SUBMITTAL CHECKLIST

PROJECT: 2,500,000 Gallon Composite (Beech Avenue) Rehabilitation

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

Specification Section	Title	Date Received	Date Reviewed	Accepted	Reviewed with Comments	Rejected
	Metal Repairs					
05 00 00	PDS and SDS - Welding Rod					
05 00 00	Welder's Certification					
05 00 00	PDS - Roof Hatch Gasket, PDS and SDS - Adhesive					
05 00 00	PDS - Fill/Draw Pipe Insulation Jacket Material					
05 00 00	PDS - Fall Prevention Device					
05 00 00	SDS - Joint Compound for Threaded Fittings					
	Steel Coating					
09 97 13	OSHA Safety and Health Program					
09 97 13	OSHA Safety Certifications for Site Personnel					
09 97 13	Designated OSHA Competent Person					
09 97 13	Fall Prevention Plan					
09 97 13	Site Specific Fall Prevention Plan					
09 97 13	Certifications for Spiders, Scaffolding, Stages, etc.					
09 97 13	SDS and PDS - Coatings, Thinners, Coating Additives, and Caulking					
09 97 13	SDS and PDS - Cleaners and Degreasers					
09 97 13	SDS and PDS - Chlorine					
09 97 13	SDS and PDS - Abrasives, Additives and Pretreatments					
	Electrical Work					
16 05 01	Electrician Certifications or Electrical Sub-Contractor Name					
16 05 01	PDS - Aviation Light					
16 05 01	PDS and SDS - Light Bulbs					

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TECHNICAL SPECIFICATIONS

SECTION 00 91 18
DEFINITIONS FOR TECHNICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 DEFINITIONS

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. Intermediate Platforms: Partial landings between top platform and condensate (bottom) platform.

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

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

K. Column: Center support whether concrete or steel.

SECTION 00 91 19.01
SCHEDULING FOR RPR SERVICES

PART 1 – COMMUNICATION

1.01 RESIDENT PROJECT REPRESENTATIVE (RPR) SERVICES

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

1.02 HOLD POINT OBSERVATIONS AND MEETINGS

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

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

b. To review surface preparation prior to welding and review all products prior to installation.
c. After welding is complete for quality assurance.

4. Hold Points – Sections 09 97 13 – Steel Coating and 09 97 13.10 Steel Coating Surface Preparation:
   a. 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 application of the 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 are to be scheduled by 6:00 P.M (Eastern Time) the previous day.
   1. Scheduling with a Central Contract Administrator. The names and phone numbers of a Contract Administrator and a Second Contract Administrator will be given to the Contractor during the Preconstruction Meeting.
C. Scheduled observations are to be cancelled by 6:00 P.M (Eastern Time) the previous day.
D. 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
E. The Contract Administrator may be contacted by text to their cell phone.
F. If the Contract Administrator is not available, DIXON's Corporate Office may be contacted during regular working hours at 1-800-327-1578.
G. Scheduling through a Project Manager is not an alternative.
H. 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 there is 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 it is 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
   3. RPR on site
D. 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 the 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, air 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 costs. 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 by 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 the 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 the 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 the 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 the 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 for at the overtime rate.)
B. Fees of misused or unnecessary Engineer/RPR Services will be documented and submitted to the Owner for Set-off. Set-off fees will be per the current Exhibit C-2,

Standard Hourly Rate and Reimbursable Expense Schedule, or per Exhibit C-1 Summary of DIXON's Compensation Fee Schedule for Unit Price or Lump Sum items.

C. The right to Set-off is a contracted right of the 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 result 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 91 19.01.
   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 the forecast was less than 20% weather meeting definition of a weather day (day where work could not be performed due to weather).
   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 On-call time charged 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) hours per week triggering overtime at forty (40) hours.

E. If Work is cancelled per requirements in Section 00 91 19.01 (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 more than the capacity of existing electrical service is to be the responsibility of the Contractor.
C. Provide, maintain, and remove temporary electric service facilities.
D. Facilities exposed to weather is to be weatherproof-type and electrical equipment enclosure locked to prevent access by unauthorized personnel.
E. The 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. The 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 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. The Contractor is responsible for replacing or repairing damage to existing buildings, sidewalks, roads, parking lot surfacing, turf, and other existing assets.
B. The 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. The 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 the 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. The Contractor is to maintain and operate all temporary systems to ensure continuous service.
B. The Contractor is to 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 is to 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 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. The 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 units 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 is 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 manufacturers' written instructions and applicable regulatory requirements.

1.09 NOISE CONTROL

A. Conduct operations to cause the 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 451, 1994 – Natural Resources and Environmental Protection Act: This statute regulates discharge of certain substances into the environment, regulates use of certain lands, waters and other natural resources.
   4. 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 waste. 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 49009-5025
(269) 567-3500
(269) 567-3555 (fax)

SECTION 05 00 00
METAL REPAIRS

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Steel and Miscellaneous Repairs.

1.02 REFERENCES
A. AWWA D100 Weld Standard (latest version)
B. AWS Weld Standard (latest version)
C. API 650 Standard (latest version)

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 gaskets on the wet interior roof hatches.
2) Install handholds at the roof hatches (inside the roof handrail).
3) Replace steel section of piping on the sample taps and pressure valve piping.
4) Replace the expansion joint nuts and bolts.
5) Install an aluminum jacketing over the fill/draw pipe insulation.
6) Install a fall prevention device on the dry interior and wet interior ladders.

1.06 WORKMANSHIP
A. Provide material and workmanship necessary to complete the Project to the specified standards.
B. Remove all coating at and around weld location prior to welding.
C. All weld spatter is to be removed prior to coating application.
D. Welds at all removed steel items are to be ground flush with surrounding surface. All new welds are to be ground smooth.

E. 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 the 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. Provide an electronic copy to the Engineer. Note that the Contractor is to supply a separate copy of the SDS of each product at the job site that is accessible by their employees.
B. No work may commence without the complete filing. All SDS shall conform to the requirements of SARA (EPCRA) Right-to-Know Act.
C. 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. 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.
    3. 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 all surface preparation ahead of all cutting and welding, 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., fall prevention devices, 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 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 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. 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.
C. Carbon Steel
   1. ASTM A36 or ASTM F1554-36 anchor rods.

2.04 WELDING ROD

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

2.05 ROOF HATCH GASKET

A. Roof hatch manway gaskets for access points above the high-water level (not in contact with potable water).
B. There are two options:
   1. Full sheet adhered to the interior of the hatch cover:

Gaskets to meet ASTM D2000 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. Gasket adhered to the edge of the hatch curb:
   EPDM foam and vinyl rubber Water and Weather Resistant Rubber Push-on Seal as manufactured/supplied by McMaster-Carr. www.mcmaster.com (562) 692-5911 or approved equal.

C. Adhesive for gasket to be 3M Super Weather strip and Gasket Adhesive as Manufactured by 3M www.3m.com (888) 364-3577 or approved equal.

2.06 FILL/DRAW PIPE INSULATION JACKET MATERIAL

A. Corrugated aluminum jacketing with a minimum thickness of 0.016 in. or approved equal.

B. Manufactured/supplied by Johns Manville www.jm.com (303) 978-2000.

2.07 FALL PREVENTION DEVICE

A. Cable-Type system as manufactured/supplied by 3M/DBI Sala, www.3m.com (888) 364-3577 or approved equal.

1. System: Lad-Saf Model and all connecting clips, etc.
2. 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.
4. Two (2) detachable sleeves – Lad-Saf X2 #6160030.
5. Two (2) harnesses –ExoFit Climbing/Positioning Body Harness one 1113082 (large) and one 1113079 (medium).
6. Two (2) lanyards – Shockwave 2 1244412.

2.08 JOINT COMPOUND FOR THREADED FITTINGS

A. As Manufactured by:

1. Oatey Great White Pipe Joint Compound www.oatey.com (800) 321-9532.
2. The Mill-Rose Company – Clean Fit Products www.CleanFit.com (800) 321-3598.
3. Loctite 567 www.loctiteproducts.com (800) 624-7767.
4. Or approved equal.

PART 3 - EXECUTION

3.01 ROOF HATCH GASKETS

A. Install gaskets on the wet interior roof hatch covers (or opening curb). There are three hatches.
B. Install the gasket after the exterior coating is dry to the touch. Apply roof hatch gasket using adhesive.
C. If there is an existing gasket, it may be reinstalled if the Engineer approves.
D. The hatch hasps may need to be modified/holes in the hasps enlarged to accept a lock once the gasket is installed. The cover is to seat flush with the curb with the gasket in place around the entire perimeter. Welding performed during any relocation of the hinges and/or hasp is to match the original condition.
E. Payment is incidental to the Project.

3.02 HANDHOLDS

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

3.03 SAMPLE TAP AND PRESSURE GAUGE PIPE REPLACEMENT

A. Replace the steel sections of pipe at the sample taps and on the piping at the pressure gauge. There is piping to replace on three penetrations.
B. Intention is to replace the piping with brass or copper piping.
C. Install a dielectric union from the existing penetration on the fill/draw pipe to the replaced pipe.
D. All threaded connections are to be installed with joint compound.
E. Payment is incidental to the Project.

3.04 EXPANSION JOINT NUT AND BOLT REPLACEMENT

A. Replace the expansion joint nuts and bolts with stainless steel nuts and bolts. Not that replacement includes the threaded rod and nuts that restrict movement on the joint.
B. The Contractor is to install the nuts on the restrictor threaded rods to match the placement of the existing nuts.
C. The expansion joint is located in the base of the column.
D. Install dielectric sleeves and washers on the nuts, bolts, and threaded rod.

E. Payment is a separate line item “Expansion Joint Nut and Bolt Replacement” which the Owner reserves the right to delete.

3.05 FILL/DRAW PIPE INSULATION JACKETING

A. Install aluminum jacketing over all of the insulation on the fill/draw pipe. Note that jacketing is not to be installed on the piping not currently insulated.
B. Stagger splices a minimum of 2 inches and fasten with self-tapping stainless-steel screws. The jacketing is to be installed around the expansion joint and any other bump-out locations with complete coverage/flashing on the top and bottom of the insulation bump-out(s).
C. Payment is a separate line item “Insulation Jacketing” which the Owner reserves the right to delete.

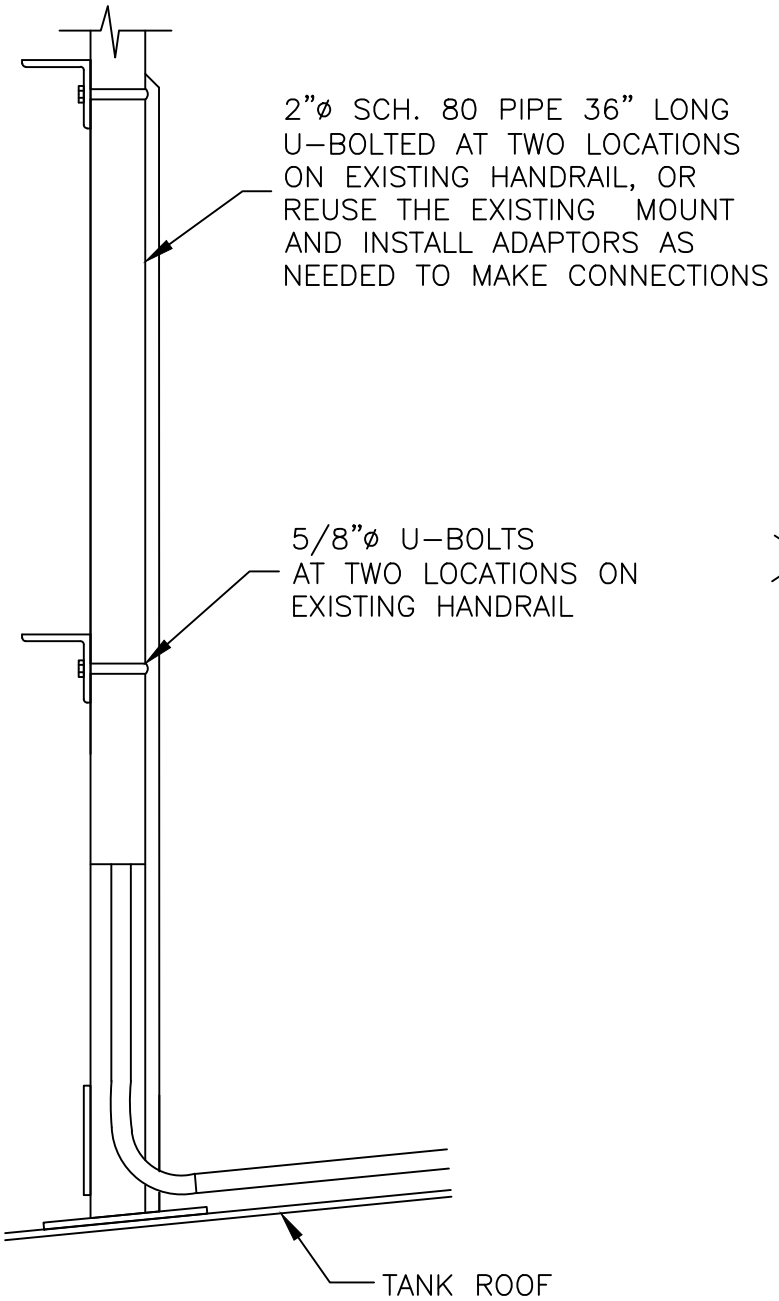
3.06 FALL PREVENTION DEVICES

A. Remove the existing fall prevention devices. Furnish and install a cable-type fall prevention device on the dry interior ladders and the wet interior ladder. There are three column ladders, a ladder to the bowl manway, the access tube ladder, and one wet interior ladder (all to have fall prevention devices replaced).
B. Devices are to be installed after the topcoat is dry to the touch. Use temporary safety lines during construction.
C. Install cable guides every 15 ft. on center.
D. Supply two (2) portable cable glides, two (2) safety harnesses, and associated hardware. Supply each harness with a double lanyard with one (1) large D-snap hook on each branch of split lanyard. Supply belts or center waist D-ring attachment with carabiner or use with required device. The portable glides can be used on all ladders.
E. Payment is a separate line item “Fall Prevention Devices” which the Owner reserves the right to delete.

PART 4 – SPECIAL PROVISIONS

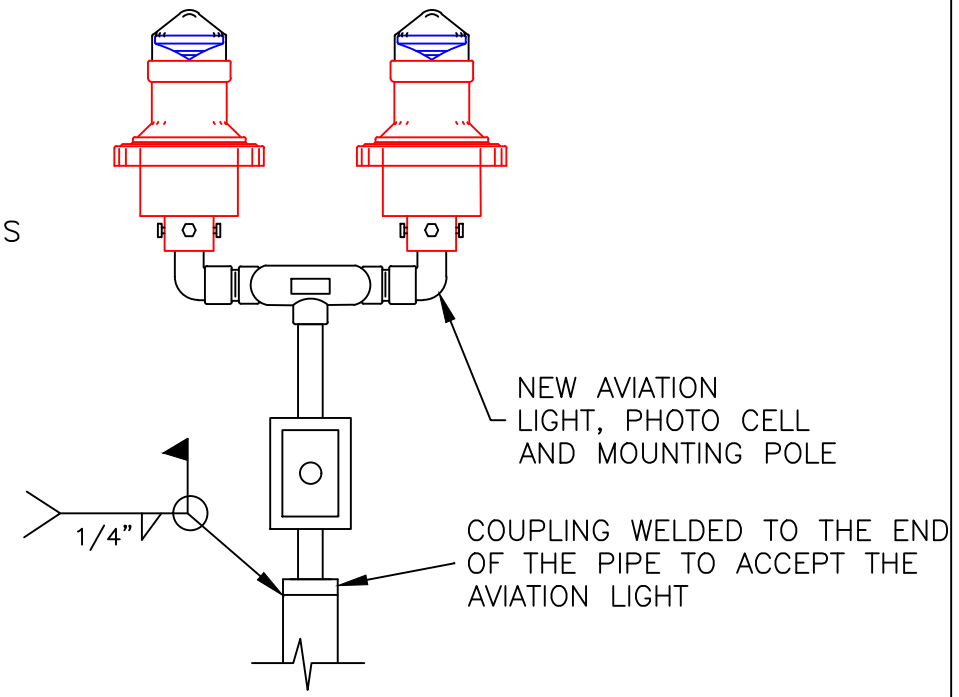
4.01 WELD PREPARATION PRIOR TO COATING

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



AVIATION LIGHT MOUNT

LOWER SECTION



AVIATION LIGHT MOUNT

UPPER SECTION

Note: Drawing not to scale.

DIXON ENGINEERING, INC.	
Kalamazoo, MI 2,500,000 Composite	
Aviation Light	
Drawn By: TMF	Date: 12/23/25
Checked By: JVR	DWG: 01

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 60/600 and 61/600.

1.03 WORK INCLUDED
A. Exterior: Apply a three (3) coat epoxy urethane system.
B. Dry Interior: Apply a spot two (2) coat epoxy system to the prepared surfaces.
C. Piping (in the column base): Apply a two (2) coat epoxy system.

1.04 EXISTING COATING CONDITIONS
A. Exterior: Original urethane system applied in 2008.
B. Wet Interior: Original epoxy system applied in 2008.
C. Dry Interior: Original epoxy system applied in 2008.
D. Pit Piping: Original epoxy system applied in 2008.

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. The Engineer, as interpreter of the specifications, will determine if disputed items fall under this category. Prevailing customs 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. All coating applicators are to be specialized in industrial or heavy commercial painting.
C. ALL CONTRACTORS ARE TO BE PREQUALIFIED with Dixon Engineering for projects of this size and complexity.

1.07 SUBMITTALS

A. Provide an electronic copy to the engineer. Note that the Contractor is to supply a separate copy of the SDS of each product at the job site that is accessible by their employees.
B. No work may commence without the complete filing. All SDS shall conform to the requirements of SARA (EPCRA) Right-to-Know Act.
C. Submit the following with the annual prequalification:
    1. Occupational Safety and Health Programs and certification that all site personnel have been trained as required by law.
D. 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: coatings, thinners, additives, cleaners, caulking, degreasers, chlorine, abrasives, abrasive additives, and pretreatments.
    2. 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.
E. Submit the following at the preconstruction meeting:
    1. Designated OSHA Competent Person and qualifications, if not previously submitted.
F. Submit the following within two (2) weeks of project completion with final pay request:
    1. Waste manifest, waste hauler and disposal facility. Required even if testing results indicate that the waste is non-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 the Contractor meets all precedent conditions of the contract.

B. Fill the structure 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 the Contractor, including re-chlorination, cost of water, plus possible liquidated damages.

1.09 DELIVERY and STORAGE of MATERIAL

A. 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 structure being taken out of service and commencement of the Project.
B. Submit the 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 the Contractor's access equipment is safely used.
C. Provide separate fall protection devices and safety lines for the Owner and observers that meet all local and federal OSHA requirements.
D. 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 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 per these specifications by the Contractor at the Contractor's expense.

1.12 SCHEDULING

A. Complete all welding and any other work before coating operations begin, including surface preparation that might damage the new coating system. The exception is coating removal in the weld area.
B. If the 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 conditional restrictions in the Field Order. If the Contractor objects to restrictions, they may revert to the original specifications.

1.13 CLIMATIC CONDITIONS

A. Do not apply paint when the temperature, as measured in the shade, is below the manufacturer's required ambient conditions 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 that the surfaces are dry.

1.14 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 regularly during coating application 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 of less than 24 hours. Additional time may be necessary if low temperatures require an increase in the necessary cure time.
D. Responsibility for damage caused by coating application and repair of coatings improperly applied is the responsibility of the Contractor, even with prior non objection to application procedures:
    1. Apply exterior coating by brush and roller only. Spray application is not permitted without prior approval of the Engineer.
    2. Coatings are to be applied using methods to eliminate roller or spray marks in the finished product on the exterior.
    3. Painting may be delayed because of poor coverage or the potential damage from overspray and/or dry spray.
    4. The Contractor is responsible for the appearance of the finished project and is advised to prevent contact with any freshly applied coating. Removal of rigging is to be completed so as not to damage the coating.
    5. Additional coats may be required for coverage or to eliminate roller marks, spray marks and to repair dry spray and overspray.
E. Use of pole extensions on spray guns is prohibited for all paint applications.
F. Mixing partial kits is not permitted. All partial coating containers must be removed from the site.
G. 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).

1.15 PRESSURE RELIEF VALVES

A. Furnish two (2) pressure relief valves for the Owner to install.
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 a range of 30 to 90 psi. Set the valve at 60 psi and the Owner will adjust the valves once installed.
D. Supply three (3) days prior to draining of the structure.
E. After work on the structure is complete with successful disinfection and dechlorination 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. The Contractor is responsible for verifying all topcoat colors with the Owner, even when specified, prior to ordering topcoat products.
      a. All bids are to be based on Tnemec "Delft Blue" color for the tank and Tnemec "Slate Gray" for the overflow pipe discharge.

B. Dry Interior and Piping 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.
      a. All bids are to be based on Tnemec "Tank White" for the dry interior.
      b. All bids are to be based on Tnemec "True/Safety Blue" for the piping.
   2. Only colors approved by NSF 61/600 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. The selection of coatings and manufacturers have 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 the use of duct tape at the openings, or other suitable measures.
D. Meet with the representative of equipment owners to verify covering will not damage equipment. This includes not only the Owner's equipment, but also telecommunication antennas, cables, buildings, controls, etc.

2.04 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 shall be NSF 60/600 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. Contractor shall never allow water to enter the distribution system until satisfactory bacteriological test results are received and any dechlorination requirements are met. Throughout the Project, only the Owner will operate valves allowing water back into the distribution system.

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. The Contractor shall pay all additional expenses if it is necessary to repeat the testing and disinfection procedure as a result of defective work, including Engineering fees.

3.02 PROTECTION OF NON-WORK AREAS

A. Protect all non-blasted/painted surfaces prior to all abrasive blast cleaning/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 REMOVAL AND PROTECTION

A. There are five 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. The antennas will need to be removed prior to welding.
D. Use material that is 100% impermeable to cover and protect the cables, and antenna controls/buildings.
E. Use material resistant to tear by mechanical action from abrasive blasting, power washing and coating application.
F. Payment for damage to antennas, antenna cables, miscellaneous equipment and/or antenna controls/buildings is the responsibility of the Contractor.
G. Contact the Owner of each set of antennas one (1) week prior to the beginning of construction to determine protection requirement. Names of antenna companies will be available at the preconstruction meeting.
H. 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.
I. Antenna removal and reinstallation, where required, shall be performed by the City of Kalamazoo staff or Drew Wireless and associated costs shall be incidental to the Project. The disconnection, reconnection, and storage of the equipment is coordinated with the City's recommended contact to ensure that work is completed properly.

3.04 ANTENNA MOUNTING EQUIPMENT COATING

A. Antenna mounting 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. Note that the antennas, radio heads, cables, etc. are not to be coated. Coating is limited to items that have previously been coated to match the tank.
C. All previously coated items are to be coated per the exterior specifications. Any galvanized, stainless steel or other uncoated materials are to remain uncoated.
D. Cable connections are to be removed during surface preparation and coating application. Temporary support may be needed to hold the cables in place during the Project. Reinstall the cable attachments or install new connections if the attachment is a zip-tie or electrical tape. Note that the antenna and any miscellaneous equipment attachment points are to remain in place throughout the Project.
E. Cost is incidental to the Project.

3.05 HAND WASH FACILITY

A. Provide an 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.

<u>PART 4 – SPECIAL PROVISIONS</u>

4.01 GRASS RESTORATION

A. The Contractor is to report any damaged ground at the construction site in writing with photos, 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, and shall be approved by the Owner.
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 Field Abrasive Blast Cleaning.
B. Power Tool Cleaning.
C. High Pressure Water Cleaning.

1.02 REFERENCES

A. AWWA Standards (latest version):
   1. D102 Painting Steel Water Storage Tanks.
B. SSPC and NACE Standards (latest versions):
   1. SP11 – Power Tool Cleaning to Bare Metal.
   2. SP6/NACE No. 3 – Commercial Blast Cleaning.
   3. SP10/NACE No. 2 – Near-White Metal Blast Cleaning.
   4. VIS 1 (Visual standard for abrasive blasted metal).
   5. 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) and spot power tool clean to a SSPC-SP11 standard.
B. Dry Interior: Abrasive blast clean the spot coating failures throughout to a SSPC-SP6 commercial standard.
C. Pit Piping: Abrasive blast clean to a SSPC-SP6 commercial standard.

PART 2 – PRODUCTS

2.01 EXTERIOR CLEANER

A. United 727 Weather-Zyme or approved equal.
B. Manufactured by United Laboratories www.united labsinc.com (800) 323-2594.

2.02 ABRASIVE – COAL SLAG

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. Other types of blast media will be considered if submitted. 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-AB3 "Ferrous 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.

PART 3 – EXECUTION

3.01 WET INTERIOR CLEANING

A. Low pressure water clean all surfaces and appurtenances at 3,500 to 5,000 psi to remove sediment, minerals, and other contaminants. Remove any remaining water.
B. Staining may remain in place, the Engineer to approve cleanliness.
C. The cost is incidental to the Project.

3.02 COMMERCIAL BLAST (SSPC-SP6/NACE No. 3) - PIPING

A. Abrasive blast clean all surfaces and appurtenances on the piping located in the base of the column 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. Note that there is a gray valve in the piping that is not to be coated. The valve is to be protected during all surface preparation and paint work.
D. Surface preparation includes the expansion joint flanges, though if preferred the flanges can be power tool cleaned to a SSPC-SP11 in lieu of abrasive blast cleaning to prevent damage to the expansion joint.

3.03 HIGH PRESSURE WATER CLEANING (SSPC-SP12/NACE No. 5) - 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 per SSPC-SP12/NACE No. 5 HP WC to remove all dirt, chalk, algae, other foreign material, and all brittle or loose coating and rust.
C. Operational pressure will be determined by the Engineer based on field conditions.
D. Maintain a water jet nozzle distance of 2 in. – 10 in. away from the surface.
E. Hold the water jet nozzle with 0º - 15º tip perpendicular (90º) to the surface at all times.
F. 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.
G. Do NOT exceed a rate of 10 sq. ft./minute.
H. 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.
I. Feather all edges using power tools per this specification.
J. SURFACES WITH AN EXISTING CLEAR COAT WILL REQUIRE SANDING. ALL CLEAR COAT REMAINING AFTER POWER WASHING IS TO BE SCARIFIED AND SHARP EDGES ARE TO BE REMOVED USING 30-60 GRIT PAPER. SCARIFY THE SURFACE PRIOR TO THE APPLICATION OF THE FIRST FULL COAT.

3.04 POWER TOOL CLEAN (SSPC-SP11) - EXTERIOR

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

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

A. Abrasive blast clean all surfaces including appurtenances where steel is exposed or rusted, or where coating is abraded as specified to a commercial finish (SSPC-SP6/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 NON-HAZARDOUS WASTE DISPOSAL

A. If after testing of the spent abrasive material the TCLP tests indicate the abrasive is not a hazardous waste, dispose the abrasive in a waste disposal facility.

B. All waste shall be handled by a licensed hauler. Supply the owner with all proper documentation from the final disposal site. The actual bill of lading and all manifests will be required prior to the final payment.
C. Payment for non-hazardous waste disposal is incidental to the respective portions of the coating project.

3.07 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 is tested as non-hazardous if documentation is not properly submitted.

3.08 TESTING AND CLEAN-UP OF WASTE

A. Daily collect all spent abrasive and properly cover/store during non-work hours. Prior to receiving test results, spent abrasive is to be separated by portion of the Project. The exterior waste (if applicable) shall be stored on ground tarps and shall be covered and weighted down so no dust can be released. The interior waste shall be stored inside the structure.
B. Furnish containers with proper labels for storage of the spent debris. Containers are to meet the requirements of the EPA (or their local counterpart) for hazardous waste disposal. The spent abrasive will be moved directly from the structure into the waste containers. 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.

3.09 WASTE SEPARATION

A. The Owner is taking possession of the properly applied finished coating, on the structure only. All of the product that was not applied to the structure, all transport materials, (empty or partially filled coating and thinner pails, skids etc.) remain the property of the Contractor.
B. If TCLP testing determines waste from some or all portions of the project are non-hazardous, then the abrasive and removed coating residue becomes the property of the Contractor. All project waste, that belongs to the Contractor, and which does not require special waste disposal, may be combined, as property of the Contractor. Dispose of waste per non-hazardous portion of these specifications.
C. If TCLP testing determines waste from some portion or from all portions of the project, dispose of waste per Hazardous Waste Disposal portion of these specifications.

3.10 WASTE SAMPLING

A. Sample spent abrasive waste from each portion of the Project with different existing coating systems. Keep waste from separate sections of the structure segregated from each portion of the Project. 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.

D. If TCLP determines waste from more than one portion of the Project is non-hazardous, those waste may be combined.

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

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Spot 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 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
PIPING STEEL COATING – TWO COAT EPOXY

PART 1 – GENERAL

1.01 SECTION INCLUDES
A. Painting the piping (in the base of the 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 13.24.11
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 an epoxy urethane system.

PART 2 – PRODUCTS

2.01 EPOXY URETHANE OVERCOAT SYSTEM
A. The contractor is advised to follow all requirements for safety concerning 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	V69(spot)/V69/1095/1094
Induron	PE-70 (spot)/PE-70/I-6600 Plus LV/I-6600 Plus LV
Sherwin Williams	646FC(spot)/646FC/Hi-Solids Poly-250/Hi-Solids Poly-250

PART 3 – EXECUTION

3.01 EPOXY URETHANE OVERCOAT SYSTEM
A. Apply to all prepared surfaces a three (3) coat epoxy urethane 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)	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.

3.02 SCHEDULE OF WORK

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

SECTION 16 05 01
ELECTRICAL WORK

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

1) Replace the aviation light.
2) Replace the dry interior light bulbs.

1.05 WORKMANSHIP

A. Provide material and workmanship necessary to complete the Project to the specified standards.

1.06 ELECTRICIAN QUALIFICATIONS

A. The electrician must conform to all licensing and/or certification requirements of the State.
B. The electrician shall be experienced in rigging and elevated work.

1.07 SUBMITTALS

A. Provide an electronic copy to the engineer. Note that the Contractor is to supply a separate copy of the SDS of each product at the job site that is accessible by their employees.
B. No work may commence without the complete filing. All SDS shall conform to the requirements of SARA (EPCRA) Right-to-Know Act.
C. Submit the following ten (10) days prior to the preconstruction meeting.
   1. Product Data Sheets (PDS) for aviation lights.

2. Product Data Sheets (PDS) and Safety Data Sheets (SDS) for light bulbs.
3. Subcontracted Electrician name or electrician certifications if work is to be performed by General Contractor.

PART 2 – PRODUCTS

2.01 GENERAL

A. Use electrical materials and equipment designed and manufactured with UL Label.
B. Supply all new equipment and materials from products of the same manufacturer.
C. Furnish all equipment and materials from an established, reputable manufacturer of quality construction, design, and guarantee to perform the service required.

2.02 CONDUIT

A. Use rigid galvanized steel, stainless steel or aluminum conduit. The intention is to match what is currently on the structure if applicable, Contractor to field verify conditions.

2.03 CONDUIT FITTINGS and BOXES

A. Use standard threaded type of cast ferrous alloy conduit fittings to suit the location and purpose. Use fittings manufactured by Crouse-Hinds, Appleton Electric, or equal.
B. Use waterproof and insect proof galvanized malleable or cast iron, aluminum, or corrosion resistant stainless-steel boxes. Note that conduit materials are to match box and fitting materials. The intention is to match what is currently on the structure if applicable, Contractor to field verify conditions.

2.04 AVIATION LIGHT

A. Double light fixture model L810LED Night Vision Compatible, with 120 V AC power, 1 in. bottom hub, and photocell #81021.
B. Manufactured/supplied by Flight Light Inc., www.flightlight.com (800) 806-3548 or approved equal.

2.05 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.

PART 3 – EXECUTION

3.01 AVIATION LIGHT REPLACEMENT

A. Replace the aviation light on the roof.
B. Remove the existing aviation light. Furnish and install a new double red aviation light with universal relay and photoelectric sensor, following the manufacturer's recommendations for installation.
C. The existing mounting pole and wiring can be reused if possible.
D. All wiring is to be inside conduit and junction boxes as needed.
E. Ensure the light operates correctly per FAA standard daytime/nighttime operations.
F. The repair work is to be performed during daylight hours and must be completed in one day so there is an operational light once it's dark.
G. See Drawing 01.
H. Payment is a separate line item "Aviation Light" which the Owner reserves the right to delete.

3.02 REPLACE LIGHT BULBS

A. Replace all dry interior 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 are to have the same color and brightness throughout the dry interior.
D. Payment is incidental to the Project.

2,500,000 gallon composite (Beech Avenue) located in Kalamazoo, Michigan.

1) There is no indication of underground leakage at the base of the column.

2) The overflow pipe discharge is equipped with a duck bill check valve.

3) The overflow pipe discharges to catch basin that is in good condition.

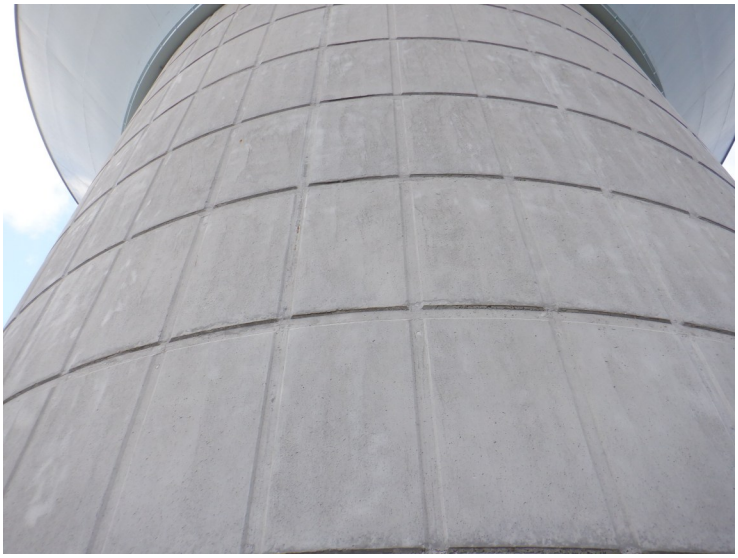
4) The antenna penetrations in the bottom of the column are sealed with rubber boots and plastic plugs that are in good condition.

5) The column service door is in good condition.

6) The retractable overhead door is in good condition.

7) Typical column section with no significant deterioration.

8) Same.



9) Same.

10) The bowl coating is in good condition overall. There is light mildew growth on the bowl.

11) The sidewall coating is in good condition. There is light mildew growth on the sidewall.

12) Same.

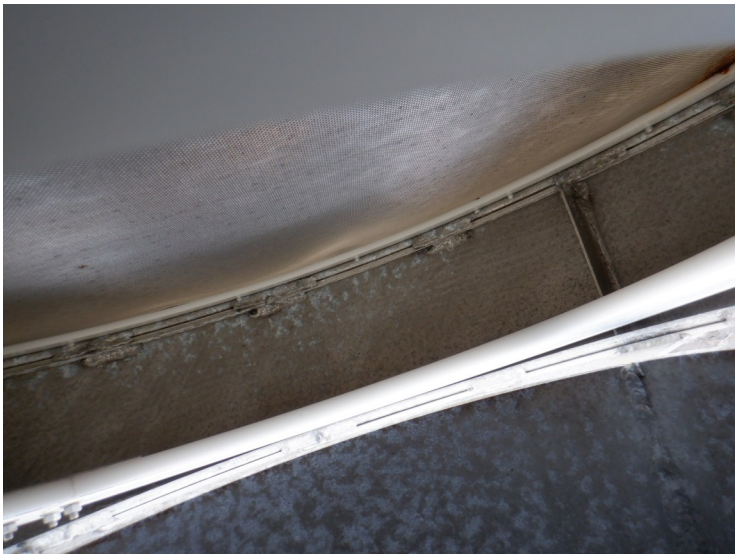
13) The dry interior roof hatch is in good condition.

14) The cable routing penetrations through the access tube cover plate are sealed with rubber boots that are in good condition.

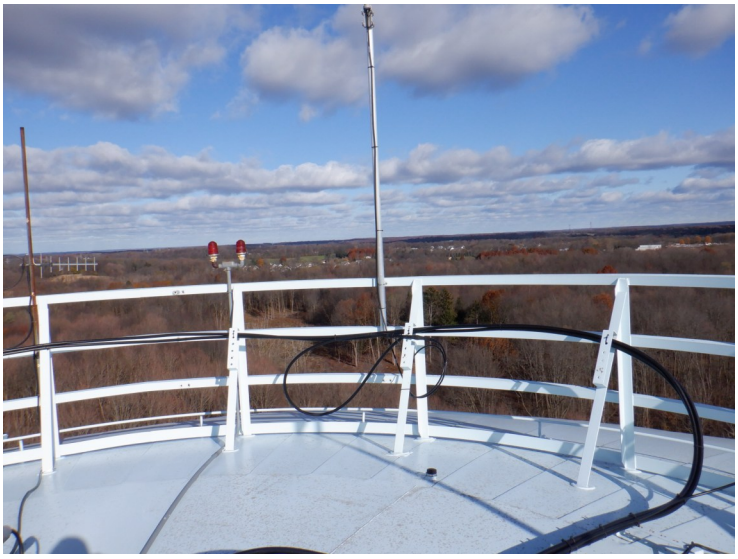
15) The pressure vacuum vent is in good condition.

16) The pressure plate is in good condition. The plate was found to be properly aligned during the inspection.

17) The interior vent screen is in good condition.



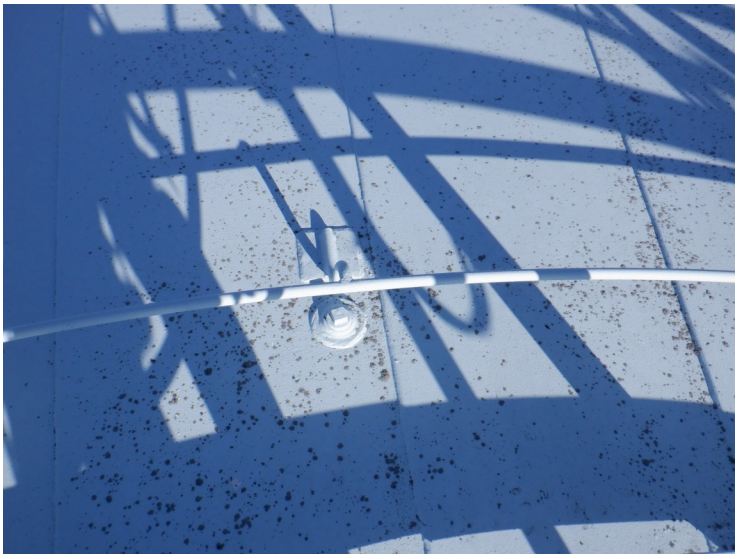
18) The roof handrail is in good condition. The handrail is being used for antenna mounting.



19) The roof handrail is in good condition. The handrail is being used for antenna mounting.

20) The double red aviation light appears to be in good condition but it is unknown if it is functional.

21) Typical roof rigging coupling sealed with a rubber boot.



22) The roof painter's railing and rigging couplings are in good condition.

23) The two secondary wet interior roof hatches outside the roof handrail are in good condition.

24) The roof coating is in good condition overall.

25) Same.

26) Roof coating inside the handrail is in good condition.

27) The wet interior roof hatch is in good condition. There was no gasket on the hatch.

28) The tank piping is above grade in a heated room in the column.

29) The pipe coating is in poor condition overall.

30) The bellows expansion joint is in good condition.

31) Typical column section with no deterioration.

32) The column ladders and step-off platforms are in good condition.

33) The ladders are caged and equipped with fall prevention devices.

34) Typical step-off platform is in good condition.

35) The top platform and handrails are in good condition.

36) Same.

37) The fill/draw pipe insulation is in good condition. The paper cover is loose in a few areas.

38) The mud valve was not operated during the inspection.

39) The concrete dome is in good condition with no significant deterioration.

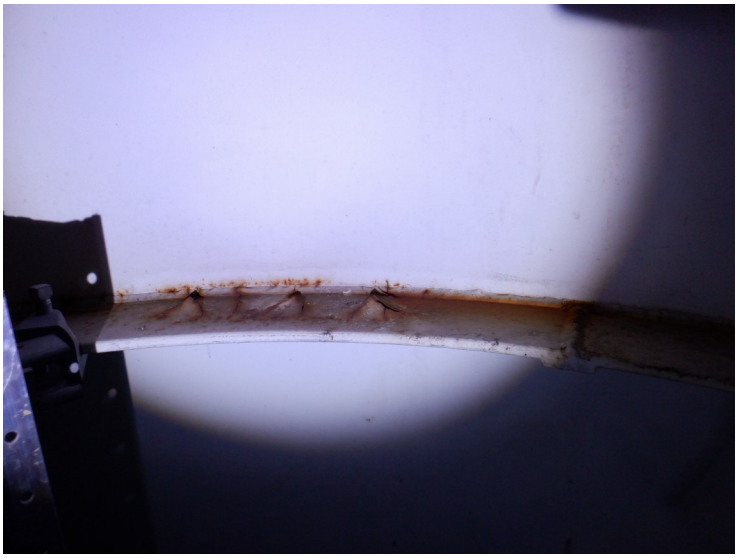
40) The manway to the wet interior in the domed bottom is in good condition.

41) Rust bleedthrough on the access tube floor.

42) Rust bleedthrough in the access tube.

43) Rust bleedthrough at an access tube bolted connection.

44) Spot coating failures on an access tube stiffener.



45) The access tube ladder is in good condition. The ladder is equipped with a fall prevention device.

46) Spot coating failures on the wet interior roof at the weld seams.

47) Same.

48) Minor corrosion on the roof stiffeners.

49) The roof coating is in good condition overall.

50) Same.

51) The sidewall coating is in good condition with no significant deterioration.

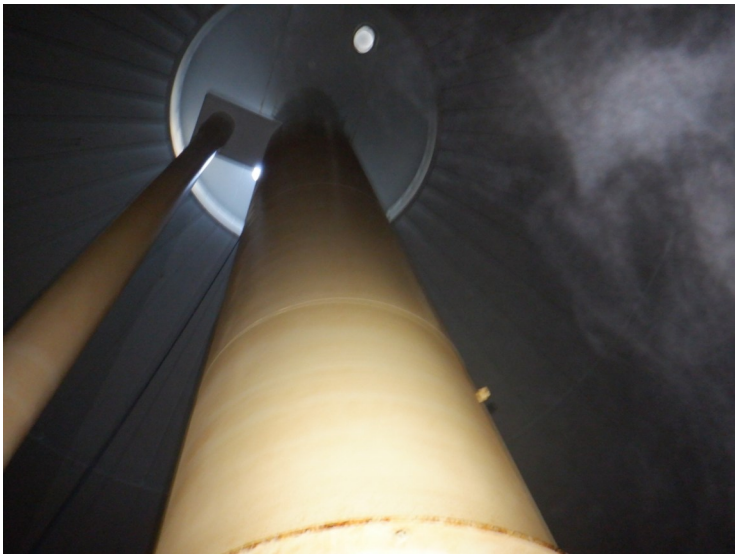
52) Same.

53) The overflow weir box is in good condition.

54) The access tube coating is in good condition overall.

55) Same.

56) Same.



57) The wet interior ladder is in good condition. The ladder is equipped with a fall prevention device that is covered with mineral deposits.

58) The floating ring cathodic protection system appears to be in good condition.

59) Same.

60) The domed bottom coating is in good condition overall.

61) Same.

62) The bottom bowl coating is in good condition.

63) Same.

64) The wet interior manway cover is in good condition.

65) The mud valve drain appears to be in good condition.

66) The fill/draw pipe is in good condition. There is a deflector bar on the pipe.