ADDENDUM NO. 2
SEPTEMBER 14, 2023

PROJECT: **CITY OF CHILLICOTHE**
TDA ELEVATED TANK REHABILITATION

BID DATE: **OCTOBER 19, 2023**

The following changes and/or additions shall be made to the Plans, Specifications, and Contract Documents for the above referenced project. The bidder shall acknowledge receipt of this Addendum by signing below and returning this Addendum with the Bid.

1) GENERAL

The Bid Opening date has been extended to October 19th, 2023, at 2:00 pm. The attached advertisement for bids has also been revised to reflect the new advertisement dates of September 29th and October 6th, 2023.

2) SPECIFICATIONS

09 02 01 – Coating and Painting for Steel Water Storage Tanks – Section 2.4 (Tank Interior Coating System has been revised to reflect different series of coating. Section 2.6 (Tank Exterior Coating System) has been revised to reflect a different surface preparation method. See revised specification for details.

Prepared by:

JACOB | MARTIN
TBPE Firm No. 2448

_____
Bidder's Acknowledgment

_____
Date

Advertisement and Invitation for Bids

The City of Chillicothe will receive bids for the TDA Elevated Tank Rehabilitation - CDV21-0237 project until 2:00 PM on October 19, 2023, at 14051 US-287, Chillicothe, TX 79225. The bids will be publicly opened and read aloud at 2:00 PM on October 19, 2023 at 14051 US-287, Chillicothe, TX 79225.

Bids are invited for several items and quantities of work as follows: The interior and exterior sandblast and recoat of the existing Highway 287 multi leg 75,000 gallon elevated storage tower in Chillicothe. The project includes lead abatement on the exterior of the tank as well as the replacement of the interior ladder, tank vent, as well as miscellaneous appurtenances.

Bid/Contract Documents, including Drawings and Technical Specifications are on file at Jacob & Martin, LLC, 3465 Curry Lane, Abilene, TX 79606.

Copies of the Bid/Contract Documents must be ordered online at www.jacobmartin.com. Orders for Bid/Contract Documents may include hard copies for pick up, mail out, or digital download via www.jacobmartin.com. Upon verification of online payment, hard copies may be picked up at Jacob & Martin, LLC, located at 3465 Curry Lane, Abilene, TX 79606. Cost for hard copies of the Bid/Contract Documents will be $100.00 for 11x17 Half Size Plans or $0.00 for Digital Download. Contractors must purchase a set of Bid/Contract Documents from Jacob & Martin, LLC to be considered a registered plan holder eligible to bid on the project.

A bid bond in the amount of 5 percent of the bid issued by an acceptable surety shall be submitted with each bid. A certified check or bank draft payable to the City of Chillicothe or negotiable U.S. Government Bonds (as par value) may be submitted in lieu of the Bid Bond.

The project to be constructed will be financed with assistance from the Texas Department of Agriculture (TDA) under the U.S. Department of Housing and Urban Development Community Development Block Grant (CDBG) program and is subject to all applicable Federal and State laws and regulations. Attention is called to the fact that not less than, the federally determined prevailing (Davis-Bacon and Related Acts) wage rate, as issued by the Texas Department of Agriculture Office of Rural Affairs, and contained in the contract documents, must be paid on this project. In addition, the successful bidder must ensure that employees and applicants for employment are not discriminated against because of race, color, religion, sex, sexual orientation, gender identity, or national origin. Adherence to the grant recipient's Section 3 Policy is required for all contracts and subcontracts.

The City of Chillicothe reserves the right to reject any or all bids or to waive any informalities in the bidding.

Bids may be held by City of Chillicothe for a period not to exceed 60 days from the date of the bid opening for the purpose of reviewing the bids and investigating the bidder's qualifications prior to the contract award.

The lobbying certification must be submitted with the bid packet to be considered complete and responsive.

The City of Chillicothe is an Equal Opportunity Employer.

All contractors/subcontractors that are debarred, suspended, or otherwise excluded from or ineligible for participation on federal assistance programs may not undertake any activity in part or in full under this project. Minority Business Enterprises, Small Business Enterprises, and Women Business Enterprises, and Historically Underutilized Business firms are encouraged to submit bids.

City of Chillicothe Cathy Young, Mayor September 29th and October 6th, 2023

SECTION 09 02 01 - COATING & PAINTING FOR STEEL WATER STORAGE TANKS

PART 1 GENERAL

1.1 REFERENCE STANDARDS

ASTM D2200 - Standard Practice for Use of Pictorial Surface Preparation Standards and Guides for Painting Steel Surfaces Latest Edition.
ASTM D4417 - Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel Latest Edition.
ASTM D520 - Standard Specification for Zinc Dust Pigment Latest Edition.
AWWA D102 - Coating Steel Water Storage Tanks 2011.
NACE No. 1 - Joint Surface Preparation Standard White Metal Blast Cleaning Latest Edition.
NACE No. 2 - Joint Surface Preparation Standard Near-White Metal Blast Cleaning 1994 (Reaffirmed 2006).
NACE No. 3 - Joint Surface Preparation Standard Commercial Blast Cleaning 1999 (Reaffirmed 2006).
NACE No. 4 - Brush-Off Blast Cleaning Latest Edition.
NACE SP0178 - Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service Latest Edition.
NACE SP0188 - Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates Latest Edition.
NACE SP0287 - Field Measurement of Surface Profile of Abrasive Blast-Cleaned Steel Surfaces Using a Replica Tape Latest Edition.
NSF 61 - Drinking Water System Components - Health Effects 2014 (Errata 2015).
SSPC GUIDE 15 - Field Methods for Extraction and Analysis of Soluble Salts on Steel and Other Nonporous Substrates Latest Edition.
SSPC VIS 1 - Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning Latest Edition.
SSPC-PA 1 - Shop, Field, and Maintenance Painting of Steel 2004.
SSPC-PA 2 - Procedure For Determining Conformance To Dry Coating Thickness Requirements 2015.
SSPC-Paint 36 - Two-Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based. 2013.
SSPC-SP 1 - Solvent Cleaning 2015.
SSPC-SP 10 - Near-White Blast Cleaning 2007.
SSPC-SP 11 - Power Tool Cleaning to Bare Metal 2012 (Ed. 2013).
SSPC-SP 2 - Hand Tool Cleaning 1982 (Ed. 2004).
SSPC-SP 3 - Power Tool Cleaning 1982 (Ed. 2004).
SSPC-SP 5 - White Metal Blast Cleaning 2007.
SSPC-SP 6 - Commercial Blast Cleaning 2007.
SSPC-SP 7 - Brush-Off Blast Cleaning 2007.

1.2 WORK INCLUDED

A. The work of this section includes the coating of all interior surfaces, and the painting of all exterior surfaces.

1.3 RELATED WORK

Specifier Notes: Reference other sections of the specification which relate to or affect this section, such as piping, pump houses, etc.

Specifier Note: When new steel work is scheduled, such as new roof rafters, review 3.04, Paragraph C. This Paragraph calls for the application of the full coating system prior to the erection or installation of areas rendered inaccessible after erection. This requirement should also be so noted in any tank fabrication and/or structural sections of the specification.

1.4 CONTRACTOR QUALIFICATIONS

A. The CONTRACTOR shall have three years practical experience and successful history in the application of specified product to surfaces of steel water tanks. Upon request, he shall substantiate this requirement by furnishing a list of references and job completions.

B. The CONTRACTOR shall submit with his bid a written statement by the coatings manufacturer stating that the CONTRACTOR is familiar with the materials specified and has workers capable of performing the work specified herein.

C. The personnel performing the work shall be knowledgeable and have the required experience and skill to adequately perform the work for this project, in accordance with SSPC-PA 1.

1.5 QUALITY ASSURANCE

A. General: Quality assurance procedures and practices shall be utilized to monitor all phases of surface preparation, application and inspection throughout the duration of the project. Procedures or practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards and are approved by the ENGINEER.

B. Surface Preparation: Surface preparation will be based upon comparison with: SSPC VIS 1, ASTM D2200, ASTM D4417 or NACE SP0287. In all cases the written standard shall take precedence over the visual standard. In addition, NACE SP0178, along with the Visual Comparator, shall be used to verify the surface preparation of welds.
Specifier Note: The above paragraph contains weld treatment requirements which should also be called out in any tank fabrication and/or structural specifications. See also 3.02, B of this specification.

C. Application: No coating or paint shall be applied when: 1) the surrounding air temperature or the temperature of the surface to be coated or painted is below the minimum surface temperature for the products specified herein, 2) rain, snow, fog or mist is present, 3) the surface temperature is less than 5F above the dew point, 4) the air temperature is expected to drop below the minimum temperature for the products specified within six hours after application of coating. Dewpoint shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychometric Tables. If any of the above conditions are prevalent, coating or painting shall be delayed or postponed until conditions are favorable. The day's coating or painting shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

D. Coating Thickness: Thickness of coatings and paint shall be measured and checked according to the procedures outlined in SSPC-PA 2 with a non-destructive, magnetic-type thickness gauge that has been calibrated according to the procedures outlined in SSPC-PA 2 . Pass/fail criteria shall require that ninety (90) percent of the spot measurements (average of 3 gauge readings within a 1.5 inch diameter area) be at or above the minimum specified dry film thickness. Of the remaining ten (10) percent of the spot measurements (average of 3 gauge readings within a 1.5 inch diameter area) that are below the minimum specified dry film thickness, they shall be no less than ninety (90) percent of the minimum specified dry film thickness. Areas that fail to meet these criteria shall be corrected at no expense to the OWNER. Use of an instrument such as a Tooke Gauge, precision groove grinder, etc. is permitted if a destructive test is deemed necessary by the ENGINEER and the total DFT is less

than 50 mils.

Specifier Notes: The below paragraph calls for all interior surfaces to be checked for holidays. We recommend this include the interior roof as well. Inaccessible areas such as the space between rafters and roof plates and lapped roof plates are exempted from this requirement.

E. Holiday (Pinhole) Testing: The integrity of interior coated surfaces shall be tested for holidays in accordance with NACE SP0188. For dry films less than 20 mils, a non-destructive holiday detector shall not exceed 67.5 volts, nor shall destructive holiday detector exceed the voltage recommended by the manufacturer of the coating system. A solution of 1 ounce non-sudsing type wetting agent, such as Kodak Photo-Flo, and 1 gallon of tap water shall be used to perform the holiday testing. For coating thickness at 20 mils and greater, a high voltage Tinker & Rasor AP/W holiday tester shall be used. Contact coating manufacturer for voltage recommendations and curing parameters.

All pinholes and/or holidays shall be marked and repaired in accordance with the manufacturer's printed recommendations and retested. No pinholes or other irregularities will be permitted in the final coating.

F. Inspection Devices: The CONTRACTOR shall furnish, until final acceptance of coating and painting is accepted, inspection devices in good working condition for detection of holidays and measurement of dry film thickness of coating and paint. The CONTRACTOR shall also furnish U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates and/or plastic shims, depending upon the thickness gauge used, to test the accuracy of dry film thickness gauges and certified instrumentation to test the accuracy of holiday detectors. Dry film gauges and holiday detectors shall be made available for the ENGINEER's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the ENGINEER.

G. Inspection: Inspection for this project shall consist of 'hold point' inspections. The ENGINEER or his representative shall inspect the surface prior to abrasive blasting, after abrasive blasting but prior to application of coating materials, and between subsequent coats of material. Final inspection shall take place after all coatings are applied, but prior to placing the tank in service. CONTRACTOR will insure that sufficient rigging is in place so that the ENGINEER or his representative shall be able to conduct the required inspections.

H. Warranty Inspection: Warranty inspection shall be conducted during the eleventh month following acceptance of all coating and painting work. All defective work shall be repaired in accordance with this specification and to the satisfaction of the ENGINEER and/or OWNER.

1.6 SAFETY AND HEALTH REQUIREMENTS

A. General: In accordance with requirements set forth by regulatory agencies applicable to the construction industry and manufacturer's printed instructions and appropriate technical bulletins and manuals, the CONTRACTOR shall provide and require use of personal protective lifesaving equipment for persons working on or about the project site.

B. Head and Face Protection and Respiratory Devices: Equipment shall include protective helmets which shall be worn by all persons while in the vicinity of the work. In addition, workers engaged in or near the work during sandblasting shall wear eye and face protection devices and air purifying halfmask or mouthpiece respirators with appropriate filters. Barrier creams shall be used on any exposed areas of skin.

C. Ventilation: Where ventilation is used to control hazardous exposure, all equipment shall be explosion-proof. Ventilation shall reduce the concentration of air contaminants to a degree a hazard does not exist. Air circulation and exhausting of solvent vapors shall be continued until coatings have fully cured.

D. Sound Levels: Whenever the occupational noise exposure exceeds maximum allowable sound levels, the CONTRACTOR shall provide and require the use of approved ear protection devices.
E. Illumination: Adequate illumination shall be provided while work is in progress, including explosion-proof lights and electrical equipment. Whenever required by the ENGINEER, the CONTRACTOR shall provide additional illumination and necessary supports to cover all areas to be inspected. The level of illumination for inspection purposes shall be determined by the inspector.
F. Temporary Ladders and Scaffolding: All temporary ladders and scaffolding shall conform to applicable safety requirements. They shall be erected where requested by the ENGINEER to facilitate inspection and be moved by the CONTRACTOR to locations requested by the ENGINEER.

1.7 DELIVERY, STORAGE AND HANDLING

A. All materials shall be brought to the jobsite in original sealed containers. They shall not be used until the ENGINEER has inspected the contents and obtained data from information on containers or label. Materials exceeding storage life recommended by the manufacturer shall be rejected.
B. All coatings and paints shall be stored in enclosed structures to protect them from weather and excessive heat or cold. Flammable coatings and paints must be stored to conform with City, County, State and Federal safety codes for flammable coating or paint materials. At all times coatings and paints shall be protected from freezing.

PART 2 PRODUCTS

2.1 GENERAL

A. All materials shall be lead-free as defined by the Consumer Product Safety Act, Part 1303.
B. All zinc dust pigment contained in any zinc-rich material shall meet the requirements of ASTM D520 as regards zinc content and purity.
C. All materials for the interior wetted portion of the tank shall meet the requirements of NSF 61 for potable water contact.
D. All catalyzed polyurethane products shall meet the minimum requirements of SSPC-Paint 36, Level 3 Performance Level.
E. No products containing MOCHA shall be allowed.

2.2 ACCEPTABLE MANUFACTURERS

A. Materials specified are those that have been evaluated for the specific service. Products of the Tnemec Company, Inc. are listed to establish a standard of quality. Equivalent materials of other manufacturer's may be submitted on written approval of the ENGINEER. As part of the proof of equality, the ENGINEER will require at the cost of the CONTRACTOR, certified test reports from a nationally known, reputable and independent testing laboratory conducting comparative tests as directed by the ENGINEER between the product specified and the requested substitution.
B. Requests for substitution shall include manufacturer's literature for each product giving name, product number, generic type, descriptive information, solids by volume, recommended dry film thickness and certified lab test reports showing results to equal the performance criteria of the products specified herein. In addition, a list of five projects shall be submitted in which each product has been used and rendered satisfactory service.
C. All requests for product substitution shall be made at least 10 days prior to the bid date.
D. Any material savings shall be passed to the OWNER in the form of a contract dollar reduction.

E. Manufacturer's color charts shall be submitted to the ENGINEER at least 30 days prior to coating and/or paint application. General CONTRACTOR and Painting CONTRACTOR shall coordinate work so as to allow sufficient time (normally seven to ten days) for paint to be delivered to the job site.

2.3 MATERIAL PREPARATION

A. Mix and thin materials according to manufacturer's latest printed instructions.
B. Do not use materials beyond manufacturer's recommended shelf life.
C. Do not use mixed materials beyond manufacturer's recommended pot life.
D. Do not split kits of multi-component products.

2.4 TANK INTERIOR COATING SYSTEM

A. Hi-Build, Zinc/Epoxy System:
1. Surface Preparation Prior to Abrasive Blast Cleaning: Weld flux and spatter shall be removed by power tool cleaning. Sharp projections shall be ground to a smooth contour. All welds shall be ground to a smooth contour as per NACE SP0178, Designation D.
2. Surface Preparation: SSPC-SP 10/NACE No. 2. A minimum angular profile of 2.0 to 2.5 mils as per ASTM D4417, Method C or NACE SP0287 is required.
3. Coating System:
1st Coat: Tnemec Series 91-H2O Hydro-Zinc applied at 2.5 to 3.5 dry mils. Thin only with approved thinner, Tnemec 41-2 or 41-3 Thinner.
Stripe Coat: Tnemec Series 21-1255 Beige Epoxoline applied by brush to weld seams, edges, corners, bolts nuts and other difficult to coat areas. Thin only with approved thinner, Tnemec 41-88 Thinner.
2nd Coat: Tnemec Series 21-1255 Beige Epoxline at 5.0 to 7.0 dry mils. Thin only with approved thinner, Tnemec 41-88 Thinner.
3rd Coat: Tnemec Series 21-WH16 Off White Epoxoline at 5.0 to 7.0 dry mils. Thin only with approved thinner, Tnemec 41-878 Thinner.
Total dry film thickness shall be a minimum of 12.5 mils.

2.5 TANK INTERIOR COATING SYSTEMS - DRY AREAS

A. Zinc/Epoxy System:
1. Surface Preparation Prior to Abrasive Blast Cleaning: Weld flux and spatter shall be removed by power tool cleaning. Sharp projections shall be ground to a smooth contour. All welds shall be ground to a smooth contour as per NACE SP0178, Designation D.
2. Surface Preparation: SSPC-SP 10 Near-White Metal Blast Cleaning. A minimum angular profile of 2.0 to 2.5 mils as per ASTM D4417, Method C or NACE SP0287 is required.
3. Coating System:
1st Coat: Tnemec Series 91-H2O Hydro-Zinc applied at 2.5 to 3.5 dry mils. Thin only with approved thinner, Tnemec 41-2 or 41-3 Thinner.
Second Coat: Tnemec Series N140-1255 Beige Pota-Pox Plus applied at 4.0 to 6.0 dry mils. Thin only with approved thinner, Tnemec 41-4 Thinner.
Third Coat: Tnemec Series N140-15BL Tank White Pota-Pox Plus applied at 4.0 to 6.0 dry mils. Thin only with approved thinner, Tnemec 41-4 Thinner.
Total dry film thickness shall be a minimum of 10.5 mils.
For cold weather applications, Series 44-700 Urethane Accelerator may be added to Series 91-H2O. For cold weather applications, use Series N140 F instead of Series N140.

2.6 TANK EXTERIOR COATING SYSTEM

A. Three-Coat Fluoropolymer System for Extended Color and Gloss Retention:
1. Surface Preparation Prior to Abrasive Blast Cleaning: Weld flux and spatter shall be removed by power tool cleaning. Sharp projections shall be ground to a smooth contour. All welds shall be ground to a smooth contour as per NACE SP0178, Designation D.

2. Surface Preparation: Sweep blast all shop-primed surfaces as per SSPC-SP 6 / NACE 3 Commercial Blast Cleaning. Clean all bare metal, welded areas and damaged shop primer as per SSSPC-SP 6/NACE No. 3. A minimum angular profile of 2.0 to 2.5 mils as per ASTM D4417, Method C or NACE SP0287 is required.
3. Coating System:
   1st Coat: Tnemec Series 91-H20 Hydro-Zinc applied at 2.5 to 3.5 dry mils applied to all bare metal. Thin only with approved thinner, Tnemec 41-2 or 41-3 Thinner.
   2nd Coat: Tnemec Series 73-Color Endura-Shield applied at 2.0 to 3.0 dry mils. Thin only with approved thinner, Tnemec 41-42 Thinner for spray, 41-39 for brush or roller. (Two coats may be required if applied by roller.)
   3rd Coat: Tnemec Series 700-Color HydroFlon applied at 2.0 to 3.0 dry mils. Thin only with approved thinner, Tnemec 41-63 Thinner for spray, brush or roller.
   Total dry film thickness shall be a minimum of 6.5 mils.
   For cold weather applications, Series 44-710 Urethane Accelerator may be added to Series 91-H20 and Series 73 at the rate specified on the Series 44-710 product data sheet.

B. Waterborne Acrylic Overcoat System for Aged Coatings:
1. Surface Preparation Prior to Abrasive Blast Cleaning: Weld flux and spatter shall be removed by power tool cleaning. Sharp projections shall be ground to a smooth contour. All welds shall be ground to a smooth contour as per NACE SP0178, Designation D.
2. Surface Preparation: Pressure wash all surfaces to be coated using a solution of hot water and detergent at a minimum of 4,500 psi and a minimum flow rate of 3.0 gallons per minute with a zero-degree spinner tip to remove all oil, grease, chalk, dust, dirt and other contaminants. For mildewed surfaces, add chlorine bleach and allow solution to dry on the surface. Rinse all surfaces with clean water. Clean all failed and rusting areas as per SSPC-SP 3 Power Tool Cleaning, taking care to not burnish the surface. Feather all edges smooth. Spot prime with Tnemec Series 27WB applied at 4.0 to 6.0 dry mils.
3. Coating System:
   1st Coat: Tnemec Series 30 Spray SAF applied at 3.0 to 4.0 dry mils. Thin with clean water.
   2nd Coat: Tnemec Series 30 Spray SAF applied at 3.0 to 4.0 dry mils. Thin with clean water.
   Total dry film thickness of the new system shall be 6.0 mils.

C. Lettering/Logos:
1. Surface Preparation: All surfaces shall be clean, dry and free of contaminants.
2. Coating System:
   1st Coat: Tnemec Series 700 Hydroflon at 2.0 to 3.0 dry mils. Thin with No. 63 Thinner.
   2nd Coat: Tnemec Series 700 at 2.0 to 3.0 dry mils. Thin with No. 63 Thinner.
   Total dry film thickness of the logo and lettering system shall be 4.0 mils.

PART 3 EXECUTION

3.1 GENERAL

A. All surface preparation, coating and painting shall conform to applicable standards of the Society for Protective Coatings, NACE International and the manufacturer's printed instructions. Materials applied to the surface prior to the approval of the ENGINEER shall be removed and re-applied to the satisfaction of the ENGINEER at the expense of the CONTRACTOR.

B. All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice. Continuity of personnel shall be coordinated with the ENGINEER.

C. The CONTRACTOR shall provide a supervisor at the work site during cleaning and application operations. The supervisor shall have the authority to sign and change orders, coordinate work and make decisions pertaining to the fulfillment of the contract.

D. Dust, dirt, oil, grease or any foreign matter that will affect the adhesion or durability of the coating or paint must be removed by washing with clean rags dipped in an approved cleaning solvent and wiped dry with clean rags.

E. Coating and painting systems include surface preparation, prime coating and finish coatings. Unless otherwise approved in writing by the ENGINEER, prime coating shall be field applied. Where prime coatings are shop applied, the CONTRACTOR shall instruct suppliers to provide the prime coat compatible with the specified finish coat. Any off-site work which does not conform to this specification, is subjected to damage during transportation, construction or installation shall be thoroughly cleaned and touched-up in the field as directed by the ENGINEER. The CONTRACTOR shall use repair procedures which insure the complete protection of all adjacent primer. The specified repair method and equipment may include wirebrushing, hand or power tool cleaning, or dry air blast cleaning. In order to prevent injury to surrounding painted surfaces, blast cleaning may require use of lower air pressure, smaller nozzle and/or abrasive blast particles, or shorter blast nozzle distances from surface shielding and masking. If damage is too extensive or uneconomical to touch-up, the entire item shall be blasted and then coated or painted as directed by the ENGINEER.

F. The CONTRACTOR's coating and painting equipment shall be designed for application of materials specified and shall be maintained in first class working condition. Compressors shall have suitable traps and filters to remove water and oils from the air. CONTRACTOR's equipment shall be subject to approval of the ENGINEER.

G. Application of the first coat shall follow immediately after surface preparation and cleaning and stripe coat, if applicable, before rust bloom occurs or the same day, whichever is less. Any cleaned areas not receiving first coat within this period shall be recleaned prior to application of first coat. Use of dehumidification equipment shall be first reviewed by the ENGINEER and coatings manufacturer prior to deviating from this provision.

H. Prior to assembly, all surfaces made inaccessible after assembly shall be prepared as specified herein and shall receive the coating or paint system specified.

3.2 SURFACE PREPARATION

A. The latest revision of the following surface preparation specifications of the Society for Protective Coatings (SSPC) shall form a part of this specification. The summaries listed below are for informational purposes; consult the actual SSPC specification for full detail.

1. Solvent Cleaning (SSPC-SP 1): Removal of oil, grease, soil and other contaminants by use of solvents, emulsions, cleaning compounds, steam cleaning or similar materials and methods which involve a solvent or cleaning action.
2. Hand Tool Cleaning (SSPC-SP 2): Removal of loose rust, loose mil scale and other detrimental foreign matter to a degree specified by hand chipping, scraping, sanding and wirebrushing
3. Power Tool Cleaning (SSPC-SP 3): Removal of loose rust, loose mil scale and other detrimental foreign matter by power wirebrushing, power impact tools or power sanders.
4. White Metal Blast Cleaning (SSPC-SP 5/NACE No. 1): Air blast cleaning to a gray-white uniform metallic color until each element of surface area is free of all visible residues.
5. Commercial Blast Cleaning (SSPC-SP 6/NACE No. 3): Air blast cleaning until at least two-thirds of each element of surface area is free of all visible residues.
6. Brush-Off Blast Cleaning (SSPC-SP 7/NACE No. 4): Air blast cleaning to remove loose rust, loose mil scale and other detrimental foreign matter to a degree specified.
7. Near-White Metal Blast Cleaning (SSPC-SP 10/NACE No. 2): Air blast cleaning until at least 95% of each element of surface area is free of all visible residues.
8. Power Tool Cleaning to Bare Metal (SSPC-SP 11): Differs from SSPC-SP 3 in that it requires more thorough cleaning and a surface profile not less than 1 mil.

B. Slag, weld metal accumulation and spatters not removed by the Fabricator, Erector or Installer shall be removed by chipping and/or grinding. All sharp edges shall be peened, ground or otherwise blunted as required by the ENGINEER. All grinding and finishing of welds, edges, etc. shall be performed prior to solvent cleaning and abrasive blasting. Welds shall be prepared as per NACE SP0178 for all interior and exterior surfaces:
   1. Butt Welds: Shall be ground smooth and free of all defects, designation "D".
   2. Lap Welds: Shall be ground smooth and blended., designation "D".
   3. Fillet Welded Tee Joint: Shall be ground smooth and blended, designation "D"
      Specifier Note: The above paragraph contains weld treatment requirements which should also be called out in any tank fabrication and/or structural specifications. See also 1.05, B of this specification.

C. Field blast cleaning for all surfaces shall be by dry method unless otherwise directed. Blast nozzles shall be venturi-type nozzles with a minimum pressure at the nozzle of 90 psi.

D. Particle size of abrasives used in blast cleaning shall be that which will produce a 1.5 - 2.5 mil (37.5 microns - 65.0 microns) surface profile or in accordance with recommendations of the manufacturer of the specified coating or paint system to be applied.
   If the profile of the blasted steel exceeds the profile specified above, the CONTRACTOR shall be required to do one or both of the following:
   1. Reblast the surface using a finer aggregate in order to produce the required profile.
   2. Apply a thicker prime coat, if possible given the limitations of the products being applied, in order to adequately cover the blast profile.

E. Abrasive used in blast cleaning operations shall be new, washed, graded and free of contaminants that would interfere with adhesion of coating or paint and shall not be reused unless specifically approved in writing by the ENGINEER.

F. During blast cleaning operations, caution shall be exercised to insure that existing coatings or paint are not exposed to abrasion from blast cleaning.

G. The CONTRACTOR shall keep the area of his work and the surrounding environment in a clean condition. He shall not permit blasting materials to accumulate as to constitute a nuisance or hazard to the accomplishment of the work, the operation of the existing facilities or to the surrounding environment.

H. Blast cleaned surfaces shall be cleaned prior to application of specified coatings or paint. All surfaces shall be free of dust, dirt, and other residue resulting from the abrasive blasting operation. No coatings or paint shall be applied over damp or moist surfaces.

I. All welds shall be neutralized with a suitable chemical compatible with the specified coating or paint.

J. Pitted areas on the tank interior shall be repaired by filling with Tnemec Series 215 Surfacing Epoxy or by welding. Epoxy filler shall be feathered smooth. Filler shall be applied prior to the application of the finish coat. No protrusions or spatter will be allowed. Pits deeper than 1/8" shall be filled by welding.

K. Specific Surface Preparation: Surface preparation for the specific system shall be as noted in Sections 2.04, 2.05, 2.06.

3.3 NON VISIBLE CONTAMINANTS

A. Surfaces shall be checked in three locations for the presence of chlorides, free iron and sulfates. New tanks shall be tested prior to abrasive blasting, tanks being rehabilitated shall be tested prior to blasting. If blisters are present in existing tank, testing shall also be performed after abrasive blasting. These tests are an Iron Test (Fe2+), Chloride Test and Sulfate Test. Testing shall be carried out as per SSSPC GUIDE 15. The maximum limits for these contaminants shall be:

1. The maximum level of chlorides is 30 milligrams per square meter or 3 micrograms per square centimeter.
2. The maximum level of sulfates is 100 milligrams per square meter or 10 micrograms per square centimeter.
3. The maximum level of ferrous ions (Fe2+) is 50 milligrams per square meter or 5 micrograms per square centimeter.
4. Contamination levels above these limits will require washing and retesting in accordance with Item B (below) until the surface is under the allowable limits.

B. If testing shows amounts present in the test solution to be greater than the limits listed herein, the CONTRACTOR shall clean the surface of the entire tank interior with a 5,000 psi water blast with fine entrained abrasive until the levels in the test solutions are below the maximum acceptable level. Alternate cleaning methods may be allowed with prior approval of the ENGINEER. Surface shall be re-blasted as specified in 2.05 at no additional cost to the OWNER.

C. CONTRACTOR shall provide a written statement from paint manufacturer stating that the maximum acceptable levels are not less than those listed herein. Results of the testing shall be provided to the OWNER before any coatings are applied.

D. The following test kits are approved for use on this project:
1. Chlor*Rid Chor*Test Kit
2. KTA SCAT Test Kit
3. Test kits from other vendors shall be submitted to the ENGINEER for prior approval before use.

Specifier Note: The below paragraph should be included when painting is near the coast when salt contamination is possible, or when the tank is next to an industrial facility where the possibility of atmospheric fallout is possible.

E. When exterior coats are to be applied on subsequent days, or when the shroud is dropped between coats, the previously-applied coat of paint shall be thoroughly pressure-washed to remove any fallout and/or salt that may have settled on the surface.

3.4 APPLICATION - GENERAL

A. Coating and paint application shall conform to the requirements of SSPC-PA 1, latest revision, for "Shop, Field and Maintenance Painting".

B. Thinning shall be permitted only as recommended by the manufacturer and approved by the ENGINEER, and utilizing the thinners stated in Sections 2.04, 2.05, 2.06.

C. Each application of coating or paint shall be applied evenly, free of brush marks, sags, runs, with no evidence of poor workmanship. Care shall be exercised to avoid lapping on glass or hardware. Coatings and paints shall be sharply cut to lines. Finished surfaces shall be free from defects or blemishes.

D. Protective coverings or drop cloths shall be used to protect floors, fixtures and equipment. Care shall be exercised to prevent coatings or paints from being spattered onto surfaces which are not to be coated or painted. Report to the ENGINEER surfaces from which materials cannot be satisfactorily removed.

E. When two coats of coating or paint are specified, where possible, the first coat shall contain sufficient approved color additive to act as an indicator of coverage or the two coats must be of contrasting color.

F. Film thickness per coat as specified in Sections 2.04, 2.05, 2.06 are the minimum required. If roller application is deemed necessary, the CONTRACTOR shall apply additional coats as to achieve the specified thickness.

G. All material shall be as specified.

3.5 COATING SYSTEMS APPLICATION

A. After completion of surface preparation as specified for the specific system, materials shall be applied as noted in Sections 2.04, 2.05, 2.06.
B. Care shall be taken so as to eliminate overspray and dry spray on the tank interior. Where such conditions are encountered, the surface shall be cleaned of all over spray and dry spray prior to the application of the succeeding coat.
C. Areas rendered inaccessible after tank erection such as the spaces between roof plates and rafters shall receive the full coating system prior to erection and/or assembly.

3.6 DISINFECTION

A. Disinfection of interior surfaces shall be performed in the presence of the ENGINEER in accordance with all the requirements of applicable AWWA Standards and regulatory agencies.
B. Disinfection shall be performed after protective coatings have been applied to the interior surfaces and allowed to thoroughly cure.
C. Prior to disinfecting, the complete interior shall be washed down with clean water and thoroughly flushed out.
D. All interior surfaces shall be thoroughly washed with a solution having a minimum chlorine content of 50 PPM. Chlorine solution accumulated on the bottom shall be drained to waste. Rinsing with clean water is not required.

3.7 SOLVENT VAPOR REMOVAL

A. All solvent vapors shall be completely removed by suction-type exhaust fans and blowers before placing tank in operating service.
B. All solvent vapors will be exhausted both during and after coating application as per AWWA D102 to allow the proper curing of the coating material.
C. Ventilation shall be continued until such time as the coating has reached "full cure" as specified by the coating manufacturer.

3.8 CLEAN UP

A. Upon completion of the work, all staging, scaffolding and containers shall be removed from the site or destroyed in a manner approved by the ENGINEER. Coating or paint spots or oil stains upon adjacent surfaces shall be removed and the jobsite cleaned. All damage to surfaces resulting from the work of this section shall be cleaned, repaired or refinished to the satisfaction of the ENGINEER at no cost to the OWNER.

-- END OF SECTION --