

SPECIFICATIONS

FOR

**SYLACAUGA HOUSING AUTHORITY
DREW COURT: LEAD BASED PAINT REPAIRS**

SYLACAUGA, ALABAMA

PROJECT # CCR - 24018

MARCH 22, 2024



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Project No. CCR–24018
March 22, 2024

TECHNICAL SPECIFICATIONS FOR
**Sylacauga Housing Authority -
Drew Court: Lead Based Paint Repairs**
900 Crestline Avenue – Sylacauga, AL 35150

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SECTION 010100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Project information.
- 2. Work covered by Contract Documents.
- 3. Access to site.
- 4. Coordination with occupants.
- 5. Specification and drawing conventions.

- B. Related Requirements:

- 1. Section 015000 "Construction Facilities and Temporary Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Drew Court: Lead Based Paint Repairs.

- 1. Project Location: 900 Crestline Avenue - Sylacauga, Alabama 35150.

- B. Owner: Sylacauga Housing Authority (SHA).

- 1. Owner's Representative: Sam Royster, Executive Director. (205)-249-0381

- C. Architect: Cohen Carnaggio Reynolds, Inc. (205)324-8864.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:

- 1. Lead Based Paint Remediation of interior and exterior paint finishes throughout existing apartment buildings at 57-4, 57-5 and 57-10 sections of SHA's Drew Court Housing Community. The scope of work includes general construction, selective demolition, removal and replacement of new paint finishes and shelving for a complete project constructed under a single prime contract. Contractor and/or subcontractor(s) shall be licensed lead based paint

remediation companies and shall provide the standard labor warranty for installation of project components.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. Condition of Existing Buildings: Maintain portions of existing buildings affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.6 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 010100

SECTION 010200 – ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Selected materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Modification Procedures" specifies procedures for submitting and handling Change Orders.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At the Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by the Architect from the designated supplier.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly upon delivery for damage or defects.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Lump Sum Allowances.

- 1. **Allowance No. 1, Construction Contingency:**

- a. Provide a 3% construction contingency amount in the construction sum for unforeseen conditions. If not used, the contingency amount shall be credited back to the Owner.

- 2. **Allowance No. 2, Damaged Steel Lintel Replacement:**

- b. Provide an allowance of \$4,000.00 for removal and replacement of existing damaged/deteriorated steel lintels above door and window openings. If not used, the allowance amount shall be credited back to the Owner.

END OF SECTION 010200

SECTION 010270 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. This Section specifies administrative and procedural requirements governing each prime contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.
- C. Related Sections: The following Sections contain requirements that relate to this Section.
 - 1. Schedules: The Contractor's Construction Schedule and Submittal Schedule are specified in Division 1 Section "Submittals."

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
- B. Coordination: Each prime Contractor shall coordinate preparation of its Schedule of Values for its part of the Work with preparation of the Contractors' Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's Construction Schedule.
 - b. Application for Payment forms, including Continuation Sheets.
 - c. List of subcontractors.
 - d. Schedule of allowances.
 - e. Schedule of alternates.
 - f. List of products.
 - g. List of principal suppliers and fabricators.
 - 2. Submit the Schedule of Values to the Owner's Representative and Architect at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.
- C. Format and Content: Use the Project Manual table of contents as a guide to establish the format for

the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect.
 - c. Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - 1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
4. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
6. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as reviewed and certified by the City Engineer or Architect and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
 2. Each monthly application should include the following:

- a. Current construction schedule.
 - b. Current Change Order Log, showing the status of all Change Orders.
 - c. Current RFI Log, showing the status of all RFI's and Change Orders.
 - d. Current Submittal Log.
 - e. Lien Wavers from suppliers, vendors and subcontractors.
- B. Payment-Application Times: Each progress-payment date is indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.
- D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
- F. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Contractor's Construction Schedule (preliminary if not final).
 5. Schedule of principal products.
 6. Schedule of unit prices.
 7. Copies of building permits.
 8. Initial progress report.
 9. Certificates of insurance and insurance policies.
 10. Performance and payment bonds.
 11. Submittal Schedule.
- G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 2. Administrative actions and submittals that shall precede or coincide with this application include:

- a. Occupancy permits and similar approvals.
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Final cleaning.
 - f. Application for reduction of retainage and consent of surety.
 - g. Advice on shifting insurance coverages.
 - h. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- H. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.
 3. Ensure that unsettled claims will be settled.
 4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
 5. Transmittal of required Project construction records to the Owner.
 6. Proof that taxes, fees, and similar obligations were paid.
 7. Removal of temporary facilities and services.
 8. Removal of surplus materials, rubbish, and similar elements.
 9. Change of door locks to Owner's access.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 010270

SECTION 010350 - MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
 - 3. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.
 - 4. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

- A. The Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on AIA Form G710, Architect's Supplemental Instructions. Such changes shall be affected by written order issued by the Architect.

1.4 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: The Architect will prepare and issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
 - 2. Within 5 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.
 - a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

- B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.

1.5 ALLOWANCES

- A. Allowance Adjustment: For allowance-cost adjustment, base each Change Order Proposal on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place. Where applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
1. Include installation costs in the purchase amount only where indicated as part of the allowance.
 2. When requested, prepare explanations and documentation to substantiate the margins claimed.
 3. Submit substantiation of a change in scope of work claimed in the Change Orders related to unit-cost allowances.
 4. The Owner reserves the right to establish the actual quantity of work-in-place by independent quantity survey, measure, or count.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. The Architect will take appropriate action on Construction Change Directives.
1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Proposal Request, the Architect will prepare a Change Order, and

the Architect will take appropriate action on a Change Order for signatures of the Owner and the Contractor on AIA Form G701.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 010350

SECTION 010400 - COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
 - 1. General project coordination procedures.
 - 2. Coordination Drawings.
 - 3. Cleaning and protection.

1.3 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
 - 3. Make provisions to accommodate items scheduled for later installation.
 - 4. Coordinate the work with other Prime Contractors.
- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. The Contractor shall prepare and submit for the Owner's information and the Architect's approval a Construction Schedule for the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.

3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.
1. Show the relationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Section "Submittals."
- B. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.
1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

- A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

- C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
1. Excessive static or dynamic loading.
 2. Excessively high or low temperatures.
 3. Thermal shock.
 4. Excessively high or low humidity.
 5. Water or ice.
 6. Puncture.
 7. Abrasion.
 8. Heavy traffic.
 9. Soiling, staining, and corrosion.
 10. Rodent and insect infestation.
 11. Contact between incompatible materials.
 12. Excessive weathering.
 13. Unprotected storage.
 14. Improper shipping or handling.
 15. Theft.
 16. Vandalism.

END OF SECTION 010400

SECTION 010950 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic contract definitions are included in the Conditions of the Contract.
- B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, who performs a particular construction activity including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- J. "Project site" is the space available to the Contractor for performing construction activities, either

exclusively or in conjunction with others performing work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different but apparently equal to the Architect for a decision before proceeding.
 - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations," which is available in most libraries.

1.4 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 010950

SECTION 01 1400 – WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 USE OF PREMISES

- A. Refer to Section 01 31 19 Project Meetings for Owner Coordination Meeting information.
- B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
- C. Contractor shall assume full responsibility for the protection and safekeeping of products under this contract stored on the site.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION 01 1400

SECTION 012000 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
 - 1. Preinstallation conferences.
 - 2. Progress meetings.
 - 3. Coordination meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Coordination" for procedures for coordinating project meetings with other construction activities.
 - 2. Division 1 Section "Submittals" for submitting the Contractor's Construction Schedule.

1.3 PREINSTALLATION CONFERENCES

- A. Conduct a preinstallation conference at the Project Site before each construction activity that requires coordination with other construction. Activities requiring preinstallation conferences include, but are not limited to the following:
 - 1. Electrical Work
 - 2. HVAC Mechanical Equipment & Refrigerant Piping.
- B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.
 - 1. Review the progress of other construction activities and preparations for the particular activity under consideration at each preinstallation conference, including requirements for the following:
 - a. Contract Documents.
 - b. Shop Drawings, Product Data, and quality-control samples.
 - c. Possible conflicts.
 - d. Compatibility problems.
 - e. Time schedules.
 - f. Manufacturer's recommendations.
 - g. Compatibility of materials.
 - h. Acceptability of substrates.

1.4 PROGRESS MEETINGS

- A. Conduct progress meetings at the Project Site at regular intervals. Notify the Owner and the Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

1.5 COORDINATION MEETINGS

- A. Conduct project coordination meetings at regular intervals convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special preinstallation meetings.
- B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for products selected under an allowance.
 - 2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor *after award of the Contract are considered to be requests for substitutions.*
 - 1. The following are not considered to be requests for substitutions:
 - a. Substitutions requested during the bidding or pricing period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - b. Revisions to the Contract Documents requested by the Owner or Architect.
 - c. Specified options of products and construction methods included in the Contract Documents.
 - d. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.
 - 2. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 3. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use CSI Form 13.1A.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

- b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed unless otherwise indicated.
- C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 013000 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

- 1. Contractor's construction schedule.
- 2. Shop Drawings.
- 3. Product Data.
- 4. Samples.

- B. Related Sections: The following Sections contain requirements that relate to this Section:

- 1. Division 1 Section "Applications for Payment" specifies requirements for submittal of the Schedule of Values.
- 2. Division 1 Section "Coordination" specifies requirements governing preparation and submittal of required Coordination Drawings.
- 3. Division 1 Section "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.
- 4. Division 1 Section "Quality Control" specifies requirements for submittal of inspection and test reports.
- 5. Division 1 Section "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay. Submit to the Architect for his approval.

- 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
- 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

- 3. Processing: To avoid the need to delay installation as a result of the time required to process

submittals, allow sufficient time for submittal review, including time for resubmittals.

- a. Allow 2 weeks for initial review by the Architect. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow 2 weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
4. A submittal schedule shall be submitted with the first application. Schedule shall illustrate all Submittals and their time frames.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of the Contractor.
 - d. Name and address of the subcontractor.
 - e. Name and address of the supplier.
 - f. Name of the manufacturer.
 - g. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Contractor.
1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 15 days after the date established for "Commencement of the Work." Schedule shall be provided in a Suretrack Format.
1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values." No activity shall extend beyond 15 days.
 2. Within each time bar, indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor

- elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
5. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.
 6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.
 7. Schedule shall include "Target Bars" illustrating the initial schedule.
 8. Provide Schedule on an electronic disk.
 9. Schedule shall reflect all milestone dates.
- B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
- C. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

- A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. **Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings.** Standard information prepared without specific reference to the Project is not a Shop Drawing.
- B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
1. Dimensions.
 2. Identification of products and materials included by sheet and detail number.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
 6. Final Submittal: Submit 4 blue- or black-line prints; submit 6 prints where required for maintenance manuals. The Architect will retain 1 print and return the remainder.
 7. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.6 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with trade association standards.

- c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Submittals: Submit 4 copies of each required submittal; submit 6 copies where required for maintenance manuals. The Architect will retain one and will return the other marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 4. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.7 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:
 - a. Specification Section number and reference.
 - b. Generic description of the Sample.
 - c. Sample source.
 - d. Product name or name of the manufacturer.
 - e. Compliance with recognized standards.
 - f. Availability and delivery time.
 2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - b. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 4 sets. The Architect will return one set marked with the action taken.
 4. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.8 ARCHITECT'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.
1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013000

SECTION 014000 - QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality-control services.
- B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by the Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 RESPONSIBILITIES

- A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.
 - 1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.
 - 2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.
- B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document

requirements, regardless of whether the original test was Contractor's responsibility.

1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
- C. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.
- D. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.4 SUBMITTALS

- A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.
1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample taking and testing.
 - k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

- A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.
 - 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 014000

SECTION 014319 MOCKUPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for fabrication and erection of mockups, complete, as indicated and specified.
2. The purpose of the mockups is for the Contractor and subcontractors to demonstrate the quality of workmanship, quality of materials, finishes, the methods of assembly, and the performance testing of the mockups.
3. When review of mock-up may require revisions in design, the Owner and Architect will so advise the Contractor of such revisions in writing.

B. Related Sections:

1. All sections for mockup work scheduled below.
2. 09 65 13 Resilient Base and Accessories
3. 09 90 00 Painting

1.2 SUBMITTALS

- A. Shop Drawings: Submit complete shop and erection drawings for construction of the area indicated. Include sizing and spacing of each component, anchorage details, and provisions for attachment or insertion of associated Work. Include detailed description of each test procedure to be performed.
- B. Additional Submittal Data: Refer to specific specification Sections for additional submittal requirements.

1.3 QUALITY ASSURANCE

- A. Construct mockups in full size, with the same materials, methods, and workmanship that will be used for the Work.
- B. Following acceptance, mockups shall serve as standards of quality and appearance for the Work they represent.
- C. Mockups will remain in place after approval by Owner and Architect.

1.4 JOB CONDITIONS

- A. Schedule construction and review of mockups to avoid delaying the progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials and finishes for mockups shall be as specified in individual Specifications Sections.

2.2 FABRICATION

- A. Fabricate and install mockups in full size, with the same materials, methods, and workmanship that will be used for the Work.
- B. Fabricate mockups as scheduled below. Mock-ups shall be complete with all components of the assembly, including framing system, windows, glazing, sealants, finishes, and all other items required.
- C. With the Owner and Architect's prior approval, mockups will be incorporated into the work.

PART 3 - EXECUTION

3.1 MOCKUPS

- A. General: Provide listed below and as indicated in specific specification section.
 - 1. Give ample advance notice of time and place for mockup review for Owner approval.
- B. Design Criteria: As specified under appropriate Sections.
- C. Schedule of Mockups. Provide mockups of the following:
 - 1. Mockup No. 1: Interior (Drew Court 57-10) Apartment Unit
 - a. In a room within a Drew Court 57-10 apartment unit designated by SHA, provide a full-height by minimum 4 foot wide in-place mockup of the new paint wall color and 4 foot long by 4" high rubber base on a plaster wall surface and new paint on a 4 foot long section of an interior metal gas line.
 - 2. Mockup No. 2: Interior Pantry Shelving
 - a. In a Drew Court 57-10 Pantry room designated by SHA, provide a full-width ¾" thick painted plywood shelf to replace existing shelves in apartment units.
 - 3. Mockup No. 3: Exterior Lintels
 - a. At both a Drew Court 57-4 or 57-5 door and window opening designated by SHA, provide a full-width paint encapsulation mockup of the lintels.
 - 4. Mockup No. 4: Exterior Porch Partitions
 - a. At a Drew Court 57-4 and 57-5 removed porch partition location designated by SHA, provide a mockup showing patching of the slab, walls and ceiling. of the lintels.

3.2 REVIEW AND ACCEPTANCE

- A. Upon completion of each mock-up, notify Architect and Owner's Representative and make arrangements for review and testing. Provide at least 3 working days after notification for review and comment. The Architect, and Owner's representative will provide comments and approval.
- B. Modify, redo, and add to mock-up as directed.
- C. Do not proceed with installation of any material or product incorporated in a mock-up until mock-up is reviewed and accepted by Architect and Owner.

3.3 PROTECTION AND MAINTENANCE

- A. General:
 - 1. Following acceptance, mockups shall serve as a minimum standard of quality and appearance for the final completed installation of the work it represents.
 - 2. Protect and maintain mockups in a clean, undamaged condition, as acceptable to the Owner and Architect, until such time as they are either incorporated in the Work or removed from the site.
 - 3. Accepted mockups shall not be incorporated into the Project unless specifically authorized in writing by the Architect.

3.4 REMOVAL

- A. Any portions of mockups that are not approved for incorporation into the work shall become the Contractor's property and shall be removed from the site by the Contractor when so directed by the Owner and Architect.

END OF SECTION

SECTION 015000 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage sheds.
 - 2. Temporary project identification signs and bulletin boards.
 - 3. Waste disposal services.
 - 4. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Temporary fire protection.
 - 2. Environmental protection.

1.3 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, fire department, and rescue squad rules.
 - 5. Environmental protection regulations.
- B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

- A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- C. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- D. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
- C. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, temporary fire-protection facilities, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

3.4 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 1. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor's property.

END OF SECTION 015000

SECTION 016000 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

- 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

- a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

- 2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

- 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

- 1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

- B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 - 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 - 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
 - 1. Proprietary Specification Requirements: Where specification sections name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
 - 2. Semiproprietary Specification Requirements: Where specifications sections name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.

- a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
3. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
4. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.
5. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.
6. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 016000

SECTION 017000 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operation and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise the Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Submit record drawings, maintenance manuals, and similar final record information.
 - 6. Deliver tools, spare parts, extra stock, and similar items.
 - 7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
 - 8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 - 9. Complete final cleanup requirements, including touchup painting.
 - 10. Touch up and otherwise repair and restore marred, exposed finishes.

- B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Before requesting final inspection for certification of final acceptance and final payment, complete the following.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit consent of surety to final payment.
 4. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.
1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
 3. Note related change-order numbers where applicable.
 4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 3. Note related record drawing information and Product Data.
 4. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
- E. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Architect for the Owner's records.
- F. Maintenance Manuals: Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51-mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
1. Emergency instructions.
 2. Spare parts list.
 3. Copies of warranties.
 4. Wiring diagrams.
 5. Recommended "turn-around" cycles.
 6. Inspection procedures.
 7. Shop Drawings and Product Data.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
 - a. Remove labels that are not permanent labels.

- b. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - c. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean light fixtures and lamps.
 - d. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
- 1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION 017000

SECTION 017400 - WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
 - 2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
 - 3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
 - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can

enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.4 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
- B. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.
- C. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
 3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 017400

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building or structure.
 - 2. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary of Work" for use of the premises and phasing requirements.
 - 2. Division 1 Section "Project Meetings" for Landlord Coordination meeting.
 - 3. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Proposed **Dust-Control and Noise-Control** Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's adjacent operations are uninterrupted.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged to the Architect.
- E. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI A10.6 and NFPA 241.
- E. Predemolition Conference: (Note: Predemolition Conference may be combined with Preconstruction Conference as described in Section 01 31 19 Project Meetings). Conduct conference at Project site with Architect present to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.7 PROJECT CONDITIONS

- A. Various tenants will occupy the building during demolition. Conduct selective demolition to minimize disruption to all tenants. Provide not less than **72** hours' notice to Landlord and Owner of activities that will affect the operations of any tenant or Landlord.
- B. Where provisions of this section conflict with items discussed during Landlord Coordination meeting as described in section 01 31 19 Project Meetings, the more stringent shall apply.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- D. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: As required by Landlord, maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly notify Architect.
- E. Engage a professional engineer as required to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and Landlord and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner, Landlord, and to authorities having jurisdiction.
 - 1. Provide at least **72** hours' notice to Owner and Landlord if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - 3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Plumbing, Fire Suppression, Mechanical and Electrical Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with all tenants, Landlord, shared stairs, elevators, means of egress, public areas, roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct these areas without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walls, barriers, walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.

- C. Temporary Shoring: Provide and maintain **interior** shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

- A. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building as directed by Landlord during Landlord Coordination meeting as described in section 01 31 19 Project Meetings.
- B. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Refer to phasing plans on drawings.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain **fire watch and** portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.
 - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 9. Dispose of demolished items and materials promptly.
 - 10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Removed and Salvaged Items: Comply with the following:
 - 1. Clean salvaged items.
 - 2. Store items in a secure area until delivery to Owner.
 - 3. Protect items from damage during removal and storage.
- C. Removed and Reinstalled Items: Comply with the following:
 - 1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 - 2. Protect items from damage during transport and storage.

3. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition **and cleaned** and reinstalled in their original locations after selective demolition operations are complete.
- E. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- F. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- G. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
 3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
- F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing **Items** to Be Removed: See Contract Document Drawings
- B. Existing Items to Be Removed and Reinstalled: See Contract Document Drawings
- C. Existing Items to Remain: See Contract Document Drawings.

END OF SECTION 024119

SECTION 028300 – LEAD REMEDIATION

PART 1 - GENERAL

1.1 INTRODUCTION

- A. The Contractor shall perform all planning, administration, execution, and cleaning necessary to safely perform work activities impacting lead-containing materials (LCM).

1.1 WORK INCLUDED

- A. Refer to attached Lead Based Paint Abatement Specification sections for Drew Court 57-4/57-5 and 57-10 for lead based paint work locations.
- B. Work activities, e.g., demolition, construction, renovation, abatement, and routine maintenance, that will impact lead-containing material, assumed lead-containing material, or other lead-related hazards.
- C. General requirements include, but are not necessarily limited to:
 - 1. Notification to regulatory agencies.
 - 2. Regulatory permits, licenses, and approvals.
 - 3. Worker health and safety program.
 - 4. Establishing appropriate engineering controls and utilizing good work practices to prevent migration of lead in air from work areas and properly cleaning work areas prior to release to other tradesworkers, employees, the public, etc.
 - 5. Contractor shall be responsible for personnel exposure monitoring as required by regulatory agencies for the safety of its employees as indicated in 29 CFR 1926.62.
 - 6. Contractor shall be responsible for retaining a third-party industrial hygienist to provide project monitoring services during work activities that are subject to this specification section.
 - 7. If required in the project scope of work, abatement of existing lead-containing material.
 - 8. If required in the project scope of work, performing the interim control of existing lead-containing material or lead-related hazards.
 - 9. Transport and disposal of lead-containing or lead-contaminated material.
 - 10. Decontamination and cleaning.
 - 11. Final job close-out.

- D. The Contractor shall review all contract documents and make a site visit to make its own determination about quantity values prior to applying for the required federal, state, or local permits from agencies having authority or jurisdiction.

1.2 PERFORMANCE OF WORK

Work activities impacting lead-containing material must be conducted by personnel trained and accredited in accordance with state or federal requirements for the location where the work is being performed. At a minimum lead awareness training must be provided in accordance with OSHA Standard 29 CFR 1926.62, Lead in Construction.

At a minimum, all renovation, repair and painting work disturbing lead-based paint (LBP), or paint that has not been tested for lead content, in pre-1978 S-owned/leased facilities, housing and child-occupied facilities, must be conducted in accordance with the requirements of the *EPA Final Rule on Lead; Renovation, Repair and Painting Program (RRP)* (40 CFR 745) and rule revisions. The rule applies to maintenance and repair activities in which 6 square feet or more of paint is disturbed in a room, or in which 20 square feet or more of paint is disturbed on the exterior. Firms/employers performing this work must be certified by EPA as Lead-Safe Certified Firms. Employees/individuals performing this work must be Certified Renovators who are trained by EPA-approved training providers to follow lead-safe work practices. When a state becomes an EPA-authorized state, firms working in those areas shall contact the appropriate state program office to ensure that applicable training, certification, and work practice requirements are being followed.

In addition, firms/employers shall ensure that lead-based paint hazards generated by renovation work are adequately cleaned after renovation work is finished and before the work areas are re-occupied. Visual inspection and dust wipe testing of the work areas after the renovations covered by the RRP rule are required. This clearance examination and dust wipe testing shall be performed by an accredited Dust Sampling Technician, Inspector Technician, or Risk Assessor in accordance with the regulations. The cleaning verification (CV) card testing option for clearance will not be accepted unless approved by OSHEM.

Any renovation, remodeling, repair, or demolition on or around any structure with lead-based paint must be performed by workers with a minimum of 16 hours of Lead-Based Paint Abatement Worker training by an EPA and accredited training provider. In addition, a project supervisor with a minimum of 32 hours of Lead-Based Paint Abatement Supervisor training by an EPA and accredited training provider must be present on site during all aspects of the project work. In addition, all personnel shall possess current lead worker and supervisor licensure from the State of Alabama prior to conducting work activities impacting lead-based paint on the project site, unless a written variance is provided by the local jurisdiction.

- A. The contractor or subcontractor to conduct work activities impacting lead-based paint (LBP) shall be an Environmental Protection Agency accredited and/or locally-accredited lead abatement contractor and shall meet the following requirements:
1. Have a record of not less than five years successful experience in work similar in scope and magnitude to this project.
 2. Maintain one Superintendent, to remain on site at all times that work is in progress. Superintendent must be approved prior to the start of the Work and shall not be changed without prior approval. Superintendent shall be a Competent Person and Lead Abatement Supervisor as defined in the Specifications and as required by OSHA and EPA. The Owner reserves the right to reject and require replacement of the

Superintendent because of lack of required experience, unsatisfactory performance, or if the Superintendent is deemed to be not in the best interest of the project.

3. Provide one experienced, EPA accredited and locally-licensed lead abatement supervisor Foreman for every eight (8) lead abatement workers utilized on the project. The Foremen shall remain inside the work area at all times that work is in progress and shall direct the work of the lead abatement workers while inside the work area. The Owner reserves the right to reject and require replacement of a Foreman because of lack of required experience, unsatisfactory performance, or if the Foreman is deemed to be not in the best interest of the project.
 4. Use only trained and experienced lead abatement workers and supervisors to perform the Work.
- B. Submittals required by Section 1.5 of this specification shall be signed by an EPA accredited and locally-licensed Lead Supervisor or Lead Project Designer.
 - C. Other work described in the Specifications shall be performed according to applicable codes and standards, federal, state, and local regulations, and the Specifications and drawings.
 - D. Work activities in child-occupied facilities and target housing that impact lead-containing materials must be conducted in accordance with the requirements of the *EPA Final rule on Lead, Renovation, Repair and Painting Program (RRP) (40 CFR 745)* and rule revisions.

1.3 CODES, REGULATIONS AND REFERENCES

- A. The Contractor acknowledges, by execution of the Contract, its awareness and familiarity with the contents and requirements of the following regulations, codes, standards, and guidance documents and assumes responsibility for the performance of the Work in strict compliance with these documents and for every instance of failure to comply with these documents. The current issue of each document shall govern. Where conflict exists between these documents and the Contract Documents, the more stringent requirements shall apply.
- B. The Contractor shall comply with the most current edition of all federal, state, county, and city codes and ordinances as applicable and shall make available for review at the site one copy of all applicable federal, state, county, and city regulations governing the Work, including, but not limited to:
 1. OSHA:

29 CFR 1910	General Industry Standards
29 CFR 1910.1025	Lead Standard for General Industry
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.1200	Hazard Communication
29 CFR 1910.245	Specifications for Accident Prevention
29 CFR 1926	Construction Industry Standards
29 CFR 1926.62	Construction Industry Lead Standard
29 CFR 1926	Subpart L-Scaffolds
29 CFR 1926	Subpart M-Fall Protection

2. United States Environmental Protection Agency:
 - 40 CFR Part 260-279 Standards for the Management of Hazardous Waste
 - 40 CFR Part 745 Lead-Based Paint Activities Regulation
3. United States Department of Transportation (DOT):
 - 49 CFR Parts 171-172 Hazardous Materials Regulations
4. United States Department of Housing and Urban Development (HUD):
 - 24 CFR Parts 35, 36, 37 HUD Lead-Based Paint Regulations
 - "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing"*
5. National Institute of Building Sciences: Lead-Based Paint: Operations and Maintenance Work Practices for Homes and Buildings
6. All state requirements which govern lead abatement or interim control work, or hauling and disposal of hazardous waste materials and the following District of Columbia requirements:
 - 20 DCMR 806, Control of Lead
 - DC Act 11-438
 - DC "Lead-Hazard Prevention and Elimination Act of 2008"
7. All local requirements which govern lead abatement or interim control work, or hauling and disposal of hazardous waste materials.
8. Codes and Standards:
 - a. American Society for Testing and Materials (ASTM)
 - b. American National Standards Institute (ANSI)
 - c. National Institution for Occupational Safety and Health (NIOSH)

1.4 SUBMITTALS

- A. The Contractor shall submit three (3) complete sets of Pre-Job Submittals to the Owner and Architect for review at least ten (10) working days prior to commencement of mobilizing or three (3) working days prior to the pre-construction meeting, whichever is earlier. The Work may not proceed until the complete pre-job submittal package has been reviewed and approved by the Owner and Architect. The Contractor's submittals shall include the following items:
 1. A Plan for the Work for approval by the Owner and Architect. The Contractor's Work Plan shall be prepared in accordance with OSHA and other applicable regulations, and shall include the following, as a minimum:

- a. A description of specific control methods to be utilized in performing the Work. This shall include all engineering and work practice controls to be utilized during the Work. Contractor must indicate what type of washing facilities (i.e., showers or hand washing) will be installed and if negative pressure will be created in the containment as required by these Specifications. The work plan shall be specific for each type of work activity impacting lead. Negative Exposure Assessment (NEA) information associated with these activities must be submitted, if the contractor wants to rely on the NEA data with approval.
 - b. A preliminary bar chart schedule of the Work. The schedule shall include all work, both on and off the job site, for the entire contract period.
 - c. A layout sketch of the decontamination unit and each work area. Describe assembly of construction, materials to be used and location of notices to be posted on the job site. Indicate which areas will be sealed off and by what means. Show locations of facilities and equipment such as showers, lockers, storage, etc. Show locations of all filtration devices to be used, their exhaust locations, and the calculations to determine the number of devices needed to provide air circulation as required in these Specifications.
 - d. A written description of methods to isolate/restrict access to the work areas. Indicate how access will be controlled, how building HVAC ventilation systems will be isolated from the work area, and how security and fire systems will be maintained within the work area. Include plans for electrical lock-out and dedicated electrical systems. These requirements shall be coordinated with the Owner, Architect and the facility representative.
2. A list of specific protective clothing and equipment to be utilized during the Work.
 3. A written respiratory protection plan which includes the following:
 - a. An initial exposure assessment as defined in these Specifications and required by OSHA. The Contractor shall base the following selections on the initial exposure assessment data: level of respiratory and other personal protection equipment, type of washing facilities provided in the decontamination unit as required by these Specifications, and the installation of air filtration units in the containment.
 - b. A proposed respiratory protection schedule indicating the specific respiratory equipment selected for use during the Work
 - c. Technical data on the different types of respirators to be used in accomplishing the Work. Include model numbers and tested/certified (TC) numbers issued by NIOSH and MSHA.
 - d. The Contractor's written respiratory program as required by OSHA. The written respiratory program shall provide evidence that each employee assigned to this project is medically certified to wear respiratory protection, has been successfully fit tested, and participates in the respiratory program.

4. A list of all project personnel, both on-site and office, and a statement of their responsibilities and authority for work on this project.
5. The following documentation for each and every employee assigned to the project by the Contractor or subcontractor, regardless of their role on the project. Submit this information as one package per employee, arranged alphabetically.
 - a. A copy of their EPA accreditation and licensure by the appropriate jurisdiction as a Lead Worker or Supervisor when impacting lead-based paint surfaces or when airborne lead concentrations are expected to exceed the OSHA PEL.
 - b. A copy of the physician's most recent written medical opinion indicating that the worker is fit to perform the Work and wear the assigned respiratory protection device.
 - c. Documentation per OSHA 1926.62(1), that shows that the employee has received and understands instruction on the hazards of lead exposure, personal protective equipment usage, use of decontamination showers and hand washing facilities, the procedures for entering and exiting the work areas, the purpose of the medical surveillance and medical removal programs, and on all aspects of the work procedures and protective measures to be used on this project.
 - d. An abbreviated resume that states the experience, qualifications, training, and currently held lead licenses for the on-site Superintendent and all Foremen assigned to the project. Furnish documentation that the Superintendent is a Competent Person as defined in these Specifications.
6. A copy of the notice of impending lead work activities in writing to the appropriate agencies. If not required, so state by means of a letter of explanation signed by a company officer.
7. Current licenses and permits required by applicable Federal, state, and local jurisdictions for the lead- work activities, transportation and disposal of waste, or other regulated activity relative to the Work.
8. An insurance certificate issued to Owner by the Contractor's insurance carrier listing all coverage as specified in the General Conditions.
9. Copies of Contractor's Certifications and Licenses.
10. Information on the site location and arrangements for transporting and disposal of lead-containing or lead-contaminated waste. Include the following as a minimum:
 - a. The landfill selected for disposing of the lead-containing or lead-contaminated waste. Include: owner, operator, address, and telephone number of the landfill.
 - b. Landfill certification that shows that the selected landfill is permitted by a state or federal agency to receive lead waste.

- c. Landfill certification that shows that the selected landfill will accept the lead waste.
 - d. Name of the disposal subcontractor. If a disposal subcontractor will not be used, so state.
 - e. The waste transporter's certificate of insurance and registration with the EPA. If the Contractor will be transporting the waste, then it shall submit its certification of insurance and registration with the EPA as a licensed Waste transporter.
 - f. All required permits for the transport and disposal of lead waste. If no permits are required, so state by means of a letter of explanation signed by a company officer.
11. Building permits required for the lead abatement and interim control, construction, or demolition work during the progress of the Work. If no permits are required, so state by means of a letter of explanation signed by a company officer.
 12. A written description and sketch of the site specific Security Plan to be utilized on this project.
 13. A written Contractor Health and Safety Program specifically designed for this project with evidence of comprehension of this Health and Safety Program by the employees assigned to this project.
 14. An Emergency Plan which addresses the Contractor's responses to the following: fire, accident, power failure, pressure differential system failure, supplied air system failure, or any other event that may require modification or abridgment of decontamination or work area isolation procedures. Show primary and secondary exit routes from the building, locations of the nearest manual pull stations, telephone number of the Smithsonian Institution Security Office, name of the Contractor's designated employee responsible for fire protection, fire hazards inherent to the project, and measures taken for prevention.
 15. Evidence that all employees assigned to this project are familiar with the Emergency Plan, know how to activate the fire alarm, and are trained in the use of portable fire extinguishers; one on-site employee shall be designated as responsible for fire protection. The plan shall be maintained and available at the job site, and the following emergency information shall be posted at all entrances to the work area: the exit route map, and the phone number of the Smithsonian Institution Security Office.
 16. Manufacturer's literature and written information for all materials and equipment, including encapsulants, primers, and paints. Submit NFPA and ASTM test reports of fire retardant materials, and MSDSs for all chemical-content supplies. Contractor shall not change materials or equipment without approval of a new submittal by the COTR.
 17. Copies of notices, signs, and lead caution barrier tape to be posted at the job site, as required by the State, EPA and OSHA regulations for lead work activities.
 18. A specimen of the Sign In/Sign Out Log showing the following as a minimum: date, name, social security number, entering and leaving time, company or agency represented and reason for entry for all persons entering the work area.

19. The name and qualifications of the Contractor's industrial hygiene consultant and analytical laboratory for performing personal air monitoring and analysis, as required by OSHA regulations.
 20. The qualifications of the Contractor's employee blood monitoring services as required by OSHA regulations.
 21. A description of any special techniques, equipment, etc., to be used on the project. If none, so state.
- B. The Contractor shall correspond with the Owner for all matters related to this project, unless otherwise directed. All correspondence with the Owner shall be in the English language, signed, and dated by the Contractor.
1. The Contractor shall maintain results at the job site from personal air monitoring and make them available to the Owner for inspection upon request.
 2. The Contractor shall maintain daily reports. Reports shall be numbered consecutively and all sections shall be completed or noted as 'not applicable'. Each day's report shall contain detailed remarks including, but not limited to: progress on the job, problems discovered, and discussions with the Owner's staff. Reports shall be submitted weekly to the Owner for the previous work week. Copies shall be maintained at the job site and made available to the Owner upon request.
 3. The Contractor shall submit to the Owner revised project schedules and manning schedules for the Work as changes mandate.
 4. The Contractor shall report all accidents immediately to the Owner. Prepare reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury. Report shall be submitted to the Owner, who will forward copies to OSHEM and the facility Safety Coordinator.
 5. When an event of unusual and significant nature occurs at the site (e.g., failure of pressure differential system, rupture of temporary enclosures, equipment or power failure), the Contractor shall prepare and submit a special report to the Owner listing the chain of events, persons participating, response by the Contractor's personnel, evaluation of results or effects, and similar pertinent information.
- C. Post-Job Submittals:
1. A comprehensive listing of personal air monitoring results taken in compliance with the OSHA regulations.
 2. A completed copy of the Waste Control Log.
 3. Submit, to the Owner, (who is to forward copies to the facility hazardous waste coordinator) copies of the following hazardous waste records for waste generated on

- SI property and disposed by contract personnel:
- a. Hazardous Waste Manifests (signed by the SI facility hazardous waste coordinator, the waste transporter, and the disposal site)
 - b. Proof of recycling for lead coated metals.
 - c. Notification and Certification Forms
 - d. Material Profile Sheet or Characterization
 - e. Container Content Sheet
 - f. Certificate of Disposal
4. Copies of the completed Sign In/Sign Out Logs showing the following as a minimum: date, name, social security number, entering and leaving time, company or agency represented, and reason for entry for all persons entering the work areas.
 5. An alphabetical listing of all employees used on the project and the exact dates on which they were present in the work areas.
 6. For each employee that worked on this project, submit a notarized letter stating that blood monitoring has been performed for the employee as required by OSHA and the Specifications.
 7. Affidavit of Release of Liens.
 8. Certificate of Completion.

1.6 GENERAL INFORMATION REGARDING LEAD WORK ACTIVITIES

- A. Work activities impacting lead that are assumed to expose employees above the OSHA PEL:
 1. Manual demolition of structures, which includes interior selective demolition;
 2. Dry, manual scraping and sanding;
 3. Using a heat gun; and
 4. Power tool cleaning with dust collection systems.
- B. Contractor shall be responsible for maintaining surfaces free of dust, debris, and paint chips in areas outside of the lead work area where employees decontaminate, eat, or take rest breaks. In addition, egress routes to and from the lead work areas to the exterior of the building must also be free of dust, debris, and paint chips.
- C. Non-lead work areas, decontamination areas, and break areas must be pre-cleaned of all visible dust, debris, and paint chips using wet wiping, sweeping, or mopping techniques with

TSP or equivalent detergent. If a vacuum is to be utilized, it must be properly equipped with a HEPA filter and be designed for use on abatement projects.

- D. Wet sweeping, brushing, or mopping shall only be used in circumstances where vacuuming or other equally effective methods have been tried and found not to be effective as determined by the COTR.
- E. Under no circumstances shall dry sweeping, compressed air, or vacuums without HEPA filters be used to clean surfaces of dust, debris, or paint chips inside lead work areas.
- F. Contractor may reduce engineering controls, worker personal protection, and training requirements with the permission of the Owner only if they can successfully establish a negative exposure assessment (NEA) in accordance with OSHA Standard 29 CFR 1926.62, paragraph (d) Exposure Assessment and these additional requirements:
 - 1. Personal exposure air sample data must be presented from a minimum of three work shifts for each work activity or task that will be represented.
 - 2. The personal exposure data used as a NEA must be representative of, at a minimum, 25% of the crew performing the work activity and collected during activities that would most likely generate the highest concentrations of airborne lead dust.
 - 3. The work practices and engineering controls utilized during the NEA must be documented in detail and approved by the Owner prior to being used as valid NEA data.

PART 2 - PRODUCTS

2.1 PRODUCT HANDLING

- A. The Contractor shall ensure that all materials are delivered in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
- B. Contractor shall schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
- C. The Contractor shall coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- D. The Contractor shall inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that the products are undamaged and properly protected.
- E. The Contractor shall store all materials subject to damage off the ground, away from wet or damp surfaces, under cover sufficient to prevent damage or contamination.
- F. The Contractor shall remove from the premises all damaged or deteriorated materials. Dispose of materials that become contaminated with lead in accordance with applicable regulatory standards and these Specifications.

2.2 MATERIALS

- A. Any substitution in materials or methods to those specified shall be approved by the COTR prior to use. Any requests for substitution shall be provided in writing to the COTR. The request shall clearly state the rationale for substitution.
- B. Chemical Stripping Agent Neutralizer: Chemical stripping agent neutralizers may be used on compatible surfaces only, according to the manufacturer's instructions. Neutralizers shall be compatible with and not harmful to the substrate to which they are applied. Neutralizers shall be compatible with the stripping agent that has been applied to the surface substrate.
- C. Chemical Stripping Removers: Chemical removers shall contain no methylene chloride products. Chemical removers shall be compatible with, and not harmful to, the substrate to which they are applied. Chemical removers used on masonry surfaces shall contain anti-stain formulation that inhibits discoloration of stone, granite, brick and other masonry construction. Chemical removers used on interior surfaces shall not raise or discolor the surface being treated.
- D. Cleaning Solution: Provide detergent or cleaning agent formulated to be effective in removing lead dust. Follow dilution ratio recommended by the manufacturer's instructions.
- E. Encapsulant: Acrylic-based primer and top coat. Primer shall be compatible to the substrate. Acceptable manufacturers shall be pre-approved.
- F. Impermeable Containers: Shall be suitable to receive and retain lead-containing or lead-contaminated materials until disposal at an approved site, and shall be labeled in accordance with OSHA, EPA and DOT regulations. Containers shall be both air and water tight. Use two types of impermeable containers:
1. Plastic, metal, or fiber drums with tightly fitting lids, lined with 0.15 mm (six-mil) poly; and,
 2. 0.15 mm (six-mil) poly bags sized to fit within the lined drums.
- G. Plastic Sheeting: Polyethylene plastic material a minimum of 0.15 mm (six-mil) in thickness for covering floors and walls, providing air locks, and sealing doors and windows; supply in appropriate widths to minimize seams. Must be fire retardant, meeting NFPA/ASTM criteria. Reinforced sheeting is required for applications subject to wear and tear.
- H. Surfactant (Wetting Agent): Mixture of "Dust-Set Amended Water Base" and water, mixed to the manufacturer's Specifications.
- I. Tape: Tape shall be glass fiber or other type capable of sealing joints of adjacent sheets of poly and for attachment of poly sheeting to finished or unfinished surfaces under both dry and wet conditions.
- J. Warning Labels and Signs: as required by OSHA.

- K. The Contractor shall provide all other materials (e.g., nails, hardware, etc.) which may be required to construct and dismantle the decontamination system and the barriers that isolate the work area.

2.3 TOOLS AND EQUIPMENT

- A. The Contractor shall provide air filtration units that are factory-sealed and equipped with HEPA filters (final), intermediate filters, pre-filters, instrumentation to monitor pressure differential, and safety and warning devices.
 - 1. Units shall be equipped with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL).
 - 2. Access to the units for replacement of all air filters shall be from intake end. Provide units with pre-filters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps. The filter media shall be completely sealed on all edges with a structurally rigid frame with a continuous rubber gasket.
 - 3. Provide units equipped with HEPA filters. Filters shall be individually tested and certified by the manufacturer.
 - 4. Provide a two-stage pre-filtration system to extend the life of the primary HEPA filter. The first-stage pre-filter shall be a low-efficiency type effective for particles 100 micrometers and larger. The second-stage (or intermediate) filter shall have a medium efficiency effective for particles down to 5 micrometers.
 - 5. Where negative pressure enclosures are required on projects, provide units equipped with a magnehelic gauge or manometer to measure the pressure drop across filters and to indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure readings on the magnehelic gauge and the magnehelic reading indicating at what point the filters should be changed, noting quantity of air delivery at that point, shall both be affixed near the gauge for reference. Provide an elapsed time meter to show the total accumulated hours of operation.
- B. The Contractor shall equip all circuits for any purpose entering work area with ground fault circuit interrupters (GFCIs). Locate GFCIs exterior to work area so that all circuits are protected prior to entry to the work area. Provide circuit breaker type GFCIs equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination unit, exterior, or as otherwise required by applicable regulations. Locate the panel exterior to the work area.
- C. The Contractor shall comply with the applicable recommendations of NFPA's "Standard for Portable Fire Extinguishers". Locate fire extinguishers where they are most convenient and effective for their intended purpose.
- D. Electrically-operated heat guns shall be flameless electrical paint softener type. Heat gun shall have electronically controlled temperature settings to allow usage below a temperature of 590° C (1,100° F). The heat gun shall be DI type (non-grounded) 120 V, AC application. The heat gun shall be equipped with various nozzles to cover all common applications.

- E. Machine Sanding Equipment shall be the dual action, rotary action, orbital or straight line system type, fitted with HEPA filters. Air compressors utilized to operate this equipment shall be designed to continuously provide adequate pressure as required by the manufacturer.
- F. Powered Air Purifying Respiratory (PAPR) equipment shall be approved by NIOSH, and equipped with HEPA filters.
- G. The Contractor shall have available power cables or sources such as generators, where required.
- H. Scaffolding, as required to accomplish the Work, shall meet all applicable safety regulations (29 CFR 1926, Subpart L).
- I. The Contractor shall provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in-task lighting.
- J. The Contractor shall provide transportation, as required, for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. Use only enclosed or covered trucks to haul waste containers to prevent loss or damage of containers in route to the landfill.
- K. Vacuum units, of suitable size and capacities for the Work, shall be equipped with HEPA filters.
- L. The Contractor shall utilize airless or low pressure water sprayers or hand-held spray bottles for amended water application.

PART 3 - EXECUTION

3.1 ACCESS TO WORK AREAS

- A. Access to the areas where lead work activities are occurring shall be restricted to the Contractor's workers and authorized visitors, as defined in these Specifications.
- B. Authorized visitors shall have access to the work site at all times, following notification to Owner. The Contractor shall supply protective clothing and equipment for authorized visitors, as necessary, except for respirators, which shall be provided by the authorized visitor in accordance with these Specifications.
- C. Signage for work areas where airborne lead concentrations are known or expected to be above the OSHA Action Level: The Contractor shall prominently post signs at all entry points to the work area which clearly warn that lead abatement or interim control work is being conducted in the vicinity. Immediately inside entry point and outside critical barriers post a warning sign meeting OSHA specifications. Minimum sign size shall be 500 mm by 350 mm displaying the following legend:

WARNING
LEAD WORK AREA
POISON
UNAUTHORIZED ENTRY PROHIBITED
NO SMOKING, EATING OR DRINKING PERMITTED IN THIS AREA

Signs shall be in bold lettering a minimum of 50 mm tall.

- D. Signage for lead work areas where airborne lead concentrations are known or expected to be less than the OSHA Action Level: Demarcate work area perimeter with caution tape. At entrance or along perimeter, post signs per OSHA with the following legend:

WARNING
LEAD WORK AREA
POISON
NO SMOKING, EATING, OR DRINKING

- E. Required signage shall be posted immediately outside all entrances and exits to the lead work area at least 3 days in advance of work except, that in emergency situations, posting shall be done as soon as possible.
- F. Where required, all workers and authorized visitors shall enter the work area through the decontamination unit only, in accordance with these Specifications.
- G. Before entering the work area, all workers and authorized visitors shall read and be familiar with all posted regulations, personal protection requirements, and emergency procedures and exit routes.
- H. The Contractor shall maintain a daily job site personnel log listing names and social security numbers of individuals who entered the work area, and the times of entering and leaving the work area.

3.2 WORKER AND VISITOR PROTECTION

- A. No eating, drinking, smoking, or chewing gum is permitted within the work area.
- B. Workers and authorized visitors shall be fully protected with respirators and protective clothing during any work that may disturb lead-containing material and which results or may result in airborne concentrations of lead greater than the OSHA PEL. Full protection is not required during pre-abatement inspections of the work area, before abatement or interim control work has begun.
- C. The Contractor shall provide workers and authorized visitors with sufficient sets of protective full-body clothing. Such clothing shall consist of full body coveralls, headgear, foot protection, and gloves. Provide eye protection and hard hats as required by applicable safety regulations. Contractor shall have a minimum of six (6) sets of disposable protective full body clothing for Owner and authorized visitors for each work day. Street clothes may not be worn into an abatement or interim control work area. Provide storage facilities for authorized visitor's and worker's street clothing in the clean room. Workers must wear nylon shorts, 'TYVEK' shorts, or an acceptable substitute, under disposable suits.
1. Provide non-skid type work boots with protective shields as required by OSHA.
 2. Provide hard hats that meet ANSI requirements for use where work is overhead, scaffolding is being used, or as otherwise required by OSHA.
 3. Provide goggles that meet ANSI requirements as required by OSHA.

4. Provide disposable work gloves for use in the work area.
 5. Provide disposable coveralls with hoods for use in the work area.
- D. Contaminated, non-disposable clothing and footwear shall be stored in a controlled area adjacent to the work area until the completion of the Work. Upon completion of work such items shall be thoroughly decontaminated of all lead-containing or lead-contaminated material, or disposed of as lead-contaminated waste.
- E. The Contractor shall provide washing facilities to be used by all workers for all work impacting lead-containing materials. All Lead work sites must have washing facilities.
1. Washing facilities shall contain a temporary sink with both hot and cold water. Filter all water as required in these Specifications, or dispose of as lead-contaminated waste.
 2. Supply a sufficient quantity of soap and towels for the workers and authorized visitors.
- F. The Contractor shall provide pre-fabricated or site-built shower facilities to be used by all workers when lead in air concentrations exceed or are expected to exceed $30 \mu\text{g}/\text{m}^3$. The Contractor must submit a negative exposure assessment and obtain Owner approval when shower facilities are not provided.
1. Showers shall have both hot and cold water which can be controlled from inside shower. Filter all shower water as required in these Specifications, or disposed of as lead-contaminated waste.
 2. Supply a sufficient quantity of soap and towels for the abatement workers and authorized visitors.
- G. The Contractor shall provide suitable emergency eye flushing facilities within the work area when the eyes of employees may be exposed to injurious corrosive materials or according to OSHA requirements.
- H. The Contractor shall provide medical surveillance for all workers according to OSHA requirements.
- I. All workers must have baseline and post work blood lead level measurements determined by the whole blood lead method. A worker shall not be permitted to work on the project when three baseline blood sampling tests average greater than $25 \mu\text{g}/\text{dL}$ or if a single test exceeds $30 \mu\text{g}/\text{dL}$. A formal investigation shall occur whenever a worker's post-work blood lead level rises more than $10 \mu\text{g}/\text{dL}$ above the baseline level.
- J. The Contractor shall assure that in areas where employees are exposed to lead above the PEL without regard to the use of respiratory protection, the following hygiene facilities and practices be followed:
1. Clean change areas shall be provided by the Contractor for employees whose airborne exposure to lead is above the Action Level, and as interim protection for employees performing tasks as specified in paragraph (d)(2) of OSHA Standard 29

- CFR 1926.62, without regard to the use of respirators;
- a. Change areas shall be equipped with separate storage facilities for protective work clothing and equipment and for street clothes, which prevent cross-contamination.
 - b. The employer shall assure that employees do not leave the workplace wearing protective clothing or equipment that is required to be worn during the work shift.
2. The Contractor shall ensure that eating areas are as free as practical from lead contamination by;
 - a. Assuring that employees wash their hands prior to eating, drinking, smoking, or applying cosmetics.
 - b. Not permitting employees to enter eating areas with protective clothing or equipment.
 3. Hand washing facilities shall be provided by the Contractor for use by employees exposed to lead in accordance with OSHA Standard 29 CFR 1926.51(f). Where showers are not provided, the Contractor shall assure that employees wash their hands and face at the end of the work shift.
- K. Personnel exiting the lead work areas shall use the following decontamination procedures, unless otherwise specified herein:
1. Vacuum off work clothes with HEPA filter equipped vac
 2. Remove disposable, protective clothing and place in an OSHA approved impermeable disposal bag
 3. Clean exposed skin such as the face, hands, and arms, either in a shower or similar washing facility
 4. Change into clean clothing prior to leaving the physical boundary designated around the work area.

3.3 RESPIRATORY PROTECTION

- A. The Contractor shall instruct and train each worker involved in the Work in proper respiratory use and require that each worker wear a respirator properly during all operations which may expose the worker at or above the permissible exposure limit (PEL). Respiratory protection shall be used until the work area is completely decontaminated and final clearance testing has been performed and approved by the COTR.
- B. The Contractor shall certify that all workers using respiratory protection have been medically approved to use respiratory protection.
- C. The Contractor shall select respiratory protection appropriate for the lead levels encountered in the work area as outlined in OSHA regulations and these Specifications, or as required for

- other toxic or oxygen-deficient situations encountered. Respirators shall be selected from among those approved by NIOSH.
- D. The Contractor shall select and provide respirators to each employee and shall ensure that the employee uses the respirator provided. Allow each employee to use only those respirators for which training and fit-testing have been provided. Require that each time an air-purifying respirator is put on it is checked for fit with a positive and negative pressure fit check in accordance with OSHA regulations (29 CFR 1910.134). Quantitative/qualitative fit-testing shall be repeated at least annually, and at any time a respirator is replaced.
- E. Authorized visitors are responsible for providing their own respirator and replacement filters and cartridges, with the exception of Full-Face, Supplied Air Respirators Operating in Pressure Demand Mode which shall be provided by the Contractor. Authorized visitors are also responsible for having received proper training, medical evaluation, and fit-testing for the respirator used.
- F. The Contractor shall provide, for use with air-purifying respirators, HEPA-type filters certified by NIOSH for protection against lead dust. Negative-pressure, particulate filters will meet the requirements of 40 CFR Part 84 following its effective date (July 10, 1998). A sufficient quantity of HEPA filters shall be supplied such that workers may change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement or when breathing resistance is occurring. In addition, a chemical cartridge must be added, as required, for protection against chemicals used for the Work.
- G. The following respirators are permitted for use for the airborne lead dust levels specified:
1. Half-Face, Air Purifying Respirators equipped with HEPA filters for airborne lead dust concentrations not in excess of $500 \mu\text{g}/\text{m}^3$ (10 times the PEL).
 2. Full-Face, Air Purifying Respirators equipped with HEPA filters for airborne lead dust concentrations not in excess of $2,500 \mu\text{g}/\text{m}^3$ (50 times the PEL).
 3. Powered Air Purifying Respirators (PAPRs) equipped with HEPA filters for airborne lead dust concentrations not in excess of $2,500 \mu\text{g}/\text{m}^3$ (50 times the PEL).
 4. Full-Face, Supplied Air Respirators Operating in Pressure Demand Mode is required when airborne lead dust concentrations are expected to meet or exceed $100,000 \mu\text{g}/\text{m}^3$ (2,000 times the PEL).
- H. Contractor shall not use or allow the use of any single-use, disposable, or quarter-face respirators or any other respirator not approved for use by NIOSH.

3.4 LEAD MONITORING, TESTING, AND ANALYSIS PROCEDURES

- A. Laboratories used to conduct lead analyses shall participate in the EPA's National Lead Laboratory Accreditation Program (NLLAP).
- B. Inspections and risk assessments performed in S-owned housing shall be conducted in accordance with HUD's "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", Chapters 5 and 7, and 40 CFR 745

- C. Sampling for lead-in-paint shall be performed by persons trained and licensed by the appropriate state and local agencies to perform lead inspections. Sampling shall be performed generally following the protocols included in HUD's "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", Chapter 7 – 1997 version using either an XRF Lead Paint Analyzer or by bulk paint chip sampling. Analysis of bulk paint chips for lead shall be performed by an accredited laboratory using either Flame Atomic Absorption Spectroscopy (FLAA) or by Inductively Coupled Plasma (ICP).
- D. Sampling for lead-in-air shall be performed generally following the "Sampling Airborne Particulate for Lead (NIOSH Method 7082)" procedure as outlined in HUD's "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing". Analysis of lead-in-air samples shall be performed by an accredited laboratory using either FLAA or ICP methods.
- E. Lead dust wipe sampling shall be performed generally following the ASTM method E1728 or "Wipe Sampling for Settled Lead-Contaminated Dust" procedure as outlined in HUD's "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing". Analysis of lead wipe samples shall be performed by an accredited laboratory using FLAA following NIOSH Modified Method 7082 or by ICP following Modified OSHA Method ID-125.
- F. Lead-in-soil sampling shall be performed generally following the procedures outlined in HUD's "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing". Analysis of soil for lead shall be performed by an accredited laboratory by FLAA or ICP.
- G. Bulk samples of waste for TCLP analysis shall be representative samples of the waste and shall be collected following the procedure indicated by the selected laboratory performing the TCLP analysis. TCLP analysis of representative samples of lead-containing or lead-contaminated waste shall be performed by an accredited laboratory following EPA Method SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods". TCLP samples shall be collected by the SI IH.

3.5 BASELINE TESTING

- A. Settled lead dust wipe samples will be collected in interior and exterior work areas by the SI IH prior to Contractor mobilization to the site, construction of the containment area, or any pre-cleaning activities. Baseline lead dust samples will be collected from representative components in the area, and will, at a minimum, include one sample from the following: floor inside the work area, floor outside the work area at the location of the containment entrance, and one window sill and one window trough inside the work area (actual number and specific locations of samples shall be determined by the SI IH).
- B. Lead-in-soil sampling will be performed in the area adjacent to exterior work areas by the SI IH prior to Contractor mobilization to the site, construction of the work area, or any pre-cleaning activities. Baseline lead soil samples will be collected by composite sampling of areas adjacent to each exterior work area (actual number and specific locations of samples shall be determined by the SI IH).

3.6 AIR AND DUST MONITORING

- A. The Contractor shall be responsible for performing personal air monitoring as required by OSHA during the Work. The results of such monitoring shall be posted, provided to individual workers, and submitted to the COTR as required in these Specifications.
- B. The SI IH will perform airborne lead monitoring on a daily basis for the duration of the work both inside and outside the work area.
 - 1. The Contractor shall utilize work practices and engineering controls that limit the quantity of airborne lead dust inside the work area. The Contractor shall strive to maintain airborne lead concentrations inside the work area below the OSHA Action Level.
 - 2. If any air sample taken outside of the work area exceeds the Action Level of 30 $\mu\text{g}/\text{m}^3$, the Contractor shall immediately stop all work except corrective actions. The SI IH and the Contractor Superintendent will determine the source of the airborne lead.
- C. The SI IH will be performing lead dust sampling at the beginning of the Work and periodically thereafter at the area immediately adjacent to the entrance of each decontamination unit. Results of lead dust samples will be compared to the baseline lead dust concentrations established in these areas (actual number and frequency of lead dust sampling to be determined by SI IH). If baseline levels are exceeded the Contractor shall immediately stop all work except corrective actions. The SI IH and the Contractor Superintendent will determine the source of the lead dust.

3.7 GENERAL PREPARATION OF LEAD WORK AREAS

- A. The Contractor shall not handle any exhibit or collection object without the approval of the Owner. The Contractor shall submit proposed methods for surface decontamination and/or disposal of unsalvageable objects to the Owner for approval.
- B. The Contractor shall coordinate the sequence of lead work area preparation throughout the building with the Owner and other trades to properly segregate work areas from areas that must remain fully or partially operational or in which other construction is being performed.
- C. Doorways and corridors which will not be used for passage during work shall be sealed with 13 mm thick fire retardant plywood, fire retardant wood framing, and poly sheeting with tape.
- D. All heating, ventilating, and air conditioning (HVAC) components that are in, supply, or pass through the work area shall be shut down. During the Work, elevators, exhaust fans, and HVAC vents and intakes will be key locked to not operate in the work area. The Contractor shall coordinate with the Owner and the Building Manager which areas are to be shut down and for what duration.
- E. The Contractor shall provide temporary power and lighting and ensure safe installation of temporary power sources and equipment in accordance with NFPA electric code requirements. Electrical power equipment shall be properly disconnected, locked out, and tagged so that the equipment can be safely serviced during the Work.
- F. The Contractor shall arrange for the lead work area to be locked during non-work hours.

- G. The Contractor shall supply water to the work area as required.
- H. Isolation of the work area for O&M work may be modified, as practical, with approval of the COTR, and in accordance with the "Operations and Maintenance Procedures and Controls" section of this specification.

3.8 PREPARATION OF INTERIOR LEAD WORK AREAS WHERE AIRBORNE LEAD CONCENTRATIONS ARE KNOWN OR EXPECTED TO EXCEED THE OSHA ACTION LEVEL

- A. Lead Work Area Preparation:
 - 1. The Contractor shall not handle any exhibit or collection object without the approval of the Owner.
 - 2. The Contractor shall clean and remove items required for access; clean all furniture, equipment, and supplies in the work area with a HEPA-filtered vacuum or by wet wiping, as directed by the Owner, prior to being moved or covered.
 - 3. The Contractor shall clean, by HEPA-filtered vacuum or by wet wiping, and remove all electrical and mechanical items (e.g., lighting fixtures, clocks, diffusers, registers, etc.) and general construction items (e.g., cabinets casework, door and window trim, moldings, etc.) which cover the surface of the Work, as directed by the Owner. Reinstall all such materials upon completion of the Work with materials, finishes, and workmanship to match conditions existing before start of the Work.
 - 4. The Contractor shall remove all removable furniture, equipment, and supplies that have been deemed by the Owner to be uncontaminated, or shall completely seal with two layers of 0.15 mm (six-mil) poly sheeting and duct tape. Such sealed furniture, equipment, and supplies shall be considered outside the work area unless the poly seal is breached.
 - 5. The Contractor shall seal all critical barriers, including ventilation openings (supply and exhaust), seams in HVAC system components, lighting fixtures, clocks, doorways, windows, speakers, and other openings into the work area with one layer of 0.15 mm (six-mil) poly sheeting and duct tape. If a temporary poly/ wood stud wall must be erected, it shall be treated as a critical barrier.
 - 6. The Contractor shall seal the front of any existing elevator in the work area with two layers of 0.15 mm (six-mil) poly sheeting and duct tape.
 - 7. The Contractor shall exercise caution when sealing lighting fixtures and control boxes to avoid melting or burning of poly. The insides of lighting fixtures, control boxes, and buss lines shall be cleaned only by lead abatement workers specially certified to work on high voltage lines.
 - 8. The Contractor shall cover the floor of the work area with two layers of 0.15 mm (six-mil) poly sheeting turned up at the walls at least 600 mm. Spray-glue and duct tape all seams in floor poly. Size to minimize number of seams. Locate seams in the top layer 2 meters from, or at right angles to, seams in bottom layer. Install poly so that

the top layer can be removed independently of the bottom layer. Do not locate seams at the wall/floor interface.

9. The Contractor shall cover existing carpeting in the work area with three layers of 0.15 mm (six-mil) poly sheeting. Place one layer of 13 mm fire retardant plywood between the top and middle layers of poly.
10. The Contractor shall cover poly in areas where scaffolding is to be used with a single layer of 13 mm fire retardant plywood. Wrap edges and corners of each sheet of plywood with duct tape.
11. The Contractor shall cover all walls in the work area, including sealed critical barriers, with two layers of 0.15 mm (six-mil) poly sheeting, sealed with duct tape or spray-glue. Size to minimize number of seams. Seams shall be staggered and separated by at least 600 mm. Wall poly shall overlap floor poly by at least 400 mm beyond wall/floor interface. Tape all joints, including those joining with the floor covering, with duct tape or as otherwise indicated by the Owner.
12. The Contractor shall not cover or alter automatic sprinkler heads and fire detectors to prevent or delay operation. Smoke detectors shall be protected (but not completely sealed) to avoid nuisance alarms during paint or demolition operations. The smoke detectors shall be cleaned by wet wiping at the end of each work day.
13. The Contractor shall install an additional layer of poly on the floor as a drop cloth to protect the primary floor layers from debris. The drop cloth shall be rolled and disposed of as lead-contaminated waste at the end of each work day and a new drop cloth installed at the beginning of each work day.
14. The Contractor shall provide emergency exiting from the contained lead work area as required by NFPA. Arrange emergency exit doors to be secure from outside the work area but to permit exiting from the work area. Mark outline of door on barriers with luminescent paint at least 150 mm wide. Hang a utility knife on a string beside outline. Post a sign identifying "EMERGENCY EXIT", using letters at least 150 mm high, inside outline with luminescent paint. Arrows shall be taped on the poly wall at eye level and at floor level to indicate the location of each exit.
15. At the entrance to the lead work area, the Contractor shall post the building floor plan and escape routes, plus the locations of nearest exits and phone numbers of the Smithsonian Institution Security Office.
16. The Contractor shall install a 4.5 kg ABC type portable fire extinguisher by each emergency exit and in the clean room of the decontamination unit.
17. Where the work area is immediately adjacent to or within view of occupied areas, the Contractor shall provide a visual barrier of opaque 0.15 mm (six-mil) poly so that the work procedures are not visible to building occupants. Where this visual barrier would block natural light, provide substitute barrier as directed by COTR.
18. The Contractor shall provide GFCI protection for all electrical equipment.

B. Construction of Decontamination Unit

1. The Contractor shall construct a three-stage worker/equipment decontamination unit at each location where workers and equipment will enter or exit the work area.
2. Decontamination units shall consist of a Clean Room, a Wash Area (with shower facilities when required by these Specifications), and an Equipment Room, each separated by 1.0 meter air locks (narrower air locks may be built if approved by the COTR).
3. All rooms shall be constructed of 0.15 mm (six-mil) poly sheeting and suitable framing. Seams shall be staggered and separated by at least 150 mm. Spray glue and duct tape all seams.
4. Doorways shall be constructed of three sheets of 0.15 mm (six-mil) poly from ceiling to floor. The width of these poly sheets shall be sufficient to prevent air movement through the doorways when closed. These doorways shall be the only source of make-up air for the air filtration units under normal circumstances, unless other sources are specifically approved by the COTR.
5. The Contractor shall provide temporary lighting inside the decontamination unit.
6. The Contractor shall transport properly containerized lead-containing or contaminated waste through the decontamination unit or through a separate waste load-out unit. If a separate waste load-out unit is used, it shall be built with two airlocks, with curtained doorways; one to the work area and one to an uncontaminated area outside the work area. These doorways shall be sealed except during waste load out activities.
7. Clean Room:
 - a. The Contractor shall construct a clean room outside the wash area for the workers to change into protective equipment. The clean room shall have a curtained doorway leading to the outside of the work area, and an airlock leading to the wash area.
 - b. The clean room shall be of sufficient size to accommodate at least one worker, a supply of clean disposable coveralls, and storage facilities for street clothing and other uncontaminated equipment.
 - c. The Contractor shall not permit lead-contaminated equipment or personnel to enter the clean room. The Contractor shall ensure that employees do not leave the work area wearing protective clothing.
8. Wash Area:
 - a. The Contractor shall ensure that employees wash or shower each time when leaving the work area.
 - b. The Contractor shall provide shower facilities in the wash area of the decontamination unit when airborne lead concentrations exceed or are expected to exceed 30 $\mu\text{g}/\text{m}^3$. The shower facilities shall contain both cold and hot water, soap, and clean towels.

- c. The Contractor shall provide a leak-tight shower unit with an integrated drain pan fabricated from fiberglass or other durable waterproof material; equip with hose bibs for hot and cold water. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the work area. Provide splash-proof entrances.
 - d. The Contractor shall provide back-flow prevention device and vacuum breaker, where required. Filter waste water using filters having a maximum pore size of 5.0 micron, or dispose of water in accordance with these Specifications. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan. Change filters daily or more often if necessary.
 - e. Where showers are not provided, the Contractor shall provide adequate washing facilities in the wash area of the decontamination unit.
 - f. Washing facilities shall contain both cold and hot water, soap, and towels.
9. Equipment Room:
- a. The equipment room shall have two airlocks, one adjacent to the work area and one adjacent to the wash area.
 - b. The equipment room shall be of sufficient size to accommodate at least one worker to change clothes, a disposable bag and container for assorted waste, and any lead-contaminated equipment which the Contractor wishes to store when not in use.
 - c. The equipment room shall contain facilities for decontaminating material and equipment.
- C. At the Owner's approval, the Contractor may perform limited lead work activities utilizing a mini containment to isolate the work area. The mini containment shall be equipped with an adjacent wash area and be sealed at all seams to where it is attached to adjacent work surfaces. The mini-containment shall satisfy all requirements for a lead work area as outlined in these Specifications.
- D. Creating Negative Pressure in Containment:
- 1. Negative pressure is required when airborne lead concentrations exceed or are expected to exceed the PEL, 50 $\mu\text{g}/\text{m}^3$. The Contractor shall submit a negative exposure assessment and obtain COTR approval when the work will be performed without negative pressure inside the work area.
 - 2. The Contractor shall provide HEPA filters that have been individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 μm di-octyl phthalate (DOP) particles when tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL586 label to indicate ability to perform under specified conditions.

3. The number of air filtration units needed to achieve the required air circulation rate shall be determined by the following formula:

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CALCULATE      Volume of Work Area (Ft³)
MULTIPLY BY    Number of air changes per hour, minimum of ten-10
                (HUD Recommended)
MULTIPLY BY    1/60 (hr/minutes) (0.0167)
DIVIDE BY      80% of capacity of the air filtration units fully loaded
                with all filters
                ADD      one additional unit as backup for machine
                failure or shutdown
EQUALS         minimum number of units required (round up to next
                whole number)
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4. As necessary to achieve air flow throughout the work area, the Contractor shall locate auxiliary makeup air inlets as far away as possible from the air filtration units, preferably near the ceiling and away from barriers that separate the containment from surrounding areas. Cover inlet with poly sheeting flaps to reseal automatically if the pressure differential system should shut down for any reason. Provide rigid framing around the opening. Spray flap and around opening with spray adhesive so that if flap closes meeting surfaces are both covered with adhesive. Use an adhesive that forms contact bond when dry.

E. Placement of Air Filtration Units:

1. The Contractor shall locate air filtration units to optimize air movement throughout the work area. Position air filtration units opposite the decontamination unit or other make-up air inlets.
2. The backup air filtration unit shall be located on site and be available and ready to run at any time.
3. The Contractor shall establish air movement so that airborne lead dust will be carried away from workers' breathing zones.
4. Dead-air pockets shall be minimized by proper ducting of make-up air, if necessary, and by optimum location of the air filtration units. The Contractor shall use smoke tubes to determine if dead-air pockets are present, and shall take corrective action as outlined above when they are found. Report such corrective actions to the Owner immediately.
5. The Contractor shall locate the air filtration units such that access for changing the pre-filters is from inside the containment. The units shall run continuously during pre-filter changing. A supply of filters shall be kept on site outside of containment. If a unit must be turned off for servicing, a backup unit shall be installed.
6. Mount units to exhaust directly or through disposable ductwork outside the building. Use ductwork and fittings of same diameter or larger than discharge connection on fan

unit. Use spiral wire-reinforced flex duct in lengths not greater than 15 meters. If direction of discharge from fan unit is not aligned with duct, use sheet metal elbow to change direction. Use 2 meters of spiral wire reinforced flex duct after each direction change.

7. Units may be vented inside the building, as directed by the Owner, only if outside venting is impractical. Units venting inside a building must be vented through an expansion chamber or diffuser system (self-contained water baffle) to reduce the exhaust air velocity. Exhaust ductwork shall be placed as far away as possible from occupied areas.

F. Use of System During the Work:

1. The Contractor shall start air filtration units before beginning abatement work. After work has begun, run units continuously to maintain a constant pressure differential and air circulation until decontamination of the work area is complete and final clearance results have been accepted by the Owner. Do not turn off units at the end of the work shift or when work temporarily stops unless authorized by Owner.
2. The Contractor shall begin work at a location farthest from the air filtration units and proceed toward them. If an electric power failure occurs, immediately stop all work and do not resume until power is restored and air filtration units are operating again.

3.9 PREPARATION OF EXTERIOR LEAD WORK AREAS WHERE AIRBORNE LEAD CONCENTRATIONS ARE KNOWN OR ARE EXPECTED TO EXCEED THE OSHA ACTION LEVEL

- A. Exterior lead work shall not be conducted if wind speeds or gusts are equal to or greater than 30 km/hr; work must stop and cleanup shall be completed before precipitation begins.

B. Exterior Lead Work Area Preparation:

1. The Contractor shall not handle any exhibit or collection object without the approval of the Owner.
2. The Contractor shall erect temporary fencing or yellow or red barrier tape at a minimum of 5 meters from the perimeter of the work area. Fencing and tape shall be a minimum height of 1.5 meters.
3. The Contractor shall post warning signs on the building exterior and along temporary fencing or tape barrier.
4. The Contractor shall clean all furniture, equipment, and supplies in the work area with a HEPA-filtered vacuum or by wet wiping, as directed by the Owner.
5. The Contractor shall clean, by HEPA-filtered vacuum or by wet wiping, and remove all electrical and mechanical items (e.g., lighting fixtures, air conditioners, etc.) and general construction items (e.g., door and window trim, moldings, etc.) which cover the surface of the Work, as directed by the Owner. Reinstall all such materials upon completion of the Work with materials, finishes, and workmanship to match conditions existing before the start of work.

6. The Contractor shall remove, to a 5-meter distance from the work area, all removable furniture, equipment, and supplies that have been deemed by the Owner to be uncontaminated, or completely cover with two layers of 0.15 mm (six-mil) poly sheeting and duct tape. Such furniture, equipment, and supplies shall be considered outside the work area unless the poly seal is breached.
 7. The Contractor shall clean all surfaces in the work area with a HEPA-filtered vacuum or by wet wiping, as directed by the Owner.
 8. The Contractor shall install a minimum of two layers of 0.15 mm (six-mil) poly sheeting on all critical barriers in the work area to the building interior (e.g., windows, doors, air intake grills, window air conditioning units, etc.).
 9. The Contractor shall cover the floor surface of the work area with two layers of 0.15 mm (six-mil) poly sheeting, turned up at any walls at least 600 mm. Spray glue and duct tape all seams in the floor sheeting; size sheets to minimize number of seams. Locate seams in top layer 2 meters from, or at right angles to, seams in bottom layer. Install poly so that top layer can be removed independently of bottom layer. Do not locate seams at wall/floor interfaces.
 10. Do not anchor ladder feet on top of poly; the poly shall be punctured to provide secure anchoring of the footings to the surface underneath. Punctures in the poly shall be resealed with a minimum of two layers of poly sheeting.
 11. The Contractor shall cover poly sheeting in areas where scaffolding is to be used with a single layer of 13 mm thick fire retardant plywood. Wrap edges and corners of each plywood sheet with duct tape.
 12. The Contractor shall install an additional layer of poly on the ground as a drop cloth to protect the primary floor layers from debris. The drop cloth shall be rolled and disposed as contaminated waste at the end of each work day and a new drop cloth installed at the beginning of each work day.
 13. The Contractor shall install a minimum of two layers of 0.15 mm (six-mil) poly sheeting 5 meters in width around the perimeter of the work area. The sheeting shall be sufficiently weighted at all edges to prevent migration of the sheeting. The sheeting shall be placed in a manner that traps all debris and water; this is best accomplished by elevating the edges.
 14. The Contractor shall install a 4.5 kg ABC type portable fire extinguisher in the clean area adjacent to the decontamination unit.
 15. The Contractor shall provide GFCI protection for all electrical equipment; provide temporary lighting in the work area.
- C. Construction of Decontamination Unit:
1. The Contractor shall construct a decontamination unit at each location where workers and equipment will enter or exit the work area.

2. The decontamination unit shall be directly adjacent to the work area, and shall consist of an equipment room and wash area in series. The Contractor shall ensure that employees use the decontamination unit prior to leaving the work area.
3. The Contractor shall select and designate a clean area adjacent to the entrance to the wash area for the workers to change into protective equipment. The clean area shall contain clean clothes and towels, and storage area for HEPA vacuums, respirators, and other personal protective equipment.
4. Contaminated equipment or personnel shall not be permitted in the clean area. The Contractor shall ensure that employees do not leave the work area wearing protective clothing. Post OSHA decontamination procedures in the clean area for duration of the Work.
5. The Contractor shall provide shower facilities in the wash area of the decontamination unit when airborne lead concentrations exceed or are expected to exceed $30 \mu\text{g}/\text{m}^3$. The shower facilities shall contain both cold and hot water, soap, and towels.
6. The Contractor shall provide a leak-tight shower unit with an integrated drain pan fabricated from fiberglass or other durable waterproof material; equip with hose bibs for hot and cold water. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the work area. Provide splash-proof entrances.
7. The Contractor shall provide back-flow prevention device and vacuum breaker, where required. Filter waste water using filters having a maximum pore size of 5.0 microns, or dispose of water in accordance with these Specifications. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan. Change filters daily or more often if necessary.
8. Where showers are not provided, the Contractor shall provide adequate washing facilities in the wash area of the decontamination unit.
9. Washing facilities shall contain both cold and hot water, soap, and towels.
10. The Contractor shall filter waste water using filters having a maximum pore size of 5.0 microns, or dispose of water as lead-contaminated waste in accordance with these Specifications.

3.10 PRE-INSPECTION OF LEAD WORK AREAS

- A. The Contractor shall perform the following actions for the Owner prior to beginning the work. These actions may be modified for pre-inspection of O&M work areas, per the "Operation and Maintenance Procedures and Controls" of this specification.
 1. Show proper sealing of poly layers, including all critical barriers.
 2. Use smoke tubes to demonstrate that air is not escaping the work area; use smoke tubes to demonstrate that the shaft of each elevator in the work area is a positively pressurized space relative to the containment.

3. Demonstrate procedures for how workers will enter and exit the decontamination unit.
 4. Demonstrate procedures for handling emergencies and for the prevention of contamination of surrounding areas.
 5. With the Owner, identify disabled building ventilation systems and the means that will prevent accidental or premature restarting. Confirm means to have units restarted at the conclusion of the Work. With the Owner, verify that all affected equipment is secured at the main breaker.
 6. Demonstrate how lead-contaminated wash water will be filtered and drained, or collected for disposal.
 7. Demonstrate how lead-containing and lead-contaminated waste will be removed for transport, where the waste will be stored, and how it will be secured during storage; identify procedures for hauling waste through the building to the loading area.
- B. The Contractor shall perform the following additional actions for the Owner prior to beginning all work using negative pressure in the work area:
1. Demonstrate that the work area can maintain negative pressure of 0.5 mm of water for a minimum of 2 hours prior to commencement of the Work, unless the system is exhausted through an isolated ventilation system. In this case, the test period shall be long enough to ensure that the lock-out ventilation controls are not over ridden and the HVAC system does not reactivate. At a minimum, the Contractor shall make all arrangements and demonstrate satisfactory equipment operation and setup for compliance with these Specifications.
 2. Show proper condition of equipment seals.
 3. Show proper operation of safety and warning devices.
 4. Show proper operation and calibration of instrumentation.
 5. Show identification of air filtration units and each unit's capacity.
 6. Use smoke tubes to demonstrate that negative air pressure and adequate air circulation is being maintained in the work area and that no dead air pockets are present in the work area. Demonstrate positive air motion through the decontamination unit into the work area.
 7. Show the installation method for pre-filters, and the HEPA primary filter in the air filtration unit. Show supply of filters available on site.
 8. Use a pressure differential meter or manometer to demonstrate the required pressure differential at every barrier separating the work area from the balance of the building, equipment, ductwork, or outside.
 9. Demonstrate that each air filtration unit is serviced by a minimum 115V-20A circuit with GFCI protection.

- C. The Contractor shall begin the lead work activities only after the following criteria have been met:
 - 1. Pre-abatement testing has been conducted.
 - 2. The work area has been prepared according to these Specifications.
 - 3. The prepared work area has been inspected and approved by the Owner.
 - 4. Arrangements have been made for managing and disposing of the waste at an acceptable site.

3.11 MAINTENANCE OF LEAD WORK AREAS

- A. The Contractor shall ensure that the work area isolation methods are effectively sealed and taped for the duration of the Work.
- B. The Contractor shall repair damaged lead work areas and remedy defects immediately upon discovery. Visually inspect each lead work area containment at the beginning, middle, and end of each work shift. Use smoke tubes to test the effectiveness of the containment on a daily basis and when requested by the Owner.
- C. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes exposed to and contaminated with lead shall be decontaminated or disposed of as lead-contaminated waste in accordance with the procedures outlined in these Specifications.
- D. The Contractor shall clean debris and residue inside of the decontamination unit on a daily basis. Clean debris from shower pans on a daily basis.
- E. The Contractor shall maintain dry floors in the clean room and airlocks to minimize slips and trips.
- F. The Contractor shall maintain emergency and fire exits from the work area, or establish alternative exits satisfactory to the Owner. Maintain appropriate fire extinguishers in all work areas for the duration of the Work.

3.12 PROHIBITED LEAD WORK METHODS

- A. Open Flame Burning or Torching, unless appropriate engineering controls as well as PPE are utilized in accordance with 29 CFR 1926.353 and 354 and approved by SI-OSHEM:
 - 1. Burning, torching, fossil fuel-powered heat plates, welding, and cutting torches are prohibited because of the high temperatures generated in the process; at these temperatures, lead fumes may be produced.

2. Using cutting torches to remove fire escapes, railings, or other metal components coated with lead-paint is prohibited unless the lead-paint is removed first, in accordance with these Specifications.
 3. Welding of painted metal components (e.g., pre-primed structural steel) is prohibited by OSHA regulations.
- B. Heat Guns Operating Above 590 °C (1,100 °F):
1. Electric heat guns operating at temperatures greater than 590 °C and 1,100° F are prohibited because of the high temperatures generated in the process; at these temperatures, lead fumes may be produced.
- C. Machine Sanding or Grinding Without a HEPA Exhaust Tool:
1. Machine sanding or grinding is prohibited (regardless of the grit used) because of the large volume of leaded dust generated.
 2. Extensive dry hand sanding is not permitted, but limited dry sanding or scraping near electrical circuits may be permitted when directed by the COTR.
- D. Uncontained Hydroblasting or High-Pressure Water Wash:
1. Uncontained hydroblasting and high-pressure water washing are prohibited due to the large quantity of uncontained lead-contaminated waste water generated.
- E. Abrasive Blasting or Sandblasting:
1. Traditional abrasive blasting or sandblasting is prohibited due to the large quantity of lead dust produced.
- F. Chemical Paint Removal Using Methylene Chloride-Based Paint Strippers:
1. Chemical paint removers containing methylene chloride are prohibited due to the potential health effects caused by the use of methylene chloride.
- G. Dry Scraping:
1. Dry scraping is not permitted because of the large volume of leaded particulate matter generated. However, The COTR may authorize the use of dry scraping in limited surface areas around electrical outlets, where appropriate.
 2. Dry scraping is permitted when performed in conjunction with heat gun removal as discussed in Section 3.14.5.B of these Specifications.

3.13 ENGINEERING CONTROLS AND WORK PRACTICES FOR SPECIFIC WORK ACTIVITIES IMPACTING LEAD

3.13.1 Interior Selective Demolition and Whole Component Removal Work Activities

- A. Contractor shall prepare work areas where demolition and/or whole building component removal work activities are occurring as work areas exceeding the OSHA Action Level unless the Contractor can provide a NEA for the specific work activity demonstrating that the documented engineering controls and work practices are effective in controlling airborne lead concentrations below the OSHA Action Level as specified in these Specifications.
- B. Interior Selective Demolition and Whole Component Work Practices
1. Surfaces to be demolished and/or removed shall be misted with water prior to impacting them.
 2. Building components shall be demolished and/or removed in a manner as to minimize the generation of dust within the work area.
 3. The work area shall be misted with water as necessary to keep airborne dust levels to a minimum.
 4. Using a utility knife or other sharp instrument, the Contractor shall carefully score all affected painted seams. This will provide space for a pry instrument to remove the component and will minimize paint chipping and dust generation during removal.
 5. The Contractor shall carefully remove loose and flaking paint by wet scraping or wet sanding. HEPA vacuum and wet wipe the surface.
 6. The Contractor shall remove any screws or other fasteners. Using a flat pry instrument and a hammer, carefully pry the selected building component away from the surface to which it is attached. The pry bar shall be inserted into the seam at the nail (or other fastening device) at one end of the component and pressure applied to the pry bar. This process shall be repeated at other fastening locations until the end of the component is reached. By prying in this manner, the component will be removed intact and paint chip and dust generation will be minimized. A pry point pad or softener may be required to minimize damage to adjoining substrates.
 7. The Contractor shall carefully remove, or bend back, all nails (or other fastening devices) and place the component in an impermeable waste disposal container, as defined in these Specifications.
 8. The Contractor shall deliver the properly sealed component to an off-site paint stripping facility or dispose of in accordance with these Specifications.
 9. Stripped component, or new lead-free component shall not be installed until the work area has been cleaned in accordance with these Specifications, the area has been visually inspected by the SI IH and approved, and clearance sampling results have been accepted.
 10. When lead-free building components are being installed, the lead-free components shall be back caulked prior to installation (back caulk means to apply caulk to underside of the components).

11. Prior to the end of each work shift, the Contractor shall clean the work area floors using wet sweeping/mopping techniques. If a vacuum is to be utilized, it shall be equipped and exhausted through a HEPA filter.
12. Prior to re-occupancy by trade workers or personnel without a minimum of lead awareness training, the work area shall be cleaned and properly cleared for re-occupancy based upon final clearance testing as specified herein.

3.13.2 Interim Controls and Surface Stabilization of Lead-Containing Surfaces for New Finishes

- A. Contractor shall prepare work areas where interim controls and surface stabilization work activities are occurring as work areas exceeding the OSHA Action Level unless the Contractor can provide a NEA for the specific work activity demonstrating that the documented engineering controls and work practices are effective in controlling airborne lead concentrations below the OSHA Action Level as specified in these Specifications.
- B. Surface Stabilization Work Practices.
 1. General Requirements:
 - a. All loose surface material should be removed by hand treatments (i.e., wet scraping and wet sanding).
 - b. Surface contaminants that prevent adhesion of new finishes should be eliminated by cleaning (i.e., chemical degreasing, trisodium phosphate washing, or other equivalent detergent followed by thorough rinsing).
 - c. Surface gloss should be eliminated by chemical etching or wet sanding. All solvents and/or chemicals used on-site are to be pre-approved prior to being brought to project site.
 - d. Adhesion of new finishes to the substrates may be enhanced by chemical etching, spot sealing, and/or wet sanding.
 2. Surfaces shall be misted with water prior to scraping or conduct wet scraping techniques.
 3. Wet Scraping:
 - a. Wet scraping of lead-containing material shall be conducted to remove loose or flaking paint prior to repainting, encapsulation, or enclosure of the lead-containing material. Wet scraping shall not be employed as an abatement technique over a large surface area without approval.
 - b. Working one square meter at a time, the Contractor shall lightly mist the surface with amended water using an airless sprayer or hand-held spray bottle. Using a paint scraper, loose lead-containing material shall be scraped from the surface. The Contractor shall use extreme caution not to damage the existing substrate or the integrity of intact lead-containing surface coatings.

- c. Scraper blades shall be kept sharp to minimize surface abrasion and gouging of the substrate. The Contractor shall have sufficient additional blades on site; scraper blades shall be selected for the surface being abated.
 - d. To obtain a smooth finish, the Contractor may need to follow wet scraping activities by wet sanding or HEPA-sanding the surface following procedure outlined in these Specifications.
4. Wet Sanding:
- a. Wet sanding shall be employed to remove loose or flaking lead-containing materials prior to repainting, encapsulation, or enclosure of the lead-containing material. Wet sanding shall not be conducted as an abatement technique over a large surface area without approval.
 - b. Working one square meter at a time, the Contractor shall lightly mist the surface with amended water using an airless sprayer or hand-held spray bottle. Loose lead-containing material shall then be sanded from the surface. The Contractor shall exercise extreme caution not to damage the substrate or the integrity of intact lead-containing surface coatings.
 - c. The Contractor shall maintain a slightly wet substrate surface during all wet sanding.
- C. Paint film stabilization involves the priming and repainting of lead-containing surface coatings and typically includes performing corrective work or repairs to the building which caused the existing lead-containing surface coating to fail (e.g., moisture problems, mechanically damaged paint, chemical incompatibility, poor surface preparation, aging paint, etc.). These repairs and defects must be specifically addressed prior to paint stabilization.
- D. The Contractor shall perform paint film stabilization as an interim lead-control according to the following general guidelines:
- 1. Perform all corrective work or repairs to the building which caused the existing lead-containing surface coating to fail. Repair all rotted structural, siding, or railing components; defective plaster; missing door hardware; loose siding or trim; loose wallpaper; etc.
 - 2. Prepare the surface by wet scraping or wet sanding, following the procedures in these Specifications, to remove loose, flaking, and deteriorated paint.
 - 3. HEPA vacuum and wet wipe all work area surfaces to remove the paint chips, debris, and dust generated during the Work.
 - 4. Clean, de-gloss, neutralize, and rinse surfaces. Surfaces must be dry before priming or repainting. HEPA vacuum surface after drying.
 - 5. Select primer and topcoat by considering longevity, moisture resistance, and organic compound content with low volatility. Paint film stabilization involves the application of at least two coats (the primer and the topcoat); use a primer/topcoat system from the same manufacturer to ensure compatibility.

6. Apply all paints at thickness according to manufacturer's directions. Apply paint only during proper temperature, wind, and humidity conditions, according to the manufacturer's directions. Allow sufficient time for each coat to dry fully.
- E. Friction and Impact Surface Treatment of Lead-Containing Surface Coatings
1. Friction surfaces are those surfaces painted with lead-containing material that are subject to abrasion (e.g., window components, tight-fitting doors, cabinet doors, stairway treads and railings, etc.), resulting in the generation of lead-contaminated dust; impact surfaces are protruding surfaces that tend to be bumped or banged (e.g., doors and doorjambes, wall corners, chair rails, baseboards, etc.), causing small chips of lead-containing material to dislodge and fall to the floor.
 2. For windows, remove stop bead and parting strip and dispose of properly. Wet scrape deteriorated lead-containing material in accordance with these Specifications. If the window trough is badly weathered, cap with back-caulked, aluminum coil stock. If necessary, repair the window weight and pulley system. Install new window channel or slide system and replace stop bead (and parting strip if required).
 3. For doors, remove the doorstop and dispose of properly. Remove door by pulling out hinge pins. Mist and plane door to eliminate friction points. Reinstall door and install new doorstop.
 4. For stairs, install a hard, cleanable covering on treads (e.g., rubber tread guards). Carpeting may be used instead, but it must be securely fastened so that it does not cause abrasion. Stabilize paint on banisters, balusters, and newel posts.
 5. For baseboards, remove and dispose of shoe molding and replace, as directed by the COTR.
 6. For abraded outside wall corners, install new plastic or wood corner protector, as directed by the COTR.
 7. Perform the removal of lead-contaminated dust, as directed by the COTR, in accordance with these Specifications.
 8. Prior to reoccupancy by trade workers or personnel without a minimum of lead awareness training, the work area shall be cleaned and properly cleared for reoccupancy based upon final clearance testing as specified herein.

3.13.3 Installation of Enclosure Systems for Lead-Containing Surfacing Coatings

- A. Contractor shall prepare work areas where enclosure systems are installed as work areas exceeding the OSHA Action Level unless the Contractor can provide a NEA for the specific work activity demonstrating that the documented engineering controls and work practices are effective in controlling airborne lead concentrations below the OSHA Action Level as specified in these Specifications.

- B. All soft, moveable, or otherwise structurally unsound structural members required to support the enclosure shall be repaired prior to enclosure. If repair is not feasible, enclosure will not be possible and an alternative abatement method shall be selected, as directed by the COTR.
- C. Prior to enclosure, the Contractor shall label the lead-containing surface to be enclosed, approximately every 1.0 meter, horizontally and vertically, with a warning: "Danger: Lead-Containing Surface Coatings". The stamp lettering should be done in permanent ink.
- D. When enclosing lead-containing floors, the Contractor shall remove all dirt and debris with a HEPA vacuum prior to installing the enclosure to avoid lumps in the new flooring.
- E. When installing enclosures directly to a lead-containing surface, the Contractor shall use both an adhesive and mechanical fasteners (e.g., nails, screws, etc.) to anchor the enclosure.
- F. The following are acceptable enclosure materials and general procedures for installing these materials. Actual enclosure material selected to be authorized (additional materials not listed here may be acceptable; the Contractor shall coordinate for use of materials and procedures not provided in these Specifications):
 - 1. Wood Paneling:
 - a. Prior to installation of enclosure, the Contractor shall carefully remove flaking and loose areas of lead-containing material by wet scraping or wet sanding. Allow intact paint with good adhesion to remain
 - b. The Contractor shall caulk all seams in the lead-containing painted component to be enclosed.
 - c. The Contractor shall anchor wood paneling to the substrate with both adhesive and mechanical fastener, as directed by COTR.
 - d. The Contractor shall scribe and cut the enclosure woodwork to fit adjoining existing work and shall refinish cut surfaces or repair damaged finish at cuts.
 - e. Wood paneling is not permitted as a ceiling enclosure.
 - 2. Laminated Products:
 - a. Prior to installation of enclosure, the Contractor shall carefully remove areas of flaking and loose lead-paint by wet scraping or wet sanding. Allow intact paint with good adhesion to remain.
 - b. Laminated products shall be anchored directly to the lead-containing surface coatings substrate.
 - 3. Ridged Tile and Brick Veneers:
 - a. Prior to installation of enclosure, the Contractor shall carefully remove areas of flaking and loose lead-containing material by wet scraping or wet sanding. Allow intact paint with good adhesion to remain.

- b. Rigid tile and brick veneers shall be glued or cemented directly to the lead-containing material.
4. Drywall and Fiberboard:
- a. Prior to installation of enclosure, the Contractor shall carefully remove areas of flaking and loose lead-containing material by wet scraping or wet sanding. Allow intact paint with good adhesion to remain.
 - b. The Contractor shall remove any trim to be disposed of and install the drywall and fiberboard over any cavity left by the removed trim, except large cavities over 400 mm in any direction. Repair any structural deficiencies.
 - c. The Contractor shall use construction adhesive to glue the drywall and fiberboard directly to the lead-containing material being enclosed.
 - d. The Contractor shall screw the drywall and fiberboard to the studs behind the existing wall. Caulk all seams that meet molding.
 - e. The Contractor shall use extension rings to bring out electrical devices flush with the new drywall and fiberboard and retrofit any HVAC registers. Caulk all seams.
 - f. The Contractor shall tape and finish the drywall.
5. Sheet Metal:
- a. Prior to installation of enclosure, the Contractor shall carefully remove areas of flaking and loose lead-containing material by wet scraping or wet sanding. Allow intact paint with good adhesion to remain.
 - b. The Contractor shall locate and place sheet metal fabrications plumb, level, and in alignment with adjacent existing building construction.
 - c. The Contractor shall back caulk at the perimeter of the sheet metal enclosure, sealing seams to form a continuously sealed enclosure.
6. Siding:
- a. Siding may be used to enclose exterior lead-containing surface coatings prior to installation of enclosure. Prior to installation, the Contractor shall carefully remove areas of flaking and loose lead-containing material by wet scraping or wet sanding. Allow intact paint with good adhesion to remain.
 - b. The Contractor shall comply with the siding manufacturer's installation instructions and recommendations. Install rigid sheathing or furring strips to provide a level surface prior to the installation of siding. Do not remove the existing lead-painted siding.

- c. The Contractor shall install siding and accessories to cover all lead-containing surface coatings. Field fabricated accessories that are not commercially available from sheet aluminum stock or wood. All seams shall be caulked and back-caulked.
- 7. Windows:
 - a. Prior to installation of enclosure, the Contractor shall carefully remove areas of flaking and loose lead-containing material by wet scraping or wet sanding. Allow intact paint with good adhesion to remain.
 - b. Snap-in replaceable aluminum and vinyl window tracks shall be pressed into a bead of caulk at each joint.
 - c. Window troughs shall be covered with fitted metal and screwed into place. The metal shall be pressed into a bead of caulk at the joints and edges.
- G. Following the installation of the enclosure material, the Contractor shall install extension rings for all electrical switches and outlets that will penetrate the enclosure.
- H. The Contractor shall seal and back-caulk all seams and joints.
- I. The COTR will evaluate the integrity of the enclosure system on a regular basis and following any significant damage due to plumbing or roof leaks, tornadoes, hurricanes, floods, earthquakes, etc. The Contractor shall immediately perform repairs to the damaged areas.
- J. Prior to reoccupancy by trade workers or personnel without a minimum of lead awareness training, the work area shall be cleaned and properly cleared for reoccupancy based upon final clearance testing as specified herein.

3.13.4 Mechanical Methods of Lead-Containing Surface Coatings Removal

- A. Contractor shall prepare work areas where LBP and/or LCM are removed as work areas exceeding the OSHA Action Level unless the Contractor can provide a NEA for the specific work activity demonstrating that the documented engineering controls and work practices are effective in controlling airborne lead concentrations below the OSHA Action Level as specified in these Specifications.
- B. Heat Guns:
 - 1. The Contractor shall use heat guns operating below 590 °C (1100° F) only; the use of heat guns operating at temperatures greater than 590 °C (1100° F) is prohibited.
 - 2. Heat gun removal may only be conducted in negative pressure containments, constructed in accordance with these Specifications.
 - 3. The Contractor shall exercise extreme caution when performing heat gun removal around wallpaper, insulation, and other flammable materials.

4. The Contractor shall maintain a fully charged ABC-type 9 kg fire extinguisher in the work area, as required by OSHA regulations.
 5. The Contractor shall allow the heat stream leaving the gun to merely soften the paint. Do not allow the paint film to scorch or smoke. At the first sign of paint softening, blistering, or bubbling, remove the heat stream and manually scrape the softened paint from the substrate. Heat gun removal shall begin at the highest point on the surface and proceed to the lowest point.
 6. The Contractor shall maintain sharp scraper blades to minimize surface abrasion and gouging of the substrate. The Contractor shall have sufficient additional blades on site; scraper blades shall be selected for the surface being abated.
 7. To obtain a smooth finish, the Contractor may need to follow heat gun activities by wet sanding or HEPA-sanding the surface following procedures outlined in these Specifications.
- C. HEPA Vacuum Needle Gun:
1. HEPA-equipped needle guns are permitted for abatement of lead-containing material from metal substrates only and may damage other surfaces.
 2. The Contractor shall select the proper shroud as recommended by the manufacturer to match the configuration of the substrate being abated.
 3. The Contractor shall operate the HEPA-vacuum attachment at all times for the duration of the lead-containing material abatement.
- D. HEPA Vacuum Blasting:
1. The Contractor shall conduct blasting on flat, exterior surfaces or on surfaces compatible with available blast heads as recommended by the equipment manufacturer.
 2. The Contractor shall maintain blast head in contact with the lead-containing surface to provide maximum collection of dust and debris created by the blasting operation.
- E. Machine HEPA Sanding:
1. Machine sanding without a HEPA-filtered vacuum attachment is prohibited. When using a sander equipped with a HEPA-filtered vacuum, the Contractor shall strictly follow the manufacturer's operating instructions and instructions for care and maintenance.
 2. During HEPA sanding, the Contractor shall maintain the operation of the HEPA-vacuum attachment during all sanding operations. The sanding surface shall be held flat to the paint surface. Sanding operations shall be conducted on flat surfaces only.
 3. The Contractor shall not allow the sanding pad surface to extend beyond the surface being sanded. The potential for the production of airborne lead dust increases when the sanding disk is wider than the surface being abated.

4. HEPA sanding is not permitted on detailed moldings.
- F. Prior to reoccupancy by trade workers or personnel without a minimum of lead awareness training, the work area shall be cleaned and properly cleared for reoccupancy based upon final clearance testing as specified herein.

3.13.5 Encapsulation of Lead-Containing Surface Coatings

- A. Contractor shall prepare work areas where lead-containing materials are to be encapsulated as work areas exceeding the OSHA Action Level unless the Contractor can provide a NEA for the specific work activity demonstrating that the documented engineering controls and work practices are effective in controlling airborne lead concentrations below the OSHA Action Level as specified in these Specifications.
- B. Encapsulation:
1. Surfaces of non-deteriorated substrates covered with intact lead-containing material may be considered for encapsulation.
 2. Conduct field tests of surfaces to be encapsulated for paint film integrity. Test the adhesion by performing a minimum 150 mm x 150 mm test patch. The area must be visually clean of dust and debris before performing the test patch. Conduct a minimum of one test patch on each type of lead-containing material covered building component to which the encapsulant will be applied.
 3. The following surfaces and components are typically not suitable for encapsulation. Alternate interim control or abatement methods shall be considered for the following:
 - a. Friction surfaces, such as window jambs and door jambs. Friction surfaces are typically subject to repeated damage, thereby compromising the integrity of the encapsulant applied.
 - b. Surfaces with substrates or existing coatings that have a high level of deterioration. Encapsulants on these surfaces have a high rate of failure as a result of the surface or substrate deterioration.
 - c. Surfaces in which there is a known incompatibility between two existing surface coating layers. This incompatibility typically cannot be determined without performing a test patch of the surface.
 - d. Surfaces that cannot support the additional weight stress of encapsulation due to existing paint thickness. This inability to support the additional weight of an encapsulant typically cannot be determined without performing a test patch of the surface.
 - e. Metal surfaces that are prone to rust or corrosion. Encapsulants on metal surfaces typically fail when the surface underneath rusts.
 4. Repair all building components and substrates as needed (e.g., caulk cracks and repair sources of water leaks).

5. Prepare surfaces. Remove all dirt, grease, chalking paint, mildew and other surface contaminants, remnants of cleaning solutions, and loose paint. All surfaces shall be de-glossed, as needed.
 6. Apply one of the three following types of encapsulant, as approved by OSHEM.
 - a. Non-reinforced liquid coatings
 1. Apply using a brush, roller or spray. Non-reinforced liquid coatings are suitable for many interior and exterior substrates. Application procedures and requirements vary with specific type selected; follow manufacturer's directions during application.
 - b. Reinforced liquid coatings:
 1. Apply using a brush, roller, spray, or trowel. Application procedures for reinforced liquid encapsulants vary with specific type selected, and may require the application of a fabric; follow manufacturer's directions during application.

NOTE: Use of liquid coatings is prohibited in the State of Maryland for residential, child-occupied, commercial and steel structures. Approval for use in other jurisdictions will be on a case-by-case basis.
 - c. Adhered materials (e.g., vinyl wall coverings, vinyl floor tile, etc.):
 1. Contractor shall apply adhesive first, then install the selected encapsulant product. The Contractor shall carefully follow the manufacturer's directions for application of adhesive product and encapsulant selected.
 7. During encapsulant application or installation, monitor air temperature and relative humidity and perform the encapsulant application according to the manufacturer's guidelines for these parameters. For liquid coatings, monitor the coating thickness to ensure that the encapsulant manufacturer's Specifications are met.
 8. For liquid coating encapsulants, allow coating to cure and then visually examine it for wrinkling, blistering, cracking, bubbling, or other chemical reaction with the underlying paint. For all encapsulants, perform the appropriate adhesion tests recommended by the manufacturer.
 9. The COTR will conduct regular evaluations of the encapsulated area and report defects or deterioration to the Contractor for re-stabilization.
- C. Prior to re-occupancy by trade workers or personnel without a minimum of lead awareness training, the work area shall be cleaned and properly cleared for re-occupancy based upon final clearance testing as specified herein.

3.13.6 Cleaning of Lead-Contaminated Surface Dust

- A. Contractor shall prepare work areas where lead-contaminated surface dust cleaning work activities are performed as work areas exceeding the OSHA Action Level unless the Contractor can provide a NEA for the specific work activity demonstrating that the documented engineering controls and work practices are effective in controlling airborne lead concentrations below the OSHA Action Level as specified in these Specifications.
- B. Dust Removal and Control:
1. The removal and control of lead-contaminated dust shall be performed for those building surfaces with lead dust levels above those in the following table.

Surface	Leaded Dust Loading ($\mu\text{g}/\text{ft}^2$)
Bare and Carpeted Floors	40
Interior Window Sills	250
Window Troughs	400
Exterior Horizontal Surfaces	400

2. Correct any known or suspected lead-containing surface coating hazards which may be contributing to the production of lead-contaminated dust before dust removal.
3. Visually inspect other dust traps (e.g., radiators, floor grates, etc.). If visible dust is observed, the item shall also be cleaned.
4. Clean all horizontal surfaces by HEPA vacuuming and by wet wiping techniques.
5. Begin dust removal at the highest horizontal surface and work down. Clean windows, other dust traps, and finally the floors.
6. During wet cleaning, replace rags, sponges, and mops frequently. Change the wash water often.
7. To discard lead-contaminated carpets or other upholstered furnishings, mist the surface with water; seal the item in plastic sheeting, bags, or containers; and discard properly.
8. To clean lead-contaminated carpets or other upholstered furnishings, HEPA vacuum each surface a minimum five times, vacuuming the bottom of the item a minimum of three times. Also HEPA vacuum the existing floor below lead-contaminated carpeting a minimum of three times.

3.13.7 Work Activities Impacting Lead Not Addressed

- A. Any work activities impacting lead that have not been addressed by these Specifications must be conducted in accordance with all applicable EPA, OSHA, and local

regulations. In addition, the engineering controls and work practices for all work activities impacting lead or assumed to impact lead must be submitted in writing for pre-approval prior to mobilization.

3.14 OPERATIONS AND MAINTENANCE PROCEDURES AND CONTROLS

- A. Preparation of work area for O&M during lead-containing material penetration and cutting:
1. Move furnishings and equipment away from the work area. Objects which are fixed-in-place shall be covered with 2 layers of six-mil poly drop cloth.
 2. Place 2 layers of six-mil poly drop cloth on the floor and extend cloth at least five feet (1,500mm) from all areas of lead-containing material work.
 3. If wall is within 1,500mm of work area perimeter, turn drop cloth up a minimum of 300 mm from the base of the wall and seal to the wall with tape.
 4. If liquid runoff is to be generated, roll up edges of drop cloth to create a berm which will contain the liquid waste and debris.
 5. Limit access through the work area by demarcating entrance areas to help control traffic with OSHA approved lead caution tape.
- B. Work procedures for penetrating or cutting lead-containing material covered surfaces:
1. As a minimum, disposable gloves and shoe coverings are to be worn by individuals performing O&M work to prevent the spread of lead paint dust to other areas. Eye protection, head protection (for overhead work), and full-body protection is recommended.
 2. Power tools used for O&M work shall be equipped with a HEPA-filtered, shrouded exhaust. As an alternative, power tools may be used in conjunction with HEPA-filtered vacuum cleaners held in close proximity to source of dust, provided that this method is shown to result in acceptable dust suppression.
 3. Initially mist the work surface area with a water and surfactant solution.
 4. Use utility knife or scraper to remove any loose paint from the work surface or to slice the painted edges of the component to be removed from the work surface. Reference wet scraping procedures per this specification to remove paint along the cutting line prior to undercutting doors.
 5. Perform the required work on the surface while the surface is wet. Re-wet the surface as needed during penetrating and cutting work.
 6. Disconnect power tools during wetting procedures to avoid electrical shock.
 7. Ensure that during penetrating and cutting work that lead dust and debris remains on the drop cloth. If dust and debris spreads to other areas, use procedures in the

specification for full-scale work area preparation, worker protection and work area cleaning.

8. After completing work, disconnect power tools and re-mist the work surfaces.
9. Clean and rinse all equipment and work surfaces using a wet wash system as covered in the Specifications.
10. Remove shoe covering when stepping off the poly drop cloth.
11. The Smithsonian Institution may conduct a visual inspection and lead clearance testing in compliance with the Specifications..
12. After completion of clearance testing, drop cloths shall be rolled inward and placed in disposal bags with other waste. Waste generated during O&M work may be regulated as a hazardous waste under RCRA per this specification. The SI IH shall collect a representative sample of the generated waste for TCLP analysis.

3.15 LEAD WORK AREA CLEANING PROCEDURES

A. Daily Cleaning:

1. The Contractor shall carefully fold the drop cloth to center and dispose of the poly drop cloth as lead-contaminated waste.
2. The Contractor shall provide general clean-up of lead work area concurrent with the removal of all lead-containing or lead-contaminated materials. Do not permit accumulation of debris on the work area floor.
3. The Contractor shall perform a thorough HEPA vacuuming of the work area. In addition, the Contractor shall utilize an effective cleaning solution during the cleaning activities. Do not perform dry dusting or dry sweeping.
4. The Contractor shall reinstall a clean poly drop cloth before resuming the Work.

B. Final Cleaning at the Completion of Work:

1. The Contractor shall remove all visible accumulations of lead-containing material and debris.
2. The Contractor shall HEPA vacuum all surfaces in the work area, then wet clean the surfaces with an effective cleaning solution; HEPA vacuum all surfaces in the work area again.
3. The Contractor shall thoroughly decontaminate and remove all equipment from the work area.
4. If applicable, the Contractor shall replace all HEPA filters and pre-filters in air filtration units exhibiting diminished flow capacity with clean filters. Clean all air filtration units.

5. The Contractor shall perform no activity in the work area for a minimum of one hour to allow settlement of airborne particulate. No reduction in this settling time will be permitted.
6. The Contractor shall notify the SI IH for observation of cleaning to determine completeness. Poly surfaces will be considered clean when free from visible dust, dirt, residue, film, or discoloration resultant from the Work.
7. Following successful visual inspection as outlined in these Specifications, the Contractor shall dismantle and carefully remove remaining poly sheeting except for critical barriers.
8. The Contractor shall HEPA vacuum all surfaces in the work area, and then wet clean the surfaces with an effective cleaning solution. Allow surfaces to dry, and HEPA vacuum all surfaces in the work area again.
9. If applicable, the Contractor shall replace all HEPA filters and pre-filters in air filtration units with clean filters. Clean all air filtration units again. Notify the SI IH for observation of cleaning to determine completeness. Work area will be considered clean when free from visible dust, dirt, residue, film, or discoloration resultant from the Work.
10. Following successful visual inspection as outlined in these Specifications, the SI IH will perform appropriate clearance sampling in the work area.

3.16 LEAD WORK AREA CLEARANCE PROCEDURES

A. Visual Inspection:

1. All surfaces within the lead work area will be visually examined by the SI IH. The SI IH will examine the bare surfaces to ensure that there is no visible residue. If residue remains, the Contractor shall re-clean the component prior to repeating the visual inspection.
2. If a building component has been removed and replaced, the SI IH will examine the work area to ensure that each building component specified for removal and replacement has been completely removed.
3. If a lead-containing surface coating- enclosure system has been installed, the SI IH will examine the mechanical fastening system used to hold the enclosure to the substrate to determine that the fastening system is adequate. All seams and edges in the enclosure will be examined to ensure that they are sealed to provide a dust tight system.
4. If lead-contaminated soil abatement has been performed, the SI IH will examine the work area to ensure that no visible paint chips are present in the soil following the Work. The SI IH will examine all soil areas selected for abatement to document that each has been completely treated, or removed, as specified.

5. If an interim control method has been performed, the SI IH will examine the work area to ensure that the lead hazard control method performed (e.g., encapsulation, paint film stabilization, friction and impact surface treatment, etc.) has been completed.
6. There shall be no evidence of settled dust following the Contractor's cleanup effort regardless of activity. Any settled dust present in the lead work area during the visual inspection provides sufficient evidence that the Contractor's cleanup effort was not adequate. The areas immediately outside the lead work area will also be visually examined to confirm that no leaded dust or paint chips have been transferred outside the work area.

B. Lead Wipe Sampling:

1. For interior work, the SI IH will follow the following guidelines: a minimum of one wipe sample will be collected for every 200 square meters of floor surface area inside the work area; and a minimum of one sample will be collected from each window inside the work area, alternating between interior window sill and window trough samples (actual number and specific locations of samples will be determined by the SI IH). In addition, one wipe sample will be collected outside the work area within a 3-meter radius of the entrance to the decontamination unit.
2. For exterior work, the SI IH will follow the following guidelines: a minimum of one wipe sample will be collected for every 200 square meters of horizontal surface area (e.g., a porch floor or an entryway) inside the work area, and one wipe sample will be collected from approximately every other window trough inside the work area (actual number and specific locations of samples shall be determined by the SI IH). In addition, one wipe sample will be collected outside the work area within a 3-meter radius of the entrance to the decontamination unit.
3. Cleaning shall be considered complete when every lead dust wipe sample is below the following levels (given in micrograms of lead per square foot):

Surface	Leaded Dust Loading ($\mu\text{g}/\text{ft}^2$)
Bare and Carpeted Floors	40
Interior Window Sills	250
Window Troughs	400
Exterior Horizontal Surfaces	400

4. The Contractor shall re-clean those areas which do not comply with the specified final clearance levels. Following re-cleaning efforts, visual inspection and clearance sampling shall be performed to ensure that the re-cleaning was effective. The Contractor is responsible for the cost incurred during re-cleaning activities.

3.17 REMOVAL OF ENGINEERING CONTROLS

- A. Following successful final clearance testing and acceptance of results, the Contractor shall leave air filtration units running until critical barrier removal has been completed.

- B. Equipment, machinery, scaffolding, tools, etc., within the work area shall not be removed without first being thoroughly cleaned by HEPA vacuuming and wet wiping with cleaning solution.
- C. If applicable, before removing air filtration units from the work area, the Contractor shall remove and properly dispose of pre-filters, decontaminate the exterior of each air filtration unit, and seal the intake to each unit with 0.15 mm (six-mil) poly sheeting. Wrap entire unit with one additional layer of 0.15 mm (six-mil) poly sheeting.
- D. After clearance results have been accepted, the critical barrier poly seals have been removed, and the poly sheeting, tape, and any other trash and debris have been disposed of properly, the SI IH and the COTR will conduct a final walkthrough of the work area.
- E. The Contractor shall repair, patch and paint all damaged areas and restore them to their original, pre-contract condition.
- F. Subsequent to the lead work activities, the Contractor shall perform the following before the Work may be considered for completeness:
 - 1. The work area has been cleaned in accordance with the procedures outlined in these Specifications.
 - 2. Visual clearance examinations and testing have been performed and the results have been accepted.
 - 3. Engineering controls have been removed from the work area, and the waste generated during the Work has been removed from the site and disposed of in accordance with these Specifications.

3.18 WASTE MANAGEMENT

- A. General:
 - 1. The Contractor shall properly store and secure all waste at all times. Do not leave debris in the work area or in uncovered or unlocked trucks or dumpsters. Do not leave any waste in unsecured areas accessible to the public. Do not incinerate debris or use any unauthorized dumpster. Do not introduce lead-contaminated water into storm or sanitary sewers. Do not permit recycling of building components coated with lead-containing material.
 - 2. All materials, whether hazardous or non-hazardous, shall be disposed of in accordance with all applicable federal, state, and local regulations. Keep all chemicals and chemical waste in sealed and properly labeled containers. The contractor shall not discard chemicals in trash or down drain. Do not evaporate surplus waste solvents.
 - 3. The Contractor shall maintain on site the name of and contact information for the building's designated Smithsonian Institution Hazardous Waste Coordinator (HWC).

4. The Contractor shall ensure that there is no leakage of waste or release of dust during the storage and transportation of waste.
 5. The Contractor shall make every attempt to minimize the total quantities of waste generated by conducting abatement and interim control efforts that generate reduced quantities of both hazardous and non-hazardous waste for disposal, avoiding commingling of hazardous and non-hazardous waste. Painted metal components should be recycled whenever possible, with required corresponding documentation provided to SI.
- B. Hazardous Waste Management:
1. The Contractor shall segregate abatement waste into distinct waste streams (e.g., disposable suits, lead-contaminated polyethylene sheeting, lead-contaminated waste water, hazardous chemical sludge, etc.). Various combinations of each in different containers will not be accepted.
 2. Lead-containing or lead-contaminated waste shall be considered as hazardous waste, and labeled in accordance with this specification, unless:
 - a. Lead leachate concentrations of the waste are determined to be less than 5 ppm from representative bulk samples, by TCLP analysis, following the protocol indicated in EPA regulations.
 - b. The waste does not meet any other regulatory definitions as "hazardous waste" per section 1.4 (A) (29) of these Specifications.
 3. Waste tested which results in a lead leachate concentration of greater than or equal to 5 parts per million shall be considered hazardous, and shall be handled and disposed of as such according to local, state, and federal regulations.
 4. All TCLP test results shall be permanently retained by the Smithsonian Institution.
 5. Lead waste from lead abatement projects completed in residential or child-occupied facilities must be removed from the site within 48 hours after completing cleanup. All other hazardous waste must be removed from the site of a lead abatement project within 90 days of completion of the project.
 6. The Contractor shall not discard chemicals in trash or down drains. Do not evaporate surplus waste solvents. Keep chemical waste in appropriate, sealed containers.
- C. Containers:
1. The Contractor shall comply with EPA, DOT, and all other applicable federal, state, and local regulations for hazardous waste containers. All hazardous waste containers shall be completely sealed and shall be checked for tightness prior to removal from the work area.
 2. All non-hazardous lead waste may be contained in one of the following:
 - a. Sealed disposal drums:

- 1) Contractor shall provide sufficient extra caps, rings, gaskets, etc., in the event of drum leakage. Replacement of caps, rings, gaskets, etc. shall not occur without the permission of the COTR.
 - 2) All disposal drums shall be new; no used or damaged disposal drums are acceptable (the Contractor shall provide sufficient dollies or other suitable means of transporting the drums as approved by the COTR).
 - 3) Each filled, sealed drum shall be tipped by the Contractor in the presence of the SI IH prior to removal from the work area.
- b. Two layers of 0.15 mm (six-mil) thick poly sheeting, sealed with adhesive spray and duct tape
 - c. Two layers of 0.15 mm (six-mil) thick poly disposal bags; each bag shall be sealed by 'goose-necking' the bag with duct tape.
- D. Storage Requirements:
1. The Contractor shall notify the COTR, who will then notify the HWC when hazardous waste containers start being filled.
 2. The Contractor shall keep all waste materials, both hazardous and non-hazardous, inside the work area during the Work.
 3. Contractor shall coordinate a designated storage area in the building where waste, both hazardous and non-hazardous, may be stored following removal from work area and prior to removal from site. The designated storage area shall be a secured area or lockable container that is inaccessible to all persons other than the Contractor and the COTR.
- E. Labeling Requirements:
1. The Contractor shall label each hazardous waste container with the words "HAZARDOUS WASTE LEAD, EPA ID# D008.
 2. The Contractor shall mark each hazardous waste container on the exterior with the accumulation start date. The accumulation start date is that date when a bulk waste disposal container starts to be filled, or when a chemical that will be disposed of is no longer needed.
- F. Waste Control Logs:
1. The Contractor shall keep a Waste Control Log (SF-3) of all hazardous waste containers. The SI IH will review the log for accuracy and completeness. The waste hauler shall include a completed copy of SF-3 when submitting the Hazardous Material Profile Sheets. Profile sheets will not be accepted without a copy of the completed log. Profile sheets shall be sent directly to the COTR.

2. All major constituents and hazardous components of the waste shall be identified by chemical name, not by acronym or trade name.
- G. Transportation and Disposal:
1. The Contractor shall transport lead waste containers out of the work area either through the decontamination unit or through a separate waste load-out unit, in accordance with these Specifications.
 2. Waste load-out shall be done by two teams. The team inside the work area shall clean the outside of properly labeled lead waste containers using HEPA-filtered vacuums and wet wiping, and place them into the decontamination unit. No personnel from the inside team shall exit any further from the work area. The team outside the work area (wearing appropriate protective equipment) shall retrieve the waste containers from the decontamination unit, double-bag the bagged waste, and pass the waste containers to the uncontaminated area outside the decontamination unit. No personnel from the "outside team" shall enter the work area.
 3. The Contractor shall line the routes to the elevator, the elevator itself, and routes to covered carts with 0.15 mm (six-mil) poly sheeting, as applicable, and as directed by the COTR.
 4. The Contractor shall perform the removal of hazardous material from public buildings after the building has closed, during non-public hours, and when limited staff is in attendance; arrange with the COTR specific schedule for the removal of hazardous waste. The Smithsonian Institution reserves the right to restrict when containerized waste will be moved outside of the work area and pass through the building.
 5. The Contractor shall coordinate with the COTR within 45 days after the accumulation start date for removal from the site and disposal.
 6. Prior to removal from the site, each hazardous waste container shall be weighed and its exact weight recorded on the waste manifest. Waste manifests that include estimated weights will not be accepted. Note: Estimated weights on the Hazardous Material Profile Sheets are acceptable.
 7. The Contractor shall provide one copy of the completed Hazardous Waste Manifest to the COTR no less than five days prior to the scheduled date of removal from the site; COTR will review the completed manifest for accuracy and completeness.
 8. All hazardous waste shall be hauled by a licensed hazardous waste hauler with all required licenses from all state and local authorities with jurisdiction. The licensed hazardous waste hauler shall provide evidence of previous experience transporting lead-contaminated waste. The licensed hazardous waste hauler shall provide permanent labeling for all containers as required by all federal, state, and local regulations.
 9. Hazardous and non-hazardous waste shall be disposed according to all federal, state and local regulations.

3.19 JOB CLOSE-OUT

- A. The Contractor shall remove from the site all remaining debris and rubbish resulting from removal and disposal operations and the construction of containment's and decontamination units.
- B. The Contractor shall demonstrate that any building utilities that were temporarily disabled are now in full service. Notify the Owner when disabled building ventilation systems, electrical power, smoke detectors, and building access/egress passages may safely be re-started or used.
- C. The Contractor shall replace those items that were removed from the work area prior to or during the Work.
- D. The Work will not be considered complete until all submittals required by these Specifications have been provided to and approved by the COTR.

3.20 POST ABATEMENT NOTIFICATIONS - The SI will notify the appropriate jurisdiction having authority of abatement actions completed in SI-owned housing.

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY OF WORK

- A. Submittals: Submit manufacturers catalog data and color samples on each type of material to be employed.

1.3 APPLICATION

- A. Apply only to clean and dry surfaces during dry weather, when temperature is 50 degrees F or above. Finish all beads with slight recess; do not allow face to project beyond adjacent surface.

1.4 CLEANING

- A. Upon completion remove all excess material (including any staining) from adjoining surfaces. Employ solvents recommended by sealant manufacturer.

1.5 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints.
- B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
 - 1. Joint Locations:
 - a. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
 - 2. Joint Sealant: Acrylic latex.
 - 3. Joint-Sealant Color: White.

PART 2 - PRODUCTS

2.1 EXTERIOR SEALANT MATERIAL

- A. Material shall be Sonolastic NP-1 or Sonneborn SL1 and SL2 two-part polyurethane sealant or products by Pecora, Tremco or Dow. Use product specifically recommended by manufacturer for location to be sealed. All manufacturers shall provide warranties as specified. All applications shall be compatible with adjacent materials, using proper

primers when necessary. Manufacturer shall be responsible for determining compatibility of materials. He shall conduct tests where he suspects incompatibility. Upon determining incompatibility, he shall make recommendations for the substitution of alternate products.

1. Color: Standard colors as selected.
2. Store compound in area heated to 70 degrees F if exterior temperature is below 60 degrees F.

2.2 TYPICAL INTERIOR CAULKING

- A. Scope: Apply along juncture where all trim, base, door frames, etc. contacts masonry or any other slightly irregular surfaces to accomplish desired finishing.
- B. Material: Tremco Acrylic Latex, Pecora AC-20 Acrylic Latex or Bostik Chem-Calk 600 acrylic latex caulking compound as approved.
- C. Application: Rake out and clean joints and crevices. Where deeper than 3/4", partially fill with foam backer compatible with sealant. Then fill solid with compound forced into place with gun under pressure. Neatly tool surface. At painted surfaces apply after priming coat but before finish coat.
- D. Crevices indicated to receive caulking shall be formed by masonry and Carpentry Trades, and shall be rectangular in shape 1/4" to 3/8" wide, 1/2" deep.
- E. Door and Window Perimeters: Door and window perimeters and air gaps in all surrounding framing shall be sealed with a non-expanding foam product. "Daptex" Latex Multi-Purpose Insulating Foam Sealant or "Touch 'n Seal No Warp" by Convenience Products will be accepted.

2.3 SPECIAL APPLICATIONS

- A. Joints Subject To High Temperature: Employ sealant meeting FS TT-S-1543, Class B, and recommended for said use.

PART 3 - EXECUTION

3.1 LOCATIONS, EXTERIOR:

- A. Phasing:
 1. At painted surface apply after priming coat but before finish coat. At masonry joints apply after mortar is well cured.
 - a. Allow sealant to cure as recommended by manufacturer (2 days to 3 weeks) before coating.
- B. Application of typical exterior sealant shall include (but is not necessarily limited to) the following locations:
 1. At both interior and exterior joints and recesses formed where frames and subsills

- of windows, doors and the like adjoin other materials in exterior walls.
2. Joints or recesses on exterior of building (including locations not specifically shown or specified) where sealing is required to prevent infiltration of water, moisture and wind into building construction.
3. Juncture of masonry with different materials such as metal, etc.
4. Exterior face of control joints in exterior masonry walls.
5. Openings where items pass through exterior walls.
6. Metal-to-metal joints where sealing is shown or specified.
7. Bottoms of exterior doorway frames.
8. Where sealant is indicated and a special application is not required hereunder or in another Section.

3.2 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.3 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.4 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.5 JOINT PREPARATIONS, EXTERIOR

- A. Verify that joints are completely dry, that mortar is well cured. Remove loose particles of mortar and any extraneous matter. Make joint surfaces absolutely clean using brush, air gun, or Xylol. Verify that no curing compounds, protective coatings, form release agents, etc. are present and will be detrimental to joint bonding.
- B. Prime porous and coated surfaces if and as recommended by manufacturer (or test application), before joint packing is installed. Prime coat shall be uniform and completely cover all such surfaces to be bonded.
- C. Install joint packing to produce a compound depth equal to $1/2$ the width, but not less than $1/4$ " nor more than $1/2$ ". Joint packing shall be strips of synthetic sponge or foam of type recommended by sealant manufacturer, or sufficient size and density to fit tightly and maintain its position in the joint without stretching.
- D. Sealant shall bond only to the two opposing faces. Where space for joint packing does not exist, employ a bond breaker tape of type recommended by sealant manufacturer. Report such joints that will not produce a $1/4$ " depth.
- E. Unless specific permission is obtained, tape facing surface adjacent to joints before applying sealing compounds. Remove tape immediately after joints have been sealed and tooled.

END OF SECTION 07 92 00

SECTION 096513 – RESILIENT BASE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Resilient wall base.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Samples for selection purposes of manufacturer's standard sample sets in form of pieces cut from each type of product specified showing full range of colors and patterns available.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Products: Obtain each type and color of product specified from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to Project site in original manufacturer's unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Store products in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F and 90 deg F.
- C. Move products into spaces where they will be installed at least 48 hours in advance of installation.

1.6 PROJECT CONDITIONS

- A. Maintain a minimum temperature of 70 deg F in spaces to receive products specified in this Section for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F.
- B. Do not install products until they are at the same temperature as that of the space where they are to be installed.
- C. Close spaces to traffic during installation of products specified in this Section.

1.7 SEQUENCING AND SCHEDULING

- A. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.

1.8 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage, and identified with labels clearly describing contents.
 - 1. Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof of each different type and color of resilient wall base installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with specifications, provide materials manufactured by the following:
 - 1. Base and resilient accessories:
 - a. Basis of design: Roppe Corporation, 4" high rubber base. Substitutions from manufacturers listed below will be considered, subject to compliance with Section 01 25 00 Substitution Procedures.
 - b. Musson
 - c. Nora
 - d. Flexco Company

2.2 RESILIENT WALL BASE

- A. Rubber Wall Base: Products complying with FS SS-W-40, Type I, and requirements specified in the Rubber Wall Base Product Data Sheet at end of this Section. Base (RB-1) to be Roppe Pewter #P178

2.3 RESILIENT ACCESSORIES

- A. Rubber Accessories: Provide carpet edges for glue down applications, carpet nosing, resilient reducers cut back to fit VCT and other accessories required for edges of exposed finish floor material where there is an uneven transition between adjacent floor finishes or at flooring-to-concrete-slab transitions.

2.4 INSTALLATION ACCESSORIES

- A.. Adhesives: Water-resistant type recommended by manufacturer to suit resilient flooring product and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where installation of products specified in this Section will occur, with Installer present, to verify that substrates and conditions are satisfactory for installation and comply with manufacturer's requirements and those specified in this Section.

3.2 PREPARATION

- A. General: Comply with manufacturer's installation specifications for preparing substrates indicated to receive products indicated.

3.3 INSTALLATION

- A. General: Install products specified in this Section using methods indicated according to manufacturer's installation directions.
- B. Apply resilient wall base to walls, columns, pilasters, casework, and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 - 1. Install inside and exterior corners before installing straight pieces.
- C. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.
- D. Apply resilient products to stairs as indicated and according to manufacturer's written instructions.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing installation:
 - 1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers of resilient product involved.
 - 2. Sweep or vacuum floor thoroughly.
 - 3. Do not wash floor until after time period recommended by manufacturer.
 - 4. Damp-mop resilient accessories to remove black marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- C. Clean products specified in this Section not more than 4 days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products using method recommended by manufacturer.

END OF SECTION 096513

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY OF WORK

- A. Include all surfaces required for complete and finished job. Work shall include but is not necessarily limited to the following:
 - 1. Typical exterior metal surfaces around window and door openings.
 - 2. Touch up painting of interior wall surfaces around and adjacent to window and door openings.

1.3 QUALITY OF WORK

- A. First class work in all respects. The number of coats specified is the minimum required; the Contractor shall gauge thickness of coats, or provide additional coats, to produce hiding, color depth, scheduled gloss and to comply with manufacturer's recommendations.

1.4 ACCEPTANCE OF SURFACES

- A. Do not begin until surfaces are in proper condition. Report deficiencies. Assume responsibility for finish surfaces after application of prime coat.

1.5 COLORS

- A. Color schedule will be furnished by Architect, made up where possible from standard color chips of manufacturer chosen. However, selection will not necessarily be limited to any single manufacturer's stock colors, nor by the number of colors selected for any area. Upon request, prepare sample paddles of selected colors, and assist Architect in illustrating color selections to the Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Top Grade Product of Glidden Professional, Devoe Coatings, Benjamin Moore, Pittsburgh, and Sherwin-Williams. Where particular types or brands are mentioned, verify before bidding that a comparable product is available from any chosen manufacturer. Use same brand of paint, stain, varnish, etc., on any one phase of work throughout project.

PART 3 - EXECUTION

3.1 GENERAL

- A. Temperature, Etc.: Do no exterior painting in direct sun, during wet weather or when temperature is below 50 degrees F. Maintain building interior continuously at 65 degrees F. or above during entire period of painting work. Building shall be broom clean before work is started.
- B. Application: Per manufacturer's directions. All work by skilled mechanics. Spread evenly and smoothly, flowing without runs, drops, sagging, brush or roller marks. Keep material free of lumps, skins and foreign matter, well stirred while being applied. Allow each coat to dry thoroughly before a successive coat is applied. Cut in neatly around glass and at other edges where materials or colors change.
- C. Spot Finishing: Not allowed; refinish whole walls or ceilings where work is damaged or is unsatisfactory.
- D. Hardware, Etc: Remove (together with device plates and similar items) and replace after painting work is completed.
- E. Cleaning: After completion of work, clean off all paint spots and stains from floors, woodwork, exposed brick, glass, metal, hardware, etc., leaving building in perfect condition.
- F. Protection: Avoid spattering or otherwise damaging vegetation, walks and all surfaces inside and outside the building. Utilize drop cloths as necessary.

3.2 PREPARATION OF SURFACES

- A. Surfaces shall be clean, dry, smooth, free of dust, scratches, hammer, planer marks, or any material which will adversely affect adhesion or appearance of finish.
- B. Ferrous Surfaces: Wash with mineral spirits to remove dirt and grease. Sand scratches, welds, and rust spots to the base metal and touch up with metal primer. Thereafter lightly sand the entire surface as for woodwork. Treat galvanized surfaces with compound designed for that purpose.
- C. Metal Doors: Seal top and bottom edges with 2 coats after fitting. Unless factory sealed, protect doors with sealer coat before hanging. Apply first (sealer) coat on each face at essentially the same time.

PART 4 - SCHEDULE OF APPLICATIONS

4.1 PAINTING SCHEDULE

- A. Catalog numbers below are from Glidden Professional and Devco Coatings unless noted otherwise.
 - 1. Verify with Owner the sheen level to be used for each product prior to painting.

EXTERIOR PAINTING SCHEDULE:

Exterior Iron & Steel:

Prime: (Touch Up) Devco Coatings, DevGuard 4160, Multi Purpose Tank & Structural Primer, Alkyd Primer.
 Intermediate: Devco Coatings, Devthane, 378, Polyurethane Semi-Gloss Enamel. Finish: Devco Coatings, Devthane 378, Polyurethane Semi-Gloss Enamel.

Exterior Galvanized Iron & Steel:

Prime: (Touch Up) Devco Coatings, DevGuard 4160, Multi Purpose Tank & Structural Primer, Alkyd.
 Intermediate: Devco Coatings, Devthane, 378, Polyurethane Semi-Gloss Enamel. Finish: Devco Coatings, Devthane, 378, Polyurethane Semi-Gloss Enamel.

INTERIOR SCHEDULE OF APPLICATION:

Interior Iron & Steel:

Prime: (Touch Up) Devco Coatings, DevGuard 4160, Multi Purpose Tank & Structural Primer, Alkyd.
 Intermediate: Glidden Professional, Ultra-Hide, 1516, Interior Alkyd Semi-Gloss Enamel.
 Finish: Glidden Professional, Ultra-Hide, 1516, Interior Alkyd Semi-Gloss Enamel.

Gypsum Board (Latex Flat Finish)(Ceilings):

Primer: Glidden Professional, Gripper 3210, Interior/Exterior Latex Primer.
 Intermediate: Glidden Professional, Ultra-Hide 150, GP 1210V, Latex Flat.
 Finish: Glidden Professional, Ultra-Hide 150, GP 1210V, Latex Flat.

Gypsum Board (Latex Low Sheen Eggshell Enamel)(Walls):

Primer: Glidden Professional, Gripper 3210, Interior/Exterior Latex Primer.
 Intermediate: Glidden Professional, Ultra-Hide 150, GP 1410V, Latex Low Sheen Eggshell Enamel.
 Finish: Glidden Professional, Ultra-Hide 150, GP 1410V, Latex Low Sheen Eggshell Enamel.

Typical Interior Wood, Interior Millwork, Wood Doors:

Prime: Glidden Professional, Gripper, 3210, Interior/Exterior Latex Primer.
 Intermediate: Glidden Professional, Ultra Hide 150, GP 1416, Latex Semi-Gloss Enamel.
 Finish: Glidden Professional, Ultra Hide 150, GP 1416, Latex Semi-Gloss Enamel.

END OF SECTION 099100