Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

DENVER J. STUTLER, JR.
SECRETARY

July 19, 2005

Mr. Donald Davis
Program Operations Engineer
Federal Highway Administration
227 N. Bronough Street, Suite 2015
Tallahassee, Florida 32301

Re: Office of Design, Specifications
Section 560
Proposed Specification: 5600000 – Shop, Field And Maintenance Coating of Structural Steel.

Dear Mr. Davis:

We are submitting, for your approval, two copies of a proposed Supplemental Specification for Shop, Field And Maintenance Coating of Structural Steel.

This change is proposed by Karen Byram, and involves the combination of Sections 560 and 561 into one Section 560. Therefore; this a complete rewrite of the existing Section 560.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965DB or duane.brautigam@dot.state.fl.us.

If you have any questions relating to this specification change, please call Duane F. Brautigam, State Specifications Engineer at 414-4110.

Sincerely,

Signature on file

Duane F. Brautigam, P.E.
State Specifications Engineer

DFB/jho
Attachment
cc: General Counsel
Florida Transportation Builders' Assoc.
State Construction Engineer

SHOP, FIELD AND MAINTENANCE COATING OF STRUCTURAL STEEL.
(REV 7-19-05)

SECTIONS 560, and 561 (Pages 650-660) are deleted and the following substituted:

SECTION 560
SHOP, FIELD AND MAINTENANCE COATING
OF STRUCTURAL STEEL

560-1 Description

Perform the shop, field and maintenance coating of structural steel surfaces in accordance with the Society for Protective Coatings (formerly Steel Structures Painting Council) (SSPC) PA 1, AASHTO/NSBA Steel Bridge Collaboration S 8.1 and this Specification. This Specification includes the preparation of the steel surfaces and the application, drying, and cure of coatings.

560-2 Materials.

560-2.1 Coating System: Use only coating products and systems listed on the Departments Qualified Products List (QPL).

560-2.2 Thinners and Cleaners: Use only thinners and cleaners meeting the coating manufacturers' recommendations.

560-2.3 Sealants/caulking: Use only sealants and caulk listed as part of the coating system on the QPL and recommended by the coatings manufacturer.

560-2.4 Soluble Salts Test Kit: Ensure the surface treatment materials are approved by the coating manufacturer. Use soluble Salt Test kits that meet the following requirements: contains all materials, supplies, tools and instructions for field testing and on-site quantitative evaluation; the extract solution is factory pre-measured, pre-packaged, and of uniform concentration; all components and solutions are mercury free and environmentally friendly; contains a factory sealed titration device and contains new materials and solutions for each test.

Ensure the test container (vessel, sleeve, cell. etc.) creates a sealed, encapsulated environment during ion extraction;

Ensure the test container is suitable for testing the following steel surfaces: horizontal (up/down configuration), vertical, flat, curved, smooth, pitted, and rough.

Ensure the kit uses a test container, with resulting ion extract solution, as the titration container.

Ensure the Ion concentrations are directly measured in micrograms per square centimeter without using either conversion charts or tables.

560-2.5 Abrasives: Use abrasive materials that meet the requirements of SSPC-AB 1, Mineral and Slag Abrasives, SSPC-AB 2, Cleanliness of Recycled Ferrous Metallic Abrasives, or SSPC-AB 3, Newly Manufactured or Re-Manufactured Steel Abrasive and do not introduce any contamination that interferes with the coating application and performance.

Provide certification to the Engineer that the abrasives used do not contain any chlorides and other salts.

Ensure recycled abrasive meets all requirements of this Specification each time it is placed in the blast pot.

560-2.6 Rust Preventative Compound: Use a rust preventative compound that meets the requirements of Federal Standard TP 664.

560-3 Equipment.

560-3.1 Compressed Air: Use a compressed air system capable of delivering clean, dry, continuous nozzle pressure to achieve the required surface cleanliness and profile or spray pattern. The system must comply with the instructions and recommendations of the manufacturer of the abrasive blasting system or coating application system.

560-3.2 Abrasive Blasting System: Design the blasting system to produce the specified cleanliness and profile.

560-3.3 Coating Application System: Use the coating application equipment approved by and in accordance with the Coating Manufacturer's technical data requirements.

560-4 Environmental, Health and Safety Requirements.

Isolate the work areas with containment devices canvasses, tarpaulins or screens, during all cleaning and coating operations. Dispose of all debris and waste products generated in accordance with all Federal, State and Local regulations. Requirements for lead abatement are covered in 560-17.

560-5 Quality Assurance.

Develop a QC plan in accordance with Specification 105. Ensure that all inspection equipment is maintained, calibrated and in good working condition. Furnish and erect scaffolding to the satisfaction of the Engineer to facilitate safe inspection of all surface preparation and coating application. Ensure that all activities are observed and approved by a coatings inspector.

560-6 Personnel Qualifications.

Provide documentation to the Engineer that all personnel performing surface preparation or coating application are certified by the American Institute of Steel Construction (AISC) Sophisticated Paint Endorsement or the Society for Protective Coatings (formerly Steel Structures Painting Council) (SSPC) to the requirements of SSPC QP 1, QP 2 and QP 3, as appropriate to the Method of Coating Application, prior to Contract award.

Provide documentation to the Engineer that all personnel performing coating inspections are NACE CIP certified or are reporting directly to a NACE CIP certified inspector.

Certification must be maintained for the duration of the Contract. If certification expires, the firm will not be allowed to perform any work until the certification is reissued.

Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Engineer of any change in Contractor certification status.

560-7 Surface Preparation.

560-7.1 Surface Cleaning: Ensure all surfaces to be coated are clean, dry, and free from oil, grease, dirt, dust, soluble salts, corrosion, peeling coating, caulking, weld spatter, mill scale and any other surface contaminants. Prepare all surfaces that will become inaccessible after fabrication, erection, or installation while accessible. Sequence the surface preparations and coating operations so that freshly applied coatings will not be contaminated by dust or foreign matter. Protect all equipment and adjacent surfaces not to be coated from surface preparation

operations. Protect working mechanisms against intrusion of abrasive. In the event that any rusting or contamination occurs after the completion of the surface preparation, clean the surfaces again to the initial requirements.

All corners resulting from sawing, burning, or shearing operations must be broken. Clean all welds and prepare the area within 2 inches [50 mm] of welds by blast cleaning, power wire brushing, water scrubbing, or chemically scrubbing to remove all detrimental welding deposits and to create a surface profile meeting the coating manufacture requirements.

560-7.1.1 Degreasing: Degrease by solvent cleaning, detergent washing, or steam cleaning in accordance with SSPC-SP 1.

560-7.1.2 Water Washing: When high levels of chloride or other undesirable contaminants are found on the surfaces, water wash using standard industrial pressure cleaners with a pressure versus volume output balance that will ensure thorough cleaning.

560-7.1.3 Soluble Salts Detection and Removal: Determine the chloride, sulfate and nitrate concentrations on all structure surfaces, using soluble salts test kits meeting the requirements of 560-2.6, laboratory test methods or other method approved by the Engineer capable of accurately detecting the concentrations at required limits.

Measure the chloride level using a method described in SSPC-TU 4. Ensure the chloride level on the blast-cleaned surface does not exceed 7 $\mu g/cm^2$ in accordance with SSPC-SP 12, NV-2. Assessing Conformance with Blast Cleaning Standards.

After surface preparation on structural steel, thoroughly inspect the surfaces. Take soluble salt measurements at the test rate identified in SSPC-PA2. When the test results exceeds 7 $\mu g/cm^2$ for any of the salt concentrations, the inspector will increase the rate of measurements as required to determine the extent of the deficient area.

If water washing does not reduce the soluble salt concentration to the acceptable levels, a surface treatment or water additive may be used. Ensure the surface treatment or additive is approved by the Coating System supplier and the Engineer.

560-7.2 Mechanical Cleaning of Structural Steel: Mechanically clean steel in accordance with SSPC-SP 2 or SSPC-SP 3. Remove all weld slag, weld spatter, and foreign matter from welds prior to abrasive blasting.

560-7.3 Abrasive Blasting of Structural Steel: Prepare steel by abrasive blasting to “Near-White” metal condition as defined in SSPC-SP10. Determine “Near-White” condition according to NACE Visual Standard No. 2. Ensure all rust is completely removed from pits and depressions. Remove all abrasive residues from the surface, leaving it clean and dry prior to the application of coatings. After blast cleaning, ensure the surface profile meets the coating manufacturer’s requirements.

Perform all abrasive blasting within a containment system to ensure confinement of all particulates. Design the containment system to comply with all applicable Federal, State, and Local regulations. Ensure the blasting operations does not produce holes, cause distortion, remove metal, or cause thinning of the substrate.

Successful testing for chlorides and other salts in abrasive material does not negate the final acceptance testing of steel surfaces. Do not use ungraded abrasive, select abrasives and grade to provide a surface profile to the specified depth per coating manufacturer recommendations. Ensure the abrasives used do not produce an additional surface profile on abrasion-sensitive surfaces.

560-8 Surfaces Not to be Coated.

560-8.1 Galvanized Surfaces: Do not coat galvanized surfaces unless specified in the Contract Documents.

560-8.2 Surfaces to be in contact with Concrete: Do not coat the areas of contact surfaces of steel to be encased or embedded in concrete, or coated with concrete, unless specified in the Contract Documents.

However, when steel surfaces are to be coated with an inorganic zinc coating system, coat the areas of contact surfaces embedded in concrete or coated in concrete with the inorganic zinc prime coat.

As an exception, surfaces of shear connectors may or may not be coated. When surfaces of shear connectors are coated, the requirements for surface cleaning and minimum film thickness will not apply; however, remove runs, sags and cracks in the coating film.

560-8.3 Faying Surfaces: Protect contact surfaces of members to be joined by high-strength bolts in friction-type joints that are not be coated, from all coatings or foreign material.

560-8.4 Machine Finished Surfaces: Apply a coating of rust preventative compound to all machine finished or similar surfaces that are not be coated, or will not be coated immediately

560-8.5 Surfaces to be Welded: Mask off surfaces within 1 inch of field welded connections before the application of any shop coating.

560-9 Material Storage.

Store coating materials in conformance with manufacturer's recommendations and Section 6.

560-10 Mixing and Thinning.

Mix in accordance with the manufacturer recommendations. Perform all mixing operations over an impervious surface with provisions to prevent runoff to grade of any spilled material. Ensure the material is agitated as required by the manufacturer's technical data requirements during application to maintain uniform suspension of solids.

560-11 Application of Coatings.

560-11.1 General: Train all coating personnel on the proper mixing and application of the coatings, Specification requirements, material application characteristics, and inspection criteria. Only personnel receiving this training may mix or apply coatings. Use thinners and cleaners according to coating Manufacturer's technical data requirements. Coating that lifts or curls after application must be removed and the area cleaned and recoated, at no additional cost to the Department.

Apply a prime coating of a color that will be a definite contrast between the coating and the dull gray appearance of the blasted steel surface immediately following the cleaning and preparation of the surface and apply succeeding coats before contamination of the previous coats occurs. When this is not possible or is impractical, inspect the surface for any damage from contaminates, weather, or other exposure and repair as necessary before application of the next coat.

Select intermediate and finish coat colors so that there is a definite contrast between the coatings. Stripe coats may be tinted as necessary to assure proper coverage and facilitate inspection. Apply the finish coating meeting Federal Standard, No. 595B, Table VIII, Shade No. 36622, color designation, unless otherwise identified in the Contract Documents.

Ensure that primer for faying (contact) surfaces of high strength bolted connections (for slip-critical, frictional transfer of load) meets the Research Council on Structural Connections (RCSC) requirements for a Class A rating, based on certified tests by the coating manufacturer or applicator.

560-11.2 Weather and Temperature Limitations for Field and Maintenance Coating: Ensure the ambient weather conditions at the actual location of the work during surface preparation and coating application operations are in accordance with coating system manufacturer's recommendations.

Do not spray coating when the measured wind speed in the immediate coating area is above 15 miles per hour [25 kilometers per hour]. Ensure the ambient air temperature, relative humidity, and dew point and the surface temperature of the steel to be coated are within limits recommended by the coating manufacturer.

Do not apply coatings when contamination from rainfall is imminent or when the temperature or humidity is outside limits recommended by the coating manufacturer.

560-11.3 Application Methods: Apply coatings per manufacturer's technical data requirements. Application with brushes may be permitted for minor touchup of spray applications and stripe coats in accordance with manufacturer recommendations. Adjust spray equipment to produce an even, wet coat with minimum overspray. Apply coatings in even, parallel passes, overlapping 50 percent unless otherwise recommended per manufacturer's technical data requirements.

560-11.4 Striping of Irregular Surfaces: Ensure complete coverage and proper thickness on welds, corners, crevices, sharp edges, bolts, nuts, and rivets.

560-11.5 Faying Surfaces: Prior to bolting; verify that the coating on the faying surfaces is properly cured in accordance with ASTM D 4752 or the manufacturer's requirements. Verify that the dry film thicknesses (DFT)and the temperature-adjusted cure time for slip critical bolted faying surfaces are within the range validated by the coating manufacturer.

560-11.6 Protection of Adjacent Surfaces: Protect all surfaces and working mechanisms not intended to be coated, during the application of coatings. Clean surfaces that have been contaminated with coatings until all traces of the coating has been removed. Do not allow material from cleaning and coating operations to be dispersed outside the work site.

560-11.7 Inaccessible Surfaces: Coat all surfaces that will become inaccessible after fabrication, erection, or installation.

560-11.8 Sealing/Caulking: Completely seal the perimeter of all faying surfaces, cracks and crevices, joints open less than 1/2 inch [13 mm], and skip-welded joints. Apply the sealant to the joint following the coating manufacturer's recommendations. Ensure the sealant/caulking bead has a smooth and uniform finish and is cured according to the sealant manufacturer recommendation prior to the overcoat application.

560-11.9 Thickness of Coats: Apply coatings to the thickness as identified by the manufacturer's technical data requirements. Do not allow any portion of the coating films to be less than the specified minimum film thicknesses. Ensure that the total minimum film thickness for any combination of coats equals the sum total of the averages of the specified thickness range of the individual coats. Achieve the total minimum film thickness before the application of the finish coat.

After application of each coat of coating, thoroughly inspect the surfaces. Take film thickness in accordance with SSPC -PA2. When the film thickness is deficient correct the

deficiency in accordance with manufacturer's recommendations to achieve the appropriate thickness and retest the area. Inspect the finish and DFT of each applied coating for compliance prior to the application of successive coats.

560-11.10 Coating Drying, and Curing: Follow the coating manufacturer's recommended drying and curing times for handling, recoating, and top coating. Meet the coating manufacturer's technical data requirements for testing the coating for proper curing before handling and shipping. Meet the requirements of ASTM D 4752, when the manufacturer's technical data sheet does not have a specified cure test.

Verify the final cure of water-based coatings in accordance with ASTM D 4752, but water must be substituted as the solvent.

560-11.11 Coating Finish: Apply each coat free of runs, sags, blisters, bubbles, and mud cracking; variations in color, gloss, or texture; holidays, excessive film buildup, foreign contaminants and dry overspray. Ensure each coat of applied material is clean, dry, cured, and free of surface contaminants prior to the application of the next successive coat. Check for missed areas or pinholes in accordance with manufacturer's recommendations. On rough or pitted surfaces, it may be necessary to apply a film thickness in excess of the normal manufacturer recommended coating thickness to obtain acceptable coverage.

560-11.12 Coating Welded Areas: After cleaning the area, apply primer to achieve a DFT per manufacturer's recommendations.

560-12 Sequence of Coating.

560-12.1 Shop Coating: Perform all work in an area capable of protecting the steel and applied coating from wind, weather, dust and direct sunlight. Ensure that all coated surfaces are protected from damage. Repair all damaged coatings in accordance with SSPC-PA 1 and/or the coating manufacturer's recommendations. Repairs to the topcoat must result in an acceptable, uniform gloss and color for visible surfaces. The Engineer will have final authority concerning the coating's uniformity and acceptable appearance. Handle steel members with care to minimize damage to or contamination of the coating.

560-12.2 Field Coating: Field coating of steel members may occur on the ground before erection or after erection, provided any damaged areas are touched up with the same number of coats and coating materials. Apply the finish coat after erection.

Do not apply the finish coating until all concrete work is completed. Ensure the surface is clean and free of any foreign matter prior to applying the final coat.

560-13 Touchup and Repair of Coatings.

Clean and coat all field connections, welds or rivets, and bolts, and all damaged or defective coating and rusted areas in accordance with 560-7 and 560-11. Ensure all repairs are in accordance with the manufacturer's recommendations.

560-14 Coal Tar-Epoxy Coating of Permanent Bulkhead Sheet Piles and H Piles.

560-14.1 Shop Coating: Take appropriate measures to insure the piles and coatings are protected from wind, weather, dust and direct sunlight.

560-14.2 Surface Preparation: Immediately before coating, abrasive-blast the steel to a near-white condition at least equal to the SSPC-SP 10. The average profile depth is 1.5 mils [40 µm] minimum. Re-blast piles not coated immediately following surface preparation to the original blast standards before coating application. Ensure that all surfaces to be coated are completely dry and free of any contamination at the time of coating.

560-14.3 Materials: Use an inorganic zinc and a Type M coal tar-epoxy coating listed on the Qualified Products List.

560-14.4 Application of Coating: Apply the inorganic zinc in accordance with this Specification. Apply the coal tar-epoxy in accordance with the following specific requirements:

(1) Apply the coal tar-epoxy system two coats. The time interval between the first coat and the second coat will be in strict accordance with the coating manufacturer's published specifications. Apply the first coat to yield a dry film thickness of 8 to 10 mils [200 to 250 µm]. Apply the second coat to attain a total dry film thickness of the two coats is between 16 and 20 mils [400 and 500 µm]. For Sheet Piles, give the inside portion of the interlock claw and the interlock ball a single coat that will yield a dry film thickness of 2 to 4 mils [50 to 100 µm]. Build up and puddling of the coating in these areas is not permitted.

(2) Ensure that no portion of the coating is less than the specified minimum film thicknesses. The total minimum film thickness for any combination of coats will be the sum total of the averages of the specified thickness range of the individual coats.

(3) After applying the coating on the steel piles, the Engineer will thoroughly inspect the surfaces and make film thickness measurements at the approximate rate of one for each 25 ft^2 [2.25 m^2] of area unless deficient thickness is found. In this case, the rate of sub-measurements will be increased as required to determine the extent of the deficient area.

560-15 Maintenance Coating.

560-15.1 Surface Preparation: Prepare all surfaces including any components to be coated per this Specification and in accordance with SSPC-SP 10 to remove corrosion, weld slag, and existing coating edges or any foreign material. When sound portions of the original coatings are to be left in place, remove all loose, cracked, brittle, and non-adherent coating, and feather back the edges of all existing coating to sound material. When any structural steel appears to be defective during the cleaning operation, notify the Engineer immediately. After repairs are completed, clean and coat the repaired sections per this Specification.

Cover all motors, gears and electrical apparatus not to be coated and may be damaged by surface preparations.

Ensure all bridge components are kept free of abrasive materials buildup at all times.

560-15.2 Testing of Original Coating: When sound portions of the original coating are to be left in place, prior to the commencement of cleaning and coating operations, apply a test patch (minimum area of 100 ft^2 [9.3 m^2]) of the proposed coating system in accordance with this Specification and have it evaluated by the Engineer for approval.

Allow the test patch to cure a minimum of 7 days prior to evaluation. Ensure the test patch meets all Specification requirements and also exhibit a minimum adhesion rating of 4A when tested in accordance with ASTM D 3359. Repair damage, which occurs as a result of testing in accordance with this Specification.

560-15.3 Application of Coating: Apply an overall coating system to all surface in accordance with the manufacturers recommendations and the Contract Documents.

560-16 Lead Abatement.

560-16.1 General: Establish a hazardous coating removal program to document and control coating removal and application operations in strict compliance with OSHA 29CFR Part 1910.1025, 1926.62, and 1926.63. This program will include applicable requirements from

Environmental Protection Agency (EPA) environmental protection issues and hazardous waste disposal.

Prior to construction of the containment area or removing any hazardous materials perform Total Suspended Particulate (TSP) sampling and testing of the air and soil for any hazardous materials. Document the number and specific location where each sample is taken as outlined in Project Design - Industrial Lead Paint Removal Handbook, Volume 2 and use these results to determine a baseline level of any hazardous materials on the job site. Continue the TSP monitoring from the beginning of work to the removal of the containment devices.

Workday determination constitutes only the time during which cleaning and surface preparation and subsequent clean up is performed. Enter all pertinent information into a field logbook. For the purposes of computing action levels, the workday must not exceed 8 hours.

560-16.2 Pollution Control: Submit a written pollution control and monitoring plan at the preconstruction meeting which clearly describes the means for complying with all Local, State and federal regulations including pollution control provisions specified herein. The written plan must be in accordance with Project Design: Industrial Lead Paint Removal Handbook, Volume II, Phase 6, Environmental Monitoring and Phase 7, Worker Protection and specifically include, but not be limited to, providing a scaled map of the work site layout showing the proposed number and location of soil and sediment sampling, waste storage areas, staging areas, temporary waste storage areas and ambient air and personnel sampling frequency.

Comply with all applicable Federal, State, and Local rules and regulations. In the event the Contractor violates any environmental regulations or fails to properly execute any pollution control provisions, the Contractor will immediately cease all operations associated with the infraction. Operations will only resume after written proposed corrective procedures have been submitted to and approved by the Engineer and implemented.

560-16.3 Permits: Submit all required permits from all applicable regulatory agencies to the Engineer prior to the commencement of any work. Seek permit determination from these regulatory agencies to avoid any potential non-compliance permit issues during work activities. The Contractor is responsible for all liability resulting from non-compliance with pertinent rules and regulations including permit requirements.

560-16.4 Containment System: Submit a written containment system design plan at the pre-construction meeting, which clearly describes the proposed containment system applicable to the intended removal method and in accordance with the requirements outlined herein and SSPC Guide 6, Guide for Containing Debris Generated During Paint Removal Activities. Ensure the plan includes, but not be limited to, removal method; methods for collecting debris; and containment enclosure components. Containment drawings, calculations, and assumptions, including ventilation criteria if applicable, signed and sealed by a Specialty Engineer. Provide a complete structural impact analysis prepared by a Specialty Engineer to verify the existing structure can withstand the live and dead loads of the containment, including wind loads. Ensure the lighting inside the containment is in accordance with SSPC Guide 12, Guide for Illumination of Industrial Painting Projects. All drawings and calculations must be submitted and accepted before any work begins.

Isolate the immediate area of the structure with appropriate containment devices to ensure compliance with current and/or permit requirements associated with air, water, and soil pollution prevention including vehicular and pedestrian traffic. Ensure that under no circumstances any paint, paint chips, or other debris falls outside of containment. Repair any

damage created by fastening, bracing, or handling the scaffolding and/or staging, or any surrounding property at no cost to the Department.

560-16.5 Regulated Area: Establish a regulated area around the work site to prohibit unauthorized persons from areas where exposure to hazardous airborne metals may exceed the following action levels:

Lead (30 $\mu g/m^3$)
Cadmium (2.5 $\mu g/m^3$)
Arsenic (5 $\mu g/m^3$)

Perform and make initial assessment and results available within 48 hours of the sampling. Performed sampling throughout surface preparation and waste clean up. Report sample results as eight-hour Time Weighted Averages (TWA). Document all pertinent data in a field logbook. Position air-sampling pumps around the project perimeter, at a minimum this is defined as upwind and downwind locations. Place sampler inlets at breathing height. Clearly mark the regulated area by the use of warning signs, rope, barrier tape, or temporary construction fencing.

560-16.6 Ambient Air Quality Compliance:

560-16.6.1 Visible Emissions: Comply with 40 CFR 50, National Primary and Secondary Ambient Air Quality Standards (NAAQS) and the Clean Air Acts of 1977 and 1990. Access the visible emissions by EPA Method 22, Timing of Emissions as defined by 40 CFR 60, Appendix A, Standards of Performance for New Stationary Sources. During abrasive blasting, do not allow visible emissions from containment to exceed random cumulative duration of no more than one percent of the workday (SSPC Guide 6, Level 1 Emissions). During pressurized water cleaning, do not allow visible emissions from containment to exceed random cumulative duration of no more than ten percent of the workday (SSPC Guide 6, Level 3 Emissions).

560-16.6.2 Total Suspended Particulate Matter: Do not exceed the Total Suspended Particulate Lead (TSP Lead) of 1.5 $\mu g/m^3$ over a 90 day period. Conduct TSP Lead monitoring in accordance with 40 CFR 50, Appendix B, Reference Method for Determination of Total Suspended Particulate Matter in the Atmosphere (high volume sampler required). Analyze filters for lead in accordance with 40 CFR 50, Appendix G, Reference Method for Determination of Total Suspended Particulate Matter Collected from Ambient Air. Position the TSP air monitoring equipment in accordance with 40 CFR 58, Ambient Air Quality Surveillance.

560-16.7 Soil Quality: Sample and test soil for lead after project completion. Document the number and specific location where the samples are taken as outlined in the SSPC Project Design - Industrial Lead Paint Removal Handbook, Volume 2. Ensure that project activities did not increase soil lead concentrations above pre-job levels. Return the site to the pre-job levels if the project activities increase the lead-in-soil levels at no cost to the Department.

For structures less than 14 feet [27m] min height, take one sample north, south, east , and west (where soil is present) of the structure. If the structure is longer than 14 feet [27m], take one additional sample for every 14 feet [27m] in length.

For structures greater than 14 feet [27m] min height, take two samples north, south, east , and west (where soil is present) of the structure. Locate the inner row of samples within feet [27m] of the structure. Locate the outer row of samples at a distance equal to the height of the structure. If the structured is longer than 14 feet [27m], take one additional sample for every 14 feet [27m] in length.

560-16.8 Protection of Adjacent Areas: Protect all areas adjacent to abrasive blast cleaning, including deck grating. Before the commencement of any cleaning and coating

operations, provide a control plan for the protection of adjacent surfaces from damage by nearby blasting and coating to the Engineer for review. Repair any damage to adjacent areas at no expense to the Department. The repair procedure must be submitted to the Engineer for acceptance prior to any remediation.

560-16.9 Collection and Handling of Waste: Properly classify, package, store, transportation, and dispose of all paint removal debris, both solid and liquid in accordance with SSPC Guide 7, Guide for the Disposal of Lead-Contaminated Surface Preparation Debris, the Federal Water Pollution Control Act with amendments, and all other current government regulations and guidelines. Comply with the Resource Conservation and Recovery Act to include, at a minimum, CFR 40, parts 260-268. Keep solid and liquid waste separate and individual waste streams separate prior to identification, storage, transportation, and disposal. Submit the method of disposal Engineer for approval a minimum of three weeks prior to the date of off-site shipment of waste.

560-16.10 Testing and Analysis: Conduct the Analyses for the regulated area and for waste identification by an EPA certified, independent laboratory with an approved comprehensive Quality Assurance Plan. Provide a copy of all sampling and test reports no later than 72 hours after collection of samples.

560-16.11 Waste Identification: Collect samples in accordance with U.S. Environmental Protection Agency - SW-846, Test Methods for Evaluating Solid Waste - Physical/Chemical Methods. Use a random and representative sampling technique. Collect a minimum of four representative samples of each waste stream. These waste streams include, but are not limited to, paint chips, dust, and paint chips mixed with disposable abrasives and debris. Complete the initial sampling of each waste stream immediately upon filling the first drum, but do not allow waste to accumulate for longer than 7 days before sampling.

After the representative samples are collected, send them immediately to the EPA certified laboratory for analysis. Unless otherwise directed by the Engineer, required by State regulations, or required by the waste recycling or disposal facility, once each waste stream is sampled, tested, and classified, additional sampling and analysis are not required for subsequent shipments unless the waste stream changes. Submit samples to an approved laboratory to be tested for arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver in accordance with EPA Methods 3050 and 6010 (content) and EPA Method 1311, Toxicity Characteristics Leaching Procedures (TCLP).Clearly label each sample with sample number, date and time of sampling, name of collector, and location of collection.

Maintain chain of custody forms for each sample. Enter each sample on a sample analysis request form. Enter sample numbers, type of waste, amount of each sample, distribution of samples, signature and all other information into field logbook.

560-16.12 Waste Storage: Collect waste from the control devices, equipment, and all work surfaces on a daily basis. Keep hazardous and non-hazardous waste separate. Do not mix blasting debris with any other type of waste. Place waste in approved storage drums.

Locate all hazardous waste within a regulated area. The maximum weight for each drum, when filled, is 821 pounds [372 kg]. Properly seal and label all drums. Transport waste storage drums to a secured, marked, temporary storage area. Locate the temporary storage area on well-drained ground not susceptible to flooding or storm water run-off. Place drums on pallet and cover with fiber reinforced, impermeable tarpaulins. Store drums no more than two drums wide and two drums high. Arrange drums so that labels are easily readable. Do not store waste in the temporary storage area longer than 90 days.

560-16.13 Waste Disposal: Dispose of all non-hazardous waste. The Department is responsible for the transportation, treatment and disposal of hazardous waste. Coordinate disposal of hazardous waste with the Engineer, a minimum of three weeks prior to the date of off-site shipment of waste.

560-17 Method of Measurement.

The quantities to be paid for will be determined under one of the following conditions:

(a) When no pay item for coating structural steel is included in the proposal, the work specified in this Section will not be paid for directly but will be considered as subsidiary work pertaining to the various items of construction on which coating is applied.

(b) When a pay item for coating structural steel is included in the proposal, the work specified under this Section will be paid for at the Contract lump sum price, or the Contract price per ton [metric ton], for Coating Structural Steel. The quantity will be either (1) the lump sum quantity coated and accepted, or (2) the plan quantity, in tons [metric tons] of structural steel, actually coated and accepted.

560-18 Basis of Payment.

When no item for coating structural steel is included in the proposal, the work specified in this Section will be included in the payment for the applicable items under Section 460.

When an item for coating structural steel is included in the proposal, price and payment will be full compensation for all work specified in this Section, including coating of all ferrous metals and machinery and castings.

Payment will be made under:

Item No. 560 - 1- Painting/Coating Structural Steel - lump sum.
Item No. 2560 - 1- Painting/Coating Structural Steel - lump sum.
Item No. 560 - 2- Painting/Coating Structural Steel - per ton.
Item No. 2560 - 2- Painting/Coating Structural Steel - per metric ton.