SP 516J **REPLACE FIXED BEARING DEVICE**
(09/15/2015)

A. Description

This Work shall include furnishing all labor, material and equipment necessary to remove the existing fixed bearing devices and install new bearings. The Contractor shall perform the Work in such a manner as to not endanger the stability or integrity of the structure during the bearing replacement operations. All applicable provisions Item 516 shall apply.

Replacement operations include but are not limited to the following:

1. Jacking and blocking beams to remove sole plate from bottom flange of beam.

2. Grinding the bottom flange of the beam to a bearing fit.

3. Removing existing bearing and masonry plate.

4. Cut off anchor rods flush with beam seat.

5. Clean and/or repair bearing seat area as required.

6. Furnishing and installing a new bearing unit, including shim plates, as detailed in the Plans. Perform welding work as indicated.

7. Perform necessary sandblasting and repainting of all previously painted surfaces damaged during the procedure plus clean and paint all new steel surfaces in accordance with SP 514A and SP 525A.

B. Requirements

The Contractor shall be responsible for the design and installation of an adequate support and jacking system capable of raising the structure under live load and will be responsible for properly arranging all temporary supports so as not to damage or induce overstress in any existing bridge members and diaphragms. The structure shall not be raised more than necessary to accomplish the required work.

Any damage to structural members, connections or parts that are to remain as part of the permanent construction shall be corrected and/or repaired by the Contractor at its expense to the satisfaction of the Chief Engineer. The Contractor's detailed procedures for replacing the bearings shall be designed by a registered structural engineer and shall be submitted in triplicate, to the Chief Engineer for approval. The submittal shall include details of the proposed temporary support and jacking system, indicating materials, member sizes, spacings, support locations, jacking points, reaction and removal procedures.

C. Method of Measurement

The quantity will be measured as the actual number of bearings replaced.

D. Basis of Payment

Work under replacing fixed bearing devices will be paid for at the Contract unit price per each bearing replaced and shall be full compensation for all labor, materials and equipment necessary to perform the Work, complete and accepted

including the cost of shim plates, jacking, cleaning and painting required to replace the bearing.

Item	Unit	Description
SP 516J	Each	Replace Fixed Bearing Device

SP 525A **LEAD PAINT REMOVAL - WORKER/ENVIRONMENTAL PROTECTION AND WASTE HANDLING**
(11-21-12)

PART 1.0 GENERAL

1.01 PURPOSE

A. These Special provisions provide the material and execution requirements for protecting the public, Contractor workers, and the environment during the removal of paints containing lead or other toxic metals.

B. The Contractor is required to implement and maintain programs and procedures which comply with the requirements of these Special Provisions and all applicable Federal, State and Local OSHA and EPA standards or regulations. The Contractor is cautioned that it must comply with all applicable regulations even if the regulation is not specifically referenced herein. If a State or Local regulation is more restrictive than the requirements of these Special Provisions, the more restrictive requirements prevail.

C. Identification of the items below which are of specific interest to the Commission in no way relieves the Contractor of the responsibility to comply with all EPA requirements, not should it be construed that the Commission, the Federal or Ohio EPA, or City and County regulators are only interested in these items.

1.02 REFERENCE STANDARDS

A. The latest edition of the following regulations, guides, and standards form a part of these Special Provisions.

B. Code of Federal Regulations (CFR)

1. 29 CFR 1926, Occupational Safety and Health Regulations for Construction

2. 29 CFR 1926.51, Sanitation

3. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists

4. 29 CFR 1926.62, Lead

5. 29 CFR 1926.450 - 453, Scaffolding

6. 29 CFR 1926.500 – 503, Fall Protection

7. 29 CFR 1926.103, Respiratory Protection

8. 29 CFR 1926.1118, Arsenic

9. 29 CFR 1926.1127, Cadmium

10. 40 CFR 50, National Primary and Secondary Ambient Air Quality Standards

11. 40 CFR 58, Ambient Air Quality Surveillance

12. 40 CFR 60, Appendix A, Method 22, Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Fires

13. 40 CFR 60, Appendix A, Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources

14. 40 CFR 261, Appendix II, Toxicity Characteristic Leaching Procedure

15. 40 CFR 262, Standards Applicable to Generators of Hazardous Waste

16. 40 CFR 263, Standards Applicable to Transporters of Hazardous Waste

17. 40 CFR 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

18. 40 CFR 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

19. 40 CFR 265, Subpart C, Preparedness and Prevention

20. 40 CFR 265, Subpart D, Contingency Plan and Emergency Procedures

21. 40 CFR 265.16, Personnel Training

22. 40 CFR 268, Land Disposal Restrictions

23. 40 CFR 302, Designation, Reportable Quantities and Notification

24. 40 CFR 355, Emergency Planning and Notification

25. 49 CFR 171.179, Hazardous Materials Regulations

C. EPA Methods

1. SW 846, Test Methods for Evaluating Solid Waste - Physical/Chemical Methods

2. Method 3050, Acid Digestion of Sediment, Sludge, and Soils

3. Method 1311, Toxicity Characteristic Leaching Procedure (TCLP)

D. NIOSH Methods

1. Method 7048, Cadmium

2. Method 7082, Lead

3. Method 7300, Chromium

4. Method 7900, Arsenic

E. Society for Protective Coatings

1. Guide 6, Guide for Containing Debris Generated During Paint Removal Operations

2. Guide 7, Guide for the Disposal of Lead-Contaminated Surface Preparation Debris

3. SSPC 93-02, Industrial Lead Paint Removal Handbook, 2nd Edition, Volume I

4. SSPC 95-06, Project Design, Industrial Lead Paint Removal Handbook, Volume II

F. American Industrial Hygiene Association

1. Environmental Lead Proficiency Analytical Testing Program (ELPAT)

G. State of Ohio Regulations

1. Air Quality, Title 37

(a) Rule 3704, Ohio Air Pollution Control Regulations

(b) Rule 3745, Ohio Ambient Air Quality Regulations

(c) Rule 3745-15-07, Air Pollution Nuisances Prohibited

(d) Rule 3745-17-08, Restrictions on Emissions of Fugitive Dust

2. Water Quality, Title 61

(a) Rule 6111, Ohio Water Pollution Control Act

3. Waste Disposal, Title 37

(a) Rule 3734, Ohio Solid and Hazardous Waste Disposal Law

(b) Rule 3745, Chapters 50-69, Hazardous Waste Management Rules

H. Equipment Manufacturers' Published Instructions

1.03 SUBMITTALS

A. The Contractor shall submit the following Plans and programs to the Chief Engineer for review and acceptance. For each submission, the Contractor shall provide information for review by the Chief Engineer in accordance with Article 14 – Submittals, of the General Conditions. The Contractor should anticipate multiple submissions may be required for final acceptance of the Plans and/or programs by the Chief Engineer.

B. Containment Design

1. Submit the containment design proposed for use during both surface preparation and paint application in accordance with the requirements of these Special Provisions. Include all data, calculations, and assumptions used for the design of the containment and ventilation system; the plan for staging, installing, moving, and removing the containment; methods of attachment that will be used; provisions for dropping the containment in inclement weather; provisions for movement out of navigation lanes;

Plans for maintaining the existing bridge lighting during the Work; and any other information needed to thoroughly describe the containment plan.

2. If the containment system will impose live or dead loads on the structure (e.g. suspended platforms), provide a structural analysis by a registered Professional Engineer. Should a lift truck or truck mounted platform be utilized, provide calculations to demonstrate the platforms ability to support any intended load.

3. Include evidence of the education, training, experience, and qualifications of the State of Ohio registered Structural and Mechanical Professional Engineers who will be evaluating and approving the containment system, and for the State of Ohio registered structural Professional Engineer with experience in structural design and safety who will be analyzing the bridge structure.

4. Provide all drawings, data, calculations, and assumptions used for the design of the containment and analysis of loads to the Chief Engineer in quadruplet.

5. Confirm that appropriate notification and coordination with other organizations or agencies such as the Coast Guard and Railroad have been accomplished with regard to right of ways, containment clearances, and other Project restrictions.

C. Environmental Compliance Plan

Submit an Environmental Compliance Plan, which establishes programs for the monitoring activities that are the responsibility of the Contractor, and includes provisions for complying with the results of any monitoring and analysis conducted by the Commission. Include the following programs in the Plan:

1. Assessments of Visible Emissions and Releases

A written program for the observation of visible emissions during Project activities, and inspections for releases or spills of dust and debris that become deposited on surrounding equipment and property. Include the frequency of observations (minimum three (3) times daily) and inspections that will be made, areas or Work activities that will be observed, and methods of observation and inspection that will be utilized. Include a statement that if emissions above the acceptance criteria are observed that Work will be halted immediately and corrective action taken. Include the name(s) and qualifications of the personnel conducting the observations and inspections. Confirm that visible emission observations will be documented and made available for review by the Chief Engineer. Provide statement that daily (or more frequent) clean up will be performed for any material released outside of the Work area.

2. Final Cleaning/Clearance Evaluations

A written program identifying the procedures and methods that will be used to conduct final Project clean up, and final cleanliness inspections and evaluations. Include confirmation that a final clearance report will be

completed and submitted to the Chief Engineer within ten (10) days of demobilization.

4. Compliance With Monitoring Conducted by the Commission

Include statements in the Plan that Work activities will immediately cease and corrective action will be implemented if the results of any monitoring and analysis that may be undertaken by the Commission show that violations of emissions criteria are occurring.

5. Remediation of Ground (Soil), Water, and Sediment

Include provisions in the Plan that in the event post-Project sampling and analysis show unacceptable results, the Contractor will undertake the necessary clean up or remediation of the ground (soil), water, and/or sediment, when directed by the Chief Engineer, at no additional cost to the Commission. Clean-up of the media to pre-Project levels is required.

D. Worker Lead (Toxic Metal) Health and Safety Compliance Program

1. Compliance Program

A written, Project-specific compliance program, prepared under the direction of, and signed and sealed by a Certified Industrial Hygienist (CIH), for the protection of Contractor workers from lead in accordance with 29 CFR 1926.62 and other toxic metals in the paint. Verify that any Subcontractors working for the Contractor are included in the program or in a separate program, which meets the requirements of this Item. If Subcontractors are operating under a separate program, include the program with the submittals. Include specific details regarding the activities which will result in lead exposures, engineering and Work practice controls, training, personal protective equipment including respiratory protection, hygiene facilities, biological and Worker exposure monitoring for lead and other toxic metals.

2. Personnel Qualifications

Provide the name, experience, and qualifications of both the CIH who will be overseeing the development of the compliance program, and the competent person who will be making routine inspections of Project activities to ensure compliance with the program. Include evidence of training (i.e. C-3) and experience of the competent person as required by the SSPC PCCP program for QP-2 certified Contractors. Confirm that regular inspections will be performed by the competent person and identify the frequency.

3. Outside Laundry

Provide the name, address, and qualifications of the launderer, if one will be used, for the cleaning of reusable clothing. Provide a letter from the laundry indicating that it is permitted the handle clothing contaminated with lead and/or the other toxic metals of concern.

4. Personal Protective Equipment for Commission Use

Acknowledge that all protective clothing and equipment, laundering or disposal, fit testing as needed, and hygiene facilities will be provided for up to two (2) designees of the Chief Engineer each day.

E. Waste Handling, Storage, and Disposal Plan

1. Waste Handling and Disposal Plan

Provide a written program that addresses the proper handling and disposal for all waste. Include the procedures that will be followed for the collection of representative samples of the waste for testing; the testing and analysis procedures that will be used; the procedures for the site handling, storage, and packaging of the waste; and contingency Plans in the event of a spill. Include procedures that will be followed to assure that all reusable items such as equipment, containment materials, and scaffolding are properly cleaned prior to removal from the site.

2. Transporter Information

Provide the names, addresses, license or permit numbers, and qualifications of the proposed haulers of hazardous waste, non-hazardous waste, and wastewater.

3. Hazardous Waste Disposal Information

Provide a letter from a legally permitted hazardous waste disposal facility, stating that the facility has agreed to accept the waste; is authorized to accept the waste under the laws of the state of residence; has the required capability to treat and dispose of the materials; and will provide or assure the ultimate disposal method indicated on the Uniform Hazardous Waste Manifest. Provide the Chief Engineer with the original letter signed by a legally authorized representative of the facility.

4. Non-Hazardous and Wastewater Disposal Information

Submit the name and address of the facilities that will accept the non-hazardous waste and wastewater generated by the Contractor. Provide the Chief Engineer with documentation stating that the levels of lead or other toxic metals remaining in the water are acceptable to the facility.

F. Laboratory/Monitoring Firm Qualifications

1. Provide the name, address, experience, and qualifications of the laboratory and/or firm that will be used for the testing and analysis required in these Special Provisions, including but not limited to worker and area exposure monitoring, waste and wastewater sampling and analysis.

2. Verify that the analytical laboratory used for sample analysis is accredited for metals analysis by the American Industrial Hygiene Association (AIHA) analysis and/or must have successfully participated (previous twelve (12) months at a minimum) in the AIHA ELPAT program.

G. Commission Review

1. Do not construe Chief Engineer acceptance of Contractor submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of these Special Provisions, or to adequately protect the health and safety of all workers involved in the Project including any members of the public who may be affected by the Project.

2. The Contractor remains solely responsible for the adequacy and completeness of the programs and Work practices and adherence to them.

1.04 CONTRACTOR QUALIFICATIONS

Society for Protective Coatings QP-2 Certification. Per SP 120, the certification must be in effect at the time of bid and must remain in effect throughout the duration of the Project. Provide a competent person for the Project who meets the QP-2 requirements for a competent person.

PART 2.0 PRODUCTS

2.01 CONTAINMENT MATERIALS

A. Supply all materials needed to contain Project debris in accordance with the requirements of these Special Provisions. This includes ground covers, rigging, scaffolding, planking, and containment materials.

B. Use materials that are free of loose dust and debris when brought onto each bridge site, and upon removal.

2.02 MONITORING AND TESTING EQUIPMENT

A. Supply the instrumentation needed for the monitoring of worker and area exposures, and waste sampling, including all equipment needed for its operation (e.g., generators, batteries, power cords, fuel, etc.)

2.03 PERSONAL PROTECTIVE EQUIPMENT AND HYGIENE FACILITIES

A. Provide all personal protective equipment (PPE) and hygiene facilities needed for the Project in accordance with the requirements of these Special Provisions. Provide all necessary protective equipment and clothing for use by up to two (2) designees of the Chief Engineer each day, including proper cleaning and disposal.

B. Use PPE and hygiene facilities that are free of lead or other toxic materials when brought onto each bridge site, and that are clean upon removal.

2.04 WASTE CONTAINERS

A. Hazardous Waste

Provide ODOT-approved containers of the appropriate size and type for the hazardous waste generated on the Project. Use containers that are resistant to rust and corrosion (painted, if constructed of steel), that have tight fitting lids or covers, and which are water resistant and leak proof.

B. Municipal/Construction Waste

Provide all containers for non-hazardous municipal/construction waste. Use containers that are free of loose debris when brought on-site.

C. Spent Solvents

Provide appropriate containers for spent solvents and paint debris.

2.05 CONTRACTORS EQUIPMENT AND RECYCLED STEEL GRIT

A. Provide dust collection and abrasive recycling equipment that are free of loose debris upon arrival to the job site. Dust entrained in the filters from previous use is acceptable.

B. Recyclable abrasives from prior use are permitted provided the abrasive has been cleaned of paint debris and other foreign matter before arrival on site. Abrasive that has not been previously cleaned will be rejected and must be immediately removed from the Project site.

C. Prior to demobilization, dispose of the used recyclable abrasive as hazardous waste, or clean it to remove paint debris and other foreign materials. Remove all loose debris from the equipment and filtration systems.

PART 3.0 EXECUTION

3.01 WORKER PROTECTION

A. General

1. Conduct the Work in strict accordance with Federal, state, and local regulations governing worker protection. All worker protection requirements apply to Contractor and Subcontractor personnel.

2. Identification of the items below which are of specific interest to the Commission in no way relieves the Contractor of the responsibility to comply with all OSHA requirements, nor should it be construed that the Commission or OSHA are only interested in these items.

3. The requirements identified below are based on the OSHA Lead in Construction Standard, 29 CFR 1926.62, but the Contractor must protect the employees from exposure to any of the other toxic metals which may be present in the paint in addition to lead.

B. Compliance Program

1. Implement a written Compliance Program prepared under the direction of, and signed and sealed by a CIH to establish and implement practices and procedures for protecting the health of those employees exposed to lead and other toxic metals contained in the paint. This program is in addition to other OSHA hazard communication and safety and health requirements of the Project. Revise and update the program at least every six (6) months.

2. Establish methods for complying with these Special Provisions and any OSHA standards published for the toxic metals present in the paint (e.g., 29 CFR 1926.62 for lead and 29 CFR 1926.1127 for cadmium.) When toxic metals are present in the paint for which OSHA has not developed a comprehensive health and safety standard, include statements that the workers will not be exposed above the PEL established for the metal as identified in 29 CFR 1926.55.

3. Identify the methods of compliance that will be used to reduce worker exposures to lead and other toxic metals. Rely on respiratory protection only after feasible engineering and Work practice controls have been first implemented to reduce airborne exposures.

4. Confirm that regular inspections of the Work area will be made by a competent person.

C. Exposure Monitoring

1. Collect representative personal air samples for each task at the beginning of the paint removal Work (at Project start-up) to determine employee exposures to lead and other toxic metals that might be present in the coating. Tasks resulting in potential exposure to toxic metals include, but are not limited to, paint removal activities, cleanup, and debris handling operations. Collect full shift (at least seven (7) hours) air samples for each job classification in each exposure area. Provide the Chief Engineer with the results of the analysis within the same five (5) day notification period required for the employees, but no later than ten (10) days after sampling.

2. When lead is present, protect workers during the initial monitoring to the anticipated exposure levels as dictated by 29 CFR 1926.62 and as specified below. A few activities in addition to those dictated by OSHA are included below. Use the same level of protection when other toxic metals are found in the coating, unless OSHA has developed a comprehensive health and safety standard for that metal. In those cases, implement the protection requirements of the standard for that metal.

   (a) Assume an exposure of at least 500 $\mu g/m^3$: Manual demolition of structures containing lead-containing coatings or paint (e.g., dry wall), manual scraping, manual sanding, and power tool cleaning with dust collection systems. Although not identified in 29 CFR 1926.62, include chemical stripping and the operation of abrasive grit recovery equipment in this category.

(b) Assume an exposure of at least 2,500 µg/m^3: Conducting the following activities where lead-containing coatings or paint are present: rivet busting, power tool cleaning without dust collection systems, cleanup activities where dry expendable abrasives are used, and the movement and removal of abrasive blasting enclosures. Although not identified in 29 CFR 1926.62, include water jetting and wet abrasive blasting removal of paint in this category.

(c) Assume an exposure of more than 2,500 µg/m^3: Activities involving lead containing coatings or paint on structures disturbed by abrasive blasting, welding, cutting, and torch burning.

3. Protection for any of the above activities requires compliance with the necessary respiratory protection, personal protective clothing and equipment, change areas and washing facilities, blood lead and zinc protoporphyrin monitoring, and employee training. Modify the protection measures as necessary, after the exposure results are received.

4. Collect and analyze all air samples for lead, cadmium, chromium and arsenic according to the appropriate NIOSH method for the metals of concern (e.g., Method 7082 for lead.) Use only AIHA accredited laboratories as submitted to and accepted by the Chief Engineer.

5. Conduct periodic monitoring and provide employee notifications in strict accordance with the applicable OSHA standard for the metal of concern (e.g., 29 CFR 1926.62 for lead.) If a standard does not exist, conduct the monitoring and employee notification based on the requirements of OSHA 29 CFR 1926.62. Provide the Chief Engineer with the results of any monitoring within the same five (5) day notification period required for the employee, but not later than ten (10) days after sampling.

D. Action Level

1. The Action Level for lead is thirty (30) µg/m^3 as an eight (8) hour Time Weighted Average (TWA), the Action Level for cadmium is 2.5 µg/m^3 as an eight (8) hour TWA, and the Action Level for inorganic arsenic is five (5) µg/m^3 as an eight (8) hour TWA. For other metals that are found in the coating, and for which no Action Level exists, establish the Action Level at 1/2 of the PEL. If a PEL does not exist, establish the Action Level at 1/2 of the Threshold Limit Value (TLV) found in Appendix A of 29 CFR 1926.55 (e.g., if the TLV is five (5) µg/m^3, establish the Action Level at 2.5µg/m^3.)

2. In addition to the initial protection provided, invoke the following protective measures when the airborne exposure to a toxic metal found in the coating exceeds the Action Level:

(a) Exposure Monitoring

(b) Housekeeping

(c) Employee Medical Surveillance and Medical Removal Protection

(d) Employee Information and Training

(e) Signs and Regulated Areas

(f) Recordkeeping

E. Permissible Exposure Limit (PEL)

1. The PEL for airborne lead exposure is fifty (50) $\mu g/m^3$ as an eight (8) hour TWA. The PEL for cadmium is five (5) $\mu g/m^3$ as an eight (8) hour TWA, and for inorganic arsenic is ten (10) $\mu g/m^3$ as an eight (8) hour TWA. The TLVs for other metals can be found in 29 CFR 1926.55.

2. In the event that extended Work shifts are allowed, use the following formula to adjust the PEL: Adjusted PEL = Eight (8) hr. PEL x (eight (8) ÷ hours worked in a day.)

3. In addition to complying with the requirements identified when exceeding the Action Level, invoke the following protective measures when the airborne exposure to a toxic metal found in the coating exceeds the PEL:

(a) Compliance Program

(b) Respiratory Protection

(c) Protective Clothing and Equipment

(d) Hygiene Facilities and Practices

F. Respiratory Protection

1. After feasible engineering controls and Work practices have been implemented, use respiratory protection if necessary to maintain employees' exposures to lead and other toxic metals below the PEL. Require the use of respirators for all employees, inspectors, observers, or other personnel who enter areas where airborne exposures exceed or are expected to exceed the PEL, or when entering regulated areas.

2. Provide respiratory protection as required for up to two (2) designees of the Chief Engineer each day.

3. Develop a written Respiratory Protection Program in compliance with 29 CFR 1926.103. When lead is present, include the provisions of 29 CFR 1926.62. When cadmium and arsenic are present, include 29 CFR 1926.1127 and .1118, respectively. Address the selection, use, maintenance and inspection of respirators, and qualifications for respirator use including medical clearance to wear respiratory protection and evidence of fit testing.

4. Treat used respirator cartridges as waste and dispose of in accordance with the requirements of these Special Provisions.

G. Protective Clothing and Equipment

1. Provide protective clothing and equipment and ensure they are worn by all employees whose exposures exceed the PEL, or employees who enter regulated areas. Provide all required protective clothing and

equipment for use by up to two (2) designees of the Chief Engineer each day.

2. Do not allow workers to wear street clothing beneath protective closing in any areas where exposure to toxic metals exceeds the PEL, or when entering regulated areas.

3. Clean or replace the protective clothing as required by the appropriate OSHA standard for the toxic metal that is present. In the case of lead, clean or replace the clothing weekly if the airborne exposure levels are less than 200 $\mu g/m^3$ as an eight (8) hour TWA, or daily if the exposure levels are greater than or equal to 200 $\mu g/m^3$.

4. Use vacuums equipped with HEPA filters for personal decontamination when leaving the Work area. Do not remove or clean the clothing by any means, which reintroduces the toxic metals into the ambient air such as brushing, shaking, or blowing.

5. Store the used clothing in sealed containers.

   (a) If the clothing is to be laundered label the containers with the following: "CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS."

   (b) If the clothing is disposable, label the containers as lead contaminated clothing. Apply hazardous waste labels as appropriate after testing.

6. If an outside laundry is used for the cleaning of the clothing, provide a letter from the laundry in accordance with these Special Provisions.

7. If the clothing is washed on site, provide containers for the collection, retention, and testing of the water after filtration in accordance with these Special Provisions.

8. Assure that employees do not leave the Project site wearing any clothing that was worn while performing activities where exposures exceeded the PELs, or while working within regulated areas.

H. Housekeeping

1. Clean accumulations of dust or debris containing lead or other toxic metals daily, at a minimum. Clean more frequently if visible accumulations are observed that could be carried outside of the regulated area. Containerize the debris for proper disposal.

2. Conduct all cleaning with HEPA vacuums and deposit all dust and debris into sealed containers. The use of compressed air for housekeeping purposes is strictly prohibited unless used in conjunction with a ventilation system capable of capturing the resulting airborne particulate.

I. Personal Hygiene Facilities and Equipment

1. Provide clean lavatory and hand washing facilities in accordance with OSHA sanitation standard 29 CFR 1926.51. Provide showers when exposures exceed the PEL. Confirm that all employees whose exposures exceed the PEL shower prior to leaving the Project site.

2. Filter and containerize all water and make arrangements for proper disposal in accordance with these Special Provisions.

3. Prohibit eating, drinking, smoking, chewing of food or tobacco products, or the application of cosmetics in any area where the exposure to toxic metals exceeds the PELs or within regulated areas, and confirm that workers thoroughly wash hands and face prior to undertaking any of these activities.

4. Provide clean lunch and break areas for use by all employees, and maintain airborne concentrations in these areas below the Action Levels.

5. Provide clean change area(s) for employees whose exposures exceed the PELs. Equip the change area(s) with separate storage facilities for street clothing that are adequately segregated to prevent cross-contamination from Work clothing.

J. Medical Surveillance and Medical Removal Protection

1. Provide all employees with initial and periodic blood and zinc protoporphyrin (ZPP) sampling and analysis, and medical surveillance as required by published OSHA health and safety standards that may exist for the metal of concern such as 1926.62 for lead and 1926.1127 for cadmium. In the case of lead, this requires testing at a minimum of once every two (2) months for the first six (6) months of exposure, and at six (6) month intervals thereafter. Verify that the blood analysis is conducted by laboratories approved by OSHA.

2. Do not use workers with initial blood lead tests of forty (40) µg/dl or above for any Work activities involving exposure to lead above the Action Level. Conduct exit blood tests for each worker upon completion of its Project activities, even if this occurs prior to the completion of the Contractor's Work on the Project.

3. Provide for the temporary removal of employees from exposures above the Action Level for the metal of concern when the blood analysis indicates that unacceptable results are occurring (e.g., fifty (50) µg/dl or above in the case of blood lead.) Protect employees' benefits during any period of medical removal and conduct all tests required by the appropriate OSHA standards during the removal period.

4. Provide all physical examinations as required by the appropriate OSHA standards for metal(s) of concern and verify that all examinations are performed by or under the direct supervision of the licensed physician.

5. Provide all exam information and test results to the employees in writing within five (5) days of receipt.

K. Employee Information and Training

1. Provide initial and annual refresher training for all employees who are exposed to toxic metals above the respective Action Levels on any one (1) day in a twelve (12) month period. Include all of the elements of training that are required by the appropriate OSHA standard. If a standard for the metal does not exist, use the training requirements of 29 CFR 1926.62 as the basis of the training program highlighting the differences as appropriate for the other metals of concern.

2. When other Contractors or employers are present at the site, notify them of the nature of the lead exposure Work, the need to remain out of exposure areas, the warning signs and labeling system in effect, and the potential need for them to take measurers to protect their employees, in accordance with the applicable OSHA regulations.

L. Signs and Regulated Areas

1. Establish regulated areas around activities where airborne levels of toxic metals exceed the respective Action Levels.

2. Post caution signs around the Work area. If a regulation does not exist for the metal of concern, use the legend for the CAUTION sign as found in 29 CFR 1926.62 as the basis, inserting the name(s) of the other toxic metals:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

3. Verify that all workers who enter the regulated area have had the proper training, blood analysis and medical examinations, and are wearing the required protective clothing and respiratory protection. Prohibit eating, drinking, smoking, and chewing of food or tobacco products within the regulated area(s.)

M. Recordkeeping

1. Retain all records related to training, medical examinations, blood analysis, exposure monitoring, respirator fit testing and medical clearance, inspections by a competent person, and other related Project documentation of file at the Project site.

2. Make all records available for review by the Chief Engineer upon request.

3. Retain all records for the duration of employment plus thirty (30) years.

3.02 ESTABLISHMENT OF REGULATED AREAS

A. Establish zones (regulated areas) around areas or activities that might generate airborne emissions of lead, cadmium, chromium, or other toxic metal in excess of the Action level (e.g., paint removal and clean-up locations, dust collector staging areas, waste storage areas, etc.) Use ropes, ribbons, tape, or other visible means to define the areas together with appropriate signage, and prohibit entrance into the regulated areas by unprotected or untrained personnel.

B. Conduct sampling for lead and any other toxic metals that may be present in the coating, according to the appropriate NIOSH method.

1. Conduct the sampling upon commencement of the paint removal activities (at Project-start-up) at the boundary of the regulated area. Collect the samples throughout an entire Work shift.

2. Verify that the samples are analyzed by the laboratory, submitted to and accepted by the Chief Engineer. Provide the test results to the Chief Engineer **in writing** within five (5) days of sampling.

C. Unless otherwise directed by the Chief Engineer, until test results are available to establish the perimeter of the regulated area, initially establish the boundary a minimum of fifteen feet (15') away from any equipment or operations that might generate airborne emissions of toxic metals.

1. If the monitoring confirms that Project emissions at the established boundary do not exceed the Action Level as an eight (8) hour TWA, establish the boundary at that location and discontinue monitoring.

2. If the monitoring shows that the emissions exceed the Action Level, modify and improve Work practices and containment to provide better controls over the emissions, or reestablish the boundary at a different location if allowed by the Chief Engineer. Repeat the monitoring in either case.

D. After the boundaries have been established through instrument monitoring, additional monitoring is not required unless directed by the Chief Engineer, if suspect visible emissions occur, or when there are changes to the Work practices or equipment being used within the regulated areas.

3.03 AIR QUALITY - VISIBLE EMISSIONS AND HIGH VOLUME AMBIENT AIR MONITORING

A. Assessment of Visible Emissions and Releases

1. General Visible Emissions Monitoring Requirements

(a) Conduct visible emissions assessments in accordance with 40 CFR 60, Appendix A, Method 22. These assessments are based on total visible emissions regardless of the opacity of the emission.

(b) In addition to assessments of airborne emissions, conduct visual inspections for releases or spills of dust and debris that have become deposited on surrounding property, structures, equipment or vehicles, and bodies of water.

(c) In the event there are unique State, City, or County regulations regarding visible emissions, they are considered to be in addition to, but not in lieu of, the requirements of this Item.

2. Acceptance Criteria for Visible Emissions Assessments

(a) Random visible emissions from Project activities are restricted to an SSPC Level 1 (no greater than one (1)% of the workday) in accordance with SSPC Guide 6. Conduct visible emission assessments in accordance with 40 CFR 60, Appendix A, Method 22.

(b) Visible emissions in excess of the above criteria are cause for immediate Project shut down until the cause of the emissions is corrected.

(c) Note that violations of any high volume ambient air monitoring that might be conducted by the Commission are cause for immediate Project shut down and the initiation of corrective action, even if the visible emissions results are acceptable.

3. Frequency and Location of Emissions Assessments and Inspections

(a) Conduct the visible emissions assessments to account for all locations where emissions of lead dust might be generated, including but not limited to, the containment, dust collection and abrasive recovery equipment, and waste containerizing areas.

(b) Casual observations and corrections of visible emissions and releases of dust or debris are an ongoing daily requirement, but conduct and document the results of the specialized assessments and inspections as described in these Special Provisions at least three times each day.

(c) Guidance on visible emissions assessments can be found in Method PD/Lead A4 of SSPC publication 95-06, Project Design.

4. Reporting of Visible Emissions

(a) Report the results of the daily assessments in a logbook or other report form and make available for review by the Chief Engineer upon request.

(b) Document all cases where Work has been halted due to unacceptable visible emissions or releases of material, the cleanup activities invoked, and the corrective action taken to avoid a reoccurrence.

B. High Volume Ambient Air Monitoring

1. The Commission may undertake high volume ambient air monitoring during paint removal and clean-up activities to confirm that emissions do not exceed the EPA National Primary and Secondary Ambient Air Quality Standards (NAAQS), or specific County or City regulations.

2. The Contractor will be advised if such monitoring will be performed.

3. The Contractor will be required to comply with the acceptance criteria established in City or County regulations when available. If there are no

local regulations governing high volume ambient air monitoring, the criteria established in 40 CFR 50 will be invoked as summarized below:

(a) TSP-Lead (Total Suspended Particulate-Lead) - Do not exceed 1.5 µg/m^3 averaged over a ninety (90) day period or 13.5 µg/m^3 over an average workday.

4. If monitoring is conducted and the above criteria are violated, immediately stop Work and make changes to the containment and/or Work practices to achieve compliance. Note that exceedances may also result in City or County violations.

3.04 RESTRICTIONS ON EMISSIONS TO GROUND (SOIL), WATER, AND SEDIMENT

A. Conduct all activities so that releases to the soil, water, sediment, or storm sewers do not occur.

B. The release of particulate or debris beyond the contained or protected areas is cause for immediate Project shut down until the cause of the emissions is corrected and clean-up of all visible deposits is completed.

C. Clean up visible deposits of debris on the unprotected ground, on the soil, on or in the water or sediment, around storm sewers or drains, or in areas where rain water could carry the debris into storm sewers or drains. Take the appropriate corrective actions.

D. The Chief Engineer may conduct laboratory testing and analysis of soil, water, and/or sediment. The Contractor will be advised if such testing and analysis will be performed. The ground (soil), water, and sediment will be considered to have been impacted by Project activities based on the laboratory analysis as described below:

1. Visible paint chips or debris on the ground, water, or sediment are not permitted and must be removed regardless of the laboratory test results.

2. Soil - If the geometric mean pre-job total lead concentration is less than 200 ppm, an impact is considered to have occurred if the post-job geometric mean lead concentration is an increase of 100 ppm or more. If the pre-job concentration is greater than 200 ppm, an impact is considered to have occurred if the post-job geometric mean lead concentration exceeds the pre-job geometric mean plus two (2) standard deviations, or an increase of 100 ppm occurs, whichever is greater.

3. Sediment - The sediment will be considered to have been impacted from Project activities following the same criteria utilized for soils.

4. Water - If the geometric mean pre-job total lead concentration is less than 3.5 µg/L, an impact is considered to have occurred if the post-job geometric mean lead concentration is an increase of 1.5 µg/L or more. If the pre-job concentration is greater than 3.5 µg/L, an impact is considered to have occurred if the post-job geometric mean lead concentration exceeds the pre-job geometric mean plus two (2) standard deviations, or an increase of 1.5 µg/L occurs, which ever is greater.

5. If the laboratory analysis shows the soil, water or sediment to have been impacted by Project activities, as directed by the Chief Engineer, and at

no cost to the Commission, conduct the clean-up or remediation necessary to return the media to pre-project levels.

3.05 WORK PRACTICES/CONTAINMENT

A. General Containment Requirements

1. Use a containment system that maintains the Work area free of emissions of dust and debris in accordance with all requirements of this Special Provision.

2. Follow the containment requirements as specified in this item and as stipulated in SSPC Guide 6 for the selected method of removal as summarized in Table 1 of this Special Provision.

3. Have the existing bridge structure analyzed by a Licensed Professional Engineer registered in the State of Ohio. The purpose is to evaluate the loads and stresses imposed on the existing bridge structure by the containment system including wind load, erection loads, blast waste, worker and equipment live loads, as well as the existing structure dead loads, HS20-44 live loads, and impact loading all in accordance with the American Association of State Highway and Transportation Officials - Standard Specification for Highway Bridges, current edition and all interim specifications.

4. When feasible, use the same containment system for both surface preparation and the application of the coatings to prevent paint droplets or overspray from escaping the Work area. Vent the containment during spray application using a suitably sized fan and dust sock, or employ paint arrestor filters on the dust collector intake. Carefully monitor the dust sock or dust collector during spray-painting operations to assure that explosion hazards due to solvent concentrations do not exist.

5. Unless specifically approved by the Chief Engineer, equipment and workers are not allowed to be present or to operate over any lanes that are open to traffic.

6. Remove debris from the containment materials and equipment prior to relocation to another point along the structure or within the facility. Clean to the extent that debris or dust is not dislodged by winds or physical contact during handling and transportation.

7. If lift trucks or truck mounted platforms are utilized, decontaminate any equipment used within the regulated area at the end of each shift.

B. Enclosure System

1. If the floor or ground beneath the structure being prepared serves as the base of the containment, cover it with air and dust impenetrable materials such as solid panels of plywood or flexible materials such as tarpaulins. Maintain the materials throughout the Project to avoid losing debris through rips, tears, or breaks in the coverings.

2. Suspend containment materials or platforms from the bridge structure or parapet walls only when a structural analysis conducted by the Contractor confirms that the bridge components have adequate capacity.

Make any attachments to the structure using rollers, hooks, slings, clamps or other methods, which will not require welding or drilling of holes in either the steel or concrete. Protect parapets from any scraping or gouging damage when hanger mechanisms are used. Do not allow any attachments to concrete parapet walls to Project into the deck shoulder area by more than nine inches (9").

3. If a suspended or elevated platform is constructed to serve as the base of the containment, verify that the platform and its components are designed and constructed to support at least four (4) times its maximum intended load without failure with wire cables capable of supporting at least six (6) times their intended load without failure. Strictly follow all applicable OSHA regulations regarding scaffolding. Cover the platform or scaffolding with air and dust impenetrable materials.

4. Use only fire resistant, self-extinguishing materials.

C. Containment Components

1. Table 1 - Table 1 identifies a series of components that serve as the basis for minimum requirements for the containment system for various methods of paint removal. The components are defined in this Special Provision.

2. Rigidity of Containment Materials - Rigid containment materials consist of solid panels of plywood, aluminum, rigid metal, plastic, fiberglass, composites, or similar materials. Flexible materials consist of screens, tarps, drapes, plastic sheeting, or similar materials.

3. Permeability of Containment Materials - The containment materials are identified as air impenetrable if they are impervious to dust or wind such as provided by rigid panels or coated solid tarps or plastic sheeting. Air penetrable materials are those that are formed or woven to allow air flow. Water impermeable materials are those that are capable of containing and controlling water when wet methods of preparation are used. Chemical resistant materials are those resistant to chemical and solvent stripping solutions.

4. Support Structure - Rigid support structures consist of scaffolding and framing to which the containment materials are affixed to minimize movement of the containment cocoon. Flexible support structures are comprised of cables, chains, or similar systems to which the containment materials are affixed. Minimal support structures involve nothing more than the cables or connections necessary to attach the material to the structure being prepared and/or to the ground.

5. Containment Joints - Fully sealed joints required that mating surfaces between the containment materials and to the structure being prepared are completed sealed. Sealing measures include tape, caulk, Velcro, clamps, or other similar material capable of forming a continuous, impenetrable or impermeable seal. Partially sealed joints involve the mating of the materials to one another and to the structure being prepared with concern for the structural soundness of the joint, but without consideration for creating a continuous, impenetrable or impermeable seal.

6. Entryways - An airlock entryway involves a minimum of one (1) stage that is fully sealed to the containment and which is maintained under negative pressure using the ventilation system of the containment. Resealable door entryways involve the use of doors capable of being repeatedly opened and resealed. Sealing methods include the use of zippers, Velcro, clamps, or similar fasteners. Overlapping door tarpaulin entryways consist of two (2) or three (3) overlapping door tarpaulins. Open seam entryways involve entrance into the containment through any open seam.

7. Mechanical Ventilation - The requirement for mechanical ventilation is to assure that adequate air movement is achieved to reduce worker exposure to toxic metals to as low as feasible, and to enhance visibility. The system must be designed with proper exhaust ports or plenums, adequately sized ductwork, discharge fans and air cleaning devices (dust collectors) and properly distributed make-up air points. Natural ventilation does not require the use of mechanical equipment for moving dust and debris through the Work area. It relies on natural air flow patterns, if any, through the containment.

8. Negative Pressure - If negative pressure is specified, it can be verified by instrument monitoring to achieve a minimum of 0.03 in. (7.5 mm) water column (W.C.) relative to ambient conditions, or through visual assessments for the concave appearance of the containment enclosure.

9. Exhaust Air Filtration - When mechanical ventilation systems are used, filtration of the exhaust air is necessary, otherwise airborne particulate from the containment will be exhausted directly into the surrounding air. Provide a filtration efficiency of at least 99.9% in removing particulate of 0.5 microns or better.

D. Maintenance of Bridge Lighting Systems and Containment Lighting Requirements

1. Maintain all bridge lighting systems operational throughout the Project. Lighting includes navigation lights, aerial lighting, and roadway lighting.

2. If existing lighting will be concealed (e.g., navigation lights), install temporary lighting. Provide the lighting plan to the Chief Engineer for approval in advance.

3. Provide adequate lighting for all surface preparation, paint application, and inspection Work. Maintain a minimum of ten (10) foot-candles for surface preparation and painting, and a minimum of thirty (30) foot-candles for inspection. Increase the lighting if workers or inspectors have difficulty in seeing. Use explosion-proof lighting.

E. Protection of Bridge Drainage Systems

1. Protect storm sewers and drains from the entrance of debris from Project activities. Keep all protective systems clean and operational throughout the entire Project. At the end of each workday at a minimum, remove all visible debris from the protective devices or from areas where rain water could carry the debris into drains or storm sewers. Conduct more frequent cleaning as directed by the Chief Engineer.

2. Identify enclosure in the containment plan the methods that will be used to route run-off from the existing deck drains through the containment. Do not close any bridge deck drains without the explicit approval of the Chief Engineer.

F. Work over Water - Containment Restrictions and Water Booms

1. When working over or near water, use water booms to contain inadvertent spills or releases of dust and debris unless prohibited by navigation lanes. In these cases, use a boat with a skimmer to collect fugitive materials. Remove all Project-related dust and debris from the surface of the water or from sediment at the end of each workday at a minimum. Conduct more frequent cleaning, if so directed by the Chief Engineer.

2. Coast Guard Issues and Notification

(a) Provide the Chief Engineer and the Coast Guard with the distance that the containment will extend below the bottom of the bridge (e.g., below the bottom chord) when operating in the navigation channel. Maintain this distance to the absolute minimum required.

(b) Advance approval from the Coast Guard is required any time that the Work necessitates partial or total restrictions to the movement of vessels beneath the bridge. Provide the Coast Guard with the request at least thirty (30) days prior to the need to commence such activities.

(c) Unless otherwise directed by the Coast Guard, design the containment to allow it to be moved out of the navigation channel within twenty-four (24) hours of notification that ships needing additional clearance require passage.

3. Provide the Chief Engineer and the Coast Guard with a twenty-four (24) hour telephone number and contacts for discussions regarding the containment system.

3.06 WASTE CLASSIFICATION, HANDLING, AND DISPOSAL

A. General

1. The Commission is the generator of the hazardous waste for permitting purposes, and will provide the EPA identification number, but the Contractor is responsible for the handling, storage, transportation and disposal of all wastes.

2. Recover all waste products generated during cleaning and painting Work, including but not limited to rags, tape, disposable coveralls, filters, paint debris, and paint cans.

3. Conduct the Work in strict accordance with Federal, State, and Local regulations governing the handling, transportation and disposal of waste.

B. Items Provided by the Commission

1. An EPA ID number and signatures on the hazardous waste manifest.

C. Items Provided by the Contractor

1. Containerizing, testing (classifying), handling, and storage of all waste.

2. Contracting with licensed and/or permitted waste transporters for the transportation of all hazardous and non-hazardous waste, as well as wastewater.

3. Contracting with licensed and/or permitted disposers of all waste.

D. Waste Sampling, Testing, and Classification

1. Solid Waste Sampling

(a) Collect representative samples of the paint debris generated by Project activities. Collect all samples under the observation of the designees of the Chief Engineer.

(b) Collect samples in accordance with SW-846, "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Describe the sampling methods in the Waste Handling Plan.

(c) All waste streams generated through the use of steel grit abrasives are declared hazardous, but collect a minimum of one (1) representative sample of the waste stream(s) generated from the use of steel grit to identify the specific composition.

(d) Collect a minimum of four (4) representative samples of all other waste streams (i.e., all waste streams, which were not generated by blast cleaning with steel abrasives.) These waste streams include, but are not limited to: paint chips and dust, paint chips mixed with disposable abrasives, and chemical stripping debris. Use a random sampling technique for the collection of the initial samples of each waste stream, and from that group, use random sampling again to select the four (4) for testing.

(e) Complete the initial sampling of each waste stream immediately upon filling the first container, but do not allow waste to accumulate for longer than thirty (30) days before sampling. After the representative samples are collected, send them immediately to the laboratory for analysis.

(f) Unless otherwise directed by the Chief Engineer, or required by state regulations or the waste 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.

2. Wastewater

(a) Collect representative samples of wastewater generated by the Work. At a minimum, collect and analyze one (1) sample per storage container. Collect the samples under the observation of the designee of the Chief Engineer.

(b) Complete the initial sampling of each wastewater stream immediately upon filling the first container, but do not allow waste to accumulate for longer than thirty (30) days before sampling. After the representative samples are collected, send them immediately to the laboratory for analysis.

3. Testing (Solid Waste)

(a) Have all testing performed by the laboratory accepted to the Chief Engineer. Direct the laboratory to test the waste in accordance with 40 CFR 261, Appendix II, Method 1311, Toxicity Characteristic Leaching Procedure (TCLP), to determine if it is hazardous. Note that spent solvents and unused paint can be classified as hazardous due to ignitability without the need for testing.

(b) Analyze the first two (2) samples from each waste stream by TCLP for all eight (8) heavy metals and other hazardous substances. Analyze subsequent samples of the waste stream(s) for lead and any material that is detected in the initial TCLP testing. For recyclable steel grit debris that will be treated as hazardous, analyze one (1) sample for all eight (8) metals. When chemical strippers are used, test all liquids and sludge. Include pH to determine corrosivity.

4. Testing (Wastewater)

(a) Test the wastewater for total lead, cadmium, arsenic, and chromium and any other analytical parameters required for disposal characterization or by the disposal facility.

5. Classification

(a) Paint debris is classified as hazardous waste if the leachate contains any of the eight (8) metals or other hazardous substances in concentrations at or above limits established in 40 CFR 261.

Arsenic -	5.0 mg/L
Barium -	100.0 mg/L
Cadmium -	1.0 mg/L
Chromium -	5.0 mg/L
Lead -	5.0 mg/L
Mercury -	0.2 mg/L
Selenium -	1.0 mg/L
Silver -	5.0 mg/L

(b) The above includes only those elements typically associated with paints. Other substances may be present which may cause debris to be classified as hazardous waste as defined in 40 CFR 261 (e.g., pH $\leq$ 2.0 or $\geq$ 12.5 resulting in corrosivity, or the characteristic of ignitability) and must be taken into account.

6. Report

(a) Provide the Chief Engineer with copies of the test results as soon as they are received from the laboratory, and no later than ten (10) days after the representative samples are collected and no later than forty (40) days after start-up.

(b) Identify the waste stream(s) analyzed, the number of samples collected and tested, dates of sampling and testing, laboratory test procedures utilized, and the names of the individuals collecting the samples and conducting the laboratory tests. Include copies of the chain-of-custody forms in the documentation.

E. Waste Handling, Packaging, and Storage

1. Comply with 40 CFR 262 and Ohio Revised Code, Chapter 37, for the on-site handling, packaging, and storage of all hazardous waste generated by the Project.

2. Comply with Ohio Revised Code, Chapter 37, for the handling, packaging, and storage of non-hazardous construction waste. Comply with additional County and City regulations as applicable.

3. At a minimum, collect and store the waste at the end of each working day in storage drums or containers such that no waste is left uncontained overnight. Use ODOT-approved containers for hazardous waste storage.

4. Cover all containers and attach lids immediately upon filling. Verify that all labels remain intact.

5. Locate all waste in a single secure storage area with signs around the perimeter. Contact the Chief Engineer for approval of the storage location(s.) At no time should more than one (1) drum of waste remain outside of the secure storage area for more than three (3) days.

6. Store non-hazardous waste separately from hazardous waste. Do not co-mix hazardous waste with non-hazardous waste.

7. Arrange containers in the storage area for easy accessibility and maintain clearance between containers.

8. Do not store any waste on-site for longer than sixty (60) days.

9. Improper waste storage is caused for immediate Project shut down until appropriate corrective action is completed.

10. Train all personnel in the proper handling of the hazardous waste at the Work site in accordance with 40 CFR 265.16. Include procedures in the

Waste Handling Plan that will be followed in the event of a release or spill, required notifications, and methods to be used for cleanup. Maintain all training records on-site.

11. Do not fill any container or roll-off in excess of the capacity marked on the container.

12. If soil remediation is required as a result of Contractor activities, place the soil into separate containers. The Contractor is responsible for the cost of its disposal.

F. Labeling of Containers

1. Immediately label all containers of Project waste and debris to identify the contents. For recyclable steel grit debris that will be treated as hazardous, immediately label the waste as hazardous. Maintain all labels throughout the Project.

2. After the TCLP test results are received, immediately apply hazardous waste labels, if the waste tests hazardous. Label each container or roll-off of hazardous waste in accordance with 40 CFR 262, 49 CFR 171-179, and Ohio Revised Code, Chapter 37. Include the following minimum information:

   (a) Hazardous Waste. Federal law prohibits improper disposal. If found, contact the nearest police, or public safety authority, or the U.S. Environmental Protection Agency.

   (b) Proper ODOT Shipping Name.

   (c) Manifest Document No.

   (d) Generator Name, Address, and EPA ID No.

   (e) Date of Accumulation.

   (f) EPA Waste No.

3. Apply non-hazardous waste classification labels on all other Project waste in accordance with Ohio Revised Code, Chapter 37.

4. Enter the above information using permanent marking material, printed in English, and displayed on a background of contrasting color unobscured by other labels or attachments.

5. All labeling, marking, and placarding is the responsibility of the Contractor. Complete the labeling activities under the observation of the designee of the Chief Engineer, prior to storing or transporting any container or roll-off.

G. Waste Transportation and Disposal

1. Advise the Chief Engineer at least two (2) days in advance of each shipment. Prepare the hazardous waste manifest for each shipment and provide to the Chief Engineer for review and signature.

2. Hazardous Waste

a) Arrange for the transportation of all hazardous waste by a licensed transporter in accordance with 40 CFR 263, 49 CFR 171-179, and Ohio Revised Code, Chapter 37. Also comply with applicable County or City regulations

(b) Arrange for the disposal of all hazardous waste in accordance with 40 CFR 264, 40 CFR 268, and Ohio Revised Code, Chapter 37.

(c) Comply with all of the manifesting, certification, and reporting requirements for hazardous waste in accordance with 40 CFR 262, 40 CFR 268, Ohio Revised Code, Chapter 37, including provision of certificates of final disposal to the Chief Engineer for each shipment.

3. Non-Hazardous Construction Waste

(a) Transport, and dispose of all residual and non-hazardous construction waste in accordance with Ohio Revised Code, Chapter 37.

(b) Comply with additional County and City regulations as applicable.

H. Special Handling and Disposal Conditions for Waste Resulting from the Use of Recycled Steel Grit Abrasives

1. When recycled steel grit abrasives are used, and the resulting waste tests non-hazardous, notify the waste disposal facility that the waste contains high levels of lead and that further stabilization is required prior to disposal. Use stabilization methods that would have been used in the event the waste tested hazardous.

2. Comply with the requirements for the site handling and storage of the waste as if it tested hazardous.

I. Special Handling and Disposal Conditions for Wastewater

1. Provide containers for the collection and retention of all wastewater, including but not limited to the water used for paint removal, hygiene purposes, laundering of clothing, and cleanup activities.

2. Filter visible paint chips and particulate (e.g., through a multi-stage filtration system ending in five (5) microns or better if needed) from the water prior to placing it into the containers. Prior to disposal, test the water for total toxic metals in accordance with these Special Provisions and provide ample filtration until the water is not classified as hazardous.

3. Provide the Chief Engineer with documentation from the facility stating that they will accept the wastewater, and that the levels of any lead or other toxic metals remaining in the water are acceptable.

J. Recordkeeping

Provide the following information to the Chief Engineer for a retention period of a minimum of five (5) years: all manifests, a listing of the type and quantity of all waste generated, and the transportation and disposal facilities used for all waste.

3.07 CLEANING AND CLEARANCE OF MATERIALS, EQUIPMENT, AND SURROUNDING SURFACES

A. Contractor Materials and Equipment

1. Upon completion of Project activities, remove all Contractor equipment and materials. Thoroughly vacuum, wash, or otherwise decontaminate reusable items until they are visually clean prior to removal from the Project site. These items include, but are not limited to, paint removal equipment, containment materials, ground covers, and scaffolding.

2. If adequate cleaning is not possible, treat materials as waste and dispose of in accordance with these Special Provisions.

3. Collect water used for cleaning and dispose of in accordance with these Special Provisions.

B. Cleaning of Surrounding Property and Surfaces

1. General Inspection and Cleaning Requirements

(a) Upon completion of Project activities, and after all Contractor equipment and materials have been removed, conduct and inspection of the Project site and surrounding property and surfaces located within the likely dispersion zone of Project dust and debris.

(b) Thoroughly inspect the property and surfaces for the presence of Project-generated debris including, but not limited to spent abrasives or other paint removal media, paint chips, materials of construction, fuel, and other litter.

(c) After all clean up activities are completed, conduct a final inspection with the designee of the Chief Engineer. Conduct any additional cleaning identified by the Chief Engineer.

2. Cleaning Requirements

(a) Remove all Project debris and litter from the Project site and surrounding property, equipment, and structures.

(b) When cleaning paint chips and dust, use HEPA vacuums, wet washing, or other means that will effectively remove the dust and debris without re-dispersing it into the air. The use of compressed air for cleanup activities is prohibited unless used in conjunction with a ventilation system designed to capture the airborne particulate.

(c) Collect water used for cleaning and dispose of in accordance with these Special Provisions.

3. Acceptance Criteria - Project Cleanup

(a) Clean up activities will be considered to be successfully completed under the conditions identified below.

(b) Paint chips, spent abrasive and other paint removal media, fuel, materials of construction, litter, or other Project debris are not visible on or around the Project site.

(c) Lead dust has been removed from the surface of the completed structure as well as from surrounding structures and equipment when assessed visually.

4. Remediation of Surrounding Property

If directed by the Chief Engineer, conduct the necessary remediation of soil, water, and/or sediment if impacted by Project activities as described earlier in these Special Provisions.

5. Report on Clearance Inspection

Prepare a letter report presenting the results of the inspections and tests conducted to verify the final cleanliness of the Project site, surrounding property, waterways, equipment, buildings, and structures. Provide this report to the Chief Engineer within ten (10) days after demobilization.

3.08 REPORTABLE RELEASES

A. Clean Water Act

Reportable quantities of hazardous substances in waterways are found in Section 311 of the Clean Water Act. Report such releases to the Chief Engineer, the EPA in accordance with 40 CFR 117 and 40 CFR 355, and the Coast Guard.

B. CERCLA

Reportable quantities under CERCLA are found in 40 CFR 302. In the case of lead, the reportable quantity is a release of ten (10) or more pounds in a twenty-four (24) hour period. If such releases occur, stop Work immediately and notify the Chief Engineer and the National Response Center (800/424-8802.)

PART 4.0 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

A. All worker protection requirements for Contractor personnel, including protective clothing and equipment, medical surveillance, hygiene facilities, laundering, and documentation, are based on lump sum.

B. Protective clothing and equipment for designees of the Chief Engineer is based on a unit price basis. The price represents full compensation for the equipment and its cleaning or disposal. For estimating purposes, two (2) sets of clothing and equipment should be available for Commission use for each eight (8) hour shift, with an average of two (2) additional sets available per week.

C. Regulated area monitoring is based on lump sum and includes full compensation for all equipment needed, personnel time, laboratory fees, and documentation for the establishment and monitoring of the regulated area(s) throughout the duration of the Project.

D. Non-hazardous waste is not measured for payment. All costs associated with the collection, storage, transportation, and disposal of non-hazardous waste are considered to be incidental to the Project.

E. Paint waste/hazardous waste is based on lump sum, and includes full compensation for all testing, handling, storage, transportation, and disposal of the waste.

F. Containment is based on lump sum, and includes full compensation for all labor, containment and ventilation materials and equipment, engineering, drawings, and any equipment or facilities needed to install, operate, move, clean, dismantle, and remove the containment system from the Project site.

4.02 BASIS OF PAYMENT

A. Payment for accepted quantities will be made at the Contract unit price. Payment represents full compensation for all labor, materials, tools, equipment, and other incidentals necessary to complete each item.

B. All of the items identified below apply to either localized or total removal of the existing coatings.

Items	Units	Description
SP 525A	Lump Sum	Worker Protection
SP 525A	Each	Protective Clothing/Equipment Set
SP 525A	Lump Sum	Establish Regulated Areas
SP 525A	Lump Sum	Paint Waste/Hazardous Waste Classification, Handling, and Disposal
SP 525A	Lump Sum	Containment System

C. The Contractor shall include all Work required by SP 525B as incidental to the above pay Items.

4.03 PAYMENT SCHEDULE

A. Partial payments for Item SP 525A - Worker Protection will be made by prorating the Contract Lump Sum price for the item based on dividing the calendar days of time expended on the jobsite by the anticipated duration of the Project in calendar days as shown on the most recently approved Progress Schedule.

B. Payment for Item SP 525A - Protective Clothing/Equipment Set will be made at the Contract price for each clothing/equipment set used. No partial payments will be made.

C. Partial payments for Item SP 525A - Establish Regulated Areas will be made by prorating the Contract Lump Sum price for the item based on dividing the

calendar days of time expended on the job site by the anticipated duration of the Project in calendar days as shown on the most recently approved Progress Schedule.

D. Payment for Item SP 525A - Paint Waste/Hazardous Waste Classification, Handling, and Disposal will be made at the Contract Lump Sum price for the item. Partial payments will not be made for this item. Payment will not be made until all certificates of final disposal are provided to the Chief Engineer.

E. Partial payments of Item SP 525A - Containment Systems will be made by prorating the Contract Lump Sum price for the item based on dividing the surface area that has been prepared and coated with all three coats by the total surface area of the structure.

Table 1
Containment Criteria for Removal of Paint Containing Lead and Other Toxic Metals[1]

Removal Method	SSPC Class[2]	Containment Material Flexibility	Containment Material Permeability[3]	Containment Support Structure	Containment Material Joints	Containment Entryway	Ventilation System Required	Negative Pressure Required
Hand Tool Cleaning[4]	3P	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed	Overlapping or Open Seam	Natural	No
Power Tool Cleaning w/ Vacuum[4]	3P	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed	Overlapping or Open Seam	Natural	No
Power Tool Cleaning w/o Vacuum[5]	2P	Rigid or Flexible	Permeable or Impermeable	Rigid or Flexible	Fully or Partially Sealed	Overlapping or Open Seam	Natural[5]	No
Chemical Required[6] Stripping[6]	3C	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed	Open Seam	Natural	No
Wet Methods[7]	2W-3W	Rigid or Flexible	Permeable or Impermeable	Rigid, Flexible, or Minimal	Partially Sealed	Overlapping or Open Seam	Natural[7]	No
Abrasive Blast Cleaning[8]	1A	Rigid or Flexible	Impermeable	Rigid or Flexible	Fully Sealed	Airlock or Resealable	Mechanical	Yes

[1]This table provides general design criteria only. It does not guarantee that specific controls over emissions will occur because unique site conditions must be considered in the design. Other combinations of materials may provide controls over emissions equivalent to or greater than those combinations shown above.

[2]The SSPC Classification is based on SSPC Guide 6. Note that for Work over water, water booms should be employed, where feasible, to contain spills or releases. Debris must be removed daily at a minimum.

[3]Permeability addresses both air and water as appropriate. In the case of water or chemical removal methods, the containment materials must be resistant to both chemicals and water. Ground covers should always be impermeable, and of sufficient strength to withstand the impact and weight of the debris and the equipment that might be used for collection and clean-up.

[4]Ground covers and/or free hanging tarpaulins may provide suitable controls over emissions without the need to completely enclose the Work area.

[5]Ventilation is not required provided the emissions are controlled as specified in this section, and provided worker exposures are properly controlled. If unacceptable worker exposures to lead or other toxic metals occurs, incorporate a ventilation system into the containment.

[6]Ground covers must always be impermeable and of sufficient strength to withstand the weight and impact of the debris and the equipment used for cleaning. If debris escape through the seams, then additional sealing of the seams and joints is required. All containment materials and materials used for sealing must be resistant to both chemicals and water. If unacceptable worker exposures to lead or other toxic metals occurs, incorporate a ventilation system.

[7]This method applies to pressure washing, high pressure water jetting with and without abrasive, and wet abrasive blast cleaning. Although both permeable and impermeable containment materials are included, ground covers and the lower portions of the containment must be water impermeable with fully sealed joints, and of sufficient strength and integrity to facilitate the collection and holding of the water and debris for proper disposal. Ventilation is not required provided the emissions are controlled as specified in this section, and provided worker exposures are properly controlled. If unacceptable worker exposures to lead or other toxic metals occurs, incorporate a ventilation system into the containment.

[8]Ground covers must be of sufficient strength to withstand the impact and weight of the abrasive and the equipment used for cleaning. Ground covers should also extend beyond the containment boundary to capture escaping debris.

SP 621 RAISED PAVEMENT MARKERS

(*02-28-2020)*

A. Description

In accordance with the lines, symbols and dimensions shown on the Plans or as described herein, the Work shall consist of:

Placing plowable raised pavement markers (RPM) on the Turnpike mainline roadway (lane line) and Turnpike acceleration and deceleration lanes (gore areas).

The Contractor shall furnish all material, services, labor and equipment necessary for the required pavement preparation and placement per manufacturer's recommendations, of RPMs and prismatic retroreflectors for each item described herein.

All provisions of Ohio Department of Transportation Construction and Material Specification (CMS) Item 621 shall apply. In the case of conflicting requirements, the Ohio Turnpike and Infrastructure Commission (Commission) SP 621 will govern.

B. Materials

The RPM shall be furnished by the Contractor and shall consist of two (2) parts. One (1) component is the casting and the other component is the prismatic retroreflector. The RPMs shall be furnished with the prismatic retroreflectors in place.

New and replacement RPM castings shall be Stimsonite Model 101 LPCR (low profile). New and replacement prismatic retroreflectors shall meet the requirements of Item 721.02.

Adhesives shall meet the requirements of Item 721.02.

C. Layout

Before beginning RPM casting placement, the Contractor shall accurately and adequately layout, by reference points, the location of all RPMs. The RPMs shall be installed in a straight or smoothly curved line, true to the alignment of the pavement.

RPMs shall not be installed until the permanent pavement markings have been placed.

RPMs shall not be placed directly over painted pavement markings except where the painted markings deviate visibly from their correct alignment, and then only

with the approval of the Chief Engineer. RPMs shall not be placed at a pavement construction joint.

The RPM spacing across bridge decks and approach slabs shall be adjusted as required to ensure that RPMs are not placed within two (2) feet of any transverse joint, expansion joint, or compression seal.

If during the preinstallation layout operations, it is determined that a RPM would be placed at a point with one (1) of the aforementioned conditions, the affected RPM shall be relocated longitudinally a sufficient distance to a point approved by the Chief Engineer. The distance the RPM may be relocated shall not exceed ten (10) percent of the typical RPM spacing. Where it would be necessary to relocate the RPM a distance greater than ten (10) percent of the typical RPM spacing, the affected RPM shall not be installed.

D. Placement of RPMs

In addition to the requirements of Item 621, at time of placement in the pavement the RPM casting shall be free of oil, grease, rust or any foreign matter, which will impair adhesion to the pavement. It shall be the responsibility of the Contractor to clean each contaminated casting by sand blasting or other acceptable procedures approved by the Chief Engineer to remove all such foreign matter prior to installation.

During periods of high ambient relative humidity, epoxy may require a longer drying time than indicated in Item 621.04 table.

RPMs shall be installed by inserting the two (2) keels of the casting into parallel slots cut into the pavement.

The epoxy adhesive shall be maintained at sixty (60) °F to eighty (80) °F before mixing. Any heating of the epoxy adhesive shall be by the application of indirect heat. The epoxy adhesive shall not be heated above 120 °F.

The cleaned slots shall be filled with epoxy adhesive. Sufficient epoxy shall be placed in and between the slots to insure that all voids beneath and around the casting are filled so as to create a watertight seal around the casting. The keels of the casting shall be placed into the slots in such a manner as to assure that the tips of the RPM snowplow deflecting surfaces are below the pavement surface and that the four (4) lugs on the keels of the casting are in contact with the pavement.

E. Placement Tolerances

RPMs installed along an edge or channelizing line shall be placed so that the near edge of the marker casting is not more than one-half (1/2) inch from the near edge of the painted line, and shall not deviate laterally from the proper location at a rate of not more than one-half (1/2) inch in eighty (80) feet. No deviation of more than one (1) inch will be accepted. Where RPMs are installed

on the lane line, they shall be placed so that they are between and in line with the dashes, and shall not deviate laterally from the proper location at a rate of not more than one (1) inch in eighty (80) feet. No deviation of more than two (2) inches will be accepted.

F. RPM Supplement Marking Descriptions

Channelizing Lines: RPMs, which are used in channelizing line applications, shall have white/red two-way reflectors with white facing traffic.

Lane Lines: RPMs, which are used in lane line applications, shall have one-way white prismatic retroreflectors facing traffic.

G. Method of Measurement

The number of RPMs placed will be the actual number, installed, complete, in place, and accepted, in the units designated, including layout, premarking, surface preparation, and the furnishing and application of all required adhesives.

The number of replacement prismatic retroreflectors will be the actual number installed, complete, in place, and accepted in the units designated including removal and disposal of the existing prismatic retroreflector.

The number of replacement RPM castings will be the actual number installed, complete, in place and accepted in the units designated. Including removal and disposal of the old casting; the cost of asphalt concrete to fill depressions caused by removal of the old casting, layout, surface preparation and the furnishing of the replacement casting and application of all adhesives.

H. Basis of Payment

Payment for accepted quantities in place will be made at the Contract unit price for:

Item	**Unit**	**Description**
SP 621	Each	Raised Pavement Marker
SP 621	Each	Replacement Prismatic Retroreflector
SP 621	Each	Replacement Raised Pavement Marker Casting

Payment shall be full compensation for all materials, labor, incidentals, and equipment for placement of the RPM castings and/or prismatic retroreflectors.

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