TECHNICAL SPECIFICATION FOR THE CLEANING, REPAIRING, AND PAINTING OF THE

AIRPARK DRIVE GROUND STORAGE RESERVOIR (300-GALLONS CAPACITY)

&

Airpark Wastewater Treatment Plant Membrane Tanks #1 and #2

QCS PROJECT NO. CC-01

Prepared For
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SECTION A

BID ITEM DESCRIPTIVE SUMMARIES & PROJECT SUBMITTALS

AIRPARK DRIVE
GROUND STORAGE RESERVOIR

CONTENTS

A.1 GENERAL

1. This section describes the specific Bid Items listed in the Bid Form Section and the respective Project Submittals required from the selected Contractor for the cleaning, repairing, and painting of the Airpark Drive Ground Storage Reservoir (300,000-Gallons Capacity) located at 13175 Airpark Drive, Elkwood, Virginia 22718 and owned by the Culpeper County Environmental Services.
2. The surface preparation requirements for the repair of the existing interior and exterior coating systems are described in Section C.6.
3. The surface preparation requirements for all the structural repairs as well as the requirements for welding are described in Appendix I.
4. The Tank Inspection/Evaluation Report with photographs for this structure are located in Appendix II.

A.2 AIRPARK DRIVE GROUND STORAGE RESERVOIR

BID ITEM #1: ROOF STRUCTURAL MODIFICATIONS - INTERIOR WET

1. Before abrasive blast and coating operations are performed, the roof support system (rafters, center support column, rafter/shell support brackets) shall be evaluated for structural integrity and rafter replacement by the Engineer in the field.
   - Rafter weld joints at the center support column's platform and shell support brackets shall be abrasive blast cleaned for review by the Engineer in the field.
   - Severely corroded areas on rafters (flanges & web) shall be abrasive blast cleaned for review by the Engineer in the field.
2. For bidding purposes see the following:
   - Provide the cost for replacement of one complete roof rafter extending from the center support column and attachment to the center support column platform and to a new shell support bracket. Provide Unit Cost for one (1) rafter replacement on Bid Form.
   - Provide the cost of replacing a deficient Rafter/Shell Angle Support Bracket: New angle support bracket to be seal welded, using ¼" fillet weld to the shell and respective roof rafter. Provide Unit Cost for one (1) rafter/shell bracket removal and replacement on Bid Form.
   - Provide the cost of a weld repair of a deficient Rafter/Shell Angle Support Bracket. Provide Unit Cost for one (1) rafter/shell bracket repair on Bid Form.
   - Provide the cost of a weld repair of a deficient Rafter/Center Support Column Platform weld joint. Provide Unit Cost for one (1) rafter/center support column platform weld joint repair on Bid Form.
3. This work will be monitored and verified by the Engineer in the field.
   - Increases or decreases in the amount of the work and the appropriate contract price adjustments will be made per the Contract Documents.

BID ITEM #2: STRUCTURAL MODIFICATIONS - INTERIOR WET

1. After surface preparation and coating operations, seal the circumferential gap at the roof/shell rim angle gap joints, roof plate/rafter joints, and the roof plate lap joints using an NSF Standard 61 approved epoxy caulk. See Section C.9 for epoxy caulk materials.
2. After surface preparation and coating operations, furnish and install NSF Standard 61 approved backer rod material into gap areas (> 1/4") between the radial roof rafters and roof plates.
    a. Seal both sides of the radial rafter/roof plate joints using an NSF Standard 61 approved epoxy caulk.
    b. See Section C.9 for backer rod and epoxy caulk materials.
3. After surface preparation and coating operations, seal the roof plate lap joints using an NSF Standard 61 approved epoxy caulk. See Section C.9 for epoxy caulk materials.
4. Remove the existing ladder, safety climb system, and standoff mounting attachments from the interior shell of the tank. Repair the shell plates damaged by the standoff brackets' removal by welding and grinding the surfaces back to a smooth, flush condition.
5. Seal weld, using ¼" weld, the unwelded interior joints between the roof plate and the roof access manway's curb.
6. Remove the hanging Cathodic Protection (CP) System wires and insulators from the interior wet. Remove the CP system control box, electrical conduit and attachment brackets from the exterior. Store the Cathodic Protection components onsite for reinstallation after surface preparation and coating operations have been completed.
7. Reinstalled Cathodic Protection (CP) System shall be evaluated and certified by a licensed Virginia Contractor, regularly engaged in cathodic protection system design and installation for potable water storage tanks, for continued service.

BID ITEM #3: PIT REPAIRS - INTERIOR WET

1. Pit weld repair of pitted areas in the tank bottom and shell plates' surfaces above and below the High Water Level (HWL) by grinding and/or welding to a smooth, flush condition per the requirements of Appendix I.
2. For bidding purposes, it is estimated that it will require approximately twenty (20) individual pit repairs to perform this work. Provide a single unit cost per individual pit repair, which will include setup and preparatory work necessary for actual pit repairs (welding and grinding) to the tank bottom and shell plates on the Bid Form.
3. This work will be monitored and verified by the Engineer in the field. Increases or decreases in the amount of the work and the appropriate contract price adjustments will be made per the Contract Documents.
4. All pitted areas shall be repaired by welding and grinding.
    - Pitted areas beyond twenty percent (20%) of the original plate thickness, shall be repaired by welding and then grinding smooth to a flush condition.
    - All surface repairs shall be performed in accordance with the requirements of Appendix I and AWWA D-100, Current Revision.

BID ITEM #4: STRUCTURAL MODIFICATIONS - EXTERIOR DRY

1. Remove the existing roof vent. Furnish and install a new combination frost free, clog-resistant screened vent assembly with a removable top mushroom style cover and a twenty-four (24) inch diameter steel flanged base. Use a corrosion resistant, heavy-gauge, No.24 SS mesh screen.
    a. New flanged base shall be sealed welded (interior wet & exterior) using a 1/4" weld to roof plates.
    b. Contractor shall install a nonconductive gasket between the new roof vent and flanged base. Gasket material shall be approved for potable water contact use by NSF Standard 61.
2. Furnish and install one 30-inch diameter, hinged, ventilation roof manway 180 degrees from the existing roof access hatch or as directed by the Engineer.
3. Modify the roof step-through opening for the existing shell ladder by removing the hoop siderails and installing two (2) vertical posts for attachment to the new 8' roof wing handrail assembly.
4. Furnish and Install two (2), eight (8) foot wing handrail sections compliant with OSHA Regulations to be positioned on either side of the new step-through opening for the modified shell ladder.
5. Furnish and install a properly sized self-closing swing-gate (i.e. FABENCO or equal) at the junction of the new roof wing handrails and the modified shell ladder to comply with OSHA Regulations.
6. Remove the lower eight (8) feet of the existing shell ladder as well as the wire framed cover gate and cable safety climb device.
7. Furnish and install a hinged locking solid enclosure over the lower 8 feet of the modified shell ladder. The solid enclosure over the lower 8 feet of the ladder shall be similar to the Ladder Gate (TM) manufactured by R.B. Industries, 1005 Livingston Loop , The Villages, FL 32162 (336) 852-6276.
8. Furnish and install a cable style safety climb fall prevention system similar to the device manufactured by 3M™ DBI-SALA® Lad-Saf™ System, to the exterior shell access ladder. The Contractor shall provide to the Owner two (2) full body harnesses, shock absorbing lanyards and climbing attachments.
9. Disassemble and store the components of the exterior water level indicator onsite. After surface preparation and coating operations have been completed, reinstall the interior wet and exterior components and check for proper working order.
10. Remove and protect the electronic tank level sensor. Re-install after all coatigns work is complete.
11. Remove the overflow pipe screen assembly.
    a. Furnish and install by welding operations a new steel flanged retainer plate ring on the termination of the overflow pipe.
    b. Furnish and install a new counterweighted fabricated screened flap gate ($^1/_4$ in. steel plate) to be bolted to the new flanged retainer plate ring at termination of the overflow pipe.

c. The flap gate shall be installed to allow the overflow discharge to be directed onto the concrete splash pad and at such an angle so as to remain closed by gravity.

12. Furnish and install a swinging davit to each of the two (2) shell manways. The swinging davit design shall be capable of supporting the respective manway's cover plate and restrict free movement of the cover plate when opened.

13. Remove the existing asphalt sealant covering the chime/concrete ring-wall joint area.

14. Replace loose or missing concrete grout under the tank's chime with non-shrink 3,000 PSI grout as directed by the Engineer. See Section C.9 for concrete grout materials requirements.

15. Lower the existing grade around the concrete ring-wall foundation so that the top of the concrete ringwall foundation is at least 4 to 6 inches above the surrounding grade level.

16. Surrounding landscape grade level shall be contoured to divert water flow around the tank foundation towards the nearest drainage ditch.

BID ITEM #5: INTERIOR WET SURFACES - ABRASIVE BLAST AND COATING

1. The interior wet coating appears to be an epoxy coating system and was not tested for **lead based** paint content. The structure was the built and coated in 1987/1988.

   Therefore, it is not anticipated that abrasive blast cleaning will generate hazardous waste. All work shall be performed in accordance with all applicable Local, State and Federal Regulations and Section C.

2. Prepare the interior wet surfaces by abrasive blast cleaning methods (SSPC SP-10, Near White Blast Cleaning Standard) in accordance with Section C.6.

3. Coat as specified in Sections C.8 and C.9.

4. Apply by brush one (1) additional coat of selected intermediate coat product to all primed surfaces (i.e., seams, welds, bolt assemblies, plate overlap seams, plate edges, and other surface irregularities).

5. Intermediate coat color to be one shade darker than the finish coat color.

6. Interior coating application shall be performed by air or airless spray application methods except for the brush stripe coat as stipulated in Paragraph 4 above.

7. Clean up and sterilize tank per Section C.12.

BID ITEM #6: EXTERIOR SURFACES – ABRASIVE BLAST AND COATING

1. The exterior coating system was not tested for **lead based** paint content. The structure was built and coated in 1987/1988.

   Therefore, it is not anticipated that abrasive blast cleaning will generate hazardous waste. All work shall be performed in accordance with all applicable Local, State and Federal Regulations and Section C.

2. Prepare the exterior surfaces by abrasive blast cleaning methods (SSPC SP-10, Near White Blast Cleaning Standard) in accordance with Section C.6.

3. Coat as specified in Sections C.8 and C.9.

4. Exterior coating system shall be applied by brush and roller only.

5. Apply by brush one (1) additional coat of intermediate to all seams, welds, bolt assemblies, plate overlap seams, and other irregularities in the surface after the primer coat application has cured..

6. Intermediate coat color to be one shade darker than the finish coat color.

7. Clean-up per Section C.12.

A.3 WASTE CONTAINMENT: INCLUDED IN BID ITEMS #5 and #6.

1. Provide a Class 2A containment of the exterior and interior wet surface preparation operations in conformance with Sections C.6 and C.7.

2. **Exterior:** As specified in Section C.6, provide one hundred percent (100%) impervious ground coverage in all areas adjacent to the tank to ensure spent paint and waste water do not come in contact with the ground.

3. Clean-up per Section C.12. The Contractor shall be fully responsible for proper testing, waste evaluation, waste tracking, documentation and disposal of exterior waste generated per Federal (RCRA/EPA) and Commonwealth of Virginia Department of the Environment Regulations and the Specification.

4. All surface preparation operations must be contained per the requirements of Section C.6.

5. All waste generated shall be collected, tested, transported and disposed of in accordance with Section C.12.

6. **DISPOSAL OF SPENT ABRASIVE (INTERIOR WET) AND PAINT CHIP WASTE (EXTERIOR): INCLUDED IN BID ITEMS #5 AND #6**

   Recover, remove and dispose of properly, all spent abrasives, dust, dirt, paint chips, spent solvent and paint containers, etc., as specified in Sections C.6 and C.12 of the Specification.

A.4 PLANS AND PROCEDURES

1. Submit to the Engineer, a minimum of ten (10) business days before the Pre-Construction Meeting for review and approval, in conformance with this specification, the following plans or procedures. Mobilization to the site will not be permitted to occur until all of the following items have been submitted and approved:

   a. Welding Procedure Specification (WPS), complete with Procedure Qualification Records (PQR), for all welding activity.
   b. Welder Qualification Records (WPQ).
   c. Full containment plan that includes as a minimum the following:
      - On-site Health and Safety Plan (To include: Confined space, fall protection, and emergency action plan).
      - Containment System Plan. See Section C.17.
      - Containment equipment list. See Section C.17.
      - Air Monitoring Plan.
      - Noise Suppression and Monitoring Plan.
   d. Construction Schedule.
   e. Community Relations Plan.
   f. Coating materials product data sheets.

g. Certified statement on Lead Free Coatings.
h. Abrasive and abrasive admixture specification.
i. TCLP Sampling Plan.
j. Waste Disposal Plan.
k. Interior and Exterior Access Rigging Plan.

2. Submit five (5) sets of shop drawings for the following items. Submittal of shop drawings for review and approval by the Engineer is required ten business days prior to the pre-construction meeting. Mobilization will not be permitted to occur until all of the following items have been approved:

a. Exterior – New Center Roof Vent Replacement and Flanged Base
b. Exterior - New Wing Handrails at Ladder Step-Thru to Roof
c. Exterior – New Shell Ladder Modifications (Roof Ladder Step-Thru Posts
d. Exterior – New Roof Ventilation Manway
e. Exterior – New Hinged Ladder Enclosure
f. Exterior – Overflow Pipe Outlet Modifications (Flanged Retainer Ring & Counterweighted fabricated screened flap gate)
g, Exterior – New Swinging Davit for each of the Two (2) Shell Manways Cover Plates.

Failure to submit the required plans ten (10) days before the pre-construction meeting may result in revocation of bid bond and termination of contract.

A.5 SUBMITTAL PROCEDURES

1. Shop drawings shall be presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable the Engineer to review the information as required. Details shall be identified by reference to sheet and detail, schedule or locations shown on contract drawings.

2. The minimum sheet size shall be 8-1/2" x 11".

3. The Contractor shall:

a. Review shop drawings and samples prior to submission.
b. Determine and verify:

1) Field measurements.
2) Field construction criteria.
3) Catalog numbers and similar data.
4) Conformance to Specifications.

4. Coordinate each submittal with the requirements of work and the Contract Documents.

5. Notify the Engineer in writing, at the time of submission, of any deviations in the submittals from requirements of the Contract Documents. Any such deviations permitted by the Engineer will require modifications of the Contract Documents.

6. Begin no fabrication or work that requires submittals until return of submittals by the Engineer with the Engineer’s stamp, as either "no exceptions taken" or "make noted corrections".

7. A minimum of five (5) sets of shop drawings shall be submitted to the Engineer for review. Each copy shall contain the following submissions.

a. Date of submission and dates of any previous submissions.
b. Project title and number.
c. Contract identification.
d. Names of:

    1) Contractor
    2) Supplier
    3) Manufacturer

e. Identification of product, with specification section number, equipment number and/or tag number.

f. Field dimensions, clearly identified as such.

g. Relationship to adjacent or critical features of work or materials.

h. Applicable standards, such as ASTM or other specification numbers.

i. Identification of deviations from Contract Documents.

j. Identification of revisions on resubmittals.

k. Unless the precise color and pattern is specifically described in the Contract Documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color pattern charts to the Engineer for review and selection.

l. A four-inch by four-inch (4"x4") blank space for the Contractor and Engineer stamps.

m. Indication of Contractor's approval, dated and signed, with wording similar to the following:

    "Approved to be in conformance with the requirements of the Contract Documents".

8. Shop drawings stamped "amend and resubmit" shall be corrected and revised. Resubmittals shall be made as required for initial submittal. Resubmittals shall clearly identify all changes that have been made, including those other than requested by the Engineer.

SECTION B

BID ITEM DESCRIPTIVE SUMMARIES
&
PROJECT SUBMITTALS

Airpark Wastewater Treatment Plant Membrane Tanks #1 and #2

SECTION B

BID ITEM DESCRIPTIVE SUMMARIES & PROJECT SUBMITTALS

Airpark Wastewater Treatment Plant Membrane Tanks #1 and #2

CONTENTS

B.1 GENERAL

1. This section describes the specific Bid Items listed in the Bid Form Section and the respective Project Submittals required from the selected Contractor for the cleaning, repairing, and painting of the Airpark Wastewater Treatment Plant Membrane Tanks #1 and #2, located at 13281 Airpark Dr, Elkwood, VA 22718 and owned by Culpeper County Utilities Department.
2. The surface preparation requirements for the repair of the existing interior wet coating system as described in Section C.6.
3. *(If Applicable):* The surface preparation requirements for all the structural repairs as well as the requirements for welding are described in Appendix I.
4. The Tank Inspection/Evaluation Report with photographs for this structure are in Appendix III.

B.2 Airpark Waste Water Treatment Plant Membrane Tanks

BID ITEM #1: PIT REPAIRS - INTERIOR WET

1. Pit weld repair of pitted areas in the tank bottom and cone plates' surfaces above and below the High-Water Level (HWL) by grinding and/or welding to a smooth, flush condition per the requirements of Appendix I.
2. For bidding purposes, it is estimated that it will require approximately ten (10) individual pit repairs to perform this work. Provide a single unit cost per individual pit repair, which will include setup and preparatory work necessary for actual pit repairs (welding and grinding) to the tank bottom and shell plates on the Bid Form.
3. This work will be monitored and verified by the Engineer in the field. Increases or decreases in the amount of the work and the appropriate contract price adjustments will be made per the Contract Documents.
4. All pitted areas shall be repaired by welding and grinding.
    a. Pitted areas beyond twenty percent (20%) of the original plate thickness, shall be repaired by welding and then grinding smooth to a flush condition.
    b. All surface repairs shall be performed in accordance with the requirements of Appendix I and AWWA D-100, Current Revision.

BID ITEM #2: INTERIOR WET SURFACES – SURFACE PREPARATION AND COATING OF SPOT REPAIRS

1. The interior wet coating is **not** classified as a **lead-based** paint based on its 2007/2008 construction history.

   All work shall be performed in accordance with all applicable Local, State and Federal Regulations and Section C.

   For bidding purposes, assume approximately five hundred (500) square feet of spot repairs. Provide a single unit cost per square foot, which will include setup and preparatory work necessary for spot repairs.
2. Pressure wash and clean the interior wet surfaces of sediment and staining to provide clean surfaces for spot identification.
3. Prepare the spot rust and any film failure areas on the interior wet surfaces in accordance with the current revision of SSPC-SP11, "Power Tool Cleaning to Bare Metal" Standard in accordance with Section C.6.

4. Coat as specified in Sections C.8 and C.9.
5. Interior wet coating application shall be performed by brush or roller.

B.3 PLANS AND PROCEDURES

1. Submit to the Engineer, a minimum of ten (10) business days before the Pre-Construction Meeting for review and approval, in conformance with this specification, the following plans or procedures.

   *Mobilization to the site will not be permitted to occur until all the following items have been submitted and approved:

   a. Containment plan that includes as a minimum the following:
      - On-site Health and Safety Plan.
   b. Construction Schedule.
   c. Community Relations Plan.
   d. Coating materials product data sheets.
   e. Certified statement on Lead Free Coatings.
   f. Abrasive and abrasive admixture specification.
   g. TCLP Sampling Plan.
   h. Waste Disposal Plan.
   i. Interior (Wet & Dry) and Exterior Access Rigging Plans.
   j. Lock out Tag out Plan

2. Submit five (5) sets of shop drawings for the following items. Submittal of shop drawings for review and approval by the Engineer is required ten business days prior to the pre-construction meeting. Mobilization will not be permitted to occur until all of the following items have been approved:

B.4 SUBMITTAL PROCEDURES

1. Shop drawings shall be presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable the Engineer to review the information as required. Details shall be identified by reference to sheet and detail, schedule or locations shown on contract drawings.
2. The minimum sheet size shall be 8-1/2" x 11".
3. The Contractor shall:

   a. Review shop drawings and samples prior to submission.
   b. Determine and verify:

      1) Field measurements.
      2) Field construction criteria.
      3) Catalog numbers and similar data.
      4) Conformance to Specifications.

4. Coordinate each submittal with the requirements of work and the Contract Documents.

5. Notify the Engineer in writing, at the time of submission, of any deviations in the submittals from requirements of the Contract Documents. Any such deviations permitted by the Engineer will require modifications of the Contract Documents.

6. Begin no fabrication or work that requires submittals until return of submittals by the Engineer with the Engineer's stamp, as either "no exceptions taken" or "make noted corrections".

7. A minimum of five (5) sets of shop drawings shall be submitted to the Engineer for review. Each copy shall contain the following submissions.

   a. Date of submission and dates of any previous submissions.
   b. Project title and number.
   c. Contract identification.
   d. Names of:

      1) Contractor
      2) Supplier
      3) Manufacturer

   e. Identification of product, with specification section number, equipment number and/or tag number.

   f. Field dimensions, clearly identified as such.

   g. Relationship to adjacent or critical features of work or materials.

   h. Applicable standards, such as ASTM or other specification numbers.

   i. Identification of deviations from Contract Documents.

   j. Identification of revisions on resubmittals.

   k. Unless the precise color and pattern is specifically described in the Contract Documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color pattern charts to the Engineer for review and selection.

   l. A four-inch by four-inch (4"x4") blank space for the Contractor and Engineer stamps.

   m. Indication of Contractor's approval, dated and signed, with wording similar to the following:

      "Approved to be in conformance with the requirements of the Contract Documents".

8. Shop drawings stamped "amend and resubmit" shall be corrected and revised. Resubmittals shall be made as required for initial submittal. Resubmittals shall clearly identify all changes that have been made, including those other than requested by the Engineer.

SECTION C

WORK SUMMARY

SECTION D
WORK SUMMARY

CONTENTS

WORK SUMMARY

C.1 GENERAL

The work to be done under this section includes furnishing all material, tools, labor, equipment and supervision for the cleaning, repairing, and painting of the following structures owned by the Culpeper County Utilities Department (Virginia).

- Airpark Drive Ground Storage Reservoir – 300,000-Gallon Capacity
- Airpark Wastewater Treatment Plant Membrane Tanks #1 and #2

See Sections A (Airpark Drive Ground Storage Reservoir) & B (Airpark Wastewater Treatment Plant Membrane Tanks #1 and #2) Bid Item Descriptive Summaries & Project Submittals", for a more complete listing of the work involved for each water storage tank.

All work shall conform, in all aspects, to the current ANSI/AWWA D 102, "AWWA Standard for Painting Steel Water Storage Tanks," and the contract documents unless otherwise noted.

C.2 REFERENCES

The current editions of the publications listed below form a part of these specifications.

1. CODE OF FEDERAL REGULATIONS (CFR)

29CFR 1910	Occupational Safety and Health Standards
29CFR 1926	Safety and Health Regulations for Construction
29CFR 1926.51	Sanitation
29CFR 1926.55	Gasses, Vapors, Fumes, Dusts, and Mists
29CFR 1926.62	Lead
29CFR 1926.63	Cadmium
29CFR 1926.103	Respiratory Protection
29CFR 1926.451	Scaffolding
40CFR 60, App. A, Method 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Fires Emissions from Fires
40CFR 261, Appendix II	EPA Toxicity Characteristic Leaching Procedure
40CFR 262	EPA, Standards Applicable to Generators of Hazardous Waste
40CFR 263	EPA, Standards Applicable to Transporters of Hazardous Waste
40CFR 264	EPA Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
40CFR 265	EPA Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40CFR 265 Subpart C	EPA, Preparedness and Prevention
40CFR 265, Subpart D	EPA, Contingency Plan and Emergency Procedures
40CFR 265.16	EPA, Personnel Training
40CFR 268	EPA, Land Disposal Restrictions
40CFR 302	EPA, Designation, Reportable Quantities and Notification
40CFR 355	EPA, Emergency Planning and Notification
49CFR 171-179	DOT, Hazardous Materials Regulations

2. EPA METHODS

3050	Acid Digestion of Sediment, Sludge, and Soils
SW 846	Test Methods for Evaluating Solid Waste - Physical/Chemical Methods

3. NIOSH METHODS

7082	Lead

4. STEEL STRUCTURES PAINTING COUNCIL (SSPC) – Current Revisions

PA 1	Shop, Field & Maintenance Painting
PA 2	Measurement of Dry Paint Thickness using Magnetic Gages
SSPC-SP 2	Hand Tool Cleaning
SSPC-SP 3	Power Tool Cleaning
SSPC-SP 6	Commercial Blast Cleaning
SSPC-SP 10	Near-White Blast Cleaning
SSPC-SP 11	Power Tool Cleaning to Bare Metal
Guide 6(CON)	Guide for Containing Debris Generated During Paint Removal Operations

4. American Water Works Association (AWWA)

D102-Current Revision	Coating Steel Water-Storage Tanks

If a conflict occurs between any Codes or Standards, the most stringent code or standard shall apply.

C.3 SUBMITTALS

1. The Contractor shall provide the Shop Drawings, Containment Calculations, Product Data, and all other Submittals to the Engineer, a minimum of ten (10) business days before the pre-construction meeting for review and acceptance.
2. See Sections A & B for background on Drawings, Product Data, and Submittals for each water storage tank in conformance with this specification.

C.4 WORKMANSHIP

1. All work of this Contract shall be performed in a safe, workmanlike manner, by skilled personnel experienced in the particular type of work being performed. The coating application shall be performed in a manner strictly in conformance with the instructions of the Coating Manufacturer, this specification, and using accepted methods, tools, and practices.
2. Proceed with surface preparation and coating application only as follows
   a. When air and surface temperatures are above the recommended minimum surface temperature and below the recommended maximum surface temperature in degrees Fahrenheit as defined by the Coating Manufacturer's product data sheets;
   b. Surface temperature is at least five degrees Fahrenheit (5°F) above the dew point;
   c. The relative humidity is below eighty-five percent (85%).

3. Coating shall not be applied to dusty, wet, or damp surfaces, and shall not be applied in rain, snow, fog or mist, or when relative humidity exceeds eighty-five percent (85%).

    a. No coating shall be applied when it is expected that the relative humidity will exceed eighty-five percent (85%) or when the air temperature will drop below forty degrees Fahrenheit (40°F) within eight (8) hours after the application of the coating.

    b. If working conditions are questionable, the Engineer shall make the decision and the Contractor shall accept the Engineer's interpretation as final and binding.

4. Each coat shall be applied at the specified rate and in the manner recommended by the Coating Manufacturer and it shall be well worked into the surface to which applied.

    a. No lap or brush marks shall show.

    b. The film thickness of the coatings will be measured and any readings below the specified film thickness shall be corrected by applying an additional coat(s) of the same material.

    c. Where thinning is necessary, only the products of the manufacturer furnishing the coating, and for that particular purpose, shall be allowed.

    d. All thinning shall be done strictly in accordance with the manufacturer's instructions, as well as with the full knowledge and acceptance of the Engineer.

5. Dry film thickness (DFTs) will be measured by means of Type II DFT Gages, using PosiTector or Quanix Type 2, fixed probe, magnet flux gages or equivalent; and measurements of wet mil thickness will be accomplished by use of the "Nordson" wet film gage or such other gage as the Engineer might determine as being satisfactory.

    - DFT gage calibration and readings' frequency shall be performed in accordance with SSPC PA2 or the instrument manufacturer's instructions. SSPC PA 2 rules governing minimum acceptable areas are not applicable. Please review Paragraph 4 above.

6. Care shall be given to insure a uniform coating carefully worked with a brush around rivet heads, weld seams, scab marks, plate overlap, joints, and other irregularities in the surface.

    - Each coat shall be allowed to dry thoroughly before the next coat is applied as required by the Coating Manufacturer's written recommendations.

7. If the coating is applied by spraying (air or airless), the Contractor is required to use suitable nozzles and provide an adequate supply of air within the proper pressure range to the liquid in the container and to the atomizing nozzle as recommended by the coating and equipment manufacturers as being best suited or necessary for the production of good work.

    a. All necessary precautions must be taken to avoid spray fallout and overspray on and the consequent damage to any works, improvements or properties of either the Owner or of other parties, wherever located.

    b. The Contractor shall be responsible for any and all damage resulting from drifting of the spray.

8. The exterior paint application shall be by brush and roller or spray painting, if authorized in writing by the Owner.

   a. The Contractor shall take all necessary precautions to avoid paint fallout on, and the consequent damage to, any works, improvements or properties of either the Owner or of other parties, wherever located.

   b. The Contractor shall be responsible for any and all damage resulting from drifting of the paint.

9. If applied by brushing, the coating shall be brushed on in one direction, and then smoothed in a direction at right angles thereto, so as to produce a uniform thickness of coating and as complete a coverage as possible. Such two-directional brushing shall be considered as "one coat" within the meaning of this Project Specification.

C.5 UNFAVORABLE WEATHER CONDITIONS

1. No surface preparation or coating application work shall be performed under unfavorable weather conditions, unless the work is adequately protected, and then only with the specific acceptance of the Engineer.

2. The Owner intends to monitor temperature and humidity to ensure the Contractor's compliance with the listed conditions.

3. The Contractor shall record the relative humidity, air temperature, and surface temperature upon commencement and completion of coating application for each day said work is undertaken. The daily log shall be submitted to the Engineer or Engineer's representative for comparison with the Owner's data and verification of compliance.

C.6 SURFACE PREPARATION

1. **Interior Wet & Exterior Surfaces – Air Park GSR Section A, Bid Items #4 & #5**

   a. The entire steel surfaces of the respective water storage tank areas shall be cleaned of all paint, grease, oil, rust, chlorides, mill scale, and other foreign or loose material.

      Cleaning shall be done in accordance with Steel Structures Painting Council Specification SSPC-SP 10, "Near-White Blast Cleaning" Standard.

      Before any primer or paint is applied, metal surface shall be completely dry, dust free, inspected, and accepted by the Engineer.

   b. Any areas where grinding is performed after abrasive blasting, shall be spot blast cleaned or power-tool cleaned to bare metal as required under this contract for surface preparation before the primer is applied.

   c. Any areas where grinding is performed after primer paint has been applied, shall be power-tool cleaned to bare metal as required under this contract for surface preparation and then spot primed prior to rusting or application of the next coat of paint.

   d. All abrasive blast cleaning shall be performed in accordance with section C.6.7 below.

   e. All power-tool cleaning shall be performed in accordance with SSPC-SP 11 “Power-tool Cleaning to Bare Metal” Standard. A minimum surface profile of 1.5 mils shall be achieved for all power-tool cleaning.

f. **INTERIOR WET (AIRPARK GSR):**

i) Surface preparation for primer application shall be performed on surface areas between the roof plates and the radial rafters, which are currently inaccessible;

ii) This work item will require the Contractor to raise the roof plates and provide a three (3) inch gap for access to the rafters' flange topside surface and the underside of the roof plates for these activities.

2. **Spot Touchup Repairs – Airpark Waste Water Treatment Plant Membrane Tanks #1 and #2**
Interior Wet Surfaces - Section B, Bid Item #2

a. The surfaces of **Airpark Waste Water Treatment Plant Membrane Tanks** shall be cleaned of all paint, grease, oil, rust, chlorides, mill scale, and other foreign or loose material.

b. Cleaning shall be done in accordance with Steel Structures Painting Council Specification SSPC-SP11, "Power Tool Cleaning to Bare Metal" standard.

i) The Contractor shall properly use power tools using vacuum recovery with filters. Edges shall be feathered into the existing paint system. Before any primer or paint is applied, metal surface shall be completely dry, dust free, inspected, and accepted by the Engineer.

ii) Use the proper equipment (needle guns, etc.) to produce the minimum mil profile of 1.5 mils (Interior Dry) or 3.0 mils (Interior Wet) as recommended by the Coating Manufacturer

c. The steel surfaces shall be spot cleaned of all paint, grease, oil, rust, chlorides, mill scale, and other foreign or loose material.

d. Any areas where grinding is performed after spot touch up coating repairs have been applied, shall be power-tool cleaned to bare metal as required under this contract for surface preparation and then spot primed prior to rusting or application of the next coat of paint.

3. **Interior Wet & Exterior Surfaces – Air Park GSR Section A, Bid Items #4 & #5**

Valve & Piping Vault –

a. The Contractor shall be fully responsible for waste emissions containment of the structure during surface preparation and coating operations, including Interior Wet & Dry - air dust collection equipment to prevent the drift of abrasive, existing paint removed, and paint overspray onto any adjacent property (i.e., buildings, cars, people) streets or structures.

The containment plan shall meet the emission control requirements of a Class 2 system as specified in SSPC-Guide 6 (CON), Section 4.2.2.2. **CONTAINMENT AND DISPOSAL PER LOCAL, STATE, AND FEDERAL REGULATIONS WILL BE MANDATORY.**

I) The Contractor must submit for review and acceptance to the Engineer and Owner a written plan outlining all the details, and equipment the Contractor plans to employ for compliance with the requirements for waste emissions containment.

- Work on the project will not begin without a containment plan compliant with the Project Specification requirements.

ii) This containment plan must be in conformance with the Commonwealth of Virginia Department of the Environment.

iii) The Contractor shall, furnish and maintain adequate dust collection during all the abrasive blast cleaning and until the surface area (interior wet) is clean to the satisfaction of the Engineer for coating application.

- The dust collection system shall at meet the requirements of a **Type J1 Air Filtration System** as specified in SSPC-Guide 6 (CON), Section 5.4.5.1.

b. **THE CONTRACTOR EXPRESSLY AGREES TO OBEY THE VERBAL OR WRITTEN DIRECTION AND INSTRUCTION OF THE ENGINEER, INSPECTOR OR OWNERS REPRESENTATIVE IN DETERMINING WHEN THE SURFACE PREPARATION OPERATIONS MAY PROCEED OR MUST BE SUSPENDED DUE TO EXCESSIVE WINDS, OR DRIFT OF DUST, SPENT ABRASIVE, AND PAINT CHIPS OUTSIDE THE AREA OF WASTE CONTAINMENT.**

c. Disposal of Waste materials generated by the Contractor or his Subcontractor(s) will be as specified in Section C.12 of this Specification.

4. **Abrasive Blast Cleaning –**

Interior Wet & Exterior Surfaces – Air Park GSR Section A, Bid Items #4 & #5

Valve & Piping Vault –

a. Use proper equipment and abrasives when blast cleaning to produce the mil profile recommended by the Coating Manufacturer. A proper mil profile range is 2.0 to 3.5 mils. Do not reuse sand or spent abrasives.

b. The abrasive used shall be of the type that is graded as to proper size, shape and hardness. It shall be free of contaminants and shall not embed itself in the blasted surface.

Flint, Garnet or Quartz type abrasives shall be chemically washed, dried, dust, dirt and fines free, resistant to fracture (shattering), and contain no leachable contaminates. Synthetic (non-metallic and non-siliceous) abrasives such as Silicon Carbide, Aluminum Oxide, and Refractory Slag products shall meet the above criteria.

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Prior to start-up of the project, samples of the Contractor's selected abrasive and/or abrasive/admixture shall be submitted to the Engineer for testing and acceptance. Random field-testing of the abrasive shall be done, as directed by the Engineer to ensure the abrasive used complies with these requirements.

c. All compressed air supply shall be properly equipped with suitable after coolers, oil and moisture separators to prevent contamination of abrasives and/or blasted surfaces.

- These separators shall be of the continuous bleeding or automatic dumping type. In order to prevent contamination of abrasives and/or blasted surfaces, it is recommended that the separators be installed between the compressor air outlet and the blasting pot compressed air inlet.

d. Stop abrasive blast cleaning in sufficient time to remove <u>all</u> dust, spent abrasive and other foreign matter from and around all blasted surfaces (including rigging and equipment) and to allow the atmosphere to clear before any coating is performed.

- Removal of these materials shall be by clean brush or suitable industrial vacuum with particular attention given to welds, pockets, poorly accessible areas or any overhead areas.

e. Apply the first coat to all prepared surfaces the day of the blast, except that there shall remain uncoated a three-inch (3”) to four-inch (4”) border of blasted steel at the end of each work day.

- When blast cleaning resumes the following workday, this border shall be reblasted up to and including one inch (1”) to three inches (3”) of the previous primer coating.

f. Take extra care during all blasting operations, to prevent damage or abrasive impingement upon previously applied coated areas.

g. A prime coat shall be applied within eight (8) hours after abrasive blasting. When the humidity exceeds eighty percent (80%), the prime coat shall be applied within four (4) hours after abrasive blasting.

- If conditions are questionable, the Engineer shall make the decision, and the Contractor shall accept his interpretation as final and binding. See Section C.4 (Workmanship) for additional temperature and humidity limitations.

h. A daily observation of the separators and compressed air supply will be required to insure cleanliness of all compressed air supplied for abrasive blasting. This test will be performed by a blotter test. A clean white blotter is held no more than eighteen inches (18") from the air supply, down stream of moisture and oil separators.

i) The air supply is directed at the blotter for approximately two (2) minutes. The blotter is then examined visually for signs of oil and moisture. A clean blotter at test completion means a successful passing of the air supply test.

ii) Failure to pass the compressed air test will be justification for rejection of abrasive blasting performed that day. The Engineer's discretion will be final in this determination.

C.7 EXTERIOR AND INTERIOR SURFACE PREPARATION PLANS

1. Submittal by the Contractor of the exterior surface preparation plan outlining all the details, equipment, impervious ground covers, and other pertinent information to be employed during exterior, interior, and valve vault surface preparation activities is required before the pre-construction meeting.

2. The Owner and the Engineer will review the plan, but the responsibility for its implementation and any damages that arise due to Contractor operations will fall on the Contractor.

C.8 COATING MATERIAL AND QUALITY

1. The coatings and coating products used to complete the project shall be as specified in Section C.9. Where permitted, the products of other manufacturers comparable in quality and type will be acceptable if the following conditions are met:

   a. The Engineer approves the product.

   b. Satisfactory data is submitted on past performance of the product on other similar structures.

   c. A Certified Statement from the material manufacturer stating that the coatings being used for the exterior reconditioning are defined as Lead Free, and that they contain less then 0.06 percent (0.06%) total lead in the dry paint film. The Owner intends to perform laboratory testing of paint samples to verify compliance with the lead free requirements.

   d. The product complies with the Commonwealth of Virginia Department of Health standards and is NSF Standard 61 approved.

   e. The Coating Manufacturer provides a Certified Statement confirming that its products are compatible with the existing coating system.

   No request for coating material substitution shall be considered without prior written acceptance. Prior written acceptance has to be obtained seven (7) days prior to the bid opening.

2. All materials shall be brought to the job site in the original sealed and labeled containers of the Coating Manufacturer and shall be subject to observation by the Engineer.

3. The Contractor shall submit to the Engineer, immediately upon completion of the job, certification from the Coating Manufacturer indicating the quantity of each coating purchased. Such Certification shall make reference to the square footage figures provided to the manufacturer and the Engineer by the Contractor.

4. All coating ingredients shall conform to current applicable specifications of the American Society for Testing and Materials (ASTM). No coating materials shall be reduced or thinned except as specified or recommended by the manufacturer of the coating. The coatings shall be thoroughly mixed and kept thoroughly stirred during application.

5. All coating for the interior surfaces that will or may come in contact with the storage water shall be a tasteless and nonpoisonous product designed for such usage and accepted by the Commonwealth of Virginia of Virginia Department of Health.

6. The Contractor shall provide adequate job site storage for all coating materials, thinners, rags and waste materials, per the manufacturers shipping and storage requirements, State and Local regulations, the Engineer's specifications, or as directed by the Engineer.

   - Adequate job site storage facilities shall be defined as any temporary job site trailer, building or enclosed van providing shelter and temperature protection to stored coating materials, thinners and solvents which meet State and local regulations.

7. CURING DATA. The Contractor must submit a data sheet complete with graduated scale or curve from the paint supplier with curing characteristics and recommendations for immersion service in potable water tanks and for exterior service.

   - The data sheet and scale curve must include specific cure time for the coating to be used over a wide range of temperature and humidity conditions at various dry film thicknesses (DFTs). This information is vital for proper monitoring of paint cure during non-ideal environmental conditions.

C.9 SURFACE COATINGS AND MATERIALS

1. **Airpark Drive Ground Storage Reservoir – Coating Systems**

   A. Interior Wet Surfaces - Section A, Bid Item #4

   The interior wet surfaces of the water storage tank shall spot coated with products manufactured by Tnemec Company Inc. or accepted equal:

   - One Coat of Primer: Tnemec HydroZinc 94 H20 (Greenish-Gray)
   - Stripe Coat: Tnemec Pota-Pox Plus N140 or N140E-15BL (Tank White)
   - Intermediate Coat: Tnemec Pota-Pox Plus N140 or N140E-1255 (Beige)
   - Finish Coat: Tnemec Pota-Pox Plus N140 or N140E-15BL (Tank White)

Coating System Requirements:

- Primer: 2.5 – 3.5 mils dry film thickness. The DFT of the primer at any individual spot measurement location shall be 2.5 mils (DFT) minimum.
- Stripe coat (Brush Only): Coverage application.
- Intermediate Coat: 4.0 - 6.0 mils dry film thickness. The DFT of the primer/intermediate coat at any individual spot measurement location shall be 6.5 mils (DFT) minimum.

  *The intermediate coat color shall be a shade darker than the finish coat.
- Finish Coat: 4.0 - 6.0 mils dry film thickness.
- The total dry film thickness range, including the primer coat, intermediate coat, and finish coat, shall be 10.5 mils to 15.5. The minimum dry film thickness of the coating at any individual spot location shall be 10.5 mils.
- DFT frequency measurements shall be taken in accordance with SSPC PA2.
- Each coating product (primer, intermediate, & finish coat) will require at least the minimum dry film thickness before proceeding to the next coating application.

Note: The Contractor is required to specify the coating materials to be used on the interior wet and interior dry in the spaces provided on the Proposal Page(s).

B. Exterior Surfaces - Section A, Bid Item #5

The exterior surfaces of Airpark Drive GSR shall be coated with products manufactured by Tnemec Company Inc. or accepted equal:

- Primer: Hydro-Zinc 94-H20 (Greenish-Gray)
- Stripe Coat: Endura-Shield II Series 1075 (Same as Intermediate Coat)
- Intermediate Coat: Endura-Shield II Series 1075 (shade of contrast)
- Finish Coat: Hydroflon Series 700 (color selection by Owner)

Coating System Requirements:

- Primer: 2.5 – 3.5 mils dry film thickness. The DFT of the primer at any individual spot measurement location shall be 2.5 mils (DFT) minimum.
- Stripe coat (Brush Only): Coverage application.
- Intermediate Coat: 3.0 - 5.0 mils dry film thickness. The DFT of the Intermediate Coat film at any individual spot measurement location shall be 3.0 mils (DFT) minimum.
- *The intermediate coat color shall be a shade darker than the finish coat.
- Finish Coat: 2.0 - 3.0 mils dry film thickness. The DFT of the Finish Coat film at any individual spot measurement location shall be 2.0 mils (DFT) minimum.
- The total dry film thickness range, including the primer coat, intermediate coat, and finish coat, shall be 7.5 mils to 11.5.

- DFT frequency measurements shall be taken in accordance with SSPC PA2. Each coating product (primer, intermediate, & finish coat) will require at least the minimum dry film thickness before proceeding to the next coating application.
- DFT frequency measurements shall be taken in accordance with SSPC PA2.

Note: The Contractor is required to specify the coating materials to be used on the exterior surfaces in the space provided on the Proposal Page(s).

2. **Airpark Waste Water Treatment Plant Membrane Tanks #1 and #2 – Coating Systems**

A. **Interior Wet Surfaces - Section B, Bid Item #4**

The interior wet surfaces of the water storage tank shall be spot coated with products manufactured by Tnemec Company Inc. or accepted equal:

- Spot Coat: Tnemec Epoxoline Series FC22 (White)

Coating System Requirements:

- Spot Coat Touchup Range: 16 - 20 mils dry film thickness. The DFT of the primer at any individual spot measurement location shall be 16.0 mils (DFT) minimum.
- DFT frequency measurements shall be taken in accordance with SSPC PA2.

Note: The Contractor is required to specify the coating materials to be used on the interior wet in the spaces provided on the Proposal Page(s).

C.10 REPAIR WORK

1. Areas to be repaired are described in Sections A & B, Bid Item Descriptive Summaries & Project Submittals.
2. All repairs by welding shall be ground smooth or radiused. These will be welded by a skilled, certified welder under the direction of the Engineer.
   a. The welders shall be certified in conformance with ASME Section IX or AWS D1.1 - Current Revision (Tests as described in AWS B2.1) and shall submit current copies of the welders' certification records to the Engineer and the Owner.
   b. The repaired areas shall conform to the surface preparation requirements of Appendix I.
3. **NO WELDING OVER COATED STEEL SURFACES IS PERMISSIBLE. IN ADDITION, NO WELDING SHALL BE ALLOWED ON THE EXTERIOR SURFACES AFTER COMPLETION AND ACCEPTANCE OF THE INTERIOR COATING.**
   a. All areas that require welding are to be abrasive blasted or power tool cleaned with vacuum attachments before any welding is started.
   b. Cleaning shall be done in accordance with the Steel Structures Painting Council Specification SSPC-SP 10, "Near White Metal Blast Cleaning" Standard or SSPC-SP 11 " Power Tool Cleaning to Bare Metal" Standard.
4. Welding Procedures:

a. All field welding shall be in accordance with ASME Section IX, and AWWA D-100-Current Revision.

b. The location, type, size, and length of all welds shall be as shown on accepted shop drawings. All field welds shall be of the manual shielded metal arc type.

- Welding shall not be done when the surface temperature is lower than thirty-five degrees Fahrenheit (35°F), when surfaces are wet, or when welders are exposed to inclement conditions.

c. **THE CONTRACTOR SHALL SUBMIT ALL WELDING PROCEDURES TO THE ENGINEER FOR ACCEPTANCE A MINIMUM OF TEN (10) DAYS PRIOR TO THE PRECONSTRUCTION MEETING.**

d. The Contractor can use alternate design details to those shown on THE ATTACHED drawings. However, the Contractor must submit all shop drawings to the Engineer for acceptance.

- Alternate design details, or any deviation from the specification requirements shall not be permitted unless a written request is submitted to the Engineer and approved in writing.

e. Certification and Tests: The Contractor shall, upon request from the Owner, provide certification in writing that all welds are in conformance with this specification and that any weld failure, defect and/or all damage relating there from will be repaired or replaced to the satisfaction of the Owner at no cost to the Owner.

- The Owner reserves the right to have any and all welds tested. Tests will be paid for by the Owner; however, in the event that work is defective, the Contractor shall pay for the tests and shall replace all faulty work with work that complies with this Specification.

f. Any additional repair work, uncovered by the Contractor or the Engineer, during reconditioning shall not be initiated until duly authorized and executed change orders are issued and signed by the Owner and accepted and signed by the Contractor.

C.11 HEALTH AND SANITARY FACILITIES

1. Prior to commencing any of the work on this Contract and thereafter at all times, the Contractor shall provide a suitable self-contained type privy. Said privy shall be satisfactorily serviced and kept in a sanitary condition at all times.

2. No one, including but not limited to, the Contractor, the Contractor's employees, or any other person under Contractor's control, shall work in or on the tank if the person has been under a physician's care or has needed physician's care within a seven (7) day period prior to entering or working on said tank or has a contagious or communicable disease.

C.12 CLEAN UP

1. On completion of the work on the interior of the respective water storage tank, the Contractor shall remove all dirt, litter and leave all surfaces in reasonably clean condition, scrubbing the same with water and accepted soap or other cleaning agent, as necessary. When this has been completed, the final sterilization of said interiors will be performed by the Contractor at no cost to the Owner.

2. The Contractor shall, at all times, keep the premises free from accumulations of waste material or rubbish caused by his employees or work.

- The Contractor shall clean-up abrasive material or rubbish on a daily regular schedule as directed by the Engineer.
- All unneeded construction equipment shall be removed from the site and all damages repaired expeditiously so that the adjacent property is inconvenienced as little as possible.

3. During exterior, interior, and valve/piping surface preparation and coating operations, the Contractor shall provide adequate protection and containment to prevent damage to adjacent structures and property by his operations.
   - The Contractor shall also perform intermittent or periodic clean up of adjacent grounds to prevent the accumulation of abrasive blast sand and debris caused by his operations. This shall include, but not be limited to, sidewalks, streets, driveways, yards, and rooftops.
4. The Contractor shall be fully responsible to recover, remove and dispose of properly all spent abrasives, removed coating and paint, spent solvents, paint containers and other non-specific waste in accordance with all current local, state, and federal regulations included but not limited to the 1976 Resource, Conservation and Recovery Act (RCRA) and its amendments, specifically the 1984 Hazardous and Solid Waste Amendments to RCRA.
   a. Disposal of "empty containers" shall be in accordance with RCRA 40CFR 261.7 and local and state requirements.
   b. **IN ADDITION THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND ACCEPTANCE HIS TCLP SAMPLING PLAN.** The Sampling Plan and quality control measures must be in conformance with EPA Test Procedure Manual SW-846 and current State Requirements. Proper documentation of this process is required by EPA and these specifications.
   c. The Contractor is also responsible to provide proper documentation per RCRA/EPA and State regulations for identifying, tracking and disposal of the waste generated. At a minimum this documentation shall include Waste Evaluation Forms, Industrial Solid Waste Tracking Forms, Landfill Special Waste Tracking Forms and letters of acceptance of the waste by the appropriate landfills or disposal sites.
5. Compliance with local, State and Federal regulations concerning emissions or disposal of solid, particulate, liquid, or gaseous matter as a result of the cleaning, painting, or other operations under this Agreement is required and shall be the responsibility of the Contractor.
   a. This compliance shall be accomplished without supervision from the Owner, Engineer or other direct or indirect agents of the Owner.
   b. No additional compensations for changes in the laws and regulations, or the interpretation thereof, shall be granted by the Owner.
   c. No burning of trash (including abrasive bags or other paper or wood products) on the site shall be permitted.
   d. All shielding, abrasive retrieval or other methods of using precautions required by the regulating agencies shall also be accomplished at no additional cost to the OWNER unless otherwise provided herein.
   e. Any fines imposed on the Owner or Engineer by any regulatory agency as a result of the Contractor's non-compliance with environmental regulations shall be paid or reimbursed by the Contractor.
6. The Contractor shall perform laboratory testing prior to removal of any waste from the site of all waste materials generated on the job site to determine their specific classification for proper disposal in accordance with this specification and all applicable State and Federal regulations.

- A minimum of four (4) TCLP tests shall be performed or as required by regulations on each of the interior wet and exterior waste materials from each of the two (2) water storage tanks before final completion status will be approved.
- TCLP testing shall be for all eight (8) specific constituent concentrations (eight heavy metals/inorganics) as shown in 40CFR 261.24, Table 1 or as amended by regulation.

7. The Owner reserves the right to perform timely laboratory testing of waste materials to verify test results taken by the Contractor.
   - In the event of discrepancies in test results and the resultant classification of waste materials, the parties to this Contract agree that the Engineer shall perform independent testing and shall determine all questions in relation to the classification of waste materials.
   - The Contractor shall pay for all supplementary testing, Engineering and associated Contract Administration and hazardous waste disposal costs.

8. The Owner reserves the right to complete soil sampling in a grid pattern on the site. Following completion of the project, additional soil samples may be taken. It is strongly recommended that the Contractor confirm the Owner's test results. The site grid will be made available to the Contractor.

9. On or before the completion of work, the Contractor shall, unless otherwise directed in writing, remove all temporary works, tools and machinery or other construction equipment placed by him.

   - He shall remove all rubbish from any grounds that he has occupied and shall leave all of the premises and adjacent property affected by the operation in a neat and restored condition satisfactory to the Engineer.

10. Restoration of grass areas shall be by the placement of topsoil suitable for the growing of grass and seeded to the Owner's satisfaction.

    - In seeded areas, restoration shall include watering repair of eroded areas and placement of seed, fertilizer and mulch as required until seeds have begun to germinate.

    - The Engineer will accept seeded areas when there is evidence of seed germination uniformly throughout the seeded area.

C.13 VENTILATION AND SAFETY REQUIREMENTS

1. The Contractor shall furnish, operate, and maintain adequate and continuous explosion-proof ventilation during all surface preparation, coating operations and recoat and curing periods.

   - This ventilation shall be of the suction type and shall be of sufficient capacity to maintain throughout the tank interior a clear atmosphere that is well below explosive and toxic limits.

2. Arrange the ventilation system, including all fans and temporary ductwork, so that fresh air is drawn into the tank at the top and is exhausted at the bottom with a downward air movement pattern within the tank that permits no still air spaces to exist in any area.

   - Give particular attention to floor level or lower spaces and pocket areas where heavier-than-air solvents and particulate matter are likely to accumulate.

   - Said ventilation shall be sufficient for the removal of dust, coating fumes or other volatile gases and moisture to such an extent as to prevent any undesirable accumulation of any thereof to the hazard of the workmen or the work.

3. **SECURING TANK OPENINGS:** Adequate grating or grills will be securely attached to all openings not otherwise secured at the end of work each day until work commences again and during the final cure after all interior coatings have been applied until such time the tank is filled with water and openings are secured for service of the tank. Grills or grates shall be of at least #2 mesh size and shall allow adequate free air passage.

4. All electrical equipment, tools, and ventilation fans shall be explosion-proof and/or non-sparking and shall be maintained in good working order.

   - Spray equipment shall be as recommended by, or acceptable to the Coatings Manufacturer, and shall be thoroughly cleaned before and after use with the appropriate cleaning solvents.

5. Provide adequate explosion-proof lighting during all structural repairs, surface preparation and coating operations.

   - This lighting shall be sufficient to illuminate clearly the working area without shadows.

6. In the event heating devices are used, they shall be explosion-proof and of the type that do not exhaust sooty or oily residues or any other contaminants into the tank. Only “indirect-heat” heating units can be used which will not cause the products of combustion to condense.

7. Prior to use, store all coating materials in a secure area that shall provide protection from weather and temperature, below sixty degrees Fahrenheit (60°F).

   - The area shall be maintained in a safe, neat, and clean manner and free from fire, explosion or other hazards.

8. All work shall be performed in a safe and orderly manner, all in compliance with the standards as prescribed by OSHA and the Commonwealth of Virginia.

   These standards include, but are not limited to, applicable Sections of OSHA Regulations 29CFR 1910.120, and 29CFR 1926.21, 1926.352 and 1926.353 for Confined Space Entry.

   The Contractor will also be required to comply with OSHA Regulations 29CFR 1926.62 Lead. Management and supervisory personnel shall be responsible for employee training and compliance with this policy.

C.14 SUPERINTENDENT

1. The Contractor shall keep on this job a competent superintendent or crew foreman who shall be familiar with all phases of the work. The superintendent or crew foreman shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.

2. The onsite superintendent shall not be replaced without prior written notification and written approval of the Engineer.

3. The onsite superintendent and/or foreman shall be bi-lingual if any workers are not proficient in English.

C.15 INSPECTION OF WORK

1. The Inspector shall be a representative of the Owner and the Engineer and shall reserve all rights and privileges granted the Owner and Engineer in this Specification.

2. The Owner, the Engineer, and the Inspector shall, at all times, have access to the work, and the Contractor shall provide safe and proper facilities for such access and inspection.

3. The Engineer reserves the right to observe the Work at any time for compliance with all requirements of the specifications.

4. The Engineer reserves the right to accept each phase of the work before further work may be performed, to halt all Work deemed to be improper or not in compliance with the Specifications, and to require the Contractor to promptly correct all improper practices or deficient Work.

5. Inspections may include wet and/or dry film thickness gauging, visual surface inspection by the naked eye and/or a suitable magnifying instrument to detect runs, sags, drips, cracks or other defects in the coating system.

6. Inspections may also include any other examination of the prepared surfaces or coating system, deemed necessary by the Engineer, including low voltage holiday-testing and random destructive film thickness and coating adhesion checks.

7. Dry film thickness (DFT) readings of the coating are taken to provide reasonable assurance that the specified minimum DFT has been achieved.

   - A minimum of five (5) separate spot measurements shall be made over every one hundred (100) square feet area tested in accordance with SSPC PA2 area requirements.
   - Each spot measurement shall consist of an average of three (3) gage readings next to each other in accordance with SSPC PA2 requirements.
   - Each spot measurement must be within the specified minimum thickness. The single gage readings, however, making up the spot measurement are permitted to be no less then eighty percent (80%) of the specified minimum thickness.

8. The Contractor shall provide all necessary and safe inspection equipment (at the discretion of the Engineer), labor, rigging, lighting and other equipment to facilitate this inspection.

9. Any expenses incurred for corrective measures required as the result of improper practices and/or defective or deficient work shall be borne by the Contractor and the extent of these corrective measures shall be at the discretion of the Engineer.

10. The Owner's or Engineer's inspection, testing, or acceptance of the Contractor's Work is solely for the Owner's benefit in determining the Contractor’s compliance with the plans and specifications and shall not relieve the Contractor of full responsibility for performing the Work strictly in accordance with the requirements of the Contract Documents. Neither shall the Contractor be relieved of its responsibility for the Work, including compliance with OSHA or other safety requirements, by actions or omissions of the Owner, Engineer, or persons other than Contractor.

11. Prior to clean-up and sterilization, the interior coatings shall be allowed to cure according to the Coating Manufacturer's recommendations or the following cure schedule. For immersion service, the coating shall cure for a minimum of seven (7) days at seventy-five degrees Fahrenheit (75°F).

    During curing the roof and shell manways will be left open and the tank power-ventilated for a minimum of eight (8) hours daily in conformance with Section C.13 Ventilation and Safety Requirements. The Engineer reserves the right to perform cure evaluation testing via the 150 double-rub, MEK solvent rub test.

C.16 STERILIZATION OF TANKS

1. Upon completion of the coating, the inside of each tank shall be thoroughly cleaned and disinfected by the use of chlorine applied in a concentrated solution, sprayed over the entire surface in accordance with Local and State requirements and AWWA C652, Section 4.2: Chlorination Method 2.

2. The disinfected surfaces shall remain in contact with the chlorine solution for at least thirty (30) minutes. Then all disinfected surfaces, including the inlet and outlet piping and any drain piping shall be washed and purged with clean water. Remove all chlorine solution and purging water from the interior. Following this, potable water shall be admitted.

3. The Contractor shall coordinate with the Owner such that the Owner may take bacteria tests of the water after disinfection.

   - If the water is considered not safe after testing, additional disinfection and testing shall be performed by the Contractor at his expense until the tank is tested safe for use as part of a potable water supply system.

4. The Contractor shall coordinate with the Owner such that the Owner shall take a taste and odor test of the water after disinfection to detect the presence of any volatile organic compounds (VOC's) imparted by the coating.

   - If the water is not considered safe or acceptable after testing further work shall be performed by the Contractor at his expense until the tank is tested safe and acceptable for use as part of a potable water supply system.

C.17 CONTAINMENT PLANS

1. Submittal of containment plans required for both tanks in Section C.6 outlining all the details, equipment, impervious ground covers, air dust collection equipment, other equipment, and/or other pertinent information, and, if applicable, the inhibitor the Contractor plans to employ with the wet abrasive blasting operation is required.

2. The Owner and the Engineer will review the plans for both water storage tanks, but the responsibility for its implementation and any damages that arise from the containment system will fall on the Contractor.

3. The containment plans for both water storage tanks must be submitted for review, a minimum of ten (10) business days prior to the pre-construction meeting for acceptance before the pre-construction meeting.

   - Work on the Project will not begin without a reviewed containment plan for the respective water tank site.

4. Failure to submit the containment plan in accordance with this specification may result in revocation of the bid bond and termination of the contract.

5. The containment plan does not relieve the Contractor from the responsibility for providing an effective and operational containment system in conformance with all Federal, State and Local requirements sufficient to protect persons, property and the environment from injury and damage due to the Contractor's operation.

6. The Contractor shall submit a list of all equipment and materials to be used in the process of waste containment. This list shall be submitted as part of the containment plan at least ten (10) business days prior to the pre-construction meeting.

C.18 ADDITIONAL REQUIRED PLANS

1. NOISE SUPPRESSION AND MONITORING: (AS APPLICABLE)

   a. The Contractor shall submit a plan to limit noise during working hours.

   b. This plan will be implemented and monitored by the on-site Industrial Hygienist.

2. COMMUNITY RELATIONS PLAN (AS APPLICABLE)

   a. The Contractor shall designate a Community Liaison to interact with the public and the Owner to resolve any questions or concerns that arises from the project.

   b. The Contractor shall display a sign onsite with a weather-proof plastic cover providing information concerning emergency medical, fire, rescue, and hazardous waste phone numbers for onsite personnel if needed.

c. The sign shall also list the name and phone number of the designated Contractor's representative who be contacted 24/7 in case of an emergency.

d. The sign shall be located so it is visible 24 hours a day and shall be posted for the entire project duration.

3. INTERIOR (WET & DRY) AND EXTERIOR RIGGING PLAN:

a. The Contractor shall submit a plan detailing the equipment and methods to be employed for accessing the tank's surfaces to perform structural modifications, surface preparation and coatings activities.

b. The access methods shall be designed such that work and inspection activities will not damage the new coating system or cause damage to the tank's structures.

APPENDIX I

WELDING SURFACE PREPARATION REQUIREMENTS

APPENDIX II

AIRPARK DRIVE GROUND STORAGE RESERVOIR INSPECTION REPORT

APPENDIX III

Airpark Waste Water Treatment Plant Membrane Tanks #1 and #2
INSPECTION REPORT