SECTION 5
SPECIFICATIONS

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 and LIQUIDATED DAMAGES

The Contractor is to abide by the following schedule:

Double Ellipse:
The tank may be out-of-service for a maximum of 50 days.

Fluted Column:
The tank may be out-of-service for a maximum of 60 days.

1.02 SCOPE of WORK

Tank Information:

Double Ellipse:
The structure is a 150,000-gallon double ellipse elevated water storage tank with a low-water level of 133 ft. 4.4375 in. located at 201 E. 9th Street in Genoa, Ohio.

Fluted Column:
The structure is a 500,000-gallon fluted column elevated water storage tank with a diameter of 49.5 ft. and a low-water level of 90 ft. 10.25 in. located at 4th Street (SR 163) in Genoa, Ohio.

The work includes:

Double Ellipse:
Exterior: Abrasive blast clean to a SSPC-SP6 commercial standard with containment. Apply a four (4) coat zinc epoxy urethane system.

Wet Interior: Abrasive blast clean to a SSPC-SP10 near-white metal standard. Apply a three (3) coat zinc epoxy system.

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

Repairs:

1) Replace the riser manway.
2) Replace the sidewall manway gasket.

3) Replace the wet interior roof hatch.
4) Overflow discharge modification.
5) Remove leg ladder cage.
6) Install a vandal guard.
7) Install a roof platform.
8) Install a wet interior ladder from the roof to the bowl.
9) Balcony drain holes.
10) Balcony access modification.
11) Replace roof vent with a pressure vacuum vent.
12) Install a roof handrail with a painter's railing.
13) Install bowl rigging couplings.
14) Install a riser grate.
15) Adjust the loose sway rods.
16) Install cathodic clips and pressure fitting.

Fluted Column:

Exterior: Abrasive blast clean to a SSPC-SP6 commercial standard with containment. Apply a four (4) coat zinc epoxy urethane system.

Wet Interior: Abrasive blast clean to a SSPC-SP10 near-white metal standard. Apply a three (3) coat zinc epoxy system.

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

Pit Piping: Abrasive blast clean to a SSPC-SP6 commercial standard. Apply a two (2) coat epoxy system.

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

Repairs:

1) Install cathodic clips and pressure fitting.
2) Replace the bowl manway gasket.
3) Install a gasket on the wet interior roof hatches.
4) Install handholds at the roof hatches located inside the new roof handrail.
5) Replace the sample tap on the fill/draw pipe.
6) Replace the mud valve.
7) Overflow discharge modification.

8) Install a fall prevention device on the column ladders.
9) Install a wet interior ladder.
10) Replace the interior roof vent screen.
11) Install a roof handrail with a painter's railing.
12) Replace the dry interior and aviation light bulbs.

1.03 MISCELLANEOUS

A. Double Ellipse: The antenna owners will temporarily remove the antennas and cables prior to the start of the project.
B. Fluted Column: There is a condensate tarp located in the column with a drain. The tarp and drain are to be removed by the Contractor prior to the start of abrasive blast cleaning in the dry interior. The Contractor is to reinstall the tarp and drain after all coating work is complete. Any damage to the tarp or drain is the responsibility of the Contractor. Repair to be determined by the Owner/Engineer.
C. Due to supply chain issues, the Owner reserves the right to require the Contractor 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 prior to the commencement of the project.

SECTION 00 54 00
SCHEDULE of VALUES

1.01 LINE ITEMS

DOUBLE ELLIPSE

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. RISER MANWAY _____
   $ _____

2. WET INTERIOR ROOF HATCH _____
   $ _____

3. OVERFLOW PIPE DISCHARGE MODIFICATION _____
   $ _____

4. LADDER CAGE REMOVAL _____
   $ _____

5. VANDAL GUARD _____
   $ _____

6. ROOF PLATFORM _____
   $ _____

7. WET INTERIOR LADDER _____
   $ _____

8. BALCONY ACCESS MODIFICATION _____
   $ _____

9. ROOF VENT _____
   $ _____

10. ROOF HANDRAIL AND PAINTER'S RAILING _____
    $ _____

11. RISER GRATE

$

12. SWAY RODS ADJUSTMENT – 6 RODS

$

13. CATHODIC CLIPS AND PRESSURE FITTING

$

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:

14. EXTERIOR REPAINT WITH CONTAINMENT

$

15. LETTERING

$

16. WET INTERIOR REPAINT

$

DOUBLE ELLIPSE TOTAL INCLUDING #1 THROUGH #16:

$

FLUTED COLUMN

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. CATHODIC CLIPS AND PRESSURE FITTING

$

2. MUD VALVE

$

3. OVERFLOW PIPE DISCHARGE MODIFICATION

$

4. FALL PREVENTION DEVICE

$

5. WET INTERIOR LADDER

$

6. ROOF HANDRAIL AND PAINTER'S RAILING

$

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:

7. EXTERIOR REPAINT WITH CONTAINMENT

$

8. LETTERING

$

9. WET INTERIOR REPAINT

$

10. DRY INTERIOR PARTIAL REPAINT

$

11. PIT PIPING REPAINT

$

FLUTED COLUMN TOTAL INCLUDING #1 THROUGH #11:

$

C. THE ESTIMATED COST ALREADY INCLUDED IN 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.

$

DOUBLE ELLIPSE TOTAL: $_____

FLUTED COLUMN TOTAL: $_____

PROJECT TOTAL: $_____

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 pertain to the coating industry. The General Conditions of this Contract were prepared by the Owner. These Additions to General Conditions are intended to supplement the Owner's General Conditions as they relate to this specific Project. For example:
   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 to General Conditions detail how DIXON calculates approval of a pay request, no payment for stored materials, percentage complete calculation methodology, etc.
   2. Liquidated Damages (if applicable) are defined in the General Conditions including when, where, and amount. In the Additions to General Conditions the method of calculating claimed wind and weather days is detailed.

B. This Additions 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 THE OWNER'S GENERAL CONDITIONS AND THESE ADDITIONS TO GENERAL CONDITIONS.

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 the Additions to General Conditions 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 to General Conditions.
E. In all cases of discrepancies between the General Conditions, the Supplemental Conditions, the Additions to General Conditions, 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 the 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 (CO)* —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 the Contractor and the 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 the 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 Liquidated Damage may be in addition (cumulative) with a Liquidated Damage 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 54 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 visits to the 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, site rehabilitation, 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 the 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 the Contractor issued on or after the Effective Date of the Contract, signed by the Owner and recommended by the 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 the 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 the 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 regarding 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 the 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, the 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. Below is an **example** of the determination procedure and of the required claim format, and is not intended to match the specified project:

   Project length: 45 days

Substantial Completion date: June 30th.
Start date: May 16th.
3 years of data* 2020, 2021, 2022
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 the exterior). Good weather days not used will count against the 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, hydrants, 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.
5. 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, the 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. The 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 regard 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 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 regarding 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. The 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 heavy metal bearing 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 are 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. The 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 the Owner.

4. Use or occupancy of the Work or any part thereof by the Owner.
5. Any review and approval of a Shop Drawing or Sample submittal.
6. The issuance of a Notice of Acceptability by the Engineer.
7. The end of the correction period.
8. Any inspection, test, or approval by others.
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, the Engineer, for the benefit of the 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, the 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 the 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. The 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 painting, pit piping repainting, 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 Part 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.
   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.
   c. Damage caused by the Contractor to the Owner or to another Site approved Contractor.
   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.
   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.

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.
m. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract sum, or within the Contract time.
n. The Contractor has failed to provide and maintain required bonds or insurance.
o. The 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. The 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 the Owner imposes any Set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, the Owner will give the Contractor immediate notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay the Contractor any amount remaining after deduction of the amount so withheld. The Owner is to promptly pay the Contractor the amount so withheld, or any adjustment agreed to by the Owner and the Contractor, if the 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-off) 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-off 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 the 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 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. The 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 the Engineer will notify the 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 the 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 for the 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: Genoa, OH 150,000 Double Ellipse and 500,000 Fluted Column Rehabilitation

CONTRACTOR: _____ **DIXON PROJECT MANAGER: _____**

Specification Section	Title	Date Received	Date Reviewed	Accepted	Reviewed with comments	Rejected
Maintenance of Cast-in Place Concrete						
03 01 30	SDS and PDS - Grout					
Metal Repairs						
05 00 00	PDS and SDS - Welding Rod					
05 00 00	Welder's Certification					
05 00 00	PDS - Manway Gasket - potable water contact					
05 00 00	PDS - Roof Hatch Gasket, PDS and SDS - adhesive					
05 00 00	PDS - Corporation Stop					
05 00 00	PDS - Sample Tap					
05 00 00	PDS - Mud Valve and Discharge Hose					
05 00 00	PDS - Overflow Screen					
05 00 00	PDS - Fall Prevention Device					
05 00 00	PDS - Vandal Guard					
05 00 00	PDS -Grating					
05 00 00	PDS - Swing Gate					
05 00 00	PDS - Vent Screen					
05 00 00	PDS - Cathodic Clips and Pressure Fitting					
05 00 00	SDS - Joint Compound for threaded fittings and rigging couplings					
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 pretreatements					
09 97 13	Ventilation Design Plan					
09 97 13	Dehumidiciation/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					
Heavy Metal Bearing Paint Removal and Disposal						
09 97 13.12	Heavy Metal Coatings Health and Safety Plan					

SUBMITTAL CHECKLIST

PROJECT: Genoa, OH 150,000 Double Ellipse and 500,000 Fluted Column Rehabilitation

CONTRACTOR: _____ **DIXON PROJECT MANAGER: _____**

Specification Section	Title	Date Received	Date Reviewed	Accepted	Reviewed with comments	Rejected
09 97 13.12	Site specific Heavy Metal Coating, Health and Safety Plan					
Lighting						
16 05 02	PDS and SDS - Light Bulbs					

TABLE of CONTENTS
TECHNICAL SPECIFICATIONS

SECTION 00 91 18
DEFINITIONS for TECHNICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 DEFINITIONS FOR TECHNICAL SPECIFICATIONS

Fluted Column:

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 Tarp: There is a condensate tarp that is attached to a stiffener in the column.

H. Top Platform: Partial landing area directly under tank's access tube.

I. Roof: Very top of the structure, including top seam of sidewall.

J. Bottom: Lower area of the tank proper shaped like a bowl. Also, section that extends up to the sidewall.

K. Column: Center support whether concrete or steel.

Double Ellipse:

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 riser.
B. Exterior: External surfaces, excluding inaccessible areas, of the roof, sidewall, riser, legs, accessories, and appurtenances that are exposed to the elemental atmosphere.
C. 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.
D. Sidewall: Vertical walls to the weld seam of the roof.
E. Roof: Very top of the structure, including top seam of sidewall.
F. Bottom: Lower area of the tank proper shaped like a bowl.
G. Riser: Center support.
H. Tower Structure: Multi-legged system used to support the elevated tank consisting of legs, struts, rods, connections, anchors, etc.
I. Balcony: Walk platform around the tank. Railing and kick plate is considered part of the balcony.

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 tanks:
      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 – 03 01 30 Maintenance of Cast-in-place Concrete.
      a. To locate or quantify repairs as necessary.

b. To review surface preparation prior to concrete or grout installation and review all products prior to installation.
c. After concrete or grout application is complete for quality assurance.

4. 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.
5. 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 application of the 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 are to 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 OR 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, 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. If containment erection is completed while other productive work progresses, then a 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 is to 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, and any waste coating or waste abrasive issues, are considered Productive Work requiring a RPR even after the structure is returned to service.
   8. Essentially all work completed between the out-of-service date and the Substantial Completion Date, excluding cure and disinfection, is considered Productive Work and requires the presence of a 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 an 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 are to have full access to the Site at reasonable times for their Observation, testing, and Contractor's personnel and equipment is to 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. The 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. The Contractor is to contact the 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 is to 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 the 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 are 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 Report 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 Report 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 Non-Conformance 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. The Contractor is financially responsible for the proper and efficient use of RPR services.

1.02 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.

B. The Contractor will pay all RPR and/or Engineer fees generated by failed Observations of Productive Work.

C. The 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

1.03 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 the 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 is to 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. Full-time Observation Fee is to 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.

1.04 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 those 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 the minimum On-call Time. This includes, but is not limited to, equipment failure, insufficient materials, damaged containment, etc.

C. The 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 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 are to 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 are to 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 is not to 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 is to be responsible for loss or injury to persons or property where work is involved and is to 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 are to be designated and approved by Owner.
B. Make parking arrangements for employees' vehicles.
C. Any costs involved in obtaining parking area is to be borne by the Contractor.

PART 3 – EXECUTION

3.01 GENERAL

A. Contractor is to maintain and operate all temporary systems to ensure continuous service.
B. Contractor is to 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 is to 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 is to 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 is to maintain work areas, on-and-off site in accordance with federal, state, or local regulations.

B. The Contractor is responsible for any, and all clean-up of any hazardous waste that may be necessary, including all applicable costs for clean-up and disposal.

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 release occurs work will stop until corrective actions are complete as determined by the appropriate regulatory agency.

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 of 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 are not to 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 are to 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 any other applicable regulatory agency.

B. Use of such chemicals and disposal of residues are to 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 03 01 30
MAINTENANCE OF CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Repair of deteriorated and damaged grout.

1.02 REFERENCES

A. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the references thereto. The latest revisions shall apply in all cases.
   1. "Building Code Requirements for Structural Concrete (ACI 318) and Commentary (ACI 318R)," American Concrete Institute.

1.03 WORK INCLUDED

Double Ellipse:

A. Application of grout.

1.04 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review methods and procedures related to concrete maintenance including, but not limited to, the following:
      a. Verify concrete-maintenance specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
      b. Materials, material application, sequencing, tolerances, and required clearances.
      c. Quality-control program.

B. Contractor shall notify engineer a minimum of twenty-four hours before placing concrete or grout repair material.

C. Do not place any repair material until surface preparation has been reviewed and approved by engineer.

1.05 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 shall conform to the 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, concrete, grouts admixtures, sealers.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Each manufacturer shall employ factory-authorized service representatives who are available for consultation and Project-site inspection and on-site assistance.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.
B. Store cementitious materials off the ground, under cover, and in a dry location.
C. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.
D. Promptly remove damaged or unsuitable products from the job site. Replace products with undamaged, suitable products.

1.08 FIELD CONDITIONS

A. Cold-Weather Requirements for Cementitious Materials: Do not apply material unless concrete-surface and air temperatures are above 40 degrees F (5 deg C) and will remain so for at least 48 hours after completion of Work.
B. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Use cooled materials as required. Do not apply material to substrates with temperatures of 90 deg F (32 deg C) and above.

1.09 INSTALLATION REQUIREMENTS

A. Apply all repair material within manufacturer’s guidelines.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.

2.02 GROUT REPAIR

A. The standard to fill holes is a grout Sika 212 Grout as manufactured by Sika Corp. www.usa.sika.com 1-800-933-7452, or approved equal.

B. Backer rod, where required, use Industrial Thermo Polymers closed cell polyethylene foam owned by Armacell Canada Inc., www.armacell.com 1-800-387-3847.

2.03 MISCELLANEOUS MATERIALS

A. Water: Potable.

2.04 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not add water, thinners, or additives unless recommended by the manufacturer.
2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
3. Do not mix more materials than can be used within time limits recommended by the manufacturer. Discard materials that have begun to set.

B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency per manufacturer’s recommendations.

PART 3 – EXECUTION

3.01 CONCRETE MAINTENANCE

A. Comply with manufacturers’ written instructions for surface preparation and product application.

3.02 EXAMINATION

A. Notify Engineer seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.

B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries. At columns and walls make boundaries level and plumb unless otherwise indicated.

C. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.03 PREPARATION

A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.
B. Protect persons, equipment and surrounding surfaces of the structure being repaired from harm resulting from concrete maintenance work.
    1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
    2. Use only proven protection methods appropriate to each area and surface being protected.
    3. Work to be performed in a manner to prevent dust and debris from reaching areas outside of the immediate work site.
C. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine the condition of construction to be removed during repair.
    1. Inventory and record the condition of items to be removed for reinstallation or salvage.

3.04 GROUT REPAIR

A. Remove all loose, soft, or mottled grout between the baseplates and tops of the foundations. Removal of grout shall be by hand, hammer, or chisel.
B. Pressure wash the grout using a minimum nozzle tip pressure of 2,000 psi. All surfaces shall be free of all standing water or frost in accordance with the manufacturer’s recommendations. Surface to be Saturated Surface Dry (SSD).
C. Properly and thoroughly mix the grout in accordance with the manufacturer’s recommendations as a dry mix.
D. Place and tamp the grouting material between the riser and leg baseplates and the foundation to ensure there are no voids. Make the edge of the grout vertically flush with the baseplate.
E. Payment is incidental to exterior painting; total amount of repair is estimated to be less than five lineal ft.

3.01 PROTECTION OF EXISTING CONCRETE

A. Protect the existing concrete not identified by the Engineer as needing repair/replacement.
B. Any damage to the existing concrete from the work performed will be repaired/replaced by the Contractor and is incidental to the project.

SECTION 05 00 00
METAL REPAIRS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Steel and Miscellaneous Repairs.
B. Surface Preparation of Heavy Metal Paint before Welding.

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

Double Ellipse:

1) Replace the riser manway.
2) Replace the sidewall manway gasket.
3) Replace the wet interior roof hatch.
4) Overflow discharge modification.
5) Remove leg ladder cage.
6) Install a vandal guard.
7) Install a roof platform.
8) Install a wet interior ladder from the roof to the bowl.
9) Balcony drain holes.
10) Balcony access modification.
11) Replace roof vent with a pressure vacuum vent.
12) Install a roof handrail with a painter's railing.

13) Install bowl rigging couplings.
14) Install a riser grate.
15) Adjust the loose sway rods.
16) Install cathodic clips and pressure fitting.

Fluted Column:

1) Install cathodic clips and pressure fitting.
2) Replace the bowl manway gasket.
3) Install a gasket on the wet interior roof hatches.
4) Install handholds at the roof hatches located inside the new roof handrail.
5) Replace the sample tap on the fill/draw pipe.
6) Replace the mud valve.
7) Overflow discharge modification.
8) Install a fall prevention device on the column ladders.
9) Install a wet interior ladder.
10) Replace the interior roof vent screen.
11) Install a roof handrail with a painter's railing.

1.06 WORKMANSHIP

A. Provide material and workmanship necessary to complete the project to the standards specified.
B. All weld spatter is to be removed prior to coating application.
C. Welds at all removed steel items are to be ground flush with surrounding surface. All new welds are to be ground smooth.
D. Removed items are to become the property of the Contractor. 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 is to 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.

1.09 WORK SEQUENCING

A. The Contractor is to monitor for flammable gases inside the tank prior to any welding or cutting. Monitoring is to be performed whether the tank is full or empty. Monitoring is also to be performed whether or not interior access is to be gained during welding and/or cutting.

B. The following is NOT a ways-and-means decision of the Contractor. It is accepted and good painting practice and is to 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, surface preparation, or coating application.
3. Do not install non-painted items (i.e., vents, fall prevention devices, vandal guards etc.) or store items 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 SUBSTITUTIONS

A. All products specified herein have been determined to meet a minimal standard. The products specified are the standard to which all proposed substitutions are to be compared.

2.02 STEEL PLATING and OTHER STRUCTURAL SHAPES

A. General Steel: ASTM – A36.

B. General Stainless Steel: ASTM – 316.
C. Rebar for ladder rungs: A706 Weldable Rebar.
D. Threading on all couplings and plugs to meet NPT and FPT standards.

2.03 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.

2.04 WELDING ROD

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

2.05 STEEL LADDERS

A. General Steel: ASTM – A36.
B. Rebar for ladder rungs: A706 Weldable Rebar.
C. All new ladders are to meet current OSHA requirements. Included in the requirements are rung clearances when immoveable obstructions are within the required 7-inch toe clearance.
   1. Maintain a 1½" clearance between any ladder rung and the top of any immoveable obstruction.
   2. Maintain a 4½" clearance between the top of any rung and the bottom of any obstruction.

2.06 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.

2.07 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.

2.08 CORPORATION STOP

A. Mueller 300 Ball Corporation 1 inch Valve Model B-20046N, or approved equal. Manufactured/supplied by Mueller. www.muellercompany.com (800) 423-1323.

2.09 SAMPLE TAP

A. Model T-532NL ¾", or approved equal. Manufactured/supplied by Legend. www.legendvalve.com (800) 752-2082.

2.10 MUD VALVE

A. Babco-NFW 4 in. x 2.5 in. No Freeze Valve (verify size), or approved equal. Manufactured/supplied by Superior Sales & Service, Inc. www.superiorsales.com (402) 296-1010.

B. Discharge hose, smooth, clear PVC. Nutriflow series, or approved equal. Manufactured/supplied by Goodyear Engineered Products www.goodyearhose.com (866) 711-4673.

2.11 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 (855) 463-5736, or approved equal.

2.12 FALL PREVENTION DEVICE

A. Rail-Type system as manufactured/supplied by Miller/Honeywell www.sps.honeywell.com (800) 430-5490 or approved equal.

B. Fall prevention system: Saf-T-Climb and all rung clamps, etc.

1. Devices are to be constructed of galvanized steel:
2. Rung clamps are to be installed every 6 ft. max. Install a clamp above and below every splice. Rung clamp must be placed above and below splice on

first available rung. Add one additional rung clamp if using a removable dismount and add two rung clamps if using a permanent dismount.

3. Two (2) shuttles – Saf-T-Grip.
4. Harness and lanyards as manufactured by DBI Sala, www.fall-protection-products.com (941) 894-0564 or approved equal.

C. 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. Exterior ladders:
      a. Rung, 4 User galvanized steel #6116633 for ladders ending at an obstruction or for curved roof ladders.
      b. Climb Extension, 2 User, galvanized steel #6116636 for vertical ladders with no obstruction so cable extends above the ladder.
      c. Cable to be 3/8 in. galvanized steel #6106XXX (last 3 numbers for ordering are for the length of cable needed).
      d. Cable Guides #6100400.
   3. 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.

2.13 VANDAL GUARD

A. RB Industries Ladder Gate Climb Prevention Shield manufactured/supplied by Emper Enterprises www.emperenterprises.com (336) 698-5485 or approved equal.

2.14 GRATING

A. Galvanized steel 1 in. x 3/16 in., with band spacing of 4 in. x 1-3/16 in. Fasteners to be “M” style.
B. Manufactured/supplied by McMaster-Carr. www.mcmaster.com (330) 995-5500, or approved equal.

2.15 SWING GATE

A. Universal Swing Gate as manufactured by SafeRack www.saferack.com (229) 216-9433, or approved equal.

2.16 VENT SCREEN

A. Aluminum wire, maximum twenty-four (24) mesh or smaller.
B. Manufactured/supplied by McMaster-Carr. www.mcmaster.com (562) 692-5911, or Wire Cloth Man www.wireclothman.com (800) 947-3626, or approved equal.

2.17 CATHODIC CLIPS and PRESSURE FITTING

A. Manufactured/supplied by Aegion (Corrpro) www.aegion.com (866) CORRPRO [267-7776] or approved equal.

2.18 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.

PART 3 - EXECUTION

3.01 RISER MANWAY – DOUBLE ELLIPSE

A. Install a 24 in. diameter manway in the riser to replace the existing manway. Notify the Engineer if obstructions do not permit replacement of the existing manway.
B. Install a gasket between the flange and cover. Install after the topcoat is dry.
C. The Contractor is to ensure that the manway does not leak, including returning to reseat the gasket as needed after the Owner refills the tank.
D. See Drawings 01a-01c.
E. Payment is a separate line item "Riser Manway" which the Owner reserves the right to delete.

3.02 MANWAY GASKET – DOUBLE ELLIPSE

A. Replace the sidewall manway gasket with new gaskets.
B. The Contractor is to ensure that the manway does not leak, including returning to reseat the gasket as needed after the Owner refills the tank.
C. Payment is incidental to the project.

3.03 WET INTERIOR ROOF HATCH – DOUBLE ELLIPSE

A. Furnish and install a 30 in. diameter hinged hatch, locate the hatch inside the new handrail.
B. The existing roof hatch is to be removed. Weld a ¼ in. plate over the hole left from removal of the existing hatch. The plate is to overlap the opening a minimum of 1 in. on all sides. Welds to be ¼ in. full fillet welds on the interior and exterior.
C. Weld a 16 in. x 3 in. x ¾ in. diameter rung on the roof for a handhold. 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 02.
H. Payment is a separate line item “Wet Interior Roof Hatch” which the Owner reserves the right to delete.

3.04 OVERFLOW DISCHARGE MODIFICATION WITH ELBOW AND FLAP GATE – DOUBLE ELLIPSE

A. Trim the end of the overflow, install elbows to extend the discharge over the existing splash pad and install a flap gate on the new elbow.
B. The flap gate is to 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. Weld a flange onto the discharge end of the overflow pipe. Use a minimum of ¼” steel plate, flange outside diameter to match that of the flap gate outside diameter.
G. See Drawing 03a-03b.
H. Payment is a separate line item “Overflow Pipe Discharge Modification” which the Owner reserves the right to delete.

3.05 LADDER CAGE REMOVAL

A. Remove the cage from the leg ladder.
B. Any broken or cut points-of-connection are to be cut with a smooth edge.
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 a separate line item “Ladder Cage Removal” which the Owner reserves the right to delete.

3.06 VANDAL GUARD – DOUBLE ELLIPSE

A. Install a vandal guard on the leg ladder.
B. Install the vandal guard per the manufacturer’s recommendations.
C. Install at 12 ft. minimum from grade to the bottom of the vandal guard.
D. Payment is a separate line item “Vandal Guard” which the Owner reserves the right to delete.

3.07 ROOF PLATFORM – DOUBLE ELLIPSE

A. Install a platform on the roof with a new sidewall ladder.
B. Remove existing roof and sidewall ladder. 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.
C. The new ladder is to meet or exceed all OSHA requirements.
D. Install a cable-type fall prevention device on the new ladder.
E. Install a swing gate at the opening between the ladder and handrail on the platform, install per manufacturers recommendations. Adjust the swing gate width and tension after installation to ensure the gate operates properly and remains closed during normal conditions.
F. 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.
G. Install a 3 in. x ¼ in. plate as a catch for the swing gate as needed so the resting position of the gate is perpendicular to the platform handrail. Round off the corners of the plate. Weld using 3/16 in. full fillet welds.
H. The platform grating is to be installed with seams running along the width (not along the length of the platform). The grating is to rest on the support angle on the left and right of the platform with m-clips attached to the angles.
I. See Drawing 04a-04d.
J. Payment is a separate line item “Roof Platform” which the Owner reserves the right to delete.

3.08 WET INTERIOR LADDER – DOUBLE ELLIPSE

A. Furnish and install a new wet interior ladder at the new wet interior roof hatch.
B. The ladder is to meet or exceed all OSHA requirements.
C. Install a cable-type fall prevention device on the new ladder.
D. See Drawing 05.
E. Payment is a separate line item “Wet Interior Ladder” which the Owner reserves the right to delete.

3.09 BALCONY DRAINAGE HOLES – DOUBLE ELLIPSE

A. Drill 1 in. drainage holes in the exterior balcony floor plates as directed by the Engineer.
B. Remove all burs after drilling.
C. Payment is incidental to the project.

3.10 MODIFY BALCONY ACCESS – DOUBLE ELLIPSE

A. Cut an opening in the balcony railing to the side of the ladder.
B. Install new support posts at each side of balcony opening.
C. Install a swing gate at the opening between the ladder and handrail, install per manufacturers recommendations.
D. See Drawing 06a-06b.
E. Payment is a separate line item "Balcony Access Modification" which the Owner reserves the right to delete.

3.11 PRESSURE VACUUM ROOF VENT – DOUBLE ELLIPSE

A. Remove the existing roof vent.
B. Furnish and install a pressure vacuum roof vent on a new bolted flange.
C. See Drawings 07a-07d.
D. Payment is a separate line item "Roof Vent" which the Owner reserves the right to delete.

3.12 ROOF HANDRAIL and PAINTER'S RAILING – DOUBLE ELLIPSE

A. Install an 11 ft. diameter handrail, and a 14 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. Verify that the new railings will not interfere with any existing appurtenances on the roof prior to fabrication. Appurtenances may need to be relocated or the size of the railings altered.
C. All butt weld sections on the painters railing to be at a stand-off.
D. 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.
E. The Contractor can install additional couplings for their own use as needed but the noted couplings are to be installed as a minimum.
F. See Drawing 08a-08b.
G. Payment is a separate line item "Roof Handrail and Painter's Railing" which the Owner reserves the right to delete.

3.13 BOWL RIGGING COUPLINGS – DOUBLE ELLIPSE

A. Install extra heavy couplings in the bowl.
B. Couplings to be located at the mid-point between the riser and each leg.
C. Install a steel plug at each coupling. Caulk the underside of the coupling. All threaded fittings to be coated with pipe joint compound.
D. Engineer to field verify location of the couplings.
E. See Drawing 09.

F. Payment is incidental to the project.

3.14 RISER GRATE – DOUBLE ELLIPSE

A. Install a grate at the top of the riser with a hinged door.
B. Fabricate the grate from 2 in. x ¼ in. stock in a crosshatch design, with 90° corners.
C. Weld all cross-member connections.
D. See Drawing 10.
E. Payment is a separate line item "Riser Grate" which the Owner reserves the rights to delete.

3.15 ADJUST SWAY RODS – DOUBLE ELLIPSE

A. Tighten all loose sway (windage) rods at each turnbuckle.
B. The Engineer is to field determine which rods require tightening.
C. Turnbuckles may be replaced (one at a time), as opposed to tightening, at the Contractor's discretion.
D. The quantity of six (6) sway rods is a figure based on the last inspection. Payment is a separate line item "Sway Rod Adjustment". The Owner reserves the right to increase or decrease this quantity, including elimination of the item.

3.16 CATHODIC CLIPS and PRESSURE FITTING – BOTH TANKS

A. Weld clips and a pressure fitting for a cathodic protection system (future installation by others).
B. Supply recommended quantity of clips and locate as directed by the supplier.
C. Weld clips with ¼ in. fillet welds all around. No area may be left that may be susceptible to crevice corrosion.
D. Weld a 3,000-psi pressure fitting coupling inside and outside with a ¼ in. fillet weld all around, and cap fitting as directed by supplier.
E. Payment is a separate line item "Cathodic Clips and Pressure Fitting" which the Owner reserves the right to delete.

3.17 MANWAY GASKET – FLUTED COLUMN

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

3.18 ROOF HATCH GASKETS – FLUTED COLUMN

A. Install a gasket on the wet interior roof hatch covers (or opening curbs). There are two hatches.

B. Install the gasket after the exterior coating is dry to the touch. Apply roof hatch gasket using adhesive.
C. The hatch hasps may need to be modified/holes in the hasps enlarged to accept a lock once the gasket is installed.
D. Payment is incidental to the project.

3.19 HANDHOLDS – FLUTED COLUMN

A. Furnish and install a handhold on the roof at the access tube hatch and the wet interior roof hatch located inside the new handrail.
B. Handhold to be a ¾ in. diameter rod shaped into a 16 in. x 3 in. "U." Weld using a ¼-in. full fillet.
C. The handhold is to be located on the ladder side of the opening.
D. Payment is incidental to the project.

3.20 SAMPLE TAP REPLACEMENT – FLUTED COLUMN

A. Replace the sample tap in the fill/draw pipe in the pit.
B. Install a dielectric union then a 1-inch corporation stop. After the corporation stop install a 1 to ¾-inch reducer to a sample tap.
C. All piping is to be soldered or threaded connections. All threaded connections are to be installed with joint compound.
D. Payment is incidental to the project.

3.21 MUD VALVE – FLUTED COLUMN

A. Remove the existing mud valve from the bowl to the overflow pipe. The existing coupling cannot be reused.
B. Install a new frost-free mud valve in the lowest section of the mud settling area. Coupling is to be a heavy or extra heavy coupling and is not extend more than ⅜ in. into wet interior surfaces.
C. Install a new hose that 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 11.
F. Payment is a separate line item "Mud Valve" which the Owner reserves the right to delete.

3.22 OVERFLOW DISCHARGE MODIFICATION WITH ELBOW AND FLAP GATE – FLUTED COLUMN

A. Trim the end of the overflow, install a downward facing elbow. Install a flap gate on the new elbow.

B. The flap gate is to 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. Weld a flange onto the discharge end of the overflow pipe. Use a minimum of ¼" steel plate, flange outside diameter to match that of the flap gate outside diameter.
G. See Drawing 12a-12b.
H. Payment is a separate line item "Overflow Pipe Discharge Modification" which the Owner reserves the right to delete.

3.23 FALL PREVENTION DEVICE – FLUTED COLUMN

A. Furnish and install a rail-type fall prevention device on the dry interior column ladders.
B. Devices to be installed after topcoat is dry to the touch. Use temporary safety lines during construction.
C. Begin installation of the basebell ladder approximately 3 ft. above the top of the foundation (bottom of ladder) and extend to the top of the basebell ladder. Each subsequent riser device is to start 3 ft. above the platforms and continue up the entire length of the ladder.
D. Any ladders ending at an obstruction (i.e., roof, platform) are to have the fall prevention end 12 in. below the obstruction so the glide can be attached and detached.
E. Payment is a separate line item "Fall Prevention Device" which the Owner reserves the right to delete.

3.24 WET INTERIOR LADDER – FLUTED COLUMN

A. Furnish and install a new wet interior ladder.
B. The ladder is to meet or exceed all OSHA requirements.
C. Install a rail-type fall prevention device on the new ladder.
D. Fall prevention device to be installed after the topcoat is dry to the touch. Use temporary safety lines during construction.
E. Begin installation of the fall prevention device 3 ft. above the bowl and extend to the roof.
F. See Drawing 13.
G. Payment is a separate line item "Wet Interior Ladder" which the Owner reserves the right to delete.

3.25 ROOF VENT SCREEN – FLUTED COLUMN

A. Remove the existing interior vent screen and furnish and install a new screen on the roof vent.
B. Attach screens with the existing fasteners.
C. Payment is incidental to the project.

3.26 ROOF HANDRAIL and PAINTER'S RAILING – FLUTED COLUMN

A. Install a 20 ft. diameter handrail, and a 23 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. Verify that the new railings will not interfere with any existing appurtenances on the roof prior to fabrication. Appurtenances may need to be relocated or the size of the railings altered.
C. All butt weld sections on the painters railing to be at a stand-off.
D. 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.
E. The Contractor can install additional couplings for their own use as needed but the noted couplings are to be installed as a minimum.
F. See Drawing 14a-14b.
G. Payment is a separate line item "Roof Handrail and Painter's Railing" which the Owner reserves the right to delete.

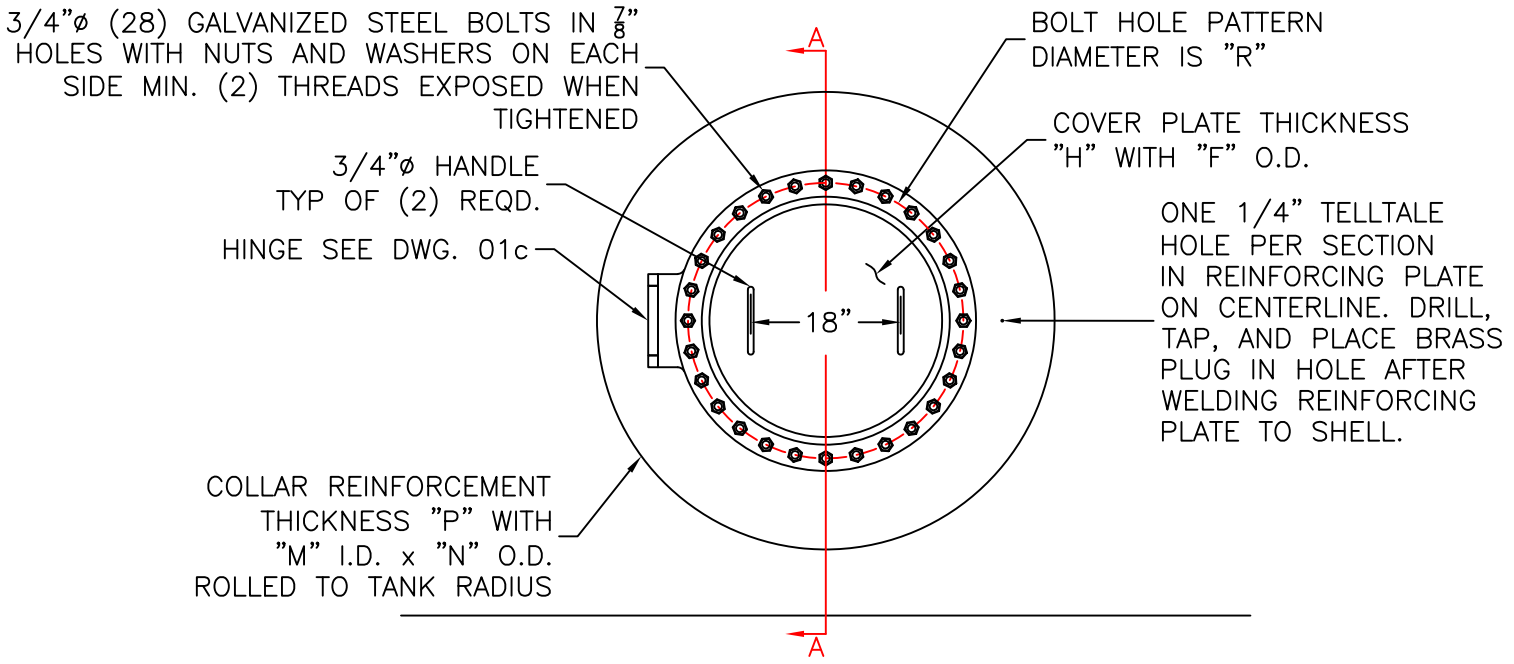
PART 4 – SPECIAL PROVISIONS

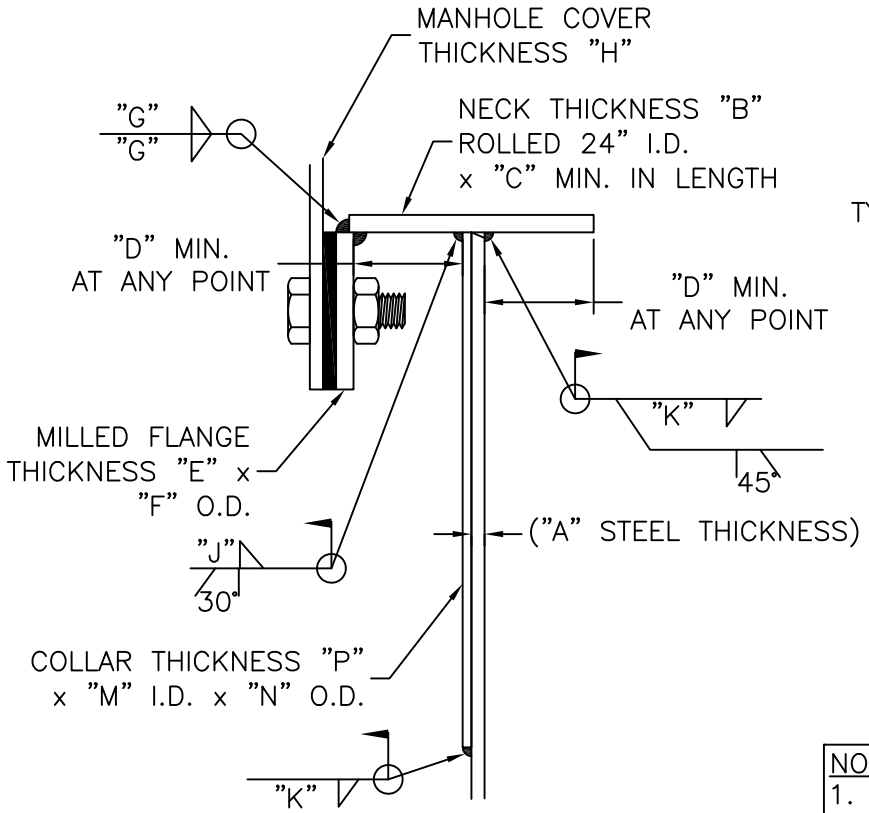
4.01 WELD PREPARATION PRIOR to COATING

A. Prepare all new welds per NACE SP0178 prior to coating application. Grind welds to category D.

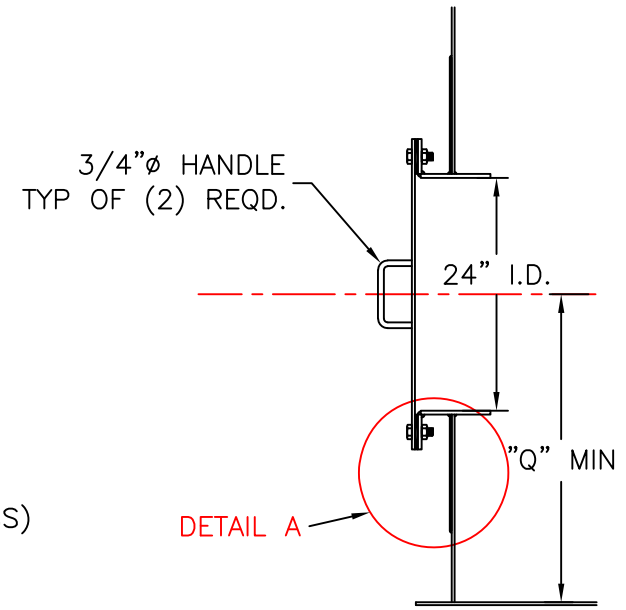
4.02 SURFACE PREPARATION – PREWELDING – LEAD/CHROMIUM PAINT – DOUBLE ELLIPSE

A. The existing exterior coating is known to contain low levels of lead and chromium.
B. Remove all coating 6-in. on both sides of welding area by abrasive blast cleaning or vacuum shrouded power tool cleaning prior to any cutting or welding.
C. Chemical stripping or other method may be approved by the Engineer.
D. Do not begin any repair work until all adjacent coating is properly removed.

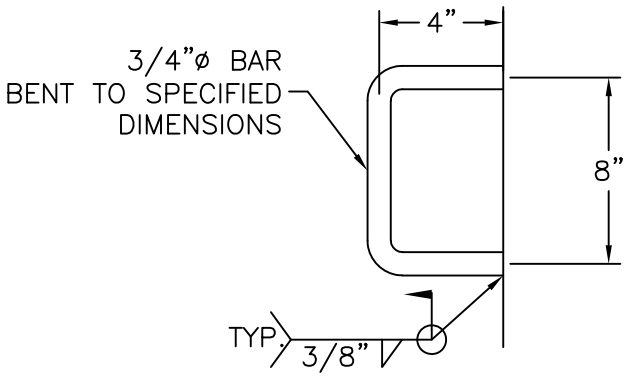




DETAIL A



SECTION A–A



COVER HANDLES

NOTES:
1. SEE DWG. 01b FOR SIZING TABLE.
2. 3/8" NEOPRENE GASKET MATERIAL IS REQUIRED BETWEEN BOLTED HATCH AND FLANGE.
3. MANWAY IS TO BE CLEAR OF THE TANK LAP SEAMS.
4. ROUND AND GRIND SMOOTH ALL SHARP CORNERS.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
24" Bolted Manway	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 01a

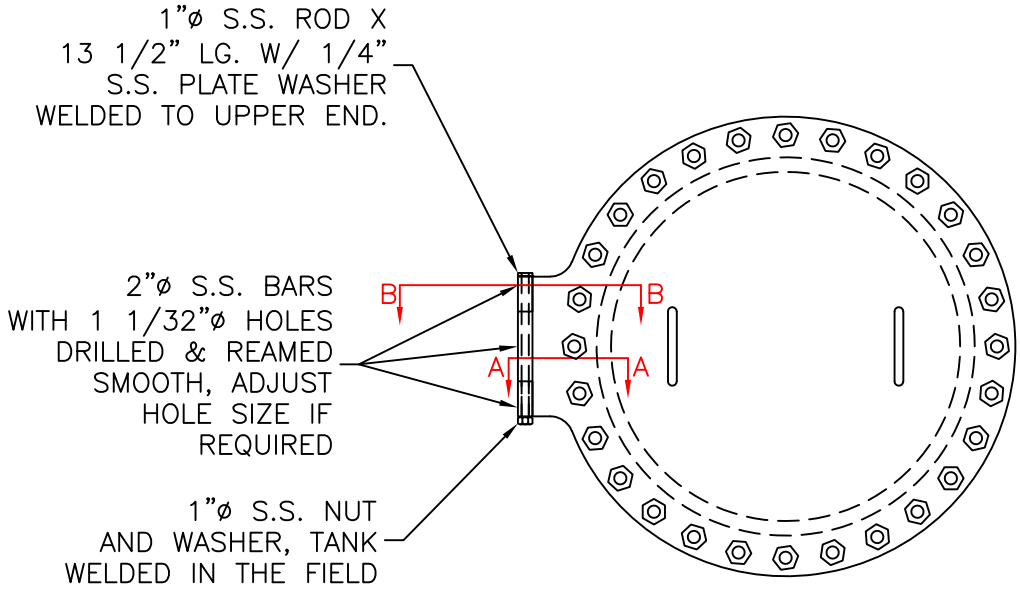
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
EXISTING STEEL THICKNESS	NECK THICKNESS	NECK LENGTH	NECK PROTRUSION IN & OUT	MILLED FLANGE THICKNESS	FLANGE & COVER O.D.	FLANGE TO NECK WELD	COVER THICKNESS	NECK TO COLLAR OR OUTSIDE TANK WELD	NECK TO INSIDE TANK WELD	COLLAR O.D. WELD	COLLAR I.D.	COLLAR O.D.	COLLAR THICKNESS	EDGE TO CENTER OF MANWAY	BOLT HOLE LOCATION
0.325"	5/8"	13"	4"	5/8"	32.75"	5/8"	7/8"	1/4"	1/4"	1/4"	25.25"	32"	1/4"	30"	30.25"

NOTE:
THE EXISTING STEEL THICKNESS IS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO MANWAY FABRICATION. INFORM THE ENGINEER IF THE EXISTING THICKNESS DOESN'T MATCH THE CHART AS NOTED. THE MANWAY SIZING MAY NEED TO BE MODIFIED.

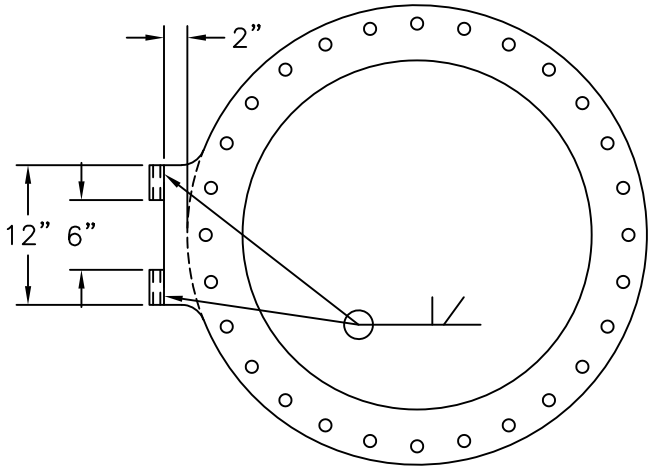
Note: Drawing not to scale.

DIXON ENGINEERING, INC.

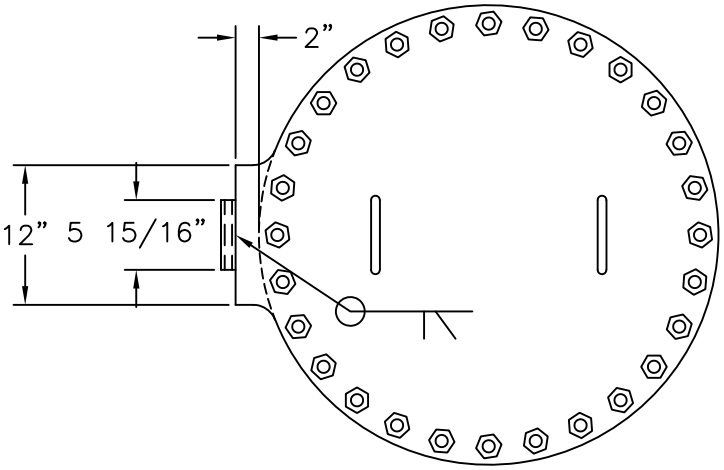
Genoa, OH 150,000 Double Ellipse	
24" Bolted Manway Chart	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 01b



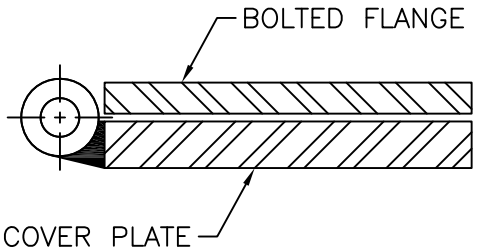
MANWAY HINGE



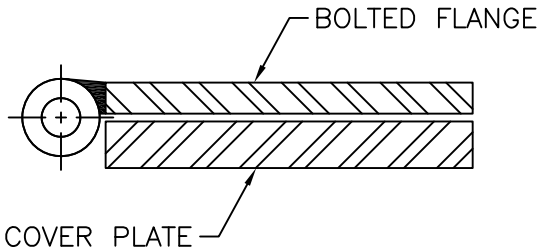
BOLTING FLANGE



COVER PLATE



SECTION A–A



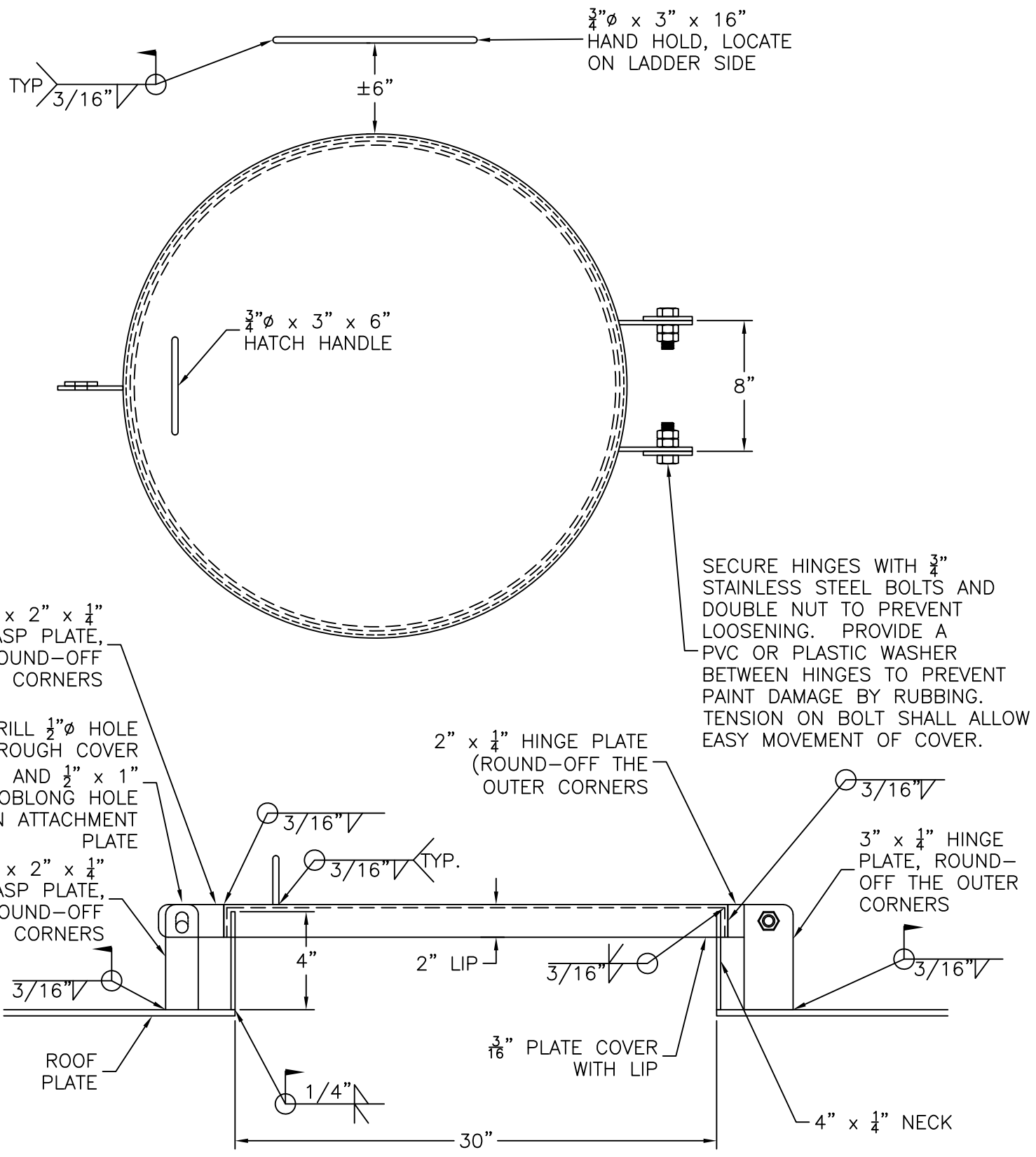
SECTION B–B

NOTES:
1. GRIND SMOOTH ALL SHARP CORNERS.
2. COVER NOT TO SAG GREATER THAN 1/2" WHEN OPEN, AND TO CLOSE EVENLY.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

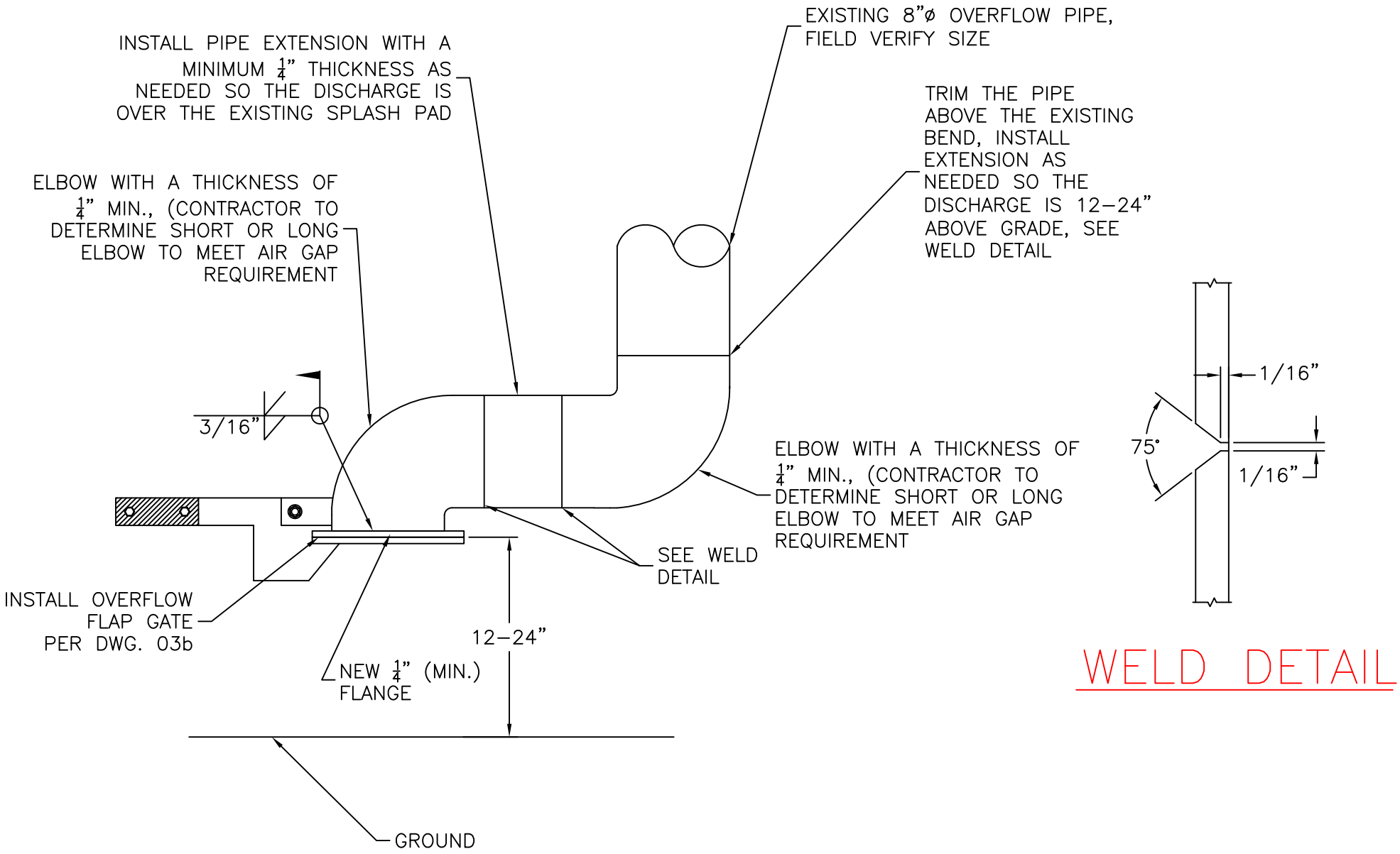
Genoa, OH 150,000 Double Ellipse	
24" Manway Hinge Details	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 01c



NOTES:
1. LOCATION OF THE MANWAY TO BE DETERMINED BY THE ENGINEER.
2. INSTALL A GASKET ON THE COVER.
3. HATCH COVER IS TO SEAT ON TOP OF THE ENTIRE CURB WHEN CLOSED.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
30" Wet Interior Roof Hatch	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 02



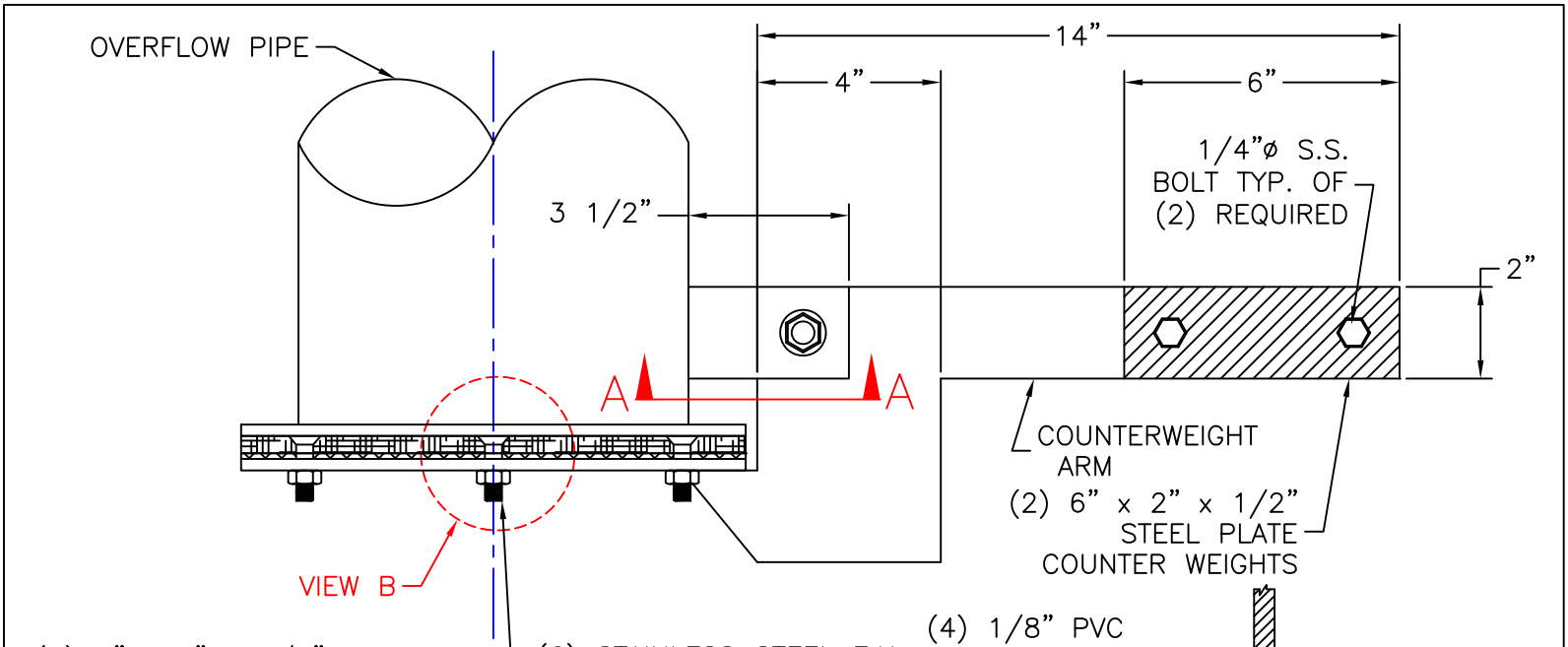
WELD DETAIL

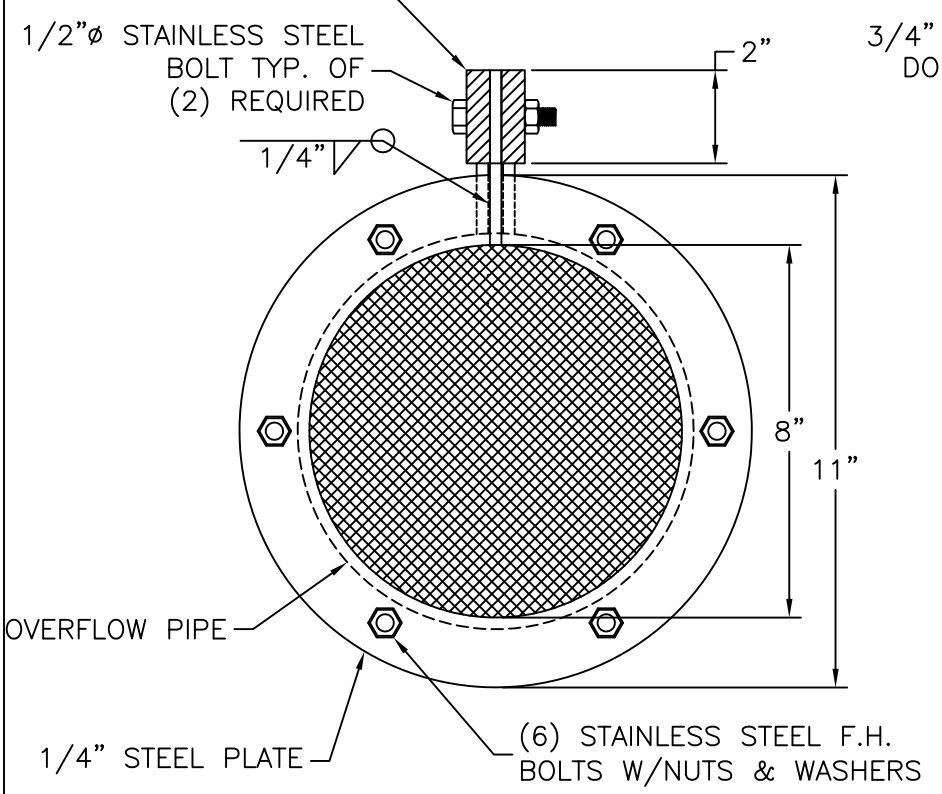
NOTE:
THE CONTRACTOR CAN INSTALL TWO 45° ANGLES IN LIEU OF TWO ELBOWS TO CREATE A VERTICAL DISCHARGE IF POSSIBLE, THE CENTER OF THE DISCHARGE OVER THE SPLASH PAD IS TO BE A MINIMUM OF 24 INCHES FROM THE FOUNDATION

Note: Drawing not to scale.

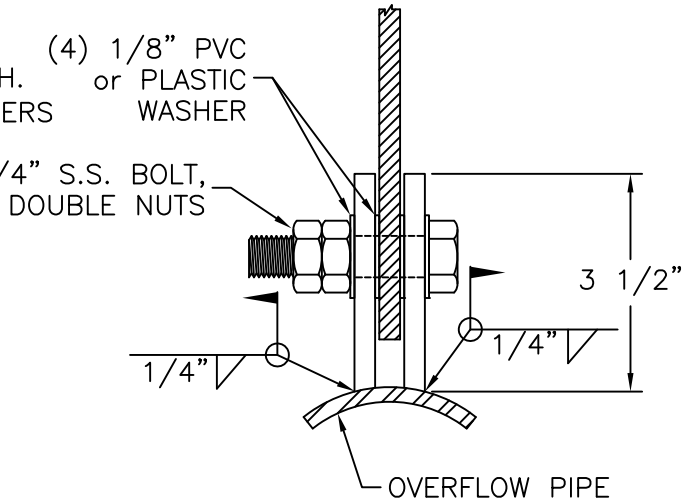
DIXON ENGINEERING, INC.

Genoa, OH 150,000 Double Ellipse	
Overflow Discharge	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 03a



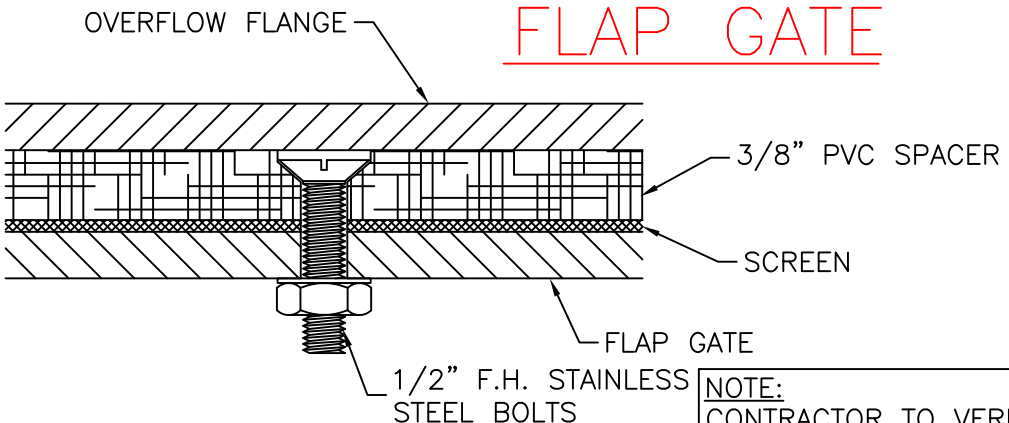


FLAP GATE



SECTION A–A

ISO VIEW



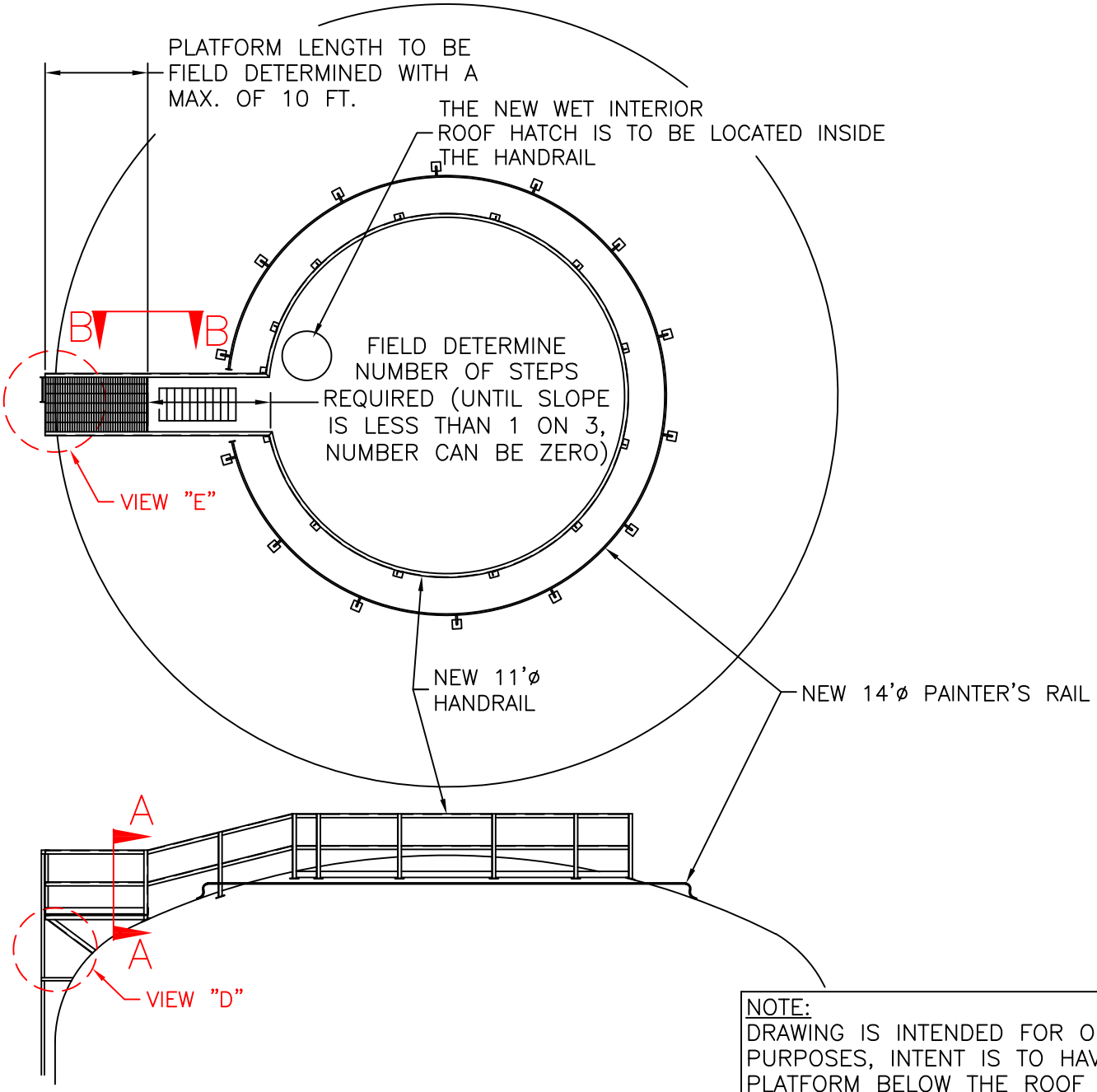
VIEW B

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

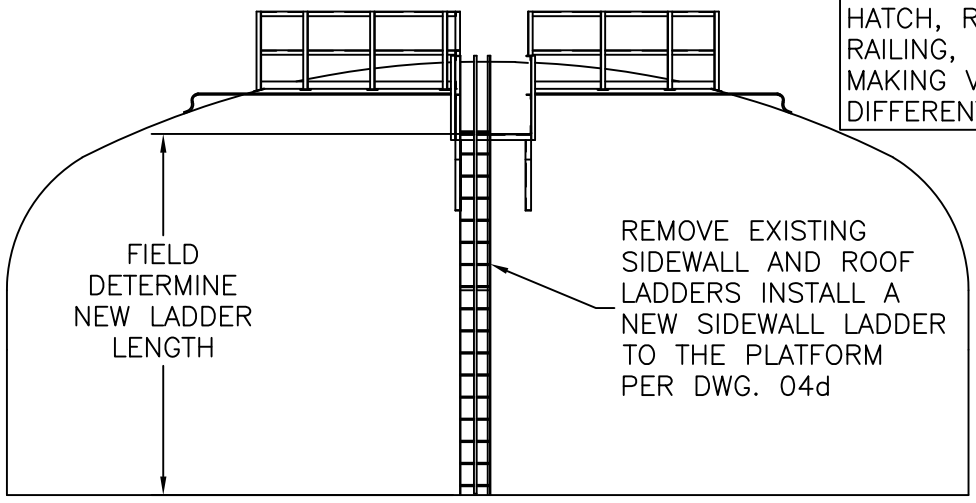
Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 150,000 Double Ellipse	
8" Overflow Flap Gate	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 03b



NOTE:
DRAWING IS INTENDED FOR ORIENTATION PURPOSES, INTENT IS TO HAVE A NEW PLATFORM BELOW THE ROOF HATCH, A COMPLETE RAILING AROUND THE ROOF HATCH, RAILS UP TO THE CIRCULAR RAILING, PROJECT TANK SIZE MAY DIFFER MAKING VIEW OF THE RAILING, ETC. DIFFERENT THAN SHOWN.

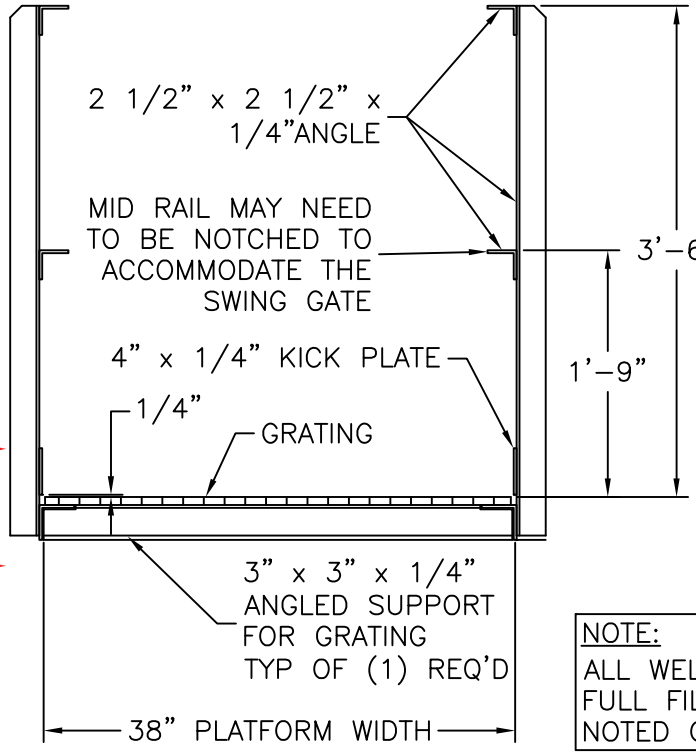


ROOF PLATFORM and RAILING

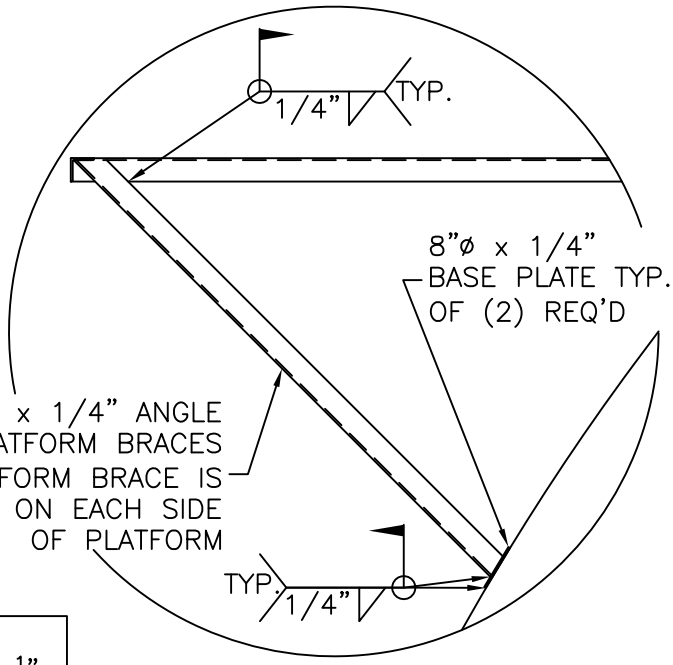
Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 150,000 Double Ellipse	
Roof Platform	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 04a

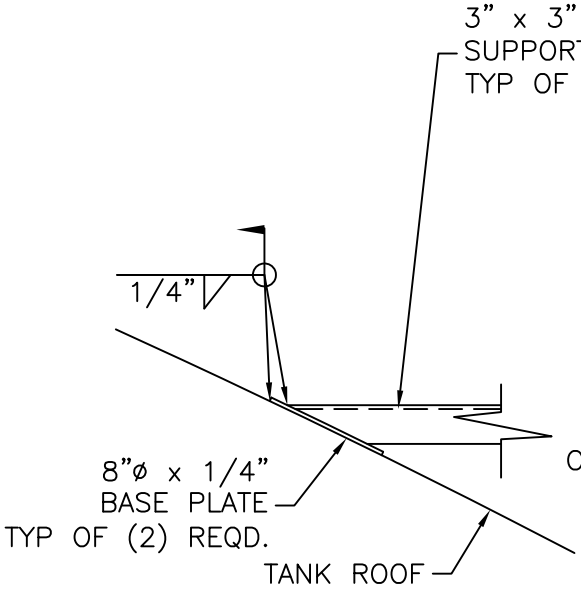


A-A

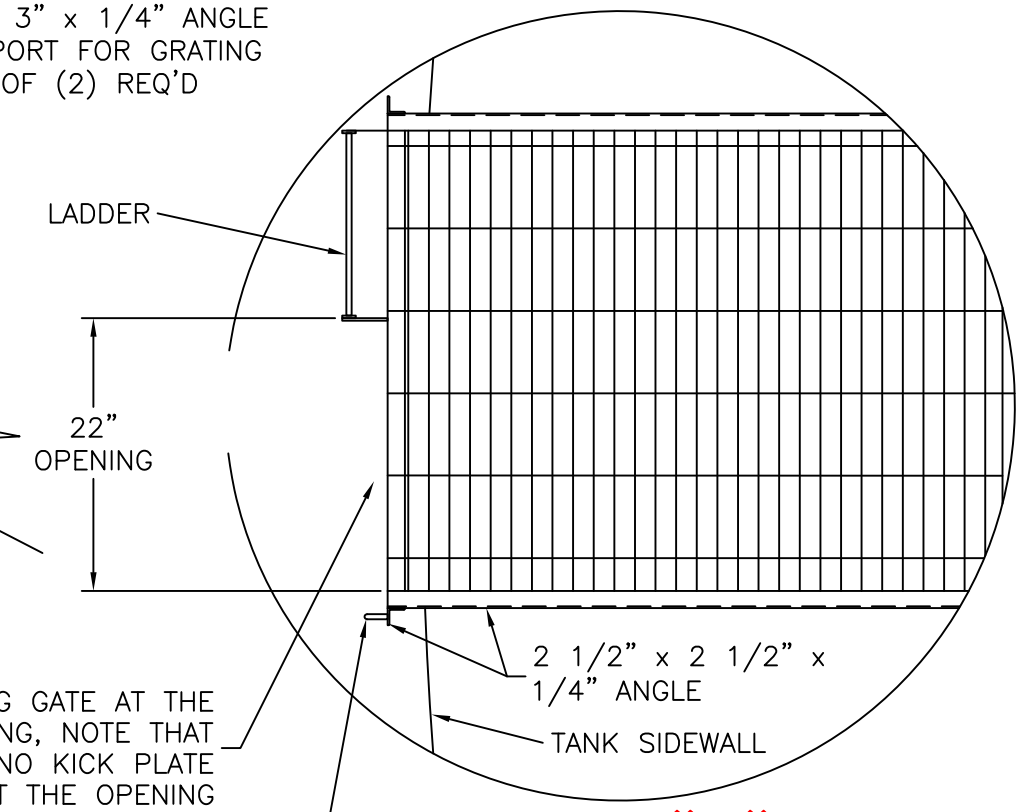


VIEW "D"

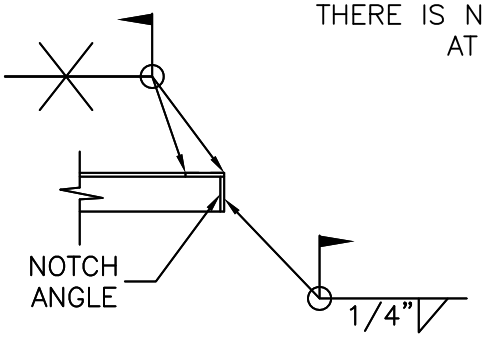
NOTE:
ALL WELDS TO BE $\frac{1}{4}$" FULL FILLET UNLESS NOTED OTHERWISE



B-B



VIEW "E"

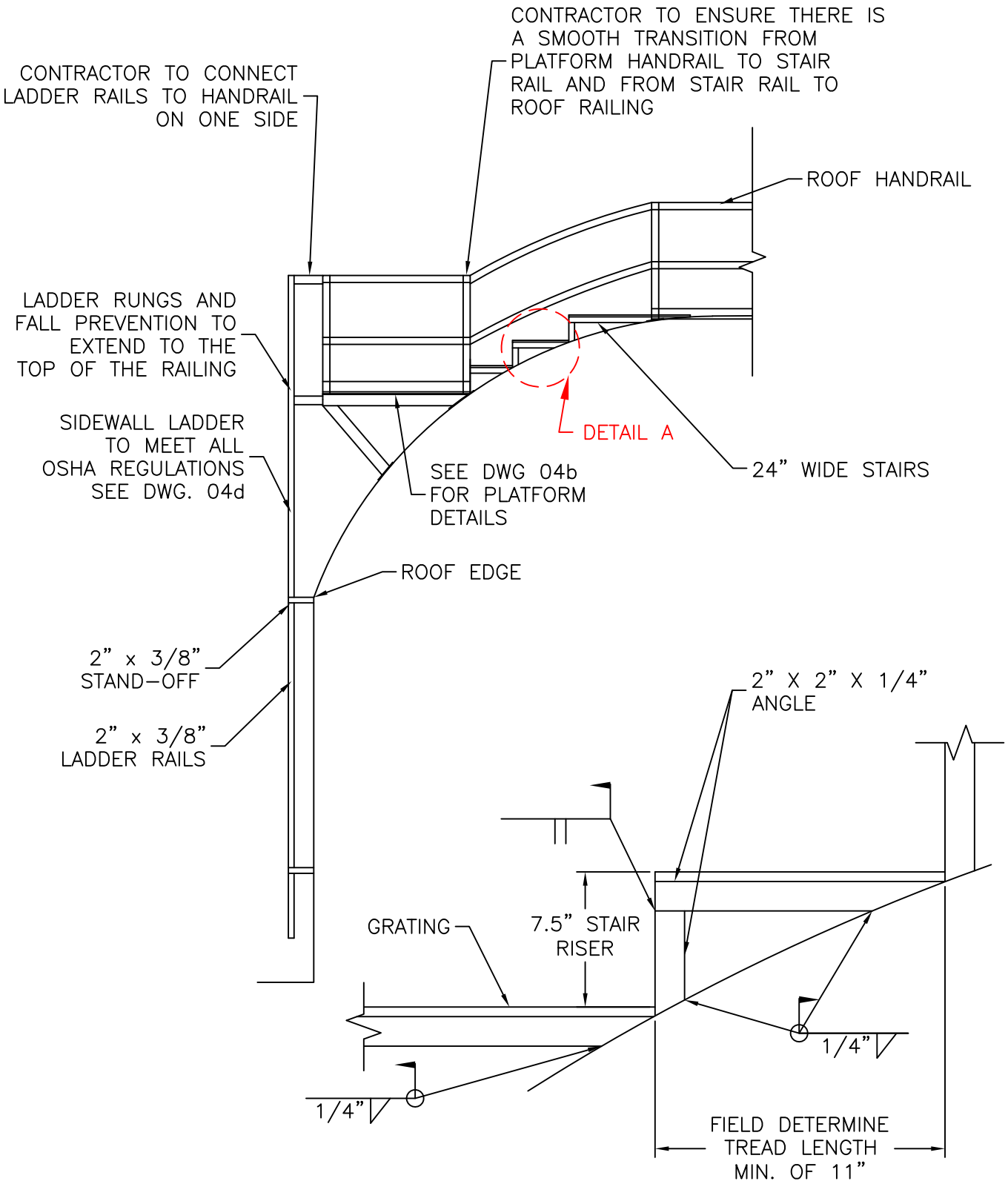


C-C

DETAILS

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
Roof Platform Details	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 04b



DETAIL A

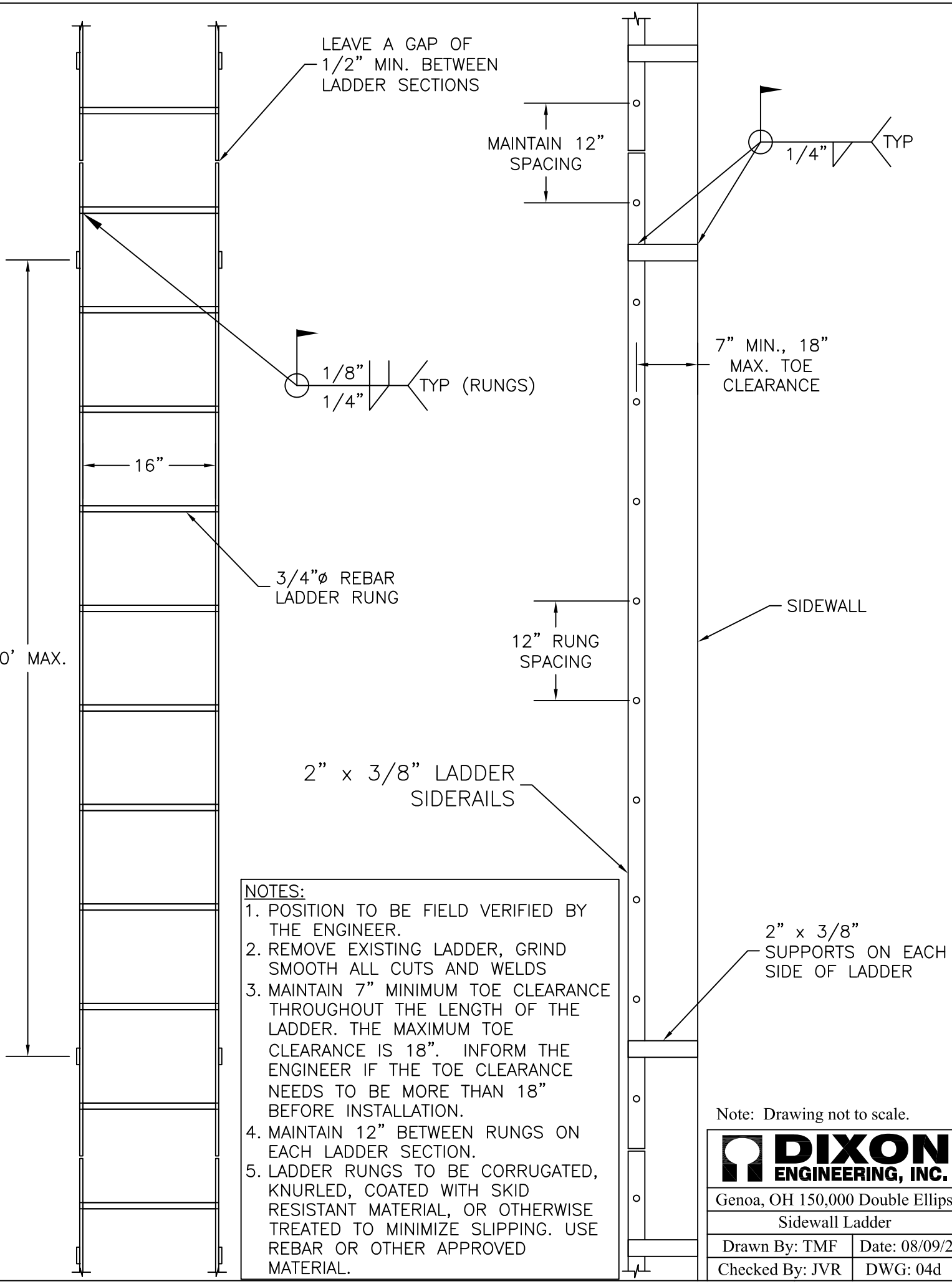
GRATING:

1. INDUSTRY STANDARD IS McNICHOLS SERIES GW-100 GALVANIZED STEEL GRATING.
2. CONTRACTOR TO FIELD VERIFY ALL GRATING SIZES (GRATING TO BE NO MORE THAN TWO PIECES FOR THE PLATFORM AND MUST BE ONE CONTINUOUS PIECE FOR EACH STAIR SECTION).
3. MOUNT GRATING EVERY 24" WITH TYPE M FASTENERS. MIN. OF 4 PER GRATING SECTION.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 150,000 Double Ellipse	
Stair Details	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 04c



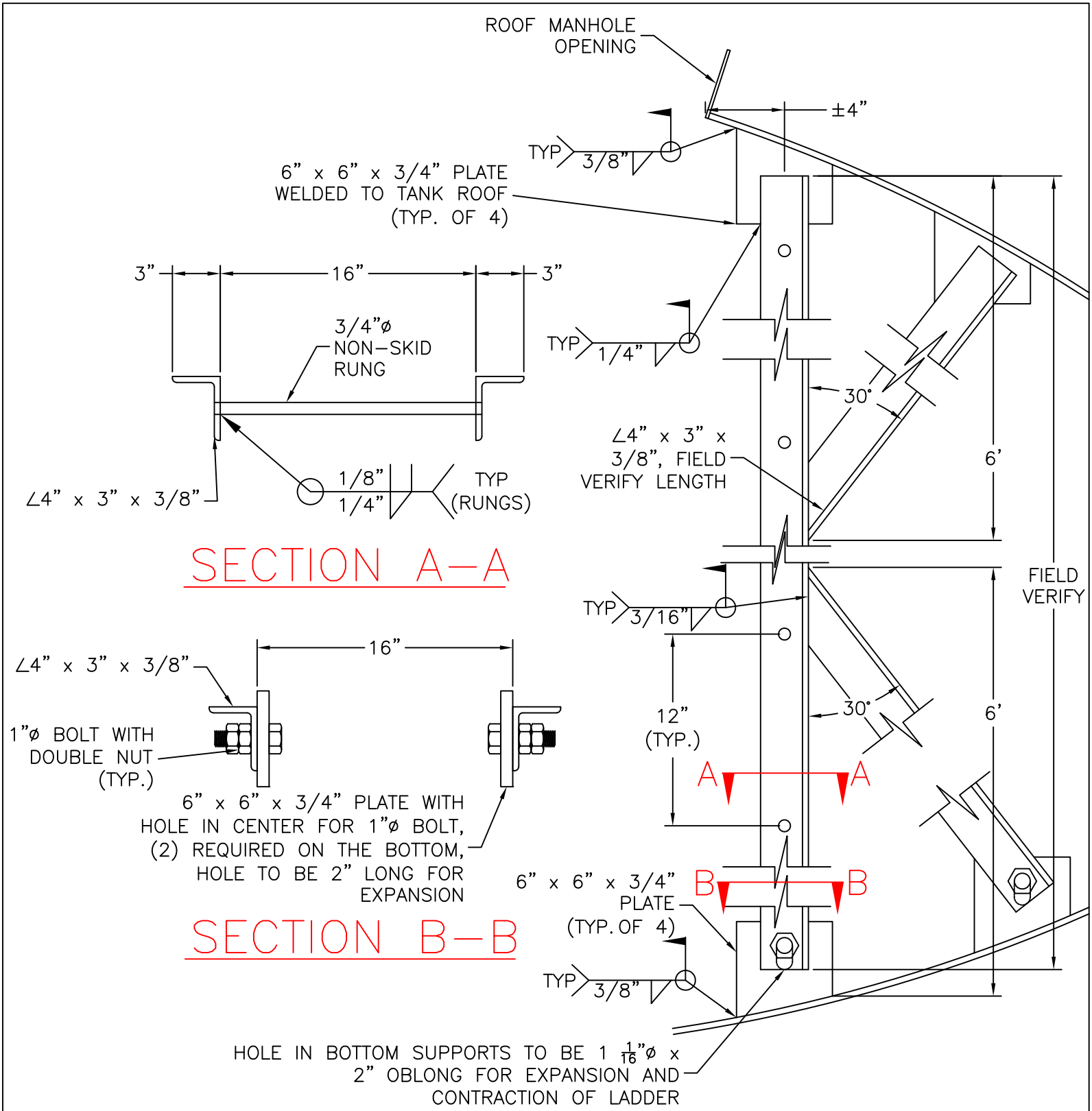
NOTES:

1. POSITION TO BE FIELD VERIFIED BY THE ENGINEER.
2. REMOVE EXISTING LADDER, GRIND SMOOTH ALL CUTS AND WELDS
3. MAINTAIN 7" MINIMUM TOE CLEARANCE THROUGHOUT THE LENGTH OF THE LADDER. THE MAXIMUM TOE CLEARANCE IS 18". INFORM THE ENGINEER IF THE TOE CLEARANCE NEEDS TO BE MORE THAN 18" BEFORE INSTALLATION.
4. MAINTAIN 12" BETWEEN RUNGS ON EACH LADDER SECTION.
5. LADDER RUNGS TO BE CORRUGATED, KNURLED, COATED WITH SKID RESISTANT MATERIAL, OR OTHERWISE TREATED TO MINIMIZE SLIPPING. USE REBAR OR OTHER APPROVED MATERIAL.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 150,000 Double Ellipse	
Sidewall Ladder	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 04d



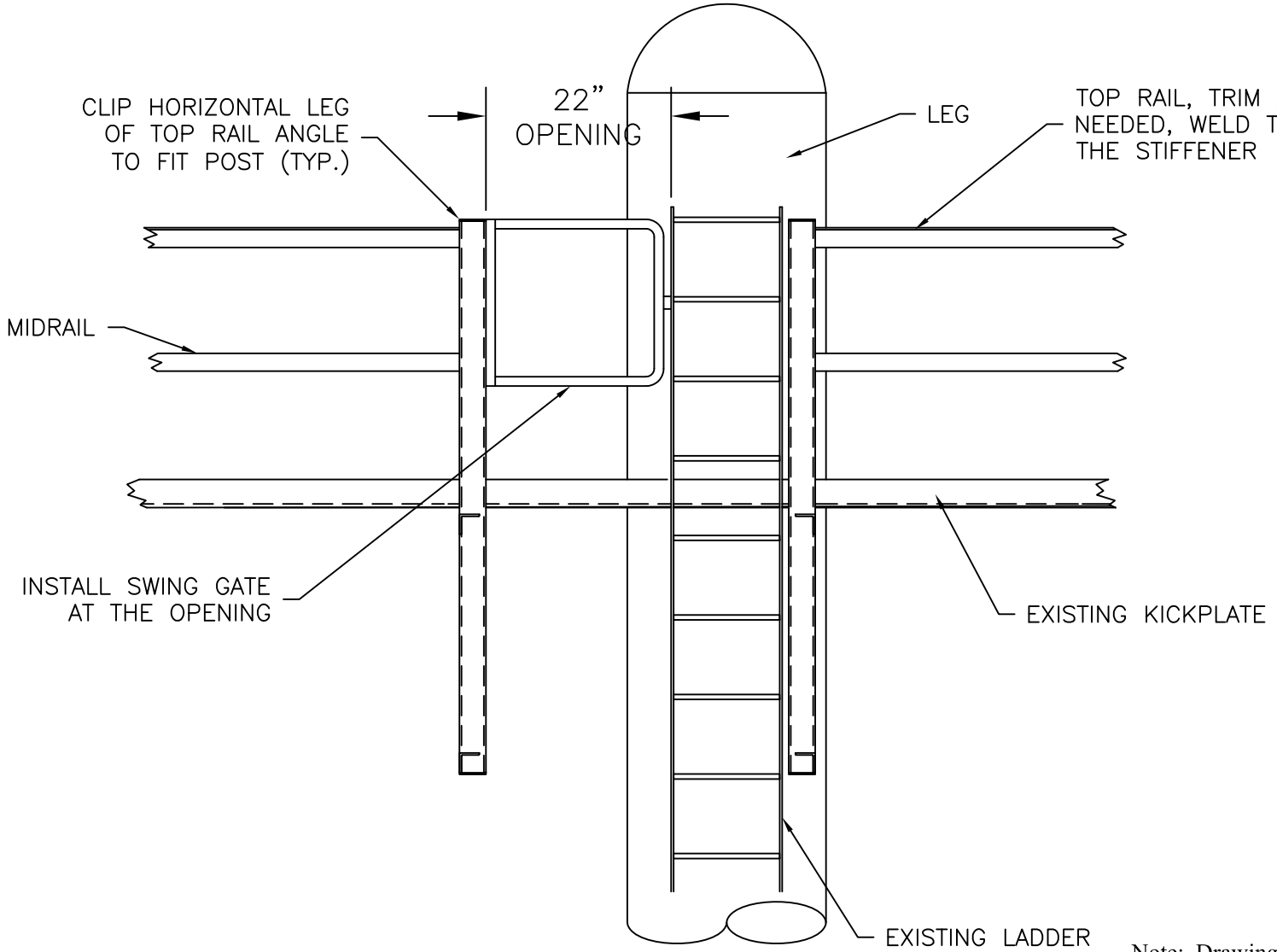
NOTES:

1. POSITION TO BE FIELD VERIFIED BY THE ENGINEER.
2. MAINTAIN 7" MINIMUM TOE CLEARANCE THROUGHOUT THE LENGTH OF THE LADDER.
3. MAINTAIN 12" BETWEEN RUNGS ON EACH LADDER SECTION.
4. LADDER RUNGS TO BE CORRUGATED, KNURLED, COATED WITH SKID RESISTANT MATERIAL, OR OTHERWISE TREATED TO MINIMIZE SLIPPING. USE REBAR OR OTHER APPROVED MATERIAL.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

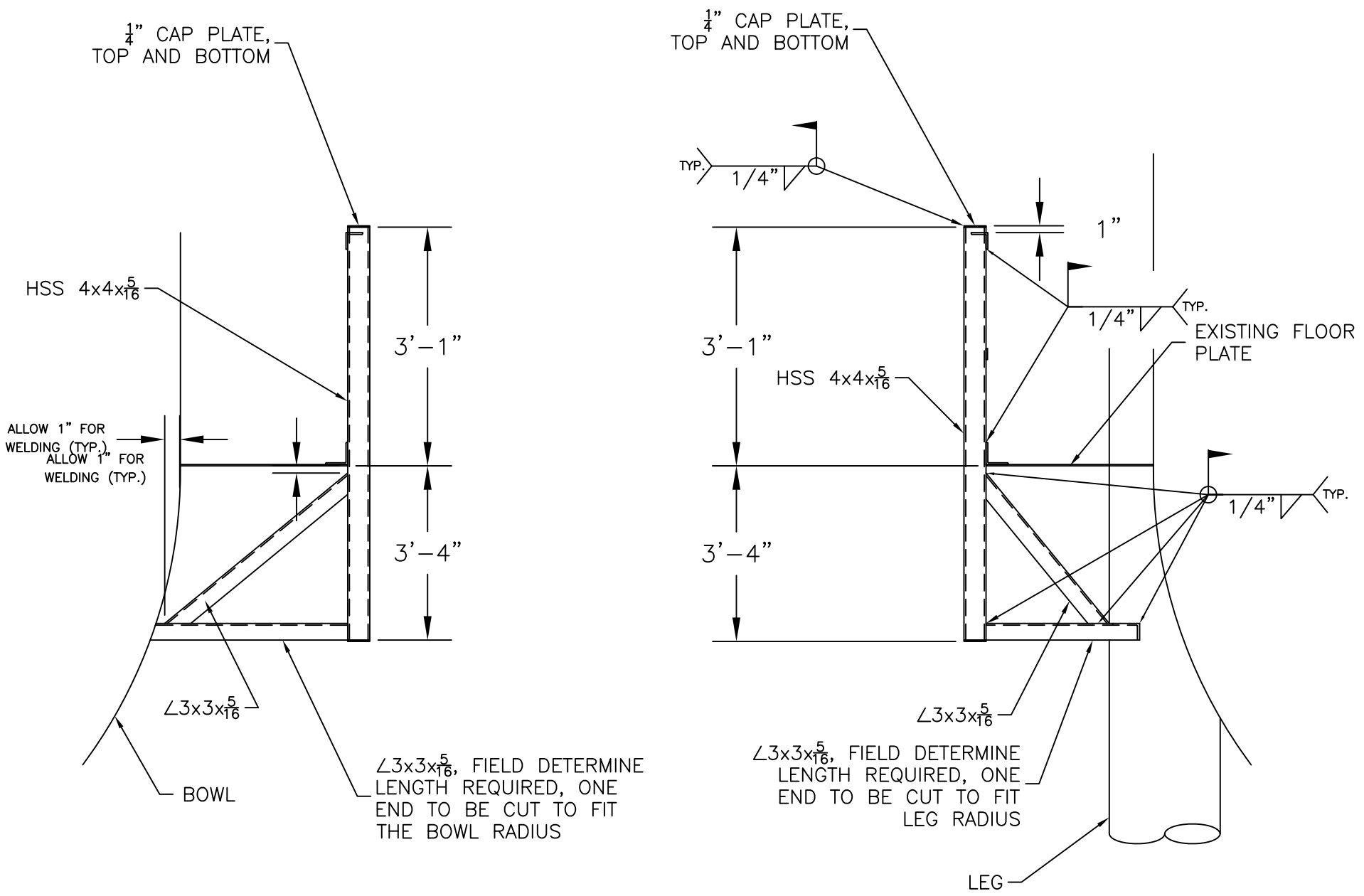
Genoa, OH 150,000 Double Ellipse	
Wet Interior Ladder	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 05



RAILING OPENING AT THE LADDER

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
Balcony Railing Opening	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 06a

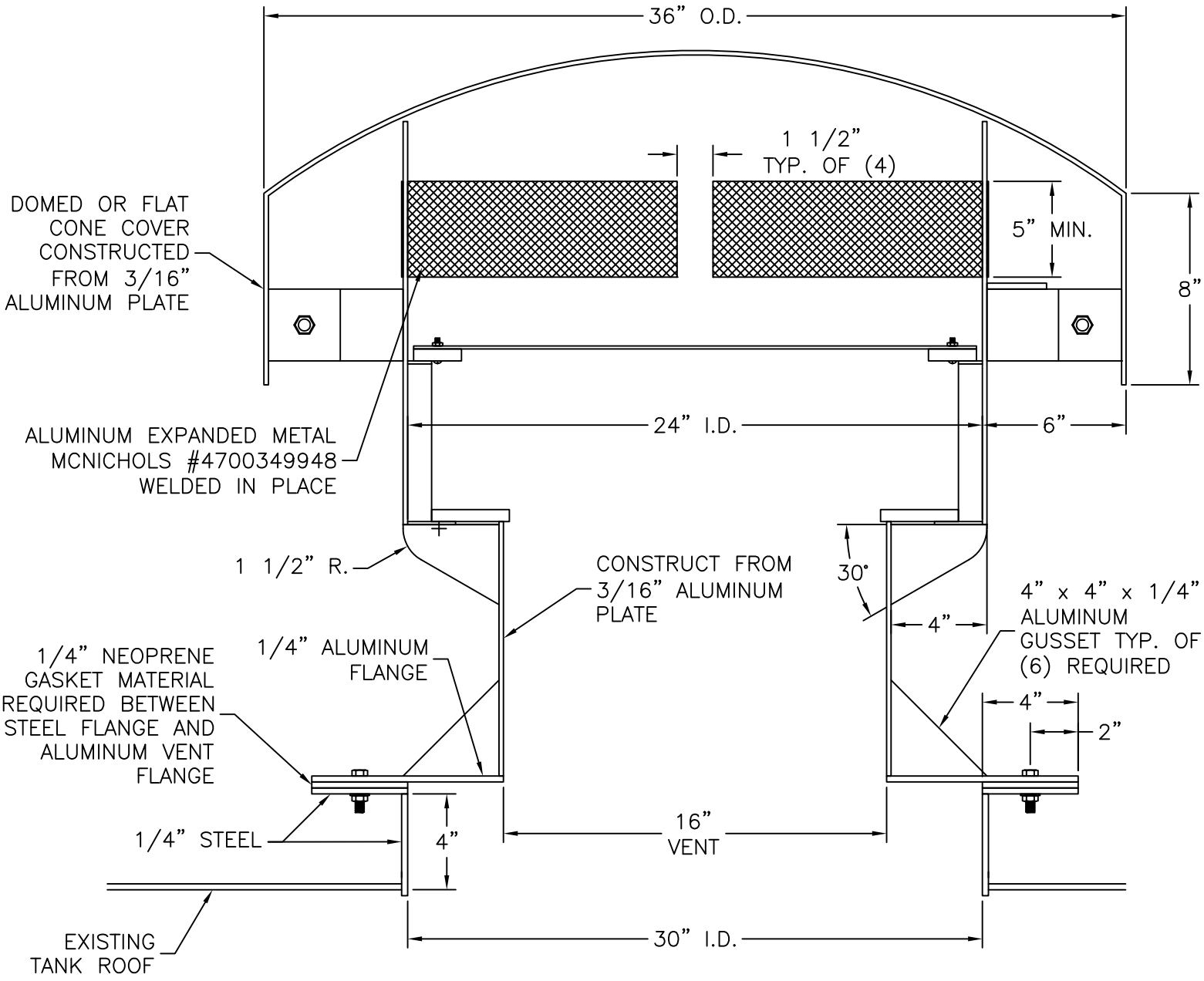


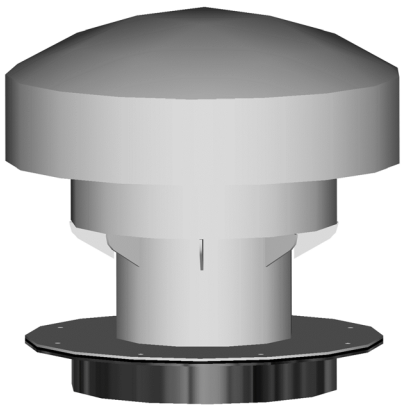
BRACING DETAIL

TYPICAL OF (2)

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
Balcony Railing Opening	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 06b

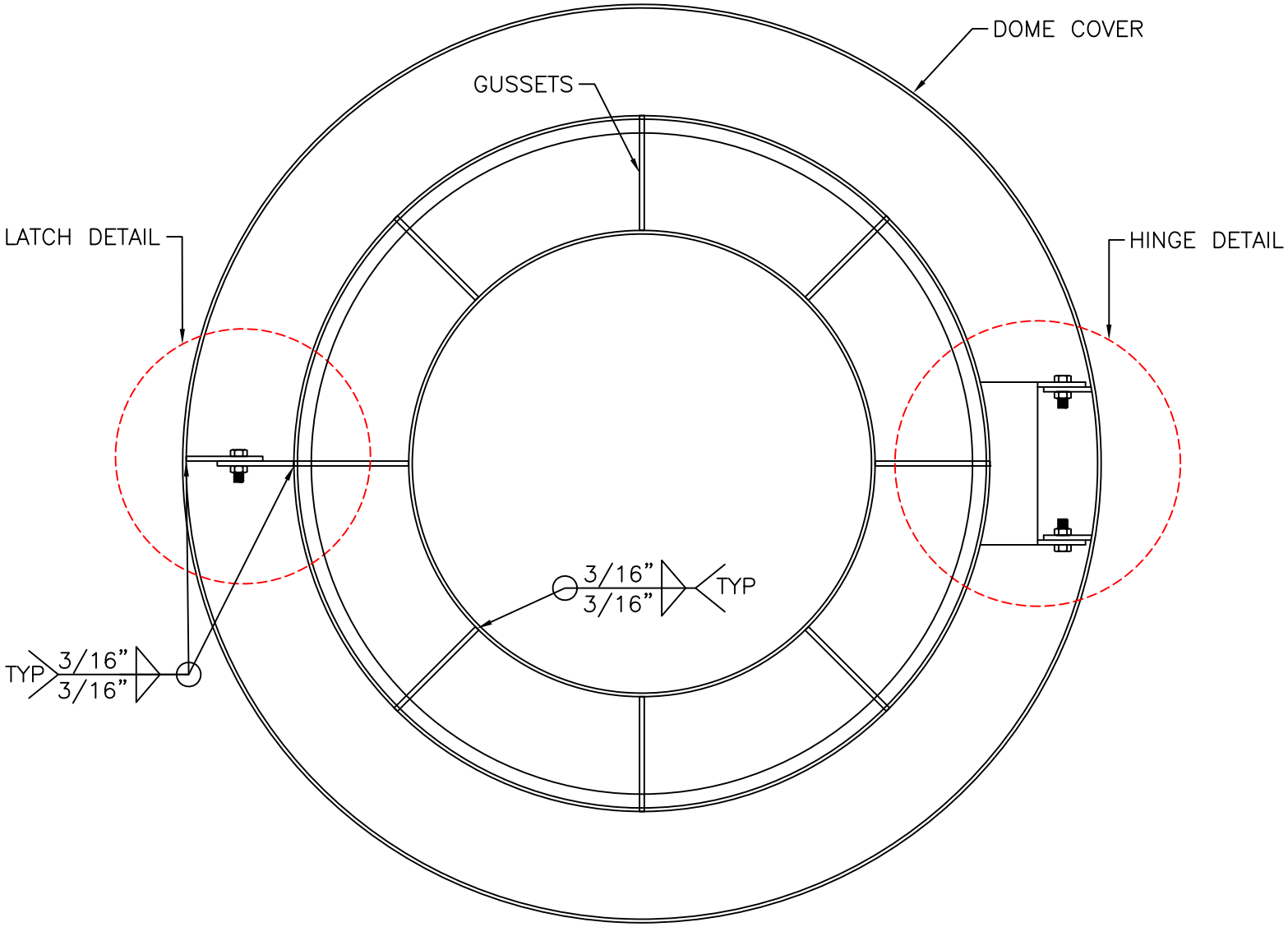




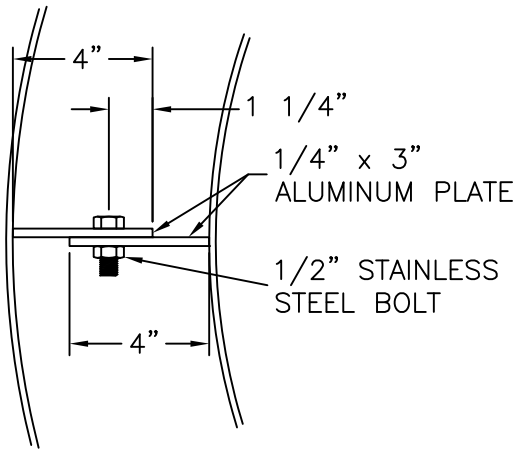
ISO VIEW

Note: Drawing not to scale.

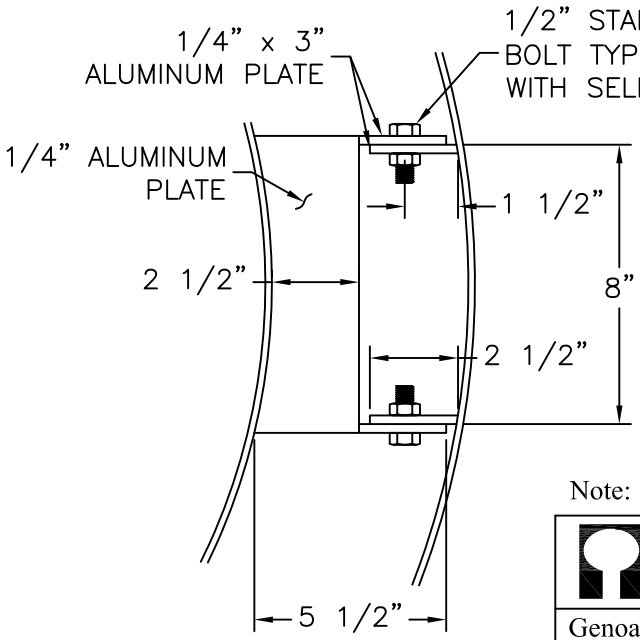
DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
16" Pressure Vacuum Roof Vent	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 07a



PLAN VIEW



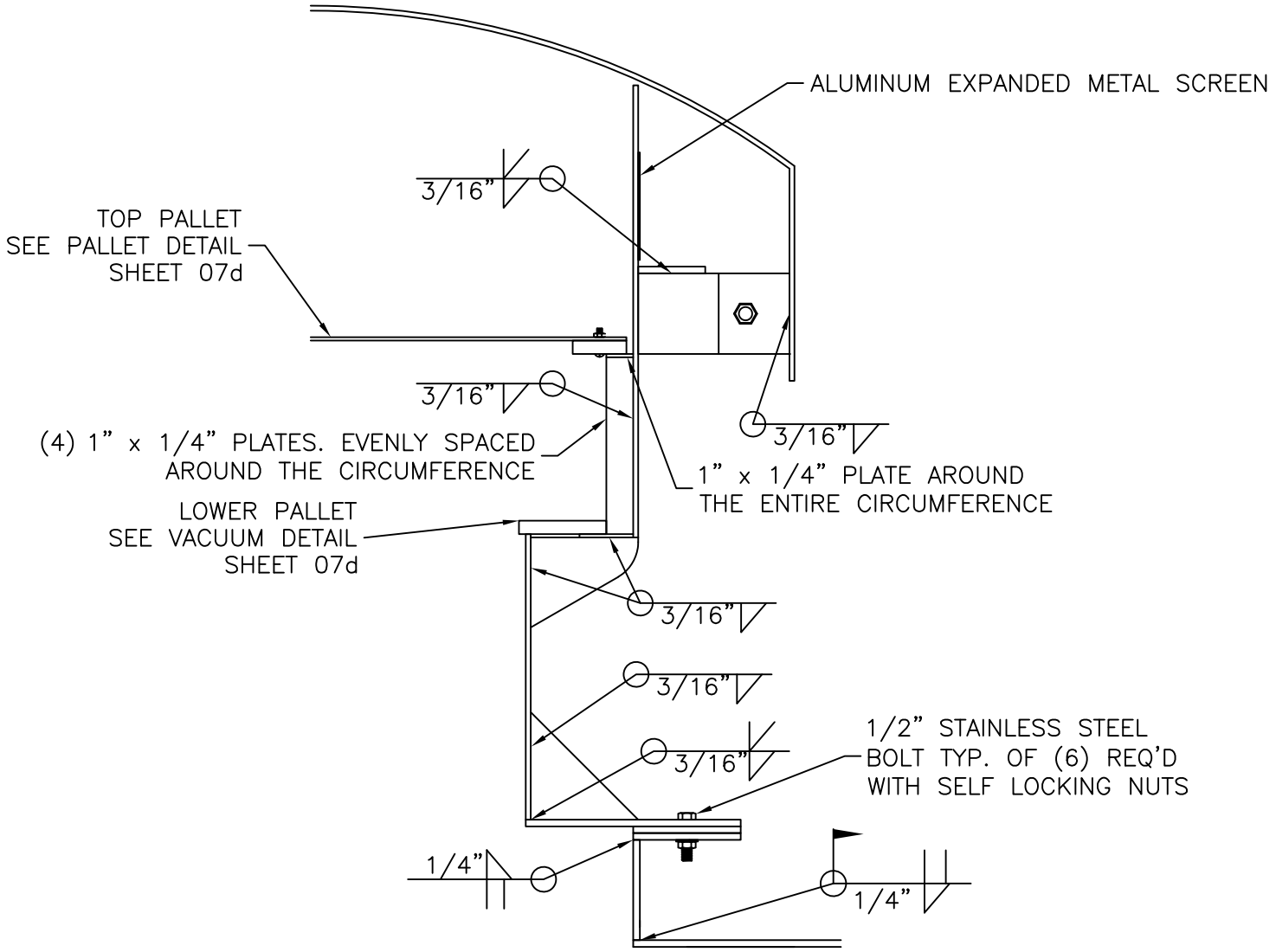
LATCH DETAIL



HINGE DETAIL

Note: Drawing not to scale.

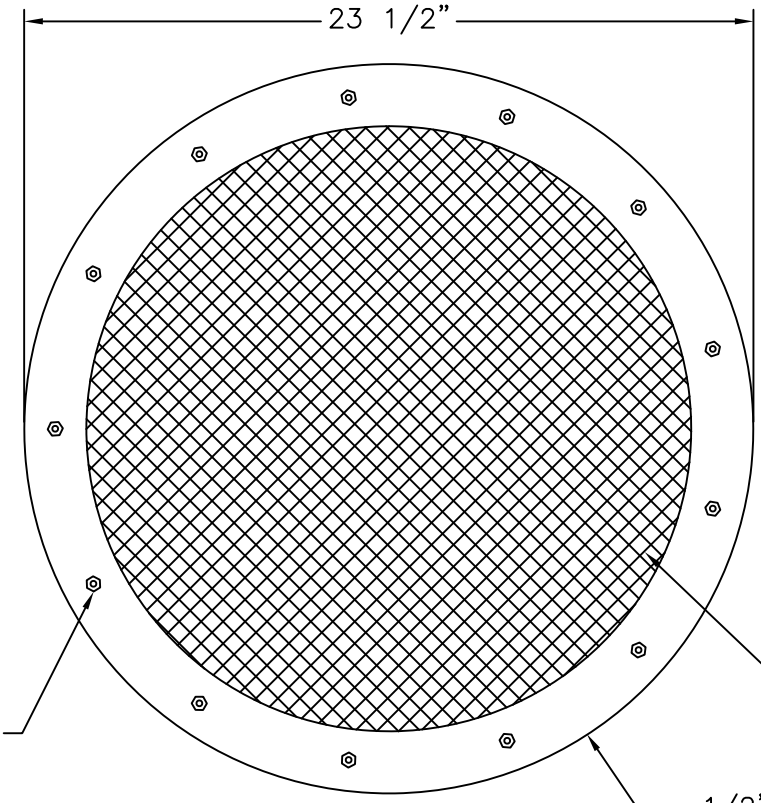
DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
16" Pressure Vacuum Roof Vent	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 07b



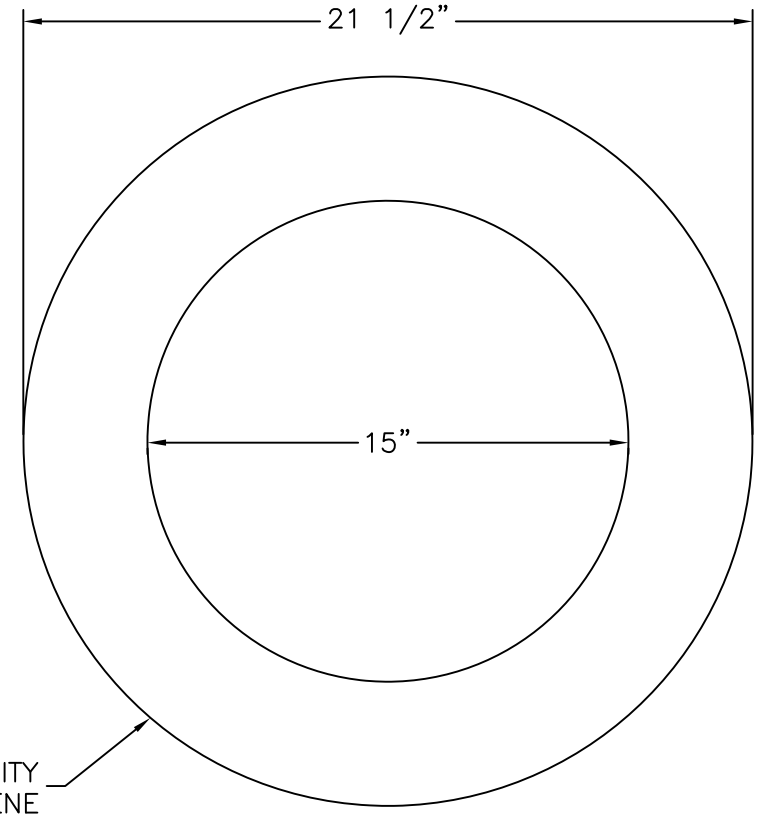
WELDING DETAIL

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
16" Pressure Vacuum Roof Vent	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 07c



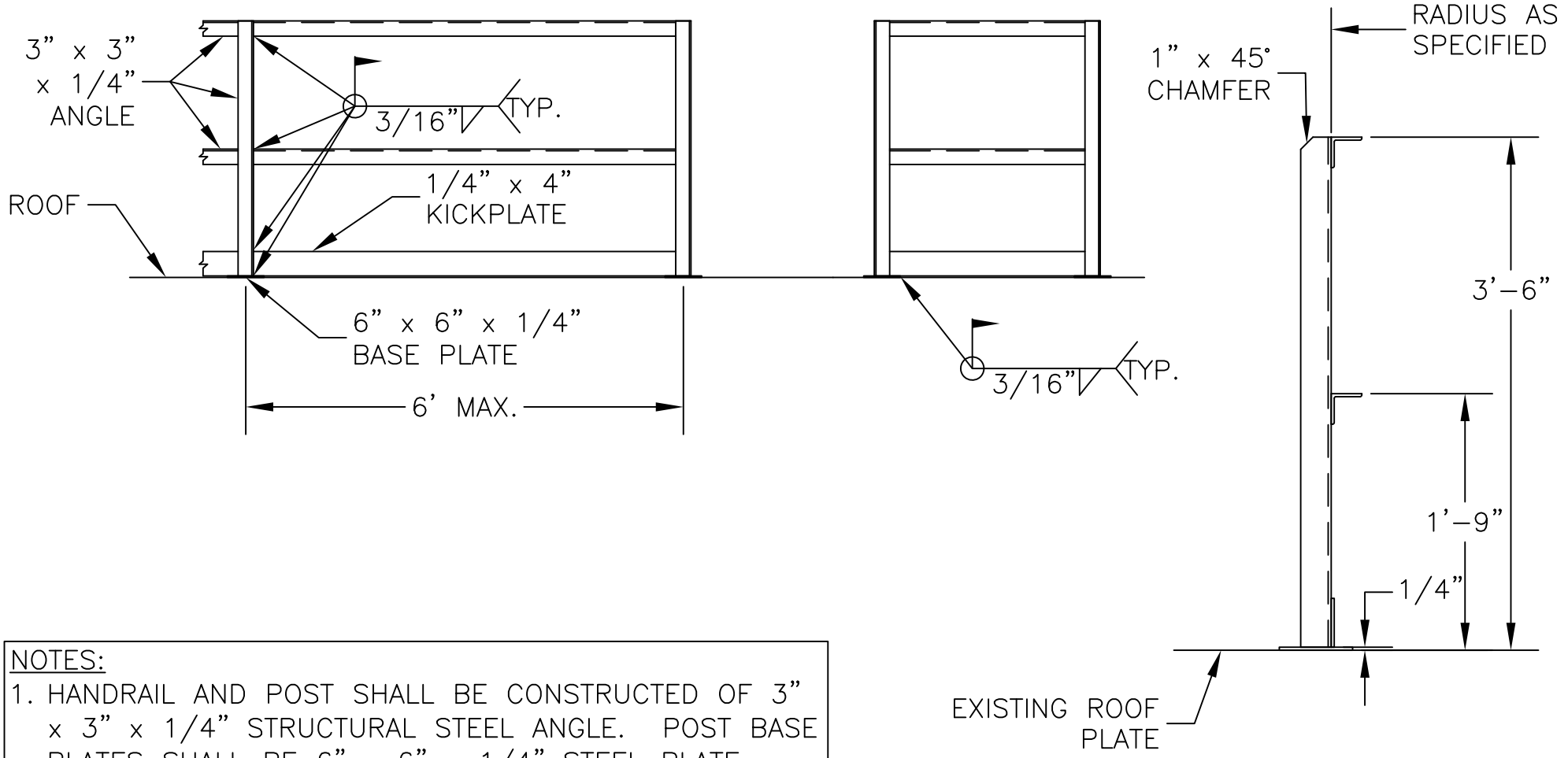
TOP PALLET



VACUUM PALLET

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
16" Pressure Vacuum Roof Vent	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 07d



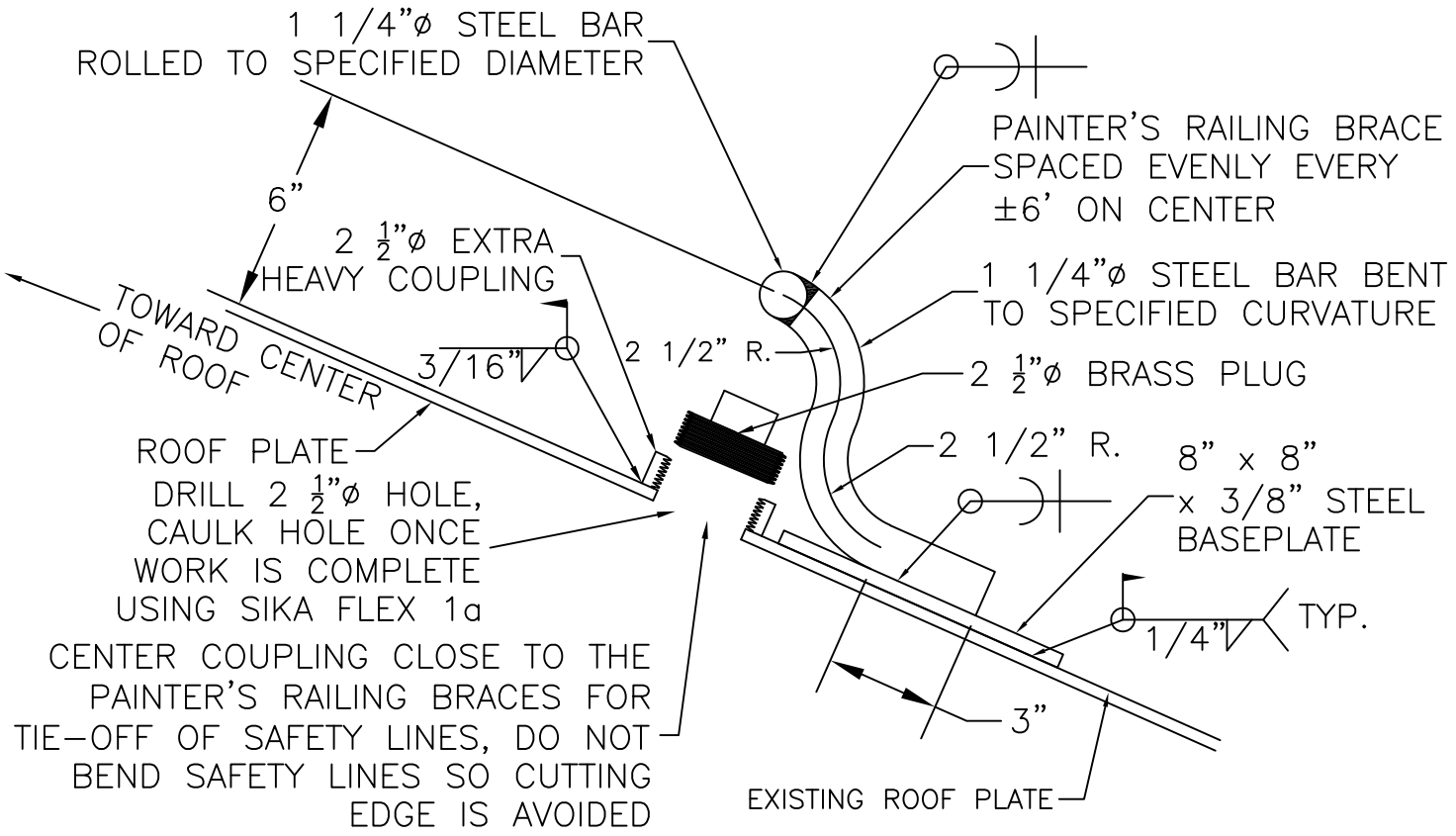
NOTES:

1. HANDRAIL AND POST SHALL 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.
2. SPACING BETWEEN MOUNTING PADS IS NOT TO EXCEED 6'. IT MAY BE NECESSARY TO USE MORE THAN THE NUMBER OF PADS SHOWN.
3. AN OPENING IS TO BE MADE IN THE HANDRAIL IN THE FIELD FOR THE ROOF PLATFORM. CONSTRUCT THE HANDRAIL IN THE SHOP THEN MODIFY IN THE FIELD.

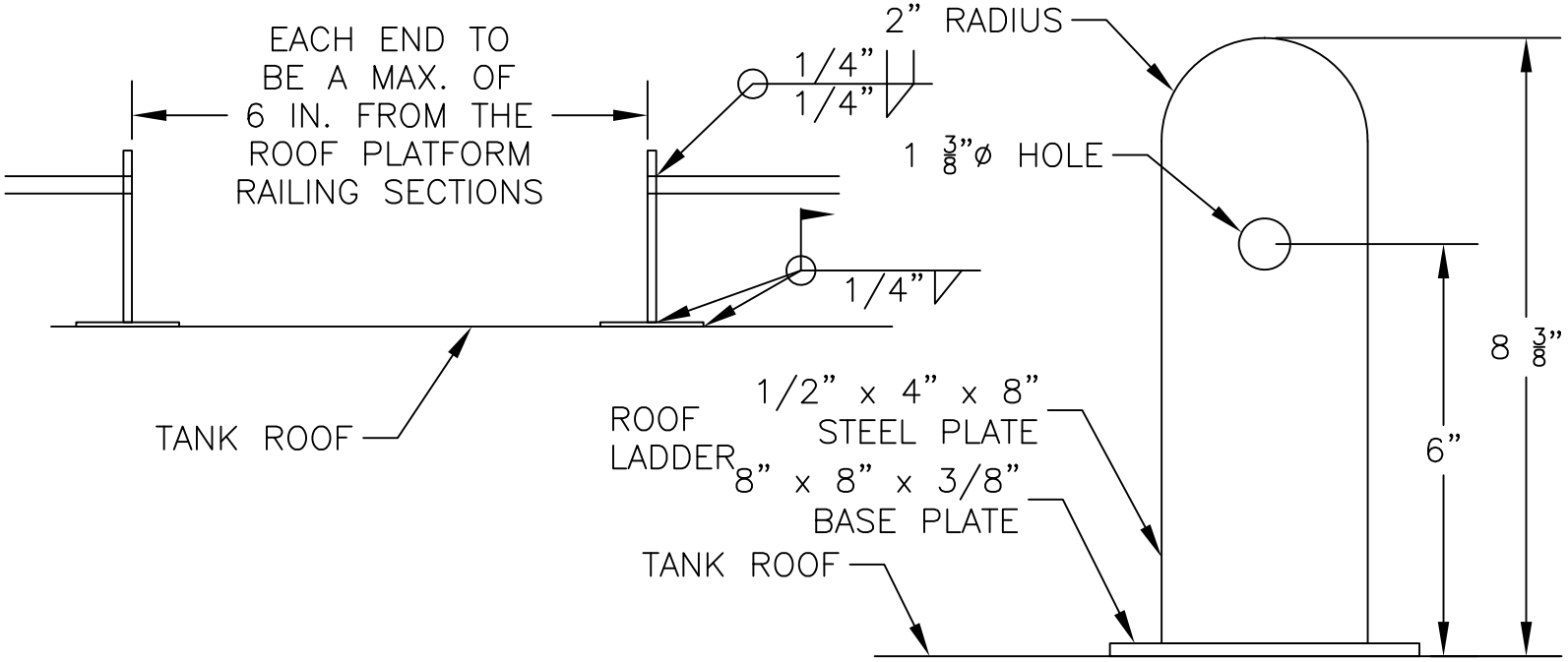
Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 150,000 Double Ellipse	
Roof Handrail	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 08a

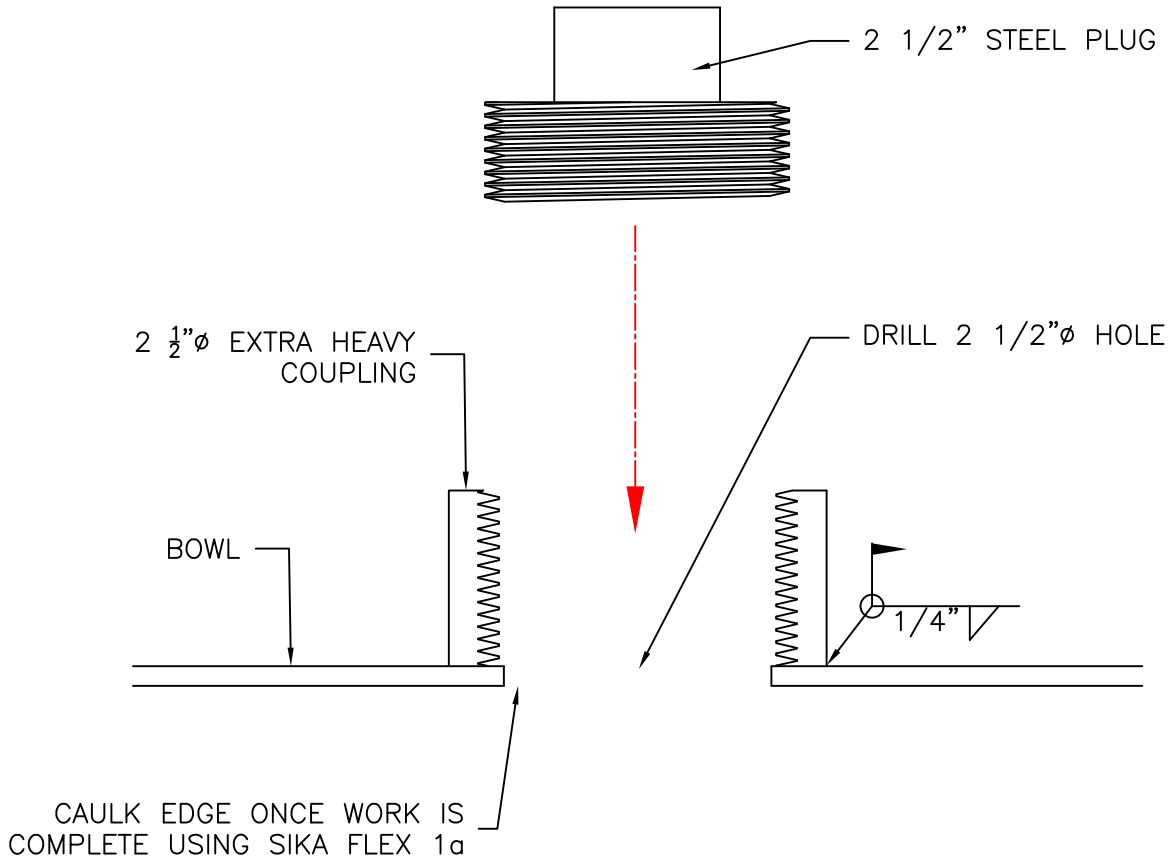


NOTES:
1. PROVIDE COUPLING AT PAINTER'S RAIL BRACES (ONE AT EVERY OTHER BRACE).
2. ALL WELDED CONNECTION POINTS FOR THE 1 1/4" ROLLED STEEL BAR MUST BE COMPLETED AT A PAINTER'S RAIL BRACE.
3. THREADED CONNECTIONS ARE TO BE SEALED WITH PIPE JOINT COMPOUND (OATEY GREAT WHITE OR APPROVED EQUAL).
4. 8" DIA. BASEPLATES ARE ACCEPTABLE IN LIEU OF SQUARE SHAPED.
5. ONE STANDOFF WITHIN 3" OF EACH SIDE OF A BUTT JOINT (2 STANDOFFS AT EACH JOINT) IS ACCEPTABLE IN LIEU OF PLACING SUPPORT DIRECTLY AT BUTT JOINT.
6. ALTERNATE STANDOFF SHAPES WITH EQUIVALENT LOAD CAPACITY MAY BE SUBMITTED FOR REVIEW.



Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
Painter's Railing	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 08b



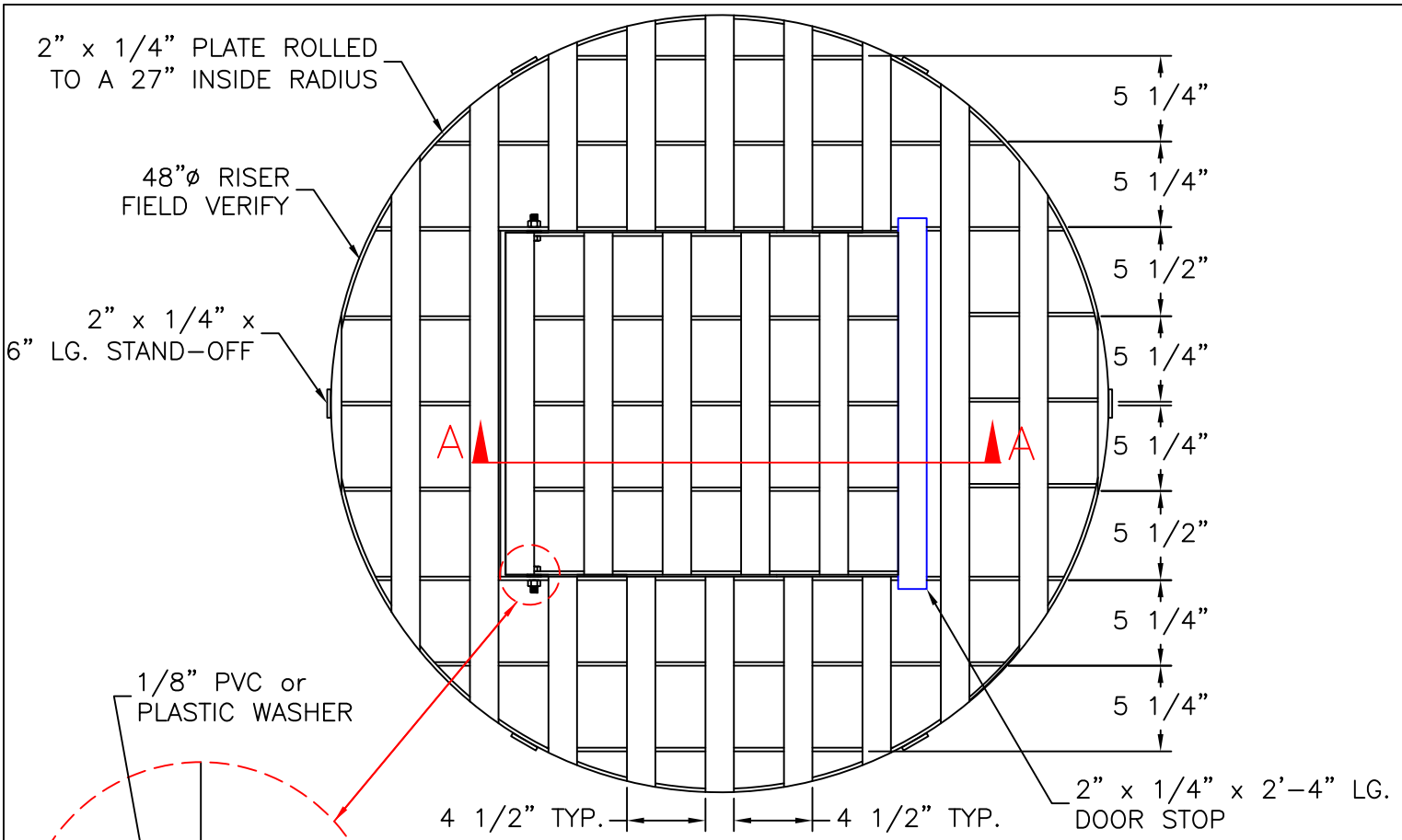
BOWL RIGGING COUPLING

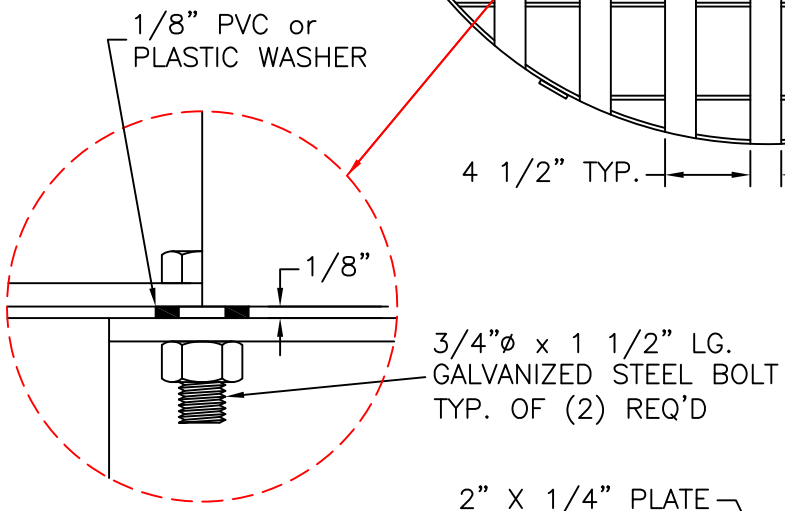
NOTE:
1. INSTALL COUPLINGS UNDER THE BOWL. COUPLINGS TO BE DIRECTLY ON THE CENTER POINT BETWEEN THE RISER AND EACH LEG, ONE COUPLING BETWEEN THE RISER AND EACH LEG.
2. THREADED CONNECTIONS ARE TO BE SEALED WITH PIPE JOINT COMPOUND (OATEY GREAT WHITE OR APPROVED EQUAL).
3. ENGINEER TO FIELD VERIFY LOCATION OF EACH COUPLING.

Note: Drawing not to scale.

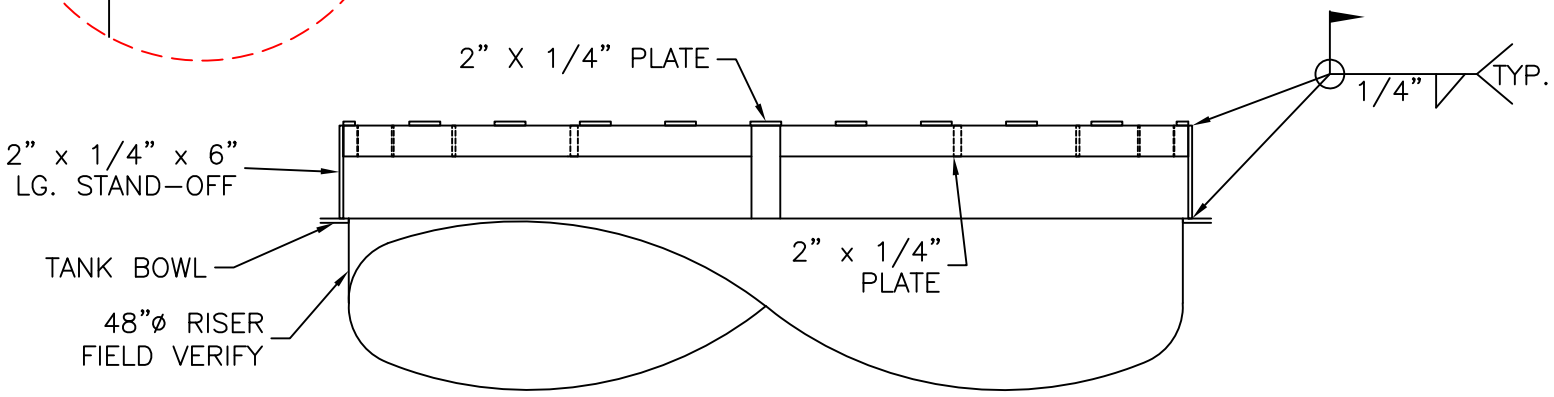
DIXON ENGINEERING, INC.

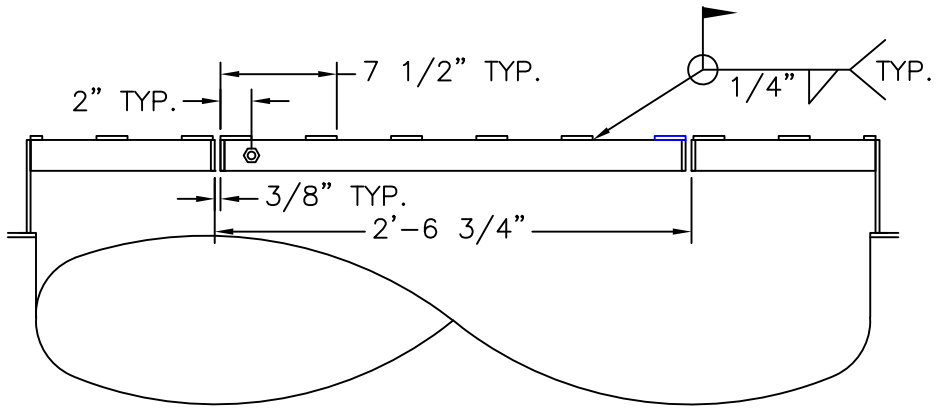
Genoa, OH 150,000 Double Ellipse	
Bowl Rigging Couplings	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 09





NOTE:
PARTIALLY ASSEMBLE INSIDE OF TANK. ALL ASSEMBLY OF SECTIONS CUT FOR ACCESS REPAIRED BY FULL PENETRATION WELDS ON BOTH SIDES & FOLLOWED BY GRINDING SMOOTH.

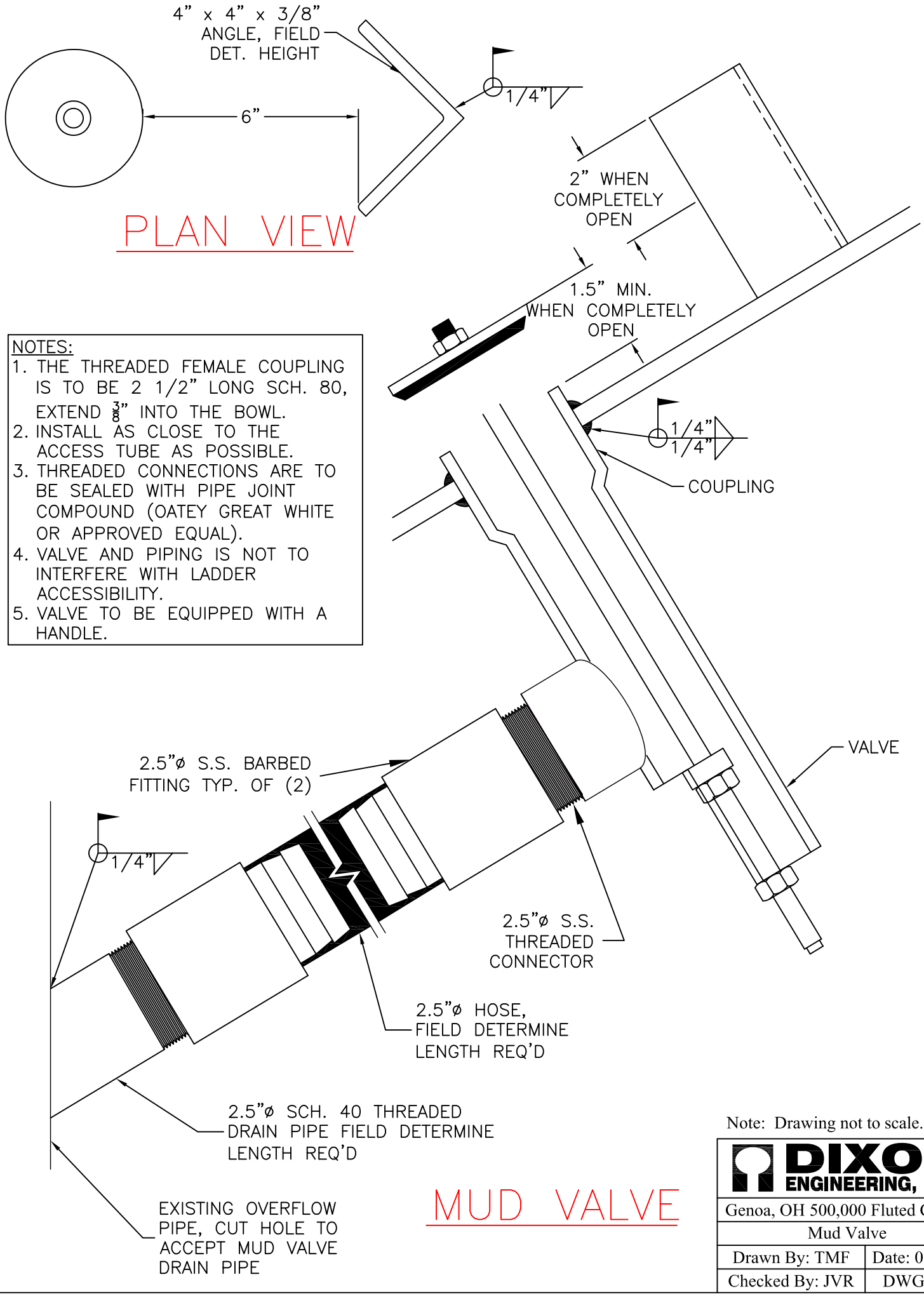




SECTION

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 150,000 Double Ellipse	
Riser Grate	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 10



NOTES:

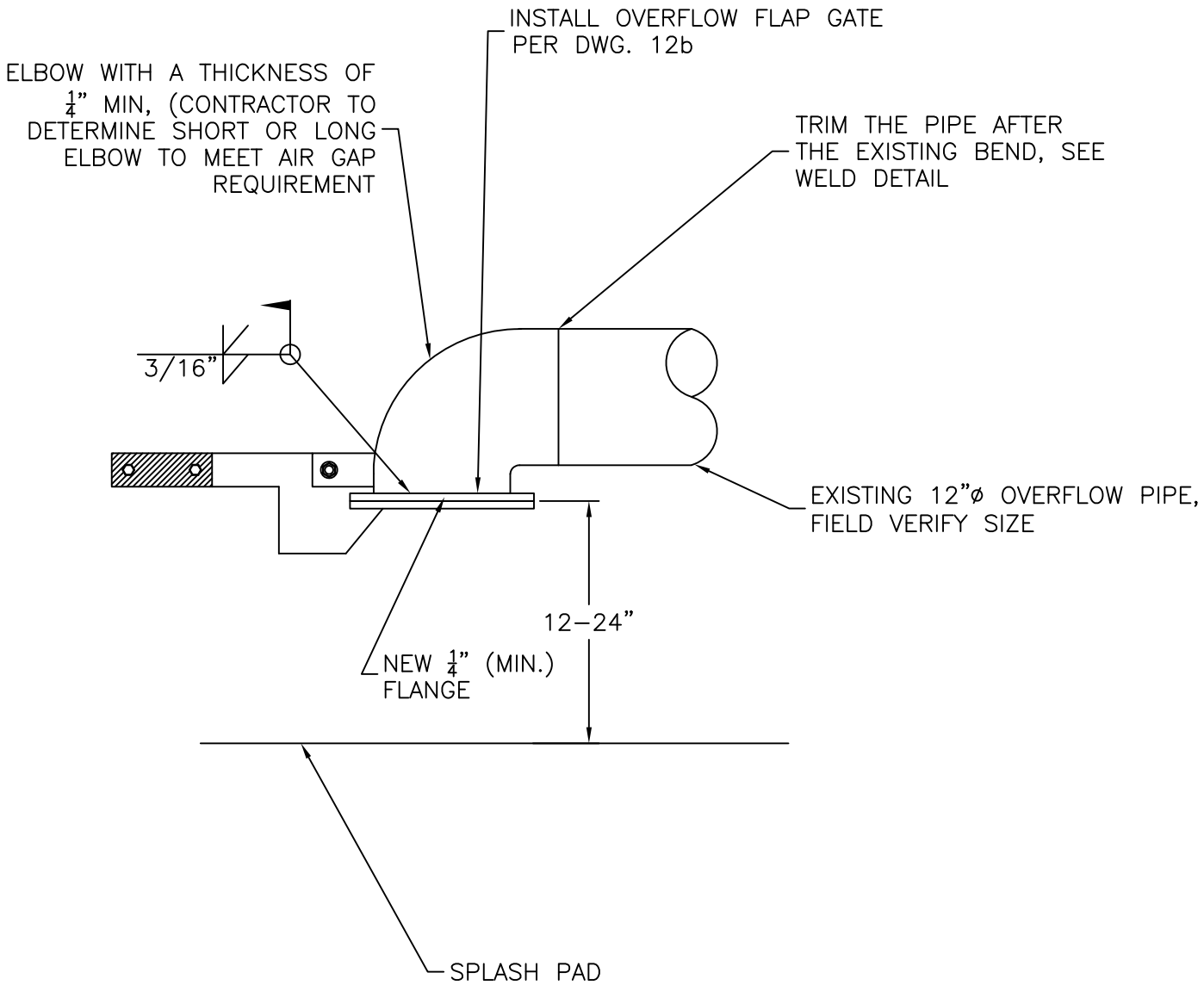
1. THE THREADED FEMALE COUPLING IS TO BE 2 1/2" LONG SCH. 80, EXTEND $\frac{3}{8}$" INTO THE BOWL.
2. INSTALL AS CLOSE TO THE ACCESS TUBE AS POSSIBLE.
3. THREADED CONNECTIONS ARE TO BE SEALED WITH PIPE JOINT COMPOUND (OATEY GREAT WHITE OR APPROVED EQUAL).
4. VALVE AND PIPING IS NOT TO INTERFERE WITH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

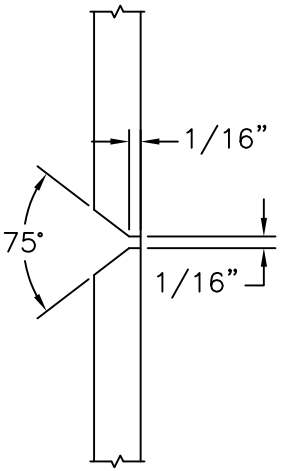
MUD VALVE

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 500,000 Fluted Column	
Mud Valve	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 11

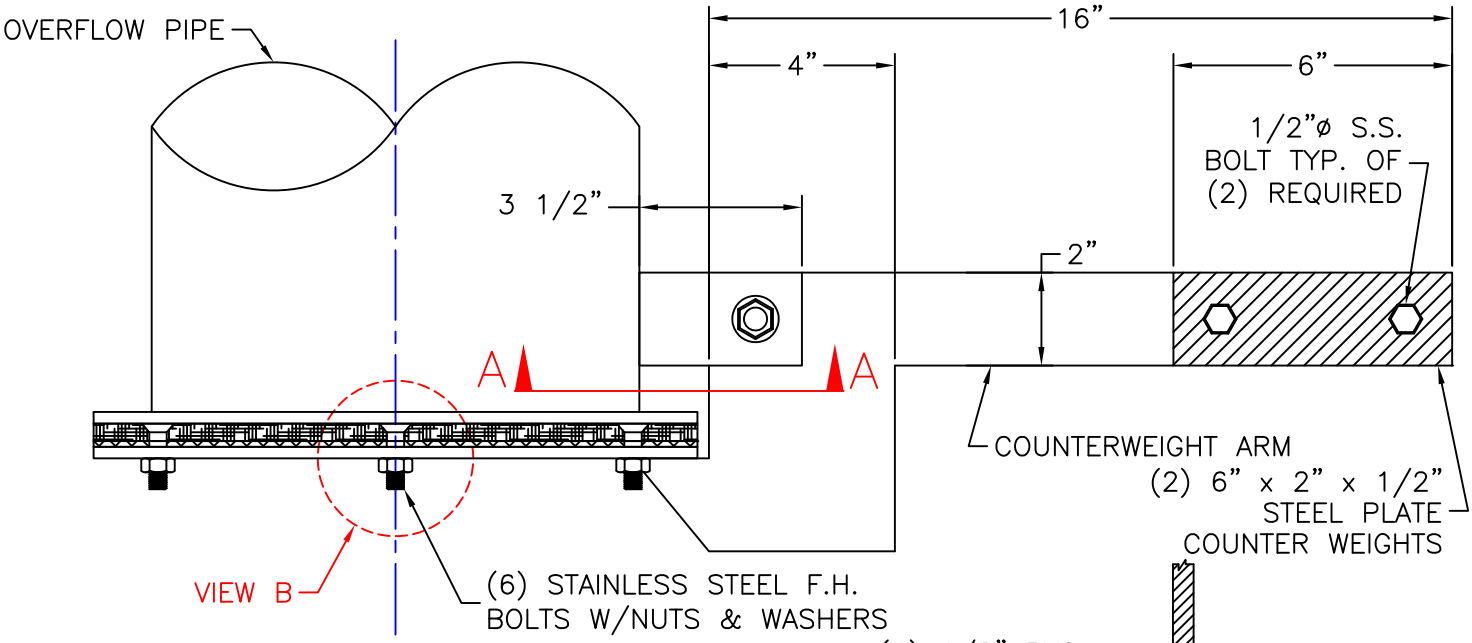




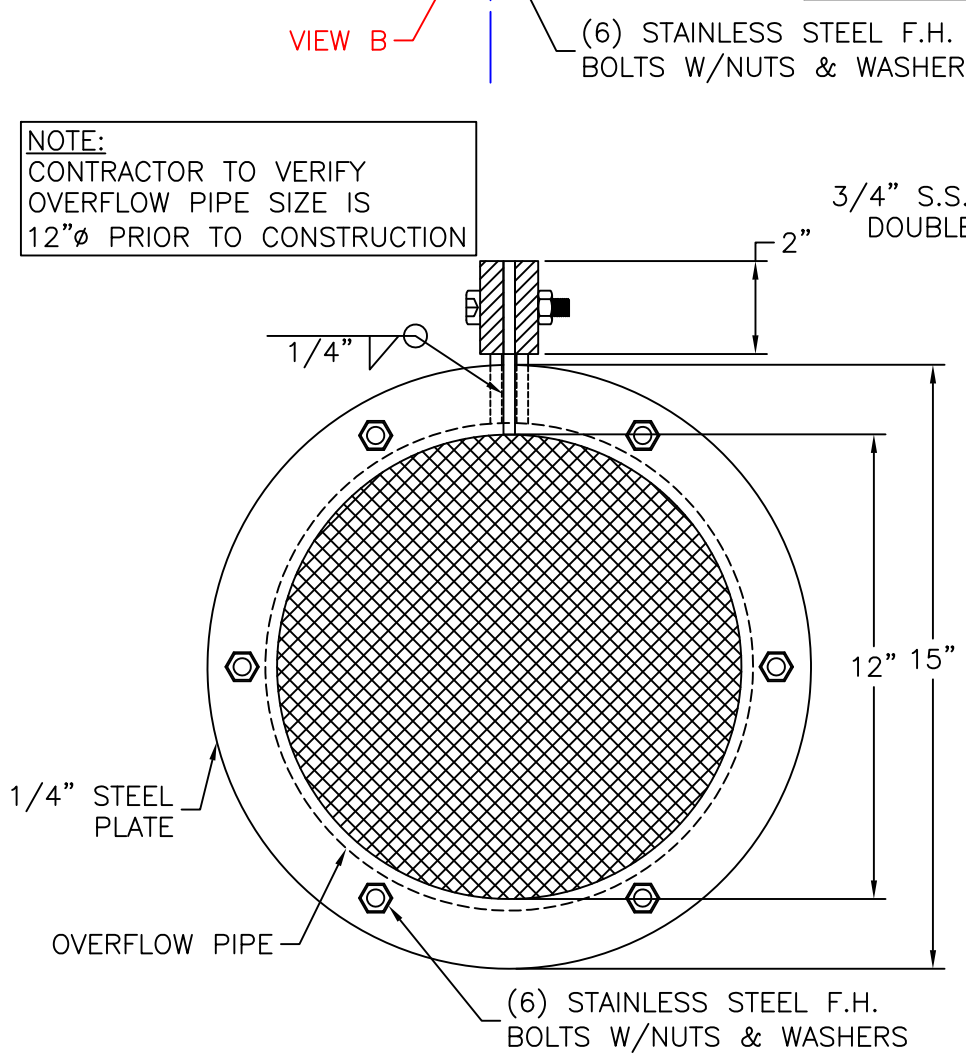
WELD DETAIL

Note: Drawing not to scale.

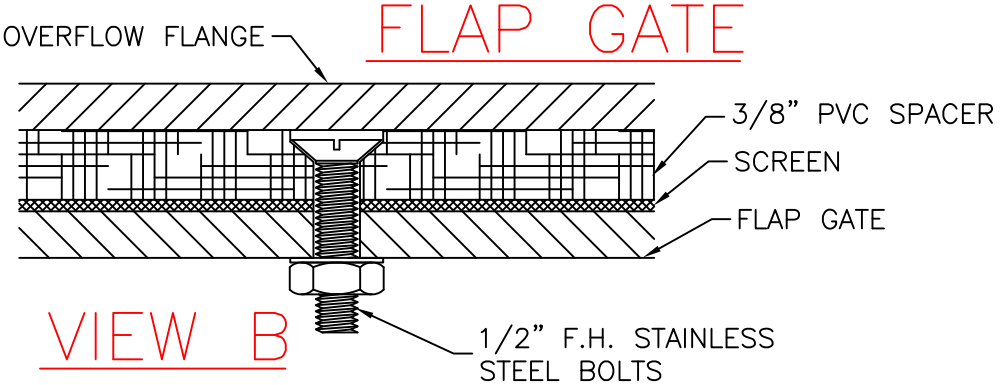
DIXON ENGINEERING, INC.	
Genoa, OH 500,000 Fluted Column	
Overflow Discharge	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 12a



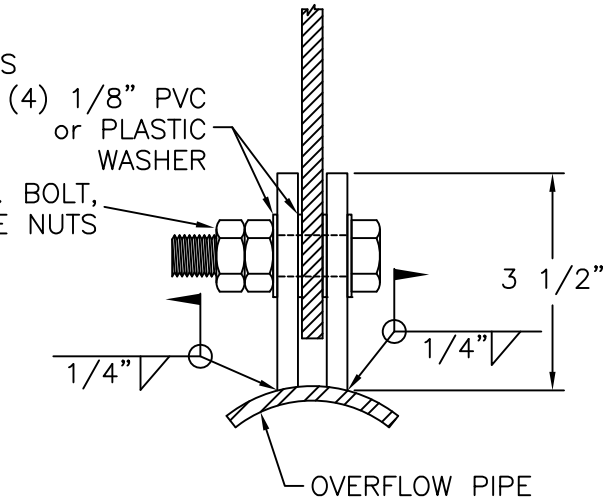
NOTE:
CONTRACTOR TO VERIFY
OVERFLOW PIPE SIZE IS
12"ø PRIOR TO CONSTRUCTION



FLAP GATE



VIEW B

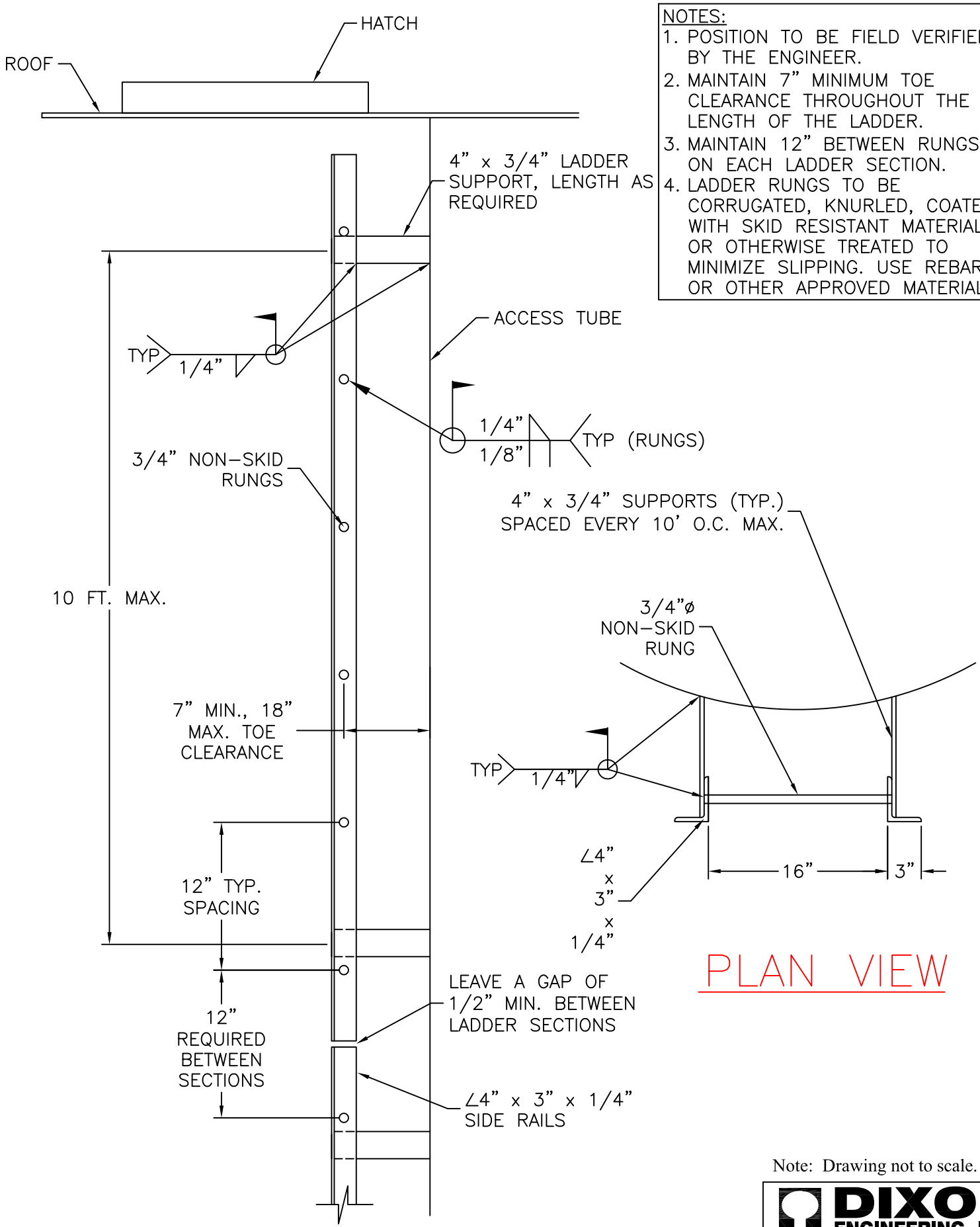


SECTION A–A

ISO VIEW

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Genoa, OH 500,000 Fluted Column	
12" Overflow Flap Gate	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 12b

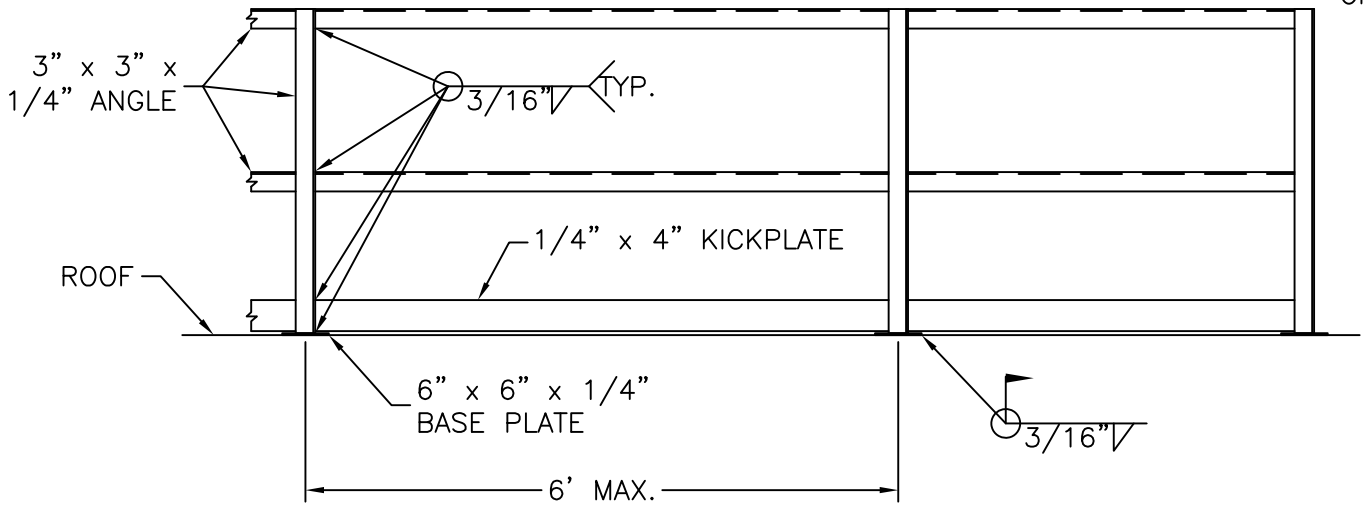


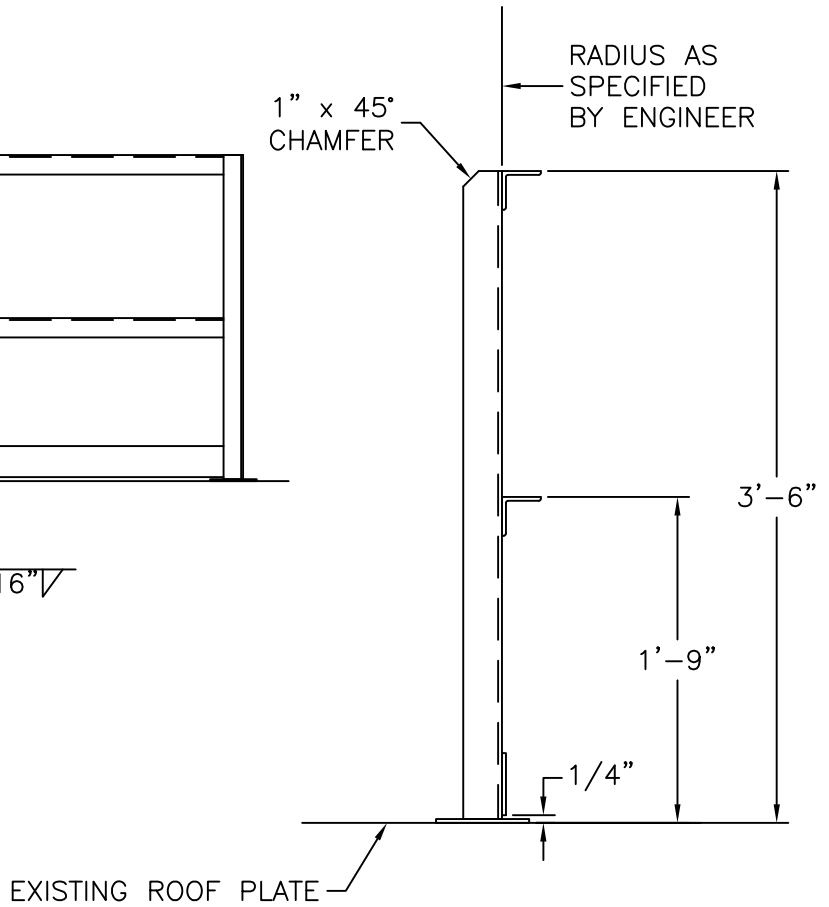
NOTES:
1. POSITION TO BE FIELD VERIFIED BY THE ENGINEER.
2. MAINTAIN 7" MINIMUM TOE CLEARANCE THROUGHOUT THE LENGTH OF THE LADDER.
3. MAINTAIN 12" BETWEEN RUNGS ON EACH LADDER SECTION.
4. LADDER RUNGS TO BE CORRUGATED, KNURLED, COATED WITH SKID RESISTANT MATERIAL, OR OTHERWISE TREATED TO MINIMIZE SLIPPING. USE REBAR OR OTHER APPROVED MATERIAL.

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 500,000 Fluted Column	
Wet Interior Ladder	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 13





HANDRAIL

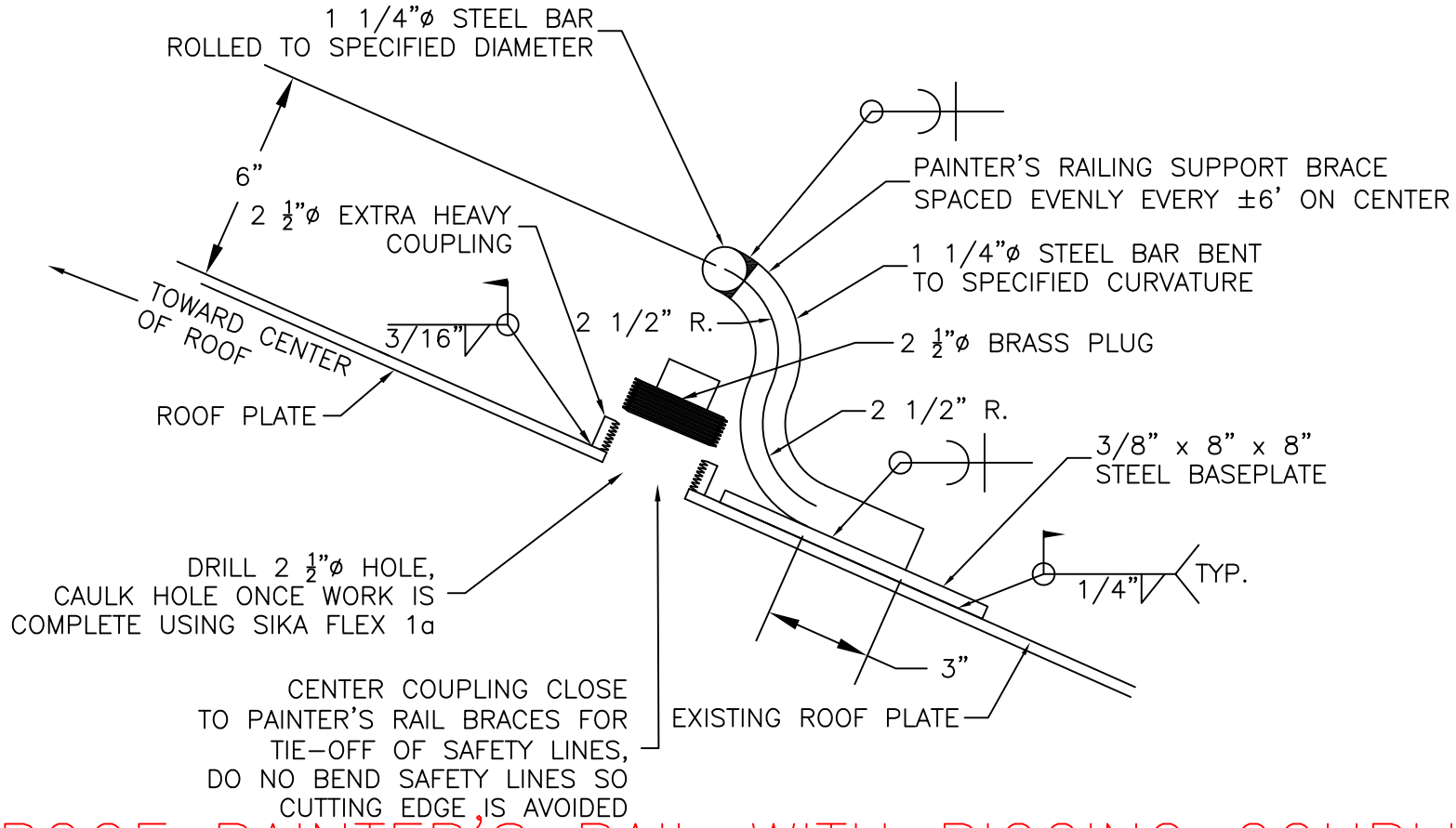
NOTES:

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

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 500,000 Fluted Column	
Roof Handrail	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 14a



ROOF PAINTER'S RAIL WITH RIGGING COUPLINGS

NOTES:
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).
4. 8" DIA. BASEPLATES ARE ACCEPTABLE IN LIEU OF SQUARE SHAPED.
5. ONE STANDOFF WITHIN 3" OF EACH SIDE OF A BUTT JOINT (2 STANDOFFS AT EACH JOINT) IS ACCEPTABLE IN LIEU OF PLACING SUPPORT DIRECTLY AT BUTT JOINT.
6. ALTERNATE STANDOFF SHAPES WITH EQUIVALENT LOAD CAPACITY MAY BE SUBMITTED FOR REVIEW.

ISO VIEW

Note: Drawing not to scale.

DIXON ENGINEERING, INC.

Genoa, OH 500,000 Fluted Column	
Painter's Railing	
Drawn By: TMF	Date: 08/09/23
Checked By: JVR	DWG: 14b

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 (latest versions):
   1. D102 – Painting Steel Water Storage Tanks.
   2. C652 – Disinfection of Water Storage Facilities.
   3. C655 – Field Dechlorination.
B. NSF/ANSI (latest versions)
   1. NSF/ANSI 60 and 61.

1.03 WORK INCLUDED

Double Ellipse:

A. Exterior: Apply a four (4) coat zinc epoxy urethane system.
B. Wet Interior: Apply a three (3) coat zinc epoxy system.

Fluted Column:

A. Exterior: Apply a four (4) coat zinc epoxy urethane system.
B. Wet Interior: Apply a three (3) coat zinc epoxy system.
C. Dry Interior: Apply a two (2) coat epoxy system to the prepared surfaces.
D. Pit Piping: Apply a two (2) coat epoxy system.

1.04 EXISTING COATING CONDITIONS

Double Ellipse:

A. Exterior: Urethane system tested for lead at 0.0022% by weight and tested for chromium at 0.01% by weight.
B. Wet Interior: Presumed to be an epoxy system.

Fluted Column:

A. Exterior: Original unknown system applied in 2000.
B. Wet Interior: Original system presumed to be an epoxy applied in 2000.
C. Dry Interior: Original system presumed to be an epoxy applied in 2000.
D. Pit Piping: Original unknown system presumed applied in 2000.

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 minor or incidental items not specifically detailed in the schedule, but inherently a part of the work is included 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. The Contractor is to complete all coating and surface preparation.
B. Painter is to be specialized in industrial or heavy commercial painting.

1.07 SUBMITTALS

A. Submit the following:
    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 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 for passing test results remains with the Contractor. Failing 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 the 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 five vertical feet.
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.
    2. Tie-off points are located on the bowl for safety lines during exterior coating.
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 to 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 5º F 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 (full) 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 brushed and rolled. Even with prior approval, responsibility for damage to any property caused by spray application still remains with the Contractor.
E. Coatings are to 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 is to 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 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 are to be Aquatrol series 69F1 manufactured by Aquatrol Valve Company, Inc. www.aquatrol.com 800-323-0688, or approved equal.
C. Valves will need to be fitted with a 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 on the structure and successful disinfection have been completed, the Owner will return the valves to the possession of the Contractor.
F. Cost is incidental to the project.

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 is to be sufficient to allow visibility of the dissimilar color from 1 ft., and from 100 ft.
   3. The Owner is to select or verify the topcoat color at the preconstruction meeting.
      a. All bids are to be based on “white” color to match the existing colors.
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, blue, or off-white as selected by the Owner. The topcoat color is to be verified at the preconstruction meeting.
   2. Only colors approved by NSF 61 are to be used in the wet interior.

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 are to 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 61 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 15º below surface temperature during blasting and lower than 5º 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 is to 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.
F. Dehumidification capacity can be obtained by combining two or more units, but total capacity must be met.

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. Double Ellipse: Use 20,000 CFM minimum for wet interior work.
   Fluted Column: Use 30,000 CFM minimum for wet interior 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 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. The number of dust collectors is to be sufficient to supply a 50 ft./minute downward draft in 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.

2.05 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 owners 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 that are sufficient to remove 98% of the moisture from the compressed air. Size the dryers on total cfm using manufacturer supplied charts. Upon request, provide charts to the 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. The 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. The Owner is responsible for collecting 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 C655 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 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 ANTENNA REMOVAL

A. There are nine (9) antennas mounted on the balcony on the double ellipse tank. Note that the Fluted Column tank has no antennas. The number of antennas listed are from the last known condition.

B. The antennas and cables are to be removed by the Owners prior to the start of the project and reinstalled after coating is completed. Genoa owns some of the antennas and Amplex Cable owns the rest. Contact for Amplex Cable is Ryan Hill (419) 837-5015.

C. All welded brackets will remain in place for the Contractor to surface prepare and paint.
D. Any galvanized or stainless-steel materials are to be removed by the antenna carrier prior to tank surface preparation and reinstalled by the antenna carrier after the topcoat is dry to the touch.
E. All previously coated items are to be removed surface prepared, coated and reinstalled with the original brackets after the topcoat is dry to the touch.
F. Cost is incidental to the project.

3.04 ANTENNA EQUIPMENT COATING

A. Antenna equipment is to be surface prepared and coated to match the exterior tank per these specifications including but not limited to: brackets and mounting poles.
B. All previously coated items are to be coated per the exterior specifications. Any galvanized, stainless steel or other uncoated materials are to remain uncoated.
C. Cost is incidental to the project.

3.05 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 HOBOU30 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. The 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 is to meet the following requirements. Auxiliary ventilation equipment and/or dust collection equipment can affect the exchange rate.
   1. Heaters are to 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.

3.06 DUST CONTAINMENT – WET INTERIOR

A. No visible dust release is allowed from openings.

B. Seal or close all openings prior to blasting. Connect the air filtration unit through a manway.

C. The seal at 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.

D. 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 drawn must be from the tank proper.

3.07 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.
E. The Contractor is to perform an MEK Solvent Double Rub Test per ASTM D 4752 to verify the cure of the coating film prior to returning the tank to service. The Owner reserves the right to perform their own MEK Solvent Double Rub Test, but conclusion of the test results is the sole responsibility of the Contractor.
F. The cost of ventilation is incidental to the project.
G. 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.
H. 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 into the atmosphere will be permitted.

3.08 HAND WASH FACILITY

A. Provide OSHA approved hand wash facility with running water. Hot water is <u>not</u> required.
B. Stock facility with soap and towels and keep supply replenished.
C. Test and dispose of the water properly after the project is completed.

3.09 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.

3.10 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 NAMEPLATE – DOUBLE ELLIPSE

A. Remove the existing nameplate, clean the area behind, and paint per the exterior specifications.
B. Remove the existing coating from the nameplate without damaging the lettering on the nameplate. Apply a clear coat to the nameplate using Rust-Oleum Automotive Clear Enamel Spray Paint or approved equal.
C. Reattach with stainless steel fasteners or using the existing fasteners after painting has been completed.
D. Cost is incidental to exterior coating.

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 provide a reason in writing to the Owner. The Project Manager will reply with a written Field Order if the change is approved. The Engineer reserves the right to put further restrictions in Field Order. If the 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 (latest version):
   1. D102 Painting Steel Water Storage Tanks.

B. SSPC and NACE Standards (latest versions):
   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

Double Ellipse:

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. Lead/Chromium Bearing Paint: For additional requirements see Section 09 97 13.12 Heavy Metal Bearing Paint Removal and Disposal.

D. Containment: For additional requirements see Section 09 97 13.11.01.

Fluted Column:

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, and spot coating failures throughout to a SSPC-SP6 commercial standard.

D. Pit Piping: Abrasive blast clean to a SSPC-SP6 commercial standard.

1.04 WASTE 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. The Contractor is to 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 – PRETREATED and NON-LEAD SURFACES

A. The coal slag is to be 20-40 grade, or 30-60 grade.
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 bags are to be removed, and affected areas properly cleaned.
E. All slag abrasive is to meet the requirements of SSPC-AB1 "Mineral and Slag Abrasive" 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 is to be subject to approval of the Engineer. The abrasive or grit is to 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 is to meet requirements of SSPC-AB1 "Metallic Abrasive".
F. All abrasive and grit material used, and all equipment supplied is to be subject to approval of the Engineer. The abrasive or grit is to 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 all surfaces and appurtenances at 4,000 psi to remove sediment, minerals, and other contaminants. Remove any remaining water.

B. Staining may remain in place prior to abrasive blast cleaning, Engineer to approve cleanliness.

3.02 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/NACE No. 2).
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 the amount of surface area that is to be blasted and coated (all coats).
E. The Contractor is responsible for supplying heat and dehumidification to maintain blast conditions.

3.03 PRE-SURFACE PREPARATION – EXTERIOR

A. Low pressure water clean all surfaces and appurtenances at 4,000 psi 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 0º or 15º tip perpendicular (90º) to the surface at all times. Maintain a water jet nozzle distance of 2 in. – 10 in. from the surface.

3.04 COMMERCIAL BLAST (SSPC-SP6/NACE No. 3) – EXTERIOR – BOTH TANKS AND PIT PIPING – FLUTED COLUMN

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 – FLUTED COLUMN

A. Abrasive blast clean the entire top of the top platform, and spot coating failures throughout including appurtenances where steel is exposed or rusted, or where coating is abraded as specified to a commercial finish (SSPC-SP6/NACE No. 3).

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 hazardous waste manifest is to 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 is to 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 is to 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 are to 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 for both tanks.

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 30,000 CFM minimum for containment work on the double ellipse tanks and 40,000 CFM minimum for containment work on the fluted column tank.
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. The number of dust collectors is to be sufficient to supply a 50 ft./minute downward draft in 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 360º.
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 is operational and clean throughout the project.

3.05 GROUND COVER

A. Protect the ground from spent abrasive, paint chip and chromium 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 – DOUBLE ELLIPSE

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.

SECTION 09 97 13.12
HEAVY METAL BEARING PAINT REMOVAL and DISPOSAL

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Heavy Metal Bearing Paint Removal and Disposal for the Double Ellipse.

1.02 REFERENCES
A. SSPC Guide-7 Disposal of Lead Contaminated Surface Preparation Debris.

1.03 PAINTER QUALIFICATIONS – HEAVY METAL BEARING PAINT PROJECTS
A. The Contractor is to complete all coating and surface preparation.
B. Painter is to be specialized in industrial or heavy commercial painting and experienced in removing lead-based coatings.
C. Submit five (5) successful paint projects of a similar nature with the bid proposal if the Engineer is not familiar with the Contractor's work.

1.04 SUBMITTALS
A. Submit the following ten (10) days prior to the preconstruction meeting:
B. Site Specific Heavy Metal Coatings, Health & Safety Plan including:
   1. Work procedures for each job classification.
   2. Administration and engineering controls to be used during exposure assessment period and expected exposure.
   3. Personal hygiene procedure.
   4. Site personnel register (updated as needed).
   5. Qualifications of competent persons and responsibilities. At this point, multiple qualified people may be submitted.
   6. 24-hour job site contact person.
   7. Site map showing and locating all equipment.

PART 2 – PRODUCTS

2.01 DECONTAMINATION FACILITY
A. Provide a climatic controlled decontamination facility. The decontamination facility must include a minimum of three separate areas: a dirty area, a showering area, and a clean area. The unit is to be manufactured by Eagle Industries of Louisiana, Inc.
B. Entry and exit into the showering room must be through an approved airlock designed to prevent cross-contamination between any two areas.

C. Equip the clean room with adequately sized lockers for each worker to secure and store clothing, valuables, and other personal belongings.
D. Equip the decontamination facility with an onboard ion exchange filtration system capable of filtering all wastewater generated during hand washing operations, showering, laundering of towels and clothing, or from any other water used in cleaning.
E. Maintain a recordkeeping log signed by each employee upon exiting, that time was provided, and decontamination procedures were followed.

PART 3 – EXECUTION

3.01 CLOTHING – CONTRACTOR

A. The Contractor is to provide protective clothing for all personnel – disposal or laundered is acceptable.

3.02 NOTIFICATION of NEIGHBORS

A. Enclose the entire project site, including the clean area, inside a yellow ribbon bearing the warning label of heavy metals.
B. Post signs around the project stating "**CAUTION – HEAVY METAL HAZARD – DO NOT ENTER**"
C. If the neighbors are in close proximity, the Contractor is to participate in any education notification program originated by the Owner.

3.03 PERSONAL HYGIENE – HEAVY METAL BEARING PAINT PROJECTS

A. Register all personnel on the site and try to maintain, as much as possible, the same crew.
B. Any changes in crew size or personnel will require registration. Registration simply means notification to the Owner or Engineer of a new person on the job site.
C. Inform all personnel of the dangers involved with heavy metals from a health standpoint and require use of washroom/decontamination facilities.
D. Ensure proper use and compliance of personnel with health department and OSHA requirements.
E. Complete contractor certification form that all employees complied with OSHA 1926.62 hygiene rules, and contractor, as employer, complied with their required OSHA housekeeping and compliance requirements.

SECTION 09 97 13.13.01
WET INTERIOR STEEL COATING – THREE COAT ZINC EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Painting the wet interior of both tanks.

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 zinc epoxy system.

PART 2 – PRODUCTS

2.01 ZINC EPOXY SYSTEM
A. System to meet all National Sanitation Foundation 61 certification standards for potable water contact.
B. Approved suppliers and system:

Manufacturer	System
Tnemec	94H_2O/21(stripe)/21/21
Induron	Indurazinc MC-67/PE-70(stripe)/PE-70/PE-70
Sherwin Williams	Corothane I GalvaPac 1k/5500LT(stripe)/5500LT/5500LT

PART 3 – EXECUTION

3.01 ZINC EPOXY SYSTEM
A. Apply to all prepared surfaces a three (3) coat zinc epoxy paint system.
B. Surface preparation is defined in Section 09 97 13.10.

C. Apply each coat at the following rates:

Coat	Minimum DFT (mils)	Maximum DFT (mils)
Primer	2.5	3.5
Stripe Coat	1.5	2.5
Intermediate	4.0	6.0
Topcoat	4.0	6.0
Total	10.5*	15.5*

*Total does not include stripe coat.

D. 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.

E. 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.

F. 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.

G. 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.

H. 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 SCHEDULE of WORK

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

SECTION 09 97 13.19.01
DRY INTERIOR STEEL COATING – SPOT TWO COAT EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Partial painting in the dry interior of the Fluted Column.

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 spot epoxy system.

PART 2 – PRODUCTS

2.01 EPOXY SPOT SYSTEM

A. Approved suppliers and system:

Manufacturer	System
Tnemec	V69/V69
Induron	PE-70/PE-70
Sherwin Williams	646FC/646FC

PART 3 – EXECUTION

3.01 EPOXY SPOT SYSTEM

A. Apply to all prepared areas a spot two (2) coat epoxy system.
B. Surface preparation is defined in Section 09 97 13.10.
C. Apply each coat at the following rates:

Coat	Minimum D.F.T. (mils)	Maximum D.F.T. (mils)
Primer (spot)	3.5	5.5
Topcoat (spot)	3.5	5.5
Total	7.0	11.0

D. Each 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.

3.02 SCHEDULE of WORK

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

SECTION 09 97 13.21.01
PIT PIPING STEEL COATING – TWO COAT EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Painting the pit piping in the Fluted Column.

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 an epoxy system.

PART 2 – PRODUCTS

2.01 EPOXY SYSTEM
A. Approved suppliers and systems:

Manufacturer	System
Tnemec	V69/V69(stripe)/V69
Induron	PE-70/PE-70(stripe)/PE-70
Sherwin Williams	646FC/646FC(stripe)/646FC

PART 3 – EXECUTION

3.01 EPOXY SYSTEM
A. Apply to all prepared surfaces a two (2) coat epoxy system.
B. Surface preparation is defined in Section 09 97 13.10.
C. Apply each coat at the following rates:

Coat	Minimum D.F.T. (mils)	Maximum D.F.T. (mils)
Primer	3.5	5.5
Stripe	1.5	2.5
Topcoat	3.5	5.5
Total	7.0*	11.0*

*Totals do not include the stripe coat.

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

SECTION 09 97 13.23.01
EXTERIOR STEEL COATING – FOUR COAT ZINC EPOXY URETHANE REPAINT

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Painting on the exterior of both tanks.

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 zinc epoxy urethane system.
B. Application of lettering.

PART 2 – PRODUCTS

2.01 ZINC EPOXY URETHANE SYSTEM
A. The contractor is advised to follow all rules for safety while using isocyanates.
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:

Manufacturer	System
Tnemec	94H_2O/V69/1095/1094
Induron	Indurazinc MC-67/PE-70/I-6600 Plus/I-6600 Plus
Sherwin Williams	Corothane I galvapac 1k/646FC/Acrolon 218/Acrolon Ultra

PART 3 – EXECUTION

3.01 ZINC EPOXY URETHANE SYSTEM
A. Apply to all prepared surfaces a four (4) coat zinc epoxy urethane system.
B. Surface preparation is defined in Section 09 97 13.10.

C.

Coat	Minimum D.F.T. (mils)	Maximum D.F.T. (mils)
Primer	2.5	3.5
Epoxy Intermediate	2.0	3.0
Urethane Intermediate	2.0	3.0
Topcoat	2.0	3.0
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 LETTERING – DOUBLE ELLIPSE

A. Paint the name "Welcome to GENOA" in two (2) locations on the sidewall.

B. Paint the lettering per the attached rendering. Field verify locations and dimensions with the Owner prior to application.

C. Approved Fluoropolymer urethane coating system.

Manufacturer	System
Tnemec	V700
Induron	Perma-Gloss
Sherwin Williams	Fluorokem HS

D. Apply lettering coating at 2.0 to 3.0 mils.

E. Payment is a separate line item "Lettering" which the Owner reserves the right to delete.

3.03 LETTERING – FLUTED COLUMN

A. Paint the name "Welcome to GENOA HOME OF THE COMETS" in two (2) locations on the sidewall.

B. Paint the lettering per the attached rendering. Field verify locations and dimensions with the Owner prior to application. Note that "HOME OF THE COMETS" is to be all capital letters, it is shown with only the first letters capitalized in the rendering.

C. Approved Fluoropolymer urethane coating system.

Manufacturer	System
Tnemec	V700
Induron	Perma-Gloss
Sherwin Williams	Fluorokem HS

D. Apply lettering coating at 2.0 to 3.0 mils.

E. Payment is a separate line item “Lettering” which the Owner reserves the right to delete.

3.04 SCHEDULE of WORK

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

DOUBLE ELLIPSE TANK LETTERING

FLUTED COLUMN TANK LETTERING, NOTE THAT “HOME OF THE COMETS” IS TO BE ALL CAPITAL LETTERS

SECTION 09 97 23.23.01
CONCRETE FOUNDATION COATING – TWO COAT EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Painting of the concrete foundations for both tanks.

1.02 REFERENCES

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

1.03 WORK INCLUDED

A. Application of an epoxy system.

PART 2 – PRODUCTS

2.01 EPOXY SYSTEM

A. Approved suppliers and manufacturers:

Manufacturer	System
Tnemec	V69/V69
Induron	PE-70/PE-70
Sherwin Williams	646FC/646FC

PART 3 – EXECUTION

3.01 EPOXY SYSTEM

A. Apply to all prepared areas a two (2) coat epoxy system.
B. Remove soil 3" below grade around the entire foundation prior to coating, backfill once the 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:

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

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

SECTION 16 05 02
LIGHTING

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Furnish and coordinate all labor, equipment, materials, tools, testing, and temporary work necessary to perform the repairs.

1.02 REFERENCES
A. NEC.
B. FAA.
C. Local Codes and Regulations.

1.03 OMISSIONS
A. The specifications include all work and materials necessary for completion of the work. Any incidental items of material, labor, or detail required for the proper execution and completion of the work are included.

1.04 WORK INCLUDED
Fluted Column

1. Replace the dry interior and aviation light bulbs.

1.05 WORKMANSHIP
A. Provide material and workmanship necessary to complete the project to the standards specified.

1.06 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. Product Data Sheets (PDS) and Safety Data Sheets (SDS) for light bulbs.

PART 2 – PRODUCTS

2.01 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 REPLACE LIGHT BULBS

A. Replace all dry interior and the aviation light bulbs with LED light bulbs.
B. Change all of the bulbs whether the existing are operational or not. Change bulbs after all blasting and painting 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.