Addendum No. 2
to the Bidding Documents for

BID PROPOSAL #09-15

Hobbs Hill Water Tank Replacement
City of Portsmouth Department of Public Works
Portsmouth, New Hampshire

Issued September 10, 2014

Under the provisions of Section 1 of the General Conditions, Bidders are informed that the Bidding Documents for the above mentioned Project are modified, corrected, and/or supplemented as follows. Addendum No. 2 becomes part of the Bidding Documents and Contract Documents.

Acknowledge receipt of this addendum by inserting its number on Page A-3.5 Bid form. Failure to acknowledge receipt of the Addendum may subject the Bidder to disqualification.

Project Manual Changes

Item 1-1 Section A-1.1 – Advertisement for Bids

Delete the time and date reference of **2:00 PM on September 11, 2014** specifying the deadline of when BIDS will be accepted by the City of Portsmouth Purchasing Department, 1 Jenkins Avenue, Portsmouth, NH 03801 and **replace** with the time and date reference of **2:00 PM on September 15, 2014,** after which time BIDS will be publically read aloud.

Item 1-2 Section A-2.1– Information to Bidders

Delete the time and date reference of **2:00 PM on September 11, 2014** specifying the deadline of when BIDS will be recieved by the City of Portsmouth Purchasing Department, 1 Jenkins Avenue, Portsmouth, NH 03801 and **replace** with the time and date reference of **2:00 PM on September 15, 2014,** after which time BIDS will be publically opened and read aloud.

Note: Any other reference in the Project Manual to the time and date revision described above shall hereby be similarly revised.

Item 1-3 Section 09901

Delete Section 09901 in its entirety and **replace** with the attached updated Section 09901**.**

END OF ADDENDUM NO. 1

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SECTION 09901

WATER TANK PAINTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Surface preparation and application of coatings to water storage tanks and appurtenances

2. Disinfection of the Water Tank

B. Related sections

1. Section 09900 - Painting

1.2 REFERENCES

A. The Society for Protective Coatings (SSPC):

1. SSPC-PA1 - Shop, Field and Maintenance Painting

2. SSPC-PA2 - Measurement of Dry Paint Thickness with Magnetic Gauges

3. SSPC-SP1 - Standard for Solvent Cleaning

4. SSPC-SP6 - Commercial Blast Cleaning

5. SSPC-SP10 - Standard for Near White Blast Cleaning

6. SSPC-VIS 1-89 - Visual Standard for Abrasive Blast Clean Steel

B. AWWA D102 – Coating Steel Water Storage Tanks

C. AWWA C652 - Disinfection of Water Storage Facilities

D. EPA Test Method Manual SW-846

E. Occupational Safety and Health Administration (OSHA) Standards

1.3 SCOPE OF WORK

A. Items of work include but are not limited to the surface preparation and coating of the following:

1. Tank exterior

2. Tank interior and all metal piping and appurtenances inside the tank.

B. Temporary utilities, containment, ventilation and dehumidification equipment required to provide and maintain the proper environment for worker protection and for coating application and curing.

C. Touch up of any areas of the new or existing tank damaged by the Contractor's activities.

D. The painting procedures herein are primarily for complete field priming of bare steel. If, at the Contractor's option, shop priming is to be performed, additional requirements for surface preparation of the shop primed steel in the field shall be required as described in Part 3.1 of this section.

1.4 SUBMITTALS

A. List of coating products and systems proposed, giving brand, type and manufacturer

B. Manufacturer's current printed recommendations and product data sheets for each system

C. Method and equipment to be used for temperature control

D. Method and equipment to be used for dehumidification

E. Method to be used, and the size and type of abrasive media to be used for the abrasive blast cleaning

F. Containment system design and calculations

G. Ventilating plan describing procedures and equipment that will be used for the temporary containments system.

H. Solvent to be used for the solvent rub test on the cured paint

I. Copies of manufacturer's complete color charts for each coating system

1.5 QUALITY ASSURANCE

A. Use adequate number of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section.

B. Contractor Qualifications - Minimum 5 drinking water storage tanks in the last 10 years similar to the tank for this project using similar paint systems specified and located in a similar climate. A description of the previous painting projects and a list of people to contact for references shall be provided upon request.

C. A qualified representative of the paint manufacturer must make at least 1 visit per coat to the work site to review surface preparation, material application procedures, and any other pertinent aspect of the Contractor's operations which could adversely affect the quality of the completed paint systems. It is the responsibility of the Contractor to assure that the paint manufacturer is notified with sufficient time to schedule site visits.

D. Use equipment of adequate size, capacity, and quantity to accomplish the work of this Section in a timely manner.

PART 2 PRODUCTS

2.1 MATERIALS

A. General

1. Paint products must be able to pass the Toxicity Characteristic Leaching Procedure (TCLP) for constituents regulated under the Toxicity

Characteristic rule of RCRA. Written certification, issued by an independent testing laboratory which meets the requirements of the EPA Test Method Manual SW-846, shall be provided by the paint manufacturer prior to the delivery of paint products to the job site. All coating products must test as non-hazardous waste.

2. Paint and paint products including thinners, used for each system shall be the product of a single paint manufacturer. Materials shall be brought to the job site in original sealed, labeled, and dated containers of the paint manufacturer and shall be subject to inspection by the Engineer. The container label shall include the paint manufacturer's name, product description, solids content by volume in percent of total volume and color.

3. Storage of these materials shall be in accordance with the paint manufacturer's recommendations.

4. Each coat of product may be a slightly different shade of the same color to provide some contrast to aid in application. The final finish coat shall be exactly the shade selected by the Owner.

5. All single coats of paint (i.e. primer coats, and finish coats) will be the same color and shade.

6. It is recognized that the specific application of the coating products varies for each specific manufacturer (number of coats, mil thickness per coat, etc.). Therefore, these Specifications represent the minimum to be provided under this contract and shall be increased in accordance with each manufacturer's recommendations. All paint used in the work shall be as manufactured by a company that demonstrates the following minimum qualifications and experience:

   a. Has been in continuous business operations for at least 10-years.

   b. Has established technical support vendors within a 150-mile radius of the project.

   c. Had similar type coating products used in New Hampshire for at least 10-years.

7. The specific paint products to be used in the work shall further meet the following minimum criteria:

   a. Have been used on at least 10 water storage tanks in similar project climates.

   b. Have been applied to at least 10 municipal water storage tanks under the observation of an Owner's representative.

   c. Have successfully demonstrated adequate performance on at least 10 municipal water storage tanks based on 2-year and 5-year follow up inspections by an Owner's representative.

B. The specific paint products to be used shall be verified in writing by the manufacturer that based on a complete physical inspection by the manufacturer of the tank, site and ambient condition to be experienced for the specific geographic

area and water tank operations that the product is suitable for the application and will conform to all of the specified performance and requirements.

C. Paint products compatible with existing tank.

2.2 MANUFACTURERS

A. Painting materials are designated by reference to TNEMEC Company Incorporated. Product references are used only to describe the intended product type, characteristics, and baseline for performance. Equivalent products and manufacturers meeting the specification criteria for the project will be considered for the project.

B. Substitutions of other manufacturers will be considered only if a “product for product” listing is submitted. The Engineer reserves the right to request and receive detailed technical literature of each proposed substitution before approving any alternatives.

C. No substitutions will be considered that decrease the film thickness, the number of coats, the surface preparation or the generic type of coating specified.

2.3 INTERIOR TANK SURFACES

A. Interior tank surfaces, including the exterior surfaces of all appurtenances within the tank, shall be coated with one stripe coat and two full coats of a system that is in full compliance with NSF 61, State and Federal Regulations, and the Environmental Protection Agency for use in the interior of potable water storage tanks. The Contractor shall furnish this certification to the Engineer prior to commencing work.

B. The he first coat shall be a zinc rich aromatic urethane, the Stripe Coat shall be a two-component Polyamidoamine Epoxy and the finish coat shall be a two-component 100% solids polyamine epoxy. The colors of the stripe coat and 2 coats shall be contrasting. The finish coat color shall be selected by the Owner.

C. Refer to Table 09901, Paint System Schedule, included at the end of this Section, for a description of the required coating systems.

2.4 EXTERIOR TANK SURFACES

A. Exterior surfaces shall be coated with one prime coat of a zinc rich aromatic urethane, a stripe coat and one full coat of a two-component polyamide epoxy, a full coat of a two-component aliphatic acrylic polyurethane, and a finish coat of an Advanced Thermoset Fluoropolymer finish coat, by the approved coating manufacturer.

B. For the exterior surfaces of the tank, the primer coat shall be Greenish-Gray. The colors of the intermediate coats and the finish coats shall be selected by the Owner after approval of the proposed manufacturer's data sheets and color chips. The 2 intermediate coats and one finish coat shall each have contrasting shades to aid in application.

PART 3 EXECUTION

3.1 SHOP PRIMED STEEL

A. Application of Shop Primer

1. Surface preparation and coatings shall be as described in Table 09901.

2. Contractor shall notify the Engineer a minimum of three weeks in advance of shop priming to arrange for Engineer's inspection while the primer is being applied.

3. Allow a minimum 4-inch border of bare steel around edges of steel plate.

B. Field Treatment of Shop Applied Primer

1. Apply a water injection blast (with abrasive media) with corrosion inhibitor on all unprimed or inadequately primed ferrous substrates to achieve SSPC 6 for exterior surfaces and SSPC 10 for interior surfaces achieving a minimum 2 mil anchor profile.

2. Lightly sand areas of primer that are adjacent to bare steel. Do not expose substrate. Feather existing primer back 4 inches from the bare steel boundary into the primed area.

3. Sand nicks, pits, and scratches with 300 grit sandpaper to specified SSPC standards.

4. Prior to application of stripe and touch up prime coat, solvent wipe bare steel and sanded areas with an appropriate solvent approved by the paint manufacturer.

5. Perform and pass a tape test as described in Item 3.9 D.3.d of these Specifications before applying touch up primer.

6. Apply a stripe coat to all unprimed areas and touch up prime coating as needed. If the corrosion inhibitor manufacturer's maximum time before coating has been exceeded or if any flash rust becomes apparent, it may be necessary to repeat the above sequence for portions of the tank that have not been primed.

7. If the recoat window for the primer has been exceeded, the Contractor shall abrade and/or reapply the primer coating per the paint manufacturer's instructions.

8. Pressure wash the entire exterior and interior surfaces with a 2,000 to 2,500 psi surface wash with surfactants approved by the paint manufacturer.

9. Continue with application of intermediate coating per Table 09901.

3.2 GENERAL

A. Interior and exterior tank surfaces and appurtenances shall be abrasive blast cleaned and coated as described herein.

B. Inlet, outlet, and drain pipe openings in the tank shall be covered with a strong enough cover to keep blasting abrasive and paint material from entering openings. The Contractor will not be allowed to start operations until these openings have been properly protected and reviewed by the Engineer.

C. The Interior coating system and application procedures shall be in accordance with AWWA D102 – Inside System #3. Exterior coating systems shall conform to AWWA D 102 – Outside System #4.Lighting

D. Provide a temporary, explosion proof lighting system so that all Work may be done in a safe, workmanlike manner within the tank. A minimum of 300 watts of lamp per each 200 square foot or less of work area shall be provided.

E. Temporary general lighting system shall consist of explosion proof wiring, switches, necessary insulated supports, poles, fixtures, receptacles, lamps, guards, cut-outs, fuses, and other materials necessary for a totally operable system.

F. In addition to meeting the minimum requirements listed above, the Contractor shall be responsible for complying with all applicable regulations of the various local, state, and federal agencies.

3.3 VENTILATION

A. Particular care shall be exercised during the cleaning and painting of the interior of the tank. Means of adequately removing air from the tank shall be provided, in order to remove dust and solvent vapors.

B. Visible emissions from the tank interior and exterior containment shall conform to Level 1 as defined in SSPC Guide 6.

C. The Contractor shall have air-moving equipment equipped with explosion proof motors and a trailer mounted dust collector with HEPA filtration. The collectors shall be capable of removing abrasive dust and solvent fumes to prevent injury to workmen and the accumulation of volatile gases which will retard the curing of the paint or create an explosive environment.

D. During the cleaning and painting operations on the tank, the painters shall be provided with proper respiratory protection in accordance with OSHA regulations.

E. All manholes and other tank openings shall remain open during cleaning, painting, and curing operations.

F. In addition to meeting the minimum requirements listed above, the Contractor shall be responsible for complying with all applicable regulations of the various local, state, and federal agencies.

3.4 TEMPORARY CONTAINMENT

A. Containment and ventilation shall comply with SSPC Guide 6 Class 3A Containment.

B. The system shall be designed by a NH registered professional structural engineer and shop drawing details with PE sealed and signed design calculations shall be submitted per Section 1.4 A. No on-site work shall proceed until the proposed containment system details have been accepted by the Owner.

C. During construction, the Contractor's engineer shall visit the site to observe the construction details and then verify in a written report that the containment system conforms to the design intent and requirements. Any modifications made to the containment system during construction shall be subject to re-inspection and reporting by the Contractor's engineer.

D. Design, construction and maintenance of the containment system shall comply with the structural and stability requirements of AWWA D100 given the shop drawing listed design loads and the loads to be imposed by the containment system. The containment system wind loads shall be calculated at the wind velocity at which the containment sheathing is designed to fail. The design wind velocity failure point of the sheathing shall not exceed 50 miles per hour wind speed.

3.5 DEHUMIDIFICATION AND TEMPERATURE CONTROL

A. Ventilation and dehumidification equipment shall be provided as required to maintain the proper environment for worker protection and for coating application and curing. Temperature and humidity shall be in accordance with paint manufacturer's recommendations before the start of painting work.

B. Auxiliary heat and/or cooling may be necessary to maintain the surface temperature at an acceptable level for the coating manufacturer's application parameters. The equipment must be compatible with the required dehumidification equipment and meet the following requirements.

1. The air from heaters and refrigerant type systems shall be connected to the process air supply duct from the dehumidifier as close to the tank interior as possible.

2. Only electric, indirect fired combustion, or steam coil auxiliary heaters will be used. No direct-fired space heaters will be allowed during the blasting, coating or curing phases.

3. Heaters will be equipped with controls that automatically turn the heaters off if the airflow is interrupted or the internal temperature exceeds its design temperature or that of the supply duct.

4. The area where dehumidification is introduced shall be sealed to allow the air to escape away from the entry point while maintaining a slight positive pressure unless dust from the operation is hazardous. The design of the filter system, if necessary, will be designed so that it does not interfere with the dehumidification equipment's ability to control the dew point and temperature parameters in that space. Do not recirculate the air from the space or from the filtration equipment back through the dehumidifier during the coating application or when solvent vapors are present

3.6 SURFACE PREPARATION

A. General

1. The entire steel tank interior and exterior and all appurtenances shall be prepared in accordance with these Specifications.

2. The paint manufacturer shall visit the site in accordance with 1.5.C. Surface preparation work must be inspected by a certified independent inspection firm. The inspection shall be performed during the first week of surface preparation work for each tank surface. A written report shall be developed by the independent inspection firm for each inspection visit, listing at a minimum, the tank inspected, the location of the surface preparation work inspected, the surface profile measured and the degree of cleanliness, as

defined by the SSPC surface preparation specification. In addition, the inspection firm shall state in the report whether the surface preparation work is acceptable for the specified paint systems. Application of the prime coat shall not be approved until the Engineer has received this report.

3. All interior surfaces shall be prepared to meet the requirements of SSPC-SP10, Near-white Metal Blast Cleaning achieving a uniform anchor profile of 2.0 mils.

4. All exterior surfaces shall be prepared to meet the requirements of SSPC-SP6, Commercial Blast Cleaning achieving a uniform anchor profile of 2.0 mils.

5. All sharp edges left over from the original shell plate fabrication shall be reduced by grinding to ensure paint adhesion.

6. All weld slag, spatter, etc. shall be removed by grinding. Oil, grease, and other foreign matter that will impair adhesion of paint shall be removed from the steel surfaces. If "Solvent Cleaning" is required, it shall be accomplished in strict accordance with SSPC-SP1

7. Compressed air used shall be periodically checked to verify that it is clean, dry and oil free. As a minimum precaution, an oil and water separator shall be placed in the air line as close as possible to the blast cleaning equipment.

8. Obtain the Engineer's approval of areas blast cleaned before applying any paint.

9. All residue of the blast cleaning shall be removed by vacuum cleaning equipped with HEPA filters. Material inside the tank shall be removed in a manner suitable to the Engineer. Blast clean material, paint or other foreign materials shall be prevented from entering the water distribution system through the inlet, outlet and overflow pipes by a method acceptable to the Engineer.

B. Anchor Pattern

1. Anchor patterns shall be as listed in Table 09901. Surfaces with anchor patterns out of this range shall be rejected and reworked until they are within range. Anchor patterns must be approved by the Engineer prior to priming. The Contractor must have properly operating anchor pattern test equipment on location and an employee knowledgeable in its use.

C. Abrasive

1. All abrasive shall be brought to the job site in original packaging and stored in a clean and dry environment.

2. All abrasive shall be maintained clean, dry, and uncontaminated by soluble salts. If the abrasive is suspected of being contaminated, it shall be tested by the Contractor at the direction of the Engineer.

3. Abrasive shall be cast steel grit meeting the requirements of S.A.E. J827, Chemical Analysis, and S.A.E. J444, Screening. The hardness of the cast steel grit will be selected by the Contractor. SSPC has determined that the

use of G-40 cast steel grit can meet the anchor pattern requirements. Due to differences in steel substrate hardness the choice of abrasive material and particle size shall be that of the Contractor who must meet the requirements of the specified anchor pattern.

4. All abrasive shall be collected and recycled for reuse.

5. Photographic standards will be used by the Engineer to evaluate the quality of blasting in conformance with the standards of SSPC-VIS 1-89. In addition to these standards, sample areas 4 feet by 4 feet in size, 2 on the tank interior and 2 on the exterior, shall be blasted to meet the requirements of SSPC-SP10 and SSPC-SP6, respectively. The sample areas will be reviewed by the Engineer, and when approved, will become the standard for comparison on the project.

D. Substrate Contamination

1. Surfaces shall be reviewed each day prior to paint work commencing. If surfaces are found to be contaminated with oil, grease, dirt, dust, or salt, they must be, cleaned in accordance with SSPC SP1, "Solvent Cleaning" or vacuuming prior to abrasive blasting and prior to the application of any primer over freshly blasted steel. Painted surfaces must be screened out or lightly sanded when found to contain over-spray, runs, drips, sags, or entrapped debris.

2. Test abrasive for ionic contamination, when directed by the Engineer. Blasted steel surfaces found to have a high concentration of soluble salts, in excess of 25 $\mu g/cm^2$ will require further surface preparation to lower this concentration. It is expected that the Contractor will re-blast these areas to achieve this reduction unless otherwise approved by the Engineer.

3. No rusted or water contaminated abrasive shall be used for surface preparation. Any abrasive found to be contaminated shall be discarded.

E. Substrate Cleanliness

1. Prior to the application of any coating, the blast products, i.e. dust and debris, shall be removed by vacuuming. No other method will be allowed, unless approved by the Engineer.

2. Priming or painting of prepared surfaces shall not be allowed until the area has been adequately vented to remove all airborne dust.

3. Prepared surfaces shall be prime painted before any rusting takes place or degradation of the substrate. If the substrate is found to have degraded, it shall be reblasted and cleaned.

4. Approval of all surface preparation shall be by the Engineer.

5. SSPC-PA1 "Standard for Shop, Field, and Maintenance Painting", shall be followed, as well as SSPC-VIS 1-89, and this specification.

3.7 PAINT APPLICATION

A. General

1. Apply each coating at the rate and in the manner specified by the manufacturer. The DFT's (dry film thickness) listed in Table 09901 shall be considered as minimums and shall be increased in accordance with the approved manufacturer's recommendations. If the protective coating has thickened or must be thinned for application, the coating shall be built up to the same Dry Film Thickness as specified for each coat, i.e. prime, stripe, intermediate, and finish coats.

2. Except as modified by this section of the Specifications or by the manufacturer's specifications, each protective coating shall be applied in accordance with "Shop, Field, and Maintenance Painting", SSPC-PA1, latest revision, which ever is most stringent.

3. All coating material containers delivered to the site shall be properly stored and protected against freezing, heat, moisture, contamination, outside alteration, and vandalism.

4. Coating materials that have an expired shelf or pot life shall not be used and must be removed from the job site.

5. All weld slag, weld spatter, oil, grease, and other foreign matter that will impair adhesion of paint shall be removed from the steel substrate. If "Solvent Cleaning" is required, it shall be accomplished in strict accordance with SSPC-SP1. If surfaces to be coated are dusty, they shall be vacuumed or lightly sanded or screened if over spray, runs, drips, sags, or entrapped debris is present.

6. Apply paints only when temperature of surfaces to be painted and surrounding air temperatures are between 55° and 95° Fahrenheit, unless otherwise dictated by paint manufacturer's printed instructions. Exterior paint shall not be applied in rain, snow, fog, or mist or when the relative humidity exceeds 80 percent, unless paint manufacturer's written instructions dictate otherwise. Anticipated dew or moisture condensation will delay painting until it can be determined with certainty that the surfaces will be dry during the painting operation. Temperature of the surface and paint shall be at least 5° Fahrenheit above the dew point temperature. Each day's painting shall be completed well in advance of probable time of day when condensation will occur, in order to permit the required full drying time prior to formation of moisture.

7. Provide approved wet and dry film thickness gauges to the Engineer for his use.

8. The paint manufacturer shall provide the services of a field representative to instruct the Contractor and the Engineer on application of its products. It is the Contractor's responsibility to secure the paint manufacturer's assistance.

9. All mixing and thinning of coatings shall be done in the presence of the Engineer. Thinning must be performed using a measuring cup marked in

ounces or milliliters. Other methods, such as "eye balling", are not acceptable.

10. Care must be taken not to damage neighboring property. The containment system required under this Section shall remain in place during all painting to safeguard surrounding area. No overspray will be permitted.

11. Concrete foundations shall be completely covered during all painting exercises and no paint drops will be tolerated.

B. Painting Interior and Exterior Tank Surfaces

1. Stripe Coat - All welds, rivets, seams and pitted areas shall receive a brush coat of primer to ensure full coverage to a minimum DFT of that specified in Table 09901.

2. Interior and exterior coating thicknesses shall be provided using conventional, airless-spray equipment or roller in accordance with Table 09901.

3. Total DFT of the paint system shall be as defined in Table 09901. Apply additional primer, intermediate, or finish coats to deficient areas until specified minimum or manufacturer's recommended DFTs are obtained. Areas of excessive thickness shall be corrected in accordance with the manufacturer's directions.

4. Drying time between coats shall be as recommended by the paint manufacturer. These times shall be strictly adhered to. Abnormal weather conditions may warrant alteration of these times, as directed by the Engineer.

C. Measurement of Paint Thickness

1. During application, by Wet Film Thickness Gauge.

2. Between cured coats, by Type I or II DFT gauges, as defined by SSPC-PA2, "Measurement of Dry Paint Thickness with Magnetic Gauges".

3. At final inspection of total protective coating system, by Type I or II DFT gauge, as defined above. At final inspection, the DFT readings will be taken in strict accordance with SSPC-PA2, "Measurement of Dry Paint Thickness with Magnetic Gauges", with the exception that no reading will be permitted below the minimum system DFT. Dry film thickness shall be exclusive of the substrate profile.

4. In addition to the SSPC-PA2 requirements, no single reading shall be less than 80% of the required DFT.

D. Inspection

1. The Owner will employ an on-site representative for the duration of the work. During surface preparation and painting operations, observations will be conducted to ensure compliance with the Project Manual, manufacturer's product data sheets, and specifications/standards of SSPC, NACE, and/or AWWA. These observations will typically occur, but not be limited to:

a. Observing mixing of paint, addition of thinners, or additions of chemical accelerators,

b. Checking of the substrate, paint, and atmosphere for proper temperatures and humidities,

c. Checking of the substrate prior to application of the stripe coat and primer,

d. Between application of each coat of paint,

e. And final checking of the completed paint protective coating system.

2. The types of test that may be conducted at the direction of the Engineer will be:

a. Dry Film Thickness Testing (DFT)

b. Visual examination of each coat for protective coating flaws as described in General Inspection Requirements below

c. And inspection of each coat of paint for cleanliness.

3. Inspection protocols will be drawn from the latest versions of SSPC, NACE, AWWA, or as directed by the Engineer. Inspection protocols will be as follows:

a. DFT testing will be in accordance with SSPC-PA2, "Paint Application Specification No. 2, Measurement of Dry Paint Thickness with Magnetic Gages"

b. Substrate cleanliness will be checked in accordance with one or a combination of the following,

1)	SSPC-SP Com	Surface Preparation Commentary
2)	SSPC-Guide to Vis 1-89	Visual Standard for Abrasive Blast Cleaned Steel
3)	SSPC-SP1	Solvent Cleaning
4)	SSPC-SP5	White Metal Blast Cleaning
5)	SSPC-SP6	Commercial Blast Cleaning
6)	SSPC-SP10	Near-White Blast Cleaning

c. Verifying that for each coat of paint will find a surface when viewed without magnification will be visibly free of:

1) All visible oil

2) Grease

3) Dirt

4) Dust

5) Corrosion products

6) Or other foreign matter.

d. In addition to a visual examination, all surfaces including the prepared substrate and each coat of paint will undergo a tape test to determine the presence of dirt, dust, etc. that may be detrimental to the adhesion of the paint system. The tape test protocol will be as follows:

1) The tape test will be conducted with standard clear cellophane tape applied to the selected surface.

2) The tape will be burnished to ensure good adherence to the surface to which it is applied.

3) Once properly applied to the selected surface the tape will be removed and placed on a paper with a white back ground.

4) The tape will be made to adhere to the paper.

5) The tape will then be examined for retained debris and an attempt will be made to remove the tape from the paper.

6) The attempted removal of the tape from the paper will show no signs of degradation to the adhesive strength of the tape.

7) If the tape test shows that the adhesive strength of the tape has diminished then the Contractor at his/her expense will clean the surface by vacuuming and/or pressure washing or other method approved by the Engineer until the subsequent testing shows no degradation in the adhesive strength of the test tape to paper.

4. A control tape will be used for comparison of the adhesive strength of the test tape. The control tape will be unspoiled and applied directly to the same paper as the tape test.

5. General Inspection Requirements

a. The certified independent inspection firm shall visit the site to inspect the tank surface during the application of each coat. A written report shall be provided by the inspection firm for each inspection visit. The reports shall state whether the paint coatings are being applied in accordance with the manufacturer's recommendations, including whether the recommended coating thicknesses are being applied. Finish coats shall not be applied over inspected primer/intermediate coats until the inspection reports for the primer/intermediate coats have been submitted by the paint manufacturer to the Engineer and have been approved by the Engineer. Similarly, intermediate coats shall not be applied over primer coats until the inspection reports for the primer coats have been reviewed and approved by the Engineer.

b. Cleaning and painting shall be subject to quality assurance inspection and approval by the Engineer. The Engineer reserves the right to inspect cleaned surfaces prior to application of any coat. The Contractor shall provide to the Engineer the necessary means to perform proper inspections. This includes, but is not limited to, the use of scaffolding, lights, and fresh-air hoods, and a dry film thickness gauge, for the duration of the Contract. Work performed without

proper inspection will be considered defective, therefore requiring rework at no additional cost to the Owner.

c. The Engineer reserves the right to have the cured protective coating system inspected using a low or high voltage "Holiday" detector to check the integrity of the coating system. Holiday Testing shall be performed in accordance with NACE SPO188. **No "Holiday" testing will be conducted until the protective coating system is deemed cured and free from solvents.**

d. The Contractor shall correct all work found to be defective under this Specification. All labor, equipment, and materials required to make the repairs shall be at the Contractor's expense.

e. The Contractor is warned that the concrete foundation wall shall be completely covered during all painting work and no paint drops will be tolerated. The Contractor will not be paid until any and all paint drops are removed.

f. All coats shall be free of:

1) Alligatoring - Cross hatch pattern of surface cracking

2) Bubbling - Bubbles on the surface of the dried film

3) Cracking - Visual cracks through the surface of the film

4) Cratering - Round U or V shaped thin spots or voids

5) Delamination - Loss of adhesion to steel or between coats

6) Holidays - Skipped or missed areas

7) Lopping - Color sheen or texture variations

8) Runs - Build up of dried paint vertically

9) Sags - Gradual build up of dried paint horizontally

10) Entrapped debris from any source

11) Overspray

12) Loss of finish coat gloss, and

13) Non-uniform appearance due to variations in gloss

g. If any of these flaws are found to exist, the Contractor shall repair the coating at no additional cost to the Owner.

E. Paint Repairs

1. Correct all work found to be defective.

2. Repair procedures used to correct any defective work shall be as specified by the paint manufacturer and approved by the Engineer or SSPC-PA1, whichever is more stringent.

F. Curing

1. The tank coating system shall not be placed into immersion service until the paint system has met the cure requirements as set forth by the paint manufacturer. The cure time will be a function of the total paint thickness and temperature.

2. The cured tank coating must pass a solvent rub test.

3.8 DISINFECTION

A. Prior to placing the tank back into service, disinfect the water tank to meet the requirements of AWWA Standards C652.

B. The tank shall be disinfected using Chlorination Method 2 in accordance with AWWA C652, Section 4.2. All laboratory bacteriological testing will be performed by the Owner.

C. The discharge of chlorinated water to the environment is strictly forbidden. The Contractor shall discharge and dispose of the chlorinated water in accordance with all local, State, and Federal regulations. If there is any possibility that the chlorinated discharge will cause damage to the environment, then a neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.

D. Dechlorination requirements shall be in accordance with AWWA C652.

E. Perform testing for VOC's using EPA Method 524 for 59 compounds prior to placing the tank into service.

F. Upon satisfactory bacteriological and VOC testing, and acceptable aesthetic quality, coordinate with the Owner to place the tank into service.

3.9 GUARANTEE

A. The Contractor shall guarantee the work finished under these Specifications for 2 (two) years from the date of acceptance of the work to the extent that he shall repair any defects of which he is notified in writing during that period because of actual or apparent faulty workmanship and/or materials furnished by him. The performance of this guarantee shall be the liability of the Contractor after the project has been complete and accepted by the Owner. The performance bond for the project shall remain in effect for the first year of the warrantee period. At the end of the first year, the Contractor will have the option of either extending the performance bond for the entire warrantee period of providing a warrantee statement signed by a representative of the firm authorized to enter into contracts and make similar commitments on behalf of the firm. The warrantee statement shall contain the warrantee language stated above with no restrictions or conditions except as allowed by the contract.

B. After the tank has been in service for 1 year, the tank coatings shall be inspected. The inspection will be carried out by an independent inspection service subcontracted through the Engineer. Representatives of the Owner and tank painting Contractor shall be on hand for the inspection.

C. Any paint failure noted within 1 year of the date of acceptance of the tank by the Owner, regardless of cause with the exception of vandalism, shall be repaired by the Contractor at his expense and as directed by the Engineer. For a period of 1 year after the first year, any paint failure not related to vandalism noted by the Owner shall be repaired by the Contractor at his expense and as directed by the Owner.

3.10 FINAL CLEAN-UP

A. Upon completion of all work under this Contract, remove from the site any and all construction waste generated by the Work. Remove all temporary structures and facilities and leave the site, including access and perimeter roads, in an equal or better condition than when work was started.

B. All trees and shrubs damaged during the course of operations are to be properly trimmed, or replaced if necessary. Remove any brush, etc. from the site and provide a satisfactory method of disposal.

C. All blast materials used for cleaning of the tank surfaces in preparation for painting shall be removed from the site. Under no circumstances will blast material be allowed to be dispersed or disposed of on site.

TABLE 09901

PAINT SYSTEM SCHEDULE

Description	TNEMEC Company Incorporated Product References[1]		
	Exterior Surfaces	Interior Water Storage Surfaces	Comments
Anchor Pattern	2.0 – 3.0 mils	2.0 – 3.0 mils	
Surface Preparation	SSPC-SP6	SSPC-SP10	
Prime Coat	Series 94-H2O Hydro-Zinc Aromatic Urethane DFT: 2.5 – 3.5 mils	Series 94-H2O Hydro-Zinc Aromatic Urethane DFT: 2.5 – 3.5 mils	May be airless sprayed or roller applied
Stripe Coat	Series 27 Typoxy Epoxy Prime Beige Polyamide Epoxy DFT: 2.0 – 3.0 mils	Series N140F Pota-Pox Plus Polyamidoamine Epoxy DFT: 2.0 – 3.0 mils	To be spray and backrolled, roller, or brushed.
Second Primer Coat	Series 27 Typoxy Polyamide Epoxy DFT: 2.0 – 4.0 mils	Not applicable	
First Finish	Series 73 Endura-Shield Aliphatic Acrylic Polyurethane DFT: 2.0 – 3.0 mils	Series FC22 Epoxoline Polyamine Epoxy DFT: 25-35 mils	Exterior May be airless sprayed or roller applied. Interior Must Be Plural Component Spray applied
Second Finish	Series 701 HydroFlon – Advanced Thermoset Fluoropolymer DFT: 2.0 – 3.0 mils	Note: For Interior Roof Surfaces only 2 coats of Series N140F may be substituted for FC22.	To be roller applied
Total Exterior DFT	8.5 to 13.5 mils in areas without Stripe Coat	27.5 to 38.5 mils in areas without Stripe Coat	DFT does not include the stripe coat. Increase by stripe coat DFT where required

[1]Note: TNEMEC Company Incorporated product references are used only to describe the intended product type and characteristics. Refer to Section 2.1A.6 for minimum qualifications, experience and project history for all product manufacturers. Any product and manufacturer meeting the specified criteria will be considered for this contract. Also, any TNEMEC products to be considered must be subjected to the same criteria review and documentation.

END OF SECTION