting.
 - a. All bids shall be based on a two-toned system with the pillar to match Tnemec series “Dolphin Blue BC52” and the bowl, sidewall and roof to match Tnemec series “Silver Fox BC 72” color.
- B. Wet Interior and Dry Interior Coatings:
 - 1. The color is to be a different tint between coats. Tinting to be performed in the factory. The final color is to be white. The topcoat color is to be verified at the preconstruction meeting.

2.02 SUBSTITUTIONS

- A. All coatings specified and approved herein have met or exceeded a specified list of ASTM standards. The materials specified are the standard to which all others shall be compared.

- B. The purpose is to establish a standard of design and quality, and not to limit competition.
- C. Manufacturers wishing to have their products approved are to have their coatings tested using the same test methods.
- D. Approval by ANSI/NSF Standard 600 is also a requirement for potable water contact coatings.
- E. The selection of coatings also has taken into consideration the manufacturer's current and past performance on availability, stocking, and shipping capabilities, ability to resolve disputes, and any applicable warranties.

2.03 DEHUMIDIFICATION and HEATING – WET INTERIOR

- A. Supply dehumidification/heating units capable of maintaining dew point temperature lower than 15° below surface temperature during blasting and lower than 5° during coating application and cure, and steel temperature maintained above the manufacturer's printed requirements.
- B. Supply a dehumidifier designed with a solid desiccant having a single rotary desiccant bed capable of continuous operation, with fully automatic operation. Do not use liquid desiccant, granular, or loose lithium chloride drying systems. Refrigerant systems may be used in conjunction with desiccant units.
- C. Plumbing, noise control, insulation, venting, and all incidental items needed to provide proper ambient conditions shall be included as one package.
- D. Supply and maintain a power source for the dehumidifier and heater, unless otherwise specified.
- E. Use a minimum 2,000 CFM dehumidification capacity for all wet interior work.

2.04 DUST COLLECTORS – AIR FILTRATION UNITS

- A. Furnish and use a dust collector during all blasting work.
- B. Units to be equal in filtration capacity to Eagle Industries dust collectors. Other units may be used, but their substitution will be evaluated on efficiency at 0.5 micron size and airflow movement.
- C. Use 30,000 CFM minimum for wet interior work.
- D. Substitution of steel grit blasting may decrease the requirements above. New requirements will be defined by the Engineer based on the efficiency of the Contractor's equipment.
- E. Furnish HEPA filters for dust collection.
- F. Number of dust collectors shall be sufficient to supply a 50 ft./minute downward draft at most areas. An average may be considered. Determination of actual containment plan will be the deciding factor. Calculations of airflow shall be included in the containment submittal.
- G. Use only new filters or filters certified clean.

2.05 GROUND TARPS

- A. Use impermeable ground tarps, 20 mils thick.
- B. Use ground tarps able to withstand the anticipated construction traffic without tearing or separating.

2.06 EQUIPMENT COVERING

- A. Use material that is 8 – 10 mils thick, and 100% impermeable to all vulnerable equipment.
- B. Use material resistant to tear and/or rip by mechanical action from abrasive blasting during blasting operations.
- C. Make coverings airtight by use of duct tape at the openings, or other suitable measures.
- D. Meet with representative of equipment Owner to verify covering will not damage equipment. Damage is the Contractor's responsibility. This includes not only the Owner's equipment, but also telecommunication antennas, cables, buildings, controls, etc.

2.07 AIR DRYER for COMPRESSOR

- A. Use air dryers sufficient to remove 98% of the moisture from the compressed air. Size the dryers on total cfm using manufacturer supplied charts. Upon request, supply charts to Engineer for verification.
- B. If the dryer fan is not operable, cease all blasting until the dryer is replaced or repaired.
- C. Supply air dryer with an air draw-off valve to check air for dryness, oil contamination, and cleanliness on the outlet side of the air dryer.
- D. For cleaning operations, draw clean air from the outlet side of the air dryer.

PART 3 – EXECUTION

3.01 DISINFECTION

- A. Disinfect the completely painted structure in accordance with AWWA Standard C652 Chlorination Method No. 3.
- B. Furnish the material and labor necessary to disinfect the structure in the required manner. Any chlorine products used are to be NSF 60 approved. Assist the Owner during filling and ensure that any manways are free of leaks after filling. Contractor is to adjust the manways and replace gaskets as needed to ensure there are no leaks.
- C. Do not allow water to enter the distribution system until satisfactory bacteriological test results are received.

- D. Owner is responsible to collect two consecutive bacteriological samples, 24 hours apart, following disinfection. Satisfactory results are required before the tank can be returned to service.
- E. Water drained to waste may not contain any substances in concentrations that can adversely affect the natural environment. No total residual chlorine may be measured in water discharged to surface water. It is recommended that the water be dechlorinated per AWWA C655F Field Dechlorination.
- F. Pay all additional expenses if it is necessary to repeat the testing and disinfection procedure as a result of defective work.

3.02 PROTECTION of NON-WORK AREAS

- A. Protect all non-blasted/painted surfaces prior to all abrasive blast cleaning/painting.
- B. Thoroughly cover the fill/drain pipe, overflow pipe, and all other openings. Do not permit abrasive or paint chips to enter into the piping or distribution system. Use watertight seals on the pipes.
- C. Protect and seal all controls and electrical components (even if they are not in the immediate work area) that are in danger from the project. Coordinate with the Owner so all controls are shut down and/or vented if necessary.

3.03 DEHUMIDIFICATION/HEATING

- A. Control the environment with dehumidification equipment twenty-four (24) hours a day during blast cleaning, coating operations, and 48 hours after the topcoat (including holiday touch-ups and repairs are performed) as a minimum to maintain ambient conditions until cure completion.
- B. Supply sufficient dry air to assure the air adjacent to surfaces to be abrasive blast cleaned or coated does not exceed minimum required humidity at any time during the blasting, coating, or curing cycle.
- C. Monitor and record ambient conditions twenty-four (24) hours a day throughout abrasive blast cleaning and painting work (use Polygon Exact Aire, DRYCO ClimaTrack, DH Tech HOB0U30 data logger, or approved equal). Monitor to be capable of being programmed with condition parameters and of alerting Contractor, Engineer and Owner via phone or e-mail of condition or equipment failures.
- D. Contractor to manually test interior ambient conditions three (3) times a day, or more often with rapid weather changes. Record daily readings. Adjust or add equipment as required to maintain steel temperatures, dew point, and humidity. (This is in addition to the monitor with recorder noted above).
- E. Surround the units with noise suppressant enclosures, unless units are sound attenuated or have noise suppressants. More extensive enclosure requirements are required in residential areas where the machines must run all night. Noise suppressant level needed will depend on the size of the dehumidification units, their

- efficiency, and their locations. Provide noise suppressant enclosures of sufficient height and thickness to lower noise to an acceptable level for neighbors. Also provide noise suppressant enclosures for generators.
- F. Auxiliary heaters may be necessary to maintain the surface temperature at a level acceptable to the coating manufacturer's application parameters. The auxiliary equipment must be approved for use by the manufacturer of the dehumidification equipment and shall meet the following requirements. Auxiliary ventilation equipment and/or dust collection equipment can affect the exchange rate.
 - 1. Heaters shall be installed in the process air supply duct between the dehumidifier and the work, as close to the work as possible. Air heaters are not acceptable as a substitute for dehumidification without approval.
 - 2. Use only electric or indirect gas fired auxiliary heaters. No direct fired space heaters will be allowed during blasting, coating, or curing phase.
 - G. Seal off the work, allowing air to escape at the bottom of the space away from the point where the dehumidified air is being introduced. Maintain a slight positive pressure in the work unless the dust from the blasting operation is hazardous.
 - H. Where necessary to filter the air escaping the space, design the filtration system to match the air volume of the dehumidification equipment in such a way that it will not interfere with the dehumidification equipment's capacity to control the space as described herein. Do not re-circulate the air from the work or from filtration equipment back through the dehumidifier when coating or solvent vapors are present. Outside air is to be used during those periods.
 - I. Securely attach duct work to the equipment and work to minimize air loss. Design hoses with sufficient capacity and minimal bends to reduce friction loss.
 - J. Dehumidification and its operating power source are incidental to the respective painting project (wet or dry interior).
 - K. Set-up and operate equipment twenty-four (24) hours (or earlier) prior to start of blasting.

3.04 DUST CONTAINMENT – INTERIOR

- A. Do everything within the Contractor's power to minimize dust as a nuisance.
- B. No visible dust release is allowed from roof openings and other access openings.
- C. Seal or close all openings prior to blasting (see ventilation requirements). Connect the air filtration unit directly to a manhole extension.
- D. Design the manhole extension to allow access of hoses through a side exit that is sealable after hoses are in-place. Install the air filtration unit directly to the end of the extension.
- E. Seal of the side exit will be tested by holding a smoke agent 6 in. outside the seal with the air filtration unit operating. If smoke is drawn to the seal area, additional sealing will be necessary.

- F. The Contractor may reverse this operation by connecting the air filtration unit to the roof manhole and sealing around the hose. Also seal the roof vent. A sealed semi-rigid structure also may be used where employees have access through a side door. 90% of the air draw must be from the tank proper.

3.05 VENTILATION REQUIREMENTS – WET INTERIOR

- A. Supply mechanical ventilation sufficient to change air in the tank six (6) times each hour during blast and coating operations.
- B. In calculating air exchange, the dust collector air capacity can be considered a part of the air being changed up to 50% of ventilation requirements.
- C. Use the manways with fans to move the required air.
- D. Ventilate wet interior areas a minimum of seven (7) days after completion of painting, or longer until the wet interior coating has fully cured. Maintain ventilation at the rate of two (2) complete air changes per hour. The Owner reserves the right to perform a MEK Solvent Double Rub Test per ASTM D 4752 to verify the cure of the coating film prior to returning the tank to service.
- E. Cost of ventilation is incidental to the project.
- F. Additional ventilation openings may have to be installed by the Contractor. Submit size of opening, stamped reinforcement details, and location(s) for approval by the Owner prior to cutting any opening. All costs associated with repairs by a certified welder are incidental to the project.
- G. Connect the dust collector through a manway to create negative pressure, and install fans as needed on the roof and sidewalls that blow inward. If all openings are not needed for ventilation, seal them. Zero release to the atmosphere will be permitted.

3.06 HAND WASH FACILITY

- A. Provide OSHA approved hand wash facility with running water. Hot water is not required.
- B. Stock facility with soap and towels and keep supply replenished.
- C. Test water and dispose of properly after job is completed.

3.07 GROUND COVER during WATER CLEANING

- A. Protect the ground from contamination. Tarp at least 10 ft. from the structure's base.
- B. Lap all ground tarps a minimum of 2 ft.

3.08 LIGHTING of WORKSPACE

- A. Provide durable lighting fixtures designed for the intended work environment for use during blasting, painting, and during all observations.
- B. Encase portable lamps in a non-conductive, shatterproof material. Use only heavily insulated cable with an abrasive resistant casing.

- C. Install all temporary electrical items in accordance with all local, state, and federal codes, including OSHA.
- D. Protect from paint overspray and damage from abrasive materials.
- E. Measure required illumination during surface preparation and coating application at the work surface. Supply 20 ft. candles minimum illumination during blasting and painting, and 30 ft. candles minimum prior to and during observation, per SSPC-Guide 12. Inspect the prepared surface at the higher illumination prior to calling for observation. All work must conform to specification requirements prior to the scheduled observation.
- F. Measure the illumination at the work surface in the plane of the work.

PART 4 – SPECIAL PROVISIONS

4.01 CATHODIC PROTECTION REMOVAL

- A. Remove existing cathodic protection anode system from the tank, including ropes and wires.
- B. Install new anode wires and mounting hardware as needed and replace all reference cells. Work is to be performed by existing Owner supplier (Corrpro) and must meet AWWA D104 requirements.
- C. Cost is incidental to wet interior repainting.

4.02 SCHEDULING

- A. Complete all welding and any other work that damages the coating before paint operations begin, including surface preparation. The exception is paint removal in the weld area.
- B. If Contractor wants a variance in this schedule, request the change and give reason in writing to the Owner. The project manager will reply with a written Field Order if change is approved. Engineer reserves the right to put further restrictions in Field Order. If Contractor objects to restrictions, he may revert to the original specifications.

4.03 GRASS RESTORATION

- A. The Contractor is to report any damaged ground at the construction site in writing prior to mobilization of equipment, otherwise all repairs to the damaged ground will be the responsibility of the Contractor.
- B. Refill all holes, ruts etc. with clean topsoil, and level area around the construction site to the original grade.
- C. Fill material to be clean soil, no gravel, rocks or construction debris is to be used as fill material without the Owner's consent.

- D. Bring soil to a friable condition by disking, harrowing, or otherwise loosening and mixing to a depth of 3 in. – 4 in. Thoroughly break all lumps and clods.
- E. Rake area to be seeded. Sow seed at a minimum rate of 220 lbs/acre. Use seed intended for the climate.
- F. Work to be completed to the Owner's satisfaction.
- G. Cost is incidental to the project.

SECTION 09 97 13.10

STEEL COATING SURFACE PREPARATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Spot/Full Field Abrasive Blast Cleaning.

1.02 REFERENCES

- A. AWWA Standards:
 - 1. D102-17 Painting Steel Water Storage Tanks.
- B. SSPC and NACE Standards:
 - 1. SP6/NACE No. 3 – Commercial Blast Cleaning.
 - 2. SP10/NACE No. 2 – Near-White Metal Blast Cleaning.
 - 3. VIS 1 (Visual standard for abrasive blasted metal).

1.03 WORK INCLUDED – SURFACE PREPARATION

- A. Exterior: Abrasive blast clean to a SSPC-SP6 commercial standard with containment.
- B. Wet Interior: Abrasive blast clean to a SSPC-SP10 near-white metal standard.
- C. Dry Interior: Abrasive blast clean the entire top of the top platform, the entire access tube, and spot failures throughout to a SSPC-SP6 commercial standard.
- D. Containment: For additional requirements see Section 09 97 13.11.01.

1.04 WASTE AND SOIL SAMPLING

- A. Sample spent abrasive waste from the project. Keep waste from separate sections of the structure segregated. Send to a NLLAP certified lab and test for TCLP for eight (8) metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver).
- B. The Owner reserves the right to collect samples and to send them to their selected lab. This will be determined at the preconstruction meeting.
- C. Pay all lab fees for eight (8) metals TCLP analysis on spent abrasive waste samples.

PART 2 – PRODUCTS

2.01 EXTERIOR CLEANER

- A. United 727 Weather-Zyme as manufactured by United Laboratories, 320 37th Ave., St. Charles, IL 60174 1-800-323-2594.

2.02 ABRASIVE – COAL SLAG – NON-LEAD SURFACES

- A. The coal slag shall be 20-40 grade, or 30-60 grade.

- B. The abrasive shall be free of moisture, water soluble contaminants, dust, and oil.
- C. The abrasive shall be stored and covered to prevent moisture contamination.
- D. All leaking or spilling bags shall be removed, and affected areas properly cleaned.
- E. All slag abrasive shall meet the requirements of SSPC-AB1 “Mineral and Slag Abrasive” June 1, 1991-Grade 3.
- F. The use of silica sand, flint sand, and glass beads is prohibited.
- G. All abrasive and grit material used, and all equipment supplied shall be subject to approval of the Engineer. The abrasive or grit shall be sharp enough and hard enough to remove the mill scale, rust, and paint.

2.03 RECYCLABLE STEEL GRIT – ALTERNATE

- A. Use recyclable steel grit size G-25 or G-50.
- B. The abrasive is to be free of moisture, water soluble contaminants, dust, and oil.
- C. The abrasive is to be stored and covered to prevent moisture contamination.
- D. All leaking or spilling containers are to be removed, and affected areas properly cleaned.
- E. All recyclable steel grit shall meet requirements of SSPC-AB1 “Metallic Abrasive” June 1, 1991.
- F. All abrasive and grit material used, and all equipment supplied shall be subject to approval of the Engineer. The abrasive or grit shall be sharp enough and hard enough to remove the mill scale, rust, and paint.
- G. Using steel grit in the dry interior will require extra clean-up when there is insulation on the fill pipe. The insulation and insulation jacketing on the fill/draw pipe will need to be removed for the sections within 4 feet above each platform. The removed insulation and jacketing is to be cleaned and reinstalled to original conditions.

PART 3 – EXECUTION

3.01 PRE-SURFACE PREPARATION – WET INTERIOR

- A. Low pressure water clean at 4,000 psi all surfaces and appurtenances to remove sediment, minerals, and other contaminants.
- B. Staining may remain in place prior to abrasive blast cleaning, Engineer to approve cleanliness.

3.02 PRE-SURFACE PREPARATION – EXTERIOR

- A. Low pressure water clean at 4,000 psi all surfaces and appurtenances to remove mildew, soot, and other contaminants.
- B. Use a biodegradable algicide for the exterior approved by the Engineer.
- C. Hand wash with a higher concentration of algicide any mildew not removed by power washing.

- D. Mix algicide at level recommended by the manufacturer, but not at a level that could result in an environmental problem.
- E. Hold water jet nozzle using a 0° or 15° tip perpendicular (90° to surface) at all times. Maintain a water jet nozzle distance of 2 in. – 10 in. from the surface.

3.03 NEAR-WHITE METAL (SSPC-SP10/NACE No. 2) DRY BLAST – WET INTERIOR

- A. Abrasive blast clean all surfaces and appurtenances to a near-white metal finish (SSPC-SP10), latest edition thereof.
- B. Maintain a profile of 2.0 – 3.0 mils on abrasive blast cleaned surfaces.
- C. All interior abrasive blast cleaning is to be completed and all spent abrasive removed, and surfaces thoroughly cleaned prior to any primer application.
- D. Once an area is acceptable for painting, apply all coats and allow coating to cure to touch prior to resumption of blasting or blast the entire tank before painting, use dehumidification to hold the blast. It is the Contractor's discretion and responsibility to determine if the entire tank is to be blasted, or what size is to be blasted and coated (all coats).
- E. The Contractor is responsible for supplying heat and dehumidification to maintain blast conditions.

3.04 COMMERCIAL BLAST (SSPC-SP6/NACE No. 3) – EXTERIOR

- A. Abrasive blast clean all surfaces and appurtenances to a commercial finish (SSPC-SP6/NACE No. 3).
- B. Maintain a profile of 1.0 – 2.0 mils on abrasive blast cleaned surfaces.

3.05 COMMERCIAL BLAST (SSPC-SP6/NACE No. 3) SPOT – DRY INTERIOR

- A. Abrasive blast clean all surfaces including appurtenances where steel is exposed or rusted, or where coating is abraded as specified to a commercial finish (SSPC-SP6), latest edition thereof.
- B. Maintain a profile of 1.0 – 2.0 mils on abrasive blast cleaned surfaces.
- C. Feather all edges of adjacent coating a minimum of ½ in. from the exposed steel with 3M Scotch-Brite Clean'n Strip discs.

3.06 HAZARDOUS WASTE DISPOSAL

- A. Contract directly with a licensed hazardous waste hauler who is properly licensed in the State of Ohio to haul hazardous material.
- B. Transport the debris for treatment to a licensed hazardous waste disposal site.
- C. The Contractor will not be paid any retainage until paperwork has been submitted, including submittal of the hazardous waste manifest. Any original of the hazardous waste manifest shall be returned to the Owner.

- D. Remove all hazardous waste from the site within thirty (30) days of completion of the blasting portion of the project.
- E. Payment for disposal of hazardous waste is incidental to the project.

3.07 WASTE DISPOSAL – NON-HAZARDOUS

- A. If after testing of the spent abrasive material the TCLP tests indicate the abrasive is not a hazardous waste, dispose the abrasive in a waste disposal facility.
- B. All waste shall be handled by a licensed hauler. Supply the Owner with all proper documentation of the final disposal site. The actual bill of lading and all manifests will be required prior to any payment.
- C. Payment for non-hazardous waste disposal is incidental to interior or exterior painting.

3.08 WASTE DOCUMENTATION

- A. Supply proper documentation of storage, transportation, and treatment, or disposal of the waste to the Owner. The Owner will retain sufficient funds from the Contractor to pay for hazardous waste transportation, treatment, and any possible fines until all documentation has been received. This retainage will be held, even if the waste has tested non-hazardous.

3.09 TESTING and CLEAN-UP of WASTE

- A. Daily collect all spent abrasive from the ground tarps and dispose in the required receptacles. Prior to receiving test results, spent abrasive shall be stored on ground tarps. The spent abrasive is to be covered and weighted down so no dust can be released.
- B. Furnish containers with proper labels for storage of the spent debris. Containers shall meet requirements of the EPA (or their local counterpart) for hazardous waste disposal. The spent abrasive will be moved directly from the tank into the waste containers. The containers will remain until final test results have been received. Furnishing containers with covers will be incidental to respective repaint and will not be affected by the Owner's final selection of respective interior or exterior disposal.
- C. Waste to remain on-site in covered receptacles until waste test results are received.

SECTION 09 97 13.11.01
CONTAINMENT – FLEXIBLE FRAME SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Flexible Frame Containment System Requirements.

1.02 REFERENCES

- A. AWWA
 - 1. AWWA D100 (latest version)
- B. SSPC Guides:
 - 1. Guide 6 – Containing Debris Generated During Paint Removal Operations.

1.03 DEFINITIONS

- A. Center Support - temporary structure installed by the Contractor at the top center of the tank roof, through which all fixed cables connect and all moving cables pass through. This support is often called the “Christmas Tree” in the industry.
- B. Fixed Cables – Cables installed by the Contractor from the center support out to each outrigger, and down to the ground. Their purpose is to support the roof bonnet, and to hold the vertical tarps away from the tank to permit movement of equipment and workers.
- C. Moving Cables or Lift Cables – Cables used to lift the vertical containment tarps. One large pull cable attaches to a winch on the ground level and smaller cables attach to the other end. The smaller cables route out to each outrigger and down to the vertical tarp.

1.04 SUBMITTALS

- A. Submit the following ten (10) days prior to the preconstruction meeting:
 - 1. Containment Plan: There are multiple possible containment designs and methods of operation. Some designs add more stress to tanks than others. This may result in unsafe working conditions and possible structural damage to the tank, particularly the roof. The loadings will vary based on tank size and design.
 - 2. These required submittals will be reviewed for information only, not for approval. Containment is considered a performance specification and thus is a “ways and means” for the Contractor’s determination. Total responsibility for maintaining structural integrity of the structure lies with the Contractor. Failure to submit does not represent a waiver of Contractor’s sole responsibility for any damage to the structure nor responsibility for any costs associated with repair.

3. Submittals are to be sealed by a Professional Engineer retained by the contractor and submitted to the Project Engineer for review.
4. If analysis by the Contractor's Professional Engineer shows structural reinforcement of the roof or any part of the structure is required, then Owner reserves the right to review the design calculation with a different containment design. If reinforcement is still required then a Change Order will be processed or the project suspended or terminated, at the Owner's discretion. If reinforcement is not required with the different containment, Contractor is to rent the other system, modify their system, or absorb the cost of roof reinforcement.
5. The Contractor is to submit the following design calculations, installation sequencing, and operation procedures.
 - a. Design Calculations - The Contractor is to review the structure in its existing condition, not the design conditions, to meet the design load requirements of the AWWA D100 part 3. Submit calculations showing that any structural deficiency or deterioration were considered, including calculations per AWWA D100. Design containment system, outriggers, connections at the ground, shields, etc. depending on the size of the structure, availability of space, prevailing wind forces, and local code requirements.
 - b. Installation Sequencing – Calculations to show the required tensile load on each fixed cable, the cumulative load on the outriggers and the tank roof. Also show the sequencing of load application, that will result in the most uniform loading while installing the cables. (i.e. the Contractor cannot tighten all cables on one side without creating a potentially high offset load on the roof.)
 - c. Operational Procedures – Calculations of airflow is to be included in the containment submittal, including a determination of maximum windspeed where lowering the containment is required.

1.05 ENVIRONMENTAL SAMPLING for EXTERIOR CONTAINMENT

- A. Collect four (4) pre-project soil samples, compile a map, and collect four (4) post-project soil samples. Send samples to a NLLAP certified lab and test for total lead, chrome and cadmium.
- B. The owner reserves the right to collect samples and to send them to their selected lab. This will be determined at the preconstruction meeting.
- C. Complete all sampling in accordance with EPA protocol.
- D. The Contractor is to pay all lab fees for total lead, chromium, and cadmium on soil samples, and any subsequent testing if clean-up is warranted.

1.06 PAYMENT

- A. Payment for Section 09 97 13.11.01 Containment is incidental to exterior painting unless otherwise stated in these specifications.

PART 2 – PRODUCTS

2.01 DUST COLLECTORS – AIR FILTRATION UNITS

- A. Furnish and use a dust collector during all blasting work.
- B. Units to be equal in filtration capacity to Eagle Industries dust collectors. Other units may be used, but their substitution will be evaluated on efficiency at 0.5 micron size and airflow movement.
- C. Use 40,000 CFM minimum for containment work.
- D. Dust collector capacity can be obtained by combining two or more units, but the total minimum capacity requirement must be met.
- E. Substitution of steel grit blasting may decrease the requirements of above. New requirements will be defined by the engineer based on the efficiency of the contractor's equipment.
- F. Furnish HEPA filters for dust collection.
- G. Number of dust collectors is to be sufficient to supply a 50 ft./minute downward draft at most areas. An average may be considered. Determination of actual containment plan will be the deciding factor. Calculations of airflow is to be included in the containment submittal.
- H. Use only new filters or filters certified clean.

2.02 GROUND TARPS

- A. Use impermeable ground tarps, 20 mils thick.
- B. Use ground tarps able to withstand the anticipated construction traffic without tearing or separating.

2.03 CONTAINMENT SHROUDS

- A. All shroud material and superstructure is to be non-penetrating, nylon rip-stop material manufactured by Eagle Industries, or approved equal. Approval of alternate material will be based on density, weight, support strength, stitching, reinforcement, home office experience, and staff assistance.

2.04 CONTAINMENT CONNECTIONS to TANK

- A. Steel plating and other Structural Shapes – ASTM A36.
- B. Bolts – ASTM A307.
- C. Welds – E70XX Electrodes.

PART 3 – EXECUTION

3.01 DUST CONTAINMENT – EXTERIOR

- A. Do everything within industry standards to minimize dust as a nuisance. Required procedures include: angle of abrasive impact, direction of nozzle spray, orifice pressure, and work stoppage due to wind speed or direction.
- B. Complete any additional measures required in these specifications. There will be no negotiations for extra compensation for nuisance complaints and corrective measures.
- C. Fully inspect the area, land use, and other pertinent local conditions prior to bidding exterior work.
- D. Do not permit dust, abrasive, or paint chips to become airborne outside the containment system perimeter.
- E. Do not permit any visual dust release when transferring abrasive from either the interior or exterior of the structure to the dumpsters. Suppress dust with tarps or water, or other preapproved method.
- F. Any release outside of the containment will result in work stoppage until repairs are performed.

3.02 CONTAINMENT during ABRASIVE BLAST CLEANING – EXTERIOR – SSPC-GUIDE 6 – CLASS 1A

- A. Furnish and install a total containment system to be used during all dust generating work.
- B. This specification is intended to be performance based. Alternative procedures to accomplish the same purpose of dust or lead elimination may be submitted for review. The final determination if the alternate performs as well as total containment will rest solely with the engineer. Printed material and test results by independent firms will be considered, but not govern.
- C. Contain waste abrasive and paint chips to the area immediately under the structure. No release outside the containment system will be permitted. The shrouds will be erected on all sides of the tank for 360°.
- D. Cover the roof with containment shrouds. Separate vertical tarps from the roof or sidewalls to allow waste from the roof to slip down the inside of the shields. The vertical shrouds are to be sandwiched between two separate sections of the roof bonnet when lifted to its highest position. Overlap to be a minimum of 36 inches between the bonnet and vertical shroud.
- E. Support the containment shields by temporary braces attached to the roof and ground. Leave space to allow rigging and equipment to be used within the shields. Extend the bracing out from the structure, and secure fixed cables to the ground.
- F. Immediately replace/repair any damaged shrouds. Discontinue blast operations until the damaged shrouds are repaired or replaced.

- G. Use air impenetrable walls and roof with either rigid or flexible framing.
- H. Overlap all seams by 2 ft. Completely seal all seams by stitching, taping, caulking, or other sealing measures.
- I. Determination and design for structural reinforcement of the roof and/or any other part of the tank, to support the containment system is the responsibility of the Contractor. The cost for this work is incidental to exterior painting.

3.03 TANK MODIFICATIONS

- A. In submittal, request approval of all welding and cutting on the structure. All attachment points used for containment are to be removed from the structure once the containment is removed. All attachment points are to be ground flush with the surrounding steel and any gouged areas rebuilt and ground flush.
- B. Cut all approved holes into the tank with rounded corners.
- C. Any holes cut in steel platforms or the tank are to be repaired by reinstalling the removed plate and welded with full penetration groove welds. All welds at repair plates in areas that are in contact with water are to be radiographed at a minimum. The Engineer may determine additional radiographs may be required at repairs performed at openings cut in other locations on the structure. Cost of the radiograph testing is the responsibility of the Contractor.
- D. Use a welder certified to complete the type and position weld necessary for attachment.
- E. All steel must be cleaned of lead paint by approved method before cutting or welding.

3.04 CONTAINMENT OPENINGS

- A. Design and construct a means of ingress and egress of the containment structure through a chamber with two openings. Access is to be through overlapped doors on each side of the chamber.
- B. Construct a temporary structure through the tarping with a minimum clear walking height of 54 in. and a minimum width of 42 in.
- C. Supply an operating HEPA vacuum in the entryway to vacuum off workers leaving the containment. The vacuum is to be maintained so it operational and clean throughout the project.

3.05 GROUND COVER

- A. Protect the ground from spent abrasive and paint chip contamination. Include the area inside the containment, and a 10 ft. area around the outside of the containment.
- B. Lap all ground tarps a minimum of 2 ft. Lap the inside ground tarps up 2 ft. on the outside of the vertical shrouds. Lap the outside ground tarps 2 ft. under the inside tarps with slots for cables. This will prevent loss of abrasive material between the ground and vertical shrouds.

3.06 DAILY SHUTDOWN

- A. Clean all ground tarps daily. Collect all debris and store in barrels. Roll all tarps for storage, including all tarps inside containment. The purpose is to prevent the debris from being blown off the tarps.
- B. After blasting, clean all flat surfaces daily before the containment structure is lowered. Also clean all rigging and equipment before lowering containment or removing the roof cover.

PART 4 – SPECIAL PROVISIONS

4.01 FENCING

- A. It is unlikely that containment will fit within the fenced area. As necessary, remove fencing or fence section prior to the containment installation. Construct a temporary 4 ft. safety construction fencing around entire site.
- B. Hire a local professional fencing company to reinstall the fence at completion of the project. Any sections damaged during removal or storage are to be replaced to match existing fence.
- C. Cost is incidental to exterior repainting.

4.02 AVIATION LIGHTS

- A. Relocate the existing aviation lights or install temporary lights on the roof above the containment roof bonnet.
- B. Install before the roof bonnet is in place.
- C. The lights must be operational throughout the entire containment phase of the project.
- D. Cost is incidental to exterior repainting.

SECTION 09 97 13.13.16

WET INTERIOR STEEL COATING – THREE COAT ZINC EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Painting the wet interior.

1.02 REFERENCES

- A. SSPC and NACE Standards:
 - 1. PA1 – Paint Application.
 - 2. PA2 – Measurements and Calibration.
 - 3. NACE RP 0178 Surface Finish Requirements.

1.03 WORK INCLUDED

- A. Application of a three (3) coat zinc epoxy system.
- B. Application of a polyurethane elastomeric seam sealer.

PART 2 – PRODUCTS

2.01 ZINC EPOXY – 3 COAT SYSTEM

- A. System to meet all National Sanitation Foundation 61 certification standards for potable water contact.
- B. Approved suppliers and system for the roof (or approved equal):

<u>Manufacturer</u>	<u>System</u>
Tnemec	94H ₂ O/L140/L140(stripe)/22
- C. Approved suppliers and system for the rest of the wet interior (or approved equal):

<u>Manufacturer</u>	<u>System</u>
Tnemec	94H ₂ O/L140/L140(stripe)/N140
- D. Approved seam sealer (or approved equal):

Sika Corporation	Sika Flex 1a
------------------	--------------

PART 3 – EXECUTION

3.01 ZINC EPOXY – 3 COAT SYSTEM

- A. Apply a three (3) coat high build epoxy paint system to all prepared surfaces.
- B. Abrasive blast cleaning and paint requirements have been previously defined in Section 09 97 13.10.

C. Apply each coat at the following rates for the roof:

<u>Coat</u>	Minimum <u>D.F.T. (mils)</u>	Maximum <u>D.F.T. (mils)</u>
Primer	2.5	3.5
Intermediate	4.0	6.0
Stripe Coat	1.5	2.5
Topcoat	<u>16.0</u>	<u>20.0</u>
Total	22.5*	29.5*

*Total does not include stripe coat.

D. Apply each coat at the following rates for the rest of the wet interior.

<u>Coat</u>	Minimum <u>D.F.T. (mils)</u>	Maximum <u>D.F.T. (mils)</u>
Primer	2.5	3.5
Intermediate	4.0	6.0
Stripe Coat	1.5	2.5
Topcoat	<u>4.0</u>	<u>6.0</u>
Total	10.5*	15.5*

*Total does not include stripe coat.

- E. Stripe coat to be applied to all welds, angles, and sharp edges throughout the structure, including above the high water line and all roof beams, etc.
- F. Each full coat to be a different color from the previous coat and is to be approved by the engineer. No color bleed through should occur if proper application rates are observed.
- G. Apply all coats in uniform color and sheen without streaks, laps, runs, sags, cloudy, or missed areas. Correct all defects before application of the successive coat.
- H. Allow a minimum of twenty-four (24) hours between coats (including stripe coat). Additional time may be necessary if low temperatures require an increase in the necessary cure time.
- I. MAINTAIN FORCED VENTILATION A MINIMUM OF SEVEN (7) DAYS AFTER TOPCOAT APPLICATION, time required for cure is dependent on the coating manufacturer and temperature. Record variations of the standard procedures (roof hatch closure because of rain, etc.), and submit to the engineer. Heat is required if, in the opinion of the engineer, the integrity of the coating is endangered by cold weather, or if additional cure time will delay the project beyond the substantial completion date.

3.02 SEAM SEALING – ROOF

- A. Seam seal all roof lap seams on the interior after the topcoat is dry to the touch. Seal using a caulking gun filling all cracks less than 1 in. separation. Tool sealant as required.
- B. Payment will be on a lump sum basis.
- C. Payment will be a separate line item “Seam Sealer” which the owner reserves the right to delete.

3.03 SCHEDULE of WORK

- A. Complete all exterior and interior welding prior to surface preparation.

SECTION 09 97 13.19.06
DRY INTERIOR STEEL COATING – EPOXY SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Partial painting in the dry interior.

1.02 REFERENCES

- A. SSPC and NACE Standards:
 - 1. PA1 – Paint Application
 - 2. PA2 – Measurements and Calibration
 - 3. NACE RP 0178 Surface Finish Requirements.

1.03 WORK INCLUDED

- A. Application of a two (2) coat or three (3) coat epoxy system.

PART 2 – PRODUCTS

2.01 EPOXY SYSTEM

- A. Two (2) coat or three (3) coat epoxy system.
- B. Approved suppliers and systems (or approved equal) to the dry interior access tube.

<u>Manufacturer</u>	<u>System</u>
Tnemec	N69/N69/N69(stripe)/N69
- C. Approved suppliers and systems (or approved equal) to all other prepared surfaces.

<u>Manufacturer</u>	<u>System</u>
Tnemec	N69/N69(stripe)/N69

PART 3 – EXECUTION

3.01 EPOXY SYSTEM

- A. Apply to all prepared areas a two (2) or three (3) coat epoxy system.
- B. Surface preparation has been previously defined in Section 09 97 13.

C. The access tube is to receive a three (3) coat system as follows:

<u>Coat</u>	Minimum <u>D.F.T. (mils)</u>	Maximum <u>D.F.T. (mils)</u>
Primer	4.0	6.0
Intermediate	4.0	6.0
Stripe	1.5	2.5
Topcoat	<u>4.0</u>	<u>6.0</u>
Total	12.0*	18.0*

*Stripe coat is not included in the totals.

The coating in the access tube is to be brush and rolled.

D. Apply each coat at the following rates for the dry interior:

<u>Coat</u>	Minimum <u>D.F.T. (mils)</u>	Maximum <u>D.F.T. (mils)</u>
Primer	4.0	6.0
Stripe	1.5	2.5
Topcoat	<u>4.0</u>	<u>6.0</u>
Total	8.0*	12.0*

*Stripe coat is not included in the totals.

E. Stripe coat to be applied to all welds, angles, and sharp edges throughout the structure.

F. Each full coat to be a different color from the previous coat and is to be approved by the engineer. No color bleedthrough should occur if proper application rates are observed.

G. Apply all coats in uniform color and sheen without streaks, laps, runs, sags, cloudy, or missed areas. Correct all defects before application of the successive coat.

H. Allow a minimum of twenty-four (24) hours between coats (including stripe coat). Additional time may be necessary if low temperatures require an increase in the necessary cure time.

3.02 SCHEDULE of WORK

A. Complete all exterior and interior welding prior to surface preparation.

SECTION 09 97 13.23.15

**EXTERIOR STEEL COATING – FOUR COAT ZINC EPOXY
FLUOROPOLYMER REPAINT**

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Painting on the exterior.

1.02 REFERENCES

A. SSPC and NACE Standards:

- 1. PA1 – Paint Application.
- 2. PA2 – Measurements and Calibration.
- 3. NACE RP 0178 Surface Finish Requirements.

1.03 WORK INCLUDED

- A. Application of a four (4) coat zinc epoxy fluoropolymer system.

PART 2 – PRODUCTS

2.01 ZINC EPOXY POLYURETHANE FLUOROPOLYMER – 4 COAT SYSTEM

- A. The coating shall be a polyurethane fluoropolymer system.
- B. Ultraviolet protection additives mixed at factory only. There will be no tinting or addition of any material other than the manufacturer’s thinners.
- C. Approved suppliers and systems (or approved equal):

<u>Manufacturer</u>	<u>System</u>
Tnemec	90-97/N69/1095/V700.

PART 3 – EXECUTION

3.01 ZINC EPOXY POLYURETHANE FLUOROPOLYMER - 4 COAT SYSTEM

- A. Apply to all prepared surfaces and appurtenances a four (4) coat zinc epoxy polyurethane fluoropolymer system.
- B. Surface preparation and paint requirements have been previously defined in Section 09 97 13.10. Apply all coatings by brush and roller. Spray application is prohibited.

- | C. <u>Coat</u> | Minimum | Maximum |
|-----------------------|----------------------|----------------------|
| | <u>D.F.T. (mils)</u> | <u>D.F.T. (mils)</u> |
| Epoxy Primer | 2.5 | 3.5 |
| Epoxy Intermediate | 2.0 | 3.0 |
| Urethane Intermediate | 2.0 | 3.0 |
| Topcoat | <u>2.0</u> | <u>3.0</u> |
| Total | 8.5 | 12.5 |
- D. Each full coat to be a different color from the previous coat and is to be approved by the engineer. No color bleedthrough should occur if proper application rates are observed.
- E. Apply all coats in uniform color and sheen without streaks, laps, runs, sags, cloudy, or missed areas. Correct all defects before application of the successive coat.
- F. Allow a minimum of twenty-four (24) hours between coats. Additional time may be necessary if low temperatures require an increase in the necessary cure time.
- G. The contractor should be advised that Dixon Engineering, Inc. will take mil readings on the exterior per SSPC-PA2 which requires gauge adjustment from magnetic plane to peak plane.

3.02 SCHEDULE of WORK

- A. Complete all exterior and interior welding prior to surface preparation.

SECTION 09 97 23.23.03

CONCRETE FOUNDATION COATING – TWO COAT EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Painting of the concrete foundation.

1.02 REFERENCES

- A. SSPC and NACE Standards:
 - 1. PA1 – Paint Application.
 - 2. PA2 – Measurements and Calibration.

1.03 WORK INCLUDED

- A. Application of a two (2) coat epoxy system.

PART 2 – PRODUCTS

2.01 EPOXY – 2 COAT SYSTEM

- A. Two (2) coat epoxy system.
- B. Approved suppliers and manufacturers (or approved equal):

<u>Manufacturer</u>	<u>System</u>
Tnemec	N69/N69

PART 3 – EXECUTION

3.01 EPOXY – 2 COAT EPOXY

- A. Apply to all prepared areas a two (2) coat epoxy system.
- B. Remove dirt 3” below grade around the entire foundation prior to coating, backfill once topcoat is dry to the touch.
- C. Abrasive blast clean to a SSPC-SP13/NACE 6 Standard to create a profile per ICRI – CSP3.
- D. Apply each coat at the following rates:

<u>Coat</u>	<u>Min. D.F.T. (mils)</u>	<u>Max. D.F.T. (mils)</u>
Primer	3.5	5.5
Topcoat	<u>3.5</u>	<u>5.5</u>
Total	7.0	11.0

- E. Allow the manufacturer’s minimum time between coatings.
- F. Cost is incidental to exterior painting.

SECTION 13 32 12
MIXING SYSTEM – GRIDBEE

PART 1 – GENERAL

1.01 EQUIPMENT OVERVIEW

- A. These specifications provide the requirements to furnish, install, and place into operation a potable water storage tank mixer and associated equipment.

1.02 REFERENCES

- A. Occupational Safety and Health Administration, OSHA
- B. Department of Transportation, DOT
- C. Underwriters Laboratories Inc., UL 508
- D. NSF/ANSI Standard 61

1.03 WORK INCLUDED

- A. Install a complete mixing system including all wiring and attachments.
- B. Payment is a separate line item “Mixer” which the owner reserves the right to delete.

1.04 QUALITY ASSURANCE

- A. Continuous Operation Equipment. The circulation equipment shall operate continuously, all day and all night, using 120 VAC as the power source.
- B. No Visual Defects. The mixer shall have no visual defects, and shall have high quality welds, assembly, and corrosion resistant finish.
- C. Qualified US Manufacturer. The manufacturer of the equipment shall have extensive experience in the production of such equipment, and the equipment shall be manufactured in the continental United States.
- D. Warranty. The mixer shall be warranted to be free of defects in materials and workmanship for a period of 5 years. This equipment warranty would run directly from the manufacturer of the equipment to the owner. The equipment warranty would not be part of the contract or any required bond.

1.05 SUBMITTALS

- A. Submit the following ten (10) days prior to the preconstruction meeting:
- B. Provide for employees one (1) copy of all data sheets at the job site for employee access.
- C. Provide an electronic copy to the Engineer.
- D. Submittals to include the following:
 - 1. Manufacture Qualification Document
 - 2. List of Supplied Equipment

3. Manufacturer Product Sheets
4. Electric Power Source Requirements
5. NSF/ANSI Standard 61 Documentation
6. Warranty Statement
7. Operation Manuals

1.06 FIELD SERVICES

- A. Installation personnel shall have received job-specific safety training which is to include: working over water, disinfecting procedures, confined space entry, and fall protection.

PART 2 – PRODUCT SPECIFICATIONS

2.01 MANUFACTURER

- A. Specified Equipment. The circulation equipment shall be manufactured by IXOM Watercare Inc. www.ixomwatercare.com, (866) 437-8076 or be a pre-approved alternative.

2.02 PERFORMANCE AND FEATURES

- A. Complete Water Circulation Required. To meet the project objectives, the tank or reservoir circulation shall be achieved by a single or multiple submerged units within the reservoir capable of providing long distance circulation of water. The mixer shall have a direct measurable flow rate where suction shall enter specified mixer’s intake positioned within 2 inches of reservoir floor and discharging water vertically in a sheet flow pattern to induce a large volume, low velocity flow to reach the tank or reservoir water surface. The mixer must be placement flexible in design to allow best hydraulic positioning for tank or reservoir conditions to prevent hydraulic short circuiting within tank or reservoir.
- B. Unit required to meet the project objectives including number of machines required.

Quantity	Model	Tank or Reservoir
1	GridBee GS-12 120V	500,000 gallon fluted column with a diameter of 49 ft. 6 in. and an approximate head range of 45 ft.

- C. Complete Mix: The mixer manufacturer guarantees that the subject tank will be completely mixed by the mixer. In continuous operation of the mixer:
 (1) at least once per 24 hours all water temperatures within the tank shall converge to within 0.8 degrees C, and

- (2) at least once per 72 hours all chlorine concentrations within the tank shall converge to within 0.18 mg/l.
- D. Fit Through Small Hatch Opening. The mixer shall be capable of fitting through a clear, unobstructed opening of 12" diameter without requiring disassembly or assembly.
- E. Continuous Operation With 120VAC, 20 Amp Power Source. The mixer shall operate continuously during day and night while connected to electric grid power.
- F. Stainless Steel Construction. The mixer shall be constructed primarily of Type 316 stainless steel metal for strength and superior corrosion resistance.
- G. Motor. The mixer shall be mechanically operated by a submersible motor that meets the following criteria.
1. Direct Drive, with no gearbox and no lubrication maintenance required.
 2. Designed for submersible operation. Mixer design shall include flow sleeve or housing around motor to provide water flow past motor per submersible motor design criteria to lower the total motor temperature and increase winding life.
 3. Designed for Continuous Operation without overheating or compromising motor life expectancy. Constant, full speed operation, variable frequency drive or other method of speed reduction not required and not allowed.
 4. 120 VAC, 20 Amp power source shall be supplied by others and not the mixer manufacturer.
- H. SCADA and Controls. The mixer shall have the option to add an Electric Control Box including a motor current indicator in a 4-20mA analog output and remote on/off control via 24VDC relay.
- I. Electrical Control Box. The mixer equipment shall be supplied with a Control Box capable of disconnecting 120 VAC outgoing power to the mixer equipment and meeting the following criteria:
1. NEMA 4X enclosure shall be provided with protection against condensation and moisture in a marine environment.
 2. Control Box shall be UL 508 Listed for sound electrical design and safety.
 3. Control Box shall include exterior mounted HOA selector switch with switch position output signal, definite purpose contactor for mixer control, exterior display showing green run, red fault indication, and motor operating amperage, grounding grounding lug, 120 VAC standard three-prong male molded plug, and locking latch for security.
 4. Control Box shall include dry contact outputs for run and fault indication, and 4-20 mA analog output scaled to motor current. Control Box shall include a 24 VDC relay to allow for remote on and off control of the mixer. Integration of 4-20 mA output and remote on/off relay into site PLC/RTU shall be provided by others and not by the mixer equipment manufacture.

5. Control Box requires a 120 VAC power source, Minimum 20 Amp rated service located near the final placement of the Control Box.
6. Timer to be 16A resistive, 8A FLA rated, single and double pole contact configuration, 8V A power consumption, CR2032(1.5V Lithium) with 3 years battery life, 8 On and Off cycles, one minute minimum interval.
- J. Low Elevation Intake: The circulation equipment shall be supplied with an intake capable of being positioned at the lowest elevation of the tank or reservoir floor. The intake level shall bring water into the circulation equipment at horizontal layer within 6 inches (15 cm) of the tank or reservoir floor.
- K. The circulation equipment shall be NSF/ANSI Standard 61 and NSF/ANSI Standard 372 listed for safe contact with potable water. The mixer shall be NSF/ANSI Standard 61 listed to be safely in contact with a potable water volume as low as 5,000 gallons.
- L. Maintenance Requirements. The circulation equipment shall operate normally with the following maintenance features.
 1. No scheduled lubrication is required of any system components including motor.
 2. No spare parts shall be required to be kept on hand.
- M. Equipment Support. The mixer manufacturer shall offer factory support with the following staff and support services.
 1. Customer Service, Application Engineering, and Equipment Engineering staff available by email or toll-free phone.
 2. Public website with detailed information available describing the mixer for this project and related applications of this equipment into potable water tanks and reservoirs.
 3. Service plans for preventative maintenance and continued technology improvements for the specified mixer.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. The circulation equipment manufacturer shall have the capability to provide Installation, Startup, and On-Site Water Testing Services to insure (a) proper machine spatial placement in the reservoir, and (b) proper intake depth setting.
- B. Contractor to provide conduit and electric service from the base of the tank (at the electric panel) up to the roof or utilize the existing conduit if available. All conduit to be galvanized and continuous from ground to roof with no openings.
- C. Contractor to supply coupling and junction box on the roof with watertight seal for electric line and connection point next to the roof hatch for retrieval chain and electric line.
- D. The device is to be installed per manufacturer's recommendations with a weather tight seal on the roof.

- E. Mixer to be installed above the bowl bottom (approximately 4 to 12 inches) using the manufacturer's suspension kit. Cut excess chain but leave approximately 8 ft. at the roof for use during mixer removal.

3.02 MOUNTING PANEL

- A. Locate metal, waterproof cabinet in the base of the column at a location approved by the owner.
- B. Mount all controls on the existing electrical panel if room is available or install new brackets welded to the column wall on a 1/8" bent plate welded to the column wall in the dry interior. Weld using 1/8" full fillet welds.
- C. Bolt the control panels using stainless steel or galvanized steel bolts.
- D. Repair the coating per section 09 97 13 and 09 97 13.10.

3.03 ELECTRICAL SUPPLY

- A. There is a 120 volt power available in the base of the column.
- B. Coordinate with owner and connect electrical source to the mixer controls.

Prevailing Wage Rate Skilled Crafts

Name of Union: Painter Local 841 Zone I

Change # : LCN01-2019fbLoc841

Craft : Painter Effective Date : 10/09/2019 Last Posted : 10/09/2019

	BHR		Fringe Benefit Payments					Irrevocable Fund		Total PWR	Overtime Rate	
			H&W	Pension	App Tr.	Vac.	Annuity	Other	LECET (*)			MISC (*)
Classification												
Painter Brush Roll	\$26.23		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$40.95	\$54.07
Paperhanger	\$26.23		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$40.95	\$54.07
Painter Spray Gun Operator Any and All Coatings)	\$27.08		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$41.80	\$55.34
Swing Scaffold, Bosum Chair, & Window Jacks	\$26.98		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$41.70	\$55.19
Sandblast, Painting of Standpipes, etc. from Scaffolds Open Structural Steel, Standpipes and Water Towers	\$27.48		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$42.20	\$55.94
Epoxy Application	\$26.88		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$41.60	\$55.04
Synthetic Exterior, Lead Abatement, Asbestos Removal	\$27.48		\$6.70	\$7.17	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$42.20	\$55.94
Apprentice	Percent											
1st Year	50.00	\$13.12	\$6.70	\$2.55	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$23.22	\$29.77
2nd Year	60.00	\$15.74	\$6.70	\$2.94	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$26.23	\$34.10
3rd Year	70.00	\$18.36	\$6.70	\$3.34	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$29.25	\$38.43
4th Year	80.00	\$20.98	\$6.70	\$4.08	\$0.35	\$0.00	\$0.50	\$0.00	\$0.00	\$0.00	\$32.61	\$43.11

Special Calculation Note : Apprentice pay based on percentage of above appropriate classification.

Ratio :
1 Journeymen to 1 Apprentice

Jurisdiction (* denotes special jurisdictional note) :
MEDINA, PORTAGE*, SUMMIT*

Special Jurisdictional Note : Summit Cnty: North to and including the Ohio Turnpike, Portage Cnty: North to and including the Ohio Turnpike

Details :