CITY OF TRENTON
DEPARTMENT OF HOUSING AND ECONOMIC DEVELOPMENT PROJECTS

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SECTION 007213 – GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The General Conditions for the Contract for Construction to be used for this Project will be the *2017 Edition* of AIA Document A201 – GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION included herein.

END OF SECTION 007213

SECTION 01 1000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: The Work of this Section shall include, but not be limited to, the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Use of premises.
5. Owner's occupancy requirements.
6. Work restrictions.
7. Specification formats and conventions.

B. Related Sections:

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: City of Trenton Department of Housing and Economic Development: South Ward Senior Center Renovations

B. Project Location: Trenton, New Jersey.

C. Architect: Clarke Caton Hintz, 100 Barrack Street, Trenton, NJ 08608.

C. The Work consists of the following:

1. Work for this project includes, but is not limited to the interior renovation of the ground floor and basement. The only work on the upper floors will be for windows replacement. Scope of work includes new finishes, replacement of light fixtures, plumbing fixtures, kitchen cabinets and appliances. Other work includes replacement exterior doors and windows.

1.3 TYPE OF CONTRACT

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

1.4 WORK PHASES

A. Performance Period
   a. The performance period for this contract is 252 calendar days from the Notice to Proceed to Substantial Completion.

B. The Work shall be conducted in a single phase, with each and every component of the Project being completed before scheduled Substantial Completion Date.

C. Before commencing Work, submit a schedule showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's personnel for all items/components of the Work.

1.5 USE OF PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

OWNER'S OCCUPANCY REQUIREMENTS

A. Owner Occupancy: Owner will not occupy the premises during entire construction period.

1. Maintain access to existing sidewalks and other adjacent occupied or used facilities. Do not close or obstruct walkways, sidewalks or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.

2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.7 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, except otherwise indicated.

1. Early Morning Hours: The permissible early morning hours of operation will be coordinated, and limited to those directed by the Owner’s Representative.
2. Hours for Utility Shutdowns: The permissible utility shut-down/interruption hours will be coordinated, and limited to those directed by the Owner’s Representative.
3. Hours for Core Drilling: The permissible core-drilling hours will be coordinated, and limited to those directed by the Owner’s Representative.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner's written permission.

1.8 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. 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. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

    a. 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.

PART 2- PRODUCTS (Not Used)

PART 3- EXECUTION (Not Used)

END OF SECTION 01 1000

SECTION 012100 – ALLOWANCES

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 governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.
3. Quantity allowances.
4. Contingency allowances.
5. Testing and inspecting allowances.

C. Related Requirements:
1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 ADMINISTRATION

A. Utilize allowances only as directed by the Owner or Architect.

B. Prepare documentation of actual costs incurred, including time sheets, invoices, and shipping receipts, and submit for approval.

C. To determine appropriate adjustment and notify the Architect or Owner promptly if expenditures exceed the allowance amount.

1.5 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.

B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

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. Allowance No. 1: To cover change orders on the project.

1. Amount: $200,000.

2. Purpose: To cover additional costs incurred for premium labor time (e.g., overtime or weekend work) and expedited material procurement or delivery necessary to meet the project's schedule objectives.

3. Documentation: Contractor must provide detailed records of labor hours, materials, and shipping costs associated with this allowance.

END OF SECTION 012100

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 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. 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 modifications 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.

2. 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.

1.4 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately upon 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:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution will not adversely affect Contractor's construction schedule.
c. Requested substitution has received necessary approvals of authorities having jurisdiction.
d. Requested substitution is compatible with other portions of the Work.
e. Requested substitution has been coordinated with other portions of the Work.
f. Requested substitution provides specified warranty.
g. 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:

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution offers 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. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. 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 01 2500 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:

1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions", or other approved form.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Contractor will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Contractor are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Architect and Owner.

1. Include a statement outlining 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 the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use AIA Document G709 for Proposal Requests, or other approved form.

1.4 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701, or other approved form.

1.5 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Contractor may issue a Construction Change Directive on AIA Document G714, or other approved form. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the 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 change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2500

SECTION 01 2900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections:

1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Each Contractor's Construction Schedule and Submittals Schedule.

1.2 DEFINITIONS

A. Schedule of Values: A statement furnished by Each Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Each Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Each Contractor's Construction Schedule. Cost-loaded CPM Schedule may serve to satisfy requirements for the Schedule of Values.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with Continuation Sheets.
b. Submittals Schedule.
c. Each Contractor's Construction Schedule.

2. Submit the Schedule of Values to Architect and Owner at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items 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 Architect.
c. Architect's project number.
d. Each Contractor's name and address.
e. Date of submittal.

2. Submit draft of AIA Document G703 Continuation Sheets or other approved form.
3. 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 the 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 the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. 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.

a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit 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 Contractor's option.

10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Each Contractor. 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 AIA Document G703 Continuation Sheets or other approved forms, as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Each Contractor. The Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Each Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Each Contractor's Construction Schedule (preliminary if not final).
4. Products list.
5. Schedule of unit prices.
6. Submittals Schedule (preliminary if not final).
7. List of Each Contractor's staff assignments.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.
12. Certificates of insurance and insurance policies.
13. Performance and payment bonds.
14. Data needed to acquire Owner's insurance.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2900

SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

B. Each subcontractor shall participate in the coordination requirements; and answer/respond to the coordination directives of the General Contractor. Certain areas of responsibility will be assigned to a specific contractor, or subcontractor.

1.2 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.3 COORDINATION

A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in 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 with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.

5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:

a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
b. Indicate required installation sequences.
c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit 3 opaque copies of each submittal. Architect will return one copy.
4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Critical work sequencing and long-lead items.
c. Designation of key personnel and their duties.
d. Procedures for processing field decisions and Change Orders.
e. Procedures for RFIs.
f. Procedures for testing and inspecting.
g. Procedures for processing Applications for Payment.
h. Distribution of the Contract Documents.
i. Submittal procedures.
j. Preparation of Record Documents.
k. Use of the premises and existing building.
l. Work restrictions.
m. Owner's occupancy requirements.
n. Responsibility for temporary facilities and controls.
o. Construction waste management and recycling.
p. Parking availability.
q. Office, work, and storage areas.
r. Equipment deliveries and priorities.
s. First aid.
t. Security.
u. Progress cleaning.
v. Working hours.

3. Minutes: Record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
2. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

3. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Status of correction of deficient items.
        14) Field observations.
        15) RFIs.
        16) Status of proposal requests.
        17) Pending changes.
        18) Status of Change Orders.
        19) Pending claims and disputes.
        20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

    a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    c. Review present and future needs of each contractor present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Change Orders.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.7 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.

2. Date.
3. Name of Contractor.
4. Name of Architect.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

    a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs: Approved RFI form.

1. Identify each page of attachments with the RFI number and sequential page number.

D. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Architect's actions on submittals.
    f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use approved Log form.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.

6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 3100

SECTION 01 3200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Preliminary Construction Schedule.
2. Contractor's Construction Schedule.
3. Submittals Schedule.
4. Daily construction reports.
5. Material location reports.
6. Field condition reports.
7. Special reports.

B. Related Sections:

1. Division 1 Section "Summary" for preparing a combined Contractor's Construction Schedule.
2. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
3. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
4. Division 1 Section "Submittal Procedures" for submitting schedules and reports.

1.2 SUBMITTALS

A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Architect's final release or approval.

B. Preliminary Construction Schedule: Submit two opaque copies.

1. Approval of cost-loaded preliminary construction schedule will not constitute approval of Schedule of Values for cost-loaded activities.

C. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.

1. Submit an electronic copy of schedule, using software indicated, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.

D. Daily Construction Reports: Submit 3 copies at weekly intervals.

E. Material Location Reports: Submit 3 copies at monthly intervals.

F. Field Condition Reports: Submit 3 copies at time of discovery of differing conditions.

G. Special Reports: Submit 3 copies at time of unusual event.

1.3 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
4. Startup and Testing Time: Include not less than 30 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Work under More Than One Contract: Include a separate activity for each contract.
2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
3. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use of premises restrictions.
    f. Provisions for future construction.

6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.
    k. Curing.
    l. Startup and placement into final use and operation.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion**.**

F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 20 days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.5 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (refer to special reports).
10. Stoppages, delays, shortages, and losses.
11. Emergency procedures.
12. Orders and requests of authorities having jurisdiction.
13. Change Orders received and implemented.
14. Construction Change Directives received and implemented.
15. Services connected and disconnected.
16. Equipment or system tests and startups.
17. Partial Completions and occupancies.
18. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation on CSI Form 13.2A or other approved form. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 3200

SECTION 01 3233 - PHOTOGRAPHIC DOCUMENTATION

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 administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.

1.3 SUBMITTALS

A. Qualification Data: For photographer.

B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same label information as corresponding set of photographs.

C. Digital Photographs: Submit image files within three days of taking photographs.

1. Digital Camera: Minimum sensor resolution of 8 megapixels.
2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
3. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Architect.
d. Name of Contractor.
e. Date photograph was taken.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
g. Unique sequential identifier keyed to accompanying key plan.

D. Construction Photographs: Submit digital copies of each photographic view within seven days of taking photographs.

1. Identification: Submit separate sheet identify each digital image, provide the following information:

a. Name of Project.
b. Date photograph was taken if not date stamped by camera.
c. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
d. Unique sequential identifier keyed to accompanying key plan.

2. Negatives: Submit a complete set of digital files with each submittal of prints as a Project Record Document. Identify negatives with label matching photographic prints.

1.4 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.5 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.
2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Architect.

C. Preconstruction Photographs: Before commencement of demolition, take color, digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Flag construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Time-Lapse Sequence Construction Photographs: Take 20 photographs as indicated, to show status of construction and progress since last photographs were taken.

1. Frequency: Take photographs monthly, coinciding with the cutoff date associated with each Application for Payment.
2. Vantage Points: Following suggestions by Architect and Contractor, photographer to select vantage points. During each of the following construction phases, take not less than two of the required shots from same vantage point each time to create a time-lapse sequence as follows:

    a. Commencement of the Work, through completion of subgrade construction.
    b. Exterior building enclosure.
    c. Interior Work, through date of Substantial Completion

E. Final Completion Construction Photographs: Take twenty color photographs after date of Substantial Completion for submission as Project Record Documents. Architect will direct photographer for desired vantage points.

F. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to, the following:

    a. Special events planned at Project site.
    b. Immediate follow-up when on-site events result in construction damage or losses.
    c. Substantial Completion of a major phase or component of the Work.
    d. Extra record photographs at time of final acceptance.
    e. Owner's request for special publicity photographs.

END OF SECTION 01 3233

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections:

1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Closeout Procedures" for submitting warranties.
5. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
6. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Divisions 2 through 16 Sections for specific requirements for submittals in those Sections.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals. Refer to Supplementary Conditions for additional restrictions.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of

the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect and Owner will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 10 days for review of each resubmittal.
4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to the Architect, before being returned to Contractor.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.
3. Include the following information on label for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name and address of Contractor.
    e. Name and address of subcontractor.
    f. Name and address of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect and Construction Manager.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.

1. Transmittal Form: Use AIA Document G810 or other approved form.

2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked "Approved" or “Approved As Noted”

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

K. Use for Construction: Use only final submittals with mark indicating "Approved" or “Approved As Noted” taken by Architect.

1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:

1. Refer to Supplementary Conditions for requirements.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Submit electronic submittals directly to extranet specifically established for Project.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Standard color charts.
    e. Manufacturer's catalog cuts.
    f. Wiring diagrams showing factory-installed wiring.
    g. Printed performance curves.
    h. Operational range diagrams.
    i. Mill reports.
    j. Standard product operation and maintenance manuals.
    k. Compliance with specified referenced standards.
    l. Testing by recognized testing agency.
    m. Application of testing agency labels and seals.
    n. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit 5 copies of Product Data, unless otherwise indicated. Architect, through Construction Manager, will return two copies. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Architect's CAD Drawings are otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    f. Shopwork manufacturing instructions.
    g. Templates and patterns.
    h. Schedules.
    i. Design calculations.
    j. Compliance with specified standards.
    k. Notation of coordination requirements.
    l. Notation of dimensions established by field measurement.
    m. Relationship to adjoining construction clearly indicated.
    n. Seal and signature of professional engineer if specified.
    o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Number of Copies: Submit three opaque copies and one transparency of each submittal, unless copies are required for operation and maintenance manuals. Submit five copies

where copies are required for operation and maintenance manuals. Architect will retain two copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Drawing.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit three sets of Samples. Architect will retain Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.
4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.

    a. Mark up and retain one returned copy as a Project Record Document.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

H. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

I. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A or other approved form. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Architect, through Construction Manager, will return two copies.

    a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit 3 copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of

assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

U. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect, except as required in "Action Submittals" Article.

1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. "Approved": Means the submission is in general conformance with design concept. Construction, fabrication and/or manufacture can proceed subject to the provision that the work shall be in accordance with the requirements of the Contract Documents. Final acceptance of the work shall be contingent upon such compliance.

2. "Approved as Noted": Means the submission is in general conformance with the design concept subject to notations on the returned Shop Drawings. Construction, fabrication and/or manufacturer can proceed subject to the provision that the work shall be carried out in compliance with all annotations and/or corrections indicated on the returned Shop Drawings and Product Data and in accordance with the requirements of the Contract Documents. Final acceptance of the work shall be contingent upon such compliance.

3. "Revise and Resubmit": Means that the Contractor shall revise and resubmit the Shop Drawings and Product Data in accordance with all annotations and/or corrections indicated therein. If construction, fabrication and/or manufacture proceeds it is at the Contractor's risk. Shop Drawings and Product Data bearing stamp shall not be permitted on the Project Site.

4. "Not Approved": Means that the submission is rejected for nonconformance with the construction documents and the Contractor shall make a new submittal which shall comply with the requirements of the Contract Documents. If construction, fabrication and/or manufacture proceeds it is at the Contractor's risk. Shop Drawings and Product Data bearing stamp shall not be permitted on the Project Site.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 3300

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -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 tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
2. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
3. Divisions 2 through 16 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

1. Where directed by, or as acceptable to the Architect, approved mock-ups may be incorporated into the completed/finished construction.

D. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

J. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two 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 Architect for a decision before proceeding.

B. 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 requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Permits, Licenses, and Certificates: For 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.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect or Construction Manager.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 4000

SECTION 01 4200 – REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 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 standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 4200

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections:

1. Division 1 Section "Summary" for division of responsibilities for temporary facilities and controls.
2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Division 1 Section "Execution Requirements" for progress cleaning requirements.
4. Divisions 2 through 16 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.2 DEFINITIONS

A. Permanent Enclosure: As determined by Architect; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.3 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 QUALITY ASSURANCE

A. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts.

B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."

C. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.

D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

E. Paint: Comply with requirements in Division 9 painting Sections.

2.2 TEMPORARY FACILITIES

A. Storage and Fabrication Sheds: Provide storage/fabrication sheds located in the area of Work, as designated by the Owner's Representative. Sheds shall be sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

2. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

B. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

C. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

D. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

F. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel.

1. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Architect's office.
e. Engineers' offices.
f. Owner's office.
g. Principal subcontractors' field and home offices.

2. Provide superintendent with cellular telephone

G. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail, in common-use facilities.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide incombustible construction for offices, shops, and sheds located within construction area. Comply with NFPA 241.
2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

C. Project Identification and Temporary Signs: Provide Project identification and other signs. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

1. Provide temporary, directional signs for construction personnel and visitors.
2. Maintain and touchup signs so they are legible at all times.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

F. Existing Elevator Use: Use of Owner's existing elevators will not be permitted.

G. Existing Stair Usage: Use of Owner's existing stairs, as acceptable to the Owner's Representative will be permitted, as long as stairs are cleaned and maintained. At Substantial Completion, damages, defects and other such conditions resulting from construction use shall be returned to their original condition prior to construction use, as acceptable to the Owner.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

H. Temporary Use of Permanent Stairs: Use of permanent stairs, as acceptable to the Owner's Representative will be permitted, as long as stairs are protected, cleaned and maintained. At Substantial Completion, remove temporary protections, repair all damages, defects and other such conditions resulting from construction use. Permanent stair assemblies shall be cleaned and returned to their original condition prior to construction use as acceptable to the Owner.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Contract Documents.

B. Project Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

C. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

D. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

F. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Prohibit smoking areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been 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 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 property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 01 5000

SECTION 01 7000 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering.
3. General installation of products.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections:

1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
2. Division 1 Section "Submittal Procedures" for submitting surveys.
3. Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
4. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

a. Description of the Work.
b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances.
d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner's Representative that is necessary to adjust, move, or relocate existing utility lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation" or other approved form.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings. If discrepancies are discovered, notify Architect promptly.

B. Building Lines and Levels: Locate and lay out control lines and levels for structures, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction forces.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. 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.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 7000

SECTION 01 7310 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.3 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. Insert list of elements that might otherwise be overlooked as structural elements and that require Architect's approval of a cutting and patching proposal.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include, but are not limited to the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-suppression systems.
4. Mechanical systems piping and ducts.
5. Control systems.
6. Communication systems.
7. Conveying systems.
8. Electrical wiring systems.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include, but are not limited to the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size

required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed 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 in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 7310

SECTION 01 7700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.

1.5 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark 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 Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site and grounds, in areas disturbed by construction activities, including rubbish, waste material, litter, and other foreign substances.
    b. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    c. Remove tools, construction equipment, machinery, and surplus material from Project site.
    d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    f. Sweep concrete floors broom clean in unoccupied spaces.
    g. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    i. Remove labels that are not permanent.

j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

l. Replace parts subject to unusual operating conditions.

m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

o. Clean ducts, blowers, and coils if units were operated without filters during construction.

p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

q. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 7700

SECTION 01 7810 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections:

1. Division 1 Section "Summary" for coordinating Project Record Documents covering the Work of multiple contracts.
2. Division 1 Section "Closeout Procedures" for general closeout procedures.
3. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
4. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up Record Prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal: Submit one set(s) of corrected Record Transparencies and one set of marked-up Record Prints. Architect will initial and date each transparency and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return transparencies and prints for organizing into sets, printing, binding, and final submittal.
b. Final Submittal: Submit one set(s) of marked-up Record Prints, one set(s) of Record CAD Drawing files, one set(s) of Record CAD Drawing plots, and three copies printed from record plots. Plot and print each Drawing, whether or not changes and additional information were recorded.

1) Electronic Media: CD-R.

B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one copy of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations below first floor.
d. Revisions to routing of piping and conduits.
e. Revisions to electrical circuitry.
f. Actual equipment locations.
g. Duct size and routing.
h. Locations of concealed internal utilities.
i. Changes made by Change Order or Construction Change Directive.
j. Changes made following Architect's written orders.
k. Details not on the original Contract Drawings.
l. Field records for variable and concealed conditions.
m. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.

1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Architect for resolution.
3. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.

C. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:

1. Format: Same CAD program, version, and operating system as the original Contract Drawings.
2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.

    a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.

D. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Architect and Construction Manager for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

E. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect and Construction Manager.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 01 7810

SECTION 01 7820 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Emergency manuals.
2. Operation manuals for systems, subsystems, and equipment.
3. Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 SUBMITTALS

A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.4 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.

3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.

3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

F. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 7820

SECTION 01 7900 - DEMONSTRATION AND TRAINING

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 instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For facilitator, instructor and videographer.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Architect.
d. Name of Contractor.
e. Date of video recording.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet

with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.

3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
4. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

1. Equipment, including projection screens, equipment, residential appliances and laboratory fume hoods.
2. Fire-protection systems, including fire alarm, fire pumps and fire-extinguishing systems.
3. Conveying systems, including elevator.
4. Laboratory equipment.
5. Heat generation, including boilers, pumps, and water distribution piping.
6. Refrigeration systems, including chillers, condensers, pumps and distribution piping.
7. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices.
8. HVAC instrumentation and controls.
9. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies and motor controls.
10. Lighting equipment and controls.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Operations manuals.
    c. Maintenance manuals.
    d. Project record documents.
    e. Identification systems.
    f. Warranties and bonds.
    g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.

h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral, a written or a demonstration performance-based test.

F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video: Provide minimum 640 x 480 video resolution converted to format file type acceptable to Owner, on electronic media.

1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.
2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:

a. Name of Contractor/Installer.
b. Business address.
c. Business phone number.
d. Point of contact.
e. E-mail address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

a. Produce segments to present a single significant piece of equipment per segment.

b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by dubbing audio narration off-site after video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 01 7900

SECTION 02 4119 – SELECTIVE DEMOLITION

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. Work Included: The Work of this Section includes, but is not limited to the following:

1. Selective demolition and removal of portions of the existing building to remain as indicated and as required to accommodate the indicated construction.
2. Patching and repairs, as indicated or required.
3. Disconnecting, capping, abandonment and removal of utilities, as indicated or required.
4. Temporary protections, weather tight enclosures, and similar protections for utilities, structures, persons, etc.
5. Relocation of pipes, conduits, ducts, and other mechanical and electrical work (including equipment).

B. See drawings for additional notes and requirements.

1.3 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner’s property.

B. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Owner items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner’s property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.5 INFORMATIONAL SUBMITTALS

A. Proposed Measures and Techniques:

1. Proposed dust-control measures.
2. Proposed noise-control measures.
3. Proposed protection measures.
4. Proposed salvage techniques.

B. Schedule: Submit a proposed schedule of operations for selective demolition for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required. Submit details for dust and noise control.

1. Provide detailed sequence of demolition and removal work to ensure uninterrupted use of the building.

C. Photographs: Photograph existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. Submit prior to start of work.

D. Contractor shall provide shop drawings and calculations for all temporary supports, shoring and bracing required. Comply with Building Code requirements for preparation of submittals and do

all required filing. Drawings and calculations for shoring and bracing shall be signed and sealed by a New Jersey State licensed Professional Engineer.

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications:

1. Engage an experienced firm that has successfully completed selective demolition Work similar to that indicated for this Project over a minimum period of 10 years.
2. Firm shall have satisfactorily completed interior selective demolition in a minimum of two similar structures in the previous seven years.

    a. Submit to the Architect references of previous Work as evidence of comparable experience.

3. No adjustment in the Contractor's bid price will be accepted due to disqualification of the selective interior demolition Contractor.

B. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction

1. Notify appropriate agencies of any hazardous materials found at the site. Do not proceed with removal of said substances until so instructed.

C. All demolition work shall comply with requirements of the building code of local governing authority having jurisdiction. The Contractor shall verify all conditions at site prior to the start of Work.

1. Demolish all selected structures indicated in their entirety, unless noted otherwise. Remove same from site and legally dispose of all materials.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of the building to be demolished.

1. Owner assumes no responsibility for actual condition of spaces to be demolished and selectively demolished.
2. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
3. Contractor shall provide temporary partitions to separate work areas from occupied areas.

B. Traffic: Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent facilities.

1. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
2. The Contractor shall provide, and maintain, at his/her own expense, all lights, barriers, sidewalk sheds, and other items that are required by traffic regulations or local law.

C. Protections: Ensure safe passage of persons around area of demolition. Conduct operations to prevent damage to adjacent buildings, structures, and other facilities and injury to persons.

1. Provide protective measures as required to provide free and safe passage of all persons to and from this building and adjacent buildings.
2. Erect temporary covered passageways as required by authorities having jurisdiction.
3. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structure or other work to remain.
4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
5. Provide temporary weather protection on exterior to ensure that no water leakage or damage occurs to the existing building. Provide temporary roofing as required.
6. Remove protections at completion of work.

D. Damages: Promptly repair damages caused to adjacent facilities and construction by selective demolition work at no cost to Owner.

E. Utility Services: Contractor to arrange for disconnecting and sealing utilities serving structures to be demolished, prior to start of demolition work.

1. Maintain and protect existing utilities to remain. Protect against damage during selective demolition operations.
2. Do not interrupt existing utilities, except when authorized in writing by Owner and coordinated with the Contractor.

F. Explosives: Use of explosives will not be permitted.

G. Environmental Controls: Use temporary enclosures, and other suitable methods to limit dust and dirt to lowest practical level. Comply with governing regulations for environmental protection.

1. Provide weatherproof enclosures to prevent rain, snow, and similar elements from entering the building spaces, prior to the start of the selective demolition work.

H. Storage or sale of removed items or materials on-site will not be permitted.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 INSPECTION

A. General: Prior to the commencement of all demolition Work, inspect areas in which work will be performed. Photograph existing conditions which could be misconstrued as damage resulting from demolition work; file with Architect prior to starting work.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Where applicable the Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off indicated utilities with utility companies.
3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.

a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material

C. Survey the condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during demolition.

D. Perform surveys as the Work progresses to detect hazards resulting from demolition activities.

3.2 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 1 Section "Temporary Facilities and Controls."

B. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

C. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

1. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area. Coordinate with additional requirements specified in Division 1 of the specifications.

D. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.

1. Protect existing site improvements, appurtenances, and landscaping to remain.

E. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of buildings to be demolished and adjacent buildings to remain.

1. Strengthen or add new supports when required during progress of demolition.

3.3 UTILITY SERVICES

A. Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.

3.4 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not create hazardous or objectionable conditions, such as ice, flooding, and pollution, when using water.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.

C. Clean adjacent buildings and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before start of demolition.

3.5 SELECTIVE DEMOLITION

A. General: Demolish indicated building and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
2. Maintain fire watch during and for at least two hours after flame cutting operations.
3. Maintain adequate ventilation when using cutting torches.
4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.

C. Selective Demolition, General: Use such methods as required to complete work within limitations of governing regulations and as follows:

1. Proceed with selective demolition in systematic manner, from top of structure to ground. Complete demolition work above each floor or tier before disturbing supporting members on lower levels.
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. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Remove larger masonry sections, and indicated steel sections (where applicable) carefully, and lower to the ground by hoists, derricks, or other suitable methods. Demolish concrete and masonry in small sections.

    a. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.

4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
5. Locate equipment throughout structure and remove materials so as to not impose excessive loads to supporting walls, floors, or framing.
6. 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. Provide a fire watch service during all welding and burning activities. Maintain portable fire-suppression devices during flame-cutting operations. Maintain adequate ventilation when using cutting torches.
7. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
8. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
9. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.

3.6 DEMOLITION BY MECHANICAL MEANS

A. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

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 CLEAN-UP, PATCHING AND REPAIRS

A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.

B. Patching and Repairs, General: Repair demolition performed in excess of requirements. Return structures and surfaces to remain to condition existing prior to commencement of demolition work. Repair adjacent construction or surfaces soiled or damaged by demolition.

1. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

    a. Patching is specified in Division 1 Section "Cutting and Patching."

2. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
3. Completely fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to manufacturer's printed recommendations.
4. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
5. Restore the integrity of rated construction where compromised by demolition.
6. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.

    a. Closely match texture and finish of existing adjacent surface.
    b. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
    c. Where patching smooth painted surfaces, extend final paint coat over entire unbroken plane of the surface containing the patch after the surface has received primer and second coat.
    d. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    e. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

END OF SECTION 02 4119

SECTION 02 8200 – ASBESTOS ABATEMENT

PART 1 – GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

A. General, Supplementary General Conditions, and the Contract Drawings apply to this Section.
B. The following reports issued by Environmental Connection, Inc. apply to this section.

1. Report – Pre-Renovation Environmental Building Assessment South Ward Senior Center 870 South Broad Street, Trenton, New Jersey issued by Environmental Connection, Inc., dated June 27, 2024.

1.2 CONDITIONS

A. All documents prepared by Environmental Connection, Inc., (EC), including any attachments, may contain information that is privileged and confidential, and is exclusively generated for the sole and intended use of the recipient(s). EC's Instruments of Service, including Contract Drawings, Technical Specifications and other documents prepared by EC are for the sole use of this Project, and unless otherwise provided, EC shall be deemed the Author and Owner of these documents and shall retain all common law, statutory and other reserved rights, including copyrights. EC shall not be liable for the acts, errors or omissions of the Owner and/or Owner's representative, Vendors, Agents or other entities performing any of the work relative to this Project/Assignment. Should the Owner, and/or Owner's other Representatives, Vendors, Agents or other entities performing any of the work fail to substantially prevail in any lawsuit brought against EC, EC shall be entitled to recover its reasonable attorneys' fees and other costs, in the court of appropriate jurisdiction.
B. This project involves the abatement and disposal of asbestos containing materials, as identified by EC, to facilitate scheduled renovations/upgrades as defined by the project architect of record, Clark Caton Hintz. Abatement work shall be performed within the building located at the following address:

1. South Ward Senior Center 870 South Broad Street Trenton, New Jersey

C. Bidders shall be responsible to inspect and field verify all existing site conditions, relative to the information presented in this Section, including the attached site assessment reports, to ensure all asbestos containing materials are removed from each site per the Scope of Work defined in Section 2.1 of this document.
D. For the purposes of this document, the term Contractor shall reference, unless otherwise stated, the State of New Jersey, Department of Labor and Workforce Development, (DLWD) licensed Asbestos Abatement Contractor that shall perform the work referenced in this Section.
E. The disturbance/removal of asbestos containing materials referenced in this Section shall be compliant with New Jersey Administrative Codes (N.J.A.C.) 5:23-8, 8:60 and 12:120, in addition to the United States Department of Labor, Occupational Safety and Health Administration (OSHA), 29 CFR, Part 1926.1101, and the United States Environmental Protection Agency (USEPA), National Emissions Standard for Hazardous Air Pollutants (NESHAPs), 40 CFR, Part 61, Sub-part M.
F. The disposal of asbestos containing materials shall be in accordance with N.J.A.C. 7:26, and in addition, 40 CFR, Part 61M, which requires, at a minimum, asbestos containing waste to be adequately wetted and appropriately packaged, transported in leak-tight containers and disposed of at a landfill authorized to collect asbestos waste. Waste

manifests shall be provided to the Owner as specified in this Section for approval prior to the issue of payment authorization.

G. The transport of asbestos containing waste materials shall be in accordance with N.J.A.C. 7:26, including the use of a State of New Jersey, Department of Environmental Protection, (DEP) registered solid waste haulers. United States Department of Transportation regulations, including, but not limited to, 49 CFR, Part 173, shall apply, with respect to placards, labels, etc.

H. Definitions as noted in these Technical Specifications are included as part of the Contract.

I. It shall be the sole responsibility of the Contractor to pay directly all fees associated with any Patent, instrument, devices, process, etc., utilized on this project where required by the patent holder.

J. Except as herein specified, no signs or photographs shall be required other than that necessary for the Contractor to comply with code and the United States Department of Labor, Occupational Safety and Health Administration (OSHA), posting regulations.

K. Water supply is available at the site(s). Extension to the point of source shall be the responsibility of the Contractor. The Contractor shall ensure leak tight connections. The Contractor shall comply with code specification requirements regarding connections.

L. Electric service for use during construction is available at the site(s). Extension to the source and point of use shall be the responsibility of the Contractor. The Contractor shall install GFCI protection at a point of source outside of containment, where constructed. **All temporary electrical connections shall be accomplished by a licensed electrician employed by the Asbestos Abatement Contractor.**

M. Temporary heat and temporary cooling is not required.

N. The Contractor shall refer to the General and Supplemental General Conditions with respect to submission of schedules, including a Critical Path Method (CPM) Schedule, a schedule that reflects coordination with other Trades, where applicable, for the installation of temporary protection, etc. The same shall apply for submission of “AS-BUILT” drawings.

O. All requests for work and project scheduling shall be coordinated in writing with the Owner's representative. The Contractor shall not proceed until written authorization and approval on the scheduled start date is obtained. A 72-Hour advance notice to the Owner’s representative shall be issued in writing requesting any change to the schedule.

P. The Contractor shall field verify all field conditions and quantities specified. The quantities shown are for informational purposes only and no guarantee is expressed or implied that the quantities are correct or that the asbestos containing materials are easily removable from the substrate, surfaces or components. No allowances shall be made for failure of the Contractor to verify in the field amounts or existing field conditions.

Q. All Sections and components, including the Contract Drawings and/or Plans, of these Technical Specifications are interrelated and must be considered in context with provisions documented throughout the Contract Documents. As such, this Section shall not be separated from the balance of the Contract Documents.

R. Where these Technical Specifications conflict with a regulatory requirement, the regulatory requirement shall be considered the more stringent, including the Contractor’s agreement filed with the DLWD to obtain/maintain licensure as an Asbestos Abatement Contractor/firm.

S. Summary by References: Work of this Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specifications Sections, Drawings, Addenda and modifications to the Contract Documents issued subsequent to the initial printing of this project manual and included, but not necessarily limited to, printed material referenced by any of these. Work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomena including weather conditions and other forces outside the Contract Documents.

1.3 PROJECT DIRECTORY

A.	Client/Owner:	City of Trenton Department of Housing and Economic Development 319 East State Street Trenton, New Jersey 08618 Telephone: 609-989-3518
B.	Architectural/Engineering Firm of Record:	Clarke Caton Hintz 100 Barrack Street Trenton, New Jersey 08608 Telephone: 609-883-8383
C.	Project Location:	South Ward Senior Center 870 South Broad Street Trenton, New Jersey 08611
D.	Environmental Consulting Firm:	Environmental Connection, Inc. 120 North Warren Street Trenton, New Jersey 08608 Telephone: 609-392-4200
E.	Project Designer/Contact:	Dominick Dercole Asbestos Project Designer

1.4 COORDINATION

A. The Contractor shall coordinate all activities with the Owner and/or the Asbestos Control Safety Control Monitor. Where the Asbestos Abatement Contractor performing the work specified herein is a sub-contractor, the sub-contractor shall coordinate all work with the Prime Contractor and/or General Contractor for coordination with the Owner's representative.

B. Coordination of work shall be notified, at a minimum within seventy-two (72) hours of an event. The exception shall be that of emergency situations.

1.5 QUANTITIES

A. The quantities shown are for informational purposes only. The Contractor shall inspect and verify all locations, quantities and measurements indicated in Contract Documents prior to bidding. No additional compensation shall be awarded for failure to complete said review or inspection.

1.6 CONTRACT DOCUMENTS

A. Contract Documents: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to, the following:

1. Applicable federal, state and local codes and regulations.
2. Notices and Permits.
3. Existing site conditions and restrictions on the use of the site.
4. Work performed prior to work under this Contract.
5. Alterations and coordination with existing work.

1.7 DEFINITIONS

A. Definitions contained in this Section are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

B. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.

1. Indicated: This term refers to graphic representations, notes or schedules on the drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted", "scheduled" and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.
2. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Owner's representative," "requested by the Owner's representative," and similar phrases. However, no implied meaning shall be interpreted to extend the Owner's representative's responsibility into the Contractor's area of construction supervision.
3. Approve: The term "approved," where used in conjunction with the Owner's representative's action on the Contractor's submittals, application, and request, is limited to the responsibilities and duties of the ASCM stated in General and Supplementary Conditions. Such approval shall not release the Contractor from the responsibility to fulfill other Contract requirements.
4. Regulation: The term "Regulations" includes laws, statutes, ordinances 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, whether they are lawfully imposed by authorities having jurisdiction or not.
5. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."
6. Install: The term "install" is used to describe operations at the project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations."
7. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
8. Installer: An "Installer" is an entity engaged by the Contractor, either an employee, sub-contractor or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
9. The term "experienced," when used with the term "installer" means having a minimum of five (5) previous projects similar in size and scope to this project, or being a certified manufacturer’s installer and familiar with the precautions required, and has complied with requirements of any authorities having jurisdiction.
10. Project Site: The Project Site is the space available to the Contractor for performance of the work, either exclusively or in conjunction with others performing other construction 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 upon which the project is to be built and/or the facility.
11. Testing Laboratory: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the project site or elsewhere, to report on, and, if required, to interpret, results of those inspections or tests.
12. Owner's representative: The Owner's representative will represent the Owner during construction. The Owner's representative will advise and consult with the Owner. The Owner's instructions to the Contractor will be forwarded through the Owner's representative.
13. Project Administrator: The Project Administrator is a full time representative of the Owner at the job site with authority to stop the work upon verbal order if

requirements of the Contract Documents are not met, or if in the sole judgment of the Project Administrator, Owner's representative or Owner, the interests of the Owner, safety of any person or the Owner's property are jeopardized by the work.

14. General Superintendent: This general superintendent is the Contractor's representative at the work site. This person will generally be the competent person required by OSHA in 29 CFR, Part 1926.1101.

B. Definitions Relative To Asbestos Abatement

1. Accredited or Accreditation (when referring to a person or laboratory): A person or laboratory accredited in accordance with Section 206 of Title II of the Toxic Substance Control Act (TSCA).
2. Aerosol: A system consisting of particles, solid or liquid, suspended in air.
3. Air Cell: Insulation normally used on pipes and duct work that is comprised of corrugated cardboard which is frequently comprised of asbestos combined with cellulose or refractory binders.
4. Air Monitoring: The process of measuring the fiber content of a specific volume of air.
5. Amended Water: Water to which a surfactant has been added to decrease the surface tension to 35 or less dynes.
6. Asbestos: The asbesti-form varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummintonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbesti-form and non-asbesti-form varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.
7. Asbestos Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.
8. Asbestos Containing Building Materials (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members of other parts of a building.
9. Asbestos Containing Waste Material: Any material which is or is suspected of being or material with an asbestos-containing material which is to be removed from a work area for disposal.
10. Asbestos Debris: Pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.
11. Asbestos Safety Technician (AST): A person certified by the New Jersey Department of Community Affairs, hired by the Asbestos Safety Control Monitor, to monitor and inspect the abatement activities pursuant to New Jersey Administrative Code, (N.J.A.C.) 5:23-8. Where work is not completed pursuant to this Code, AST shall refer to an Air Sampling Technician employed by the Owner's representative, to ensure regulatory compliance during abatement and collect the appropriate air samples.
12. Authorized Visitor: The Owner, the Owner's representative, testing lab personnel, the Architect/Engineer, emergency personnel or a representative of any federal, state and local regulatory or other agency having authority over the project.
13. Barrier: Any surface that seals off the work area to inhabit the movement of fibers.
14. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately six (6) to nine (9) inches.
15. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.
16. Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.
17. Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility with any related handling operation.
18. Disposal Bag: A properly labeled six (6) mil thick leak-tight plastic bag used for transporting asbestos waste from work to disposal site.

19. Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.
20. Bridging Encapsulant: An encapsulate that forms a discrete layer on the surface of an asbestos matrix.
21. Penetrating Encapsulant: An encapsulate that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
22. Removal Encapsulant: A penetrating encapsulate specifically designed to minimize release during removal of asbestos containing materials.
23. Encapsulation: Treatment of asbestos containing materials, with an encapsulant.
24. Enclosure: The construction of an air-tight, impermeable, permanent barrier around asbestos containing material to control the release of asbestos fibers into the air.
25. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.
26. Friable Asbestos Material: Material that contains more than 1.0% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
27. Glove Bag: A polyethylene bag (typically constructed of 10 mil transparent polyethylene or polyvinyl chloride plastic) with inward projecting long sleeve gloves, which is designed to enclose an object from which an asbestos containing material is to be removed.
28. HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in a diameter.
29. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger. May also be referred to as Air Filtration Device (AFD).
30. High-Efficiency Particulate Air Filter (HEPA): Refers to a filtering system capable of trapping and retaining 99.97 percent of all monodispersed particles 0.3 um in diameter or larger.
31. Industrial Hygiene Technician: A person hired by the Asbestos Safety Control Monitor, to monitor and inspect the abatement activities not regulated by the New Jersey Administrative Code, (N.J.A.C.) 5:23-8.
32. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.
33. Negative Pressure Ventilation System: A pressure differential and ventilation system.
34. Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.
35. Polyethylene Sheet (Fire Retardant): Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame Resistant Textiles and Films. Provide largest sheet size possible to minimize seams, six (6) mil thick as indicated, clear, frosted or black as indicated.
36. Pressure Differential and Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential with the inside of the work area at a lower pressure than any adjacent area, and which cleans re-circulated air or generates a constant air flow from adjacent areas into the work area.
37. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

38. Repair: Returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.
39. Respirator: A device designed to protect the wearer from inhalation of harmful atmospheres.
40. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation of area.
41. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.
42. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
43. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulate and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.
44. Work Area: The area where asbestos related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a regulated area as defined by 29 CFR, Part 1926.

1.8 CODES & STANDARDS RELATIVE TO ASBESTOS ABATEMENT

A. Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable codes, regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.

B. The Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site/work area. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable federal, state and local regulations. The Contractor shall hold the Owner and the Owner's representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or sub-contractors.

C. A copy of the appropriate codes and standards, as referenced herein, shall be maintained at the project site.

D. Conflicting Requirements: Where compliance with two (2) or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Owner's representative for a decision before proceeding

E. Code of Federal Regulations (CFR)

1. 29 CFR, Part 1910.20, Access to Employee Exposure and Medical Records;
2. 29 CFR, Part 1910.134, Respiratory Protection;
3. 29 CFR, Part 1910.145, Specifications for Accident Prevention Signs and Spill Response;
4. 29 CFR, Part 1910.1001 & 29 CFR, Part 1926.1101, Occupational Exposure to Asbestos, Final Rule;
5. 29 CFR, Part 1910.1200 & 29 CFR, Part 1926.59, Hazard Communication;
6. 29 CFR, Part 1926.55, Gases, Vapors, Fumes, Dusts, and Mists;
7. 29 CFR, Part 1926.103, Respiratory Protection;
8. 40 CFR, Part 61, National Emission Standard for Hazardous Air Pollutants (NESHAP);
9. 40 CFR, Part 173, General Requirements for Shipments and Packaging;

10. 40 CFR, Part 178, Shipping Container Specifications;

11. 40 CFR, Part 260 & 40 CFR, Part 261, Hazardous Waste Management Systems

12. 40 CFR, Part 763, Sub-part G, Asbestos Hazard Emergency Response Act (AHERA), Asbestos Abatement Projects, Worker Protection; and

13. 40 CFR, Part 763, Sub-part E, AHERA, Regulation Asbestos Containing Materials in Schools, Final Rule and Notice

F. State of New Jersey requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials include, but are not limited to the following:

1. **Asbestos Licenses and Permits**
   N.J.A.C. 8:60 and 12:120
2. **Asbestos Training Courses**
   N.J.A.C. 8:60 and 12:120
3. **Disposal Regulations**
   N.J.A.C. 7:26
4. **Asbestos Hazard Abatement Sub-code**
   N.J.A.C. 5:23-8
5. **Indoor Air Quality Standard**
   N.J.A.C. 12:100-13 (applicable to public buildings; it is anticipated that visitors from the Board of Education will periodically be on-site).

G. Standards which apply to asbestos abatement work of hauling and disposal of asbestos waste materials include but are not limited to the following:

1. American National Standards Institute (ANSI)
   1430 Broadway
   New York, New York 10018
   (212) 354-3300
2. Fundamentals Governing the Design and Operation of local Exhaust Systems Publication Z9.2-79
3. Practices for Respiratory Protection Publication Z88.2-80
4. American Society for Testing and Materials (ASTM)
   1916 Race Street
   Philadelphia, PA 19103
   (215) 299-5400
5. Specification for Encapsulants for Friable Asbestos Containing Building Materials Proposal P-189

1.9 PRE-PROJECT INSPECTION

A. Prior to commencement of work, inspect areas in which work is to be performed. Prepare a listing of damage to the structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions, as necessary to document conditions. Submit a copy of these photos or tapes to the Owner's representative prior to starting work.

1.10 POTENTIAL ENVIRONMENTAL HAZARDS

A. The disturbance or dislocation of asbestos containing materials identified in these Technical Specifications may cause a release within the building's atmosphere or the environment, thereby creating a potential health hazard to workmen and building occupants. The Contractor shall also be aware of other potential environmental hazards that may exist at the sites including, but not limited to: mercury containing equipment, fuel

storage tanks, polychlorinated biphenyl (PCB) containing equipment/materials, etc. Apprize all workers, supervisory personnel, sub-contractors, consultants and authorized visitors who will be at the job site of the seriousness of the hazard and of proper work procedures which must be followed. THE BUILDING SHALL BE UNOCCUPIED DURING ALL ASPECTS OF ENVIRONMENTAL REMEDIATION.

1.11 STOP WORK

A. If the Owner, the Owner's representative, or the Project Administrator presents a written stop work order, immediately and automatically stop all work. Do not recommence work until authorized in writing by the Owner or his/her appropriate representative.

1.12 CONTRACTOR'S USE OF THE PREMISE

A. Confine operations, at the site, to the areas permitted under the Contract. Portions of the site beyond areas in which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.
B. Secure and obtain facility security regulations for Contractors. All facility security requirements are incorporated by reference. No additional compensation or time shall be allotted for failure to comply with the facility's security requirements.
C. Keep existing driveways and entrances serving the premises clear and available to the Owner and his employees at all times. Do not use these areas for parking or storage of materials.
D. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary obtain and pay for such storage off site.
E. Maintain existing building in a safe and weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building during the construction period.
F. Keep public areas such as hallways, stairs, elevator lobbies and toilet rooms free from accumulation of waste, rubbish or construction debris.
G. Smoking or open fires will not be permitted within the building enclosure or on the premises.
H. Cooperate fully with the Owner and/or the Owner's representative during construction operations to minimize conflicts with other Trades. Perform the work so as not to interfere with the Owner's operation.
I. The Contractor shall be apprised of and be compliant with Facility Requirements, which shall be presented to the Contractor, prior to or during mobilization to, the project site.

1.13 SUBMITTALS

A. Pre-Project Submittals

1. Written Respiratory Protection Plan, in accordance with 29 CFR, Parts 1910 and 1926.
2. Written site-specific Health and Safety Plan.
3. All notifications and permits.
4. All Safety Data Sheets (SDS).

B. Post Project Submittals: Upon completion of work on this project the Asbestos Abatement Contractor shall submit the following information to the Owner:

1. Daily activity reports and personnel sign-in sheets
2. Minutes of meetings
3. Visitations; authorized and unauthorized
4. Special or unusual events
5. Waste material disposal manifests

PART 2 – DESCRIPTION OF THE WORK

2.1 SCOPE OF WORK

A. The Contractor shall remove identified asbestos containing materials utilizing non-friable methods within a negative pressure enclosure as specified in the report.

2.2 ADDITIONAL INFORMATION

A. Floor tile and mastic within the Storage Closet in the Kitchen is adhered to a plywood substrate. The Contractor shall be responsible for removing and disposing of the plywood substrate as asbestos containing waste. All work shall be performed in accordance with the Resilient Floor Covering Institute "Recommended Work Practices for Flooring Removal".

B. Relocation of furniture and equipment from the work areas to facilitate abatement activities will be the responsibility of the Building Owner.

C. Protection of furniture and equipment incapable of being removed from the work area is the responsibility of the Contractor.

1. At minimum, remaining furniture and equipment shall be vacuumed with a HEPA filter equipped vacuum and then covered with two (2) separate layers of six (6) millimeter polyethylene sheeting.

D. The quantities shown are for informational purposes only. The Contractor shall inspect and verify all locations, quantities and measurements indicated in Contract Documents prior to bidding. No additional compensation shall be awarded for failure to complete said review or inspection.

E. The Contractor shall be responsible for the cleaning of all suspect asbestos containing debris and dust within the work areas, prior to asbestos abatement, which is an industry standard. The cleaning shall consist of High Efficiency Particulate Air (HEPA) vacuuming and/or wet-wiping/moping surfaces within the work areas. For large debris items, the debris shall be misted with amended water prior to packaging as asbestos waste.

F. The Contractor shall comply with the OSHA Technical Manual, Section III, Chapter #4, relative to heat stress.

G. The Contractor shall be advised of OSHA bulletin 3156 from 1998 regarding Cold Stress, the asbestos abatement work may be scheduled during seasons with cold weather.

H. The Contractor shall comply with all applicable OSHA regulations, relative to fall protection, operation of boom lifts, etc., where applicable, and the manufacturer's recommendations, which shall be included with the Contractor's Health and Safety Program. Boom lift operations, where applicable, shall be in accordance with the American National Standards Institute (ANSI) A92.2-1969 and 29 CFR, Part 1926.453 – Aerial Lifts. Fall Protection, as per 29 CFR, Part 1926.502 – Fall Protection Systems Criteria and Practices, shall also be followed, in addition to any applicable federal, state and local regulations for such activities.

I. AFDs shall exhaust via duct work to the exterior of the building.

J. The removal and disposal of specified asbestos containing materials shall be completed using methods as specified and as described by N.J.A.C. 5:23-8.

L. If suspect asbestos containing materials that are not identified above and attachments are uncovered during demolition/renovation work, the activities shall cease. The suspect asbestos containing materials shall be inspected by an accredited USEPA Asbestos Building Inspector. A third-party independent laboratory that is accredited by the American Industrial Hygiene Association (AIHA), participating in the National Voluntary Laboratory Accreditation Program (NVLAP) shall provide analytical services. Sampling efforts and analytical services shall not be cause for a delay claim by the Contractor against the Owner, the Owner's representative and/or the Owner's agents, as well as the Prime and/or General Contractor.

2.3 SCHEDULE

A. The Contractor shall complete all work referenced herein within two (2), eight (8) hour shifts, Monday – Friday. No work is anticipated on weekends or holidays.

B. The Contractor's schedule shall account for 10-day notifications to Federal and State Enforcement agencies prior to the project start date. These contingencies shall not be cause for a delay claim to complete the asbestos abatement work within the renovation project's schedule.

C. Should final clearance air and/or surface samples fail, the Contractor shall re-clean the work area at no additional cost to the Owner, the Owner's representative and/or the Prime/General Contractor. Additional costs incurred for all re-sampling of the work area shall be the responsibility of the Contractor, at no additional cost to the Owner, Owner's representative and/or the Prime/General Contractor.

PART 3 – ASBESTOS ABATEMENT REQUIREMENTS

3.1 GENERAL REQUIREMENTS

A. The Contractor shall provide a "competent person" on-site at all times, in accordance with OSHA Regulations, and shall maintain the necessary staffing to complete the project in accordance with the project schedule. The competent person shall have knowledge in construction and shall be knowledgeable in reading and interpreting construction documents.

B. All materials (i.e., caulk, polyethylene sheeting, lumber, etc.) utilized in association with asbestos abatement activities shall be of nominal size and fire-retardant. All polyethylene sheeting shall be six (6) mil in thickness.

C. Worker Protection

1. The Contractor shall utilize workers trained in accordance with 29 CFR, Part 1926.1101, dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures.
2. Appropriate respiratory protection shall be provided by the Employer, upon notification that employees have received medical clearance and monitoring, followed by passing respiratory fit testing, and have read the Contractor's written Respiratory Protection Program.

a. The Contractor shall provide medical examinations for all workers in accordance with 29 CFR, Part 1926.1101. Provide an evaluation of the individual's ability to work with respiratory protection in an environment capable of producing heat stress in the worker.
b. The Contractor shall have a respiratory protection program established which is in compliance with ANSI Z88.2 - 1980 "Practices for Respiratory Protection" and OSHA's 29 CFR, Parts 1910 and 1926. The written program shall be posted at the job site.
c. Provide half-face or full-face type respirators to each worker. Equip full-face respirators with a nose cup or other anti-fogging device. If negative pressure air purifying respirators are being used, the Contractor shall supply a sufficient quantity of respirator filters approved for asbestos dust, so that workers can change filters during the work day. Store respirators and filters at the job site and protect from exposure to asbestos prior to their use. Clean and sanitize as required.
d. Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z88.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case,

provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

e. Single use, disposable, or quarter face respirators are strictly forbidden for use during asbestos containing roofing removal and related work.

f. No one having a beard or other facial hair in the respiratory facial fit area will be permitted to don a respirator and enter the work area.

3. Provide disposable full-body coveralls including foot and head covers and require that they be worn by all workers in the work area. Provide a sufficient number for all required changes, for all workers in the work area.

4. Provide gloves to all workers and require that they be worn inside the work area. Do not remove gloves from the work area, and dispose of as asbestos contaminated waste at the end of work.

5. The Contractor shall strictly prohibit workers from eating, drinking, smoking and chewing gum or tobacco while within the work area. In order to perform any of these functions, workers must exit the work area, and are required to follow the outlined decontamination procedures on each occasion.

D. Perform United States Department of Labor, Occupational Safety and Health Administration, (OSHA) 8-hour Time Weighted Average personal exposure air monitoring in accordance with 29 CFR, Part 1926.1101. OSHA monitoring is solely the responsibility of the Contractor, and the Contractor shall ensure that the Contractor's Supervisor performs OSHA monitoring in accordance with 29 CFR, Part 1926.1101. The Owner's representative is not responsible for the Contractor's compliance with OSHA monitoring.

1. Negative Exposure Assessment: The employer shall demonstrate that employees trained in accordance with 29 CFR, Part 1926.1101, shall be exposed to airborne fiber concentrations below the Permissible Exposure Limit (PEL) of less than 0.1 fibers per cubic centimeter of air. However, such as with typical roofing products, product data may demonstrate the material does not release fibers under normal circumstances and/or when removed, that exceeds the PEL for an 8-hour Time Weighted Average (TWA) or the excursion limit (EL) of 1.0 fibers per cubic centimeter of air; therefore, personal monitoring may not be required. If the employer has monitored employees on previous similar projects, within twelve (12) months of the current project, and the PEL and EL were not exceeded, then the aforementioned monitoring is not necessarily required.

E. Ensure all HVAC within proximity to the work area, including exterior work areas, are deactivated and/or protected with polyethylene sheeting that is secured airtight with duct tape.

F. No asbestos containing material shall be disturbed during preparation activity. The exception is asbestos material required to be cleaned up to complete preparation shall be treated first with an amended water solution and removed in a manner designed to limit or prevent fiber release to the environment.

G. Removal activities shall generate no visible emissions, as enforceable under 40 CFR, Part 61, of the National Emissions Standard for Hazardous Air Pollutants (NESHAPS).

H. All asbestos waste bags and packages shall be labeled with the prescribed federal OSHA warning signs and shall include site specific waste generator information.

1. The Contractor shall provide a fully enclosed, watertight waste container complete with a locking device for storage of all contaminated waste removed from the site. The waste container shall have asbestos warning signs affixed to all sides and doors. A perimeter warning band shall be placed near the trailer location and the exterior route of travel during waste transfer activities.

2. The Contractor shall be responsible for coordination of waste removal immediately upon completion of the project. This is essential in order to obtain a permit for re-

occupancy. No payment shall be made to the Contractor until all contaminated waste has been removed from the site and a waste manifest signed by the proper authority is submitted to the Owner.

3. Asbestos waste that may puncture or tear waste bags, and which is required to be bagged for disposal, shall be placed in cardboard boxes, burlap or nylon sacks, or other protective covering, prior to bagging, as necessary to ensure that bags are not punctured or torn during the disposal process. Items that are too large for standard bagging that require bagging for disposal, shall be wrapped in two (2) layers of six (6) mil polyethylene sheeting and sealed with duct tape. All asbestos waste shall be packaged and disposed of in accordance with all applicable local, state and federal regulations and ordinances.

3.2 NOTIFICATIONS, WARNING SIGNS, LABELS AND POSTINGS

A. At the entrance to each work area, the Contractor's ingress/egress point to the work area and at the waste removal route, and all sides of the waste dumpster/container, post an approximate 20 inch by 14 inch manufactured caution sign displaying the following legend with letter sized and styles of a visibility required by 29 CFR, Part 1926:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA

B. Disposal/Waste Bags/Containers shall be labeled as follows:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

AVOID BREATHING AIRBORNE ASBESTOS FIBERS

AND

Asbestos, NA2212, RQ

AND

Class 9 Label

In addition, the Contractor shall also label all disposal bags and/or containers with the name of the waste generator (Owner) and the location from which the waste was generated; all in accordance with the USEPA NESHAPS regulation - 40 CFR, Part 61, Sub-part M.

C. Provide other signs, labels, warnings and posted instructions that are necessary to protect, inform and warn people of the hazard form asbestos exposure. Post in a prominent and convenient place for the workers a copy of the latest applicable regulations from OSHA, USEPA and NIOSH.

D. Post Construction Permits, if applicable, at the entrance to the work area(s).

3.3 NEGATIVE PRESSURE ENCLOSURES

A. The disturbance and or removal of identified asbestos containing and/or contaminated materials, shall be accomplished within a negative pressure enclosure. At a minimum, the negative pressure enclosure shall consist of:

1. Two (2) layers of six (6) mil polyethylene sheeting (critical barriers) installed over all openings in the work area(s), such as, but not limited to: windows, doors, ceiling tile systems, ventilation diffusers/registers/grilles, etc.
2. Curtain doorways shall be established at the entrance to the work area(s). These doorways shall consist of overlapping layers of polyethylene sheeting in a "Z-formation." Where the work area entrance is at a critical barrier, a vertical slit, seven (7) feet from the floor, shall be established prior to the installation of the curtain doorway.

B. Work area negative pressure shall be established, at a minimum, at –0.02 inches of water column. High Efficiency Particulate Air (HEPA) filter equipped negative air filtration devices shall be incorporated in the work area and exhaust to the building via flexible duct work. Sufficient negative air filtration devices shall achieve four (4) air exchanges per hour and a work area pressure differential of –0.02. The Contractor shall demonstrate the minimum air exchanges per hour and work area pressure differential via calculation and manometers, respectively, to EC's representative.

C. Where appropriate, materials shall be adequately wetted with amended water during all phases of removal and immediately placed in appropriate asbestos waste disposal bags. All surfaces in the work area shall be cleaned of debris and dust by a combination of wet-wiping and HEPA vacuuming. A sealant shall be applied to all abated surfaces.

D. Personnel decontamination units shall be attached airtight to the work area containment(s), where specified or required by code. Otherwise, establish a three-stage remote decontamination unit proximal to the work area(s).

E. Demobilization of work area containment and engineering controls shall not be allowed until acceptable post abatement air sample results are obtained.

3.4 REMOVAL AND PACKAGING OF INTACT NON-FRIABLE ASBESTOS CONTAINING MATERIALS

A. DESCRIPTION

1. Work specified herein is limited to those materials that can be removed intact and in whole sections such as, but not limited to:

Floor Tile & Mastic with Plywood Substrate

B. PRODUCTS

Six (6) mil polyethylene sheeting
Spray glue
High quality duct tape
Garden sprayer
Amended water
Asbestos warning signs
Other equipment deemed necessary by the Contractor, such as man-lifts, pulley systems, fork lifts, etc.

C. EXECUTION

1. Establish work area engineering controls and containment as indicated in these

Technical Specifications.

2. Post appropriate warning signs and/or tape at the entrance to the work area and around the work area boundaries.
3. Mist the material with amended water.
4. Remove fasteners used to secure the non-friable asbestos containing material (ACM) to a substrate without disturbing the ACM.
5. Remove the non-friable ACM in whole sections and place on two (2) layers of six (6) mil polyethylene sheeting. If necessary, the Contractor is permitted to remove less than ten (10) linear feet or twenty-five (25) square feet of non-friable ACM using friable methods with proper engineering controls to prevent fiber migration. The limited removal quantities specified herein shall be the aggregate of each individual item where such procedures are required within one (1) calendar year for each project.
6. Remaining/residual asbestos containing materials still present on surfaces following bulk removal shall also be abated utilizing approved non-friable methods.
7. Package the ACM with the two (2) layers of polyethylene sheeting and seal all seams with spray-glue and duct tape.
8. Place appropriate warning signs and generator labels on the packaged ACM and place in the on-site waste container or Contractor's registered vehicle, in accordance with the requirements set forth in Part 4 of this Technical Specification.
9. Personnel shall decontaminate in accordance with the requirements set forth in this Technical Specification.
10. Engineering controls shall remain operational until a satisfactory visual inspection, final clearance air samples have been collected and the clearance criteria achieved, as conveyed by the IHT.

3.5 WORK AREA(S) CLEAN UP

A. First Cleaning: Carry out a first cleaning of all surfaces of the Work Area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) Filtered Vacuum. (Note: A HEPA vacuum may fail if used with wet material.) Do not perform dry-dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

B. Second Cleaning: Carry out a second cleaning of all surfaces in the work area in the same manner as the first cleaning.

C. Encapsulation of Exposed Surfaces: Where surfaces have been removed of asbestos containing materials, perform encapsulation of work area surfaces. Apply two (2) individual coats to all exposed surfaces and allow to dry between coats. Assure color is sufficiently distinct to allow for identification of applications.

D. Final Cleaning: Carry out a Final Cleaning of all surfaces in the Work Area in the same manner as the previous cleaning.

E. Removal of Work Area Isolation: After approval of the visual inspection and testing, remove Personnel Decontamination Unit and Critical Barriers. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners. If significant quantities, as determined by the owner's representative, are found, then the entire area affected shall be decontaminated as specified in Cleaning and Decontamination Procedures.

F. Remove all equipment, materials and debris from the work site. Dispose of all asbestos containing waste material as specified in Disposal of Asbestos Containing Waste Materials.

PART 4 – WASTE HANDLING AND DISPOSAL

4.1 ASBESTOS WASTE HANDLING AND DISPOSAL

A. Disposal bags shall be six (6) mil, leak tight, and labeled in accordance with OSHA, NESHAPS, and the United States Department of Transportation (USDOT) regulations.

B. Load all asbestos containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one (1) of the following:

1. Two (2), six (6) mil disposal bags, or,
2. Two (2), six (6) mil disposal bags and a fiberboard drum, or
3. Two (2), six (6) mil disposal bags and sealed steel drum.

C. Two (2) layers of six (6) mil polyethylene sheeting shall be utilized for wrapping large components not suited for disposal bags or drums.

D. Duct tape shall be used to seal disposal bags and wrapped components.

E. The Contractor's vehicle and/or dumpster shall be lined with a critical barrier. The Contractor's vehicle and/or dumpster utilized to transport the asbestos waste off-site, and the Waste Hauler shall be licensed by the New Jersey Department of Environmental Protection.

F. Maintain records of waste shipments in accordance with NESHAPS 40 CFR, Part 61, Section 61.150, (d) 1-5 and (e).

G. Notify the USEPA or State approved asbestos landfill within 10-days prior to transportation of the asbestos containing waste to the landfill. Provide the name and address of the landfill. Retain manifest from the landfill for all materials disposed of. At the completion of asbestos abatement, forward all manifests to the Owner.

H. On-site activities shall not be considered complete until all waste is off-site, upon demobilization of the work area(s), and after receipt of satisfactory final clearance air sample results.

PART 5 – AIR MONITORING

5.1 SUMMARY

A. Air monitoring shall be performed to demonstrate the effectiveness of engineering controls and methods for the removal of asbestos containing materials with respect to the potential release of asbestos fibers, and the clearance of the work area(s) for re-occupancy.

1. This Section describes air monitoring to verify that the building beyond the work area(s) and the outside environment remains uncontaminated.
2. This Section also sets forth work area clearance criterion.

B. AIR MONITORING REQUIRED BY OSHA IS WORK OF THE CONTRACTOR AND IS NOT COVERED IN THIS SECTION.

C. Daily air monitoring shall be completed along the work area perimeter. Sample collection and analysis shall be in accordance with the National Institute of Occupational Safety and Health (NIOSH) method #7400, most recent revision, by Phase Contrast Microscopy (PCM). The acceptable airborne fiber concentrations for this type of analysis shall be less than 0.01 fibers per cubic centimeter (f/cc) of air.

D. Final Clearance Air Monitoring

1. Final clearance air samples shall be collected at the completion of the asbestos abatement activities, upon receipt of a satisfactory Clean-up Inspection, in writing by the Environmental Consultant to the Contractor.
2. Engineering controls, critical barriers and the decontamination unit shall remain during final clearance air sampling.

3. A minimum of five (5) samples will be taken from the work area(s) and analyzed in accordance with the method set forth in the AHERA Regulation 40 CFR, Part 763,

Appendix A, and N.J.A.C. 8:60 and 12:120.

a. For full containment work areas where any quantity of asbestos containing materials have been removed, final clearance samples shall be collected/analyzed utilizing Transmission Electron Microscopy (TEM).
b. For work area(s) where more than 260 LF/160 SF of asbestos containing materials have been removed, final clearance samples shall be collected/analyzed utilizing Transmission Electron Microscopy (TEM).
c. For limited containment work area(s) where less than 260 LF/160 SF of asbestos containing materials have been removed, final clearance samples shall be collected/analyzed utilizing Phase Contrast Microscopy (PCM).
d. TEM samples shall be analyzed at a laboratory accredited by the American Industrial Hygiene Association, participating in the National Voluntary Laboratory Accreditation Program (NVLAP). Analytical results shall be available to the Owner's representative within six (6) hours upon receipt by the laboratory.
e. PCM samples shall be analyzed in accordance with the most recent revision to NIOSH method 7400.

4. Acceptable Clearance Criteria for work area(s) demobilization and re-occupancy shall be as follows:

a. TEM: less than 70 Structures per millimeter squared.
b. PCM: less than 0.01 fibers per cubic centimeter.

PART 6 - PROJECT COMPLETION

6.1 FINAL INSPECTION AND CLEARANCE AIR MONITORING

A. Owner's Representative shall perform a final inspection and conduct final clearance air monitoring of the work area in accordance with the State of New Jersey, Department of Labor & Workforce Development requirements. If analytical results are obtained that are higher than the allowable threshold, the Contractor shall re-clean the work area and the Owner's ASCM Firm shall re-test the area. This sequence shall be repeated until the final test results are acceptable.

1. The Contractor shall be financially responsible for additional cleaning, final clearance sampling and analysis, at no cost to the Owner.

B. Upon receipt of acceptable final air tests, the Contractor shall remove all critical and separation barriers, decontamination unit, and engineering controls, from the abatement area. All waste containers shall be off-site and en route to an USEPA or State approved landfill for final disposal.

C. The Owner's Representative will perform a final visual inspection of the abatement work area, and document the project has been completed in accordance with these Technical Specifications and all applicable local, state and federal regulations.

END OF SECTION 02 82 00

SECTION 03 5400 - CONCRETE UNDERLAYMENT AND PATCHING

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

A. Section includes hydraulic-cement-based, polymer-modified, self-leveling underlayment for application below interior floor coverings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: Signed by manufacturers of underlayment and floor-covering systems certifying that products are compatible.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F.

1.8 COORDINATION

A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.

PART 2 - PRODUCTS

2.1 HYDRAULIC-CEMENT-BASED UNDERLAYMENTS

A. Underlayment: Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thickness of 1/4 inch and that can be feathered at edges to match adjacent floor elevations.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Ardex; K-15 Self-Leveling Underlayment Concrete.
b. BASF Construction Chemicals, Inc.; Chemrex Self-Leveling Underlayment, MBT Mastertop 110 Plus Underlayment.
c. Bonsal American, an Oldcastle company; ProSpec Level Set 200, ProSpec Level Set 300, ProSpec Level Set LW-60.
d. Euclid Chemical Company (The); Super Flo-Top, Level Magic, TAMMS SLU.
e. L&M Construction Chemicals, Inc.; Levelex.
f. USG Corporation; Levelrock SLC 300, Levelrock SLC 400.

2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
3. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C 109/C 109M.
4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

B. Aggregate, if required: Well-graded, washed gravel, 1/8 to 1/4 inch; or coarse sand as recommended by underlayment manufacturer.

1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.

C. Water: Potable and at a temperature of not more than 70 deg F.

D. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

1. Primer shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance.

1. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.

1. Use a Planetary Grinder and Polisher and Low Speed Hand Held Grinder/Polisher to remove remnants of existing floor finishes and adhesives.

C. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

D. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 APPLICATION

A. General: Mix and apply underlayment components according to manufacturer's written instructions.

1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply underlayment to produce uniform, level surface.

1. Apply a final layer without aggregate to product surface.
2. Feather edges to match adjacent floor elevations.

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 03 5400

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work Included: Provide rough carpentry work as specified and as shown on the Drawings, including the following:

1. Wood grounds, nailers, blocking and furring.
2. Plywood construction panels.
3. Installation of finish hardware.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for manufactured materials, including plywood construction panels and related materials.

B. Sustainable Submittal:

1. Chain-of-custody certificates indicating that products specified to be made from certified wood comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.

C. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for handling, storing, and using treated material.

1. Submit certification by treating plant stating type of treatment, preservative retained and conformance with applicable standards.
2. Submit a statement that moisture content of treated materials complied with levels indicated before delivery.

1.4 QUALITY ASSURANCE

A. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.

1.5 PRODUCT HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Stack wood to provide air circulation within and around stacks.

1.6 PROJECT CONDITIONS

A. Coordination: Fit carpentry work to other work accurately. Correlate location of rough carpentry for attachment of other work.

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

A. Certified Wood: Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship".

B. Lumber Standards: Comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee.

C. Grade Stamps: Furnish lumber with grade stamp of inspection agency to show compliance with grading rules, and identifying grading agency, grade, species, moisture content and mill.

D. Provide lumber sizes as required by PS 20, unless otherwise shown.

1. Provide dressed lumber, S4S.
2. Provide seasoned lumber with 15% maximum moisture content.

2.2 MISCELLANEOUS LUMBER

A. General: Provide wood for support or attachment of other work including cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members of sizes and shapes shown.

B. Grade: Construction Grade lumber of western or southern species.

2.3 PLYWOOD PANELS

A. Plywood Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not made under PS 1 provisions, with APA PRP-108.

1. Composite wood manufacturer's product data for each composite wood product used indicating that the bonding agent contains no urea formaldehyde.
2. Adhesive manufacturer's product data for each adhesive used indicating that the adhesive contains no urea formaldehyde.

a. Low VOC: All adhesives shall comply with South Coast Air Quality Management District (SCAQMD) Rule #1168.

B. Trademark: Factory-mark each construction panel with APA trademark to show compliance with grade requirements.

C. Plywood Backing Panels: For mounting electrical, telephone, or other equipment, provide fire-retardant-treated plywood panels with grade designation, APA C-D PLUGGED EXPOSURE 1, in thickness indicated, or, if not otherwise indicated, not less than 1/2 inch or as required.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners and Anchorages: Provide size, type, material and finish complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers, anchors and connectors of the size and type recommended by the manufacturer for each use indicated including recommended nails.

1. Where rough carpentry work is exposed to weather, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).
2. Provide galvanized steel connectors, minimum 16 gage, of type and size as recommended by manufacturer for uses indicated.

B. Building Paper: ASTM D 226, Type I; asphalt saturated organic felt, non-perforated, 15-lb. type.

2.5 WOOD TREATMENT BY PRESSURE PROCESS

A. Preservative Treatment: Comply with applicable requirements of AWPA Standards C2 (Lumber) and C9 (Plywood) and of AWPB Standards listed below. Mark each treated item with the AWPB Quality Mark.

1. Pressure-treat above-ground items with water-borne preservatives to comply with AWPB LB-2. After treatment, kiln-dry lumber and plywood to 15% maximum moisture content. Treat the following:

a. Wood cants, nailers, curbs, blocking and stripping in connection with exterior wall construction roofing, flashing and waterproofing.
b. Wood sills, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.

2. Complete fabrication of treated items prior to treatment, where possible. Coat field cut surfaces with heavy brush coat of same chemical used for treatment and to comply with AWPA M4.

B. Fire-Retardant Treatment: Treat all wood and wood products indicated or required by Code to be fire-retardant, using methods accepted by the New Jersey State Building Code. Identify treated lumber with appropriate marking.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard defective materials. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.

B. Securely attach carpentry work as required by specified standards. Countersink nail heads on exposed carpentry work and fill holes.

C. Use fasteners of size to not penetrate members to exposed side or into finish materials. Make tight connections; install fasteners without splitting of wood; predrill as required.

D. Provide concealed blocking, sheet metal grounds and additional items as necessary and as indicated on the Drawings.

3.2 WOOD GROUNDS, NAILERS, SLEEPERS, AND BLOCKING

A. Provide where shown for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Where possible, anchor to concrete and masonry during their installation.

C. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2 inch wide and of thickness to match finish material. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF PLYWOOD PANELS

A. General: Comply with applicable recommendations contained in Form No. E 30, "APA Design/Construction Guide - Residential & Commercial," for types of plywood panels and applications indicated.

B. Fastening Methods: Anchor to wall construction. Using anchors and fasteners appropriate to the substrate construction. At gypsum board construction fasten to studs. At masonry construction use masonry anchors.

END OF SECTION 061000

SECTION 06 4023 - INTERIOR ARCHITECTURAL WOODWORK

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

A. Section Includes:

1. Kitchenette millwork.

1.3 DEFINITIONS

A. MDF: Medium-density fiberboard.

B. MDO: Plywood with a medium-density overlay on the face.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.
3. Include copies of warranties from chemical-treatment manufacturers for each type of treatment.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
2. Apply AWI Quality Certification Program label to Shop Drawing

C. Samples for Initial Selection:

1. Plastic laminates.
2. Wood veneer for wall paneling.

D. Samples for Verification:

1. For each species and cut of lumber and panel products with non-factory-applied finish, with 1/2 of exposed surface finished, 50 sq. in. for lumber and 8 by 10 inches for panels.
2. For each finish system and color of lumber and panel products with factory-applied finish, 50 sq. in. for lumber and 8 by 10 inches for panels.
3. Sample of casework, complete with countertops and hardware. Cabinet shall be 24” long.
4. Sample of countertops, 12” wide by full depth.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For fire-retardant-treated wood, from ICC-ES.

B. Sample Warranty: For manufacturer's warranty.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

B. Deliver interior finish carpentry materials only when environmental conditions meet requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20 and the following grading rules:

1. NeLMA: Northeastern Lumber Manufacturers' Association, "Standard Grading Rules for Northeastern Lumber."
2. NHLA: National Hardwood Lumber Association, "Rules for the Measurement and Inspection of Hardwood & Cypress."
3. WCLIB: West Coast Lumber Inspection Bureau, Standard No. 17, "Grading Rules for West Coast Lumber."

B. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

1. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.

C. Softwood Plywood: DOC PS 1.

D. Hardboard: AHA A135.4.

E. MDF: ANSI A208.2, Grade 130 made with binder containing no urea-formaldehyde resin.

2.2 PLASTIC LAMINATE

A. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Abet Laminati, Inc.
b. Formica Corporation.
c. Lamin-Art, Inc.
d. Panolam Industries International, Inc. (Pionite Decorative Surfaces).
e. Wilsonart International; Div. of Premark International, Inc.

B. Laminate Cladding for Exposed Surfaces:

1. Horizontal and Vertical Surfaces: Grade HGS.
2. Edges: Grade HGS.

C. Basis of design: Color: See INTERIOR FINISHES schedule on the drawings.

2.3 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.

1. Provide labels and certificates from AWI certification program indicating that woodwork, including installation, complies with requirements of grades specified.

B. Grade: Premium.

C. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.

2.4 CABINET HARDWARE AND ACCESSORIES

A. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, [100] [135] [170] degrees of opening, self-closing.

B. Pulls: Brushed aluminum wire pulls, 4 inch long.

C. Catches: Magnetic catches, BHMA A156.9, B03141.

D. Drawer Slides: BHMA A156.9.

1. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.

E. Door Locks: BHMA A156.11, E07121.

F. Drawer Locks: BHMA A156.11, E07041.

G. Door and Drawer Silencers: BHMA A156.16, L03011.

H. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18:

1. Brushed aluminum.

2.5 SHOP FINISHING

A. Grade: Provide finishes of same grades as items to be finished.

B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

C. Shop Priming: Shop apply the prime coat including backpriming, if any, for items specified to be field finished. Refer to Division 9 painting Sections for material and application requirements.

D. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.

E. Opaque Finish:

1. See Division 09 Section “Painting.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.

3.3 INSTALLATION, GENERAL

A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, too small to fabricate with proper jointing arrangements, or with defective surfaces, sizes, or patterns.

B. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

1. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
2. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
3. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining interior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
4. Coordinate interior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate interior finish carpentry.

3.4 CABINET INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

1. Use filler matching finish of items being installed.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

G. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips or No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish or toggle bolts through metal backing or metal framing behind wall finish

3.5 ADJUSTING

A. Replace interior finish carpentry that is damaged or does not comply with requirements. Interior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

3.6 CLEANING

A. Clean interior finish carpentry on exposed and semi-exposed surfaces. Restore damaged or soiled areas and touch up factory-applied finishes, if any.

3.7 PROTECTION

A. Protect installed products from damage from weather and other causes during construction.

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

C. Clean, lubricate, and adjust hardware.

D. Clean cabinets on exposed and semi-exposed surfaces.

END OF SECTION 06 4023

SECTION 07 8413 - PENETRATION FIRESTOPPING

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. Work Included: The Work of this Section shall include, but not be limited to the following:

1. Penetrations through fire-resistance-rated construction.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. General: For the following constructions, provide firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.

B. Systems shall be capable of preventing passage of smoke, flame and hot gases sufficient to ignite cotton waste, when tested in accordance with ASTM E 814 and ANSI/UL 1479 for firestop systems and ASTM E 119 and ANSI/UL 2079 for joint systems and fire containment, including perimeter conditions.

C. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

D. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to potential contact with adjacent materials in occupied floor areas:

E. Jointed Systems: Provide joint firestop systems indicated, as determined per ASTM E 1399, but not less than that equaling or exceeding fire-resistance rating of adjoining construction.

F. For firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.

G. For firestop systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

H. Firestop Systems do not reestablish the structural integrity of load bearing partitions/assemblies, or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.

I. Where subject to movement, firestopping materials used shall remain flexible and allow for normal movement of building structure, substrates, penetrating items and related surfaces and items without affecting integrity and performance of firestopping materials and systems.

J. All firestopping products shall be FM Approved.

1.4 SUBMITTALS

A. Product Data: Submit product data for each type of product specified.

1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.

B. Shop Drawings: Submit Shop Drawings detailing materials, installation methods, and relationships to adjoining construction for each through-penetration firestop system, and each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition indicated.

1. List of Conditions: Shop Drawings shall list all firestopping categories indicated or expected for the Project. For each type of construction element and assembly indicated, list the UL Design Number to be complied with, include coordinated specified product data for each product incorporated into firestopping assemblies. Attach a copy of each UL Design Number listed.

C. Product Certificates: Signed by manufacturers of firestopping products certifying that their products comply with specified requirements.

D. Product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.

1. Submit joint sealer-substrate test results to verify compatibility of proposed joint sealers with substrates. Submit copies of Special Inspection reports.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements and those specified under the "System Performance Requirements" article:

1. All firestopping systems shall be U.L. listed and shall be installed as a completed U.L. listed assembly. Firestop System installation must meet requirements of ASTM E-814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.
2. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
3. Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
4. Proposed firestopping materials and methods shall conform to State and Local Codes and other authorities having jurisdiction.

B. Installer Qualifications: All fire stopping systems shall be installed by a single qualified installer.

C. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

D. Special Inspections: The Owner will retain a Professional Engineer or Architect licensed in New Jersey to perform Periodic Special Inspections of firestopping required by the Building Code.

1. Owner will employ and pay a qualified inspection agency to check installed firestopping systems for compliance with requirements.

E. Do not cover up those firestopping installations that will become concealed behind other construction until Owner's inspection agency and authorities having jurisdiction, if required, have examined each installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. General: Specified products may be components of a complete firestopping system. Provide all components necessary to provide complete systems.

B. Manufacturers: Subject to compliance with requirements, provide firestop systems for each application indicated that are produced by the following manufacturers:

1. Hilti Construction Chemicals, Inc.
2. Tremco Corp.
3. 3M Fire Protection Products.
4. Specified Technologies Inc. (STI).

2.2 FIRESTOPPING, GENERAL

A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.

B. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials including the following:

    a. Semi-refractory fiber (mineral wool) insulation (as specified in Division 7 Section - “Building Insulation”).
    b. Ceramic fiber.
    c. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
    d. Fire-rated formboard.
    e. Joint fillers for joint sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.
6. Safing clips.
7. Metal support plates.

C. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

D. Firestopping Products: Subject to compliance with all other requirements, selected from the following products as acceptable to the Architect and in accordance with a reviewed UL System as provided by the firestop manufacturers published UL Listed Drawing. Use products as applicable to each condition requiring fire-stopping:

1. Water Based Intumescent Firestop Sealant.
2. Intumescent Firestop Flexible Block / Pillows.
3. Water Based Elastomeric Firestop Joint Spray.
4. Silcone Based Elastomeric Firestop Sealant.
5. Acrylic Based Firestop Sealant.
6. Intumescent Firestop Collar.
7. Cast-In Place Intumescent Firestop Sleeve Device.
8. Intumescent, Non-hardening Firestop Putty.
9. Trowlable Firestop Compound/Mortar.

2.3 MIXING

A. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening and joint configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements.

B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.

3.3 INSTALLATION/GENERAL

A. The Contractor shall select the material and UL test assemblies to be used as may be required for each type of material, location, rating and penetration or hole size. Do not proceed with the work until all submittals have been fully reviewed.

B. See Schedule of Through-Penetration Firestop Systems schedule on the drawings for additional system and installation requirements.

C. Materials and equipment shall be as approved by the manufacturer. Application procedures shall be in strict accordance with the manufacturer's directions and specifications. Only experienced, skilled mechanics approved by the materials manufacturers shall be allowed to place the materials.

D. Provide firestopping materials and thicknesses as required to provide indicated ratings. Where not otherwise indicated, comply with U.L. standard designs. In multiple layer work, offset joints by at least 6 inches.

E. Anchor firestopping using manufacturers' recommended system and in compliance with U.L. standard designs.

3.4 INSTALLING THROUGH-PENETRATION FIRESTOPS

A. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

B. Install fill materials for through-penetration firestop systems by proven techniques, as required by the manufacturer.

3.5 INSTALLING FIRE-RESISTIVE JOINT SEALANTS

A. General: Comply with the "System Performance Requirements" article in Part 1, with ASTM C 1193, and with the sealant manufacturer's installation instructions and drawings pertaining to products and applications indicated.

B. Install fire resistive joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.

C. Firestopping products shall match or exceed the hourly rating of the walls and floors they are installed in.

D. All vertical and horizontal penetrations in the base building’s telephone and electrical closets shall be fire-stopped.

3.6 FIELD QUALITY CONTROL

A. The Special Inspector will examine completed firestopping to determine, in general, if it is being installed in compliance with requirements.

1. Firestopping is subject to special inspection in accordance with the ~~NYC~~ New Jersey Building Code.

B. Inspecting agency will report observations promptly and in writing to Contractor and Architect.

C. Do not proceed to enclose firestopping with other construction until reports of examinations are issued.

D. Where deficiencies are found, repair or replace firestopping at no additional cost so that it complies with requirements.

3.7 CLEANING

A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

END OF SECTION 07 8413

SECTION 07 9200 - JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Work Included: The Work of this Section shall include, but not be limited to, the following:

1. Exterior and interior joint sealants as shown on the Drawings.

1.03 RELATED SECTIONS

A. Refer to the Contract Documents for related Specifications Sections which interface with, and are affected by the Work of this Section, provide all required coordination to ensure completion of the Work of this Section and the Work of other Sections affected by this Work.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each product required, including instructions for preparation and application.

1. Manufacturers' product data for interior sealants, including printed statement of VOC content.

B. Samples: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available.

C. Test Reports: Submit joint sealer-substrate test results to verify compatibility of proposed joint sealants with substrates.

D. Certificates: Submit certificates from manufacturers that their products comply with specifications and are suitable for the use indicated.

E. Mock-Ups: Install in-place samples of sealants as directed by Architect. Do not proceed with work until Mock-ups are accepted by Architect.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: One who has successfully completed within the last 5 years at least 5 similar joint sealant applications?

B. Source for Materials: Obtain joint sealer materials from a single manufacturer for each different product.

C. Preconstruction Field Tests: Prior to installation of joint sealants, field-test adhesion to joint substrates as recommended in ASTM C 1193.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original unopened containers with labels indicating manufacturer, expiration date, and other pertinent data.

B. Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.07 PROJECT CONDITIONS

A. Environmental Conditions: Do not install joint sealants when air and surface temperatures are outside the limits permitted by joint sealer manufacturer, or when joint substrates are wet or dirty.

B. Joint Widths: Do not proceed with installation of joint sealants when joint widths are not as allowed by joint sealer manufacturer.

1.08 WARRANTY

A. Submit a warranty to repair or replace defective joint sealer materials or workmanship; including staining, loss of adhesion, loss of cohesion, cracking or discoloration, for a period of 5 years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers and related materials that are compatible with one another and with joint substrates, as demonstrated by testing and field experience.

B. Colors: Provide colors of joint sealants as selected by the Architect, from manufacturer's full range of colors.

2.02 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Comply with ASTM C 920.

B. One-Part Non-Acid-Curing Silicone Sealant: Type S; Grade NS; Class 25; Medium modulus and complying with the following requirements:

1. Uses: For all exterior vertical joints except as otherwise indicated.
2. Additional Capability: When tested per ASTM C 719, to withstand 50 percent increase and decrease of joint width.
3. Products: Subject to compliance with requirements, provide one of the following one-part non-acid-curing silicone sealants:

a. "Dow Corning 790"; Dow Corning Corp.
b. "Silpruf"; Momentive Performance Materials
c. "864"; Pecora Corp.
d. "Spectrum 2"; Tremco, Inc.

C. One-Part Mildew-Resistant Silicone Sealant: Type S; Grade NS; Class 25; Uses: Non-traffic, formulated with fungicide for sealing interior joints with nonporous substrates at vertical and horizontal surfaces of ceramic tile in toilets, kitchens and between plumbing fixtures and tile.

1. Products: Subject to compliance with requirements, provide one of the following mildew-resistant sealants.

a. "Dow Corning 786"; Dow Corning Corp.
b. "SCS 1702"; Momentive Performance Materials
c. "863 #345 White"; Pecora Corp.
d. “Proglaze White"; Tremco, Inc.

D. Two-Part Pourable Urethane Sealant: Type M; Grade P; Class 25; Uses: Traffic, for floor joints and exterior pavements.

1. Products: Subject to compliance with requirements, provide one of the following:

a. "Chem-Calk 550"; Bostik Construction Product Div.
b. "Vulkem 245"; Mameco International, Inc.
c. "Pourthane"; W.R. Meadows, Inc.
d. "NR-200 Urexpan"; Pecora Corp.
e. "THC-900"; Tremco Corp.

2.03 LATEX JOINT SEALANTS

A. Acrylic-Emulsion Sealant: One part, nonsag sealant complying with ASTM C 834, paintable and recommended for interior, non-wet areas, applications with joint movement of not more than plus or minus 5 percent. Subject to compliance with requirements, provide one of the following:

1. "Chem-Calk 600"; Bostik Construction Products Div.
2. "AC-20"; Pecora Corp.
3. "Tremco Acrylic Latex 834"; Tremco Inc.

2.04 FIRE-RESISTANT JOINT SEALANTS

A. See Division 7 Section “Penetration Fireproofing”.

2.05 MISCELLANEOUS JOINT SEALANTS

A. Butyl-Polyisobutylene Sealant: Manufacturer's standard, solvent- release-curing, butyl-polyisobutylene sealant complying with AAMA 809.2, for concealed metal to metal joints.

2.06 JOINT SEALANT BACKING

A. General: Provide backings which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer.

B. Plastic Foam Joint-Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth.

1. Either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam, unless otherwise indicated.

C. Tubing Joint-Fillers: Neoprene, EPDM or silicone tubing complying with ASTM D 1056, non-absorbent to water and gas, resilient at temperatures down to -26 deg F., of size and shape to provide a secondary seal.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape to prevent bond between sealant and materials at back of joint. Provide self-adhesive tape where applicable.

2.07 MISCELLANEOUS MATERIALS

A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates, as determined from preconstruction joint sealer-substrate and field tests.

B. Cleaners: Provide non-staining cleaner of type acceptable to manufacturer of sealant and sealant backing materials.

C. Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.

D. Accessory Materials for Fire-Stopping Sealants: Provide accessory materials required for installation of fire-stopping sealants.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect joints to receive joint sealants for compliance with requirements. Report conditions detrimental to joint sealant work. Proceed after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealer manufacturers and the following requirements:

1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including water.
2. Clean porous joint substrate surfaces to produce a clean, sound substrate. Remove loose particles remaining from cleaning.
3. Remove laitance and form release agents from concrete.
4. Clean non-porous surfaces with cleaners which are not harmful to substrates or leave residues that may affect joint sealants.

B. Joint Priming: Prime all joint substrates to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond; not on adjoining surfaces.

C. Masking Tape: Mask adjoining surfaces which might be permanently stained or damaged by sealant or by cleaning required to remove sealant. Remove tape immediately after tooling without disturbing joint.

3.03 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealer manufacturers' printed installation instructions, except where more stringent requirements apply.

B. Elastomeric Sealant Installation Standard: Comply with ASTM C 1193 for use of joint sealants as applicable to conditions indicated.

C. Installation of Sealant Backings: Install sealant backings to produce the shapes and depths of sealants for optimum performance.

1. Do not leave gaps between ends of joint-fillers.
2. Do not stretch, twist, puncture or tear joint-fillers.
3. Do not use absorbent joint-fillers which are wet.
4. Install bond breaker tape where required to prevent third-side adhesion of sealant to back of joint.
5. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting joint substrates, completely filling joints and providing uniform, cross-sectional shapes and depths for optimum sealant movement. Mask adjacent surfaces if necessary.

E. Tooling of Nonsag Sealants: Tool sealants to form smooth, uniform beads to eliminate air pockets and to ensure adhesion of sealant with sides of joint. Remove excess sealants from adjacent surfaces. Provide concave joint configuration per Figure 6A in ASTM C 1193.

3.04 CLEANING

A. Clean off excess sealants or sealant smears as work progresses by methods and materials approved by manufacturers of joint sealants. Remove masking tape when no longer required.

3.05 PROTECTION

A. Protect joint sealants from contamination or damage, so that they are without deterioration or damage at time of Substantial Completion.

B. Remove damaged or defective joint sealants and reseal joints to match original work.

END OF SECTION 07 9200

Part 1 General

1.1 Section Includes

A. Ultimate Wood Commercial Door and Frame, complete with hardware, glazing, weather strip, simulated divided lite, grilles-between-the-glass, stationary sidelite, stationary transom, jamb extension, and standard or specified anchors, trim, and attachments.

1.2 Construction Specification Institute (CSI) MasterFormat Numbers and Titles

A. Section 01 33 00 – Submittal Procedures: Shop Drawings, Product Data, and Samples

B. Section 01 62 00 – Product Options

C. Section 01 63 00 – Product Substitution Procedures

D. Section 01 65 00 – Product Delivery

E. Section 01 66 00 – Product Storage and Handling Requirements

F. Section 01 71 00 – Examination and Preparation

G. Section 01 73 00 - Execution

H. Section 01 74 00 – Cleaning and Waste Management

I. Section 01 75 00 – Starting and Adjusting

J. Section 01 76 00 – Protecting Installed Construction

K. Section 06 22 00 – Millwork: Wood trim other than furnished by door and frame manufacturer

L. Section 07 92 00 – Joint Sealants: Sill sealant and perimeter caulking

M. Section 08 71 00 – Door Hardware: Hardware other than furnished by door and frame manufacturer

N. Section 09 90 00 – Paints and Coatings: Paint or stain other than factory applied finish

1.3 References

A. WDMA I.S.4: Industry Standard for Water Repellent Preservative Treatment Millwork

B. Sealed Insulating Glass Manufacturers Association / Insulating Glass Certification Council (SIGMA/IGCC)

1.4 System Description

A. Design and Performance Requirements are not available for this product.

1.5 Submittals

A. Shop Drawings: Submit shop drawings under the provision of CSI MasterFormat Section 01 33 00.

B. Protect Data: Submit product data for certified options under provision of CSI MasterFormat Section 01 33 00. Product performance rating information may be provided via quote, performance rating summary (NFRC Data), or certified performance grade summary (WDMA Hallmark data).

C. Samples:

1. Submit corner section under the provision of CSI MasterFormat Section 01 33 00.

2. Specified performance and design requirements under provisions of CSI MasterFormat Section 01 33 00.

1.6 Quality Assurance

A. Requirements: consult local code for IBC [International Building Code] and IRC [International Residential Code] adoption year and pertinent revisions.

1.7 Delivery

A. Comply with provisions of CSI MasterFormat Section 01 65 00

B. Deliver in original and protect from weather

1.8 Storage and Handling

A. Prime and seal wood surfaces, including concealed by wall construction, if more than thirty (30) days will expire between delivery and installation.

B. Store window units in an upright position in a clean and dry storage area above ground to protect from the weather under the provision of Section 01660.

1.9 Warranty

Complete and current warranty information is available at **marvin.com/warranty**. The following summary is subject to the terms, conditions, limitations, and exclusions set forth in the Marvin Limited Warranty and Products in Coastal Environments Limited Warranty Supplement:

A. Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. Glass is warranted against stress cracks caused by manufacturing defects from (10) years from the original date of purchase.

B. Factory applied interior finish is warranted to be free from the Finish Defects for a period of five (5) years from the original date of purchase.

C. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

Part 2 Products

2.1 Manufactured Units

A. Description: Factory assembled Wood Commercial Door, manufactured by Marvin Windows and Doors, Ripley, Tennessee or Approved Equal.

2.2 Frame Description

A. Finger-Jointed, edge-glued Pine core with non-finger-jointed Pine veneer; finger-jointed, edge-glued Mahogany core with non-finger-jointed Mahogany veneer; finger-jointed, edge-glued Vertical Grain Douglas fir core with non-finger-jointed Vertical Grain Douglas Fir veneer.

   1. Kiln dried to moisture content no greater than twelve (12) percent at the time of fabrication.

   2. Water repellent, preservative-treated in accordance with WDMA I.S.4.

B. Frame width: 4 9/16” (116mm)

C. Frame thickness: 1 1/16” (27mm)

D. Sill Options:

   1. Standard factory installed thermal barrier saddle low profile .500” (13mm) by 7.125” (181mm) sill. Optional thermal barrier saddle low profile .250” (6mm) by 7.125” (181mm) sill. Offset saddle low profile 0.500” (13mm) by 7.00” (178mm) sill with 0.250” (6mm) offset.

   2. Optional factory-installed thermal barrier saddle low profile 0.500” (13mm) by 8.125” (210mm). Optional thermal barrier saddle low profile 0.250” (6mm) by 8.125” (210mm) sill.

   3. Optional factory-installed thermal barrier saddle low profile 0.500” (13mm) by 9.125” (235mm). Optional thermal barrier saddle low profile 0.250” (6mm) by 9.125” (235mm) sill.

   4. Optional No Sill – sill supplied and applied by others. Jambs extended 7/8” (22mm) beyond panel bottom

2.3 Panel Description

A. 1 ¾" Doors: Stiles contain laminated veneer lumber (LVL) core with non-finger-jointed Pine, Mahogany, Mixed Grain Douglas Fir veneers. Solid wood top, bottom, and intermediate rails.

1. Kiln dried to moisture content no greater than twelve (12) percent at the time of fabrication.

2. Water repellant, preservative-treated in accordance with WDMA I.S.4.

B. 2 ¼" Doors: Stiles and top rail contain laminated veneer lumber (LVL) core with non-finger-jointed Pine, Mahogany, Mixed Grain Douglas Fir veneers. Solid face laminated bottom and intermediate rails.

1. Kiln dried to moisture content no greater than twelve (12) percent at the time of fabrication.

2. Water repellant, preservative-treated in accordance with WDMA I.S.4.

C. Composite panel thickness: 1 ¾" (44mm); 2 ¼" (57mm)

D. Top rail width: 1 ¾" panel: 6" (152mm) or 2 ¼" panel: 8 1/8" (206mm)

E. Stile width: 6" (152mm)

F. Bottom rail height: 11 3/8" (289mm)

G. Panel corners glued and fastened with 5/8 x 4" (16mm x 102mm) fluted hardwood dowels. Removable interior vinyl glazing stops with non-finger-jointed wood covers. 1 ¾" panel: Removable interior vinyl glazing stops with non-finger-jointed wood covers, no visible fastener holes; 2 ¼" panel: Non-Finger-Jointed wood visible nailed on glazing stop.

2.4 Glazing

A. Select quality complying with ASTM C1036. Comply with 16 CFR 1201 Safety Standard for Architectural Glazing Materials. Tempered insulating glass IGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E774.

B. Glazing Method: Tempered Insulating Glass (Altitude Adjusted)

C. Dual Pane thicknes: 15/16"

D. Glass fill: Air with capillary tubes, Argon.

E. Glass Type: Clear, Bronze, Gray, Reflective Bronze, Low E2, Low E3, Obscure, Laminated, Low E2/ERS, Low E3/ERS

F. Glazing Seal: Silicone bedding, exterior.

2.5 Finish

A. Exterior Finish Options

1. Prime: Factory-applied enamel primer. Available on Pine product only.

B. Interior Finish Options

1. Painted Interior Finish. Factory-applied water-borne acrylic enamel. Available on Pine product only.Available in White or Designer Black. Meets WDMA TM-14 requirements.
2. Factory-applied water–borne acrylic enamel clear coat. Applied in two separate coats with light sanding between coats. Available on Pine, Mahogany, Vertical Grain Douglas Fir.
3. Factory-applied water-borne stain. Stain applied over a wood (stain) conditioner. A water-borne acrylic enamel clear coat was applied in two separate coats, with light sanding between coats applied over the stain. Available on Pine, Mahogany, Vertical Grain Douglas Fir. Colors available: Wheat, Honey, Hazelnut, Leather, Cabernet, or Espresso

2.6 Hardware

A. Hinges: 4 ½" x 4 ½" square corner ball bearing hinges.

1. Finish: Satin Chrome (US26D) over the brass substrate, Bronze (US10A) over the brass substrate, Brass (US3), Stainless Steel (US32D).

B. Locking System:

1. No lock no bore is standard
2. Commercial Hardware Package: closer, rim device, mortise lock, removable mullion, and kick plate

C. Hardware Routs and Preps.

1. Von Duprin Push pad Rim Devices and Trim Sets
2. Von Duprin Cross Bar Device and Trim Sets
3. Von Duprin 5547 Concealed Vertical Rod Exit Device (available in 2 ¼" panels only)
4. Schlage L Mortise Lock and Trim Sets
5. Schlage ND Cylindrical locks
6. Sargent 8200 Mortise Lock
7. Alarm Lock

2.7 Weather Strip

A. Head jamb and hinge jamb: bulb type weather strip.

1. Color: beige or black.

B. Locking jamb: gray pile weather strip

C. Surface-mounted aluminum panel drip mounted at the bottom of the panel (shipped loose for field application)

1. Panel drip to default to sill color
2. Beige for clear anodized, gold anodized, or beige sills
3. Bronze for bronze sill

2.8 Jamb Extension

A. Factory installed (loose), for wall thickness indicated or required.

B. Finish: Match interior frame wood species and finish.

2.9 Raised or Flat Panel

A. Raised or Flat Panel

1. Core is medium density fiberboard (MDF) with non-finger-jointed wood laminate to the interior and exterior.

B. Two placement options

1. Low Placement: 26” (660mm) on center (OC) of 6” (152mm) intermediate rail from bottom sill for a 10 13/16” (275mm) visible panel height.
2. High Placement: 40 5/16” (1024mm) on center (OC) of 6” (152mm) intermediate rail from bottom sill for a 25 1/8” (638mm) visible panel height.

2.10 Simulated Divided Lites (SDL)

A. 5/8” (16mm), 7/8” (22mm), 1 3/4” (44mm), 1 15/16” (49mm), 2 13/32” (61mm) – with or w/out internal spacer bar.

1. Muntins: Pine, Mahogany, or Vertical Grain Douglas Fir.
2. Muntins adhered to glass with double-coated acrylic foam tape.
3. Pattern: Rectangular; Custom lite layout
4. Interior muntins: Wood and finish interior of door
5. Standard interior sticking: Ogee
6. Optional interior sticking: Square

B. 1 1/18” (29mm), 1 15/16” (49mm)

1. Standard: Ovolo
2. Optional: Square

2.11 Grilles-Between-the–Glass (GBG)

A. 23/32” (18mm) contoured aluminum bar

1. Exterior colors: Marvin aluminum clad color. The exterior GBG color is designed to best match the Marvin aluminum clad colors when used with Low E2 glass. The use of different types of glazing may alter the exterior GBG color appearance.
2. Interior colors: White is the default color. Optional colors: Bronze, Pebble Gray, Sierra White, Ebony (only available with Ebony exterior).

B. Optional flat aluminum spacer bar; contact your Marvin representative.

2.12 Accessories and Trim

A. Installation and hardware Accessories:

1. Factory installed vinyl nailing fin/drip cap
2. Installation brackets: 6 3/8” (162mm); 9 3/8” (238mm); 15 3/8” (390mm)
3. Masonry brackets: 6” (152mm); 10” (254mm)

B. Exterior Wood Moulding:

1. Profile; Brick Mould casing; Flat casing; Stucco brick mould casing; Stucco flat casing; as indicated on drawings.
2. Finish: Match exterior frame finish.

Part 3 Execution

3.1 Examination

A. Verification of Condition: Before installation, verify openings are plumb, square, and of proper dimensions, as required in CSI MasterFormat Section 01 71 00. Report frame defects or unsuitable conditions to the General contractor before proceeding,

B. Acceptance of Condition: Beginning on installation confirms acceptance of existing conditions.

3.2 Installation

A. Comply with CSI MasterFormat Section 01 73 19.

B. Assemble and install window/door unit(s) according to manufacturer's instruction and review shop drawing.

C. Install sealant and related backing materials at the perimeter of the unit or assembly in accordance with CSI MasterFormat Section 07 92 00 Joint Sealants. Do not use expansive foam sealant.

D. Install accessory items as required.

E. Use finish nails to apply wood trim and mouldings.

3.3 Field Quality Control

A. Remove visible labels and adhesive residue according to the manufacturer's instructions.

3.4 Cleaning

A. Remove visible labels and adhesive residue according to the manufacturer's instructions.

B. Leave windows and glass in a clean condition. Final cleaning as required in CSI MasterFormat Section 01 74 00.

3.5 Protecting Installed Construction

A. Comply with CSI MasterFormat Section 01 76 00.

B. Protecting windows from damage by chemicals, solvents, paint, or other construction operations that may cause damage.

End of Section

SECTION 08 16133 – INWARD SWING FRENCH DOORS

Part 1 General

1.1 Section Includes

A. Elevate® Inswing door and frame complete with hardware, glazing, weather strip, screen, grilles-between-the-glass, simulated divided lites, jamb extension, and standard or specified anchors, trim and attachments

1.2 Construction Specification Institute (CSI) MasterFormat Numbers and Titles

A. Section 01 33 23 – Submittal Procedures: Shop Drawings, Product Data, and Samples

B. Section 01 62 00 – Product Options

C. Section 01 25 15 – Product Substitution Procedures

D. Section 01 65 00 – Product Delivery

E. Section 01 66 00 – Product Storage and Handling Requirements

F. Section 01 71 00 – Examination and Preparation

G. Section 01 73 00 - Execution

H. Section 01 74 00 – Cleaning and Waste Management

I. Section 01 75 00 – Starting and Adjusting

J. Section 01 76 00 – Protecting Installed Construction

K. Section 06 22 00 – Millwork: Wood trim other than furnished by door and frame manufacturer

L. Section 07 92 00 – Joint Sealants: Sill sealant and perimeter caulking

M. Section 08 71 00 – Door Hardware: Hardware other than furnished by door and frame manufacturer

N. Section 09 90 00 – Paints and Coatings: Paint and stain other than finish

1.3 References

A. ASTM, International:

1. E283: Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

2. E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference

3. E547: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Cyclic Air Pressure Difference

4. E2190: Standard Specification for Insulating Glass Unit Performance and Evaluation

5. C1036: Standard Specification for Flat Glass

6. E2112: Standard Practice for Installation of Exterior Windows, Doors, and Skylights

B. North American Fenestration Standard (NAFS) - American Architectural Manufacturer's Association/Window and Door Manufacturer's Association/Canadian Standards Association (AAMA/WDMA/CSA 101/I.S.2/A440):

1. AAMA/WDMA/CSA 101/I.S.2/A440-17: NAFS: North American Fenestration, Standard/Specification for windows, doors, and skylights

C. Window and Door Manufacturers Association (WDMA)

1. WDMA I.S.4: Industry Standard for Water Repellent Preservative Treatment for Millwork

2. WDMA I.S.2: Hallmark Certification Program

D. Insulating Glass Certification Council (IGCC) and Fenestration Glazing Industry Alliance (FGIA) Glass Products Council (GPC)

E. Fenestration Glazing Industry Alliance (FGIA) – note: AAMA combined with IGMA and formed FGIA as of 08/01/2019

1. AAMA 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels

F. National Fenestration Rating Council (NFRC):

1. NFRC 101: Procedure for Determining Fenestration Product Thermal Properties

2. NFRC 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence

G. Window Covering

1. WCMA A100.0: American National Standard for Safety of Window Covering Products

1.4 System Description

A. Design and Performance Requirements

Product	Air Tested to psf	Water Tested to psf	Design Pressure (DP)	Certification Rating	Max Overall Width	Max Overall Height
Elevate Inswing French Door (OX / XO)	1.57	4.50	30	LC-PG30-SHD	71	95.5
Elevate Inswing French Door (XX)	1.57	4.50	30	LC-PG30-SHD	71	95.5
Elevate Inswing French Door (X)	1.57	4.50	30	LC-PG30-SHD	36.319	95.5
Elevate Inswing French Door (O)	1.57	4.50	30	LC-PG30-SHD	36.319	95.5
Elevate Inswing French Door (OX / XO) HP	1.57	7.50	50	LC-PG50-SHD	71	95.5
Elevate Inswing French Door (XX) HP	1.57	7.50	50	LC-PG50-SHD	71	95.5
Elevate Inswing French Door (X) HP	1.57	7.50	50	LC-PG50-SHD	36.319	95.5
Elevate Inswing French Door (O) HP	1.57	7.50	50	LC-PG50-SHD	36.319	95.5
Elevate Inswing French Door (OX / XO) Impact	1.57	8.35	+55/-55	LC-PG55-SHD	71	95.5
Elevate Inswing French Door (XX) Impact	1.57	8.35	+55/-55	LC-PG55-SHD	71	95.5
Elevate Inswing French Door (X) Impact	1.57	8.35	+55/-65	LC-PG55-SHD	36.319	95.5
Elevate Inswing French Door (O) Impact	1.57	8.35	+55/-65	LC-PG55-SHD	36.319	95.5

B. Design and Performance Requirements for Inswing French Door Impact Zone 3:

1. Units shall be designed to comply with 101/AAMA/WDMA/CSA 101/I.S.2/A440-11 and AAMA/WDMA/CSA 101/I.S.2/A440-08 (-LC-PG +55/-65 X and O; LC-PG +55/-55 XX and XO/OX rating.

2. Air leakage shall not exceed 0.30 cfm per linear foot of sash crack when tested at 1.57 psf according to ASMT E283

3. No water penetration when tested at 8.25 psf according to ASTM E547

4. Units shall be designed to comply with ASTM E330 for structural performance when tested at the following pressures: (+82.5/-97.5 psf)

5. Forced Entry Resistance complies with AAMA 1304-02

6. Vertical Load Resistance complies with AAMA 925-03

7. Operating Cycling, complies with AAMA 920-03

8. Missile Impact at Missile Level D, complying with ASTM E1886-05, ASMT E1996-09

9. Impact Pressure Cycling at +55/-65 psf (X and O) and +55/-55 (XX and XO/OX), complies with ASTM E-1886-05, ASTM E1996-09

1.5 Submittals

A. Shop Drawings: Submit shop drawings under provision of CSI MasterFormat Section 01 33 23.

B. Protect Data: Submit catalog data under provision of CSI MasterFormat Section 01 33 23.

C. Samples:

1. Submit corner section under provision of CSI MasterFormat Section 01 33 23.

2. Specified performance and design requirements under provisions of CSI MasterFormat Section 01 33 23.

D. Quality Control Submittals: Certificates: submit manufacturer's certification indicating compliance with specified performance and design requirement under provision of CSI MasterFormat Section 01 33 23.

1.6 Quality Assurance

A. Requirements: consult local code for IBC [International Building Code] and IRC [International Residential Code] adoption year and pertinent revisions for information on:

1. Egress, emergency escape and rescue requirements

2. Basement window requirements

3. Windows fall prevention and/or window opening control device requirements.

1.7 Delivery

A. Comply with provisions of cSI MasterFormat Section 01 65 00

B. Deliver in original and protect from weather

1.8 Storage and Handling

A. Prime and seal wood surfaces, including to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation.

B. Store window units in an upright position in a clean and dry storage area above ground to protect from weather under provision of Section 01660.

1.9 Warranty

The following limited warranty is subject to conditions and exclusions. There are certain conditions or applications over which Marvin has no control. Defect or problems as a result of such conditions or applications are not the responsibility of Marvin. For a more complete description of the Marvin limited warranty, refer to the complete and current warranty information available at marvin.com/support/warranty.

A. Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. Glass is warranted against stress cracks caused by manufacturing defects for ten (10) years from the original date of purchase.

B. Hardware another non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

Part 2 Products

2.1 Manufactured Units

A. Description: Factory assembled Ultrex® Inswing Door, as manufactured by Marvin Windows and Doors, West Fargo, North Dakota or approved equal.

2.2 Frame Description

A. Interior: Clear pine exposed surfaces

1. Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication
2. Water repellant, preservative treated in accordance with ANSI/NWWDA I.S.4.

B. Exterior: Fiberglass reinforced Ultrex® - 0.080 inch (2mm) thick

C. Composite frame thickness: 1-11/16 inches (47mm)

D. Frame width: 4 9/16 inches (116mm) or 6 9/16 inches (167mm).

1. Ultrex sill, beige or bronze in color
2. Oak or Cellular PVC sill liner is positioned to the interior and shipped loose

2.3 Panel Description

A. Interior: Finger jointed with clear pine veneers

1. Kiln dried to moisture content no greater than twelve (12) percent at the time of fabrication

2. Water repellant preservative treated in accordance with ANSI/NWWDA I.S.4.

B. Core material: Finger jointed pine

C. Exterior: Fiberglass reinforced Ultrex® - 0.110 inch (2.8mm) thick

D. Composite panel thickness: 1 ¾ inches (44mm)

E. Rail height dimension: top rail 3 5/8 inches (92mm), bottom rail 6 inches (152mm)

2.4 Glazing

A. Select quality complying with ASTM C1036. Insulating glass is manufactured and tested level ASTM E2190 and is IGCC certified. STC and OITC ratings are certified to the level in accordance with ASTM E90-09

B. Glazing Method: ¾ inch (19mm) tempered insulating glass

C. Glass type: Low E1, E2, E3, E3/ERS with air or Argon gas, Rain Glass, Glue Chip, Narrow Reed, Reed, Frost, Bronze Tint, Gray Tint, Green Tint.

D. Glazing Seal: Silicone bedding, interior and exterior

E. Glazing Option: STC/OITC upgrade

F. Impact Zone 3 for winds up to 140 miles per hour. Glass is laminated insulated Low E2 or Low E3 with Argon, consisting of tempered glass to the exterior and laminated glass to the interior. The laminated glass is made up of two pieces of glass with SGP laminate between. The interior and exterior glazing compound is silicone, in a sandwich style glazing system.

2.5 Certified Mulling for Standard Units

A. Directional mull limits: 1 unit wide by 2 units high: Rough Opening not to exceed 72 x 100 ½ (1828mm x 2552mm) inches

B. Directional mull limits: 3 units wide by 1 unit high: Rough Opening not to exceed 109 15/16 x 96 (2792mm x 2438mm) inches

2.6 Certified Reinforced Space Mulling for Standard Units

A. Directional mull limits (Horizontal ½" Space Mull): 1 unit wide by 2 units high: Rough Opening not to exceed 72 x 100 ½ inches (1828mm x 2552mm)

B. Directional mull limits (Horizontal Space Mull): 2 units wide by 2 units high: Rough Opening not to exceed 73 5/8 x 100 ½ inches (1871 mm x 2552 mm)

2.7 Finish

A. Exterior: Pultruded Fiberglass. Factory baked on acrylic urethane. Meets AAMA 624-10 requirements.

1. Color: Stone White, Pebble Gray, Bronze, Cashmere, Gunmetal, Ebony

B. Interior:

1. Treated bare pine
2. Optional white, clear interior, or designer black interior factory finish

2.8 Hardware

A. Hinges: 4 inch butt hinges that contain both horizontal and vertical adjustment feature

1. Three hinges on all operator panels
2. Finish: Powder coated: Gold Tone, White, Gray, Dark Brown, Almond Frost, Ebony; PVD: Brass, Satin Nickel, Oil Rubbed Bronze

B. Handle Set: Lever operated

1. Interior and Exterior finishes are selected separately
2. Finish: Almond Frost, White, Solid Brass, Satin Nickel, Oil Rubbed Bronze, Matte Black

C. Locking System:

1. Multi-point locking system
2. Top and bottom shoot bolt are operated by the handle set

2.9 Weather Strip

A. All units are constructed with weather strip at all panel perimeter joints

B. Jambs, Head jamb, astragal, and mull post utilize a dual bulb weather strip

C. Sill weather strip to seal against the bottom rail

D. Frame weather strip is black in color, sill weather strip is black or beige in color

2.10 Jamb Extension

A. Furnish jamb extension: 6 9/16 inch (167mm) or 6 13/16 inch (173mm) factory-installed

B. Optional jamb extension: 4 11/16 inch (119mm), 4 13/16 inch (122mm), or 5 1/16 inch (129mm) – 8 9/16 inch (217mm) shipped loose.

C. Finish: White, Clear Lacquer, Designer Black

2.11 Insect Screen

A. Sliding screen for XO/OX

1. Extruded aluminum sliding frame 0.045 inch (1.2mm) thick
2. Top hung roller assembly with stainless steel ball bearing in nylon wheels, top rollers adjustable up to 3/8 inch (10mm)
3. Frame to have edge-mounted wool pile bug strip
4. Screen mesh: Charcoal fiberglass
5. Frame finish: White, Pebble Gray, Bronze, Cashmere, Gunmetal, Ebony
6. Black nylon handles on both sides of screen – includes latch, pneumatic closure and sweep

B. Swinging screen for X and XX

1. Extruded aluminum 0.055 inch (1.4mm) thick
2. Frame to have edge mounted wool pile bug strip
3. Screen mesh: Charcoal fiberglass
4. Frame finish: White, Pebble Gray, Bronze, Cashmere, Gunmetal, Ebony
5. Black nylon handles on both sides of screen – includes latch, pneumatic closure and sweep

2.12 Simulated Divided Lites (SDL)

A. 7/8 inch (22mm) wide. Available with optional spacer bars

1. Exterior muntins: Ultrex finished to color match exterior
2. Interior muntins: Bare pine wood or optional white, clear interior, or design black interior finish
3. Patterns:
4. Rectangular
5. 9-lite Prairie cut with 4” DLO corners
6. 6 lite top or bottom Prairie cut with 4” DLO corners
7. 6 lite left or right Prairie cut with 4” DLO corners
8. Cottage style up to 2H with specified DLO height (4” min)
    a. Size limitations may apply to Prairie and Cottage lite cut availability

9. Simulated Check rail option: 2 11/32” (60mm). Available with optional spacer bars

2.13 Grilles-Between-the–Glass (GBG)

A. Manufactured from aluminum in a 23/32 inch (18mm) wide contoured profile placed between the two panes of glass

1. Not available on Impact units

2. Colors:
   a. Interior: White, Bronze, Black
   b. Exterior: White, Pebble Gray, Bronze, Cashmere, Gunmetal, or Ebony

3. Patterns:
   a. Rectangular
   b. 9 lite Prairie cut with 4” DLO corners
   c. 6 lite top or bottom Prairie cut with 4” DLO corners
   d. 6 lite left or right Prairie cut with 4” DLO corners
   e. Cottage style up to 2H with specified DLO height (3” min)
   f. Size limitations may apply to Prairie and Cottage lite cut availability

2.14 Accessories and Trim

A. Exterior Casing:

1. Non-integral to the unit – fastened to the exterior wall with barb and kerf
2. 2 inch Brick Mould available as a header and jamb surround
3. 3 ½ inch Flat casing as a header and jamb surround – also available with 1inch Ranch Style header overhang
4. Color: Stone White, Pebble Gray, Bronze, Cashmere, Gunmetal, Ebony

B. Installation Accessories:

1. Factory installed nailing fin at head and side jambs
2. Installation brackets: 6 3/4 inches (171mm)
3. Mullion kit: Mullion kit for field assembly of units. Kits includes: Instructions, aluminum pins, mullion tie, sealant foam tape, masonry clips, mull brackets, #7 x ¾ inch installation bracket screws, #8 x 3/8 inch screws, interior mullion trim, and nailing fin connectors
4. ½" Space Mullion kit: Structural mullion kit with ½" spacing for field assembly or related units available in horizontal, and multi-wide, multi high configurations. Kit includes: mulling pins, mull reinforcement, mull support, weatherstrip, plugs, exterior mull cover, interior mull trim, brackets, drip cap and hardware.
5. Installation clips standard with nailing fin on impact glazed units

Part 3 Execution

3.1 Examination

A. Verification of Condition: Before installation, verify openings are plumb, square and of proper dimensions as required in CSI MasterFormat Section 01 71 00. Report frame defects or unsuitable conditions to the General contractor before proceeding.

B. Acceptance of Condition: Beginning of installation confirms acceptance of existing conditions.

3.2 Installation

A. Comply with CSI MasterFormat Section 01 73 00

B. Assemble and install doors and frames according to manufacturer's instruction and reviewed shop drawing

C. Coordinate sealant material for location conditions and where sealant is to be applied, as specified in CSI MasterFormat Section 07 92 00.

D. Install frames and panels as required

E. Install accessory items as required

F. Use finish nails to apply wood trim and mouldings

3.3 Starting and Adjusting

A. Adjust door to work freely with hardware functioning properly. Re-adjust at completion of project if directed.

3.4 Field Quality Control

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Unless otherwise specified, air leakage resistance tests shall be conducted at a uniform static pressure of 75 Pa (~1.57 psf). The maximum allowable rate of air leakage shall not exceed 2.3 L/sm^2 (~0.45 cfm/ft^2).

C. Unless otherwise specified, water penetration resistance testing shall be conducted per AAMA 502 and ASTM E1105 at 2/3 of the fenestration products design pressure (DP) rating using "Procedure B" – cyclic static air pressure difference. Water penetration shall be defined in accordance with the test method(s) applied.

3.5 Cleaning

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Leave windows and glass in a clean condition. Final cleaning as required in Section 01 74 00.

3.6 Protecting Installed Construction

A. Comply with CSI MasterFormat Section 07 76 00

B. Cover doors and frames during painting or other construction operations that may cause damage

C. Protecting sill from damage by chemicals, solvents, paint, or construction traffic

End of Section

SECTION 085213 – METAL-CLAD WOOD WINDOWS

Part 1 General

1.1 Section Includes

A. Ultimate Double Hung G2, Single Hung, Transom, Picture window complete with hardware, glazing, certified mulls, weather strip, insect screen, grilles-between-the-glass, simulated divided lite, jamb extension, combination storm/screen, and standard or specified anchors, trim, attachments, factory-applied historic casing(s) and accessories

B. Ultimate Double Hung G2 Bay, Bow window complete with hardware, glazing, weather strip, insect screen, grilles-between-the-glass, simulated divided lite, jamb extension, combination storm/screen, head/seat board, and standard or specified anchors, trim attachments, and accessories

1.2 Related Sections

A. Section 01 33 00 – Submittal Procedures; Shop Drawings, Product Data and Samples

B. Section 01 62 00 – Product Options

C. Section 01 65 00 – Product Delivery

D. Section 01 66 00 – Storage and Handling Requirements

E. Section 01 71 00 – Examination and Preparation

F. Section 01 73 00 - Execution

G. Section 01 74 00 – Cleaning and Waste Management

H. Section 01 76 00 – Protecting Installed Construction

I. Section 06 22 00 – Millwork: Wood trim other than furnished by window manufacturer

J. Section 07 92 00 – Joint Sealant: Sill sealant and perimeter caulking

K. Section 09 90 00 – Painting and Coasting: Paint and stain other than factory-applied finish

1.3 References

A. American Society for Testing Materials (ASTM):

1. E283: Standard Test method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors

2. E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Door by Uniform Static Air Pressure Difference

3. E547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential

E2112: Standard Practice for Installation of Exterior Windows, Doors, and Skylights
E2190: Specification for Sealed Insulated Glass Units

C1036: Standard Specification for Flat Glass
E2068: Standard Test Method for Determination of Operating Force of Sliding Windows and Doors
E 1996: Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

4. E 1886: Standard Test method for Performance of Exterior Windows, curtain Walls, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

5. F 2090-17: Standard Specifications for Windows Fall Prevention Devices with Emergency Escape (egress) Release Mechanisms

B. American Architectural Manufacturer's Association/Window and Door Manufacturer's Association (AAMA/WDMA/CSA):

6. AAMA/WDMA/CSA 101/I.S.2/A440-08, Standard/Specification for windows, doors and skylights

7. AAMA/WDMA/CSA 101/I.S.2/A440-11, Standard/Specification for windows, doors and skylights

8. AAMA 450-10, Voluntary Performance Rating Method for Mulled Fenestration Assemblies

C. WDMA I.S.4: Industry Standard for Water Repellant Preservative Treatment for Millwork

D. Window and Door Manufacturer's Association (WDMA): 101/I.S.2 WDMA Hallmark Certification Program

E. Sealed Insulating Glass Manufacturer's Association/Insulating Glass Certification Council (SIGMA/IGCC)

F. American Architectural Manufacturer's Association (AAMA): 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels

G. National Fenestration Rating Council (NFRC):

9. 101: Procedure for Determining Fenestration Product thermal Properties

10. 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence

H. Window Covering Manufacturer's Association

11. A100.1: American National Standard for Safety of Corded Window Coverings Products

1.5 Submittals

A. Shop Drawings: Submit shop drawings under provision of Section 01 33 00.

B. Product Data: Submit production data for certified options under provision of CSI MasterFormat Section 01 33 00. Product performance rating information may be provided via quote, performance rating summary (NFRC Data), or certified performance grade summary (WDMA Hallmark data).

C. Samples:

12. Submit corner section under provision of section 01 33 00.

13. Specified performance and design requirements under provisions of CSI MasterFormat Section 01 33 00.

1.6 Quality Assurance

A. Requirements: consult local code for IBC [International Building Code] and IRC [International Residential Code] adoption year and pertinent revisions for information on:

14. Egress, emergency escape and rescue requirements

15. Basement window requirements

16. Windows fall prevention and/or window opening control device requirements

1.7 Delivery

A. Comply with provisions of Section 01 65 00

B. Deliver in original packaging and protect from weather

1.8 Storage and Handling

A. Prime and seal wood surfaces, including to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation

B. Store window units in an upright position in a clean and dry storage area above ground to protect from weather under provision of Section 01 66 00

1.9 Warranty

Complete and current warranty information is available at marvin.com/warranty. The following summary is subject to the terms, condition, limitations and exclusions set forth in the Marvin Windows and Door Limited Warranty and Products in Coastal Environments Limited Warranty Supplement:

A. Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. Glass is warranted against stress cracks caused by manufacturing defects from ten (10) years from the original date of purchase.

B. Standard exterior aluminum cladding finish is warranted against manufacturing defects resulting in chalk, fade and loss of adhesion (peel) per the American Architectural Manufacturer's Association (AAMA) Specification 2605-11 Section 8.4 and 8.9 for twenty (20) years from the original date of purchase.

C. Factory-applied interior finish is warranted to be free from finish defects for a period of five (5) years from the original date of purchase.

D. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

Part 2 Products

2.1 Manufactured Units

A. Description: Ultimate Double Hung G2 (and related stationary units) as manufactured by Marvin, Warroad, Minnesota or approved equal.

B. Description: Ultimate Double Hung G2 Bow unit, (and related stationary units) as manufactured by Marvin Windows and Door, Warroad, Minnesota.

17. Available in 3, 4, 5, and 6 wide assemblies

18. 6 degree angle

19. With and w/out head and seat board

C. Description: Ultimate Double Hung G2 Bay Assemblies as manufactured by Marvin, Warroad, Minnesota

20. Available 30 degree, 45 degree, and 90 degree

21. With and w/out head and seat board

2.2 Frame Description

A. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer; optional non finger-jointed Douglas Fir or finger-jointed core with non finger-jointed Douglas Fir veneer; optional non finger-jointed White Oak or finger-jointed with non finger-jointed Oak veneer; non finger-jointed Cherry or finger-jointed core with Cherry veneer; non finger-jointed Mahogany or finger-jointed core with non finger-jointed Mahogany veneer; non finger-jointed Vertical Grain Douglas Fir or finger-jointed with non finger-jointed Vertical Grain Douglas Fir veneer

22. Kiln-dried to moisture content no greater than 12 percent at the time of fabrication

23. Water repellant, preservative treated in accordance with ANSI/WDMA I.S.4.

B. Frame exterior aluminum clad with 0.050” (1.3mm) thick extruded aluminum

C. Frame thickness: 11/16” (17mm) head and jambs

D. Frame depth: Frame depth had an overall 5 21/32” jamb (144mm). 4 9/16” (116mm) jamb depth from the nailing fin plane to the interior face of the frame for new construction.

E. Sill assembly including the sill liner: 2 7/32” (56mm)

F. Factory-applied historic profile extrusion

2.3 Sash Description

A. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer; optional non finger-jointed Douglas Fir or finger-jointed core with non finger-jointed Douglas Fir veneer; optional non finger-jointed White Oak or finger-jointed with non finger-jointed Oak veneer; non finger-jointed Cherry or finger-jointed core with Cherry veneer; non finger-jointed Mahogany or finger-jointed core with non finger-jointed Mahogany veneer; non finger-jointed Vertical Grain Douglas Fir or finger-jointed with non finger-jointed Vertical Grain Douglas Fir veneer

24. Kiln-dried to moisture content no greater than 12 percent at the time of fabrication

25. Water repellant preservative treated with accordance with WDMA I.S.4.

B. Sash exterior aluminum clad with 0.050” (1.3mm) thick extruded aluminum

C. Sash thickness: 1 3/4” (44mm). Corner slot and tenoned.

D. Operable sash tilt to interior for cleaning or removal

E. Sash Options:

a. Standard: Equal Sash

b. Optional:

i. Unequal Sash

ii. Both Sash Stationary

F. Exterior Cope Profile: Putty

G. Interior Sash Sticking

26. Standard: Ogee

27. Optional: Square

2.4 Glazing

A. Select quality complying with ASTM C1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E2190.

B. Glazing method: Insulating glass

C. Glazing seal: Silicone bedding on interior and exterior

D. Glass fill: Air with capillary tubes, Argon

E. Glass Type: Clear, Bronze, Gray, Reflective Bronze, Tempered, Obscure, Laminated, Low E2 with or without Argon, Low E3 with or without Argon, Low E1, Low E2/ERS, Low E3/ERS

F. Triple-Pane Glass (TG): Triple-Pane Low E1, Triple-Pane Low E2, Triple-Pane Low E3.

2.5 Certified Mulling

A. Directional mull limits: 1 High (can be 2 or more units wide in an assembly)

28. Max mullion span is 71 ½" (1816mm); max tributary width 45 ¼" (1149mm)

29. CUDH NG 2.0 to CUDH NG 2.0 only

30. Certified to Design Pressure 50

B. Directional mull limits: 1 Wide (can be 2 or more units high in an assembly)

31. Max mullion span is 69 ¼" (1759mm); max tributary height 53 19/32" (1361mm)

32. CUDH NG 2.0 over CUDH NG 2.0 only

33. Certified to Design Pressure 50

C. Multiple Wide x Multiple High assemblies with 1" LVL

34. Max mullion span is 75 11/16" (1922mm); max tributary width is 45 1/4" (1149mm)

35. LVL must be in vertical mull

36. Certified to Design Pressure 50

D. Multiple Wide x Multiple High assemblies with 3/8" (10mm) MRF

37. Max mullion span is 83 11/16" (2125mm); max tributary width 45 1/4" (1149mm)

38. UDH NG 2.0 over UDH NG 2.0 only

39. Certified to Design Pressure 65

E. If any units have a lower design pressure the entire assembly will have the lowest design pressure of any unit or mull in the assembly.

2.6 Finish

A. Exterior: Aluminum clad. Fluoropolymer modified acrylic topcoat over a primer. Meets AAMA 2605 requirements.

40. Aluminum clad color options: Bahama Brown, Bronze, Cadet Gray, Cascade Blue, Cashmere, Clay, Coconut Cream, Ebony, Evergreen, Gunmetal, Hampton Sage, Pebble Gray, Sierra White, Stone White, Suede, Wineberry, Bright Silver (pearlescent), Copper (pearlescent), Liberty Bronze (pearlescent)

41. Custom colors: Contact your Marvin representative

B. Interior Finish options:

42. Prime: Factory-applied water-borne acrylic primer. Meets WDMA TM-11 requirements.

43. Painted Interior Finish. Factory-applied water-borne acrylic enamel. Available on Pine product only. Available in White or Designer Black. Meets WDMA TM-14 requirements.

44. Factory-applied water-borne acrylic enamel clear coat. Applied in two separate coats with light sanding between coats. Available on Pine, Mahogany, Mixed Grain Douglas Fir, Vertical Grain Douglas Fir, Cherry, or White Oak. Meets WDMA TM-14 requirements.

45. Factory-applied water-borne urethane stain. Stain applied over a wood (stain) conditioner. A water-borne acrylic enamel clear coat applied in two separate coats, with light sanding between coats, applied over the stain. Available on Pine, Mahogany Mixed Grain Douglas Fir, Vertical Grain Douglas Fir, Cherry, or White Oak. Colors available: Wheat, Honey, Hazelnut, Leather, Cabernet, and Espresso. Meets WDMA TM-14 requirements.

2.7 Hardware

A. Locking system that provides locking, unlocking, balancing, and tilting of the sash members

B. Lock Actuator Assembly

46. Material

Zinc die-cast

Available finishes: Satin Taupe, White, Bronze, Matte Black, Brass, Antique Brass, Polished Chrome, Satin Chrome, Oil Rubbed Bronze, Satin Nickel, or Unlacquered Brass

47. Design Feature and Components

To unlock unit, turn the handle 135°

Lock automatically locks when both sash are closed.

To tilt the bottom sash for wash mode, the bottom sash must be unlocked and raised a few inches; push the button on top of the lock handle and rotate the handle 180°

To tilt the top sash for wash mode, the bottom sash must be tilted and/or removed from the frame; lower the top sash to a good working height, retract the tilt latches on the top rail and tilt sash inward out of the frame

Custodial hardware colors: Satin Taupe, White, Bronze, Matte Black

C. Bottom Rail Lock Actuator Assembly - Lift Lock (Optional for Single Hung)

48. Material

a. Zinc die-cast
b. Available finishes: Satin Taupe, White, Bronze, Matte Black, Brass, Antique Brass, Polished Chrome, Satin Chrome, Oil Rubbed Bronze, Satin Nickel, or Unlacquered Brass

1. Design Feature and Components
   a. Does not contain Check Rail Lock Actuator Assembly or Strike Assembly
   b. Available in Traditional and Contemporary designs
   c. To unlock unit, lift the lock
   d. Lock automatically locks when bottom sash is closed.
   e. To tilt the bottom sash for wash mode, raise the bottom sash and manually retract the latches.
   f. Custodial hardware colors (available with traditional design): Satin Taupe, White, Bronze, Matte Black

D. Latches

49. Bottom sash latch

50. Material

i. Bolt: Glass-filled nylon
ii. Latch housing: Acetal
iii. Sash latch reinforcement: Stainless steel

51. Top sash tilt latch

a. Material

i. Bolt: Glass-filled nylon
ii. Latch housing: Glass-filled nylon

52. Latches accommodate travel of sash in frame, and tilting into wash-mode

53. Color: Beige (manual latch for Lift Lock also available in White and Black)

E. Strike Assembly

54. Material

Zinc die-cast strike plate and injection-molded Acetal housing and button

Available finishes: Satin Taupe, White, Bronze, Matte Black, Brass, Antique Brass, Polished Chrome, Satin Chrome, Oil Rubbed Bronze, Satin Nickel, or Unlacquered Brass

55. Strike assembly accommodates locking/unlocking

F. Balance System (balance system determined by sash weight)

56. Block & tackle balances

57. Hybrid spiral balances

G. Factory-applied Window Opening Control Device (WOCD) is a sash limiter that prevents the window opening more than 4" vertically. It meets ASTM F2090-17 specifications for window fall prevention standards. The system consists of two single action devices that allows for egress (when applied to an egress size window) by bypassing the 4" stop feature.

58. Material

a. WOCD device: zinc die-cast

b. WOCD strike plate: nylon

59. 2 WOCD's applied to each double and single hung window and will be recessed into the stiles of the top sash

60. Default color matches lock handle

61. Strike plate mounted to the bottom sash check rail

62. Strike plate color to match weather strip

H. Sash Limiter

63. Bottom Sash Limiter (Acetal)

64. Available on all operator configurations, and IZ3

Selectable bottom sash locations, 4", 6" or 8" Net Clear Opening (NCO)

Non-tilt hardware is default, and a sash removal tool is required in order to by-pass the Sash limiter for sash removal (tilt wash mode)

Standard application is factory applied. Available for field retrofit applications.

Color: Will align with the Exterior Weather Strip Package selection

65. Top Sash Limiter (Extruded PVC)

Available on all operator configurations, with the exception of Single Hung configurations. This includes IZ3

Standard application is factory applied. Available for field applications

Color: Will align with the Interior Weather Strip Package selection

2.8 Weather Strip

A. Operating units:

66. Jambs: Foam-filled bulb

67. Header: Continuous dual leaf

68. Bottom rail and check rail: Hollow bulb

B. Stationary units:

69. Jambs: Foam for picture units; foam-filled bulb for transom unit

70. Header and bottom rail: Hollow bulb

2.9 Jamb Extension

A. Jamb extensions are available for various wall thickness factory-applied up to a 14” (356mm) wide

B. Finish: Match interior frame finish

2.10 Head/Seat Board (For use with Bow and Bay units)

A. Factory-installed (head board) (seat board) for wall thickness indicated or required

B. Finish: Match interior finish

2.11 Insect Screen

A. Factory-installed full or half screen. Half screen covers sash opening.

71. Screen Mesh: Marvin Bright View™

72. Optional Screen mesh: Charcoal Aluminum Wire, Black Aluminum Wire, Bright Bronze Aluminum Wire, Bright Aluminum Wire

B. Screen Frame

73. Window frame height less than or equal to 54 ½” Aluminum Screen Frame. Option: Extruded Aluminum Screen Frame.

74. Window frame height greater than 54 ½” Extruded Screen Frame. Option: None.

C. Aluminum frame finish:

75. Color: Matches exterior aluminum clad color

2.12 Combination Storm Sash and Screen

A. Frame: Exterior extruded aluminum 0.050” (1.3mm) thick

B. Finish: Fluoropolymer modified acrylic topcoat applied over Fluoropolymer primer. Meets AAMA 2605 requirements

76. Finish: Stone White, Bahama Brown, Bronze, Pebble Gray

C. Hardware: Spring loaded locking pins to hold movable storm panel in position. Heavy metal clips to lock upper and lower storm panels together

D. Weather strip: Dual durometer weather strip on center cross rail seals against operating panel in closed position

E. Storm panel: Select quality glass in aluminum frame

77. Frame finish: Standard color: Stone White, Bahama Brown, Bronze, Pebble Gray

F. Insect screen panel:

78. Extruded aluminum surround

79. Screen mesh: Standard is Charcoal Aluminum Wire; Optional Marvin Bright View™.

80. Aluminum frame finish: Bronze, White

2.13 Simulated Divided Lites (SDL)

A. 5/8" (16mm) wide, 7/8" (22mm) wide, 1 1/8" (29mm) wide, 1 3/4" (44mm) wide, 1 15/16" (49mm) wide, 2 13/32" (61mm) wide with or w/out internal spacer bar

B. Exterior muntins: 0.050" (1.3mm) thick extruded aluminum

C. Interior muntins: Pine, Mixed Grain Douglas Fir, White Oak, Cherry, Mahogany Vertical Grain Douglas Fir

D. Muntins adhere to glass with closed-cell copolymer acrylic foam tape

E. Exterior sticking: Putty

F. Interior Sticking:

81. Standard: Ogee

82. Optional: Square

G. Patterns: Rectangular, diamond, custom lite cut

H. Finish – exterior matches exterior aluminum clad colors, interior matches interior wood species and color

2.14 Grilles-Between-the–Glass (GBG)

A. 23/32" (18mm) contoured aluminum bar

83. Exterior Colors: Exterior matches exterior aluminum clad colors. The exterior GBG color is designed to best match the Marvin aluminum clad color when used with Low E glass. The use of different types of glazing may alter the exterior GBG color appearance

84. Interior Colors: White is the default color. Optional colors: Bronze, Pebble Gray, Sierra, White

B. Optional flat aluminum spacer bar. Contact your Marvin representative.

C. Pattern: Rectangular, Cottage, Custom lite layout

2.15 Accessories and Trim

A. Installation Accessories:

85. Factory-installed vinyl nailing/drip cap

86. Installation brackets: 6 3/8” (162mm), 9 3/8” (283mm), 15 3/8” (390mm)

87. Masonry brackets: 6” (152mm), 10” (254mm)

B. Aluminum Extrusions:

88. Casing Profile: Brick Mould Casing (BMC), Flat Casing, Columbus Casing, Grayson Casing, Ridgeland Casing, Stratton Casing, Thorton Casing, Potter Casing

89. Aluminum clad Extrusion: Frame Expander, Jamb Extender, Mullion Cover, Mullion Expander, Subsill, Subsill End Cap and Lineal Cap

90. Finish: Fluoropolymer modified acrylic topcoat applied over primer. Meets AAMA 2605 requirements

91. Available in all exterior aluminum clad colors

C. Historic casing, factory-applied profiles: Ridgeland, Flat, BMC, Custom
   a. Subsills factory-applied

D. Exterior Sash Lugs – Standard Option

92. Standard Profile: Ogee

93. Available on Top Sash

94. Color: Available in all exterior clad color options

Color shall be the same as top sash clad color

95. Standard application is factory applied. Available for field applications

2.16 Lock Status Sensor (Optional)

A. Lock Status Sensor

1. Unit is factory-prepared for an integrated lock status sensor system. Sensor and Magnet mounted inside the boundaries of the overall frame size. Refer to **Lock Status Sensor Installation Instructions**.
2. Lock Status Sensor may be wired or wireless.
   a. For wired option, check with local codes on potential contractor requirements for low voltage networking connections.
   b. Wireless option available. Requires purchase of secondary transmitter for operation. Marvin will prep for this option.

3. For CUDH-NG 2.0 products, the sensor will always be located on the right-hand side of the check rail (from the exterior) for the bottom sash. For the top sash, the sensor will be located in the header parting stop of the frame on the right side (from the exterior).
4. Actuator (magnet) for the sensor will be located on the stile for the top sash. For the bottom sash, it will be integrated into the locking hardware on the same side as the sensor.

B. Lock Status Sensor Option Includes:

1. Sensor - Reed

2. Actuator – Neodymium Magnet

3. Actuator Cover (Casement and Double Only)
   a. Colors: Black: Bare, stain and designer black; White: PIF-White and Prime

Part 3 Execution

3.1 Examination

A. Verification of Condition: Before installation, verify openings are plumb, square and of proper dimensions as required in Section 01 71 00. Report frame defects or unsuitable conditions to the General contractor before proceeding.

B. Acceptance of Condition: Beginning on installation confirms acceptance of existing conditions.

3.2 Installation

A. Comply with Section 01 73 00.

B. Assemble and install window/door unit(s) according to manufacturer's instruction and reviewed shop drawing.

C. Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00 Joint Sealants.

D. Install accessory items as required.

E. Use finish nails to apply wood trim and mouldings.

3.3 Field Quality Control

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Unless otherwise specified, air leakage resistance tests shall be conducted at a uniform static pressure of 75 Pa (~1.57 psf). The maximum allowable rate of air leakage shall not exceed 2.3 L/sm^2 (~0.45 cfm/ft^2).

C. Unless otherwise specified, water penetration resistance testing shall be conducted per AAMA 502 and ASTM E1105 at 2/3 of the fenestration products design pressure (DP) rating using "Procedure B" – cyclic static air pressure difference. Water penetration shall be defined in accordance with the test method(s) applied.

3.4 Cleaning

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Leave windows and glass in a clean condition. Final cleaning as required in Section 01 74 00.

3.5 Protecting Installed Construction

A. Comply with Section 07 76 00.

B. Protecting windows from damage by chemicals, solvents, paint or other construction operations that may cause damage.

End of Section

SECTION 09 3000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work Included: The Work of this Section shall include, but not be limited to, the following:

1. Porcelain tile.
2. Ceramic tile.
3. Related accessories.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of product specified.

B. Shop Drawings: Submit Shop Drawings indicating tile patterns, accents and locations. Indicate widths of control joints in tile surfaces.

C. Samples for Initial Selection: Submit actual tiles showing full range of colors, textures, and patterns available. Include samples of grout.

D. Samples for Verification: Submit samples of each type of tile, color and texture required, 12 inches square, mounted and grouted. Submit each type of trim and stone thresholds in 6-inch lengths.

E. Certificates: Submit master grade certificates for each shipment and type of tile, signed by tile manufacturer and Installer.

F. Reports: Submit material test reports from a qualified independent testing laboratory to show compliance of tile and tile setting and grouting products with requirements indicated.

1. Product Data for adhesives and sealants including printed statement of VOC content.

1.4 QUALITY ASSURANCE

A. Source of Materials: Obtain each kind of material from a single source, for ceramic tile, setting materials and grout.

B. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project, for at least 5 years.

C. Code Compliance: Provide flooring applications that comply with minimum slip resistance ratings as required by the ADA and accessibility requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F or more in ceramic tiled areas during installation and for 7 days after completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers and Distributors : Subject to compliance with requirements, provide tile products from the following manufacturers (distributors):

1. American Olean.
2. Daltile.
3. Porcelanosa-USA.
4. Crossville, Inc.
5. Casalgrande Padana.
6. United States Ceramic Tile.
7. Architect approved equal.

B. Selected Products and Manufacturers: Refer to Interior Finish Schedule on the drawings for products and manufacturers.

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with materials for setting and grouting.

C. Colors, Textures, and Patterns: Provide tile, grout, and other products of colors, surface textures and other appearance characteristics as selected by the Architect from manufacturer's standard range.

1. Provide patterns and trims as indicated on Drawings.
2. Allow for two colors each of ceramic floor and wall tile.

D. Mounting: Where factory-mounted tile is required, provide back- or edge-mounted tile assemblies as standard with manufacturer and as recommended by the manufacturer for installation in wet areas.

2.3 PORCELAIN AND CERAMIC TILE

A. See Interior Finishes Schedule on the drawings.

2.4 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements of Division 7 Section "Sealants", including ASTM C 920 as referenced by Type, Grade, Class, and Uses.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints.

2.5 SETTING MATERIALS

A. Latex-Portland Cement Mortar: ANSI A118.4, with "Laticrete 3701" by Laticrete International,

Inc., or approved equal by American Olean Tile Co., Boiardi Products Corp., Bostik Construction Products Div. or Mapei Corp., combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.

1. Products shall have low VOC as defined in Division 1 Section “Sustainable Design Requirements”.

2.6 GROUTING MATERIALS

A. Latex-Portland Cement Grout: ANSI A118.6, colors as selected by Architect, from manufacturers full range of options for "Laticrete 3701" by Laticrete International, Inc., or approved equal by other named manufacturers, latex additive added at job site with dry grout mixture.

2.7 MISCELLANEOUS MATERIALS

A. Tile Cleaner: Product specifically acceptable to manufacturer of tile and grout manufacturer, as recommended by National Tile Promotion Federation, 112 North Alfred St., Alexandria, VA 22134 or Ceramic Tile Institute, 700 N. Virgil Ave., Los Angeles, CA 90029.

B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, stainless-steel, ASTM A 666, 300 Series exposed-edge material.

1. Basis of design:
   a. RENO-U Edge Strip by Schluter at floor transitions
   b. JOLLY by Schluter for all outside corners.

2.8 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers for accurate proportioning of materials and mixing procedures needed to produce mortars and grouts of uniform quality with optimum performance.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, for compliance with requirements for proper installation. Proceed with installation after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Blending: For tile with color variations, verify that tile has been blended in factory and packaged accordingly. If not factory blended, return to manufacturer.

B. Temporary Protective Coating: Where needed to prevent staining of exposed tile surfaces by grout, protect them with a continuous temporary protective coating, taking care not to coat unexposed tile surfaces:

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with applicable parts of ANSI A108 series of standards included under "American National Standard Specifications for the Installation of Ceramic Tile".

B. TCNA Installation Guidelines: TCNA "Handbook for Ceramic Tile Installation"; comply with TCNA installation methods indicated.

C. Extent: Extend tile into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Fitting: Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind exposed cut edges of tile for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern. Align joints when adjoining tiles are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.

1. Make joints between mounted tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent.

F. Grout: Grout tile to comply with the following standards:

1. For latex-portland cement grout, comply with ANSI A108.10.

3.4 FLOOR TILE INSTALLATION METHODS

A. Floor Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types:

1. Latex-Portland Cement Mortar: ANSI A108.5; for tile floors unless otherwise indicated.

a. Concrete Subfloors, Interior: TCNA F113.
b. Grout: Latex-Portland cement.

3.5 WALL TILE INSTALLATION METHODS

A. Install types of wall tile designated to comply with requirements indicated below for setting-bed methods, and TCNA installation methods related to subsurface and grout.

B. Latex-Portland Cement Mortar: ANSI A108.5.

1. Water-Resistant Tile Backing Panel: TCNA W244C.
2. Gypsum Board, Interior: TCNA W242.
3. Grout: Latex-portland cement.

3.6 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove latex-portland cement grout residue from tile as soon as possible.
2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal, wood and plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile.

C. Protection: Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral cleaner to tile walls and floors. Protect tile with kraft paper or other heavy covering to prevent staining.
2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces. Replace damaged or loose tile.

END OF SECTION 09 3000

SECTION 09 5113 - ACOUSTICAL PANEL CEILINGS

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

A. Section Includes:

1. Acoustical panel ceilings
2. Metal panel ceilings.
3. Suspension systems.
4. Edge trims and installation accessories.

1.3 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for each acoustical material, suspension system and other products required, including certified laboratory test reports and other data as may be required to show compliance with the Documents.

B. Samples: For each exposed product and for each color and texture specified, 6-inches- in size.

C. Samples: For components with factory-applied color finishes.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Method of attaching hangers to building structure.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
4. Minimum Drawing Scale: 1/4 inch = 1 foot.

B. Product Test Reports: For each acoustical tile ceiling, for tests performed by a qualified testing agency.

C. Evaluation Reports: For each acoustical tile ceiling suspension system and anchor and fastener type, from ICC-ES.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical ceilings similar in material, design, and extent to those indicated for Project.

B. Single-Source Responsibility: Obtain each type of acoustical ceiling panel and suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

C. Coordination of Work: Coordinate layout and installation of acoustic ceiling panels and suspension systems components with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, partition system and fire suppression system components.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. See structural drawings for requirements.

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.

a. Flame spread rating of 25 or less.

2. Smoke-Developed Index: 450 or less.

C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

D. FM approved Class 1 materials.

2.2 ACOUSTICAL PANELS, GENERAL

A. Source Limitations:

1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
2. Suspension System: Obtain each type from single source from single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.

C. Acoustical Panel Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.

2.3 ACOUSTICAL AND METAL PANELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong.
2. Celotex.
3. USG Interiors, Inc.; Subsidiary of USG Corporation.
4. Rulon.

B. Basis of design: See Interior Finishes Schedule on the drawings.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.

B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

a. Type: Postinstalled expansion or Postinstalled bonded anchors.
b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 for Class SC 1 service condition.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.

C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch-diameter wire.

D. Seismic Struts: Manufacturer's standard compression struts designed to accommodate lateral forces.

E. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical tiles in-place.

F. Hold-Down Clips (if required): Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.

2.5 METAL SUSPENSION SYSTEM

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. CertainTeed Corp.
3. Chicago Metallic Corporation.
4. USG Interiors, Inc.; Subsidiary of USG Corporation.

B. Basis of design: See Interior Finish Schedule on the drawings.

2.6 METAL EDGE MOLDINGS AND TRIM

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. CertainTeed Corp.
3. Chicago Metallic Corporation.
4. Fry Reglet Corporation.
5. Gordon, Inc.
6. USG Interiors, Inc.; Subsidiary of USG Corporation.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations complying with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical tile edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION OF SUSPENDED ACOUSTICAL TILE CEILINGS

A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
3. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
4. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
5. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
6. Do not attach hangers to steel deck tabs.
7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
8. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
9. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Install edge moldings and trim of type indicated at perimeter of acoustical panel ceiling area and where necessary to conceal edges of acoustical tiles.

1. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels in coordination with suspension system and exposed moldings and trim.

1. Fit adjoining panels to form flush, tight joints. Scribe and cut panels for accurate fit at borders and around penetrations through tile.
2. Hold panels field in compression by inserting leaf-type, spring-steel spacers between panels and moldings, spaced 12 inches o.c.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panels ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace panels and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113

SECTION 096500 - RESILIENT FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Work Included: The Work of this Section shall include, but not be limited to, the following:

1. LVT
2. Rubber base.
3. Rubber transition.
4. Rubber treads and risers

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of resilient accessory.

B. Samples: Submit samples of each type, color, of resilient material required, showing full-range of color. Include full-size samples and 12-inch long sections of accessories.

C. Maintenance Instructions: Submit manufacturer's recommended maintenance practices for each type of resilient accessory required.

1.04 QUALITY ASSURANCE

A. Manufacturer: Provide each type of resilient material and accessories as produced by a single manufacturer.

B. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

C. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

D. Mockup: Build mockup to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup for resilient floor at location directed by the Architect, including resilient base accessories.

a. Size: Minimum 100 sq. ft. for each type, color, and pattern.

1.05 PROJECT CONDITIONS

A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive flooring should be clean, fully enclosed and weathertight. The permanent HVAC must be fully operational, controlled and set at a minimum of 70 deg F for a minimum of 48 hours prior to, during, and after the installation. The flooring material should be conditioned in the same manner for at least 48 hours prior to the installation. Areas to receive flooring shall be adequately lighted to allow for proper inspection of the substrate, installation and seaming of the flooring, and for final inspection.

B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements

and fabrication schedule with construction progress to avoid construction delays.

1.06 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Resilient Flooring: Furnish quantity of recycled rubber flooring units equal to 10% of the amount installed
2. Rubber Base and Transitions: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.07 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1. Warranty Period: Five (5) year limited warranty commencing on Date of Substantial.

PART 2 - PRODUCTS

2.01 LVT

A. Basis of design: See Interior Finish Schedule on the drawings.

2.02 RESILIENT BASE

A. Basis of design product: Subject to compliance with requirements, provide products by:

1. Johnsonite; A Tarkett Company or equivalent.

B. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).

1. Group: I (solid, homogeneous).
2. Style and Location: as shown on drawings

C. Thickness: 0.125 inch.

D. Height: 4 inches.

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: preformed.

G. Inside Corners: preformed.

2.03 RESILIENT TRANSITIONS

A. Basis of design product: Subject to compliance with requirements, provide products by:

1. Johnsonite; A Tarkett Company or equivalent.

TR1: 1/4" to 1/8" Transition from Existing Epoxy to Rubber sheet flooring

CTA-XX-H - color – 20 Charcoal

2.04 RUBBER STAIR TREADS AND RISERS

A. Basis of design product: Subject to compliance with requirements, provide products by:

1. Johnsonite; A Tarkett Company or equivalent.

B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. Stair Treads and risers: ASTM F 2169.

1. Type: TP (rubber, thermoplastic).
2. Class: 2 (pattern; embossed, grooved, or ribbed).
3. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
4. Nosing Height: 1-5/8 inches.
5. Thickness: 1/8 inch with 3/16 inch raised nosing.
6. Size: Lengths and depths to fit each stair tread in one piece.

E. Landing Tile: Matching treads; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.

F. Colors and Patterns:

1. Color: 20 Charcoal.
2. Pattern: Hammered

2.05 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer and manufacturer's representative present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written instructions and with oversight by manufacturer's representative to ensure adhesion of floor coverings.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.

    a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of

water/1000 sq. ft. in 24 hours.

b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.03 FLOOR INSTALLATION, GENERAL

A. Acoustic underlayment: Install underlayment in strict adherence to the manufacturer's written installation instructions.

B. Comply with manufacturer's written instructions for installing flooring.

C. Scribe, cut, and fit flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

D. Extend flooring into toe spaces, door reveals, closets, and similar openings. Extend flooring to center of door openings.

3.04 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material. Preformed Corners: Install preformed corners before installing straight pieces.

3.05 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor coverings.

B. Perform the following operations immediately after completing floor covering installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor coverings from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION 096500

SECTION 09 9100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work Included: The Work of this Section shall include but not be limited to the following:

1. Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. Colors will be selected from manufacturer's full range of standard colors.
2. Walls, ceilings, doors, frames, wood trim, stairs, ladders and all other exposed elements.
3. Exposed pipes.
4. Exposed Ducts.
5. Exposed Conduit.
6. Exposed hangers.
7. Exposed steel.
8. Primed metal equipment.

B. Work Not Included:

1. Pre-Finished Items: Do not include painting when shop or factory finishing is specified for such items as elevator, and mechanical and electrical equipment.
2. Concealed Surfaces: Painting is not required on surfaces in concealed and generally inaccessible areas such as pipe spaces, duct shafts and elevator shafts.
3. Finished Metal Surfaces: Anodized aluminum, stainless steel, and similar finished metals will not require painting.
4. Operating Parts: Moving parts of mechanical and electrical devices, motor and fan shafts will not require painting.

C. Labels: Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material.

B. Samples: Submit samples for review of each required color and texture. Identify materials used on samples.

1. Submit paint samples on 12 x 12-inch hardboard. Resubmit samples until they are acceptable.
2. Apply full-coat finish samples on at least 60 sq. ft. of wall and ceiling areas, where directed, until required sheen, color and texture are obtained under finished lighting. Do not proceed with painting until samples are approved.

C. Mock-ups:

1. Mock-up typical painted areas, including walls, doors, railings etc., extent and location as directed by the Architect.

1.4 QUALITY ASSURANCE

A. Single Source Responsibility: Provide primers produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

B. Coordination of Work: Review other Sections of these specifications for shop primers, to ensure compatibility of total coatings system. Upon request from other trades, furnish information on finish materials, to ensure that compatible prime coats are used.

C. Applicator: A firm with not less than 5 years of successful experience in the application of specified materials.

1.5 DELIVERY AND STORAGE

A. Deliver materials in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

1. Name or title of material.
2. Fed. Spec. number, if applicable.
3. Manufacturer's name, stock number and date of manufacture.
4. Contents by volume, for major pigment and vehicle constituents.
5. Thinning and application instructions.
6. Color name and number.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.

1. Protect paint materials from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from use of paints.

1.6 JOB CONDITIONS

A. Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees Fahrenheit and 90 degrees Fahrenheit, unless otherwise permitted by paint manufacturer's instructions.

B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees Fahrenheit and 95 degrees Fahrenheit, unless otherwise permitted by paint manufacturer's instructions.

C. Do not apply paint when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Benjamin Moore and Co.
2. PPG Industries, Pittsburgh Paints.
3. The Sherwin-Williams Company.
4. Tnemec.

B. Proprietary names of colors or materials are not intended to imply that products of named manufacturers are required to the exclusion of equivalent products of other manufacturers.

2.2 MATERIALS

A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
2. Non-flat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Floor Coatings: VOC not more than 100 g/L.
5. Flat Topcoat Paints: VOC content of not more than 50 g/L.
6. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
7. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
8. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
9. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
10. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.

C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:

    a. Acrolein.
    b. Acrylonitrile.
    c. Antimony.
    d. Benzene.
    e. Butyl benzyl phthalate.
    f. Cadmium.
    g. Di (2-ethylhexyl) phthalate.
    h. Di-n-butyl phthalate.
    i. Di-n-octyl phthalate.
    j. 1,2-dichlorobenzene.
    k. Diethyl phthalate.
    l. Dimethyl phthalate.
    m. Ethylbenzene.
    n. Formaldehyde.
    o. Hexavalent chromium.
    p. Isophorone.
    q. Lead.
    r. Mercury.
    s. Methyl ethyl ketone.
    t. Methyl isobutyl ketone.
    u. Methylene chloride.
    v. Naphthalene.
    w. Toluene (methylbenzene).

x. 1,1,1-trichloroethane.
y. Vinyl chloride.

D. Primers and Undercoaters: Provide primers and undercoaters recommended by the finish coating manufacturer for suitability with the substrate and compatibility with finish coats.

E. Color Pigments: Pure, non-fading, to suit substrates and service.

2.3 PROJECTION SCREEN COATING

A. Product: Screen Goo Projection Screen Coating (High Contrast Finish Coating).

B. A water-based non-hazardous acrylic optical paint.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas and conditions of work and notify Contractor in writing of conditions detrimental to proper painting. Proceed with work after unsatisfactory conditions have been corrected.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, or conditions detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning in accordance with paint manufacturer's instructions and as herein specified.

1. Provide barrier coats over incompatible primers or remove and reprime as required.
2. Remove hardware, accessories, lighting fixtures, and similar items not to be field-painted, or provide suitable protection. Remove items if necessary, for painting of items or adjacent surfaces.
3. Clean surfaces to be painted. Remove oil and grease prior to other cleaning. Be sure that cleaning materials do not fall onto newly-painted surfaces.

B. Cementitious Materials: Remove efflorescence, chalk, dust, and dirt. Correct alkalinity before application of paint. Flash patch joints and defects in precast concrete plank ceilings.

C. Wood: Scrape, clean and seal knots before priming. After priming, fill imperfections with plastic wood-filler. Sandpaper smooth when dried.

D. Ferrous Metals: Clean unfinished ferrous surfaces of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning. Touch-up defective shop-prime coats with shop primer.

E. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Remove surface film and, if necessary, strain material before using.

3.4 APPLICATION

A. General: Apply primers, undercoaters and finish paints in accordance with manufacturer's directions. Use techniques best suited for substrate and type of material being applied.

1. Provide colors, surface treatments, and finishes, as scheduled or as selected by the Architect.
2. Provide finish coats which are compatible with prime paints used.
3. Apply additional coats when undercoats show through final coat of paint, until paint film is of uniform finish, color and appearance, including edges, corners, crevices, welds, and fasteners.
4. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.
5. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.
6. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.
7. Finish exterior doors on tops, bottoms and side edges same as exterior faces, unless otherwise indicated.
8. Sand lightly between each succeeding enamel or varnish coat.
9. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted.

B. Scheduling Painting: Apply first-coat material to surfaces that have been prepared for painting as soon as practicable after preparation. Allow sufficient time for proper drying. Do not recoat until paint feels dry and firm.

C. Minimum Coating Thickness: Apply materials to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

D. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces; this also applies to elevators.

E. Prime Coats: Apply prime coat on material which is required to be painted or finished, and which has not been prime coated by others. Recoat primed and sealed surfaces where there is evidence of defects in first coat, to assure a finish coat without defects.

F. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

G. Completed Work: Match approved samples for color and texture. Repaint work not in compliance with specified requirements.

H. Painted Signs: Provide painted signs of size, style, color and content as indicated. These signs shall be painted by a qualified sign painter.

3.5 CLEAN-UP AND PROTECTION

A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

1. Upon completion of painting work, clean paint-spattered surfaces. Remove spattered paint by proper methods, with care not to scratch or otherwise damage finished surfaces.

B. Protection: Protect work of other trades against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting.

1. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
2. At completion of work of other trades, touch-up and restore all damaged or defaced surfaces.

3.6 EXTERIOR PAINT SCHEDULE

A. General: Provide the following exterior paint systems as manufactured by Tnemec Inc., or approved equal.

B. Masonry:
1. Primer: 1 coat SW Loxon Concrete & Masonry Primer
2. Finish: 2 coats SW Loxon Self Cleaning Acrylic Coating
1 coat SW Anti-graffiti coating B97C00150

C. Wood Shake Siding
1. Primer: Spot Prime as needed to bare substrate with SW Exterior Oil Base Primer
2. Finish: 2 coats SW Duration Exterior Acrylic Coating Flat

D. Exterior Galvanized Ferrous Metal
1. First Coat: Moore IMC Acrylic Metal Primer (M04),
2. Second Coat: Moore IMC Urethane Alkyd Enamel (M22).

E. Exterior Existing Prepainted Painted Steel, for Overcoat Painted Finish in Metallic:

a. Surface Preparation: Water Blast 5000 psi and SSPC-SP3 Power Tool Clean.
b. One Coat:
1) Tnemec 394 Omnithane at 3.0 to 3.5 mils DFT.
2) PPG PMC Amerlock 400 Hi-Build Epoxy at 3.0 to 4.0 mils DFT.
3) RD Coatings Elasto Metal at 3.0 mils DFT.
4) International Interplus 356 at 3.0 to 5.0 mils DFT.

c. And One Coat:
1) Tnemec 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.
2) PPG PMC Amerlock 400 at 3.0 to 4.0 mils DFT.
3) RD Coatings Elasto Metal at 7.0 mils DFT.
4) International Intergard 475 HS at 5.0 to 10.0 mils DFT.

d. And One Coat:
1) Tnemec 73 Endura-Shield at 3.0 to 5.0 mils DFT.
2) PPG PMC Amercoat 450H at 3.0 mils DFT.
3) RD Coatings MurCryl at 3.0 to 4.0 mils DFT.
4) International Interthane 990 HS at 3.0 to 4.0 mils DFT.

3.7 INTERIOR PAINT AND COATING SCHEDULE

A. General: Provide the following interior paint systems as manufactured by Sherwin Williams, or approved equal.

B. Interior Ferrous Metal:
1. Semi-Gloss:
a. Primer: 1 coat SW Harmony Zero VOC Interior Latex Primer.
b. Finish: 2 coats SW Harmony Zero VOC Interior Latex Paint

C. Interior Masonry (to be painted):

1. Semi-gloss Finish/Acrylic Latex:
    a. Block Filler: 1 coat SW ProMar Block Filler & Finish
    b. Primer: 1 coat SW Harmony Zero VOC Interior Latex Primer
    c. Finish: 2 coats SW Harmony Zero VOC Interior Latex Paint.

D. Interior Drywall:
1. Flat Finish / Interior Acrylic Latex (ceilings):
    a. Primer: 1 coat SW Zero VOC Interior Latex Primer.
    b. Finish: 2 coats SW Harmony Zero VOC Interior Latex Paint.

2. Eggshell Finish/Vinyl Acrylic Latex:
    a. Primer: 1 coat SW Harmony Zero VOC Interior Latex Primer
    b. Finish: 2 coats SW Harmony Zero VOC Interior Latex Paint.

E. Wood:
1. Semi-Gloss Finish/Vinyl Acrylic Latex:
    a. Primer: 1 coat SW Harmony Zero VOC Interior Latex Primer
    b. Finish: 2 coats SW Harmony Zero VOC Interior Latex Paint

F. COLORS
1. See Interior Finish Schedule on the drawings or to be determined by the Architect.

END OF SECTION 09 9100

SECTION 10 1400 – SIGNAGE

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. Work Included: The work of this section shall include but not be limited to the following:

1. Code required signage
2. Exterior building signage.

1.3 SUBMITTALS

A. Product Data: Submit product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

B. Shop Drawings: Shop drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.

1. Provide message list, including details of wording and lettering layout, at least half size. Include full-size details of special graphics.
2. Furnish full-size templates for cutout letters, numbers, and other graphic symbols.
3. Provide setting drawings, templates, and directions for installing anchor bolts and other anchors to be installed as a unit of Work in other Sections.
4. Provide full size layout submittal for each sign, with an accurate photocopy or pen plot, and showing typeface, proposed color, material and all other required information.
5. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.

C. Samples: Submit samples of each sign component for initial selection of color, pattern, and surface texture as required and for verification of compliance with requirements indicated.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.

B. Installer/Fabricator Qualifications: Engage an experienced installer who is also the manufacturer of the signs and who has completed manufacturer and installation of signs similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

C. Design Criteria: The Contract Documents indicate size, profiles, and dimensional requirements of signs and are based on the specific type and model indicated. Signs by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

D. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

1. Exit and Fire Safety Signage: Provide graphic content, style and sign copy that complies with the requirements of the ADA and local authorities having jurisdiction for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

1.5 PROJECT CONDITIONS

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

1.6 DELIVERY AND HANDLING

A. Handle signs carefully to prevent breakage, surface abrasion, denting, soiling, and other defects. Comply with the manufacturer's written handling instructions for unloading components subject to damage.

B. Inspect sign components for damage on delivery.

1. Do not install damaged sign components.
2. Repair minor damage to signs, provided the finished repair is equal in all respects to the original work and is approved by Architect; otherwise, remove and replace damaged sign components.

1.7 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.

1. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
2. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

B. Coordinate delivery time so signs can be installed within 24 hours of receipt at Project site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thicknesses indicated, with a minimum flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 deg F, and of the following general types:

B. Aluminum Sheet: Provide aluminum sheet of alloy and temper recommended by the sign manufacturer for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 209 for 5005-H15.

C. Aluminum Extrusions: Provide aluminum extrusions of alloy and temper recommended by the sign manufacturer for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 221 for 6063-T5.

D. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.

E. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

F. Miscellaneous Products: Types as shown or scheduled or as recommended by fabricator for use indicated.

1. Where directed, provide double sided tape as selected by the Architect to match conditions indicated.
2. Silicon Adhesive: Provide Type required to adhere and support sign loads and as recommended by sign component manufacturers.

2.2 EXTERIOR SIGNAGE

A. Custom CNC routed aluminum letters for exterior installation with pins

1. Size: 10' tall
2. Font: **Arial Black**
3. Thickness: 0.080" aluminum with 3" returns
4. Mounting: Letters to be pin mounted on an exterior masonry wall
5. Finish: Painted with PPG Matthews paints with a satin finish

2.3 PANEL SIGNS

A. Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.

B. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

C. Engraved Copy: Machine-engrave letters, numbers, symbols, and other graphic devices into sign panel on the face indicated to produce precisely formed copy, incised to uniform depth. Use high-speed cutters mechanically linked to master templates in a pantographic system or equivalent process capable of producing characters of the style indicated with sharply formed edges.

2.4 FRAMES

A. Provide aluminum frame with plexiglass glazing where required. Provide frames in size, as required to accommodate certificate. Locate as indicated by Architect.

2.5 SIGN SCHEDULE

A. Refer to drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.

B. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

1. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
2. Silicone-Adhesive Mounting: Use liquid silicone adhesive recommended by the sign manufacturer to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape where recommended by the sign manufacturer to hold the sign in place until the adhesive has fully cured.
3. Shim Plate Mounting: Provide 1/8-inch-thick concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach the plate with fasteners and anchors suitable for secure attachment to the substrate. Attach panel sign units to the plate using the method specified above.
4. Fastened Mounting: Provide acrylic sign with 4 (four) pre-drilled and countersunk holes, at each corner or locations indicated, and where other mounting methods are not practicable. Fasten the sign with mechanical screws in methods recommended by the sign manufacturer and approved by the Architect.

3.2 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Architect.

END OF SECTION 10 1400

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

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. Fire extinguishers.
2. Semi-recessed mounted cabinets for portable fire extinguisher.
3. Mounting brackets for fire extinguishers.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of product included in this Section. For fire extinguisher cabinets include roughing-in dimensions and details showing mounting methods, relationship of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, panel style and materials.

B. Samples: Submit samples of each required finish on metal of same gage as used for production. Where normal color variations are to be expected, include 2 or more units in each sample set showing limits of variation.

1. Unless otherwise directed by the Architect, provide one full-size cabinet assembly (of each different type specified) indicative of the material, types and finishes specified.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain extinguishers and cabinets from one source from a single manufacturer.

B. Coordination: Verify that cabinets are sized to accommodate type and capacity of extinguishers indicated, including any extinguishers provided by Owner under separate Contract.

C. UL-Listed Products: Fire extinguishers shall be UL listed with UL listing mark for type, rating, and classification of extinguisher.

D. FM-Listed Products: Fire extinguishers approved by Factory Mutual Research Corporation for type, rating, and classification of extinguisher with FM marking.

E. Fire-Rated Cabinets: UL listed with UL listing mark with fire-resistance rating of wall where it is installed.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate size of fire-protection cabinets to ensure that type and capacity of hose valves indicated are accommodated.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturer: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. J.L. Industries.
2. Larsen's Manufacturing Co.
3. Potter-Roemer, Inc.

B. Basis of design: Potter Roemer "Alta" cabinets, Model 7052, stainless steel.

1. Fire extinguisher: Model 3010, 10 lb., UL-rated 4A:60B:C, multi-purpose dry chemical extinguishers.

2.2 FIRE EXTINGUISHERS

A. General: Provide fire extinguishers for each extinguisher cabinet and other locations indicated, in color and finishes selected by Architect from manufacturer's standard which comply with requirements of governing authorities.

1. Fill and service extinguishers to comply with requirements of governing authorities and manufacturer.
2. Abbreviations indicated below to identify extinguisher types related to UL classification and rating system and not necessarily to type and amount of extinguishing material contained in extinguisher.

2.3 FIRE PROTECTION CABINETS

A. General: Provide fire protection cabinets where indicated, of suitable size for housing fire extinguishers and hose valve assemblies of types and capacities indicated.

B. Semi-recessed Cabinet Type: Provide cabinets, semi-recessed in walls of sufficient depth to accommodate door construction.

1. Cabinet Construction: Manufacturer's heavy gauge, stainless steel box. Cabinet door shall cover the flange of the steel tub, with concealed door hinge and pin. Weld joints and grind smooth.

C. Door Material and Construction: Manufacturer's standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.

1. Door Material: Cabinet door of thickness as indicated; fabricated from one piece sheet metal set in steel frame, with continuous steel hinge. Fabricate door and frame with finish to match cabinet box. Provide full laminated safety glass infill for doors, unless otherwise indicated.

2. Identification: Provide fire extinguisher cabinet doors with die-cut letters applied vertically

reading the words “FIRE EXTINGUISHER”, in color as indicated below:

a. Die-Cut Letter Color: As selected by the Architect.

D. Door Hardware: Provide manufacturer’s standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handles.

2.4 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with galvanized finish.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in letter decals applied to mounting surface.

a. Orientation: Vertical, unless otherwise indicated.

2.5 MATERIALS

A. General: Factory finish fire extinguishers, brackets and cabinets to comply with NAAMM “Metal Finishes Manual” after products are assembled. Protect finishes with plastic or paper covering, prior to shipment.

B. Stainless Steel: ASTM A 666, Type 304. Finish: No. 4 directional satin finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for thickness and framing for cabinets to verify cabinet depth and mounting prior to cabinet installation. Examine rough-in for cabinets to verify locations of connections prior to cabinet installation.

B. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Follow manufacturer's printed instructions for installation.

B. Install units in locations and at heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities. Fasten cabinets to structure, square and plumb.

1. For units to be fully recessed, prepare recesses in walls for cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

a. Provide surface mounted fire extinguisher cabinets for assemblies mounted to precast concrete walls, and other locations indicated.

2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

D. Identification: Apply decals or pressure-sensitive vinyl letters at locations indicated.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust cabinet doors that do not swing or operate freely. Refinish or replace cabinets and doors damaged during installation.

B. Provide final protection and maintain conditions that ensure that cabinets and doors are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 10 4400

SECTION 12 3661 – SOLID SURFACE COUNTERTOPS

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

A. Section includes the following:

1. Solid surface countertops.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets and other items installed in countertops.

C. Samples for Verification:

1. Solid surfaces, 8 by 10 inches, for color, pattern, and surface finish, with one sample having the specified edge.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer / fabricator.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver countertops and trim until painting and similar operations that could damage countertops have been completed in installation areas. If countertops must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install countertops and trim until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where countertops and trim are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Established Dimensions: Where countertops and trim are indicated to fit to other construction, establish dimensions for areas where countertops are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 SOLID-SURFACE-MATERIAL COUNTERTOPS AND WINDOW SILLS

A. Solid polymer components:

1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
2. Superficial damage to a depth of 0.010 inch shall be repairable by sanding and/or polishing.

B. Thicknesses: As noted on the drawings.

C. Edge treatment: As noted on the drawings, or if not noted, slightly eased.

D. Product Basis of Design: DuPont Building Innovations, Corian.

1. Color: Designer white.

E. Fabrication: Fabricate tops and sills in one piece with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

1. Fabricate with loose backsplashes for field assembly.

2.2 FABRICATION

A. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch over base cabinets.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

C. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

B. Before installing countertops, examine shop-fabricated work for completion and complete work as required, including removal of packing and back priming.

3.2 INSTALLATION

A. Grade: Install countertops and sills to comply with same grade as item to be installed.

B. Assemble countertops and sills and complete fabrication at Project site to the extent that it was not completed in the shop.

1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items.

C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.

D. Install countertops and sills level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

E. Scribe and cut countertops and sills to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

F. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Install countertops and sills with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Secure backsplashes to tops and to walls with adhesive.
3. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective countertops and trim, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean countertops and trim on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 12 3661

ENVIRONMENTAL CONNECTION INC
A Vertical Technologies Corporation

REPORT

Pre-Renovation
Environmental Building Assessment
South Ward Senior Center
870 South Broad Street
Trenton, New Jersey 08611

Prepared For:

Clarke Caton Hintz
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June 27, 2024

EC Project #: 24127-01

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Section 1.0 Executive Summary

Environmental Connection, Inc., (EC) was contracted by Clarke Caton Hintz to conduct an Environmental Building Assessment of the South Ward Senior Center located at 870 South Broad Street in Trenton, New Jersey. The purpose of the assessment was to identify hazardous building materials likely to be impacted by planned renovation activities at the site. As such, the assessment consisted of an inspection for suspect Asbestos Containing Materials (ACM), screening for Lead Based Paint (LBP), and bulk sampling of suspect Polychlorinated Biphenyl (PCB) containing materials. The assessment was performed by a team of EC's United States Environmental Protection Agency (USEPA) accredited Asbestos Building Inspectors and State of New Jersey Department of Health certified Lead Inspector/Risk Assessor on April 29, 2024 and April 30, 2024.

During the inspection, EC collected 89 samples of 31 suspect asbestos containing materials for analysis. Laboratory analysis revealed that **nine (9)** of the identified suspect materials contain greater than 1% asbestos content by weight, the USEPA established threshold for classification as an asbestos containing material. Five (5) materials were not accessible for sampling and were therefore assumed to be asbestos containing.

The lead-based paint screening was performed utilizing a handheld X-Ray Fluorescence (XRF) Lead in Paint Analyzer. The following surfaces/components were identified as containing lead-based paint during the screening.

- Plaster Walls
- Metal Radiators
- Built-In Wood Closets
- Ceramic Wall Tile Glazing
- Metal Walls in Cells
- Metal Doors in Cell Area
- Wood Windows
- Metal Railing
- Metal Door Frames in Cell Areas

EC also identified and collected samples of two (2) suspect Polychlorinated biphenyl (PCB) containing materials. Laboratory analysis revealed that the none of the sampled materials contain PCBs in concentrations greater than 50 parts per million, the threshold for classification as a PCB containing material established by the USEPA.

The following sections detail the findings of the assessment.

Section 2.0 Asbestos Containing Material Inspection

Asbestos is a naturally occurring mineral categorized into two (2) groups, Serpentine and Amphibole, based on morphology. The Serpentine group is comprised of Chrysotile asbestos, the Amphibole group consists of Amosite, Crocidolite, Tremolite, Anthophyllite, and other forms of asbestos. Asbestos was incorporated into more than 3,600 products for its fire resistance, tensile strength, inertness, chemical binding properties, and durability. Due to enhanced durability, asbestos containing products remain present in the built environment decades after installation. Public awareness of the hazards associated with airborne asbestos fibers increased through the 1970s and culminated in the adoption of the Asbestos Hazard Emergency Response Act (AHERA), signed into law (40 CFR, Part 763) in 1986. Briefly, AHERA established Federal regulations pertaining to inspections to identify asbestos containing materials, appropriate response actions, and Asbestos Management Plan requirements.

Samples of each identified suspect asbestos containing material were collected in sufficient quantities as mandated by 40 CFR, Part 763.86. All samples were submitted to EMSL Analytical, Inc., for analysis utilizing Polarized Light Microscopy (PLM) via EPA Method 600/R-93/116. EMSL Analytical, Inc., is accredited by the American Industrial Hygiene Association (AIHA) and participates in the National Voluntary Laboratory Accreditation Program (NVLAP).

Emergency Regulatory Adoptions to New Jersey Administrative Codes (N.J.A.C.) 8:60 and 12:120, Volume 38, Issue 11, dated June 5, 2006, mandate that non-friable organically bound (NOB) suspect asbestos containing materials be analyzed via Transmission Electron Microscopy (TEM) analysis when PLM analysis yields results of less than 1% asbestos by weight or "None Detected" for asbestos fibers. TEM uses electron imaging to identify asbestos fibers at a higher magnification.

Results for PLM and TEM analysis methods are reported in percentage by weight. According to the USEPA, materials containing greater than 1% asbestos content by weight are classified as asbestos containing materials. Materials containing <1% asbestos content by weight are classified as "Trace" asbestos containing materials. Trace asbestos containing materials are not regulated by the USEPA but are regulated by the United States Department of Labor Occupational Safety and Health Administration (OSHA). The following table summarizes the analytical results.

Table 1 – Asbestos Containing Material Analytical Results Summary
South Ward Senior Center
870 South Broad Street
Trenton, New Jersey

ID #	Material	PLM Results	PLM Point Count Results	TEM Results
01	Wall Plaster Rough Coat*	2% Chrysotile	<0.25% Chrysotile	N/A
01-A	Wall Plaster Skim Coat	None Detected	N/A	N/A
02	Multi- Layer Flooring (Tile 1)	None Detected	N/A	None Detected
02-A	Multi- Layer Flooring (Mastic associated with Tile 1)	None Detected	N/A	Not Analyzed
02-B	**Multi- Layer Flooring (Tile 2)**	**2% Chrysotile**	N/A	**N/A**
02-C	**Multi- Layer Flooring (Mastic associated with Tile 2)**	**None Detected**	N/A	**1.8% Chrysotile**
02-D	Leveling Compound	None Detected	N/A	N/A
02-E	Mastic associated with Leveling Compound*	None Detected	N/A	0.58% Chrysotile
02-F	Backing Material*	None Detected	N/A	0.33% Chrysotile
03	**9" x 9" Gray Floor Tile**	**2% Chrysotile**	N/A	**N/A**
03-A	**Mastic associated with Gray Floor Tile**	**None Detected**	N/A	**5.5% Chrysotile**
03-B	Backing associated with Gray Floor Tile	None Detected	N/A	N/A
04	**12" x 12" Cream Floor Tile**	**2% Chrysotile**	N/A	**N/A**
04-A	Mastic associated with Cream Floor Tile*	None Detected	N/A	0.20 % Chrysotile
05	9" x 9" Black Floor Tile	None Detected	N/A	None Detected
05-A	Mastic associated with Black Floor Tile*	None Detected	N/A	0.30 % Chrysotile
06	**Window Glazing**	**None Detected**	N/A	**2.0 % Anthophyllite**

Table 1 – Asbestos Containing Material Analytical Results Summary South Ward Senior Center 870 South Broad Street Trenton, New Jersey				
ID #	**Material**	**PLM Results**	**PLM Point Count Results**	**TEM Results**
07	**Masonry Caulk**	**3% Chrysotile**	N/A	**N/A**
08	Parge Coating	None Detected	N/A	N/A
09	Basement Ceiling Plaster (Rough Coat)	None Detected	N/A	N/A
09-A	Basement Ceiling Plaster (Skim Coat)	None Detected	N/A	N/A
10	**12" x 12" Gray Floor Tile**	**2% Chrysotile**	N/A	**N/A**
10-A	**Mastic associated with Gray Floor Tile**	**None Detected**	N/A	**5.5% Chrysotile**
11	2' x 2' Dot Groove Ceiling Tile	None Detected	N/A	N/A
12	2' x 4' Dot Furrow Ceiling Tile	None Detected	N/A	N/A
13	Brick	None Detected	N/A	N/A
14	Mortar associated with Brick	None Detected	N/A	N/A
15	Ceiling Plaster (Rough Coat)	None Detected	N/A	N/A
15-A	Ceiling Plaster (Skim Coat)	None Detected	N/A	N/A
16	Grout associated with Ceramic Wall Tile	Assumed		
16-A	Wet Bed/Adhesive associated with Ceramic Wall Tile	Assumed		
17	Grout associated with Ceramic Floor Tile	Assumed		
17-A	Wet Bed/Adhesive associated with Ceramic Floor Tile	Assumed		
18	Drywall	None Detected	N/A	N/A
18-A	Joint Compound	None Detected	N/A	N/A
19	Furnace	Assumed		

N/A – Not Applicable

Nine (9) of the materials sampled were found to contain greater than 1% asbestos content by weight. Five (5) trace asbestos containing materials were also identified during the assessment. These materials are not considered Asbestos Containing Materials per the USEPA definition. However, in accordance with Part 1926.1101 (OSHA Asbestos Standard), EC recommends that engineering controls be employed during removal/disturbance of these materials to avoid potential asbestos fiber release. **Five (5)** assumed asbestos containing materials were identified during the assessment. The assumed asbestos containing materials should be handled and disposed of as asbestos containing materials until samples collected by an accredited asbestos building inspector and laboratory analytical results from an accredited laboratory prove otherwise.

EC's inspectors quantified each suspect material as part of the inspection. The location and approximate total quantity of identified asbestos containing materials are included in Table 2 below. The location and quantity of identified trace asbestos containing materials are included in Table 3.

Note: The quantities listed in Tables 2 and 3 are representative of total quantity of each material observed at the listed location. As such, the listed quantity may differ from the quantity specified for abatement as only materials necessary to facilitate renovation activities will be removed.

Table 2 – Asbestos Containing Material Quantities South Ward Senior Center 870 South Broad Street Trenton, New Jersey		
Material	**Location**	**Quantity**
Multi-Layer Flooring and associated Mastic	Multi-Purpose Room	770 SF
	Multi-Purpose Room Closet 1	12 SF
	Multi-Purpose Room Closet 2	16 SF
	Hall to Stairs	84 SF
	Hall to Dining Room	56 SF
	Bathroom Vestibule	88 SF
	Kitchen	120 SF
	Women's Bathroom	112 SF
	Classroom	780 SF
	Total	**2,038 SF**
9" x 9" Gray Floor Tile and Mastic	Second Floor - Office 4	210 SF
	Second Floor - Office 5	58 SF
	Total	**268 SF**
12" x 12" Cream Vinyl Floor Tile	Second Floor – Cell 1	90 SF
	Second Floor – Cell 2	90 SF
	Second Floor – Cell 3	90 SF
	Second Floor – Cell 4	90 SF
	Total	**360 SF**
Window Glazing	Exterior	550 LF
	Total	**550 LF**
Masonry Caulk	Exterior	750 LF
	Total	**750 LF**
12"x12" Gray Vinyl Floor Tile and Mastic	Basement Stairwell Landing	126 SF
	Basement Game Room	273 SF
	Total	**399 SF**
Grout and Wet Bed/Adhesive associated with Ceramic Wall Tile (Assumed)	Multi-Purpose Room Bathroom	120 SF
	Office Bathroom	120 SF
	Second Floor Office 3 Bathroom	110 SF
	Second Floor Office 4 Bathroom	160 SF
	Second Floor Tub Room	100 SF
	Third Floor Bathroom	360 SF
	Total	**970 SF**
Grout and Wet Bed associated with Ceramic Floor Tile (Assumed)	Multi-Purpose Room Bathroom	32 SF
	Office Bathroom	12 SF
	Second Floor Office 3 Bathroom	30 SF
	Second Floor Office 4 Bathroom	60 SF
	Second Floor Tub Room	24 SF
	Third Floor Bathroom	200 SF

Table 2 – Asbestos Containing Material Quantities South Ward Senior Center 870 South Broad Street Trenton, New Jersey		
Material	**Location**	**Quantity**
	Total	**358 SF**
Furnace (Assumed)	Boiler Room	40 CF
	Total	**40 CF**

SF – Square Feet | LF – Linear Feet | CF – Cubic Feet

Table 3 – Trace Asbestos Containing Material Quantity South Ward Senior Center 870 South Broad Street Trenton, New Jersey		
Material	**Location**	**Quantity**
Wall Plaster Rough Coat	Throughout Building	29,440 SF
	Total	**29,440 SF**
Mastic and Backing Material associated with Multi-Layer Floor Tile	Multi-Purpose Room	770 SF
	Multi-Purpose Room Closet 1	12 SF
	Multi-Purpose Room Closet 2	16 SF
	Hall to Stairs	84 SF
	Hall to Dining Room	56 SF
	Bathroom Vestibule	88 SF
	Kitchen	120 SF
	Women's Bathroom	112 SF
	Classroom	780 SF
	Total	**2,038 SF**
Mastic associated with Cream Floor Tile	Second Floor – Cell 1	90 SF
	Second Floor – Cell 2	90 SF
	Second Floor – Cell 3	90 SF
	Second Floor – Cell 4	90 SF
	Total	**360 SF**
Mastic associated with Black Floor Tile	Second Floor Office 5	32 SF
	Total	**32 SF**

SF – Square Feet

The Asbestos Analytical Reports and Chain of Custody Records for the recent inspection are included in Appendix I.

Section 3.0 Lead Based Paint Screening

Lead based paint (LBP) was used extensively before 1960 because it was more durable than other paints available at the time. Due to the potential hazards of lead in paint, especially to children, lead-based paint was banned in 1977.

The United States Department of Housing and Urban Development (HUD), USEPA, and State of New Jersey Administrative Code (N.J.A.C.) 5:17, define lead-based paint as a coating which contains greater than 0.5% lead by weight or greater than 1.0 milligram of lead per square centimeter (mg/cm^2). The disturbance or dislocation of lead-based paint or lead containing paint from building materials may cause lead dust to be released into the building's atmosphere, thereby creating a potential health hazard to workers and/or building occupants. To mitigate health hazards, demolition and other construction related work is governed by the United States Department of Labor, Occupational Safety and Health Administration, (OSHA). Under OSHA's regulation, 29 CFR, Part 1926.62, "Lead in Construction Standard", construction work is defined as work for alteration and/or repair, including demolition or salvage of structures, removal or encapsulation of materials containing lead.

EC utilized a portable X-Ray Fluorescence (XRF) device manufactured by Viken Detection, Inc., of Burlington, Massachusetts (Serial #2320), to detect the presence of lead within the paint films tested. The device bombards the testing surface with X-ray energy, generated by a radioactive source. The energy excites electrons in the testing surface causing them to emit energy. The energy emitted by the electrons is analyzed by the XRF device. Based on analysis of the energy emitted by the electrons, the device is able to determine the presence and concentration of an element, e.g. Lead, in the testing surface. Results are reported in milligrams per square centimeter. New Jersey Administrative Code (N.J.A.C.) 5:17, defines any film which contains greater than 1.0 milligram of lead per square centimeter (mg/cm^2) as lead-based paint.

The screening was performed to determine if any of the paint films in the proposed renovation/repair work areas are lead-based. EC grouped similar building components with like paint histories for testing purposes. The complete lead-based paint screening data sheets are included in Attachment II of this report. Identified lead-based paint covered components are summarized below.

- Plaster Walls
- Metal Radiators
- Built-In Wood Closets
- Ceramic Wall Tile Glazing
- Metal Walls in Cells
- Metal Doors in Cell Area
- Wood Windows
- Metal Railing
- Metal Door Frames in Cell Areas

Paint films associated with the above referenced components were found to contain lead in concentrations greater than 1.0 mg/cm^2. As such, each are classified as lead-based paint. Per OSHA, paint films containing any detectable level of lead are classified as lead containing paint films

Note: OSHA'S "Lead Safe Work Practices in Construction" standard applies to all renovation activities that may impact materials classified as "lead based" or "lead containing".

Section 4.0 Polychlorinated Biphenyl Inspection

PCBs were widely utilized between 1929 and 1977 in the United States as coolants and lubricants in electrical equipment (i.e., capacitors, transformers, light ballasts), plasticizers, surface coatings, inks, adhesives, flame retardants, pesticides, paints and carbonless duplicating paper, for their insulating properties, chemical stability and relative non-flammability. PCB products were banned in the United States in 1977. However, many PCB containing products remain in service to this day. The United States Environmental Protection Agency (USEPA) has classified PCBs as a possible human carcinogen and regulates disposal of materials that contain greater than 50 parts per million (ppm) PCBs under the Toxic Substances Control Act (TSCA) and PCB regulations, 40 CFR, Part 761.

EC inspected the building for the presence of caulk and glazing suspected of containing Polychlorinated Biphenyls (PCBs). EC collected samples of suspect PCB containing caulks utilizing a razor knife. A minimum of one (1) gram of material was collected and placed directly into a sampling jar. The sample was then labeled and submitted to the laboratory for analysis. Samples were analyzed by EMSL Analytical, Inc., of Cinnaminson, New Jersey, in accordance with USEPA SW-846 Method 8082. PCB laboratory analytical reports and associated Chains of Custody documentation are attached within Appendix IV.

None of the samples contained PCBs in concentrations greater than the 50 parts per million thresholds established by the USEPA. The reporting limit indicates the lowest detectable concentration for the analysis method utilized. The reporting limit is determined by the original mass of the sample and is therefore a dependent variable of the samples mass. Aroclor was the proprietary/commercial name given to PCB containing mixtures. The mixtures were further defined by their unique composition. The four (4) digit number following Aroclor refers to the composition of the mixture. The first two (2) digits denote the number of carbon atoms present in the two phenyl rings. The second two (2) digits indicate the mass percentage of Chlorine atoms in the mixture.

Table 4 – Polychlorinated Biphenyl Analytical Results
Clark Caton Hintz
South Ward Senior Center

Material	Analyte	Reporting Limit	Results
Exterior Window Glazing	Aroclor 1016	0.25 mg/Kg	None Detected
	Aroclor 1221	0.25 mg/Kg	None Detected
	Aroclor 1232	0.25 mg/Kg	None Detected
	Aroclor 1242	0.25 mg/Kg	None Detected
	Aroclor 1248	0.25 mg/Kg	None Detected
	Aroclor 1254	0.25 mg/Kg	None Detected
	Aroclor 1260	0.25 mg/Kg	None Detected
	Aroclor 1262	0.25 mg/Kg	None Detected
	Aroclor 1268	0.25 mg/Kg	None Detected
Exterior Window Caulk	Aroclor 1016	0.25 mg/Kg	None Detected
	Aroclor 1221	0.25 mg/Kg	None Detected
	Aroclor 1232	0.25 mg/Kg	None Detected
	Aroclor 1242	0.25 mg/Kg	None Detected
	Aroclor 1248	0.25 mg/Kg	None Detected
	Aroclor 1254	0.25 mg/Kg	None Detected
	Aroclor 1260	0.25 mg/Kg	None Detected

Table 4 – Polychlorinated Biphenyl Analytical Results Clark Caton Hintz South Ward Senior Center			
Material	**Analyte**	**Reporting Limit**	**Results**
	Aroclor 1262	0.25 mg/Kg	None Detected
	Aroclor 1268	0.25 mg/Kg	None Detected

Section 5.0 Project Limitations/Disclaimers

The Client should be advised that EC made every effort, inclusive of selective demolition, to access and sample all suspect hazardous materials that may be impacted by the planned renovation activities. Where present, these materials were sampled in accordance with applicable Federal and State Regulations. EC does not claim that hidden materials may not still be present and inaccessible on, within, or beneath the various building components. EC does, however, assure that due diligence was observed in performing sampling as generally recognized by industry practices.

Section 6.0 Conclusions/Recommendations

The Environmental Building Assessment performed at 870 South Broad Street in Trenton, New Jersey identified **nine (9)** confirmed asbestos containing materials, five (5) assumed asbestos containing materials and multiple lead-based paint covered building components. Based on the results of the inspection, EC offers the following recommendations.

- Consult the inspection report prior to all renovation activities.
- Employ a USEPA accredited Asbestos Project Designer to develop Plans and Specifications for the removal or repair of asbestos containing materials where required to facilitate renovations.
- Utilize a New Jersey Department of Labor licensed Asbestos Contractor to perform all asbestos abatement activities in accordance with federal and New Jersey requirements for asbestos abatement in public buildings.
- Perform air monitoring in accordance with federal and New Jersey requirements for asbestos abatement. EC recommends daily air monitoring during abatement activities in addition to clearance air monitoring at the completion of abatement.
- Should a previously unidentified suspect asbestos containing material be uncovered during renovation, activities should cease until the composition of the material is determined through sampling and analysis in accordance with 40 CFR, Part 763, inclusive of utilizing USEPA accredited Asbestos Building Inspectors to collect the appropriate number of samples and an AIHA accredited laboratory that is a NVLAP participant.
- Utilize Lead Safe Work Practices as defined by OSHA.

Should you have any questions or require additional information, please contact the undersigned at your convenience.

Respectfully Submitted:
ENVIRONMENTAL CONNECTION, INC.

Dominick Dercole
Project Manager

APPENDIX I

ASBESTOS CONTAINING MATERIALS SAMPLING AND ANALYTICAL DATA

EMSL Analytical, Inc.

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Customer ID: ENVI65
Customer PO:
Project ID:

Attn: Info
Environmental Connection, Inc.
120 North Warren Street
Trenton, NJ 08608

Phone: (609) 392-4200
Fax:
Collected: 4/30/2024
Received: 4/30/2024
Analyzed: 6/03/2024

Proj: CCH / ACM Inspection / South Ward Senior Center / 24127-01

Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 01DD043024 ***Lab Sample ID:*** **042408863-0001**
Sample Description: Fl 1 Office/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

Client Sample ID: 01ADD043024 ***Lab Sample ID:*** **042408863-0002**
Sample Description: Fl 1 Office/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	3.0%	97.0%	None Detected	

Client Sample ID: 02DD043024 ***Lab Sample ID:*** **042408863-0003**
Sample Description: Ladies Room/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

Client Sample ID: 02ADD043024 ***Lab Sample ID:*** **042408863-0004**
Sample Description: Ladies Room/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	3.0%	97.0%	None Detected	

Client Sample ID: 03DD043024 ***Lab Sample ID:*** **042408863-0005**
Sample Description: Multi-purpose Room/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

Client Sample ID: 03ADD043024 ***Lab Sample ID:*** **042408863-0006**
Sample Description: Multi-purpose Room/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	5.0%	95.0%	None Detected	

Client Sample ID: 04DD043024 ***Lab Sample ID:*** **042408863-0007**
Sample Description: Fl 2 Office/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 04ADD043024 ***Lab Sample ID:*** **042408863-0008**
Sample Description: FI 2 Office/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	3.0%	97.0%	None Detected	

Client Sample ID: 05DD043024 ***Lab Sample ID:*** **042408863-0009**
Sample Description: FI 2 Office at End/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 05ADD043024 ***Lab Sample ID:*** **042408863-0010**
Sample Description: FI 2 Office at End/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	5.0%	95.0%	None Detected	

Client Sample ID: 06DD043024 ***Lab Sample ID:*** **042408863-0011**
Sample Description: FI 2 Cell Wall/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

Client Sample ID: 06ADD043024 ***Lab Sample ID:*** **042408863-0012**
Sample Description: FI 2 Cell Wall/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	98.0%	**2% Chrysotile**	
400 PLM Pt Ct	6/03/2024	Brown	3.0%	97.0%	**<0.25% Chrysotile**	

Client Sample ID: 07DD043024 ***Lab Sample ID:*** **042408863-0013**
Sample Description: FL 3 Office/Plaster Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

Client Sample ID: 07ADD043024 ***Lab Sample ID:*** **042408863-0014**
Sample Description: FL 3 Office/Scratch

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/03/2024	Brown	2.0%	98.0%	None Detected	

Client Sample ID: 37DD043024 ***Lab Sample ID:*** **042408863-0015**
Sample Description: FI 1/Multi-layer VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan	0.0%	100.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Tan	0.0%	100.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 37ADD043024 ***Lab Sample ID:*** **042408863-0016**
Sample Description: FI 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Yellow	2.0%	98.0%	None Detected	
TEM Grav. Reduction	5/06/2024				Insufficient Material	

Client Sample ID: 37ADD043024-Vinyl Floor Tile 2 ***Lab Sample ID:*** **042408863-0016A**
Sample Description: FI 1/Multi-layer VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Red	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: 37ADD043024-Mastic 2 ***Lab Sample ID:*** **042408863-0016B**
Sample Description: FI 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Black	0.0%	98.2%	**1.8% Chrysotile**	

Client Sample ID: 37ADD043024-Leveler ***Lab Sample ID:*** **042408863-0016C**
Sample Description: FI 1/Leveler

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/Blue	30.0%	70.0%	None Detected	

Client Sample ID: 37ADD043024-Mastic 3 ***Lab Sample ID:*** **042408863-0016D**
Sample Description: FI 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Brown	0.00%	99.42%	**0.58% Chrysotile**	

Client Sample ID: 37ADD043024-Backing ***Lab Sample ID:*** **042408863-0016E**
Sample Description: FI 1/Backing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Black	60.0%	40.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Brown/Black	0.00%	99.67%	**0.33% Chrysotile**	

Client Sample ID: 38DD043024 ***Lab Sample ID:*** **042408863-0017**
Sample Description: FI 1/Multi-layer VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 38ADD043024 ***Lab Sample ID:*** **042408863-0018**
Sample Description: FI 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Yellow	0.0%	100.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 38ADD043024-Vinyl Floor Tile 2 ***Lab Sample ID:*** **042408863-0018A**
Sample Description: FI 1/Multi-layer VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024				Positive Stop (Not Analyzed)	

Client Sample ID: 38ADD043024-Mastic 2 ***Lab Sample ID:*** **042408863-0018B**
Sample Description: FI 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	

Client Sample ID: 38ADD043024-Leveler ***Lab Sample ID:*** **042408863-0018C**
Sample Description: FI 1/Leveler

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/Blue	30.0%	70.0%	None Detected	

Client Sample ID: 38ADD043024-Mastic 3 ***Lab Sample ID:*** **042408863-0018D**
Sample Description: FI 1/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 38ADD043024-Backing ***Lab Sample ID:*** **042408863-0018E**
Sample Description: FI 1/Backing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	70.0%	30.0%	None Detected	

Client Sample ID: 09DD043024 ***Lab Sample ID:*** **042408863-0019**
Sample Description: FI 2 Cells/9"x9" Grey VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: 09ADD043024-Mastic ***Lab Sample ID:*** **042408863-0020**
Sample Description: FI 2 Cells/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Black	0.0%	94.5%	**5.5% Chrysotile**	

Client Sample ID: 09ADD043024-Backing ***Lab Sample ID:*** **042408863-0020A**
Sample Description: FI 2 Cells/Backing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Black	45.0%	55.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 10DD043024 ***Lab Sample ID:*** **042408863-0021**
Sample Description: FI 2 Cells/9"x9" Grey VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024				Positive Stop (Not Analyzed)	

Client Sample ID: 10ADD043024-Mastic ***Lab Sample ID:*** **042408863-0022**
Sample Description: FI 2 Cells/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	

Client Sample ID: 10ADD043024-Backing ***Lab Sample ID:*** **042408863-0022A**
Sample Description: FI 2 Cells/Backing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	50.0%	50.0%	None Detected	

Client Sample ID: 11DD043024 ***Lab Sample ID:*** **042408863-0023**
Sample Description: FL 2 Office/12"x12" Cream VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: 11ADD043024 ***Lab Sample ID:*** **042408863-0024**
Sample Description: FL 2 Office/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Black	0.00%	99.80%	**0.20% Chrysotile**	

Client Sample ID: 12DD043024 ***Lab Sample ID:*** **042408863-0025**
Sample Description: FL 2 Office/12"x12" Cream VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024				Positive Stop (Not Analyzed)	

Client Sample ID: 12ADD043024 ***Lab Sample ID:*** **042408863-0026**
Sample Description: FL 2 Office/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	

Client Sample ID: 13DD043024 ***Lab Sample ID:*** **042408863-0027**
Sample Description: FL 2 Cells/9"x9" Black VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Black	0.0%	100.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 13ADD043024 ***Lab Sample ID:*** **042408863-0028**
Sample Description: FL 2 Cells/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	3.0%	97.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Black	0.00%	99.70%	**0.30% Chrysotile**	

Client Sample ID: 14DD043024 ***Lab Sample ID:*** **042408863-0029**
Sample Description: FL 2 Cells/9"x9" Black VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	0.0%	100.0%	None Detected	

Client Sample ID: 14ADD043024 ***Lab Sample ID:*** **042408863-0030**
Sample Description: FL 2 Cells/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Black	40.0%	60.0%	None Detected	

Client Sample ID: 15DD043024 ***Lab Sample ID:*** **042408863-0031**
Sample Description: Exterior (Old Windows)/Window Glazing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	2.0%	98.0%	None Detected	
TEM Grav. Reduction	5/06/2024	Tan/White	0.0%	98.0%	**2.0% Anthophyllite**	

Client Sample ID: 16DD043024 ***Lab Sample ID:*** **042408863-0032**
Sample Description: Exterior (Old Windows)/Window Glazing

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	2.0%	98.0%	None Detected	

Client Sample ID: 17DD043024 ***Lab Sample ID:*** **042408863-0033**
Sample Description: Exterior (Old Windows)/Masonry Caulk

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/Tan	2.0%	95.0%	**3% Chrysotile**	

Client Sample ID: 18DD043024 ***Lab Sample ID:*** **042408863-0034**
Sample Description: Exterior (Old Windows)/Masonry Caulk

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024				Positive Stop (Not Analyzed)	

Client Sample ID: 19DD043024 ***Lab Sample ID:*** **042408863-0035**
Sample Description: Boiler Door/Parge Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 20DD043024 ***Lab Sample ID:*** **042408863-0036**
Sample Description: Basement/Parge Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 21DD043024 ***Lab Sample ID:*** **042408863-0037**
Sample Description: Basement/Parge Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 22DD043024 ***Lab Sample ID:*** **042408863-0038**
Sample Description: Basement/Parge Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 23DD043024 ***Lab Sample ID:*** **042408863-0039**
Sample Description: Basement/Parge Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 24DD043024 ***Lab Sample ID:*** **042408863-0040**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 24ADD043024 ***Lab Sample ID:*** **042408863-0041**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

Client Sample ID: 25DD043024 ***Lab Sample ID:*** **042408863-0042**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 25ADD043024 ***Lab Sample ID:*** **042408863-0043**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 26DD043024 ***Lab Sample ID:*** **042408863-0044**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 26ADD043024 ***Lab Sample ID:*** **042408863-0045**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

Client Sample ID: 27DD043024 ***Lab Sample ID:*** **042408863-0046**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 27ADD043024 ***Lab Sample ID:*** **042408863-0047**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

Client Sample ID: 28DD043024 ***Lab Sample ID:*** **042408863-0048**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 28ADD043024 ***Lab Sample ID:*** **042408863-0049**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

Client Sample ID: 29DD043024 ***Lab Sample ID:*** **042408863-0050**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 29ADD043024 ***Lab Sample ID:*** **042408863-0051**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

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EMSL Order ID: 042408863
Customer ID: ENVI65
Customer PO:
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 30DD043024 ***Lab Sample ID:*** **042408863-0052**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	

Client Sample ID: 30ADD043024 ***Lab Sample ID:*** **042408863-0053**
Sample Description: Basement/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown	3.0%	97.0%	None Detected	

Client Sample ID: 31DD043024 ***Lab Sample ID:*** **042408863-0054**
Sample Description: Basement Stairs/12"x12" Grey VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: 31ADD043024 ***Lab Sample ID:*** **042408863-0055**
Sample Description: Basement Stairs/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Red/Black	5.0%	95.0%	None Detected	Result includes a small amount of inseparable attached material
TEM Grav. Reduction	5/06/2024	Red/Black	0.0%	94.5%	**5.5% Chrysotile**	

Client Sample ID: 32DD043024 ***Lab Sample ID:*** **042408863-0056**
Sample Description: Basement Stairs/12"x12" Grey VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/02/2024			Positive Stop (Not Analyzed)		

Client Sample ID: 32ADD043024 ***Lab Sample ID:*** **042408863-0057**
Sample Description: Basement Stairs/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/02/2024	Red/Black	2.0%	98.0%	None Detected	Result includes a small amount of inseparable attached material

Client Sample ID: 33DD043024 ***Lab Sample ID:*** **042408863-0058**
Sample Description: Kitchen/2'x2' Dot/Groove CT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/White	80.0%	20.0%	None Detected	

Client Sample ID: 34DD043024 ***Lab Sample ID:*** **042408863-0059**
Sample Description: Kitchen/2'x2' Dot/Groove CT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/White	80.0%	20.0%	None Detected	

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 35DD043024 ***Lab Sample ID:*** **042408863-0060**
Sample Description: FI 1 - End of Cells/2'x4' Dot/Fissure CT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/White	80.0%	20.0%	None Detected	

Client Sample ID: 36DD043024 ***Lab Sample ID:*** **042408863-0061**
Sample Description: FI 1 - End of Cells/2'x4' Dot/Fissure CT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/White	80.0%	20.0%	None Detected	

Client Sample ID: 39DD043024 ***Lab Sample ID:*** **042408863-0062**
Sample Description: Exterior/Brick

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Red	0.0%	100.0%	None Detected	

Client Sample ID: 40DD043024 ***Lab Sample ID:*** **042408863-0063**
Sample Description: Exterior (Garage)/Brick

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Red	0.0%	100.0%	None Detected	

Client Sample ID: 41DD043024 ***Lab Sample ID:*** **042408863-0064**
Sample Description: Exterior/Mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray/Tan	0.0%	100.0%	None Detected	

Client Sample ID: 42DD043024 ***Lab Sample ID:*** **042408863-0065**
Sample Description: Exterior (Garage)/Mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 43DD043024 ***Lab Sample ID:*** **042408863-0066**
Sample Description: FI 1 Storage by Cells/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	3.0%	97.0%	None Detected	

Client Sample ID: 43ADD043024 ***Lab Sample ID:*** **042408863-0067**
Sample Description: FI 1 Storage by Cells/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

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Customer ID: ENVI65
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Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 44DD043024 ***Lab Sample ID:*** **042408863-0068**
Sample Description: FI 1 Storage by Cells/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	5.0%	95.0%	None Detected	

Client Sample ID: 44ADD043024 ***Lab Sample ID:*** **042408863-0069**
Sample Description: FI 1 Storage by Cells/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 45DD043024 ***Lab Sample ID:*** **042408863-0070**
Sample Description: FI 2 Office/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	3.0%	97.0%	None Detected	

Client Sample ID: 45ADD043024 ***Lab Sample ID:*** **042408863-0071**
Sample Description: FI 2 Office/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 46DD043024 ***Lab Sample ID:*** **042408863-0072**
Sample Description: FI 2 Bathroom/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	3.0%	97.0%	None Detected	

Client Sample ID: 46ADD043024 ***Lab Sample ID:*** **042408863-0073**
Sample Description: FI 2 Bathroom/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Tan/White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 47DD043024 ***Lab Sample ID:*** **042408863-0074**
Sample Description: FL 3 Bathroom/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/Gray	0.0%	100.0%	None Detected	

Client Sample ID: 47ADD043024 ***Lab Sample ID:*** **042408863-0075**
Sample Description: FL 3 Bathroom/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

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Summary Test Report for Asbestos Analysis of Bulk Material

Client Sample ID: 48DD043024 ***Lab Sample ID:*** **042408863-0076**
Sample Description: FI 3 Office/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	2.0%	98.0%	None Detected	

Client Sample ID: 48ADD043024 ***Lab Sample ID:*** **042408863-0077**
Sample Description: FI 3 Office/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	

Client Sample ID: 49DD043024 ***Lab Sample ID:*** **042408863-0078**
Sample Description: FI 3 Meeting Room/Ceiling Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Gray	4.0%	96.0%	None Detected	

Client Sample ID: 49ADD043024 ***Lab Sample ID:*** **042408863-0079**
Sample Description: FI 3 Meeting Room/Ceiling Skim

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	0.0%	100.0%	None Detected	Inseparable paint / coating layer included in analysis

Client Sample ID: 50DD043024 ***Lab Sample ID:*** **042408863-0080**
Sample Description: Basement Ceiling (Hall)/Drywall

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/White	20.0%	80.0%	None Detected	

Client Sample ID: 50ADD043024 ***Lab Sample ID:*** **042408863-0081**
Sample Description: Basement Ceiling (Hall)/Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	10.0%	90.0%	None Detected	

Client Sample ID: 51DD043024 ***Lab Sample ID:*** **042408863-0082**
Sample Description: Basement Ceiling (Hall)/Drywall

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	Brown/White	20.0%	80.0%	None Detected	

Client Sample ID: 51ADD043024 ***Lab Sample ID:*** **042408863-0083**
Sample Description: Basement Ceiling (Hall)/Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	5/01/2024	White	10.0%	90.0%	None Detected	

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EMSL Order ID:	042408863
Customer ID:	ENVI65
Customer PO:	
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material

Analyst(s):

Alex Francois	PLM (1) 400 PLM Pt Ct (1)
Brett Teixeira	PLM (1)
Daniel Blake	TEM Grav. Reduction (10)
Emilie Kalbach	PLM (53)
Kiara Stefanik	PLM (3)
Trinh Tran	PLM (32)

Reviewed and approved by:

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This is a summary report; official reports are available on LabConnect or upon request and relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, PA ID# 68-00367, LA #04127

Report amended: 06/04/202400:33:45 Replaces initial report from: 05/02/202415:02:37 Reason Code: Client-Additional Analysis

OrderID: 042408863

042408863

ENVIRONMENTAL CONNECTION INC

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24 APR 30 PM 7:06

Survey Form 04

CLIENT : CCH
PROJECT : ACM INSPECTION
BUILDING : South Ward Senior Center

DATE : 4/30/24
TECHNICIAN: D Dercole/ M Haviland
PROJECT # : 24127-01

ASBESTOS ANALYSIS OF BULK MATERIALS via EPA600/R-93/116 USING PLM

MATERIAL DESCRIPTION	SAMPLE	HOMO. AREA ID	ROOM NUMBER	PLM or TEM NOB
PLASTER Skim/Scratch	01/01A DD043024	01/01A	FL-1 OFFICE	PLM
PLASTER Skim/Scratch	02/02A DD043024	01/01A	LADIES ROOM	PLM
PLASTER Skim/Scratch	03/03A DD043024	01/01A	MULTIPURPOSE ROOM	PLM
PLASTER Skim/Scratch	04/04A DD043024	01/01A	FL-2 OFFICE	PLM
PLASTER Skim/Scratch	05/05A DD043024	01/01A	FL-2 OFFICE & END	PLM
PLASTER Skim/Scratch	06/06A DD043024	01/01A	FL-2 CELL WALL	PLM
PLASTER Skim/Scratch	07/07A DD043024	01/01A	FL-3 OFFICE	PLM
MULTI LAYER VFT/MASTIC	37/37A DD043024	02/02A	FL-1 [redacted]	PLM→TEM
MULTI LAYER VFT/MASTIC	38/38A DD043024	02/02A	FL-1 [redacted]	PLM
9"X9" GREY VFT/MASTIC	08/08A DD043024	03/03A	FL-2 CELLS	PLM→TEM
9"X9" GREY VFT/MASTIC	10/10A DD043024	03/03A	FL-2 CELLS	PLM
12"X12" CREAM VFT/MASTIC	11/11A DD043024	04/04A	FL-2 OFFICE	PLM→TEM
12"X12" CREAM VFT/MASTIC	12/12A DD043024	04/04A	FL-2 OFFICE	PLM
9"X9" BLACK VFT/MASTIC	13/13A DD043024	05/05A	FL-2-CELLS	PLM→TEM
9"X9" BLACK VFT/MASTIC	14/14A DD043024	05/05A	FL-2 CELLS	PLM
WINDOW GLAZING	15 DD043024	06	EXTERIOR (2ND FLOOR)	PLM→TEM
WINDOW GLAZING	16 DD043024	06	EXTERIOR (2ND FLOOR)	PLM

CHECK EACH BOX THAT APPLIES

- ☐ Point Count Sample if <10% Asbestos by Weight
- ☒ NOB's - TEM if Sample(s) are None Detected or <1%
- ☒ Stop at First Positive Homo. Area ID Code
- ☐ 6 hr. TAT
- ☐ 24 hr. TAT
- ☐ 5 Day TAT
- ☒ Other 48 hour

CHAIN OF CUSTODY RECORD (CCR)

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME	REASON FOR CCR
[signature]	4/30/24	1400	Daniel Stapp	4-30-24	5:30pm	

COMMENTS: WT.

missing 31/31A-32/32A (99) NS

120 North Warren Street • Trenton, New Jersey 08608 • tel: 609-392-4200 • fax: 609-392-1216

1-3

OrderID: 042408863

042408863

ENVIRONMENTAL CONNECTION INC

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Survey Form 04

CLIENT : CCH
PROJECT : ACM INSPECTION
BUILDING : South Ward Senior Center

DATE : 4/30/24
TECHNICIAN: D Dercole/ M Haviland
PROJECT # : 24127-01

ASBESTOS ANALYSIS OF BULK MATERIALS via EPA600/R-93/116 USING PLM

MATERIAL DESCRIPTION	SAMPLE	HOMO. AREA ID	ROOM NUMBER	PLM or TEM NOB
MASONRY CAULK	17 DD043024	07	EXTERIOR OLD WINDOWS	PLM→TEM
MASONRY CAULK	18 DD043024	07	EXTERIOR OLD WINDOWS	PLM
PARGE COATING	19 DD043024	08	BOILER ROOM	PLM
PARGE COATING	20 DD043024	08	BASEMENT	PLM
PARGE COATING	21 DD043024	08	BASEMENT	PLM
PARGE COATING	22 DD043024	08	BASEMENT	PLM
PARGE COATING	23 DD043024	08	BASEMENT -	PLM
CEILING PLASTER	24/24A DD043024	09/09A	BASEMENT	PLM
CEILING PLASTER	25/25A DD043024	09/09A	BASEMENT	PLM
CEILING PLASTER	26/26A DD043024	09/09A	BASEMENT	PLM
CEILING PLASTER	27/27A DD043024	09/09A	BASEMENT	PLM
CEILING PLASTER	28/28A DD043024	09/09A	BASEMENT	PLM
CEILING PLASTER	29/29A DD043024	09/09A	BASEMENT	PLM
CEILING PLASTER	30/30A DD043024	09/09A	BASEMENT	PLM
12"X12" GRAY VFT/MASTIC	31/31A DD043024	10/10A	BASEMENT STAIRS	PLM→TEM
12"X12" GRAY VFT/MASTIC	32/32A DD043024	10/10A	BASEMENT STAIRS	PLM

CHECK EACH BOX THAT APPLIES

- ☐ Point Count Sample if <10% Asbestos by Weight
- ☒ NOB's - TEM if Sample(s) are None Detected or <1%
- ☒ Stop at First Positive Homo. Area ID Code
- ☐ 6 hr. TAT
- ☐ 24 hr. TAT
- ☐ 5 Day TAT
- ☒ Other 48hr

CHAIN OF CUSTODY RECORD (CCR)

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME	REASON FOR CCR
	4/30/24	1400				

COMMENTS:

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2-3

OrderID: 042408863

042408863

ENVIRONMENTAL CONNECTION INC

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RECEIVED EMSL CINNAMINSON, NJ 24 APR 30 PM 7:06

Survey Form 04

CLIENT : CCH
PROJECT : ACM INSPECTION
BUILDING : South Ward Senior Center

DATE : 4/30/24
TECHNICIAN: D Dercole/ M Haviland
PROJECT # : 24127-01

ASBESTOS ANALYSIS OF BULK MATERIALS via EPA600/R-93/116 USING PLM

MATERIAL DESCRIPTION	SAMPLE	HOMO. AREA ID	ROOM NUMBER	PLM or TEM NOB
2'x2' dot/gram CT	33 DM43024	11	Kitchen	PLM
2'x2' dot/gram CT	34 DM43024	11	Kitchen	PLM
2'x4' dot/Foam CT	35 DM43024	12	Fl-1 - End of cells	PLM
2'x4' dot/Foam CT	36 DM43024	12	Fl-1 End of cells	PLM
BRICK	39 DM43024	13	Exterior	PLM
BRICK	40 DM43024	13	Exterior (Annex)	PLM
MORTAR	41 DM43024	14	Exterior	PLM
MORTAR	42 DM43024	14	Exterior (Annex)	PLM
Ceiling Plaster/Skim	43/43A DM43024	15/15A	Fl-1 Storage by cells	PLM
Ceiling Plaster/Skim	44/44A DM43024	15/15A	Fl-1 Storage by cells	PLM
Ceiling Plaster/Skim	45/45A DM43024	15/15A	Fl-2 Office	PLM
Ceiling Plaster/Skim	46/46A DM43024	15/15A	Fl-2 - Bathroom	PLM
Ceiling Plaster/Skim	47/47A DM43024	15/15A	Fl 3 Bathroom	PLM
Ceiling Plaster/Skim	48/48A DM43024	15/15A	Fl-3 Office	PLM
Ceiling Plaster/Skim	49/49A DM43024	15/15A	Fl-3 Meeting Room	PLM
Drywall / Joint Compound	50/50A DM43024	18/18A	Basement Ceiling (Hall)	PLM
Drywall / Joint Compound	51/51A DM43024	18/18A	Basement Ceiling (Hall)	PLM

CHECK EACH BOX THAT APPLIES

- ☐ Point Count Sample if <10% Asbestos by Weight
- ☒ NOB's - TEM if Sample(s) are None Detected or <1%
- ☒ Stop at First Positive Homo. Area ID Code
- ☐ 6 hr. TAT
- ☐ 24 hr. TAT
- ☐ 5 Day TAT
- ☒ Other 48hr TAT

CHAIN OF CUSTODY RECORD (CCR)

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME	REASON FOR CCR
[signature]	4/30/24	1400				

COMMENTS:

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3-3

Christy, Sherry 042408863

From: Slattery, C. Michael
Sent: Monday, June 3, 2024 3:59 PM
To: Corporate - Asbestos Login
Cc: Silverman, Josh
Subject: FW: EMSL Order #042408863

Good Afternoon,

Please see the below client request.

C. Michael Slattery
Laboratory Manager
EMSL Analytical, Inc. 1056 Stelton Road Piscataway, NJ 08854
Phone: 732-981-0550 Toll Free: 800-220-3675

From: Dominick Dercole <DDercole@VTIHQ.com>
Sent: Monday, June 3, 2024 3:29 PM
To: EMSL Lab - Piscataway <piscatawaylab@EMSL.com>
Cc: Rollie Jones <RJones@VTIHQ.com>; Jordan Reed <JReed@VTIHQ.com>; Steven Mania <SMania@VTIHQ.com>
Subject: EMSL Order #042408863

[EXTERNAL E-MAIL]

EMSL, for **Order #042408863**, Please Point Count Sample 06A and analyze sample which is marked positive Stop 07A. If 07A is less than 10% please point count that sample as well. All samples on 24 hour TAT. If you have any questions please let me know.

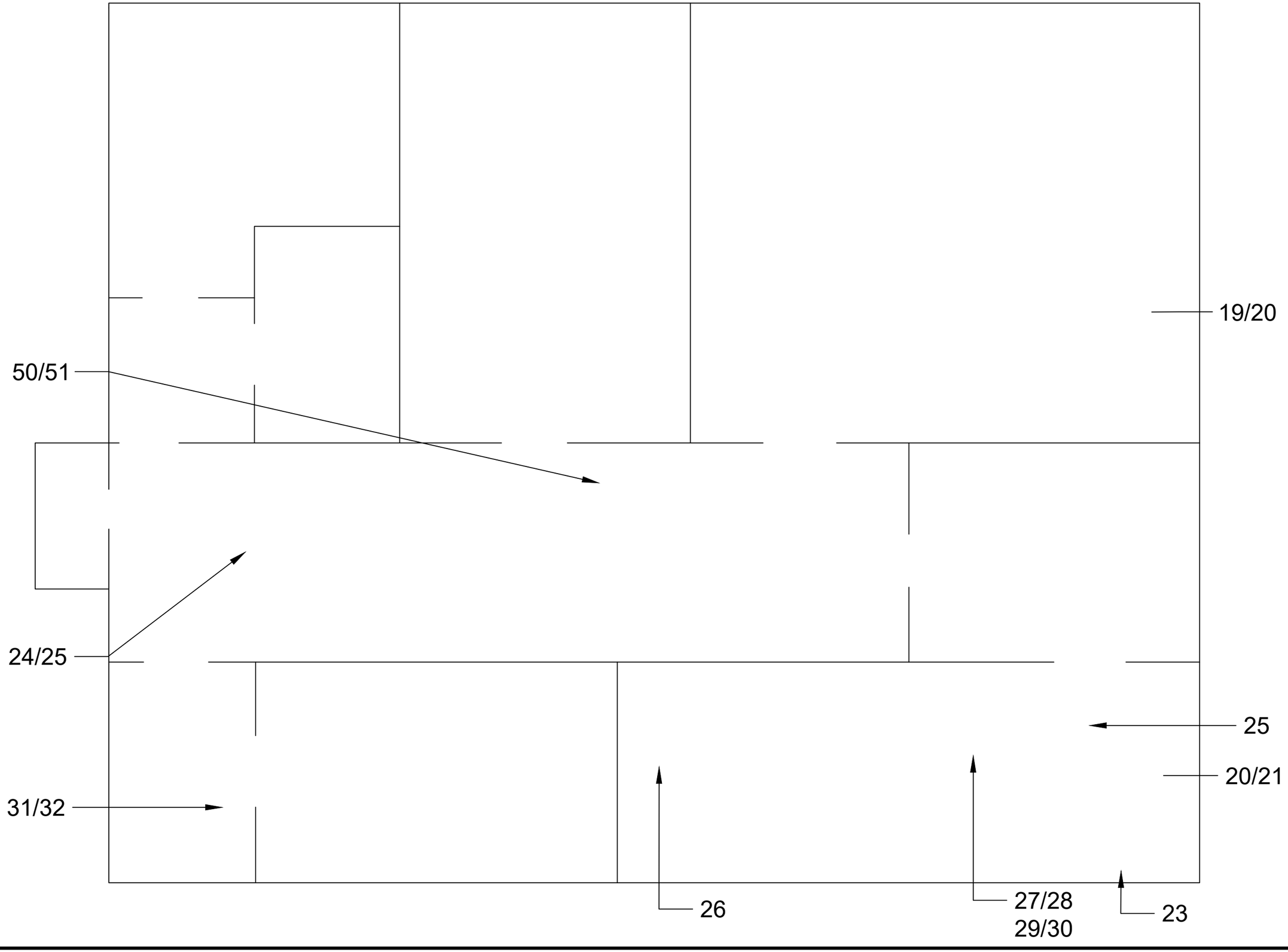
Respectfully,

Dominick

Dominick Dercole
Project Manager
Environmental Connection, Inc.
120 North Warren Street
Trenton, New Jersey 08608
609-392-4200 v
609-392-1216 f
Email: ddercole@vtihq.com

APPENDIX II

ASBESTOS SAMPLE LOCATION PLANS



ENVIRONMENTAL CONNECTION INC
A Vertical Technologies Corporation

Environmental Consulting, Auditing & Investigations
120 North Warren Street
Trenton, NJ 08608
TEL: 609-392-4200 FAX: 609-392-1216
EMAIL: info@vtihq.com WEB: www.VTIHQ.com

No.	Date	Issue or Revision
01	05/01/24	Review

AHERA FLOOR PLAN
SECOND FLOOR SAMPLE LOCATION PLAN
SOUTH WARD SENIOR CENTER
870 SOUTH BROAD ST, TRENTON, NEW JERSEY 08611

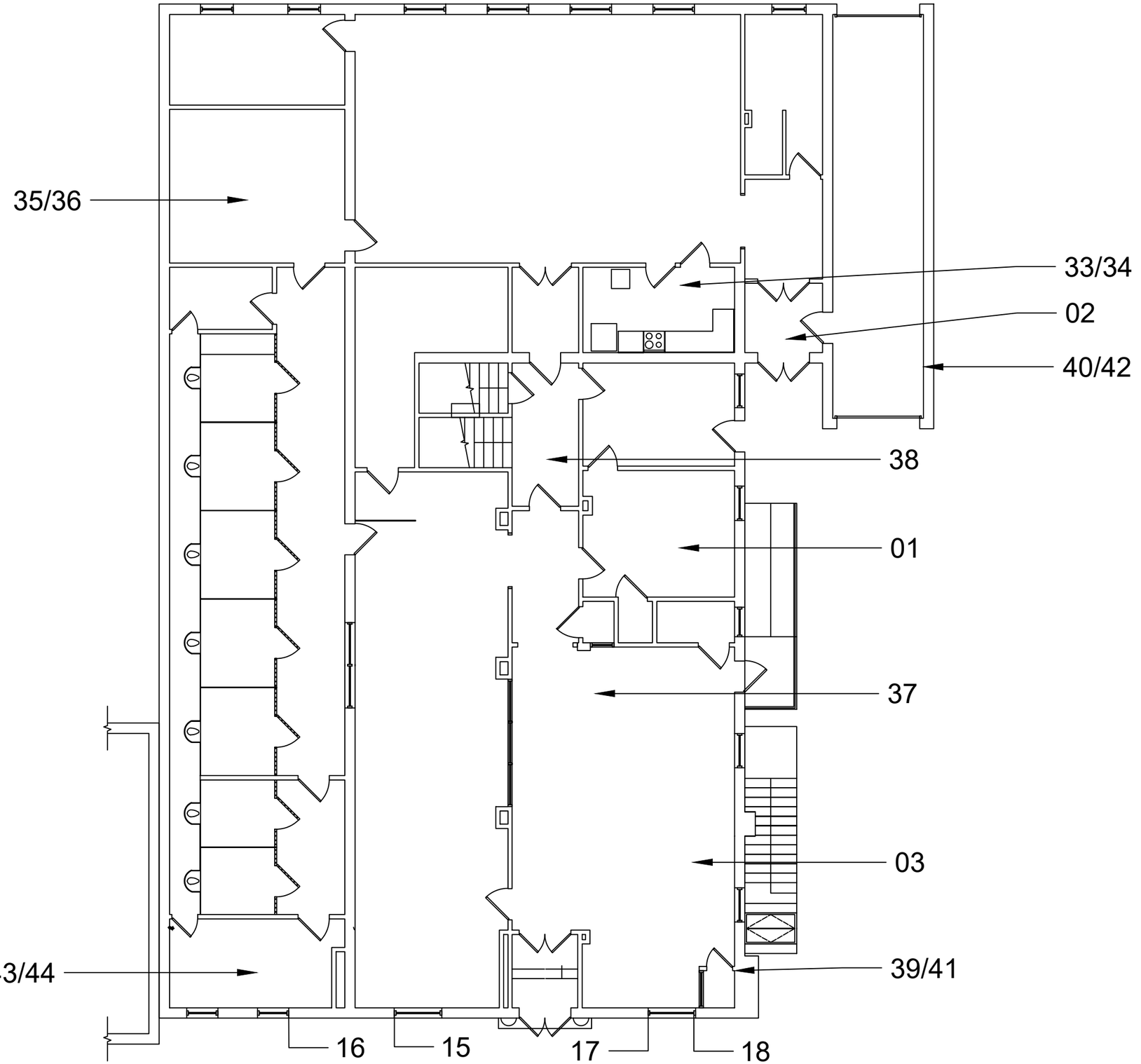
Date: 05/01/2024
Scale: NTS
Drawn By: JBM
Project No: 24127-01

Drawing Title

BASEMENT SAMPLE LOCATION PLAN

Drawing No.

SLP-00



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AHERA FLOOR PLAN
FIRST FLOOR SAMPLE LOCATION PLAN
SOUTH WARD SENIOR CENTER
870 SOUTH BROAD ST, TRENTON, NEW JERSEY 08611

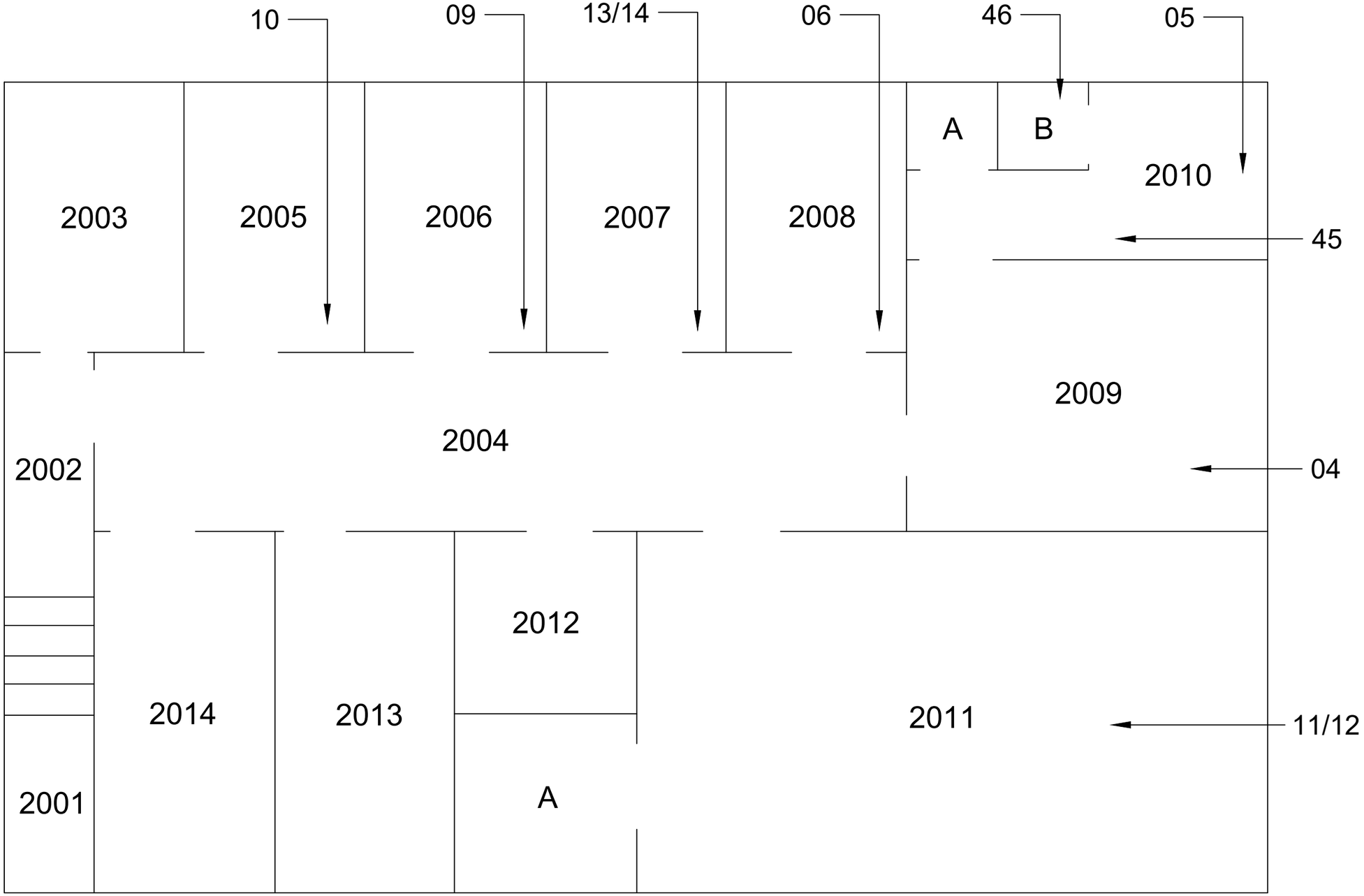
Date:	05/01/2024
Scale:	NTS
Drawn By:	JBM
Project No:	24127-01

Drawing Title

FIRST FLOOR
SAMPLE LOCATION PLAN

Drawing No.

SLP-01



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AHERA FLOOR PLAN
SECOND FLOOR SAMPLE LOCATION PLAN
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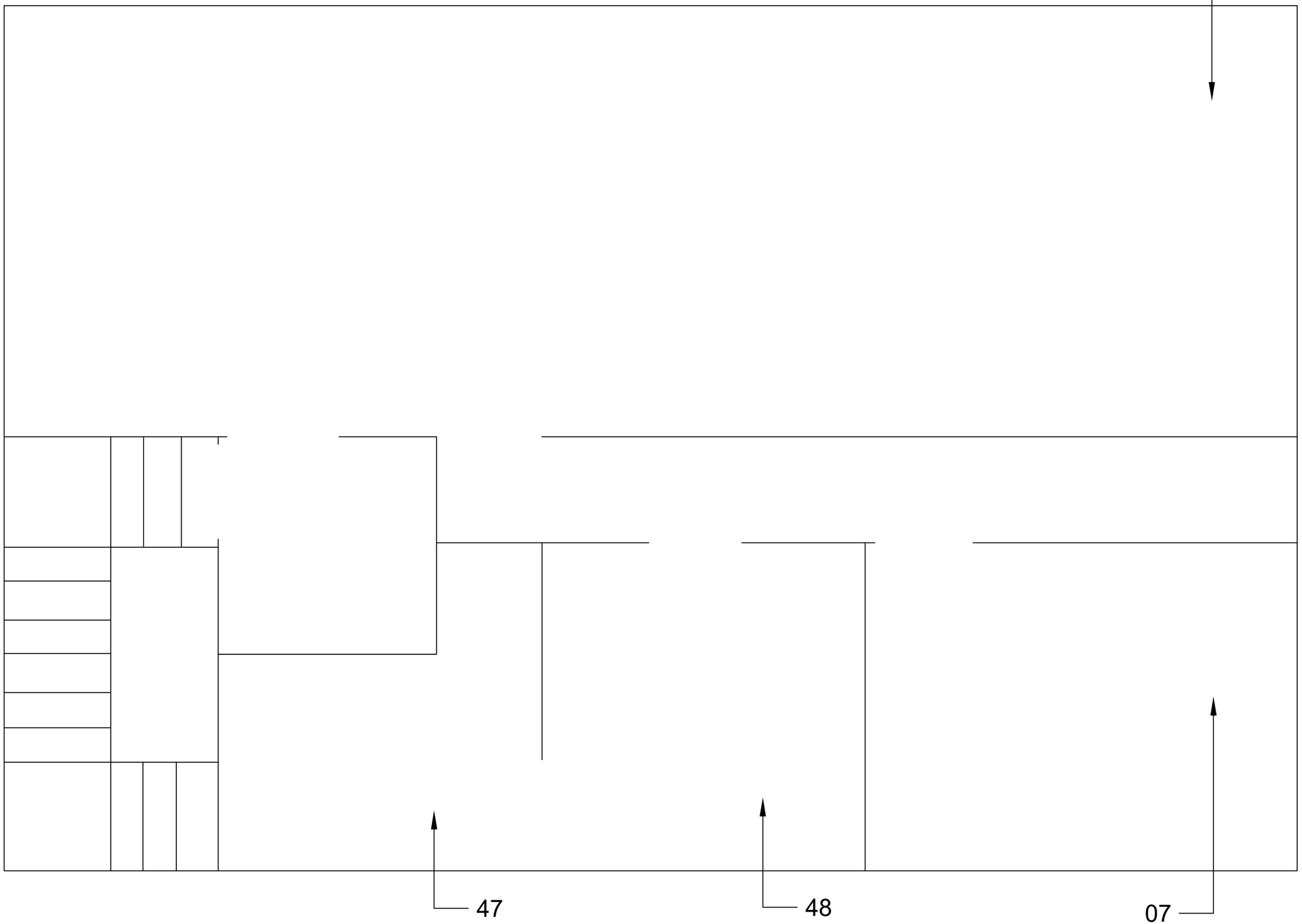
Date: 05/01/2024
Scale: NTS
Drawn By: JBM
Project No: 24127-01

Drawing Title
SECOND FLOOR PLAN

Drawing No.
SLP-02



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AHERA FLOOR PLAN
THIRD FLOOR SAMPLE LOCATION PLAN
SOUTH WARD SENIOR CENTER
870 SOUTH BROAD ST, TRENTON, NEW JERSEY 08611

Date:	05/01/2024
Scale:	NTS
Drawn By:	JBM
Project No:	24127-01

Drawing Title

THIRD FLOOR SAMPLE LOCATION PLAN

Drawing No.

SLP-03

APPENDIX III

LEAD-BASED PAINT INSPECTION DATA

ENVIRONMENTAL CONNECTION INC
A Vertical Technologies Corporation

Date: April 29, 2024 **Page:** 1 of 12
Client: Clark Caton Hintz **Unit #:** 1
Building: South Ward Senior Center **Job#:** 04-29-2024-1115
Address: 870 S. Broad Street **XRF Serial #:** 2320
Trenton, NJ **EC#:** 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
1	Calibration	-	-	1.0	-	-
2	Calibration	-	-	1.0	-	-
3	Zero Calibration	-	-	0.0	-	-
4	**Floor 3 Large Room Wall A**	**Plaster**	**Wall**	**4.1**	**Pos.**	
5	**Floor 3 Large Room Wall C**	**Plaster**	**Wall**	**4.3**	**Pos.**	
6	Floor 3 Large Room Wall B	Wood	Window	0.4	Neg.	
7	Floor 3 Large Room Wall B	Wood	Window Frame	0.3	Neg.	
8	Floor 3 Large Room Wall B	Wood	Window Sill	0.2	Neg.	
9	Floor 3 Large Room Wall C	Wood	Baseboard	0.3	Neg.	
10	Floor 3 Large Room Wall C	Wood	Chair Rail	0.3	Neg.	
11	Floor 3 Large Room Wall B	Wood	Door	0.2	Neg.	
12	Floor 3 Large Room Wall B	Wood	Door Frame	0.2	Neg.	
13	**Floor 3 Large Room Wall B**	**Plaster**	**Wall**	**4.0**	**Pos.**	

Lead Inspector/Risk Assessor: Dominick Dercole

Substrate: **SR** = Sheetrock **C** = concrete **B** = Brick **W** = Wood **PL** = Plaster **CB** = Cinderblock **M** = Metal
Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

Date: April 29, 2024
Client: Clark Caton Hintz
Building: South Ward Senior Center
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Trenton, NJ

Page: 2 of 12
Unit #: 1
Job#: 04-29-2024-1115
XRF Serial #: 2320
EC#: 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
14	Floor 3 Corner Office Wall A	Plaster	Wall	0.9	Neg.	
15	Floor 3 Corner Office Wall C	Plaster	Wall	0.8	Neg.	
16	Floor 3 Corner Office Wall C	Wood	Baseboard	0.2	Neg.	
17	Floor 3 Corner Office Wall C	Wood	Chair Rail	0.0	Neg.	
18	Floor 3 Corner Office Wall B	Wood	Window	0.2	Neg.	
19	Floor 3 Corner Office Wall B	Wood	Window Frame	0.4	Neg.	
20	Floor 3 Corner Office Wall B	Wood	Window Sill	0.2	Neg.	
21	**Floor 3 Corner Office Wall B**	**Metal**	**Radiator**	**12.1**	**Pos.**	
22	**Floor 3 Bathroom Wall A**	**Ceramic**	**Wall**	**3.4**	**Pos.**	
23	Floor 3 Bathroom Wall A	Plaster	Wall	0.8	Neg.	
24	Floor 3 Bathroom Wall C	Wood	Door (Stall)	0.2	Neg.	
25	**Floor 3 Office and Bathroom Wall B**	**Metal**	**Radiator**	**11.9**	**Pos.**	
26	Floor 3 Office and Bathroom Wall B	Plaster	Wall	0.9	Neg.	

Lead Inspector/Risk Assessor: Dominick Dercole

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Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

Date: April 29, 2024 **Page:** 3 of 12
Client: Clark Caton Hintz **Unit #:** 1
Building: South Ward Senior Center **Job#:** 04-29-2024-1115
Address: 870 S. Broad Street **XRF Serial #:** 2320
Trenton, NJ **EC#:** 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
27	**Floor 3 Stair Landing Wall A**	**Plaster**	**Wall**	**1.1**	**Pos.**	
28	Floor 3 Stair Landing Wall C	Plaster	Wall	0.8	Neg.	
29	Floor 3 Stair Landing Wall C	Wood	Railing	0.1	Neg.	
30	Floor 3 Stair Landing Wall C	Wood	Stringer	0.2	Neg.	
31	Floor 3 Stair Landing Wall C	Wood	Window	0.2	Neg.	
32	Floor 3 Stair Landing Wall C	Wood	Window Frame	0.2	Neg.	
33	Floor 3 Stair Landing Wall C	Wood	Window Sill	0.3	Neg.	
34	**Floor 2 Front Corner Room Wall B**	**Plaster**	**Wall**	**1.0**	**Pos.**	
35	**Floor 2 Front Corner Room Wall B**	**Metal**	**Railing**	**6.8**	**Pos.**	
36	**Floor 2 Front Corner Room Wall B**	**Plaster**	**Wall**	**1.0**	**Pos.**	
37	**Floor 2 Front Corner Room Wall B**	**Wood**	**Window**	**5.5**	**Pos.**	
38	Floor 2 Front Corner Room Wall B	Wood	Window Frame	0.5	Neg.	
39	**Floor 2 Front Corner Room Wall B**	**Wood**	**Window**	**6.5**	**Pos.**	**Exterior**

Lead Inspector/Risk Assessor: Dominick Dercole

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Date: April 29, 2024
Client: Clark Caton Hintz
Building: South Ward Senior Center
Address: 870 S. Broad Street
Trenton, NJ

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Unit #: 1
Job#: 04-29-2024-1115
XRF Serial #: 2320
EC#: 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
40	**Floor 2 Office (Broad St) Ext. Door/Window Wall A**	**Metal**	**Railing**	**6.9**	**Pos.**	Exterior
41	Floor 2 Office (Broad St) Ext. Door/Window Wall A	Wood	Window	0.4	Neg.	Exterior
42	Floor 2 Office (Broad St) Ext. Door/Window Wall A	Wood	Window Frame	0.4	Neg.	Exterior
43	Floor 2 Office (Broad St) Ext. Door/Window Wall A	Wood	Window Sill	0.2	Neg.	Exterior
44	Floor 2 Office (Broad St) Ext. Door/Window Wall A	Wood	Baseboard	0.3	Neg.	
45	**Floor 2 Office (Broad St) Ext. Door/Window Wall A**	**Metal**	**Radiator**	**15.3**	**Pos.**	
46	**Floor 2 Office (Broad St) Ext. Door/Window Wall A**	**Plaster**	**Wall**	**1.1**	**Pos.**	
47	**Floor 2 Left Corner Office Wall A**	**Plaster**	**Wall**	**1.0**	**Pos.**	
48	**Floor 2 Left Corner Office Wall A**	**Wood**	**Window**	**5.3**	**Pos.**	
49	Floor 2 Left Corner Office Wall A	Wood	Window Frame	0.2	Neg.	
50	Floor 2 Left Corner Office Wall D	Wood	Chair Rail	0.1	Neg.	
51	Floor 2 Left Corner Office Wall D	Wood	Baseboard	0.2	Neg.	
52	Floor 2 Left Corner Office Bathroom Wall A	Plaster	Wall	0.2	Neg.	

Lead Inspector/Risk Assessor: **Dominick Dercole**

Substrate: **SR** = Sheetrock **C** = concrete **B** = Brick **W** = Wood **PL** = Plaster **CB** = Cinderblock **M** = Metal
Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

ENVIRONMENTAL CONNECTION INC
A Vertical Technologies Corporation

Date: April 29, 2024 **Page:** 5 of 12
Client: Clark Caton Hintz **Unit #:** 1
Building: South Ward Senior Center **Job#:** 04-29-2024-1115
Address: 870 S. Broad Street **XRF Serial #:** 2320
Trenton, NJ **EC#:** 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
53	**Floor 2 Left Corner Office Bathroom Wall A**	**Ceramic**	**Wall**	**2.8**	**Pos.**	
54	**Floor 2 Long Hallway End Office (Cells) Wall D**	**Plaster**	**Wall**	**5.8**	**Pos.**	
55	**Floor 2 Long Hallway End Office (Cells) Wall B**	**Metal**	**Door**	**6.1**	**Pos.**	Red Cells
56	**Floor 2 Long Hallway End Office (Cells) Wall B**	**Metal**	**Door Frame**	**4.6**	**Pos.**	Red Cells
57	Floor 2 Long Hallway End Office (Cells) Wall C	Wood	Baseboard	0.2	Neg.	
58	**Floor 2 Long Hallway Opposite End Wall B**	**Plaster**	**Wall**	1.4	**Pos.**	
59	Floor 2 Long Hallway Opposite End Wall B	Wood	Window Frame	0.3	Neg.	
60	Floor 2 Long Hallway Opposite End Wall B	Wood	Window Sill	0.4	Neg.	
61	Floor 2 Long Hallway Opposite End Wall B	Wood	Window	0.3	Neg.	
62	Floor 2 Long Hallway Opposite End Wall B	Wood	Baseboard	0.3	Neg.	
63	**Floor 2 Long Hallway Opposite End Wall D**	**Metal**	**Radiator**	**7.0**	**Pos.**	
64	Floor 2 Long Hallway Wall D	**Plaster**	**Wall**	**1.0**	**Pos.**	
65	Floor 2 Long Hallway Wall B	**Plaster**	**Wall**	**1.1**	**Pos.**	

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Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

Date: April 29, 2024
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XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
66	Floor 2 Long Hallway Wall C	Metal	Door	0.2	Neg.	
67	Floor 2 Long Hallway Wall C	Metal	Door Frame	0.1	Neg.	
68	Floor 2 Stairwell Wall D	Wood	Window	0.2	Neg.	
69	Floor 2 Stairwell Wall D	Wood	Window Frame	0.3	Neg.	
70	Floor 2 Stairwell Wall D	Wood	Window Sill	0.2	Neg.	
71	Floor 2 Stairwell Wall D	Wood	Baseboard	0.2	Neg.	
72	Floor 2 Stairwell Wall D	Wood	Railing	0.2	Neg.	
73	**Floor 2 Stairwell Wall D**	**Metal**	**Radiator**	**3.8**	**Pos.**	
74	Floor 1 Exterior Wall A	Wood	Door	0.6	Neg.	
75	**Floor 1 Exterior Wall A**	**Wood**	**Door Frame**	**2.8**	**Pos.**	
76	**Floor 1 Exterior Wall A**	**Wood**	**Window**	**1.1**	**Pos.**	
77	Floor 1 Exterior Wall A	Wood	Window Frame	0.8	Neg.	
78	Floor 1 Exterior Wall A	Wood	Window Sill	0.6	Neg.	

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Date: April 29, 2024
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Address: 870 S. Broad Street
Trenton, NJ

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XRF Serial #: 2320
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XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
79	Floor 1 Exterior Wall D	Wood	Boards over Window	0.3	Neg.	
80	Floor 1 Front Room Wall A	Plaster	Wall	0.8	Neg.	
81	**Floor 1 Front Room Wall A**	**Metal**	**Radiator**	**1.5**	**Pos.**	
82	Floor 1 Front Room Wall A	Wood	Window	0.3	Neg.	
83	Floor 1 Front Room Wall A	Wood	Window Frame	0.2	Neg.	
84	Floor 1 Front Room Wall A	Wood	Window Sill	0.1	Neg.	
85	**Floor 1 Front Room Wall D**	**Plaster**	**Wall**	**1.0**	**Pos.**	
86	**Floor 1 Front Room Wall C**	**Plaster**	**Wall**	**1.2**	**Pos.**	
87	**Floor 1 Front Room Closet Wall D**	**Plaster**	**Wall**	**1.0**	**Pos.**	
88	**Floor 1 Bathroom (Single) Wall D**	**Plaster**	**Wall**	**4.6**	**Pos.**	
89	**Floor 1 Bathroom (Single) Wall D**	**Ceramic**	**Wall**	**2.5**	**Pos.**	
90	**Floor 1 Office with Bathroom Wall A**	**Plaster**	**Wall**	**1.1**	**Pos.**	
91	Floor 1 Office with Bathroom Wall A	Wood	Window	0.2	Neg.	

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Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

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XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
92	Floor 1 Office with Bathroom Wall A	Wood	Window Frame	0.2	Neg.	
93	Floor 1 Office with Bathroom Wall A	Wood	Window Sill	0.2	Neg.	
94	Floor 1 Office with Bathroom Wall A	Wood	Baseboard	0.1	Neg.	
95	Floor 1 Office with Bathroom Wall A	Wood	Chair Rail	0.2	Neg.	
96	**Floor 1 Office with Bathroom Wall C**	**Metal**	**Radiator**	**3.1**	**Pos.**	
97	Calibration	-	-	1.0	-	-
98	Calibration	-	-	1.0	-	-
99	Zero Calibration	-	-	0.0	-	-
100	Calibration	-	-	1.0	-	-
101	Calibration	-	-	1.0	-	-
102	Zero Calibration	-	-	0.1	-	-
103	Floor 1 Classroom Wall A	Wood	Window	0.2	Neg.	
104	Floor 1 Classroom Wall A	Wood	Window Frame	0.3	Neg.	

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Date: April 29, 2024
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XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
105	Floor 1 Classroom Wall A	Wood	Window Sill	0.2	Neg.	
106	**Floor 1 Classroom Wall A**	**Plaster**	**Wall**	**1.6**	**Pos.**	
107	**Floor 1 Classroom Wall B**	**Plaster**	**Wall**	1.2	**Pos.**	
108	Floor 1 Classroom Wall B	Wood	Covebase	0.1	Neg.	
109	Floor 1 Classroom Wall B	Metal	Duct	0.2	Neg.	
110	**Floor 1 Front Cells Wall B**	**Metal**	**Door**	**2.7**	**Pos.**	
111	**Floor 1 Front Cells Wall B**	**Metal**	**Door Frame**	**12.1**	**Pos.**	
112	Floor 1 Front Cells Wall B	Metal	Door	0.2	Neg.	Door to Classroom
113	Floor 1 Front Cells Wall B	Metal	Door Frame	0.2	Neg.	Door to Classroom
114	**Floor 1 Front Cell Area Wall B**	**Metal**	**Door**	**15.5**	**Pos.**	Cells
115	**Floor 1 Front Cell Area Wall B**	**Metal**	**Wall**	**12.8**	**Pos.**	Cells
116	**Floor 1 Front Cell Area Wall B**	**Metal**	**Wall**	**17.1**	**Pos.**	Cells
117	Floor 1 Front Cell Area	Concrete	Floor	0.1	Neg.	Cells

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XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
118	**Floor 1 Front Cell Area Wall D**	**Plaster**	**Wall**	**1.0**	**Pos.**	Cells
119	**Floor 1 Front Cell Area Wall D**	**Metal**	**Radiator**	**1.4**	**Pos.**	Cells
120	**Floor 1 Men's Bathroom Wall B**	**Plaster**	**Wall**	**1.1**	**Pos.**	
121	**Floor 1 Men's Bathroom Wall B**	**Ceramic**	**Wall**	**3.5**	**Pos.**	
122	Floor 1 Men's Bathroom Wall A	Wood	Door	0.2	Neg.	
123	Floor 1 Men's Bathroom Wall A	Wood	Door Frame	0.3	Neg.	
124	**Floor 1 Music Room Wall A**	**Plaster**	**Wall**	**1.1**	**Pos.**	
125	**Floor 1 Music Room Wall C**	**Plaster**	**Wall**	**1.4**	**Pos.**	
126	Floor 1 Music Room Wall C	Wood	Wainscot	0.2	Neg.	
127	Floor 1 Music Room Wall C	**Metal**	**Radiator**	**9.5**	**Pos.**	
128	**Basement Game Room Wall A**	**Plaster**	**Wall**	**11.1**	**Pos.**	
129	**Basement Game Room Wall C**	**Plaster**	**Wall**	**13.2**	**Pos.**	
130	Basement Game Room Wall C	Metal	Door	0.1	Neg.	

Lead Inspector/Risk Assessor: **Dominick Dercole**

Substrate: **SR** = Sheetrock **C** = concrete **B** = Brick **W** = Wood **PL** = Plaster **CB** = Cinderblock **M** = Metal
Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

Date: April 29, 2024
Client: Clark Caton Hintz
Building: South Ward Senior Center
Address: 870 S. Broad Street
Trenton, NJ

Page: 11 of 12
Unit #: 1
Job#: 04-29-2024-1115
XRF Serial #: 2320
EC#: 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
131	Basement Game Room Wall C	Metal	Door Frame	0.2	Neg.	
132	Basement Game Room Wall C	Wood	Stringer	0.2	Neg.	
133	Basement Game Room Wall C	Metal	Railing	0.3	Neg.	
134	Basement Game Room Wall C	Wood	Door	0.1	Neg.	
135	Basement Game Room Wall C	Wood	Door Frame	0.1	Neg.	
136	Basement Hall Wall B	Brick	Wall	0.1	Neg.	
137	Basement Hall Wall B	Brick	Wall	0.2	Neg.	
138	Boiler Room Wall A	Brick	Wall	0.5	Neg.	
139	Boiler Room Wall C	Brick	Wall	0.9	Neg.	
140	Basement Laundry Wall B	Brick	Wall	0.2	Neg.	
141	Basement Laundry	Plaster	Ceiling	0.8	Neg.	
142	Property Room Wall A	Wood	Door	0.1	Neg.	
143	Property Room Wall A	Wood	Door Frame	0.1	Neg.	

Lead Inspector/Risk Assessor: Dominick Dercole

Substrate: **SR** = Sheetrock **C** = concrete **B** = Brick **W** = Wood **PL** = Plaster **CB** = Cinderblock **M** = Metal
Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

ENVIRONMENTAL CONNECTION INC
A Vertical Technologies Corporation

Date: April 29, 2024
Client: Clark Caton Hintz
Building: South Ward Senior Center
Address: 870 S. Broad Street
Trenton, NJ

Unit #: 1
Job#: 04-29-2024-1115
XRF Serial #: 2320
EC#: 24127-01

XRF LEAD BASED PAINT INSPECTION DATA SHEET

Sample #	Test Location/Room Equivalent	Substrate	Component	XRF Value	Classification (pos., neg., inc.)	Condition/ Comments
144	**Property Room Built in Closet Wall A**	**Wood**	**Closet**	**6.8**	**Pos.**	
145	Calibration	-	-	1.0	-	-
146	Calibration	-	-	1.0	-	-
147	Zero Calibration	-	-	0.0	-	-

Lead Inspector/Risk Assessor: Dominick Dercole

Substrate: **SR** = Sheetrock **C** = concrete **B** = Brick **W** = Wood **PL** = Plaster **CB** = Cinderblock **M** = Metal
Component: **W** = Wall **F** = Floor **C** = Ceiling **Wd** = Window **WF** = Window Frame **WC** = Window Casing **WM** = Window Mullion **WS** = Window Sill **WSH** = Window Sash **D** = Door **DF** = Door Frame **DC** = Door Casing **DJ** = Door Jamb **H** = Header **CB** = Covebase **T** = Trim **CR** = Chair Rail **S** = Stairs **Ri** = Riser **Ru** = Runner **SM** Stair Mullion

APPENDIX IV

POLYCHLORINATED BIPHENYL SAMPLING AND ANALTYICAL DATA

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012415588
LIMS Reference ID: AC15588
EMSL Customer ID: ENVI65

May 15, 2024

Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 5/1/2024. The results are tabulated on the attached pages for the following client designated project:

CCH-PCB Caulk/Glazing-South Ward Senior Center

The reference number for these samples is EMSL Order #: AC15588 . Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact the lab at 856-858-4800.

Owen McKenna Laboratory Manager or other approved signatory

Table of Contents

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012415588
LIMS Reference ID: AC15588
EMSL Customer ID: ENVI65

Attention: Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608
(609) 462-3218
ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Sample Condition on Receipt

Cooler ID: Default Cooler **Temperature: 10.6 °C**

Custody Seals	Y
Containers Intact	Y
COC/Labels Agree	Y
Preservation Confirmed	Y

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012415588
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Attention: Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608
(609) 462-3218
ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
AC15588-01	PCB 1	Solid	04/30/2024	05/01/2024
AC15588-02	PCB 2	Solid	04/30/2024	05/01/2024

EMSL Analytical, Inc.

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120 North Warren Street
Trenton, NJ 08608
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ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Positive Hits Summary

No positive results reported

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

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Trenton, NJ 08608
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ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Sample Results

Sample: PCB 1/Ext window glazing
AC15588-01 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*48%*			*10-112*		05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*49%*			*10-123*		05/14/24 12:34	05/15/24 13:33	SXD/TL1	SW846 3540C	*SW846-8082A*

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012415588
LIMS Reference ID: AC15588
EMSL Customer ID: ENVI65

Attention: Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608
(609) 462-3218
ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Sample Results
(Continued)

Sample: PCB 2/Ext window caulk
AC15588-02 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.25	mg/kg	05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*47%*			*10-112*		05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*52%*			*10-123*		05/14/24 12:34	05/15/24 13:54	SXD/TL1	SW846 3540C	*SW846-8082A*

EMSL Analytical, Inc.

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Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012415588
LIMS Reference ID: AC15588
EMSL Customer ID: ENVI65

Attention: Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608
(609) 462-3218
ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Quality Control

GC-SVOA

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BCE1029 - SW846 3540C										
Blank (BCE1029-BLK1)					Prepared: 5/14/2024 Analyzed: 5/15/2024					
Aroclor-1016	ND		0.25	mg/kg						
Aroclor-1221	ND		0.25	mg/kg						
Aroclor-1232	ND		0.25	mg/kg						
Aroclor-1242	ND		0.25	mg/kg						
Aroclor-1248	ND		0.25	mg/kg						
Aroclor-1254	ND		0.25	mg/kg						
Aroclor-1260	ND		0.25	mg/kg						
Aroclor-1262	ND		0.25	mg/kg						
Aroclor-1268	ND		0.25	mg/kg						
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*74*	*10-112*		
Surrogate: Decachlorobiphenyl					*0.5000*		*82*	*10-123*		
LCS (BCE1029-BS1)					Prepared: 5/14/2024 Analyzed: 5/15/2024					
Aroclor-1016	3.47		0.25	mg/kg	5.000		69	23-111		
Aroclor-1260	3.72		0.25	mg/kg	5.000		74	29-119		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*69*	*10-112*		
Surrogate: Decachlorobiphenyl					*0.5000*		*81*	*10-123*		

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Attention: Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608
(609) 462-3218
ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Certified Analyses included in this Report

Analyte	CAS #	Certifications
SW846-8082A in Solid		
Aroclor-1016	12674-11-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1221	11104-28-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1232	11141-16-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1242	53469-21-9	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1248	12672-29-6	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1254	11097-69-1	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260 [2C]	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1262	37324-23-5	NJDEP,NYSDOH,PADEP
Aroclor-1268	11100-14-4	NJDEP,NYSDOH,PADEP

List of Certifications

Code	Description	Number	Expires
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2024
NYSDOH	New York State Department of Health	10872	04/01/2025
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2024
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2024
CTDPH	Connecticut Department of Public Health	PH-0270	06/23/2024
California ELAP	California Water Boards	1877	06/30/2024
AIHA LAP	EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC-ELLAP Accredited	100194	01/01/2025
A2LA	A2LA Environmental Certificate	2845.01	07/31/2024

Please see the specific Field of Testing (FOT) on www.emsl.com <http://www.emsl.com> for a complete listing of parameters for which EMSL is certified.

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012415588
LIMS Reference ID: AC15588
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Attention: Dominick Dercole
Environmental Connection, Inc. [ENVI65]
120 North Warren Street
Trenton, NJ 08608
(609) 462-3218
ddercole@vtihq.com

Project Name: CCH-PCB Caulk/Glazing-South Ward Senior Center

Customer PO:
EMSL Sales Rep: Josh Silverman
Received: 05/01/2024 09:00
Reported: 05/15/2024 17:12

Notes and Definitions

Item	Definition
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
Q	Qualifier
RL	Reporting Limit
%REC	Percent Recovery
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.

1C15588

ENVIRONMENTAL CONNECTION INC

A Vertical Technologies Corporation

Chain of Custody and Field Data Record

Client : CCH
Project : PCB Caulks / Glazing
Building : South Ward Senior Center

Date : 4/30/24
Technician : D Dercole/ M Haviland
Project # : 24127-01

	Sample Identification #	Location	Matrix	Date	Analysis Required (Specify Method if Known)	Quantity
1	PCB1 DDD4 29 24	EXT. WINDOW GLAZING	GLAZING	4/30/24	PCB's 3540C/8082A	✓
2	PCB2 DDD4 29 24	EXT WINDOW CAULK	CAULK	4/30/24		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		

Relinquished by (Print and Sign Name) Dominick Dercole Date 4/30/24 Time 1400

Received by (Print and Sign Name) Daniel Stepp int Date 4.30.24 Time 5:35pm
Colleen Palladino 5/1/24 9AM

Reason for Change of Custody

NOTES: **1 Week Turn Around Time**

DMS
10.6°C

1C15588

ENVIRONMENTAL CONNECTION INC

A Vertical Technologies Corporation

Chain of Custody and Field Data Record

Client : CCH
Project : PCB CAULK / GLAZING
Building : South Ward Senior Center

Date : 4/30/24
Technician : D Dercole/ M Haviland
Project # : 24127-01

	Sample Identification #	Location	Matrix	Date	Analysis Required (Specify Method if Known)	Quantity
1	PCB1 DDDY 29 24	EXT. WINDOW GLAZING	GLAZING	4/30/24	PCB's 3540C/8082A	✓
2	PCB2 DDDY 29 24	EXT WINDOW CAULK	CAULK	4/30/24		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		
				/ /		

Relinquished by (Print and Sign Name) Dominick Dercole — Date 4/30/24 — Time 1400

Received by (Print and Sign Name) David Stepp UPS — Date 4.30.24 — Time 5:35pm
Colleen Palladino 5/1/24 9AM

Reason for Change of Custody

NOTES: **1 Week Turn Around Time**

DNS

10.6°C

APPENDIX V

CERTIFICATIONS/ ACCREDITATIONS

Big Apple Occupational Safety Inc

505 Eighth Avenue, #2305, New York, NY 10018
(212) 564-7656

This Is To Certify That

Dominick Dercole

SS#: XXX-XX-XXXX

has successfully completed the New York State Department of Health approved course entitled
This course meets requirements of TSCA Title II

Asbestos Inspector Refresher - CLASSROOM - NYC

(The official record of successful completion is the DOH 2832 Certificate of completion
New York State Department of Health Certificate of Asbestos Safety Training)

Course Date: 11/03/2023

Examination Date: 11/03/2023

Expiration Date: 11/03/2024

Certificate Number: 943360

Examination Grade: 88%

Radha Reddy
Training Director

Lead Identification Permit

New Jersey Department of Health

DOMINICK M DERCOLE

Permit No.: 038863

ID No.: 028808

Expires: 10/15/2024

Authorization Signature: Christina Tan

Christina Tan, MD, M.P.H., Assistant Commissioner

Inspector/Risk Assessor

NAETI

65679

CERTIFICATE OF COMPLETION

AHERA/EPA Accredited Per 40 CFR Part 763
Asbestos Accreditation under TSCA Title II

Michael Haviland

Successfully completed the course entitled

1/2-Day New York State/EPA/AHERA Asbestos Building Inspector Annual Refresher on April 1st, 2024

Examination Date on April 1st, 2024 *Expiration Date on April 1st, 2025*

Glenn Neuschwender, Greg Krueger
Training Directors, NAETI

Per 10 NYCRR Part 73.2 (L) (1), DOH 2832 Certificate of Completion of Asbestos Safety Training is the only official record of training for N.Y.S. students.

Language: English ABIH 1/2 CM POINT

[illegible]

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-0

EMSL Analytical, Inc.

Cinnaminson, NJ

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2023-07-01 through 2024-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
Ms. Samantha Rundstrom
Phone: 856-303-2577
Email: srundstrom@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 101048-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Laboratory ID: LAP-100194

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

☑	**INDUSTRIAL HYGIENE**	Accreditation Expires: January 01, 2025
☑	**ENVIRONMENTAL LEAD**	Accreditation Expires: January 01, 2025
☑	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: January 01, 2025
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Cheryl O. Morton

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision20: 06/07/2022

Date Issued: 01/01/2023

AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077

Laboratory ID: LAP-100194
Issue Date: 01/01/2023

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

The EPA recognizes the AIHA LAP, LLC ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air and composited wipes analyses are not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)

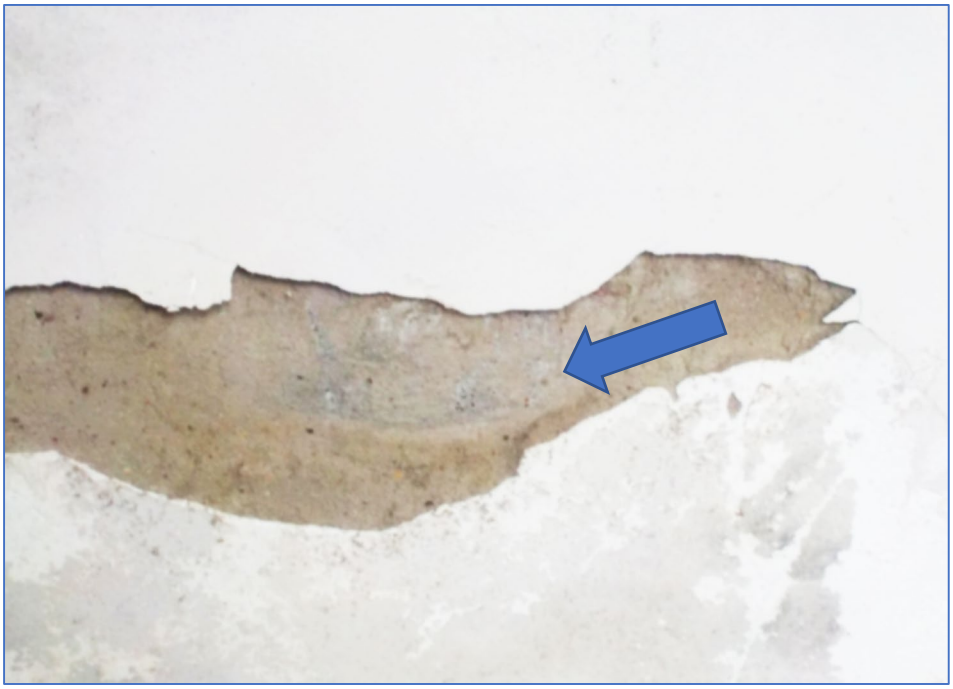
Initial Accreditation Date: 01/18/1995

Component, parameter or characteristic tested	Technology sub-type/Detector	Method	Method Description *(for internal methods only)*
Airborne Dust	AA	NIOSH 7082	N/A
Composited Wipes	AA	EPA SW-846 3050B	N/A
		EPA SW-846 7000B	N/A
Paint	AA	EPA SW-846 3050B	N/A
		EPA SW-846 7000B	N/A
Settled Dust by Wipe	AA	EPA SW-846 3050B	N/A
		EPA SW-846 7000B	N/A
Soil	AA	EPA SW-846 3050B	N/A
		EPA SW-846 7000B	N/A

A complete listing of currently accredited ELLAP laboratories is available on the AIHA LAP, LLC website at: *http://www.aihaaccreditedlabs.org*

APPENDIX VI

PHOTOGRAPH LOG



Photograph 1 – Trace Asbestos Containing Brown Coat Plaster

Photograph 2 –Asbestos Containing Multi-Layered Vinyl Floor Tile and Mastic

ENVIRONMENTAL CONNECTION INC	**Site Photographs**	
	Date Taken	April 29, 2024
	Client	Clark Caton Hintz
	Location	South Ward Senior Center
EC Project # 24127-01	Address	870 S Broad Street, Trenton, New Jersey

Photograph 3 – Asbestos Containing 9”x9” Grey Vinyl Floor Tile and Mastic

Photograph 4 – Asbestos Containing 12”x12” Cream Vinyl Floor Tile

ENVIRONMENTAL CONNECTION INC	Site Photographs	
	Date Taken	April 29, 2024
	Client	Clark Caton Hintz
	Location	South Ward Senior Center
EC Project # 24127-01	Address	870 S Broad Street, Trenton, New Jersey

Photograph 5 – Asbestos Containing Window Glazing

Photograph 6 – Asbestos Containing Masonry Caulk

ENVIRONMENTAL CONNECTION INC	Site Photographs	
	Date Taken	April 29, 2024
	Client	Clark Caton Hintz
	Location	South Ward Senior Center
EC Project # 24127-01	Address	870 S Broad Street, Trenton, New Jersey

Photograph 7– Asbestos Containing 12”x12” Grey Vinyl Floor Tile and Black Mastic

ENVIRONMENTAL CONNECTION INC	Site Photographs	
	Date Taken	April 29, 2024
	Client	Clark Caton Hintz
	Location	South Ward Senior Center
EC Project # 24127-01	Address	870 S Broad Street, Trenton, New Jersey