

**SPECIFICATIONS - DETAILED PROVISIONS**  
**Section 09876 - Repainting of Exterior Surfaces**  
**Based on 100% or Spot Removal of Lead Based Paint**  
**and Replacement with an Alkyd/Silicone Alkyd Paint System**

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**SECTION 09876**  
**REPAINTING OF EXTERIOR SURFACES**  
**BASED ON 100% OR SPOT REMOVAL OF LEAD BASED PAINT**  
**AND REPLACEMENT WITH AN ALKYD/SILICONE ALKYD PAINT SYSTEM**

**PART 1 - GENERAL**

1.01 PURPOSE

- A. The purpose of this specification is to establish methods and procedures for painting and handling of hazardous and non-hazardous materials/wastes.

1.02 SCOPE OF WORK

- A. Work to be accomplished includes field application of protective paints to exterior surfaces, including surface preparation, handling of hazardous and non-hazardous materials/wastes, and other work necessary to accomplish the approved end result of a totally protected and usable structure, including attachments, accessories and appurtenances, generally as follows:

100% Removal

1. Remove all exterior paint by abrasive blast cleaning, either by conventional method with containment, via vacuum blasting, or other method approved by Engineer.
2. Apply prime, intermediate and finish coats to all blast cleaned exterior surfaces noted in 1. above.

Spot Removal

1. Remove all oxidation, dirt, and other contaminants from exterior surfaces via washing, as specified.
2. Remove all existing defective paint on exterior by abrasive blast cleaning, either by vacuum blasting or other approved method.
3. Apply specified primer to all abrasively blast cleaned areas.
4. Apply intermediate and finish coats of paints to complete exterior surfaces.

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5. Test, handle and dispose of any hazardous wastes and non-hazardous generated from exterior painting operations in conformance to all regulations.

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- B. Surfaces not to be painted include all interior surfaces, fencing, concrete surfaces, liquid level indicator accessories, glass, plastic, nameplates, and other surfaces on which paints would not adhere or would interfere with operation of specific item.
- C. If severely corroded or damaged areas are discovered during the course of abrasive blast cleaning operations, the Contractor shall notify the Engineer or authorized representative. Welding and repair of severely corroded areas of tank and other mechanical repairs may be required during project.
  1. The Contractor shall allow the District access to make tank repairs while the existing paints are being removed. The District reserves the option to repair the tank structure with:
    - a) Change order to the contract.
    - b) District employees.
    - c) A separate Contractor.
    - d) Any combination of the above.
  2. A no cost time extension will be issued should structural repairs preclude abrasive blast cleaning and/or paint application. Preparation work shall continue while tank repairs are being made. The time extension will assume the Contractor will be able to re-mobilize and begin painting within two weeks of notification. No additional time will be granted to permit the Contractor to complete other projects prior to this project.

1.03 REFERENCE SPECIFICATIONS AND STANDARDS

- A. Without limiting the general aspects or other requirements of this specification, work and equipment shall conform to applicable requirements of municipal, state and federal codes, laws and ordinances governing the work, the Eastern Municipal Water District, Society for Protective Coatings and manufacturer's printed instructions, subject to Engineer's approval.
- B. The Engineer's decision shall be final as to interpretation and/or conflict between any of the referenced codes, laws, ordinances, specifications and standards contained herein.

1.04 COMPLETION OF WORK

- A. All surface preparation, paint application, and handling/disposing of hazardous materials/wastes shall be completed within the number of calendar days consistent with the Contract Completion Schedule noted in the Information for Bidders. If work is not completed within the number of calendar days specified, Contractor shall bear all additional expenses incurred after contract completion schedule.

1.05 CONTRACTOR

- A. The contractor shall be a licensed Painting and Decorating Contractor in the State of California (C-33 Classification). He shall have a minimum of five (5) years practical experience and successful history in the application of specified products to surfaces of steel water storage tanks. Upon request, he shall substantiate this requirement by furnishing a written list of references.

1.06 DEFINITIONS

- A. "Engineer" refers to the person authorized by the District to oversee the execution of the contract, acting either directly or through his properly authorized agents, each agent acting only within the scope of authority delegated to him.
- B. "Paint" refers to protective materials used or applied on exterior surfaces.
- C. "Coat" refers to paint applied in a single or multiple pass application to form an evenly distributed film when dry. Designations for "coats" are primer or first coat, intermediate or second coat, and finish coat, and any coats applied beyond the designated coats.
- D. "District" refers to the Eastern Municipal Water District.

1.07 HOURS OF WORK

- A. The Contractor's activities shall be confined to an eight hour shift between the hours of 7:00 a.m. and 5:00 p.m. Monday through Friday, excluding District-designated holidays. Deviation from these hours will not be permitted without the prior consent of the Engineer, except in emergencies involving immediate hazard to persons or property.

- B. In the event of either a requested or emergency deviation, inspection service fees for District personnel and any third-party inspector will be charged against the Contractor. The service fees will be calculated at overtime rates including benefits, overhead, and travel time. The service fees will be deducted from any amounts due the Contractor. Charges will be made for any change to extraordinary work hours, including standby time due to late crew arrival or "no-show" by crew.
- C. Inspections hours made necessary as a result of the Contractor's crew working over forty hours per week must be scheduled and approved by District and overtime paid for by Contractor at the prevailing rate for overtime. Inspections requested by or made necessary as a result of actions by the Contractor on Saturdays, Sundays or holidays must be scheduled and approved by Engineer and paid for by Contractor at the prevailing rate for overtime or holiday work.

#### 1.08 PRE-BID CONFERENCE

- A. Pre-Bid Conference for the project will be conducted by the Engineer at District offices and site as noted in the Notice Inviting Bids. The object of the Pre-Bid Conference is to acquaint bidders with existing facility and site. The conditions and requirements of the plans and specifications shall govern over any information presented at the Pre-Bid Conference, unless amended in writing by the Engineer. All bidders must attend the Pre-Bid Conference to have their bid accepted by the District.

#### 1.09 PRE-CONSTRUCTION CONFERENCE

- A. A Pre-Construction Conference shall be scheduled prior to start of project. The District, Contractor and Engineer shall be present. The sequence of work will be discussed and will be mutually agreed upon to ensure that the work is accomplished and completed as stated in the Contract, and to allow for inspection and operations flexibility by District. A schedule of work to be accomplished and a list of labor, material and equipment rates for additional work will be established and maintained throughout the project. Contractor shall furnish resumes of all personnel assigned to project, and a complete set of approved submittal data for use by inspection personnel. Contractor shall have a designated representative for all projects.
- B. The Contractor shall submit manufacturers' literature and Material Safety Data Sheets (MSDS) on all materials to be used in painting operations, including, but not limited to paints, thinners, solvents and cleaning fluids. No materials will be allowed which have been stored over 60 days, or manufacturer's recommended shelf life, whichever is less. Contractor shall maintain copies of MSDS's at jobsite at all times. Copies of all invoices showing purchased dates and delivery for all material mentioned above will be required.

## 1.10 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 acceptable professional standards and are approved by the Engineer.
- B. All materials furnished and all work accomplished under the Contract shall be subject to inspection by the Engineer. The Contractor shall be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship, and diligent execution of the Contract.
- C. Work accomplished in the absence of prescribed inspection may be required to be removed and replaced under the proper inspection, and the entire cost of removal and replacement, including the cost of all materials which may be furnished by the District and used in the work thus removed, shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not. Work covered up without the authority of the Engineer, shall, upon order of the Engineer, be uncovered to the extent required, and the Contractor shall similarly bear the entire cost of accomplishing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, as directed and approved by the Engineer.
- D. The Engineer will make, or have made, such tests as he deems necessary to assure the work is being accomplished in accordance with the requirements of the Contract. Unless otherwise specified in the Special Conditions, the cost of such testing will be borne by the District. In the event such tests reveal non-compliance with the requirements of the Contract, the Contractor shall bear the cost of such corrective measures deemed necessary by the Engineer, as well as the cost of subsequent retesting and re-inspection. It is understood and agreed the making of tests shall not constitute an acceptance of any portion of the work, nor relieve the Contractor from compliance with the terms of the Contract.
- E. Surface Preparation: Surface preparation will be based upon comparison with: "Pictorial Surface Preparation Standards for Painting Steel Surfaces", SSPC-Vis 1, ASTM Designation D2200, NACE Standard TM-01-70, and as described below. Anchor profile for prepared surfaces shall be measured by using a non- destructive instrument such as a K-T Surface Profile Comparator or Testex Press-O-Film System. Temperature and dewpoint requirements noted in 1.10 F. herein shall apply to all surface preparation operations, except low and high temperature limits and operation of dehumidification equipment shall be determined at the Pre-Construction Conference.

- F. Application: No coating shall be applied under the following conditions:
1. When the surrounding air temperature or the temperature of the surface to be coated or painted is below 55 degrees F. for epoxy coatings, below 45 degrees F. for epoxy low temperature cure coatings, or above 125 degrees F. for all materials;
  2. Wet or damp surfaces or in rain, fog or mist;
  3. When the temperature is less than 5 degrees F. above the dewpoint.
  4. When it is expected the air temperature will drop below 55 degrees F. for epoxy coating, below 45 degrees F. for epoxy low temperature cure coatings, or less than 5 degrees F. above the dewpoint within two hours after application of coatings or paints.
    - a) Dewpoint shall be measured by use of an instrument such as a sling psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychrometric Tables or equivalent. If dehumidification is used, equipment must run continuously during all phases of contract, except disinfection phase.

If above conditions are prevalent, paint application shall be delayed or postponed until conditions are favorable. The day's application shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

- G. Overspray Control: The Contractor shall conduct all operations so as to confine abrasive blasting debris and paint overspray to within the bounds of the site. The Contractor shall take all precautions necessary to prevent adverse off-site consequences of application operations. Any complaints received by the District relating to any such potential off-site problems will be immediately delivered to the Contractor-assigned jobsite representative. The Contractor shall immediately halt blast cleaning or application work and shall take whatever corrective action is required to mitigate any such problems. All costs associated with protection of off-site properties and/or correction of damage to property as a result of blast cleaning or application operations shall be borne directly by the Contractor at no additional expense to the District.
1. District approval of Contractor's overspray prevention procedures and Engineer's presence on project does not free Contractor from responsibility for overspray. Daily approval of procedures will be required prior to start of spray operations. Exterior paint shall not be applied by spray when wind speed exceeds fifteen miles per hour.

- H. Thickness Testing: Thickness of paints shall be tested with a non-destructive film thickness gauge. An instrument such as a Tooke Gage should be used if a destructive tester is deemed necessary. Testing shall be accomplished in conformance to SSPC-PA 2, "Measurement of Dry Paint Thickness with Magnetic Gages" except as modified hereinafter.
1. Flat exterior painted surfaces shall be tested in conformance to SSPC-PA 2.
  2. Exterior structural members, piping and other irregular surfaces shall be tested with frequency and locations as directed by the Engineer.
- I. Inspection Devices: Contractor will furnish, until final acceptance of paints, inspection devices in good working condition for measurement of dry-film thickness. They shall also furnish U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates to test accuracy of thickness gauges. Dry film thickness gauges shall be available at all times until final acceptance of application. Inspection devices shall be operated by, or in the presence of the Engineer with location and frequency basis determined by the Engineer.
- J. Acceptable Inspection Devices: Acceptable devices for ferrous metal surfaces include, but are not limited to "Inspector", or "Positest", or "Positector" or "Quanix" units for dry film thickness gauging. Inspection devices shall be operated in accordance with these specifications and the manufacturer's instructions.
- K. Warranty Inspection: Warranty inspection shall be conducted between the eleventh and sixteenth months following completion of all work and filing of the Notice of Acceptance. All personnel present at the Pre-Construction Conference should be present at this inspection. All defective work shall be repaired in strict accordance with this specification and to the satisfaction of the Engineer.
1. Notification: The District shall establish the date for the inspection and shall notify the Contractor at least 30 days in advance.
  2. Exterior Inspection: The entire exterior paint systems shall be visually inspected as specified in 1.10 QUALITY ASSURANCE. All defective paint as well as damaged or rusting spots of the tank shall be satisfactorily repaired by and at the sole expense of the Contractor. All repaired areas shall then be again inspected as specified in the above mentioned section and repair procedure repeated until surface is acceptable to the Engineer.
  3. Inspection Report: The Engineer shall prepare and deliver to the Contractor an inspection report covering the first anniversary inspection, setting forth the number and type of failures observed, the percentage of the surface area where failure has occurred, and the names of the persons making the inspection.

4. Schedule: Upon completion of inspection and receipt of Inspection Report as noted herein, District shall establish a date for Contractor to proceed with remedial work. Any delay on part of Contractor to meet schedule Contract and District may proceed to have defects remedied as outlined under General Provisions.
5. Remedial Work: Any location where paint has peeled, bubbled, or cracked and any location where rusting is evident shall be considered to be a failure of the system. The Contractor shall make repairs at all points where failures are observed by removing the deteriorated paint, cleaning the surface, and reapplying the same system. If the area of failure exceeds 25 percent of a specific coated surface, the entire applied system may be required to be removed and reapplied based on the District's sole judgment in accordance with the original specification.
  - a) Specific painted surfaces are defined as follows:
    - (i) Roof
    - (ii) Shell
    - (iii) Attachments, accessories and appurtenances
6. Upon completion of warranty remedial repairs, Contractor shall clean site as originally specified.
7. Costs: All noted costs for Contractor's inspection and all costs for repair shall be borne by the Contractor and in figuring his bid, the Contractor shall include an appropriate amount for testing and repair as no additional allowance will be paid by the District for said inspection and repair.

1.11 SAFETY AND HEALTH REQUIREMENTS

- A. Contractor shall submit a notarized letter signed by a principal officer of the Corporation certifying the Contractor fully complies with California Code of Regulations pertaining to the work including, but not limited to, the following Construction Safety Orders (CSO) or General Industry Safety Orders (GISO):

1.	Illness Injury Prevention Program	CSO/GISO	1508/3203
2.	Confined Space Plan	GISO	5156/5159
3.	Respiratory Protection	CSO/GISO	1531/5144
4.	Hazard Communication	GISO	5194
5.	Lead-Based Paint Compliance Plan	CSO	1532.1

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| 6. | Rolling Scaffolds                   | CSO | 1646 |
| 7. | Employee Safety Instruction         | CSO | 1510 |
| 8. | Emergency Medical Service           | CSO | 1512 |
| 9. | Dusts, Fumes, Mists, Vapors & Gases | CSO | 1528 |
- B. General: Contractor assumes the responsibility to accomplish all work in a safe and prudent manner, and to conform to all applicable safety requirements, regulations and guidelines of federal, state and local regulatory agencies, as well as applicable manufacturer's printed instructions and appropriate technical bulletins and manuals. Without in any way limiting that responsibility or assuming responsibility for safety, District is particularly concerned that the following are strictly observed:
1. Life Saving Equipment: Contractor shall provide and require use of personal protective life saving equipment for all its personnel working in or about the project site.
  2. Access Facilities: All ladders, scaffolding and rigging shall be designed for their intended uses. Ladders and scaffolding shall be erected where requested by Engineer to facilitate inspection and be moved by the Contractor to locations requested by the Engineer.
  3. Ventilation: Contractor shall ensure there is proper ventilation, air eduction and exhausting of work space to reduce the concentration of lead-laden air contaminants to a level which poses no hazard to personnel at or near the job site. Air circulation and exhausting of solvent vapors shall be continued until paints have fully cured. If conventional blast cleaning is accomplished, total containment during blast cleaning and paint application operations is mandatory. The exhaust blower capacity shall be sufficient to maintain air changes within containment interior in accordance with Cal-OSHA, paint manufacturer's recommendations and local air quality management district regulations.
    - a) If dehumidification is not used, exhaust blower shall exhaust into an Engineer-approved structure which precludes the exhausting of lead-laden paint chips or particulate matter onto the site or into the atmosphere.
  4. Dehumidification: Dehumidification equipment or other alternate ventilation systems must be approved by the Engineer. Equipment must be operated on a continuous basis during all blasting, painting and curing operations, including shifts during which no work is being accomplished. Requirement for exhausting of dust, etc. from containment interior noted in 1.11B.3.a. above applies to all dehumidification operations.

5. 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. During abrasive blasting operations, nozzlemen shall wear U.S. Bureau of Mines approved positive pressure air-supplied helmets and all other persons who are exposed to blasting dust shall wear respiratory protection determined necessary by the exposure assessment of the Certified Industrial Hygienist.

Positive pressure air-fed hoods and/or masks shall be supplied by an air source currently certified to produce "Class D Breathing Air". Contractor shall at all times during the work maintain onsite current documentation to substantiate the quality of the breathing air.

Barrier creams shall be used on any exposed areas of skin.

6. Grounding: All hoses shall be grounded to prevent accumulation of charges of static electricity.
7. Illumination: Sparkproof artificial lighting shall be provided for all work in confined spaces. Light bulbs shall be guarded to prevent breakage. Lighting fixtures and flexible cords shall comply with the requirements of NFPA 70 "National Electric Code" for the atmosphere in which they will be used. 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 Engineer.
8. Toxicity and Explosiveness: The maximum allowable concentration of vapor shall be kept below the maximum safe concentration for eight-hour exposure, plus Lower Explosive Limit (L.E.L.) must be strictly maintained. Exterior paints have been determined to contain lead or other hazardous materials. All regulations related to safety of personnel and handling of such materials shall be strictly followed. Cost of handling and disposing of such materials will be borne by the Contractor.
  - a) Contractor's responsibility for meeting all regulations relating to toxic and hazardous materials includes, but is not limited to, obtaining all permits and EPA numbers, processing paperwork, blood testing of personnel at start and finish of project, sampling and testing of wastes, paying fees, handling and packaging of wastes at site, and delivering materials to the selected Class I dumpsite using licensed hazardous materials transporters. All regulations relating to working with heavy metals or confined spaces shall be strictly enforced.

9. Protective Clothing: When handling and mixing paints, workmen shall wear gloves and eye shields. If working with lead or other heavy metals, regulations regarding handling of exposed clothing shall be strictly enforced.
10. Fire: Contractor shall provide appropriate fire abatement devices and prohibit any flames, welding and smoking during mixing and application of materials.
11. Sound Levels: Whenever the occupational noise exposure exceeds the maximum allowable sound levels, the Contractor shall provide and require the use of approved ear protective devices.
  - a) Noise suppression shall be practiced at all times to minimize disturbance to persons living or working nearby, and to the general public. Measures to be used in effecting noise suppression shall include (but not limited to) equipping all internal combustion engines with critical residential silencers (mufflers), shielding noise-producing equipment from nearest areas of human occupancy by location in such positions as to direct the greatest noise emissions away from such areas, and conducting operations in the most effective manner to minimize noise generation consistent with the prosecution of the Contract in a timely and economic manner. Whenever levels are objectionable, they shall be adjusted as directed by the Engineer.

#### 1.12 COMPLIANCE WITH ENVIRONMENTAL REGULATORY REQUIREMENTS

- A. Contractor shall comply with all current federal, state, and local environmental laws and regulations, including, but not limited to the laws and regulations of the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the South Coast Air Quality Management District (SCAQMD).

### **PART 2 - PAINT MATERIALS**

#### 2.01 GENERAL

- A. Standard products of manufacturers other than those specified on the Approved Material List provided, will be accepted when it is proved to the satisfaction of the Engineer they are equal in composition, durability, usefulness and convenience for the purpose intended. Substitutions will be considered provided the following minimum conditions are met:
  1. The proposed paint system shall have a dry film thickness equal to or greater than that of the specified system.

2. The proposed paint system shall employ an equal or greater number of separate coats.
  3. The proposed paint system shall employ paints of the same generic type.
  4. All requests for substitution shall carry full descriptive literature and directions for application, along with complete information on generic type, non-volatile content by volume and a list of 10 similar projects, all at least three years old, where the products have been applied to similar exposure.
  5. The District requires that the Contractor provide certified laboratory data sheets showing the results of complete spectrographic and durability tests accomplished on the proposed substitute. Tests shall be accomplished by an independent testing laboratory satisfactory to the Engineer and all costs incurred in the testing program shall be borne by the Contractor. In any case, the Engineer shall be sole and final judge of the acceptability of any proposed substitution. Requests for substitution must be approved in writing prior to date of bid.
- B. All materials shall be brought to the jobsite in the original sealed containers. They shall not be opened or used until District's representative has physically inspected contents and obtained necessary data from information printed on containers or label. Materials exceeding storage life recommended by the manufacturer shall be rejected. Copy of invoice showing purchase and delivery dates will be required.
- C. Flammability, toxicity, allergenic properties, and any other characteristic requiring field precautions shall be identified and specific safety practices shall be stipulated.
- D. All paint materials shall be stored in enclosed structures to protect them from weather and excessive heat or cold. Flammable materials must be stored to conform with District, County, State and Federal safety codes for flammable materials. At all times paints shall be protected from freezing.
- E. Contractor shall use products of same manufacturer for all coats.

## 2.02 SPECIFIC PAINT MATERIALS

- A. Paint materials for exterior surfaces of tank will consist of an alkyd primer, alkyd intermediate coat and silicone-alkyd finish coat. Products containing perchlorethylene (PCE), trichloroethylene (TCE), lead, chromium or zinc will not be permitted.

1. The Contractor shall provide, prior to painting any surfaces of the tank, written certifications from the coating manufacturers stating that the paint materials, thinners, solvents, and equipment cleaning fluids provided by the manufacturers do not contain PCE or TCE. The Contractor shall also certify, in writing, that no material containing PCE, TCE, lead, chromium, or zinc in any form will be used for the interior coatings or exterior paints of the tank. This shall include all solvents, thinners, and cleaning fluids at the job site, regardless of where the materials were obtained.
  2. The Engineer may require all solvents, thinners and cleaning fluids be tested for TCE and PCE prior to being used at the job site. The Contractor shall provide the Engineer with samples of each material at no cost to the District. Unacceptable materials shall be removed from the job site.
- B. All paint materials shall comply with air pollution regulations, specifically the local air quality management district or air pollution control district rules, and rules for the District.
- C. All paint materials shall also conform to regulations and applicable requirements of local, State and Federal health regulatory agencies.
- D. Prime coat shall be similar or equal to products such as ICI Devoe Devguard 4160, Carboline Carbocoat 150, or Tnemec Series 4 Versare Primer.
- E. Intermediate coat shall be similar or equal to products such as ICI Devoe Devguard 4160, Carboline Carbocoat 150, or Tnemec Series 2H.
- F. Finish coat shall be similar or equal to products such as ICI Devoe Bar-Ox 475, Carboline Carbocoat 30, or Tnemec Series 82.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL**

- A. All surface preparation, paint application shall conform to applicable standards of the Society for protective Coatings, the Eastern Municipal Water District and the manufacturer's printed instructions. Material applied prior to approval of the surface, by the Engineer, shall be removed and reapplied to the satisfaction of the Engineer at the expense of the Contractor.

- B. All work shall be accomplished by skilled craftsmen qualified to accomplish the required work in a manner comparable with the best standards of practice. Resumes of personnel to be used on the project shall be submitted upon Notice of Award. Continuity of personnel shall be maintained and transfers of key personnel shall be coordinated with the Engineer.
- C. The Contractor shall provide a supervisor to be at the work site during cleaning and application operations. The supervisor shall have the authority to sign and change orders, coordinate work and make other decisions pertaining to the fulfillment of their contract.
- D. Contractor shall provide approved sanitary facilities for all Contractor personnel, as no existing facilities will be available to the Contractor. Facilities shall be maintained during the project to complete standards established by District and shall be removed prior to Contractor's departure from the site at completion of the project.
- E. Dust, dirt, oil, grease or any foreign matter which will affect the adhesion or durability of the finish must be removed by washing with clean rags dipped in an approved commercial cleaning solution, rinsed with clean water and wiped dry with clean rags.
- F. The Contractor's 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. Blotter test shall be accomplished at each start-up period and as deemed necessary by the Engineer. Contractor's equipment shall be subject to approval of the Engineer. This approval does not relieve the Contractor's responsibility for the safe operation of the equipment or its performance.
  - 1. Cleanliness of compressed air supply shall be verified daily, and as deemed necessary by Engineer, by directing a stream of air, without abrasive, from the blast nozzle onto a white blotter or cloth for twenty seconds. If oil or water appears on the blotter or cloth, all traps and separators shall be blown down until two subsequent twenty-second tests show no further oil or water.
- G. Application of the first coat shall follow immediately after surface preparation and cleaning within an eight hour working day. Any cleaned areas not receiving first coat within an eight hour period shall be recleaned prior to application of first coat.
- H. Because of presence of moisture and possible contaminants in atmosphere, care shall be taken to ensure previously coated or painted surfaces are protected or recleaned prior to application of subsequent coat(s). Methods of protection and recleaning shall be approved by the Engineer.

1. Project is subject to intermittent shutdown if, in the opinion of the Engineer, cleaning and application operations are creating a localized condition detrimental to ongoing facility activities, personnel or adjacent property.
  2. In the event of emergency shutdown by the Engineer, Contractor shall immediately correct deficiencies. All additional costs created by shutdown shall be borne by Contractor.
- I. Exterior surfaces have been determined, by laboratory analyses, to contain varying levels of lead and other heavy metals. All regulations related to safety, worker protection and handling of such materials shall be strictly followed. Submittal of a written plan of action for the project shall be accomplished by Contractor prior to start of project.
  - J. Contractor shall comply with requirements of Department of Health Services Title 22 for handling and disposing of hazardous wastes resulting from surface contamination and removed paint particles. Submittal of a written plan of action for the project shall be accomplished by Contractor prior to start of project.
  - K. District shall remove four representative samples of soil from jobsite prior to start of work. Samples shall be tested under requirements of Title 22 for determination of lead and other heavy metals to ensure soil does not contain excessive levels of lead and other heavy metals. If soils contain excessive levels of lead or other heavy metals, site remediation shall be the responsibility of the District. Copies of laboratory analyses reports shall be forwarded to Contractor immediately upon receipt from laboratory, prior to start of any work. Any required remediation schedule will be determined by the District.
  - L. The Contractor shall provide, at his own expense, all necessary power required for his operations under the contract.
  - M. Contractor shall tightly seal any tank vents, pumps, motors, and other open areas to prevent intrusion of paint or other contaminants. The sealing system shall be designed to allow continuous operation of facilities or equipment, with no detrimental effects. If necessary, sealing system shall be removed daily at termination of work, or as directed by the Engineer.

### 3.02 SURFACE PREPARATION, GENERAL

- A. The latest revision of the following surface preparation specifications of the Society for Protective Coatings shall form a part of this specification. (Note: An element of surface area is defined as any given square inch of surface).

1. Solvent Cleaning (SSPC-SP1): 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-SP2): Removal of loose rust, loose mill scale and other detrimental foreign matter present to degree specified by hand chipping, scraping, sanding and wire brushing.
  3. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mill scale and other detrimental foreign matter present to degree specified by power wire brushing, power impact tools or power sanders.
  4. Commercial Blast Cleaning (SSPC-SP6): Blast cleaning until at least two-thirds of each element of surface area is free of all visible residues.
  5. Brush-off Blast Cleaning (SSPC-SP7): Blast cleaning to remove loose rust, loose mill scale, and other detrimental foreign matter present to the degree specified.
  6. Near-White Blast Cleaning (SSPC-SP10): Blast cleaning to near-white metal cleanliness, until at least ninety-five percent of each element of surface area is free of all visible residues.
  7. Power Tool Cleaning to Bare Metal (SSPC-SP11): Power tool cleaning to produce a bare metal surface and to retain or produce a surface profile of at least 1.0 mil.
  8. Brush-Off Water Jet Blast (SSPC-SP12): Low pressure water jet blast at a maximum pressure of 2,000 psi to remove loose paint, and other detrimental foreign matter present.
- B. As exterior paints have been determined to contain excessive levels of lead and zinc after testing under Title 22, all work must be accomplished in compliance to 29 CFR Part 1926, Lead Exposure in Construction, Interim Final Rule, dated May 4, 1993.
1. On first day of any heavy metals based paint removal, work environment must be tested by a Certified Industrial Hygienist (CIH) to determine levels of protection required to protect workers and the environment from lead and other heavy metal contamination. All costs related to testing by the CIH shall be borne by the Contractor.

2. Testing will include air sampling and testing of filters removed from the workers' respirators or personal air monitors to determine the level of lead exposure. Upon completion of testing, the CIH shall file a written report on the results of the testing. Level of exposure will then determine the type respiratory protection, clothing, housekeeping, hygiene facilities, medical surveillance, medical removal protection, employee information and training, signs, record keeping, and observation of monitoring required for the project. No work shall re-commence until the report from the CIH is filed and worker and environmental protection required is in place. Costs for the time delay shall be included in the Contractor's original bid.
- C. Any burrs, weld spatter, sharp edges, corners, or rough welds which would cause difficulty in achieving a defect-free paint system shall be chipped or ground smooth in conformance to NACE Standard RP0178-89. It is not the intent to have the welds or "scars" ground "flush". The object of the grinding is to eliminate sharp edges, corners, and overlaps to provide a surface for the application of a uniform thickness of coating or paint without voids or other defects.
  - D. Abrasive blasting nozzles shall be equipped with "deadman" emergency shut-off nozzles. Blast nozzle pressure shall be a minimum of 95 P.S.I. and shall be verified by using an approved nozzle pressure gage at each start-up period or as directed by the Engineer. Number of nozzles used during all blast cleaning operations must be sufficient to ensure timely completion of project, subject to designation and approval by Engineer.
  - E. All blast hose connections shall be tethered and secured to prevent separation during blast cleaning operations, and shall be taped with duct tape prior to pressurizing. All taped connections shall be visually inspected for leaks within five minutes after start of blast cleaning operations and at the end of blast cleaning operations. Leaking connections shall be immediately repaired to prevent further damage.
  - F. Field blast cleaning for all surfaces shall be by dry method unless otherwise directed. Contractor is responsible for maintaining dust emissions within the legal level and that level which would not create a nuisance.
    1. Exterior surfaces of tank contain hazardous materials. Dust emissions, abrasive deflection and removed paint particles shall be confined to interior of containment structure where abrasive blasting is being accomplished, unless vacuum blasting or other means of cleaning are approved by Engineer.
    2. All lead paint removal work shall be governed by, but not necessarily limited to, the following:
      - a) Health and Safety Code, Division 20, Chapters 5 and 6 (California Hazardous Waste Control Act)

- b) Title 22 California Administrative Code, Chapter 30 (Minimum Standard for Management of Hazardous and Extremely Hazardous Materials)
  - c) Title 8, California Administrative Code
  - d) Code of Federal Regulations (29 CFR 1910 and 1926, applicable sections)
- G. Particle size of abrasives used in blast cleaning shall be that which will produce a 2.0 mil surface profile or in accordance with recommendations of the manufacturer of the specified paint system to be applied, subject to approval of Engineer.
- H. Abrasive used in blast cleaning operations shall be new, washed, graded and free of contaminants which would interfere with adhesion of paints and shall not be reused unless specifically approved by the Engineer. Abrasives shall be certified for unconfined dry blasting pursuant to the California Administrative Code, Section 92520 of Subchapter 6, Title 17, and shall appear on the current listing of approved abrasives. Invoices or load sheets confirming above shall be required.
- I. During blast cleaning operations, caution shall be exercised to ensure existing paints are not exposed to abrasion from blast cleaning.
- J. Blast cleaning from rolling scaffolds shall only be accomplished within confines of interior perimeter of scaffold. Reaching beyond limits of perimeter will be allowed only if blast nozzle is maintained in a position which will produce a profile acceptable to the Engineer.
- K. The Contractor shall keep the area of his work in a clean condition and shall not permit blasting materials to accumulate as to constitute a nuisance or hazard to the prosecution of the work or the operation of the existing facilities. Spent abrasives and other debris shall be removed at the Contractor's expense as directed by the Engineer. As existing paints have been determined by laboratory analysis to be toxic or hazardous, paint and paint/abrasive residue mixture shall be tested to assure conformance with hazardous material tolerances have been met. It shall be the responsibility of the Contractor to provide adequate containers on the jobsite to retain spent media and removed paint until tests have been completed. Disposal of hazardous or toxic waste will not be permitted. All hazardous/toxic waste must be recycled or incinerated. Documentation of all hazardous or toxic waste disposal will be required.
- L. Blast cleaned and painted surfaces shall be cleaned prior to application of specified paints via a combination of blowing with clean dry air, brushing/brooming and/or vacuuming as directed by the Engineer. Air hose for blowing shall be at least ½" in diameter and shall be equipped with a shut-off device.

- M. All welds, when required, shall be neutralized with a suitable chemical compatible with the specified paint materials.
- N. Brush-Off Water Jet Blast Cleaning (SSPC-SP12) shall be used only when and as directed by Engineer. Pressures shall be those determined by Engineer to effectively accomplish removal of loose, peeling/flaking coating or other detrimental surface contaminants.

### 3.03 SURFACE PREPARATION, EXTERIOR

#### 100% Removal

- A. All surfaces shall be blast cleaned, in conformance to Society for Protective Coatings Specification SSPC-SP10 (Blast Cleaning to Near-White Metal).
  - 1. Cleaning methods other than vacuum blasting may be used, after approval by Engineer, which accomplish the specified results while containing all paint, abrasive, etc. during cleaning operations. These include conventional blast cleaning with containment, SABAR method with containment, chemical stripping, and Cavi-Tech method with containment.

#### Spot Removal

- A. All surfaces shall be inspected jointly by the Contractor and the Engineer to determine the condition of existing paint. The Engineer shall then designate the surface condition by marking deficient areas, and cleaning shall be accomplished as noted below. Any areas overlooked during the joint inspection shall not relieve the Contractor from completely preparing surfaces:
  - 1. Step One: All oily or greasy surface contaminants shall be removed by wiping the contaminated area with a clean rag wetted with solvent or degreasing solution in accordance with Society for Protective Coatings Specification SSPC-SP1 (Solvent Cleaning), then rinsed with clean water, wiped clean and dried.
  - 2. Step Two: All chalking paint or other surface contaminants shall be removed by high pressure water blasting or scrubbing the complete surface with a suitable broom or brush as approved by the Engineer, wetted with a solution of trisodium phosphate, detergent and water, or other approved cleaning solution. Cleaned surfaces shall then be rinsed with clean water, wiped clean and dried. As exterior paints have been determined by laboratory analyses to contain excessive levels of lead and other heavy metals under Title 22, all cleaning operations shall be conducted to insure removed paint particles or water are contained and not allowed to fall onto the site.

3. Step Three: All rusting, scaling or damaged areas shall only be vacuum blast cleaned in conformance with Society for Protective Coatings Specification SSPC-SP10 (Near-White Blast Cleaning). Remaining paint shall be firmly bonded to the substrate with blast cleaned edges feathered. Extreme care should be exercised to ensure remaining paint is not damaged by cleaning operations.
  - a) Cleaning methods other than vacuum blasting may be used, after approval by Engineer, which accomplish the specified results while containing all paint, abrasive, etc. during cleaning operations. These include conventional blast cleaning with containment, SABAR method with containment, chemical stripping, and Cavi-Tech method with containment.

#### 3.04 APPLICATION, GENERAL

- A. Paint application shall conform to the requirements of the Society for Protective Coatings Paint Application Specification SSPC-PA1, latest revision, for "Shop, Field and Maintenance Painting," the Eastern Municipal Water District, the manufacturer of the paint materials printed literature and as specified herein.
- B. Thinning shall only be permitted as recommended by the manufacturer and approved by the Engineer and shall not exceed limits set by applicable regulatory agencies.
  1. If Contractor applies any materials which have been modified or thinned to such a degree as to cause them to exceed established VOC levels, Contractor shall be responsible for any fines, costs, remedies, or legal action and costs that may result.
- C. Each application of paint shall be applied evenly, free of brush marks, sags, runs and no evidence of poor workmanship. Care should be exercised to avoid lapping on glass or hardware. 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, equipment, prepared surface and applied paints. Personnel walking on exterior roof of tank shall take precautions to prevent damage or contamination of painted surfaces. If required by Engineer, personnel shall wear soft-soled shoes, or shoe coverings approved by Engineer. Care shall be exercised to prevent paint from being spattered onto surfaces which are not to be painted. Surfaces from which such material cannot be removed satisfactorily shall be refinished as required to produce a finish satisfactory to the Engineer.
- E. All materials shall be applied as specified herein.

- F. All welds and irregular surfaces shall receive a brush coat of the specified product prior to application of each complete coat. Paint shall be brushed in multiple directions to ensure penetration and coverage, as directed by the Engineer. These areas include, but are not limited to, welds, nuts, bolts, pitted areas, etc. Care shall be exercised to ensure dry film thickness of paints does not exceed the maximum thickness allowed by the manufacturer of the specific product being applied.
- G. At conclusion of each day's blast cleaning and paint operations, a 6" wide strip of blast cleaned substrate shall remain uncoated to facilitate locating point of origin for successive day's blast cleaning operations.
- H. All attachments, accessories, and appurtenances shall be prepared and finished in the same manner as specified for adjoining tank sections, except as specifically designated by the Engineer.

### 3.05 APPLICATION, EXTERIOR PAINT SYSTEMS

#### 100% Removal

- A. Accessible surfaces:
  - 1. After completion of surface preparation as specified, all surfaces shall receive the three coat paint system specified under 2.02 D., 2.02 E., and 2.02.E., "SPECIFIC EXTERIOR PAINT MATERIALS". Total dry film of the completed system shall be a minimum of 6.0 mils, with primer of 2.5 mils, intermediate coat of 2.0 mils, and finish coat of 1.5 mils.
    - a) Maximum dry film thickness allowed, if not specified in manufacturer's approved literature, will be as determined, in writing, by the paint manufacturer's headquarters technical representative.
  - 2. Paint shall not be applied when wind speed exceeds fifteen miles per hour.

#### Spot Removal

- A. After completion of surface preparation as specified, all areas of bare metal shall receive the primer specified under 2.02 D., "SPECIFIC PAINT MATERIALS". Dry film thickness shall not be less than 2.5 mils.
- B. After proper drying interval, sealed areas shall be carefully inspected to determine if paint edges have lifted or if other defects exist. If necessary, repairs shall be accomplished, using procedures as specified herein to effect a smooth transition between sealer and subsequent coats.

- C. Upon completion of priming operations, the primer shall be clean, dry and show no evidence of oxidation, after which all exterior surfaces shall receive the intermediate coat specified under 2.02 E., "SPECIFIC PAINT MATERIALS", to a dry film thickness of 2.0 mils.
- D. After specified drying interval, all surfaces shall receive the finish coat specified under 2.02 F., "SPECIFIC PAINT MATERIALS", to a dry film thickness of 1.5 mils.
- E. Total dry film thickness of the completed three-coat system shall not be less than 6.0 mils at any point in the surface where bare metal was originally exposed, or less than 8.5 mils where the new two-coat system was applied over existing paint.
  - 1. Prior to start of intermediate coat application, Contractor and Engineer shall conduct spot dry film thickness tests to determine the minimum dry film thickness of the existing paint system. A mutual agreement shall be reached as to the specific dry film thickness of the existing paint system, which shall then be used in determining if sufficient additional paint has been applied over the existing paint.
    - a) Maximum dry film thickness allowed, if not specified in manufacturer's approved literature, will be as determined, in writing, by the paint manufacturer's headquarters technical representative.
- F. Paint shall not be applied when wind speed exceeds fifteen miles per hour.

### 3.06 QUALITY ASSURANCE, EXTERIOR PAINT SYSTEMS

- A. All paint components shall be mixed in exact proportions specified by the manufacturer. Care shall be exercised to ensure all material is removed from containers during mixing and metering operations.
- B. All paints shall be thoroughly mixed, utilizing an approved slow-speed power mixer until all components are thoroughly combined and are of a smooth consistency. Paints shall not be applied beyond pot-life limits or recoat cycles specified by manufacturer.
- C. Thinners shall be added to paint materials only as required in accordance with manufacturer's printed literature and in the presence of the Engineer. Quantities of thinner shall not exceed limits set by applicable regulatory agencies.
- D. Application shall be by airless spray method, except as otherwise specified. Drying time between coats shall be strictly observed as stated in manufacturer's printed instructions, except there shall be a minimum of 24 hours between coats

- E. When two or more coats are specified, where possible, each coat shall contain sufficient approved color additive to act as an indicator of coverage or the coats must be of contrasting color.
- F. Care shall be exercised during spray operations to hold the spray nozzle perpendicular and sufficiently close to surfaces being coated, to avoid excessive evaporation of volatile constituents and loss of material into the air or the bridging of cracks and crevices. Reaching beyond limits of scaffold perimeter will not be permitted. All overspray identified by Engineer shall be removed by hand or pole sanding prior to application of subsequent coat.
- G. Upon completion of paint operations, after curing interval in accordance with manufacturer's recommendations, dry film thickness testing shall be accomplished using one of the specified instruments. Repair and retesting shall be accomplished as specified under 1.10 QUALITY ASSURANCE. Engineer is not precluded from verifying adequacy of thickness testing by accomplishing measurement of selected areas, using his own instrument.
- H. All mixing, thinning, application and dry film thickness testing of paints shall be accomplished in the presence of the Engineer.
- I. Color Scheme: The District shall select colors for the project. The Contractor shall submit a current chart of the manufacturer's available colors to the District's representative ten days prior to start of painting operations.

### 3.07 CLEANUP

- 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. Paint and thinner containers, and excess paint and thinners, shall be disposed of in conformance to current regulations. Paint spots upon adjacent surfaces shall be removed and the entire jobsite cleaned. All damage to surfaces resulting from the work of this section shall be cleaned, repaired or refinished to the complete satisfaction of the Engineer at no cost to the District.

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1. Upon completion and acceptance of all paint operations, site soil shall be retested by District, in same locations tested prior to start of work, for presence of lead or other heavy metals. Testing shall be accomplished by the same laboratory as the original testing under requirements of Title 22. If soils contain excessive levels of lead or other heavy metals above those levels determined by testing at start of work, Contractor shall be responsible for removal and disposal of contaminated soil, and returning the site to its original condition. Copies of laboratory analyses reports shall be forwarded to Contractor immediately upon receipt from laboratory, prior to start of any work. Any required remediation schedule will be determined by the District. Handling, storing, transporting and disposal of any hazardous wastes shall be in complete compliance to all regulatory requirements.

3.08 OMISSIONS

- A. Care has been taken to delineate herein those surfaces to be coated. However, if paint requirements have been inadvertently omitted from this section or any other section of the specifications, it is intended that all metal surfaces, unless specifically exempted herein, shall receive a first-class protective system equal to that given the same type surface pursuant to these specifications.

**END OF SECTION 09876**