TABLE of CONTENTS
TECHNICAL SPECIFICATIONS

SECTION 00 91 18
DEFINITIONS for TECHNICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 DEFINITIONS FOR TECHNICAL SPECIFICATIONS

A. Wet Interior: Internal surfaces, excluding inaccessible areas, to the roof, shell, bottom, accessories, and appurtenances that are exposed to the stored water or its vapor. Examples are the interior of the roof, sidewall, domed bottom, 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. Top Platform: Landing area directly under tank's access tube.

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

I. Bottom: Lower area of the tank proper shaped like a dome. Also section that extends up to the sidewall.

J. Column: Center support whether concrete or steel.

SECTION 00 91 19.01
SCHEDULING FOR RPR SERVICES

PART 1 – COMMUNICATION

1.01 RESIDENT PROJECT REPRESENTATIVE (RPR) SERVICES

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

1.02 HOLD POINT OBSERVATIONS AND MEETINGS

A. Each hold point requires an onsite visit for Observation. Example: If the contractor coats over or otherwise makes work inaccessible for Observation, the Work will be considered failed. Remove Work and recoat or repair in accordance with this specification. At least two (2) new hold points, surface preparation and coating, may be created when work fails after the primer has been applied.

B. Stop Work and schedule Observation times for the following Hold Points as a minimum. Additional Hold Points may be determined at the Preconstruction Meeting. Each Hold Point requires a Site visit and observation. Schedule of Hold Points – Preliminary:
   1. Hold Point Meeting: The Preconstruction Meeting is the initial hold Point. The Preconstruction Meeting will not be scheduled until five (5) days after all required submittals are received and reviewed by the Engineer and no exceptions are taken to the shop drawings.
   2. Hold Point - Prior to draining tank:
      a. To ensure all Section of 01 50 00 and 01 53 43 environmental requirements are met.
   3. Hold Points – Section 05 00 00 – Metal Repairs:
      a. To locate or quantify repairs as necessary.
      b. To review surface preparation prior to welding and review all products prior to installation.

c. After welding is complete for quality assurance.

4. Hold Points – Sections 09 97 13 – Steel Coating and 09 97 13.10 Steel Coating Surface Preparation:
   a. Prior to surface preparation to set the standard.
   b. Prior to primer application to verify cleanliness, profile, thoroughness, and ambient conditions for coating application.
   c. Prior to application of each successive coat for quality assurance and ambient conditions for the next coat.
   d. Prior to final coat to verify all non-conformance issues have been resolved.
   e. 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.
   f. Scheduled final Observation: After ALL punch list items have been completed (including painting ladders), provide access to all items on the punch list.

1.03 SCHEDULING FOR RPR SERVICES FOR HOLD POINT OBSERVATIONS

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

1.04 SCHEDULING FOR RPR SERVICES FOR FULL TIME OF DAILY OBSERVATIONS

A. Productive Work
   1. Do not start, continue, or complete any Productive Work if RPR is not present on the project site.
   2. Productive Work includes, but is not limited to, all elements of abrasive blast cleaning, power washing, high pressure water jetting or high/low pressure water cleaning, power tool cleaning, rigging, painting, metal repairs, concrete repairs, punch list items, and clean-up.

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

1.05 SCHEDULING WITH A CENTRAL CONTRACT ADMINISTRATOR

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

1.06 SCHEDULING THROUGH ONSITE RPR

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

1.07 SUMMARY OF SCHEDULING HOLD POINT OBSERVATIONS

A. Contract Administrator
   1. by phone
   2. by text
   3. by voice mail
B. Second Contract Administrator
   1. by phone

2. by text
3. by voice mail

C. Corporate Office during work hours
1. by phone
2. NO voicemail

D. Do NOT contact Project Manager

1.08 SUMMARY OF SCHEDULING FOR FULL TIME OR DAILY OBSERVATIONS

A. Contract Administrator
1. by phone
2. by text
3. by voice mail

B. Second Contract Administrator
1. by phone
2. by text
3. by voice mail

C. Corporate Office during work hours
1. by phone
2. NO voicemail

D. RPR on site

E. Do NOT contact Project Manager

1.09 CONTRACTOR'S RESPONSIBILITIES

A. The Engineer and Owner shall have full access to the Site at reasonable times for their Observation, testing, and Contractor's personnel and equipment shall be available to the Owner and Engineer/RPR to expedite Observations. Provide Owner, Engineer/RPR proper and safe conditions for such access, including rigging, and advise them of contractor's site safety procedures and programs so that they may comply as applicable.

B. Contractor is responsible for all of Contractor's manpower needs and scheduling and Work to be completed. RPR is to be available to expedite the project and complete their services with minimal interference of the Contractor's Work. Successful project completion is dependent on Contractor's proper scheduling and use of RPR services.

C. Contractor is financially responsible for efficient scheduling of RPR services, See Section 00 91 19.02.

1.10 DELAY IN ARRIVAL OF RPR

A. RPRs for Hold Point, Full – Time or Daily observations may be delayed by traffic or other reason from arriving at the scheduled time. Contractor shall contact Contract Administrator immediately if the RPR has not arrived at the scheduled time.

B. The Contract Administrator will locate the missing RPR, return to the Contractor with a revised arrival time, and discuss with Contractor what other Work can be completed until RPR arrives for Observation.

1.11 REJECTED DEFECTIVE WORK

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

1.12 NON-CONFORMANCE REPORTS (NCR)

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

SECTION 00 91 19 .02
CONTRACTOR'S FINANCIAL RESPONSIBILITY FOR RPR

PART 1 - PROGRESS SCHEDULE and RPR SCHEDULE

1.01 GENERAL

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

1.02 PROGRESS SCHEDULE

A. Per the General Provisions a Progress Schedule is required to be submitted. At the Preconstruction meeting the Contractor shall submit a preliminary Progress Schedule. This General Provisions of this contract as-bid restricts Work to 40 hours/ 8 hours per day, 5 days per week. If the Owner has prior approved a more open schedule it is noted in the Project Summary. Either prior approved in the Project Summary or not; a Progress Schedule more aggressive than Monday through Friday, regular working hours, will require submittal and discussion, at Preconstruction Meeting.

B. Once the Owner, at the Preconstruction meeting accepts a more aggressive schedule the Contractor is responsible for all of the Contractor's manpower scheduling and Critical Path Work to maintain the Schedule.

C. Contractor shall complete a minimum 8 hours per day of Productive Work, which should be calculated into the Schedule.

1.03 HOLD POINTS AND RPR SERVICES

A. Fees for Hold Point RPR Services are contracted with the Owner at a Unit Price and are calculated to include the following: travel time to and from Site, reimbursable expenses, observation and report time. Time required for Contractor to repair or redo small areas that failed Observation, are not included in the unit price. Failure may be minimal compared to all Work observed, but failed Work still must be observed before proceeding. For minor failures that can be quickly repaired, the Contractor may entirely at their option:

1. Accept a Non-Conformance for failed Observation.
2. Request, the RPR wait for a reasonable period while repairs are completed.
3. Proceed with the next phase for all areas which have not failed, and "work around" failed areas. The failed areas would then be observed at the next Hold Point.

B. The Fee for extended onsite time, or a new Hold Point is the responsibility of the Contractor.

1.03.1 FULL TIME OR DAILY RPR SERVICES

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

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

1.03.2 FULL TIME OR DAILY RPR SERVICES

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

1.04 RPR FEE CALCULATIONS FOR FAILED OBSERVATIONS

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

3) For time over 40 hours. (The standard work week for overtime (over 40) begins on Monday as Sunday is already paid at overtime rate.)

B. Fees of misused or unnecessary Engineer/RPR Services will be documented and submitted to the Owner for Set off.
C. The right to Set-off is a contracted right of Owner per the General Provisions, or Additions to General Provisions, and the right to enforce those rights are at the Owner's discretion.

1.05 ON-CALL TIME

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

SECTION 01 50 00
TEMPORARY CONSTRUCTION FACILITIES and UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

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

1.02 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.01 TEMPORARY ELECTRICITY and LIGHTING

A. Supply temporary lighting sufficient to enable Contractor to safely access all work areas.
B. Electrical requirements in excess of capacity of existing electrical service shall be responsibility of Contractor.
C. Provide, maintain, and remove temporary electric service facilities.
D. Facilities exposed to weather shall be weatherproof-type and electrical equipment enclosure locked to prevent access by unauthorized personnel.
E. Contractor is to pay for and arrange for the installation of temporary services.
F. Patch affected surfaces and structures after temporary services have been removed.
G. Provide explosion proof lamps, wiring, switches, sockets, and similar equipment required for temporary lighting and small power tools.

2.02 WATER for CONSTRUCTION

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

2.03 SANITARY FACILITIES

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

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

2.04 TEMPORARY FIRE PROTECTION

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

2.05 DAMAGE to EXISTING PROPERTY

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

2.06 SECURITY

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

2.07 TEMPORARY PARKING

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

PART 3 - EXECUTION

3.01 GENERAL

A. Maintain and operate systems to ensure continuous service.
B. Modify and extend systems as work progress requires.

3.02 REMOVAL

A. Completely remove temporary materials 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 service to specified or original condition.

3.03 BARRIERS and ENCLOSURES

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

SECTION 01 53 43
PROTECTION of ENVIRONMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Contractor in executing work shall maintain work areas, on-and-off site, free from environmental pollution that would be in violation of federal, state, or local regulations.

B. The Contractor is responsible for any and all clean-up that may be necessary and all applicable costs for the same.

1.02 LAWS and REGULATIONS

A. Environmental regulations may be met with different available technologies. It is the Contractor's sole responsibility to comply with these and all applicable environmental regulations.

B. If a contamination occurs work will stop until cleanup is complete.

1.03 PROTECTION of SEWERS

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

1.04 PROTECTION of WATERWAYS

A. Observe rules and regulations of local and state agencies, and agencies of U.S. government prohibiting pollution of any lake, stream, river, or wetland by dumping of refuse, rubbish, dredge material, or debris therein.

B. Provide containment that will divert flows, including storm flows and flows created by construction activity, to prevent loss of residues and excessive silting of waterways or flooding damage to property.

C. Comply with procedures outlined in U.S. EPA manuals entitled "Guidelines for Erosion and Sedimentation Control Planning and Implementation," Manual EPA-72-015 and "Processes, Procedures, and Methods to Control Pollution Resulting from all Construction Activity," Manual EPA 43019-73-007.

1.05 DISPOSAL of EXCESS EXCAVATED and OTHER WASTE MATERIALS

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

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

1.06 PROTECTION of AIR QUALITY

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

1.07 PROTECTION from FUEL and SOLVENTS

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

1.08 USE of CHEMICALS

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

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

1.09 NOISE CONTROL

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

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 HAZARDOUS MATERIALS PROJECT PROCEDURES

A. Applicable Regulations:
   1. RCRA, 1976 – Resource Conservation and Recovery Act: This federal statute regulates generation, transportation, treatment, storage and disposal of hazardous wastes nationally.
   2. Act 64, 1979 – Michigan's Hazardous Waste Management Act: This statute regulates generation, transportation, treatment, storage, and disposal of hazardous wastes.
   3. Act 641 as amended 1990 – Michigan's Solid Waste Act: This statute regulates generation, transportation, treatment, storage and disposal of solid wastes.
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 wastes. The list below includes the regulations which are most frequently encountered:

Topic	Agency and Telephone Number
Small quantity hazardous waste management, including hazardous waste stored in tanks	Hazardous Waste Division, EGLE (517) 373-2730 in Lansing, or District Office Certified County Health Department

Hazard Communication Standards (for chemical in the workplace)	Occupational Health Division, Michigan Department of Consumer and Industrial Services (517) 373-1410
Burning of waste oil and other discharges to the air	Air Quality Division, EGLE (517) 322-1333 in Lansing, or District Office
Local fire prevention regulations and codes (including chemical storage requirements)	Local fire chief or fire marshal

D. Department of Environment, Great Lakes, and Energy
Hazardous Waste Division
Compliance Section District Offices

Kalamazoo District Office
7953 Adobe Rd.
Kalamazoo, MI 49009
(269) 567-3500
(269) 567-9440 (fax) (Remediation and Redevelopment Div. and Water Div.)
(269) 567-3555 (fax) (Air Quality Di., Env. Science and Services Div., Geol. and Land Mgmt. Div., and Waste and Haz. Materials Div.)

SECTION 05 00 00
METAL REPAIRS

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Steel Repair.

1.02 REFERENCES
A. AWWA D100 Weld Standard
B. AWS Weld Standard
C. API 650 Standard

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

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

1.05 WORK INCLUDED
1) Install a gasket on the wet interior roof hatch.
2) Install a top platform hatch.
3) Install handholds at the roof hatches.
4) Install a duck bill check valve on the overflow discharge.
5) Install a roof painter's railing.
6) Replace dry interior and aviation light bulbs.

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

1.07 WELDER QUALIFICATIONS

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

1.08 SUBMITTALS

A. Safety Data Sheets (SDS) – for all items as required by law.
B. Welder's certification.
C. Submit materials at least one (1) week prior to preconstruction meeting.

1.09 WORK SEQUENCING

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

1.10 NEW STEEL COATING

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

PART 2 – PRODUCTS

2.01 STEEL PLATING and OTHER STRUCTURAL SHAPES

A. General Steel: ASTM – A36.
B. General Stainless Steel: ASTM – 316.
C. General Galvanized Steel: ASTM – A123.
D. Threading on all couplings and plugs to meet NPT standards.

2.02 BOLTS and NUTS

A. Stainless Steel

1. ASTM F594G – 316 Stainless Steel Bolts.
2. ASTM F594G – 316 Stainless Steel Nuts.

B. Galvanized Steel
1. ASTM A307 Grade A zinc coated Steel Bolts.
2. ASTM A307 Grade A zinc coated Nuts.

2.03 WELDS

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

2.04 OVERFLOW DUCKBILL CHECKVALVE

A. Duck bill check valve with 304 stainless steel ANSI flange. Tideflex series 35.
B. Manufactured/supplied by Tideflex Technologies www.redvalve.com (412) 279–0044 or approved equal.

PART 3 - EXECUTION

3.01 ROOF HATCH GASKET

A. Install a gasket on the wet interior roof hatch cover.
B. Gasket to be ¼ inch EPDM or neoprene.
C. Install after the exterior coating is dry to the touch.
D. Apply gasket using adhesive, 3M Super Weatherstrip and Gasket Adhesive or approved equal.
E. Payment is incidental to the project.

3.02 TOP PLATFORM HATCH

A. Install a top platform hatch.
B. All new steel for the hatch and curb is to be shop galvanized and field repairs are to be performed with field galvanizing coating.
C. Furnish and install a hinged hatch at the top platform.
D. Complete all welding and cutting prior to any surface preparation for field galvanizing to avoid contamination of surfaces.
E. Remove any residue and weld smoke by solvent cleaning.
F. Power tool clean to a SSPC-SP11 finish all areas damaged by welding. Use 3M Scotch-Brite Clean'n Strip Discs.
G. Apply one-coat of ZRC Galvanizing Compound Flat as manufactured by ZRC Worldwide 800-831-3275.
H. See Drawing 01.
I. Payment is a separate line item "Top Platform Hatch" which the Owner reserves the right to delete.

3.03 HANDHOLDS

A. Furnish and install a handhold on the roof at the access tube hatch and the wet interior roof hatch.
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.

3.04 OVERFLOW DISCHARGE MODIFICATION WITH A DUCK BILL CHECK VALVE

A. Trim the end of the overflow and install a flange with a duck bill check valve on the new end. Note that the existing pipe is stainless steel all welding and new steel for the overflow are to be stainless steel.
B. Field verify existing overflow pipe dimensions.
C. Weld a minimum of ¼ inch stainless steel ANSI flange on the end of the discharge and bolt the duck bill check valve on the flange.
D. Install gasket between the existing flange and the new flange per AWWA C207 with a full face and a minimal thickness of 1/16 inch.
E. The bolts are to be stainless steel.
F. See Drawing 02.
G. Payment is a separate line item "Overflow Pipe Discharge Modification" which the Owner reserves the right to delete.

3.05 ROOF PAINTER'S RAILING

A. Install a 33 ft. diameter painter's railing on the roof. Field verify dimensions prior to fabrication. The intention is that the painter's railing diameter be 3-4 ft. larger than the handrail around the entire circumference.
B. All butt weld sections on the painters railing to be at a stand-off.
C. Install couplings with brass plugs located at every other painter's railing stand-off. Caulk the underside of the coupling. All threaded fittings to be coated with pipe joint compound.
D. See Drawing 03.
E. Payment is a separate line item "Roof Painter's Railing" which the Owner reserves the right to delete.

3.06 REPLACE LIGHT BULBS

A. Replace all dry interior and aviation light bulbs with LED light bulbs.

B. 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.
C. 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.
D. Change bulbs after all blast and paint equipment has been removed from the tank.
E. All bulbs to have the same color and brightness throughout the dry interior.
F. Payment is incidental to the project.

PART 4 – SPECIAL PROVISIONS

4.01 STEEL REPLACEMENT COATING

A. All large pieces of steel to be shop primed using the specified prime coat over a SSPC-SP10 near white surface preparation.
B. Do not prime 3 in. from area to be welded.
C. After installation, spot clean welded areas to a SSPC-SP11 and apply coating as specified.
D. Use only one manufacturer for repair coating.
E. Payment is incidental to weld repairs.

4.02 WELD PREPARATION PRIOR to COATING

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

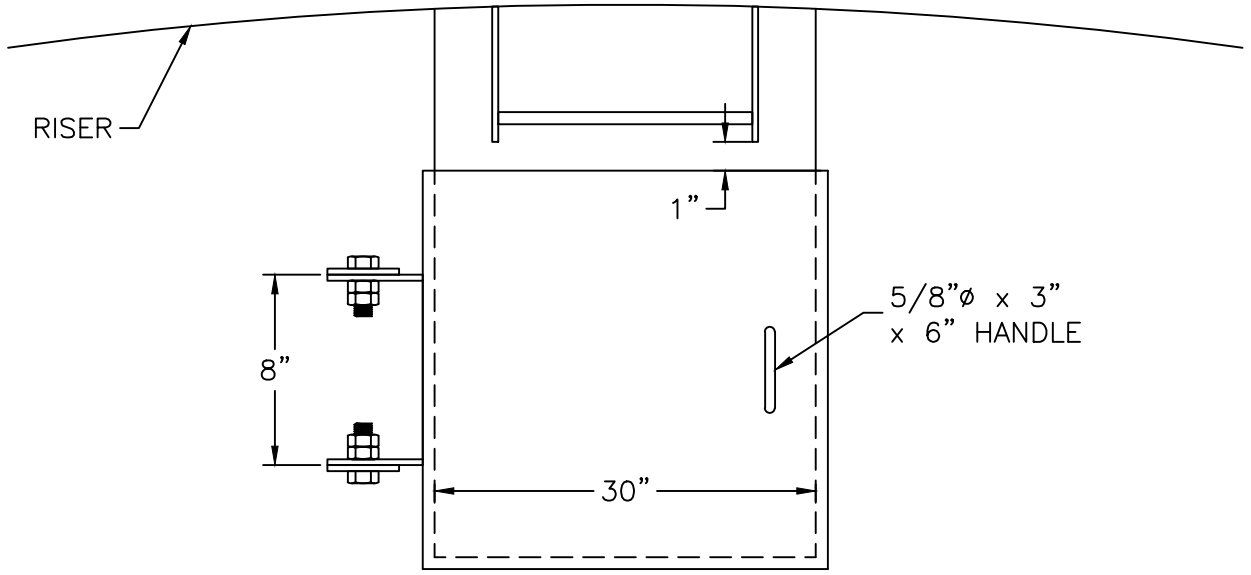
4.03 COATING REPAIR – WET INTERIOR

A. Complete all welding and cutting prior to any surface preparation for painting to avoid contamination of surfaces.
B. Remove any residue and weld smoke by solvent cleaning.
C. Power tool clean to a SSPC-SP11 finish all areas damaged by welding.
D. Use 3M Scotch-Brite Clean'n Strip Discs.
E. Feather edges of adjacent coating a minimum of ½ in. from exposed steel.
F. Apply repair system at 3.5 - 4.5 mils per coat as follows:

Manufacturer	System
Tnemec	20/20
Induron	PE-70/PE-70
PPG	Amerlock 2/Amerlock 2
Sherwin Williams	646PW/646PW

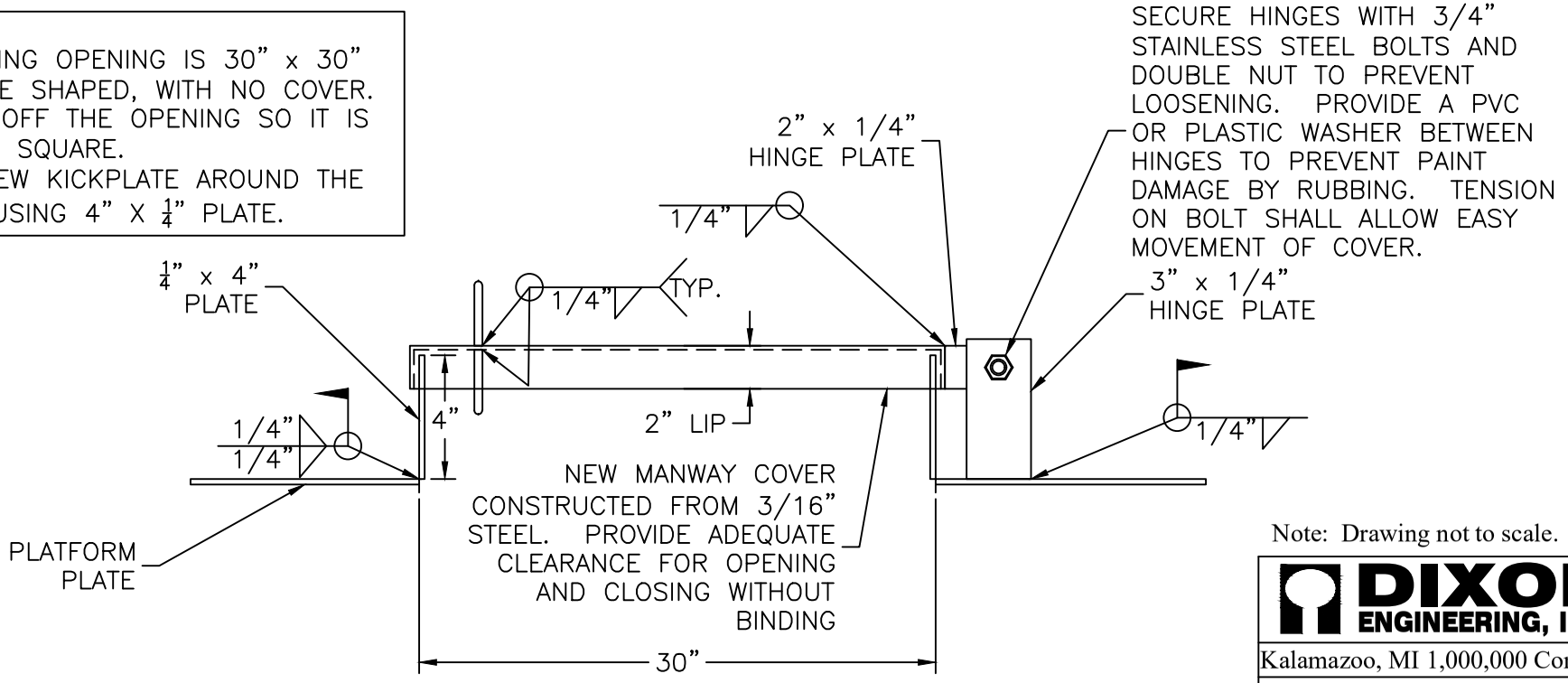
G. Contractor has the option to apply one (1) coat of Aquatopoxy A-61 at 6.0-10.0 mils in lieu of the two coat system.

H. System to meet all National Sanitation Foundation 61 certification standards for potable water contact.
I. Contractor to follow the relevant items from Sections 09 97 13 and 09 97 13.10.
J. Payment is incidental to weld repairs.



PLATFORM HATCH COVER

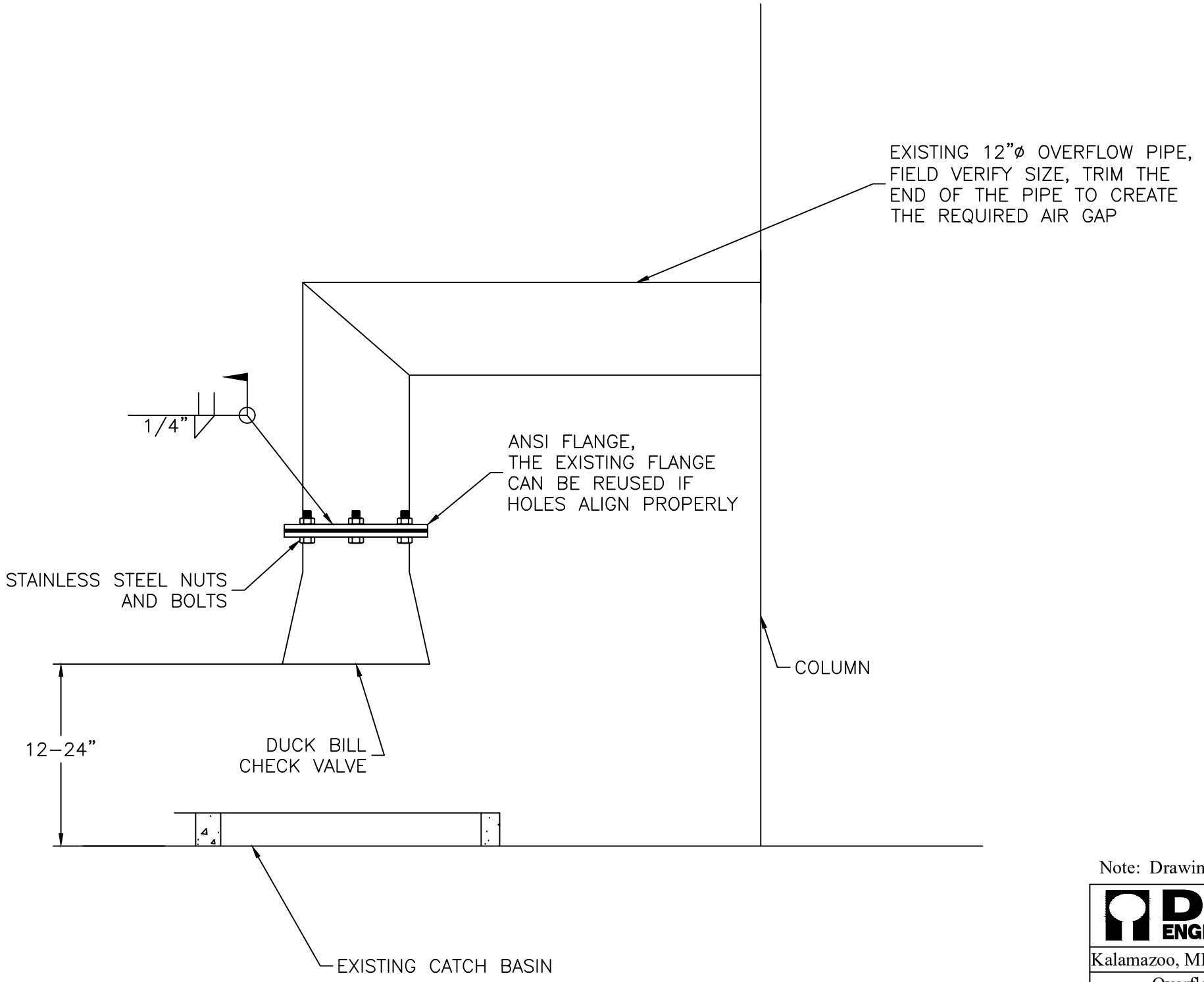
NOTES:
1. THE EXISTING OPENING IS 30" x 30" TOMBSTONE SHAPED, WITH NO COVER.
2. SQUARE –OFF THE OPENING SO IT IS 30" x 30" SQUARE.
3. INSTALL NEW KICKPLATE AROUND THE OPENING USING 4" X ¼" PLATE.



Note: Drawing not to scale.

DIXON ENGINEERING, INC.

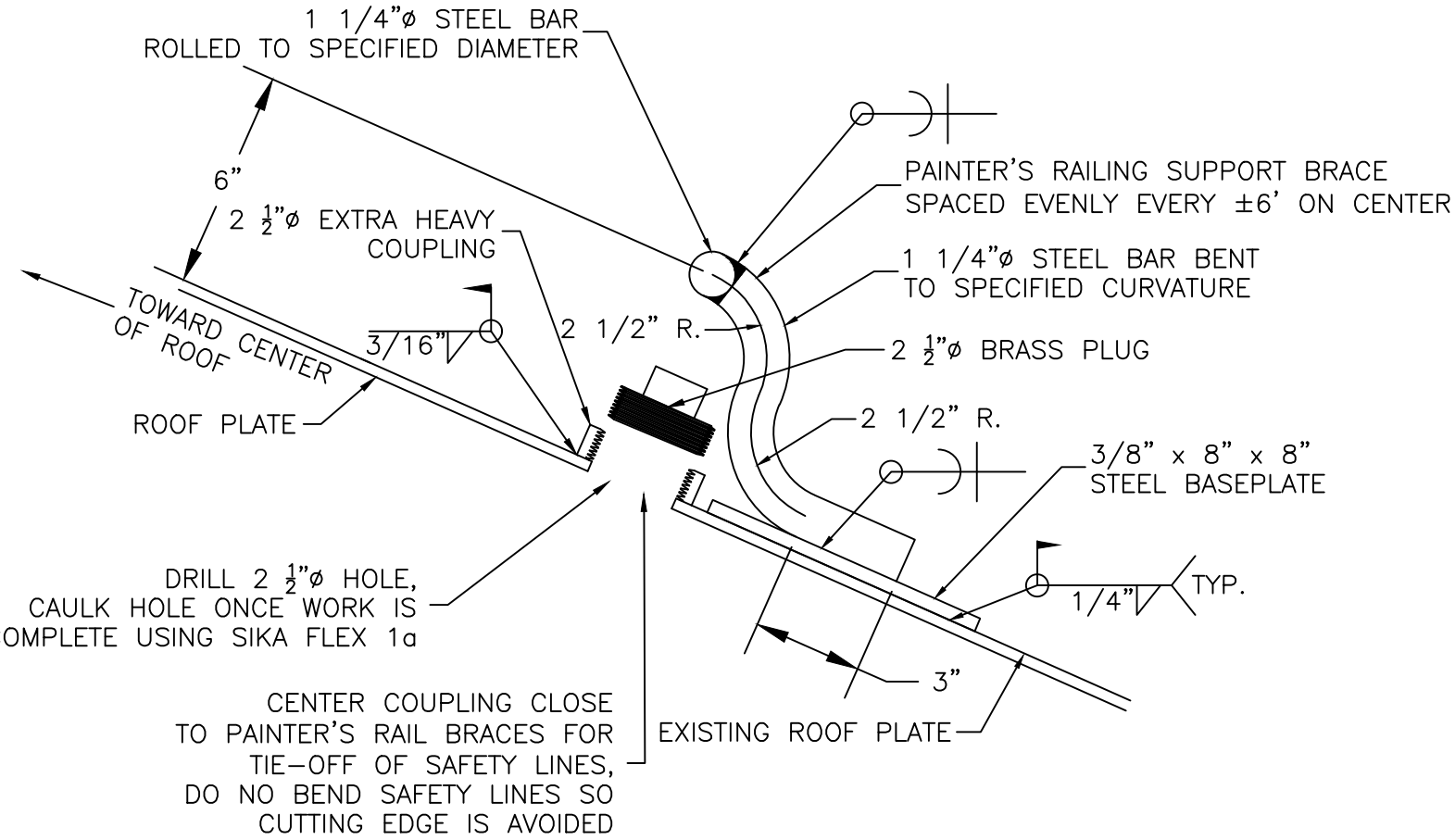
Kalamazoo, MI 1,000,000 Composite	
Platform Hatch	
Drawn By: TMF	Date: 07/28/21
Checked By: JVR	DWG: 01



Note: Drawing not to scale.

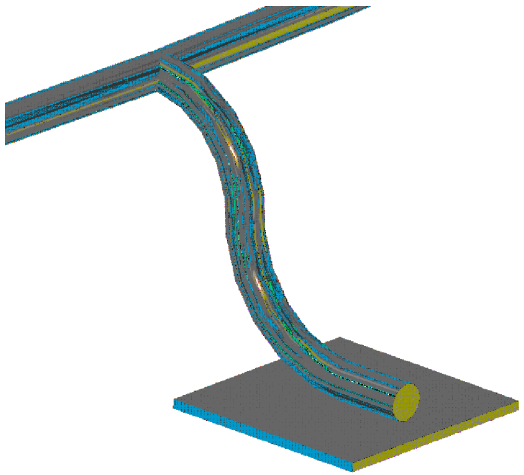
DIXON ENGINEERING, INC.

Kalamazoo, MI 1,000,000 Composite	
Overflow Discharge	
Drawn By: TMF	Date: 07/28/21
Checked By: JVR	DWG: 02



ROOF PAINTER'S RAIL WITH RIGGING COUPLINGS

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



ISO VIEW

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Kalamazoo, MI 1,000,000 Composite	
Painter's Railing	
Drawn By: TMF	Date: 07/28/21
Checked By: JVR	DWG: 03

SECTION 09 97 13
STEEL COATING

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Painting of steel structures.
B. Interior cleaning and disinfection.

1.02 REFERENCES
A. AWWA Standards:
   1. D102 – 17 Painting Steel Water Storage Tanks.
   2. C652 – Disinfection of Water Storage Facilities.
   3. C655 – Field Dechlorination.
B. NSF/ANSI
   1. NSF/ANSI 61

1.03 WORK INCLUDED
A. Exterior: Apply a three (3) coat epoxy urethane system. A 10-15 ft. section on the north side of the new painter's railing is to be painted black. Caulk the antenna cable penetrations on the roof.
B. Dry Interior: Apply a spot two (2) coat epoxy system to the prepared surfaces.

1.04 EXISTING CONDITIONS
A. Exterior: Original urethane system applied in 2005.
B. Wet Interior: Original epoxy system applied in 2005.
C. Dry Interior: Original epoxy system applied in 2005 (only the access tube and manway are coated).

1.05 OMISSIONS or INCIDENTAL ITEMS
A. It is the intent of these specifications to coat the structure for the purpose of corrosion protection on wet interior surfaces. It is the intent to coat the exterior for corrosion protection and aesthetics.
B. Any small or incidental items not specifically detailed in the schedule, but obviously a part of the work are included in the work at no additional cost to the Owner.
C. Engineer, as interpreter of the specifications, will determine if disputed items fall under this category. Prevailing custom and trade practices will be considered in this determination.

1.06 PAINTER QUALIFICATIONS – NON-HEAVY METAL PROJECTS

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

1.07 SUBMITTALS

A. Submit the following with your annual prequalification:
    1. Occupational Safety and Health Programs and certification that all site personnel have been trained as required by law.
B. Submit the following ten (10) days prior to the preconstruction meeting:
    1. 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, paints, thinners, cleaners, degreasers, and abrasive materials.
        b. Provide for employees one (1) copy of all data sheets at the job site for employee access.
        c. Provide one (1) hard copy and an electronic copy to the Engineer.
        d. No work may commence without the complete filing. All SDS shall conform to requirements of SARA (EPCRA) Right-to-Know Act.
    2. Fall Prevention Plan and Site Specific Fall Hazard Evaluation:
        a. Site specific plan to contain a 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 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 hazardous.
    2. Waivers of lien.
    3. Copies of any formal worker safety or environmental citations received on the project.

1.08 OWNER RESPONSIBILITY

A. Drain the structure with a seven (7) day notice after Contractor meets all precedent conditions of the contract.

B. Fill the tank and draw samples and test after chlorination; responsibility of good results remains with the Contractor. Poor test results could result in added costs to Contractor, including re-chlorination, cost of water, plus possible liquidated damages.

1.09 DELIVERY and STORAGE of MATERIAL

A. 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.
B. Cover bulk materials subject to deterioration because of dampness, weather, or contamination, and protect while in storage.
C. Maintain materials in original, sealed containers, unopened and with labels plainly indicating the manufacturer's name, brand, type, grade of material, and batch numbers.
D. Remove from the work site containers that are broken, opened, water marked, and/or contain caked, lumpy, or otherwise damaged materials. They are unacceptable.
E. 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.
F. Keep equipment stored outdoors from contact with the ground, away from areas subject to flooding, and covered with weatherproof plastic sheeting or tarpaulins.
G. Store all painting materials in a location outside the structure.
H. Do not store or have on-site unapproved material, material from different manufacturers, or materials from different projects.

1.10 ACCESS and INSPECTOR 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 inspector to use inspection 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 inspectors. Limit fall to 5 ft. vertically.
D. New safety tie-off points have been added as part of this project, see Section 05 00 00 Metal Repairs. Do not rig equipment from these points. Provide separate fall protection cables and safety grabs for each tie-off point. The Contractor can install additional rigging couplings for staging. Coupling design for the additional couplings is to match those designed for safety lines.
    1. Tie-off points are located on the roof for wet interior safety.

E. These specifications require the Contractor to supply a separate fall protection cable and safety grab for each tie-off point for the inspector'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 inspector's, but a separate cable and safety grab are required for each user.

1.11 INSPECTION and TESTING

A. Prior to the scheduled inspection, remove all dust, spent abrasive, and foreign material from the surface to be coated.
B. The Contractor is to furnish an instrument for measuring the wet film thickness, and also a calibrated instrument for measuring dry film thickness of each field coat of paint. The dry film thickness testing gauge shall be the magnetic type as manufactured by Elcometer Co., or the Nordson Gauge Co.; spring loaded model with two percent (2%) accuracy margin over a range of one-to-twenty-one (1-21) mils or equal.
C. The Engineer will furnish and operate inspection 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 coating repairs 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 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 inspector is satisfied the surfaces are dry.

1.13 APPLICATION

A. Complete all painting and surface preparation in strict accordance with these specifications, approved paint manufacturer's specifications, and good painting practices per SSPC.
B. Apply each coating at the rate and in the manner specified by the manufacturer. Check the wet film thickness every 200 sq. ft. to ensure each coat applied meets the dry film thickness range requirements.
C. Allow sufficient time for each coat of paint to dry and cure. Allow a minimum of twenty-four (24) hours between coats, unless product requirements have a maximum time less than 24 hours.
D. Apply exterior coating by brush and roller only. Spray application is not permitted without prior approval of the Engineer. Even with prior approval, responsibility for damage still remains with the Contractor.
E. Coatings shall be applied using methods to eliminate roller or spray marks in the finished product on the exterior.
F. Painting may be delayed because of poor coverage or the potential damage from overspray and/or dry spray. In all cases, responsibility for damages rests with the Contractor.
G. The Contractor is responsible for the appearance of the finished project and is warned to prevent contact with any freshly applied coating. Removal of rigging shall be completed so not to mar or damage the coating.
H. 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.
I. Use of pole extension on spray guns is prohibited for all paint application.
J. Mixing of partial kits is not permitted. All partial cans of coating must be removed from the site.
K. Mixing blades to be clean. The Engineer has the right to reject mixing blades based on cleanliness or paint build-up. Do not use the same mixing blade for different coatings (i.e. epoxy and urethane coatings).

1.14 PRESSURE RELIEF VALVES

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

PART 2 – PRODUCTS

2.01 COLOR

A. Exterior Coatings:
   1. Supply the Engineer with a color chart to allow the Owner ample time for the exterior topcoat color selection.
   2. Factory tint the intermediate coat(s) for all areas of the structure if similar to the finish coat. Tinting shall be sufficient to allow visibility of the dissimilar color from 1 ft., and from 100 ft.
   3. The Owner shall select or verify the topcoat color at the preconstruction meeting.
      a. All bids shall be based on Tnemec "Delft Blue" color.

B. Dry Interior Coatings:
   1. The color is to be a different tint between coats. Tinting to be performed in the factory. The final color is to be white. The topcoat color is to be verified at the preconstruction meeting.

2.02 SUBSTITUTIONS

A. All coatings specified and approved herein have met or exceeded a specified list of ASTM standards. The materials specified are the standard to which all others shall be compared.
B. The purpose is to establish a standard of design and quality, and not to limit competition.
C. Other manufacturers wishing to have their products approved have also had their coatings tested using the same representative of Dixon Engineering, Inc., and 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 EQUIPMENT COVERING

A. Use material that is 8 – 10 mils thick, and 100% impermeable to all vulnerable equipment.
B. Use material resistant to tear and/or rip by mechanical action from abrasive blasting during blasting operations.
C. Make coverings airtight by use of duct tape at the openings, or other suitable measures.

D. Meet with representative of equipment Owner to verify covering will not damage equipment. Damage is the Contractor's responsibility. This includes not only the Owner's equipment, but also telecommunication antennas, cables, buildings, controls, etc.

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 61 approved. Assist the Owner during filling and ensure that any manways are free of leaks after filling. Contractor is to adjust the manways and replace gaskets as needed to ensure there are no leaks.
C. Do not allow water to enter the distribution system until satisfactory bacteriological test results are received.
D. Owner is responsible to collect two consecutive bacteriological samples, 24 hours apart, following disinfection. Satisfactory results are required before the tank can be returned to service.
E. Water drained to waste may not contain any substances in concentrations that can adversely affect the natural environment. No total residual chlorine may be measured in water discharged to surface water. It is recommended that the water be dechlorinated per AWWA C655F Field Dechlorination.
F. Pay all additional expenses if it is necessary to repeat the testing and disinfection procedure as a result of defective work.

3.02 PROTECTION of NON-WORK AREAS

A. Protect all non-painted surfaces prior to all painting.
B. 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 SYSTEM PROTECTION

A. There are 7 antennas mounted on the roof. The number of antennas listed are from the last known condition, the Contractor is to field verify number of antennas.
B. There are cables routed from the ground up to the antennas with miscellaneous sensitive equipment mounted on the structure and control equipment/buildings located on the ground.
C. Use material that is 100% impermeable to cover and protect all antennas, antenna cables, and antenna controls/buildings.

D. Use material resistant to tear by mechanical action from abrasive blasting, power washing and coating application.
E. Payment for damage to antennas, antenna cables, miscellaneous equipment and/or antenna controls/buildings is the responsibility of the Contractor.
F. Contact the Owner of each set of antennas one (1) week prior to the beginning of construction. Name of antenna companies will be available at the preconstruction meeting.
G. Antennas may remain in service during the project. The Contractor is responsible for their own RF safety. Contractor to provide a minimum of one RF monitor for employees on site for the duration of 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 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 water and dispose of properly after job is completed.

3.06 LIGHTING of WORKSPACE

A. Provide durable lighting fixtures designed for the intended work environment for use during blasting, painting, and during all inspections.
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 inspection, per SSPC-Guide 12. Inspect the prepared surface at the higher illumination prior to calling for inspection. All work must conform to specification requirements prior to the scheduled inspection.
F. Measure the illumination at the work surface in the plane of the work.

PART 4 – SPECIAL PROVISIONS

4.01 ANTENNA CABLE PENETRATION CAULKING

A. Seal the antenna cable penetrations on the roof with caulking.
B. Remove all existing caulking, spray foam insulation, or tape.
C. Apply clear silicone caulking to completely seal the penetrations.
D. Cost is incidental to the project.

4.02 SCHEDULING

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

4.03 GRASS RESTORATION

A. The Contractor is to report any damaged ground at the construction site in writing prior to mobilization of equipment, otherwise all repairs to the damaged ground will be the responsibility of the Contractor.
B. Refill all holes, ruts etc. with clean topsoil, and level area around the construction site to the original grade.
C. Fill material to be clean soil, no gravel, rocks or construction debris is to be used as fill material without the Owner's consent.
D. Bring soil to a friable condition by disking, harrowing, or otherwise loosening and mixing to a depth of 3 in. – 4 in. Thoroughly break all lumps and clods.
E. Rake area to be seeded. Sow seed at a minimum rate of 220 lbs/acre. Use seed intended for the climate.
F. Work to be completed to the Owner's satisfaction.
G. Cost is incidental to the project.

SECTION 09 97 13.10
STEEL COATING SURFACE PREPARATION

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Power Tool Cleaning.
B. High Pressure Water Cleaning.

1.02 REFERENCES
A. AWWA Standards:
   1. D102-17 Painting Steel Water Storage Tanks.
B. SSPC and NACE Standards:
   1. SP11 – Power Tool Cleaning to Bare Metal.
   2. SP12/NACE No. 5 – Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
   3. VIS 3 (Visual standard for hand and power tool cleaned metal).

1.03 WORK INCLUDED – SURFACE PREPARATION
A. Exterior: High pressure water clean (5,000 to 10,000 psi), spot power tool clean to a SSPC-SP11 standard.
B. Dry Interior: Spot power tool clean the spot failures throughout to a SSPC-SP11 standard.

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.

PART 3 – EXECUTION

3.01 WET INTERIOR CLEANING
A. Low pressure water clean at 4,000 psi all surfaces and appurtenances to remove sediment, minerals, other contaminants, and any remaining water.
B. Staining may remain in place, the Engineer to approve cleanliness.
C. The cost is incidental to the project.

3.02 HIGH PRESSURE WATER CLEANING - EXTERIOR

A. Solvent clean all visible grease, oil, salt, algae, and residue in accordance with SSPC-SP1.
B. High pressure water clean all exterior surfaces and appurtenances at 5,000 – 10,000 psi to remove all dirt, chalk, algae, other foreign material, and all brittle or loose coating, rust, and mill scale. Operational pressure will be determined by the Engineer based on field conditions.
C. Maintain a water jet nozzle distance of 2 in. – 10 in. away from the surface.
D. Hold the water jet nozzle with 0º - 15º tip perpendicular (90º) to the surface at all times.
E. Only use machines rated at and capable of achieving and maintaining 10,000 psi. Use of a rotating/reciprocating nozzle during water cleaning is permitted but not to increase the pressure of a washer rated lower than required.
F. Do NOT exceed a rate of 10 sq. ft./minute.
G. The gauge measuring time of use must be operational on the unit, if not operational the Contractor may be shut down and/or deducted price for rental of an operational unit from the final payment.
H. Feather all edges using power tools per this specification.

3.03 POWER TOOL CLEAN (SSPC-SP11) – EXTERIOR – DRY INTERIOR

A. Solvent clean all visible grease, oil, salts, and residue.
B. Power tool clean all surfaces and appurtenances to bare metal (SP11) in areas where steel is exposed or rusted, or where coating is abraded.
C. Retain or produce a surface profile. Surface profile shall be greater than 1.0 mil.
D. Edges of adjacent coating shall be feathered a minimum of ½ in. from the exposed steel with 3M Scotch-Brite Clean’n Strip discs.

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.

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 two (2) coat epoxy system.

PART 2 – PRODUCTS

2.01 EPOXY – SPOT 2 COAT SYSTEM
A. Spot two (2) coat epoxy system.
B. Approved suppliers and system:

Manufacturer	System
Tnemec	66(spot)/66(spot)
Induron	PE-70(spot)/PE-70(spot)
PPG	Amerlock 2(spot)/Amerlock 2(spot)
Sherwin Williams	646(spot)/646(spot)

PART 3 – EXECUTION

3.01 EPOXY – SPOT 2 COAT EPOXY
A. Apply to all prepared areas a spot two (2) coat epoxy system.
B. Surface preparation has been previously 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 13.24.01
EXTERIOR STEEL COATING – THREE COAT EPOXY URETHANE OVERCOAT

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Painting on the exterior.

1.02 REFERENCES
A. SSPC and NACE Standards:
   1. PA1 – Paint Application.
   2. NACE RP 0178 Surface Finish Requirements.

1.03 WORK INCLUDED
A. Application of a three (3) coat epoxy urethane system.

PART 2 – PRODUCTS

2.01 EPOXY URETHANE – 3 COAT OVERCOAT SYSTEM
A. The coating shall be an epoxy urethane system.
B. The contractor is advised to follow all requirements for safety concerning isocyanates.
C. Ultraviolet protection additives mixed at factory only. There will be no tinting or addition of any material other than the manufacturer's thinners.
D. Approved suppliers and systems:

Manufacturer	System
Tnemec	66(spot)/66/1074/1074UV
Induron	PE-70 (spot)/PE-70/I-6600 Plus/I-6600 Plus
Sherwin Williams	646PW(spot)/646PW/Acrolon Ultra/Acrolon Ultra
PPG	Amerlock 2(spot)/Amerlock 2/Pitthane Ultra/Pitthane Ultra

PART 3 – EXECUTION

3.01 EPOXY URETHANE – 3 COAT OVERCOAT SYSTEM
A. Apply to all prepared surfaces and appurtenances a three (3) coat epoxy urethane system.
B. Surface preparation and paint requirements have been previously defined in Section 09 97 13.10. Apply all coatings by brush and roller. Spray application is prohibited.

C. Apply each coat at the following rates:

Coat	Minimum D.F.T. (mils)	Maximum D.F.T. (mils)
Primer (spot)	2.0	3.0
Epoxy Intermediate	2.0	3.0
Urethane Intermediate	2.0	3.0
Topcoat	2.0	3.0
Total	8.0	12.0

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. Paint a 10-15 ft. section on the north side of the new painter's rail black. Field verify location and dimensions with the owner prior to application.

3.02 SCHEDULE of WORK

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