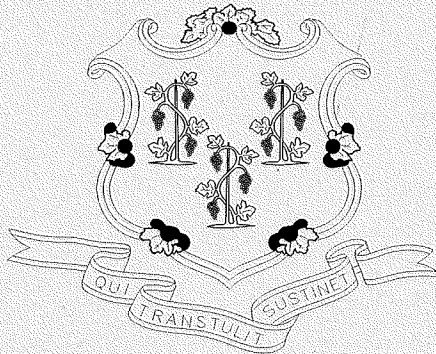


PROJECT MANUAL

VOLUME 1 OF 1

WINDOW REPLACEMENT
NEW LONDON ARMORY
249 BAYONET STREET
NEW LONDON, CONNECTICUT 06320

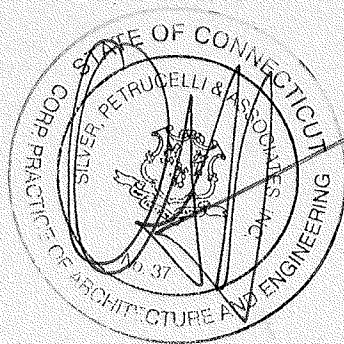
PROJECT NO.: 18MIL22301
AGENCY NO.: NL1101



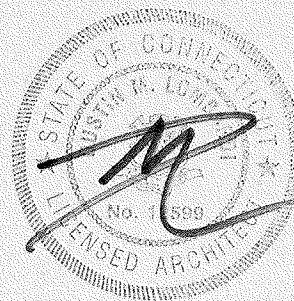
CONNECTICUT ARMY NATIONAL GUARD FACILITIES MANAGEMENT OFFICE

360 Broad Street
Hartford, Connecticut 06105

Department of Construction Services
Melody A. Currey, Commissioner



Prepared by:



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Revised Tracing & Masters Submission: January 3, 2018

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GENERAL REQUIREMENTS

01000 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Number 18MIL22301 is entitled New London Armory Window Replacement. It is to be located in New London, Connecticut. It is to be completed and ready for use by the Owner and Agency within the Contract Time specified in Section 00020 Bid Proposal Form.
- B. The Project Description:
1. Removal of hazardous materials, including window systems, louvers and all associated components.
 2. Installation of new windows, louvers, translucent panel systems and all associated components, including but not limiting to blinds, sills and trim.
 3. Repair of existing sills, where indicated.
 4. Removal and reinstallation of all electrical components (fixtures, conduit, etc.) within the area of work.
 5. This Project **does not exceed** the Threshold Limits as defined by the Connecticut General Statutes.
- C. Project Location: The Connecticut Army National Guard Armory, 249 Bayonet Street, located in New London, Connecticut 06320.

01001 OWNER AND AGENCY

- A. Owner: The Owner and Agency is Military Department, State of Connecticut.
1. The authorized representative for the Owner and Agency is Mr. Ed Fulton, Project Manager. The Agency Representative is located 360 Broad Street, Hartford, CT 06105. Phone: 860-548-3274; Fax: 860-524-4937; E-mail: george.e.fulton.nfg@mail.mil.
 2. The Representative has the administrative authority for the facility and or site where the work is being performed but does not have the authority to change the contract documents or direct the Contractor.

01002 ARCHITECT AND ARCHITECT

- A. The Architect is Silver/Petrucci + Associates, Inc. and is located at 3190 Whitney Avenue, Building 2, Hamden, Connecticut. The Project Architect representing the firm for this project is Dustin Lombardi. Phone: 203-230-9007; Fax: 203-230-8247; E-mail: dlombardi@silverpetrucci.com.
1. The Architect or their accredited representative is referred to in the Contract Documents as "Architect" or "Architects" or by pronouns which imply them. As information for the Contractor or Architect's status is defined as follows:
 - a. The Architect will not make interpretations or decisions directly to the Contractor. Where Construction Administrator is mentioned in this document substitute it with Architect.
 - b. The Architect is responsible for review of shop drawings, materials and equipment intended for the work, in accordance with the "General Conditions", and the "Supplementary Conditions".

GENERAL REQUIREMENTS

2. Wherever the Architect is mentioned in the documents in connection with an administrative function, it shall include the Construction Administrator in that function except for shop drawings.

01003 CONSTRUCTION ADMINISTRATOR

- A. The Construction Administrator is Mr. James A. Cavanna, AIA CBO, Construction Specialist, and is located at 360 Broad Street, Hartford 06105. Phone: 860-548-3279; Fax: 860-548-3260; E-mail: james.a.cavanna2.nfg@mail.mil
 1. The Construction Administrator is referred to in the Contract Documents as "Construction Administrator" or "Construction Manager" or by pronouns which imply it. All communications concerning the project will be directed through the Construction Administrator or a designated representative(s).
 2. As information to the Contractor, the Construction Administrator's status is defined as follows:
 - a. The Construction Administrator is the Owner's Agent who will, among other things, monitor the General Contractor's performance, scheduling and construction, process shop drawings, material, and equipment submittals, review and process periodic billings, review and recommend cost changes.
 - b. The Construction Administrator will process all requests for information, interpretations and decisions regarding the meaning and intent of the Contract Documents, consulting with appropriate parties prior to rendering the interpretations or decisions to the Contractor. All such requests and replies shall be in writing.

01010 SUMMARY OF WORK

- A. Summary of Work includes but is not limited to the following:
 1. Removal of hazardous materials, including window systems, louvers and all associated components.
 2. Installation of new windows, louvers, translucent panel systems and all associated components, including but not limiting to blinds, sills and trim.
 3. Repair of existing sills, where indicated.
 4. Removal and reinstallation of all electrical components (fixtures, conduit, etc.) within the area of work.
- B. The Contractor will include in his bid, all items required in order to carry out the intent of the work as described, shown and implied in the Contract Documents.
 1. Window manufacturer shall provide, with their bid/quote, a "Blast Narrative" describing which design method of the UFC 4-010-01 was utilized to show product compliance to the performance requirements in Sections 08520 and 08950.
- C. It shall be the Contractor's responsibility upon discovery to immediately notify the Construction Administrator, in writing, of errors, omissions, discrepancies, and instances of noncompliance with applicable codes and regulations within the documents, and of any work which will not fit or properly function if installed as indicated on the Contract Documents. Any additional costs arising from the Contractor's failure to provide such notification shall be borne by the Contractor.

GENERAL REQUIREMENTS

- D. NOTE: Identify type of contract for this project as stated in the Bid Proposal Form.
- E. The Work will be constructed under a single lump.
- F. Work Sequence – Phase(s):
 - 1. The Project shall be constructed in a single Phase.

01011 EXAMINATION OF SITES

- A. It is not the intent of the Documents to show all existing conditions. All Contractors are advised to visit and examine the site with the Construction Administrator prior to submitting bids.
- B. Contractors should investigate and satisfy themselves as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, uncertainties of weather, roads or similar physical conditions of the ground, the character of equipment, and facilities needed preliminary to and during the prosecution of the Work. The Contractor should further satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the sites, as well as from information presented by the Contract Documents. Any failure by the Contractor to acquaint himself with the available information shall not relieve him from the responsibility for estimating properly the difficulty and cost of successfully performing the Work.
- C. Pre-Bid Conference:
 - 1. A Pre-Bid Conference and tour of the site will be conducted as scheduled in the Invitation to Bid. This scheduled conference is the only official opportunity for the bidders to tour the site with the Owner, Architect, Construction Administrator, and Agency.

01012 PROJECT DOCUMENTS

- A. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the work of this Project.
- B. Throughout the Technical Specifications, the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction Form 814A, current edition including any interim and supplemental specifications are referenced. Where so referenced the requirements set forth therein are applicable and made a part hereof. Copies of Form 814A are available from the Connecticut Department of Transportation at a nominal charge.

01013 DOCUMENTS FURNISHED

- A. The General Contractor will be given **five (5)** sets of the Contract Documents on or about the time of execution of Contract, free of charge. If additional copies are wanted, they will be available at the direct additional cost of their reproduction, to the Contractor.

01014 CONTRACTOR'S USE OF PREMISES

- A. The Contractor shall confine his operations, including storage of apparatus, equipment and materials to the contract limit lines as directed by the Construction Administrator.
- B. The areas and/or spaces, including their access, shall be maintained free and clear throughout the contract term.
- C. Parking for Contractor's employees will be limited to an area (or areas) designated by the Construction Administrator. The Contractor may be required to provide identification stickers for employees' cars.

01015 OCCUPANCY REQUIREMENTS

- A. **Full Agency Occupancy During Construction:** The Agency will occupy the site and existing building during the entire construction period. Cooperate with the Agency during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Agency's operations.
 - 1. Provide adequate building and fire code egress from the buildings during the renovation process. The Contractor will be responsible to maintain and protect egress ways during the construction sequence per the design as supplied by the Architect. Contractor shall be responsible for preparing egress plans for Owner approval and for Office of State Building Official and Office of State Fire Marshal for approval if required.
- B. **Partial Agency Occupancy:** The Agency reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Should it become necessary or advisable, as the work nears final completion, for the Agency to occupy a portion of the building prior to final acceptance, the Contractor shall cooperate in completing such areas and making same accessible.
 - 2. The Construction Administrator will determine whether such occupancy or use is possible and, if so, will make arrangements for holding a job inspection with the Project Manager, Agency Representative, Architect and General Contractor.
 - 3. A comprehensive list of items to be completed or corrected as issued by the General Contractor, together with the status of completion and terms of occupancy, will be forwarded to the Project Manager and the Architect by the Construction Administrator. A letter will be issued by the Project Manager and Architect to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.
 - 4. Prior to partial Agency occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Agency will operate and maintain mechanical and electrical systems serving occupied portions of the building.
 - 5. The Architect will prepare a "Certificate of Substantial Completion" for each specific portion of the Work to be occupied prior to Agency occupancy. Use the "Certificate of Substantial Completion" form as required by the Owner.
 - 6. The Project Manager will request a signed "Certificate of Compliance" from the Architect, and Contractor, if required, or for projects that exceed the Threshold

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limit:

7. A letter from the Project Manager to the Agency Representative with copy to the General Contractor granting occupancy will state the terms and conditions of occupancy and that fire insurance coverage has been requested, the effective date of which will indicate to the Contractor that he may cancel fire insurance coverage for that portion of the project.
8. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
9. Work after Partial Agency Occupancy:
 - a. For all work to complete the area occupied, warranty work, the balancing and commissioning of systems, repair of latent defects and adjustments after partial occupancy, the Contractor is responsible for all costs associated with working in occupied buildings.

01019 CONTRACT CONSIDERATIONS

A. Allowances:

1. The Contractor's costs for unloading and handling, labor, installation costs, storage, insurance, overhead and profit and other expense related to the Allowance item shall be included in the Lump Sum Bid Amount and not in the Allowance unless stated otherwise in the Allowance Schedule of this section.
2. Architect:
 - a. Consult with Contractor for consideration of Products, suppliers and installers.
 - b. Select Products in consultation with the Project Manager and Agency Representatives and transmit decision to Construction Administrator.
 - c. Prepare Change Order.
3. Construction Administrator Responsibilities:
 - a. Consult with Architect, Contractor, Project Manager and Agency Representatives for consideration of Products, suppliers and installers.
 - b. Select Products in consultation with Architect, Project Manager and Agency Representatives and transmit decision to Contractor
 - c. Prepare Change Order.
4. Contractor Responsibilities:
 - a. File applications and obtain **ALL** required permits for the Project.
 - b. Assist Architect and Construction Administrator in selection of Products and Suppliers.
 - c. Obtain proposals from Suppliers and offer recommendations.
 - d. On notification of selection by Construction Administrator execute purchase agreement with designated supplier.
 - e. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - f. If the actual cost of an Allowance item is more or less than the given amount, the Contract Sum will be adjusted by Change Order.

01027 APPLICATION FOR PAYMENT

- A. **Schedule of Values:** Submit the “Schedule of Values” to the Construction Administrator at the earliest possible date but no later than twenty-one (21) Calendar Days after the Contract Start Date. A separate "Schedule of Values" shall be provided for each Phase of the Project identified in Section 01010 Summary of Work, Work Sequence – Phase(s).
1. **Format and Content:** Use the Project Manual Table of contents as a guide to establish the format for the “Schedule of Values”. Provide at least one (1) line item for each of the Specification Section on electronic media printout.
 2. **Identification:** Project identification on the Schedule of Values shall include, but not be limited to, the following:
 - a. **Owner**
 - b. **Project Number**
 - c. **Project Name**
 - d. **Project Location**
 - e. **Contractor's name and address**
 3. Arrange the “Schedule of Values” in tabular format as required by the Owner, containing separate columns including, but not limited to, the following Items:
 - a. **Item Number**
 - b. **Description of Work with Related Specification Section or Division Number**
 - c. **Scheduled Values broken down by description number, type material, units of each material**
 - d. **Name of subcontractor**
 - e. **Name of manufacturer or fabricator**
 - f. **Name of supplier**
 - g. **Retainage**
 - h. **Contract sum in sufficient detail**
 4. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total one hundred percent (100%).
 5. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
 6. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
 7. **Unit-Cost Allowances:** Show the line-item value of unit-cost allowances, as a product of the unit cost, multiplied by the measured quantity. Estimate quantities from the best indication in the Contract Documents.
 8. **General Conditions:** Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

GENERAL REQUIREMENTS

- a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.
- B. Applications for Payment – General:** Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and Construction Administrator and paid for by the Owner.
1. The initial “Application for Payment”, the “Application for Payment” at time of “Substantial Completion” and the final “Application for Payment”, involve additional requirements.
 2. Payment-Application Terms: The Owner will process monthly progress payments. The Contractor may submit applications for payment on a monthly basis.
 3. Payment-Application Forms: Use the “Application for Payment” form as required by the Owner. Present the required information on electronic media printout or approved Owner Form, multiple pages should be used if required.
 4. For each item, provide a column including but not limited to the following items:
 - a. Item Number
 - b. Description of Work and Related Specification Section or Division
 - c. Scheduled Value, break down by units of material and units of labor
 - d. Work completed from previous application
 - e. Work completed this period
 - f. Materials presently stored
 - g. Total completed and stored to date of application
 - h. Percentage of Completion
 - i. Balance to Finish
 - j. Retainage
 5. Application Preparation: Complete every entry on the Application form. At the time of Final Payment only, include an executed Application form by a person authorized to sign legal documents on behalf of the Contractor. The Construction Administrator will return incomplete Applications without action.
 - a. Entries shall match data on the “Schedule of Values”.
 - b. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.**
 6. Transmittal: Except for final payment, submit to the Construction Administrator by a method ensuring receipt within **forty-eight (48)** hours. One (1) complete, signed and notarized original of each Application for Payment, including lien waivers and similar attachments when required, along with six (6) copies. For Final Payment, nine (9) complete, signed and notarized copies shall be submitted.
 - a. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
 7. Applications for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment and all

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subsequent Application for Payments including, but not limited to, the following items:

- a. List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Connecticut Tax Registration Numbers
- b. List of principal suppliers and fabricators
- c. Schedule of Values
- d. Contractor's Construction Schedule (preliminary if not final)
- e. Schedule of principal products
- f. Submittal Schedule (preliminary if not final)
- g. List of Contractor's staff assignments
- h. List of Contractor's principal consultants
- i. Copies of all applicable permits
- j. Copies of authorizations and licenses from governing authorities for performance of the Work
- k. Proof that as-built documents are updated as required by Section 01700 "Contract Closeout"
- l. Initial as-built survey and damage report, if required

C. **Application for Payment at Substantial Completion:** Following issuance of the Certificate of Substantial Completion submit an Application for Payment form, using the form as required by the Owner. Present the required information on electronic media printout.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
2. Administrative actions and submittals that shall precede or coincide with this application include, but are not limited to, the following:
 - a. Occupancy permits and similar approvals
 - b. Warranties (guarantees) and maintenance agreements
 - c. Maintenance instructions
 - d. Meter readings
 - e. Changeover information related to Owner's occupancy, use, operation, and maintenance
 - f. Final cleaning
 - g. Application for reduction of retainage and consent of surety
 - h. Final progress photographs
 - i. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion

D. **Final Payment Application:** Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include, but are not limited, to the following:

1. Completion of Project Closeout requirements

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2. Completion of list of items remaining to be completed as indicated on the attachment to the Certificate of Substantial Completion
3. Ensure that unsettled claims will be settled
4. Ensure that incomplete Work is not accepted and will be completed without undue delay
5. Transmittal of required Project construction records to the Owner (including as-built documents Reference Section 01700 "Contract Closeout".)
6. Proof that taxes, fees, and similar obligations were paid
7. Removal of temporary facilities and services
8. Removal of surplus materials, rubbish, and similar elements
9. Change of door locks to Owner's access
10. The requirements of the General Conditions and Supplementary Conditions for Final Acceptance, Final Completion, Final Inspection, and Final Payment
11. Asbestos, Lead or other hazardous material manifests
12. Completion of "Building Contractor Reporting Form" as supplied by Department of Public Works, for all Contractors, Subcontractors, Vendors, Suppliers, etc. who work on the Contract. The form includes the following information:
 - a. Contractor/Subcontractor name
 - a. FEIN/Social Security Numbers
 - b. Connecticut Tax Registration Numbers
 - c. Type of work
 - d. Name of business and address
 - e. Remittance address

01030 SUPPLEMENTAL BIDS

- A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. **Definition:** A Supplemental Bid is an amount proposed by bidders and stated on the Bid Proposal Form for certain work defined in the Bidding Documents that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

The cost for each supplemental bid is the net addition to the Contract Sum to incorporate the Supplemental Bid into the Work. Supplemental Bids are only accepted in the numerical order that they are listed on the Bid Proposal Form and never accepted out of numerical sequence. No other adjustments are made to the Contract Sum.
- C. **Procedures:**
 1. **Coordination:** Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
 - a. Include as part of each Supplemental Bid, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete

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installation whether or not mentioned as part of the Supplemental Bid.

- b. Execute accepted Supplemental Bids under the same conditions as other Work of this Contract.
- c. Schedule: A "Schedule of Supplemental Bids" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each Supplemental Bid.

D. **Schedule of Supplemental Bids (Alternates):**

- 1. Supplemental Bid No. 1: ADD to the Base Bid the labor, material and equipment to replace the windows and all associated components, including but not limiting to blinds, sill and trim on the East façade and Northeast corner of the building as indicated on the Drawings. Refer to related specification sections for additional information.
- 2. Supplemental Bid No 2: ADD to the Base Bid the labor, material and equipment to replace the windows and all associated components, including but not limiting to blinds, sill and trim on the West façade and Northwest corner of the building as indicated on the Drawings. Refer to related specification sections for additional information.
- 3. Supplemental Bid No 3: ADD to the Base Bid the labor, material and equipment to replace the windows, translucent wall assemblies and all associated components at Drill Hall 33 as indicated on the Drawings. Refer to related specification sections for additional information.

01035 MODIFICATION PROCEDURES

A. **Summary:** This Section specifies administrative and procedural requirements for handling and processing contract modifications.

B. **Requests for Information:**

- 1. In the event that the Contractor or subcontractor, at any tier, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the Architect, the Contractor shall submit a "Request for Information" in writing to the Architect via Construction Administrator. "Requests for Information" may only be submitted by the Contractor and shall only be submitted on the "Request for Information" forms as required by the Owner. In the "Request for Information", the Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect.
 - a. In the "Request for Information", the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.
 - b. The Owner acknowledges that this is a complex project. Based upon the Owner's past experience with projects of similar complexity, the Owner anticipates that there will probably be some "Requests for Information" on this project.
 - c. The Architect will review all "Requests for Information" to determine whether they are "Requests for Information" within the meaning of this term. If it is determined that the document is not a "Request for

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Information”, it will be returned to the Contractor, unreviewed as to content, for resubmittal on the proper form and in the proper manner.

- d. “Requests for Information Response” shall be issued within seven (7) Working Calendar Days of receipt of the request from the Contractor unless the Owner determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Owner will, within seven (7) Working Calendar Days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a “Request for Information” on an activity with seven (7) Working Calendar Days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the seven (7) Working Calendar Days set forth above.
- e. “Requests for Information Response” from Architect will not change any requirement of the contract documents. In the event the Contractor believes that the “Requests for Information Response” will cause a change to the requirements of the contract document, the Contractor shall immediately give written notice to the Construction Administrator stating that the Contractor believes the “Requests for Information Response” will result in “Change Order” and the Contractor intends to submit a “Change Order Proposal” request. Failure to give such written notice immediately shall waive the Contractor’s right to seek additional time or cost under the requirement these Requirements.

C. Minor Changes in the Work

1. The Architect, through the Construction Administrator, will issue supplemental instruction authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract time, on the “Supplemental Instructions” form as required by the Owner.

D. Proposal Request:

1. Architect/Owner-Initiated Requests For Proposals: The Architect or Owner will issue a detailed description of proposed changes in the Work via the Construction Administrator that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications. Such requests shall be on a “Proposal Request” form as required by the Owner.
2. “Proposal Request” is issued for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
3. Within fourteen (14) Working Calendar Days of receipt of a “Proposal Request”, submit a “Change Order Proposal” with the required information necessary to execute the change to the Construction Administrator for the Architect’s/Owner’s review.
4. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - a. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.

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- b. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- c. The Agency is tax exempt. All Contractor and Subcontractor services provided under your contract with the State of Connecticut may not be exempt from taxes. The Department of Revenue Services can guide you as to which services are exempt and which are not. Please contact the State of Connecticut, Department of Revenue Services at 800-382-9463 or 860-541-3280.
- d. Dollar values shown on the Schedule of Values shall not be the governing (or deciding) final amounts for change orders involving either additional charges or deletions.

E. **Change Order Proposal:**

- 1. When either a “Request for Information” from the Contractor or a “Proposal Request” from the Architect or Owner results in conditions that may require modifications to the Contract, the Contractor may propose changes by submitting a request for a “Change Order Proposal” to the Architect via the Construction Administrator on forms as required by the Owner. These forms shall also include “Change Order Proposal Worksheets” as required by the Owner.
 - a. Include statements outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 - b. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities as directed by Article 13 “Compensation for Changes in the Work” of the General Conditions of the Contract for Construction.
 - c. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
 - d. Comply with requirements in Section 01631 “Equals and Substitutions” if the proposed change requires an equal or substitution of one (1) product or system for a product or system specified.
- 2. The State of Connecticut construction contract has the following tax exemptions:
 - a. Purchasing of materials which will be physically incorporated and become a permanent part of the project.
 - b. Tools, supplies and equipment used in fulfilling the construction contract are not exempt.
 - c. Services that are resold by the Contractor are exempt, i.e. if a General Contractor hires a plumber, carpenter or electrician, a resale certificate may be issued to the subcontractor because these services are considered to be integral and inseparable component parts of the building contract
- 3. “Change Order Request” Forms: Use “Change Order Proposal” and “Change Order Proposal Worksheets” forms as required by Owner.
- 4. “Change Order Proposal” cannot be submitted without the Contractor either prior submission of a “Request for Information” from the Contractor or as a response to a “Proposal Request” submitted by the Architect or Owner.

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5. Any "Change Order Request" submitted without a prior submittal of a "Request for Information" or as a response to a "Proposal Request" will be immediately rejected and returned to the Contractor.

F. Construction Change Directive:

1. "Construction Change Directive": When the Owner and the Contractor disagree on the terms of a "Change Order Proposal" resulting from either a "Request for Information" or "Proposal Request", then the Architect through the Construction Administrator may issue a "Construction Change Directive" on a "Construction Change Directive" as authorized by the Owner on the form required by the Owner. The "Construction Change Directive" instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a "Change Order".
 - a. The "Construction Change Directive" contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.
2. Documentation: The Contractor shall maintain detailed records on a time and material basis of work required by the "Construction Change Directive".
 - a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
 - b. The final value shall be negotiated based on the supporting data to determine the value of the work.

G. Change Order Procedures:

1. Upon the Owner's approval of a Contractor's "Change Order Proposal", the Construction Administrator will issue a "Change Order" for signatures of the Architect, Owner and the Contractor on "Change Order" form as required by the Owner.

01040 COORDINATION

A. Construction Administrator:

1. The Construction Administrator is identified in Section 01003 "Construction Administrator".
2. Construction Mobilization:
 - a. Cooperate with the Construction Administrator in the allocation of mobilization areas of the site, for field offices and sheds, for agency facility access, traffic, and parking facilities.
 - b. During Construction, coordinate use of site and facilities through the Construction Administrator.
 - c. Comply with Construction Administrators procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
 - d. Comply with instructions of the Construction Administrator for use of temporary utilities and construction facilities.

- B.** Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate

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construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in the sequence required to obtain the best results where installation of one (1) part of the Work depends on installation of other components, before or after its own installation.
 3. Make provisions to accommodate items scheduled for later installation.
- C. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
1. Prepare similar memoranda for the Construction Administrator, Owner and separate Contractors where coordination of their work is required.
- D. **Administrative Procedures:** Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of schedules
 2. Installation and removal of temporary facilities
 3. Delivery and processing of submittals
 4. Progress meetings
 5. Project closeout activities
- E. **General Coordination Provisions:**
1. **Inspection of Conditions:** Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed and coordinate such inspections with the Construction Administrator and authorities having jurisdictions. If unsatisfactory conditions exist notify the Construction Administrator immediately. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
 2. The Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
 3. **Coordination Drawings: NOT USED.**
 4. The Construction Administrator will meet with the Contractor on all major items of coordination.
 5. See also General Conditions Article 7 "Cooperation of Trades".

01045 CUTTING AND PATCHING

- A. Openings and chases may not be shown on the Drawings. It is the responsibility of the Contractor to examine the Electrical, Heating, Cooling, Ventilating and Plumbing Drawings and to provide chases, channels or openings where needed.
- B. The Contractor shall install sleeves, inserts and hangers furnished by the trades needing same.
- C. After installing work into openings, channels and/or chases, the Contractor shall close same. If finishes are to be restored, the new work shall match the original and shall be

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- done by the trade customarily responsible for the particular kind of work.
- D. Permission shall be obtained from the Construction Administrator before cutting beams, arches, lintels or other structural members.
 - E. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
 - 1. Obtain approval from the Architect of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. *Structural decking.*
 - b. *Equipment supports.*
 - c. *Piping, ductwork, vessels, and equipment.*
 - F. Do cutting and patching to integrate all elements of the work. Provide penetrations of existing surfaces. Provide samples for testing. Seal penetrations through floors, walls, ceilings and roofs, as applicable; restore or preserve fire-rated and smoke-barrier construction. All penetrations shall be coordinated with the manufacturer and/or warranty holder in accordance with appropriate specifications. Construction and finishes shall match original work.
 - G. The Contractor shall verify dimensions for built-in work and/or work adjoining that of other trades before ordering any material or doing any work. Discrepancies shall be submitted to the Construction Administrator before proceeding with the work.
 - H. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.
 - I. See also General Conditions Article 23 "Cutting, Fitting, Patching and Digging".

01050 FIELD ENGINEERING

NOT USED

01095 REFERENCE STANDARDS & DEFINITIONS

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. References to standard specifications and codes refer to the editions current at the bid due date. An exception is buildings exceeding the threshold limit must be in substantial compliance with the requirements of the effective code at the time of receipt of completed application to the Office of State Building Inspector (OSBI). References include their addenda and errata, if any, and shall be considered a part of these specifications as if they were printed herein in full.
- C. The manufacturers' standard warranties or guarantees shall apply when their products are used on this project.
- D. Flame Spread Ratings: All materials that are required of obligated to meet specified standards shall be submitted to the Owner for their records as part of the shop drawing submittal process for their construction records.

01120 RENOVATION/DEMOLITION PROJECT PROCEDURES

- A. Products for Patching and Extending Work:**
1. New Materials: As specified in product sections; match existing Products and Work for patching and extending Work.
 2. Type and Quality of Existing Products: Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.
- B. Inspection – General:**
1. Verify that demolition is complete and areas are ready for installation of new Work.
 2. Beginning of restoration Work means acceptance of existing conditions.
- C. Project Procedures for Work Involving Lead Containing Material (LBP):**
1. Exposure levels for lead in the construction industry are regulated by 29 CFR 1926.62. Construction activities disturbing surfaces containing lead-based paint (LBP) which are likely to be employed, such as sanding, grinding, welding, cutting and burning, have been known to expose workers to levels of lead in excess of the Permissible Exposure Limit (PEL). Conduct demolition and removal Work specified in the technical sections of this specification in conformance with these regulations. In addition, construction debris/waste may be classified as hazardous waste. Disposal of hazardous waste material shall be in accordance with 40 CFR Parts 260 through 271 and Connecticut Hazardous Waste Management Regulations Section 22a-209-1; 22a-209-8(c); 22a-449(c)-11; and 22a-449(c)-100 through 110.
 2. The Contractor's Work shall be based on a child under the age of six (6) in residence; the Work shall also be in accordance with Connecticut Regulations Section 19a-111-1 through 11.
 3. This facility was constructed prior to 1978 and is likely to have painted surfaces containing lead-based paint.
 4. Testing for lead-based paint has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the LBP testing are for information purposes only. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of LBP. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.
- D. Project Procedures for Work Involving Asbestos Containing Material (ACM):**
1. The Contractor is responsible for abating all ACM that is within the windows and associated components, and is identified in Asbestos Inspection Reports. This is to be accomplished as part of the project. In demolition portion, every attempt should be made by the Contractor to remove all ACM.
 2. If the Contractor should encounter any material suspect or known to contain ACM, he should immediately notify the Construction Administrator of same. It is the Contractor's responsibility to have the material tested and abated (if necessary).
 3. Testing for asbestos has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. The asbestos testing results are for information purposes only. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of

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asbestos. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

4. See also General Conditions Article 23 "Cutting, Fitting, Patching and Digging".

E. Project Procedures for Work Involving Products Containing Persistent Bioaccumulative Toxic Chemicals" (PBT's) such as Polychlorinated Biphenyls (PCB's), Di-2-ethylhexyl Phthalate (DEHP), and Mercury:

1. The Contractor is responsible for abating all PCB's, DEHP, and mercury prior to the start any work involving construction, renovation or demolition (if necessary).
2. Exposure Levels for Products Containing Persistent Bioaccumulative Toxic Chemicals (PBT's) such as PCB's, DEHP, and mercury in the construction industry is regulated by 29CFR1910.1200 and 29CFR1926.28 et. al. Construction, renovation or demolition activities disturbing Products Containing Persistent Bioaccumulative Toxic Chemicals" (PBT's) such as PCB's and DEHP which are likely to be employed. These materials include but are not limited to fluorescent light fixture & exit sign, ballast's, high density discharge (HID) lamps, and certain types of construction products containing vinyl, and mercury containing electrical switches and thermostats. These activities may expose workers in excess of the respective Permissible Exposure Limit (PEL). Conduct demolition and removal Work specified in the technical sections of these specifications in conformance with these regulations. In addition, construction debris/waste may be classified as hazardous waste. Disposal of all hazardous materials shall be in accordance with but not limited to 40CRF Parts 761 Subpart K, 761, and 761.65 and the Connecticut General Hazardous Waste Statute Sec. 22a-454.
3. A Survey for Products Containing Persistent Bioaccumulative Toxic Chemicals (PBT's) such as PCB's, DEHP and Mercury has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling or repair. The PCB testing results are for information purposes only. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

F. Preparation:

1. Cut, move, or remove items as are necessary for access to alterations and renovation Work. Replace and restore at completion.
2. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
3. Remove debris and abandoned items from area and from concealed spaces.
4. Prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
5. Close openings in exterior surfaces to protect existing Work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

G. Installation:

1. Coordinate Work of alterations and renovations to expedite completion and if required sequence Work to accommodate Owner occupancy.
2. Remove, cut and patch Work in a manner to minimize damage and to provide restoring Products and finishes to original and or specified condition in accordance

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with Section 01045 "Cutting and Patching".

3. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes in accordance with Section 01045 "Cutting and Patching".
4. In addition to specified replacement of *equipment* and *fixtures*, restore existing *plumbing, heating, ventilation, air conditioning, electrical*, systems to full operational condition.
5. Recover and refinish Work that exposes mechanical and electrical Work exposed accidentally during the Work.
6. Install Products as specified in individual sections.

H. Transitions:

1. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent Work in texture and appearance.
2. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

I. Adjustments:

1. Where removal of partitions or walls result in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
2. Where a change of plane of $\frac{1}{4}$ inch in **12 inches** or more occurs, request recommendation from Architect for providing a smooth transition.
3. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
4. Fit Work at penetrations of surfaces as specified in Section 01045 "Cutting and Patching".

J. Repair of Damaged Surfaces:

1. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing imperfections.
2. Repair substrate prior to patching finish.

K. Finishes:

1. Finish surfaces as specified in individual Product sections.
2. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

L. Cleaning:

1. In addition to cleaning specified in Section 01700 "Project Closeout", clean Agency occupied areas of Work.

01121 SALVAGEABLE MATERIALS

NOT USED

01200 PROJECT MEETINGS

A. Pre-construction Conference:

1. The Contractor will attend a Pre-construction Conference before starting construction, as scheduled by the Construction Administrator convenient to the Owner, the Construction Administrator, Architect and Contractor. This meeting will take place within fourteen (14) Calendar Days after the written Notice to Proceed and before the Contract Start Date. Hold the conference at the Project Site or another convenient location as directed by the Construction Administrator. The Construction Administrator shall conduct the Pre-construction Conference to review the Contractor and Subcontractor responsibilities and personnel assignments.
2. Attendees: Authorized representatives of the Construction Administrator, Owner, Architect and their consultants; the Contractor and its superintendent; major subcontractors; agency; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. *Tentative construction schedule*
 - b. *Critical work sequencing*
 - c. *Progress meeting schedule*
 - d. *Designation of responsible personnel*
 - e. *Procedures for processing field decisions and Change Orders*
 - f. *Procedures for processing Applications for Payment*
 - g. *Distribution of Contract Documents*
 - h. *Submittal of Shop Drawings, Product Data, and Samples*
 - i. *Preparation of record documents*
 - j. *Use of the premises*
 - k. *Parking availability*
 - l. *Office, work, and storage areas*
 - m. *Equipment deliveries and priorities*
 - n. *Safety procedures*
 - o. *First aid*
 - p. *Security*
 - q. *Housekeeping*
 - r. *Working hours*
 - s. *Coordination with Audio-Visual and Telecommunications*

B. Progress Meetings:

1. The Construction Administrator will conduct progress meetings, bi-weekly, at the Project Site or at regular intervals as agreed upon at the Pre-construction Conference. The Construction Administrator will notify the Owner, the Architect,

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- and the Contractor of the scheduled Progress Meeting dates. Coordinate dates of Progress Meetings with preparation of Application for Payment requests.
2. Attendees: In addition to representatives of the Contractor, Construction Administrator, Owner and the Architect, subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities may be requested to attend these meetings on an as needed basis. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. The Contractor shall include the site superintendent as a minimum.
 3. Agenda: Progress Meetings shall review and correct or approve minutes of the previous Progress Meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
 - a. Construction Schedule: Review progress since the last Progress Meeting. Determine where each activity is in relation to the required Contractor's "Construction Schedule" and whether each activity is on time or ahead or behind Schedule. Determine how Work that is 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. Review the present and future needs of each entity present
 4. Reporting: The Construction Administrator will distribute minutes of the meeting to each party present, promptly and before the next scheduled meeting, and to parties who should have been present.
 5. A schedule of regular Project Meetings will be established at the Pre-construction Conference.

01300 SUBMITTALS

A. Summary

1. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:
 - a.* Submittal procedures
 - b.* Submittal schedule
 - c.* Daily construction reports
 - d.* Shop drawings
 - e.* Product data
 - f.* Samples
 - g.* Quality assurance submittals
 - h.* Architect's action
 - i.* Submittals shall comply with all requirements in Section 01631 "Equals and Substitutions".
 - j.* Submittals shall comply with all requirements in Section 01740 "Warrantees and Bonds".

E. **Submittal Procedures**

1. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
3. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - b. The Architect reserves the right to reject incomplete submitted packages.
4. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
 - a. Allow two (2) weeks for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two (2) weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

F. **Submittal Preparation:** Place a permanent label, title block or 8½ inches x 11 inches cover page approved by the Architect, on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. The minimum number of copies required for each submittal shall be at a minimum seven (7) copies or as determine otherwise at the pre-construction conference or by the Construction Administrator.
2. Provide a space approximately 4 inches by 5 inches on the label, beside the title block or on the cover page on Shop Drawings to record the Contractor's review and approval markings and the action taken.
3. Include the following information on the label for processing and recording action taken.
 - a. *Project Name and State of Connecticut Project Number*
 - b. *Date*
 - c. *Name and address of the Architect, Construction Administrator and Owner Representative*
 - d. *Name and address of the Contractor*
 - e. *Name and address of the subcontractor*
 - f. *Name and address of the supplier*
 - g. *Name of the manufacturer*

- h. Number and title of appropriate Specification Section*
 - i. Drawing number and detail references, as appropriate*
 - j. Indicate either initial or resubmittal*
 - k. Indicate deviations from Contract Documents*
 - l. Indicate if "equal" or "substitution"*
- G. **Submittal Transmittal:** Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. Copy the Construction Administrator on the transmittal. The Architect will return all submittals to the Contractor after action is taken with a complete copy of the submittal package and one (1) complete copy of the submittal package. The Architect will not accept submittals received from sources other than the Contractor.
 - 1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
- H. **Submittal Schedule:**
 - 1. After development and review by the Owner and Architect acceptance of the Contractor's Construction or CPM schedule prepare a complete schedule of submittals. Submit the schedule to the Construction Administrator within thirty (30) days of Contract Award.
 - 2. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction or CPM Schedule.
 - 3. Prepare the schedule in chronological order. Provide the following information:
 - a. Schedule date for the initial submittal
 - b. Related section number
 - c. Submittal category (Shop Drawings, Product Data, or Samples)
 - d. Name of Subcontractor
 - e. Description of the part of Work covered
 - f. Scheduled date for resubmittal
 - g. Scheduled date for the Architect's final release of approval
- I. **Distribution:** Following response to the initial submittal, print and distribute copies to the Construction Administrator, Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
 - 1. When revisions are made, distribute 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 construction activities.
- J. **Schedule Updating:** Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.
- K. **Daily Construction Reports**
 - 1. Prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to the Construction Administrator at

weekly intervals:

- a. List of subcontractors at the site*
- b. Approximate count of personnel at the site*
- c. High and low temperatures, general weather conditions*
- d. Accidents and unusual events*
- e. Meetings and significant decisions*
- f. Stoppages, delays, shortages, and losses*
- g. Meter readings and similar recordings*
- h. List of equipment on site and identify if idle or in use*
- i. Orders and requests of governing authorities*
- j. Change Orders received, start and end dates*
- k. Services connected, disconnected*
- l. Partial Completion's, occupancies*
- m. Substantial Completion's authorized*
- n. Equals or Substitutions approved or rejected*

L. Shop Drawings

1. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
2. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 - a. Dimensions
 - b. Identification of products and materials included by sheet and detail number
 - c. Compliance with specified standards
 - d. Notation of coordination requirements
 - e. Notation of dimensions established by field measurement
 - f. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½ by 11 inches but no larger than 36 by 48 inches.
 - g. Submit one (1) reproducible media and seven (7) prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.
 - h. Details shall be large scale and/or full size.
3. The Contractor shall review the Shop Drawings, stamp with this approval, and submit them with reasonable promptness and in orderly sequence so as to cause no delay in his Work or in the Work of any subcontractor. Shop Drawings shall be properly identified as specified for item, material, workmanship, and project number. At the submission, the Contractor shall inform the Architect, in writing of any deviation in the shop drawings from the requirements of the Contract

Documents.

4. The Architect will review and comment on shop drawings with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. Refer to Article 5 of General Conditions. Shop Drawings received by the Architect that indicate insufficient study of drawings and specifications, illegible portions or gross errors, will be rejected outright. Such rejections shall not constitute an acceptable reason for granting the Contractor additional time to perform the work.
5. The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copies of shop drawings until fully reviewed.
6. Upon final review submit four (4) additional prints, same as submitted, to the Construction Administrator for his use.
7. The Architect's review and comments on shop drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents.
8. Only final reviewed shop drawings are to be used on the project site.
9. The Work installed shall be reviewed in accordance with the shop drawings and the drawings and specifications. Final Review of the shop drawings by the Architect shall constitute acceptance by the State and the Architect of a variation or departure that is clearly identified. Final reviewed shop drawings shall not replace or be used as a vehicle to issue or incorporate change orders.

M. Product Data

1. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, schedules, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. *Manufacturer's printed recommendations*
 - b. *Compliance with trade association standards*
 - c. *Compliance with recognized testing agency standards*
 - d. *Application of testing agency labels and seals*
 - e. *Notation of dimensions verified by field measurement*
 - f. *Notation of coordination requirements*
3. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
4. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
5. Submittals: Submit seven (7) copies of each required submittal. The Architect will retain one (1) and will return the other marked with action taken and

corrections or modifications required.

a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

6. **Distribution:** Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.

b. Do not permit use of unmarked copies of Product Data in connection with construction.

N. Quality Assurance Submittals

1. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

2. **Certifications:** Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

a. **Signature:** Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

3. **Inspection and Test Reports:** Requirements for submittal of inspection and test reports from independent testing agencies are specified in Section 01400 "Quality Control."

O. Architect's Action

1. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.

a. Compliance with specified characteristics is the Contractor's responsibility.

2. **Action Stamp:** The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:

a. **Final Unrestricted Release:** When the Architect marks a submittal "Approved for fabrication," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

b. **Final-But-Restricted Release:** When the Architect marks a submittal "Incorporate Notations," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Submit corrected copies for record. Final payment depends on that compliance.

c. **Returned for Resubmittal:** When the Architect marks a submittal "Rejected, or Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

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- 1) Do not use, or allow others to use, submittals marked "Rejected, or Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
 - 2) Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."
- d. Unsolicited Submittals: The Architect will discard unsolicited submittals without action.

01310 CONSTRUCTION SCHEDULE

A. **Definitions:**

1. Construction Schedule: A method of planning and scheduling a construction project utilizing a horizontal bar chart with a separate bar for each major portion of the Work or operation to make the schedule an effective tool for planning and monitoring the progress of the work.

B. **Quality Assurance:** The Contractor's Consultant: Retain a consultant to provide planning, evaluating, and reporting by CPM scheduling.

1. In-House Option: The Owner may waive the requirement to retain a consultant if the Contractor can demonstrate that:
 - a. The Contractor has the computer equipment required to produce construction schedules.
 - b. The Contractor employs skilled personnel with experience in construction scheduling and reporting techniques.
2. **Program:** Use "Microsoft Project", latest version.
3. Standards: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

C. **Construction Schedule Format:**

1. Format: Utilize a horizontal bar chart (Gantt) with a separate bar for each major portion of the Work or operation, identifying first work day of each week.
2. Program: Use **Microsoft Project**, latest version.
3. Sequence of Listings: Utilize the Table of Contents of this Project Manual and the chronological order of the start of each item of work.
4. Scale and Spacing: Provide space for notations and revisions.
5. Sheet Size: To be coordinated with Construction Administrator.

D. **Content:**

1. Show complete sequence of construction by activity, with dates beginning and completion of each element of construction.
2. Identify each item by specification section number.
3. Identify work of separate phases other and other logically grouped activities.
4. Show accumulated percentages of completion of each item, and total percentage of Work completed, as of the first day of each month.

GENERAL REQUIREMENTS

5. Provide separate schedule of submittal dates for shop drawings, product data, and samples, Owner/Agency furnished products and any products identified as under Allowances, and dates reviewed submittals will be required from Architect/Architect. Indicate decision dates for selection of finishes.
6. Indicate delivery dates for Owner/Agency furnished products and any products identified as under Allowances.
7. Coordinate content with Schedule of Values specified in Section 01027 "Application for Payment".
8. Indicate critical path with original baseline indicated.

E. Submittals and Revisions to Schedules:

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
3. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken or proposed, and its effect.
4. An initial bar graph (Gantt) schedule is to be prepared by the General Contractor and submitted to the Construction Administrator within seven (7) Working calendar days of award of contract. This schedule is to cover all items of work from the start of the project up to the completion of the project. After review, resubmit required revised data within five (5) Working calendar days. This schedule must be revised monthly and when the actual schedule of significant items varies more than seven (7) Calendar days from the proposed schedule. The critical path with baseline must be indicated.
5. Submit revised Construction Schedules each Application for Payment.
6. Submit four (4) copies of the Construction Schedule to the Construction Administrator.

F. Distribution:

1. Distribute copies of the Construction Schedules to Construction Administrator, Architect, Owner, Subcontractors, suppliers, and other concerned parties.
2. Instruct recipients to promptly report, in writing, problem anticipated by projections indicated in schedules.

01380 CONSTRUCTION PHOTOGRAPHS

NOT USED

01400 QUALITY CONTROL

- A. Contractor Responsibilities: All tests required by the individual specification sections are required to be scheduled and notification given to the Construction Administrator forty-eight (48) hours in advance to the test/inspection as applicable. Costs for these services are not included in the Contract Sum.
1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-

GENERAL REQUIREMENTS

- control services. Costs for these services are included in the Contract Sum.
2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.
 - a. Such services include Special Inspections as required by the latest adoption of the "Connecticut State Building Code".
 - b. Where the Owner has engaged a testing agency for testing and inspecting part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner. The Owner will engage the services of a qualified Special Inspector for this project. The Special Inspector, as a representative of the Owner, shall document and confirm compliance with the provisions of the Connecticut State Building Code for Special Inspections.
 - c. Materials and assemblers for this project will be tested and construction operations inspected as the work progresses. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered, nor shall it obligate the State for final acceptance.
 - d. The Owner use of testing and inspection services shall in no way relieve the Contractor of the responsibility to furnish materials and finished construction in full compliance with the Contract Documents and the Connecticut State Building Codes.
- B. **Retesting:** The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
 2. The Owner will issue a credit change order to cover all costs incurred related to all re-tests/re-inspection due to non-compliance to the contract documents, including but not limited to the Owners costs and the Consultants costs.
- C. **Associated Services:** Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
1. Provide access to the Work.
 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 4. Provide facilities for storage and curing of test samples.
 5. Deliver samples to testing laboratories.
 6. Provide an approved design mix proposed for use for material mixes that require control by the testing agency.
 7. Provide security and protection of samples and test equipment at the Project Site.

GENERAL REQUIREMENTS

- D. **Duties of the Testing Agency:** The independent testing agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Construction Administrator, Architect and the Contractor in performance of the testing agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
1. The testing agency shall notify the Construction Administrator and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The testing agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 3. The testing agency shall not perform any duties of the Contractor.
- E. Owner will pay for the services of an independent testing agency laboratory to perform inspections, tests and other services required by the Specifications except as noted below, listed for which the Owner will issue a deduct change order to cover the cost associated with these tests:
1. When the Contractor notifies the Construction Administrator and/or Testing Agency less than twenty-four (24) hours before the expected time of testing.
 2. When the Contractor requires testing for his own convenience.
 3. When the Contractor schedules a test and is not ready for the required test.
- F. Reports of test that are part of the submittal requirements which indicate compliance or non-compliance with the specified standard.
- G. See also General Conditions Article 16 "Inspections and Tests".
- H. **Submittals:**
1. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Construction Administrator. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.
 2. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 3. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample taking and testing.

GENERAL REQUIREMENTS

- k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
- l. Name and signature of laboratory inspector.
- m. Recommendations on re-testing.

I. Quality Assurance:

- 1. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are pre-qualified as complying with the National Voluntary Laboratory Accreditation Program and that specialize in the types of inspections and tests to be performed.
 - a. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

J. Repair and Protection:

- 1. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Section 01045 "Cutting and Patching."
- 2. Protect constructions exposed by or for quality-control service activities, and protect repaired construction.
- 3. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

01505 TEMPORARY ELECTRICITY AND LIGHTING

NOT USED

01510 TEMPORARY HEATING, COOLING AND VENTILATING AND LIGHTING

NOT USED

01515 TEMPORARY TELEPHONE

- A. General Contractor shall use a cellular phone. All calls will be paid by the Contractor.

01520 TEMPORARY WATER

NOT USED

01525 TEMPORARY SANITARY FACILITIES

- A. Designated existing toilets may be used during construction. It is the responsibility of the Contractor to maintain the facilities in a clean and sanitary condition and return them to their original condition after use. No loitering or smoking will be permitted in these areas.

GENERAL REQUIREMENTS

01530 FIRE PROTECTION

- A. The Contractor, during construction, shall be responsible for loss or damage by fire to the work of the Contract until completion. Any fire used within the structure for working purposes shall be extinguished when not in use. Bitumen or tar shall be melted on the ground only. No flammable material shall be stored in the structure in excess of amounts allowed by the authorities. No gasoline shall be stored in or close to the building at any time. The Contractor shall assign a responsible employee to be in charge of fire protection measures.
- B. Provide one (1) 30 B:C fire extinguisher within 75 feet of any point on the roof.

01535 CONSTRUCTION EQUIPMENT

- A. The Contractor shall furnish tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and similar work or material necessary to insure convenience and safety in the execution of the Contract except where this is otherwise specified in any Specification Section. All such items shall meet the approval of the Department of Public Works but responsibility for design, strength and safety shall remain with the Contractor. All such items shall comply with Federal OSHA regulations and applicable codes, statutes, rules and regulations, including compliance with the requirements of the current edition of the "Manual of Accident Prevention in Construction" published by the A.G.C. and the standards of the State Labor Department.
- B. Staging, exterior and interior, required for the execution of this Contract, shall be furnished, erected, relocated if necessary and removed by the General Contractor. Staging shall be maintained in a safe condition without charge to and for the use of all trades as needed.

01540 BARRIERS AND ENCLOSURES

NOT USED

01545 PROTECTION

- A. Protect buildings, equipment, furnishings, grounds and plantings from damage. Any damage shall be repaired or otherwise made good at no expense to the State.
- B. Provide protective coverings and barricades to prevent damage. The Contractor shall be held responsible for, and must make good at his own expense, any water or other type of damage due to improper coverings. Protect the public and building personnel from injury.
- C. Provide temporary protection for installed products.
- D. Provide protective coverings for walls, projections, jambs, sills and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects and storage.
- E. See also General Conditions Article 19 "Protection of the Work, Persons and Property".

01550 SECURITY

- A. The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism.

GENERAL REQUIREMENTS

01555 TRAFFIC WAYS

NOT USED

01560 TEMPORARY CONTROLS

NOT USED

01565 STORM WATER CONTROL

NOT USED

01570 CLEANING

- A. Maintain areas under Contractor's control free of waste materials, debris and rubbish. Maintain in a clean and orderly condition.
 - B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces before closing the space.
 - C. Periodically clean interior areas before start of surface finishing and continue cleaning on an as-needed basis.
 - D. Control cleaning operations so that dust and other particulates will not adhere to wet or newly-coated surfaces.
 - E. Remove waste materials, debris and rubbish from site daily and dispose of legally off-site. No scrap/debris shall remain inside the building or anywhere on site upon final acceptance of the project.
 - F. See also General Conditions Article 24 "Cleaning Up".
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01575 PROJECT SIGNS

NOT USED

01580 FIELD OFFICES AND SHEDS

NOT USED

01585 IDENTIFICATION BADGES

NOT USED

01600 MATERIALS AND EQUIPMENT CONTROLS

- A. **Materials and Equipment:** Shall be delivered, stored and handled to prevent intrusion of foreign matter and damage by weather or breakage. Packaged materials shall be delivered and stored in original, unbroken packages.
 - 1. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.
 - 2. Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Owner.
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B. Storage and Protection:

1. Store products in accordance with manufacturers' instructions with seals and labels intact and legible. Store sensitive products in weathertight enclosures; maintain within temperature and humidity range required by manufacturer.
2. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
3. Store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
4. Arrange storage to provide access for inspection. Periodically inspect to insure products are undamaged and are maintained under required conditions. Keep log showing date, time and problems, if any.
5. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.
6. The Contractor shall prepare, as directed by the Owner, one (1) area or space in the building for storage of State-owned equipment.

01631 EQUALS AND SUBSTITUTIONS

A. Definitions: Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.

- 1 Equals or Substitutions General: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract.
- 2 Equal: Any deviation from the specification which is defined as follows: A replacement for the specified material, device, procedure, equipment, etc., which is recognized and accepted as substantially equal to the first listed manufacturer or first listed procedure specified, after review, by the Architect and may be rejected or approved at the sole discretion of the Owner. All equals must be substantially equivalent to the first manufacturer or first procedure listed in the Specifications with reference to all of the following areas: the substance and function considering quality, workmanship, economy of operation, durability and suitability for purposes intended; size, rating and cost. The equal does not constitute a modification in the scope of Work, the Schedule or Architect/Architect's design intent of the specified material, device, procedure, equipment, etc.
- 3 Substitution: Any deviation from the specified requirements, which is defined as follows: A replacement for the specified material, device, procedure, equipment, etc., which is not recognized or accepted as equal to the first manufacturer or procedure listed in the Specification after review by the Architect and may be rejected or approved by the Owner. The Substitution is not equal to the specified requirement in comparison to the first manufacture or first procedure listed in the Specifications in one or more of the following areas: the substance and function considering quality, workmanship, economy of operation, durability and suitability for purposes intended; size; cost and rating. The Substitution constitutes a modification in the scope of Work, the Schedule or the Architect/Architect's design intent of the specified material, device, procedure, equipment, etc.
- 4 The following are not considered to be requests for Equals or Substitutions:

GENERAL REQUIREMENTS

- a. Revisions to the Contract Documents requested by the Owner or Architect.
- b. Specified options of products and construction methods included in the Contract Documents.
- c. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities having jurisdiction.

B. Submittals:

1. Equals and Substitution Request Submittals: The Owner will consider requests for equals or substitutions if received within time period designated in the General Conditions Article 15 "Materials; Standards". Requests received more than the days specified in Article 15 after the start date of the contract will be rejected.
 - a. The Contractor is required to prepare and submit three (3) copies of the required data for the first manufacturer listed or procedure listed in the specifications section with reference to all of the following areas: the substance and function considering quality, workmanship, economy of operation, durability and suitability for purposes intended including the size, rating and cost. All submissions must include all the required data for the first listed manufacturer or procedure as specified, as well as the required data for the proposed Equal or Substitution. This will enable the Owner and Architect to determine that the proposed Equal or Substitution is or is not substantially equal to the first listed manufacturer or procedure.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for equals or substitutions, and the following information, as appropriate on a "Substitution Request" form as required by the Owner:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will be necessary to accommodate the proposed Equal or Substitution.
 - b. A detailed comparison chart of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Shop Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the effect on the Contractor's Construction Schedule or CPM Schedule compared to the schedule without approval of the Equal or Substitution. Indicate the effect on overall Contract Time.
 - f. Cost information, broken down, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed Equal or Substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.

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- g. The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.
 - h. The proposed request can be coordinated with the Work as certified by the Contractor.
 - i. The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.
2. The Contractor's submission and the Architect's review of Submittals, including but not limited to, Samples, Manufacturer's Data, Shop Drawings, or other such items, which are not clearly identified as a request for an Equal or Substitution, will not be considered or accepted as a valid request for an Equal or Substitution, nor does it constitute an approval.

01650 STARTING OF SYSTEMS

NOT USED

01700 CONTRACT CLOSEOUT

A. Substantial Completion:

- 1. Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
 - a. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show one hundred percent (100%) completion for the portion of the Work claimed as substantially complete.
 - 1) Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - 2) If one hundred percent (100%) completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - b. Advise the Owner of pending insurance changeover requirements.
 - c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - d. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - e. Submit record drawings, damage or settlement surveys, property surveys, and similar final record information.
 - f. Deliver tools, spare parts, extra stock, and similar items.
 - g. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
 - h. Demonstration, through operation and testing, the functions of all equipment to the satisfaction of the Owner for compliance to the contract. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.

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- i. Complete final cleanup requirements, including touchup painting.
 - j. Touch up and otherwise repair and restore marred, exposed finishes.
 2. Inspection Procedures: The Contract shall be ready and prepared when they request a Substantial Completion inspection. If the inspection reveals that the work is not complete, there are extensive punchlist items and as the items listed above are not complete, the Construction Administrator, Architect, and Owner will determine the inspection has failed.
 3. The Contractor is responsible for all costs to re-inspect due to a failed inspection. The Owner will issue a deduct change order to cover all costs for re-inspection.
 - a. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
 - b. Results of the completed inspection will form the basis of requirements for final acceptance.

B. Final Acceptance:

1. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 - a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 - b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - c. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
 - d. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
 - e. Submit consent of surety to Final Payment.
 - f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
2. Reinspection Procedure: The Inspection Group will re-inspect the Work upon receipt of notice from the Construction Administrator that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Owner.
 - a. Upon completion of reinspection, the Construction Administrator will prepare a certificate of final acceptance. If the Work is incomplete, the Construction Administrator will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

C. As Built Document Submittals:

1. **General:** Do not use record documents for construction purposes. Protect Record Documents from deterioration and loss in a secure, fire-resistant location. Provide

GENERAL REQUIREMENTS

access to record documents for the Architect's reference during normal working hours. Keep documents current; do not permanently conceal any work until required information has been recorded. **Failure to keep documents current is sufficient cause to withhold progress payments.**

- a. The Contractor shall also hire the services of a Surveyor registered in the State of Connecticut to conduct a final survey to determine the location of exterior underground utility lines and to record the results, and update existing electronic media
 - b. The record of exterior underground utilities shall be made at the time of installation on Mylar film drawing and AutoCAD (latest version) compatible disks. The drawing shall bear the seal of the Land Surveyor and a statement of accuracy.
2. **As-built Drawings:** The Contractor shall maintain one (1) clean, complete undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
- a. Mark record sets with erasable pencil to distinguish between variations in separate categories of the Work.
 - b. Mark all new information that is not shown on Contract Drawings.
 - c. Note related change-order numbers where applicable.
 - d. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
 - e. Upon completion of the work, the Contractor shall submit Record Drawings to the Construction Administrator for the Owner's Records who will pass them on to the Architect or Architect for transferring the changes to the Record Drawing Mylar Tracings.
 - f. Submit electronic format data of all Coordination Drawings as required by the Owner, at no additional cost.
3. **Record Specifications:** The Contractor shall maintain one (1) complete copy of the Project Manual, including Addenda. Include with the Project Manual one (1) copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
- a. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 - b. Give particular attention to equals and substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 - c. Note related record drawing information and Product Data.
 - d. Upon completion of the Work, submit record Specifications to the Construction Administrator for the Owner's records.

GENERAL REQUIREMENTS

4. **Record Product Data:** The Contractor shall maintain one (1) copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
 - a. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 - b. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 - c. Upon completion of markup, submit complete set of Record Product Data to the Construction Administrator for the Owner's records.
5. **Miscellaneous Record Submittals:** Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Construction Administrator for the Owner's records.

D. **Final Cleaning:**

1. **General:** The General Conditions requires general cleaning during construction. Regular site cleaning is included in Section 01570 "Cleaning".
2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion and Certification of Occupancy.
3. **Interior:**
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots; wash and polish glass
 - c. Clean exposed interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wash washable surfaces of mechanical, electrical equipment and fixtures and replace filters, clean strainers on mechanical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean and polish finish hardware.
 - f. Clean and polish tile and other glazed surfaces.
 - g. Clean floors; wax and buff resilient tile. Clean vinyl or rubber base.
 - h. Vacuum and/or dust walls, ceilings, lighting fixtures, ceiling diffusers and other wall and ceiling items.

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- i. Remove defacements, streaks, fingerprints and erection marks.
4. **Exterior:**
 - a. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth, even-textured surface.
 - b. Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances.
 - c. Clean roofs, gutters and downspouts.
 - d. Remove waste and surplus materials, rubbish and construction equipment and facilities from the site, and deposit it legally elsewhere.
 - e. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots; wash and polish glass.
5. **Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work during construction.
6. **Compliance:** Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
 - a. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Construction Administrator.
 - b. Leave building clean and ready for occupancy. If the Contractor fails to clean up, the Owner may do so, with the cost charged to the Contractor. The Owner will issue a credit change order to cover the costs.

01730 OPERATION AND MAINTENANCE DATA

NOT USED

01740 WARRANTIES AND GUARANTEES

- A. **Disclaimers and Limitations:** Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- B. **Related Damages and Losses:** When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

GENERAL REQUIREMENTS

- C. **Reinstatement of Warranty:** When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- D. **Replacement Cost:** Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- E. **Owner's Recourse:** Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. **Rejection of Warranties:** The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- F. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.
- G. The Contractor shall guarantee all materials and workmanship for a period of eighteen (18) months from the date of acceptance of the Work. In addition, the Contractor shall furnish the warranties listed below. Submit four (4) copies of each to the Construction Administrator in the supplier's standard form or in the form given below if there is no standard form available.
 - 1. Section 06600 Cast Plastic Fabrications – Five (5) Years
 - 2. Section 07421 Composite Metal Building Panels – Ten (10) Years
 - 3. Section 08520 Aluminum Windows – Five (5) Years
 - 4. Section 08950 Translucent Wall Assembly – Five (5) Years
 - 5. Section 12510 Blinds – Lifetime
- H. Submit certification that finish materials are fire rated as specified.
- I. Form of Guarantees and Warranties:

*Commissioner
Military Department
360 Broad Street
Hartford, Connecticut 06105
(Project Title and Number)*

I (We) hereby guarantee and warranty)

*the _____ work on the referenced project for a period of _____ years
from _____, 20__ against failures of workmanship and materials in accordance
with the requirements of Section ____, Page ____, Paragraph ____, of the Specifications.
Signed _____*

GENERAL REQUIREMENTS

General Contractor
(or authorized agent)

- J. Bonds shall be by approved Surety Companies, made out to the Commissioner, Military Department on companies' standard form.
- K. Guarantees, warranties or bonds supplied by Subcontractors, Suppliers or Manufacturers shall reference the project name, number, and location and be certified by the General Contractor to be for the product and installation on the project and must be countersigned by the General Contractor.
- L. **Submittals:**
 - 1. Submit written warranties prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 - 2. Forms for special warranties are included in this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Construction Administrator, for approval prior to final execution.
 - a. Refer to Divisions 2 through 17 Sections for specific content requirements and particular requirements for submitting special warranties.
 - 3. Form of Submittal: At Final Completion compile two (2) copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 4. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½-by-11-inch paper.
 - a. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
 - b. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.

END OF DIVISION 1 – GENERAL REQUIREMENTS

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Removal of designated construction
- B. Refer to items as indicated in the construction documents

1.2 RELATED SECTIONS

- A. Section 01010 – Summary of Work: Work sequence and Owner's continued occupancy
- B. Section 01700 – Contract Closeout: Project record documents

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Coordinate the preparation of the demolition sequence plan with the Owner, to mitigate disruption of administrative services.
- C. Assure that the fire alarm system, security alarm system, power, lighting and ventilation systems will remain on line, without disruption of service, unless authorized by the Owner and Fire Marshal at designated periods.

1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700.

1.5 REGULATORY REQUIREMENTS

- A. Conform to the Connecticut Building Code for demolition work, safety of structure, dust control and occupational safety.
- B. Obtain required permits from authorities.
- C. Do not close or obstruct egress width to exits.
- D. Do not disable or disrupt building fire or life safety systems without 3-day prior written notice to the Owner and Fire Marshal.
- E. Conform to procedures applicable when discovering hazardous or contaminated materials.
- F. Comply with and maintain a copy of the “IAQ Guidelines for Occupied Buildings Under Construction”, prepared by the Sheet Metal and Air Conditioning Contractors National Association, Inc. which identifies the air pollutants associated with construction, control measures, managing the construction process, quality control, communicating with occupants and planning and inspection checklists. Follow all recommended procedures and submit checklists at the intervals recommended by the Guidelines.

1.6 SEQUENCING

- A. Sequence work as agreed with the Owner at the preconstruction conference, where the schedule and sequence of work will be reviewed and approved.

1.7 SCHEDULING

- A. Schedule work under the provisions of Section 01300.
- B. Describe demolition removal procedures and schedule.

2 PART 2 – PRODUCTS

Not Used

3 PART 3 – EXECUTION

3.1 PREPARATION

- A. Provide, erect and maintain temporary barriers to restrict public access to construction areas.
- B. Provide, erect and maintain temporary enclosures to protect and assure public and Owner's access to the facility.
- C. Erect and maintain temporary partitions to prevent spread of dust, odors and noise to permit continued Owner occupancy, as specified in Section 01010.
- D. Protect existing materials which are not to be demolished.
- E. Prevent movement of structure; provide required bracing and shoring. Use caution when removing existing load bearing and structural elements, including walls, suspended floor slabs, etc.

3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if structure appears to be in danger. Notify Owner. Do not resume operations until directed.
- C. Maintain protected egress and access to the Work.

3.3 DEMOLITION

- A. Demolish in an orderly and careful manner. Protect existing supporting structural members and other bearing elements.

DEMOLITION AND REMOVALS

- B. Except where noted otherwise, remove demolished materials from site. Do not burn or bury materials on site.
- C. Remove demolished materials from site as work progresses. Upon completion of work, leave areas in clean condition.
- D. Remove temporary Work.
- E. Verify actual conditions to determine whether removal or demolition of any element will result in structural deficiency, overloading, failure or unplanned collapse.
- F. Provide and pay for all dumpsters required to complete the Scope of Work.
- G. Completely remove residual sealant from each window work area, including interior and exterior sealants. Use a solvent cleaner (recommended for use on brick masonry, stone or concrete) as required to remove the residual sealant from the brick masonry and concrete, leaving the brick work and concrete free of telltale streaks or discoloration.

END OF SECTION

1 PART 1 – GENERAL**1.1 SECTION INCLUDES**

- A. Blocking in window openings and framing
- B. Plywood sheathing
- C. Preservative treatment of wood

1.2 RELATED SECTIONS

- A. Section 07421 – Composite Metal Building Panels
- B. Section 07900 – Sealants
- C. Section 08520 – Aluminum Windows
- D. Section 09260 – Gypsum Board Systems

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society of Mechanical Engineers (ASME) Publications:

- B18.2.1-10 Square, Hex, Heavy Hex and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head and Lag Screws (Inch Series)
- B18.6.1-81 Wood Screws (Inch Series)

- 2. American Wood Preservers' Association (AWPA) Standards:

- T1-11 Processing and Treatment Standard
- M6-07 Brands Used on Preservative Treated Materials

- 3. American Society for Testing and Materials (ASTM) Publications:

- A 36-08 Carbon Structural Steel
- A 307-10 Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
- F 1667-11 Driven Fasteners: Nails, Spikes, and Staples

- 4. Federal Specifications (FS) Publications:

- A-A-1922A-95 Shield, Expansion (Caulking Anchors, Single Lead)

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.

- C. Certificates of Grade: Attesting that products meet the grade requirements specified in lieu of grade markings where appearance is important and grade marks will deface material.

1.5 DELIVERY AND STORAGE

- A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper ventilation, drainage and protection against dampness. Remove defective and damaged materials and provide new materials.

1.6 GRADING AND MARKING

- A. Lumber: Mark each piece of board lumber or each bundle of small pieces of lumber with the grade mark of a recognized association or independent inspection agency. Such association or agency shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used.
- B. Preservative-Treated Lumber and Plywood: The Contractor shall be responsible for the quality of treated wood products. Each treated piece shall be permanently marked or branded, by the producer, in accordance with AWPA M6. The Contractor shall provide the Owner with the inspection report of an independent inspection agency, approved by the Owner, that offered products comply with applicable AWPA Standards. The AWPB Quality Mark "LP-22" on each piece will be accepted, in lieu of inspection reports, as evidence of compliance with applicable AWPA treatment standards.
- C. Fire-Retardant Treated Lumber: Mark each piece in accordance with Mil. Spec. MIL-L-19140, except pieces that are to be natural or transparent finished. In addition, exterior fire-retardant lumber shall be distinguished by a permanent penetrating blue stain. Labels of a nationally recognized independent testing agency will be accepted as evidence of conformance to the fire-retardant requirements of Mil. Spec. MIL-L-19140.

- 1.7 SIZES AND SURFACING: Lumber shall be surfaced four (4) sides. Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

- 1.8 MOISTURE CONTENT: Air-dry or kiln-dry lumber. Kiln-dry treated lumber after treatment. Maximum moisture content of wood products shall be as follows at the time of delivery to the job site:

- A. Lumber and Boards: Nineteen percent (19%) maximum.
- B. Materials other than lumber – Moisture content shall be in accordance with standard under which the product is produced.

1.9 PRESERVATIVE TREATMENT

- A. Lumber and plywood shall be treated in accordance with T1. All wood shall be air or kiln dried after treatment. Specific treatments shall be verified by the report of an approved independent inspection agency, or the AWPB Quality Mark on each piece. Do not incise surfaces of lumber that will be exposed. Brush coat areas that are cut or drilled after treatment with either the same preservative used in the treatment or with a two

percent (2%) copper naphthenate solution. The following items shall be preservative treated:

1. Wood blocking and sills that are less than 24 inches from the ground and/or set into or in contact with concrete or masonry.

1.10 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:

1. Lumber Grading Agency: Certified by ALSC.

2 PART 2 – PRODUCTS

2.1 ROUGH LUMBER

A. Lumber: Preservative treated lumber such as nailing strips, nailers, blocking, framing and board lumber shall be one (1) of the species listed in the table below. Minimum grade of species shall be as listed. Finger-jointed lumber may be used in the same applications as solid lumber of an equivalent species and grade, provided the finger-jointed lumber meets all the requirements of the certification and the quality control programs of the rules writing agency having jurisdiction and all applicable requirements of PS 56.

Table of Grades for Framing and Board Lumber

<u>Grading Rules</u>	<u>Species</u>	<u>Framing/Board Lumber</u>
WWPA standard 1 grading rules No. 3 Common	Mountain Hemlock Douglas Fir-Larch Douglas Fir South	All Species: Standard Light Framing or No. 3 Structural Light Framing (Stud Grade for 2 x 4 size, 10 feet and shorter)
WCLIB standard grading rules	Douglas Fir-Larch Hem-Fir	All Species: Standard Light Standard

2.2 PLYWOOD: Conform to the requirements of U.S. Product Standard PS 1 and the American Plywood Association. Products conforming to equivalent grading by TECO or Pittsburgh Testing Laboratory is also approved. Do not use particle panel products or other fabricated wood products. All plywood is to be glued and screwed.

A. Plywood Sheathing: C-D Grade, Exposure 1, fire treated, thickness as indicated on the Drawings.

2.3 ROUGH HARDWARE: Unless otherwise indicated or specified, rough hardware shall be of the type and size necessary for the project requirements. Sizes, types and spacing of fastenings of manufactured building materials shall be as recommended by the product manufacturer unless otherwise indicated or specified. Rough hardware exposed to the weather or embedded in or in contact with preservative treated wood, exterior masonry or concrete slabs shall be zinc-coated.

- A. Bolts and Nuts: ASTM A 307.
- B. Expansion Anchors: FS A-A-1922A; except as shown otherwise, maximum size of devices in Groups IV, V, VI and VII shall be as indicated on the drawings.
- C. Adhesive Anchors: ASTM A 36; the adhesive capsules shall contain a vinylester resin as supplied in then Hilti HEA adhesive capsule.
- D. Lag Screws and Lag Bolts: ANSI B18.2.1.
- E. Wood Screws: ANSI B18.6.1.
- F. Wire Nails: ASTM F 1667.

3 PART 3 – EXECUTION

3.1 INSTALLATION

- A. Fit rough carpentry, set accurately to the required lines and levels and secure in place in a rigid manner. Provide as necessary for the proper completion of the work all framing members not indicated or specified. Spiking and nailing not indicated or specified otherwise shall be in accordance with the Nailing Schedule contained in UBC; perform bolting in an approved manner. Spikes, nails and bolts shall be drawn up tight.
- B. Sills: Set sills level and square and wedge with steel or slate shims; point or grout with non-shrinking cement mortar to provide continuous and solid bearing. Anchor sills to the foundations as indicated. Provide at least two (2) bolts for each sill member. Lap and splice sills at corners and bolt through the laps or butt the ends and through-bolt not more than 6 inches from the ends. Provide bolts with plate washers and nuts. Bolts in exterior walls shall be zinc-coated.
- C. Anchors in Masonry: Except where indicated otherwise, embed anchor bolts not less than 15 inches in masonry unit walls and provide each with a nut and a 2-inch-diameter washer at bottom end. Fully grout bolts with mortar.
- D. Anchors in Concrete: Except where indicated otherwise, embed anchor bolts as indicated on the drawings in poured concrete walls and provide each with a nut and a 2-inch-diameter washer at bottom end. A bent end may be substituted for the nut and washer; bend shall be not less than 90 degrees.
- E. Miscellaneous
 - 1. Wood Blocking: Provide proper sizes and shapes at proper locations for the installation and attachment of wood and other finish materials, fixtures, equipment and items indicated or specified.

3.2 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment in accordance with manufacturer's instructions.

ROUGH CARPENTRY

- B. Brush apply one (1) coat of preservative treatment on wood in contact with cementitious materials, roofing and related metal flashing. Treat site-sawn cuts.
- C. Allow preservative to dry prior to erecting members.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Wood trim
- B. Hardware and attachment accessories

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 07900 – Sealants
- C. Section 08520 – Aluminum Windows

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. Federal Specifications (FS) Publications:

MM-L-736C-83 Lumber; Hardwood

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials in ventilated, interior locations under constant minimum temperatures of 60 degrees F and maximum relative humidity of fifty-five percent (55%).

2 PART 2 – PRODUCTS

2.1 LUMBER MATERIALS

- A. Softwood Lumber: PS 20; Custom grade in accordance with AWI; maximum moisture content of six percent (6%).
- B. Hardwood Lumber: FS MM-L-736; Custom grade in accordance with AWI; maximum moisture content of six percent (6%). Fire treated.

2.2 FINISHED MILLWORK MATERIALS

- A. Interior Millwork:
 - 1. Trim, etc.: Custom grade poplar species, rotary cut, natural, with booked match grain, painted finish in accordance with AWI, size and profile as indicated in construction documents.
 - 2. Trim, etc.: Milled from clear red oak, stained in accordance with AWI, size and profile as indicated in the construction documents.

2.3 FABRICATION

- A. Fabricate to AWI Custom standards.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work and field measurements are as shown on shop drawings.
- B. Verify mechanical, electrical and building items affecting work of this Section are placed and ready to receive this work.
- C. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.3 INSTALLATION

- A. Install work in accordance with AWI Custom quality standard.
- B. Set and secure materials and components in place, plumb and level.

3.4 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Cast plastic sills

1.2 RELATES SECTIONS

- A. Section 07900 – Sealants
- B. Section 08520 – Aluminum Windows

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:
 - E 84-11 Surface Burning Characteristics of Building Materials

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate dimensions, thicknesses, required clearances, tolerances, materials, colors, finishes, fabrication details, field jointing, adjacent construction, design load parameters, methods of support, integration of components and anchorages.
- C. Product Data: Provide data on specified component products.
- D. Samples: Submit two (2) samples illustrating color, texture and finish.
- E. Manufacturer's Installation Instructions: Indicate preparation of opening required, with rough-in sizes. Provide tolerances for item placement, temporary bracing of components.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements for stain resistance.

1.5 MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Maintenance Data: Indicate list of approved cleaning materials and procedures required and provide list of substances that are harmful to product.
- C. Include instructions for stain removal, surface and gloss restoration.

1.6 REGULATORY REQUIREMENTS

- A. Conform to State of Connecticut Building code for flame/fuel/smoke rating of 35/10/15 for a thickness of ¾ inch in accordance with ASTM E 84 requirements.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install components when site conditions may be detrimental to product or curing.

1.8 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.9 SEQUENCING

- A. Sequence work under the provisions of Section 01010.
- B. Sequence work to permit installation of adjacent affected construction and electrical rough-in.

1.10 WARRANTY

- A Provide five (5) year warranty under provisions of Section 01700.

1.11 EXTRA MATERIALS

- A. Provide two (2) 16 ounce containers of polishing cream.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. DuPont Worldwide, (800.436.6072); **Corian Solid Surface**
- B. Formica Corporation, Cincinnati, OH (800.367.6422); **Solid Surfacing**
- C. Avonite Surfaces, a group of Aristech Acrylics, LLC, Florence, KY (800.354.9858)
- D. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

- A. Resin: Polyester type, with integral coloring, stain resistance to domestic chemicals and cleaners.
- B. Polishing Cream: Compatible polishing cream to achieve specified sheen.
- C. Core Framing: Softwood lumber, clear and free of knots.

2.3 FABRICATION

- A. Fabricate components by mold to achieve required shape and configuration.

- B. Finish exposed surfaces smooth and polish to a low sheen.
- C. Radius corners and edges.
- D. Cure components prior to shipment, except sheet materials requiring site handling.
- E. Provide cutouts for inserts, outlet boxes, fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal contact surfaces of cut edges.
- F. Comply with manufacturer's written recommendations for adhesives, sealers, fabrication and finishing.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions under provisions of Section 01600.
- B. Verify that joint preparation and affected dimensions are acceptable.

3.2 PREPARATION

- A. Provide anchoring devices for installation and embedment.
- B. Provide templates and rough-in measurements.

3.3 INSTALLATION

- A. Install components in accordance with shop drawings and manufacturer's instructions.
- B. Align work plumb and level.
- C. Rigidly anchor to substrate to prevent misalignment.

3.4 TOLERANCES

- A. Maximum Variation from True Dimension: 1/8 inch.

3.5 CLEANING

- A. Clean work under provisions of Section 01700.
- B. Clean and polish fabrications in accordance with manufacturer's instructions.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Batt insulation in soffit

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 09260 – Gypsum Board Systems

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- C 665-06 Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
 - E 136-11 Behavior of Materials in a Vertical Tube Furnace at 750°C

1.4 PERFORMANCE REQUIREMENTS

- A. Materials of this Section shall provide continuity of thermal barrier at building enclosure elements.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on product characteristics, performance criteria and limitations.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Owens Corning, Toledo, OH (800.438.7465)
- B. Johns Manville, Denver, CO (800.654.3103)
- C. CertainTeed Corporation, Valley Forge, PA (800.233.8990)
- D. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

- A. Batt Insulation: ASTM C 665, Type I and ASTM E 136; preformed glass fiber batts; conforming to the following:
 - 1. Thermal Resistance: R19.

- 2. Batt Size: 16 x 96 inches for walls.
 - 3. Facing: None.
- B. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide. Mechanically staple tape to prevent delamination.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

- A. Install insulation in accordance with insulation manufacturer's instructions.
- B. Install in walls without gaps or voids.
- C. Trim insulation neatly to fit spaces.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.
- E. Install with factory applied membrane facing warm side of building spaces. Lap ends and side flanges of membrane between framing members.
- F. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preformed metal panels with insulation, liners, related flashings and accessory components

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 07900 – Sealants
- C. Section 08520 – Aluminum Windows

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. Aluminum Association (AA) Publications:

- Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction

- 2. American Society for Testing and Materials (ASTM) Publications:

- A 153-09 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - B 209-10 Aluminum and Aluminum-Alloy Sheet and Plate
 - E 330-02 Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference (R 2010)

1.4 SYSTEM DESCRIPTION

- A. System: Pre-formed and pre-finished composite metal building panels of horizontal profile; site assembled; with integral rigid board insulation.

1.5 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with the 2003 International Building Code (IBC) for New London, Connecticut to prescribed design pressures as measured in accordance with ANSI/ASTM E 330.
- B. Maximum Allowable Deflection of Panel: 1/90
- C. System to accommodate, without damage to system, components or deterioration of seals, movement within system; movement between system and perimeter components, when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

COMPOSITE METAL BUILDING PANELS

- D. Accommodate positive drainage for moisture entering, or condensation occurring within panel system, to exterior.
- E. System to accommodate tolerances of building structural framing.
- F. Thermal Resistance of System: R of 19.
- G. Products of this section shall provide continuity of thermal barrier at building enclosure elements.
- H. Products of this section shall provide continuity of vapor and air barrier at building enclosure elements.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate dimensions, panel layout, spans, joints, construction details, methods of anchorage, method of installation
- C. Product Data: Provide data on assembled panel structural capabilities.
- D. Samples: Submit two (2) samples of panel and finish, 4 x 4 inch in size illustrating finish color, sheen and texture.
- E. Design Data: Indicate panel profile characteristics and dimensions, structural properties.
- F. Manufacturer's Installation Instructions: Indicate special handling criteria, installation sequence, cleaning procedures.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with AA.
- B. Maintain one (1) copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three (3) years experience.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products under provisions of Section 01600.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Stack pre-finished material to prevent twisting, bending or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

- D. Prevent contact with materials which may cause discoloration or staining.

1.10 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.11 COORDINATION

- A. Coordinate the Work with installation of installing windows.

1.12 WARRANTY

- A. Provide ten (10) year warranty under provisions of Section 01740. Include coverage for degradation of panel finish including color fading caused by exposure to weather.
- B. Provide three (3) year weather tight warranty under provisions of Section 01740. Include coverage for water tightness, integrity of seals.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Laminators, Inc., Hatfield, PA (877.663.4277); **Omega-Lite**
- B. Centria Architectural Systems, Moon Township, PA (800.759.7474); **Designwall 2000R, DS59 Profile**
- C. Substitutions: Under provisions of Section 01600.

2.2 EXTERIOR PANEL SHEET MATERIALS

- A. Pre-Coated Aluminum: ASTM B 209, 3105 alloy, H174 temper; smooth finish; shop pre-coated with modified silicone coating Kynar finish in color as selected by Architect and Owner.

2.3 OTHER SHEET MATERIALS

- A. Aluminum: ASTM B 209, 3105 alloy, H174 temper; mill finished.

2.4 COMPONENTS

- A. Exterior Sheet: Minimum 0.021 inch thick pre-coated aluminum stock; profile as indicated; 48 inches wide panel; interlocking edges, fitted with continuous gaskets.
- B. Liner: 0.011 inch thick aluminum stock; mill finish.
- C. Core: Rigid insulation board and corrugated polyallomer stabilizers.

- D. Internal and External Corners: Same material, thickness and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles. Mitered internal corners to be back braced with .032 inch thick pre-coated sheet stock, to maintain continuity of profile.

2.5 ACCESSORIES

- A. Gaskets: Manufacturer's standard type suitable for use with panels, permanently resilient; ultraviolet and ozone resistant; color as selected by Architect and Owner.
- B. Sealants: Specified in Section 07900.
- C. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized in accordance with ANSI/ASTM A 153 fastener cap same color as exterior panel.
- D. Power Actuated Fasteners: Steel, galvanized in accordance with ANSI/ASTM A 153; with soft neoprene washers, fastener cap same color as exterior panel.
- E. Field Touch-up Paint: As recommended by panel manufacturer.

2.6 FABRICATION

- A. Fabrication of primary component profiles on site not permitted.
- B. Form sections true to shape, accurate in size, square and free from distortion or defects.
- C. Form panels for batten seams.

2.7 FINISH

- A. Exposed Surfaces: Kynar 500 color as selected by Architect and Owner from manufacturer's full range.
- B. Concealed Interior Surfaces: Mill finish.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that building framing members are ready to receive panels.

3.2 INSTALLATION

- A. Install composite metal building panels in accordance with manufacturer's instructions.
- B. Use concealed fasteners unless otherwise approved by Architect.
- C. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.3 TOLERANCES

- A. Maximum Offset from True Alignment between Adjacent Members Butting or In Line:
1/16 inch.
- B. Maximum Variation from Plane or Location Indicated on Drawings: 1/8 inch.

3.4 CLEANING

- A. Clean work under provisions of 01700.
- B. Remove site cuttings from finish surfaces.
- C. Clean and wash pre-finished surfaces with mild soap and water, rinse with clean water.

END OF SECTION

1 PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Brake metal enclosure

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 07900 – Sealants
- C. Section 08520 – Aluminum Windows

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- B 209-14 Aluminum and Aluminum-Alloy Sheet and Plate

- 2. Sheet Metal and Air Conditioning Contractors National Association, Incorporated (SMACNA) Publication:

- 20012 Architectural Sheet Metal Manual

1.4 SUBMITTALS

- A. Samples:

- 1. Sheet Metal Materials: Two (2) pieces, 6 by 10 inches, of each type.
 - 2. Nails and Other Fastenings: Two (2) each.

- B. Shop Drawings: Indicate thicknesses, dimensions, fastenings and anchoring methods, expansion joints and other provisions necessary for thermal expansion and contraction.

- C. Certificates of Compliance: Manufacturer's certificates attesting that materials meet specified requirements.

1.5 DELIVERY, HANDLING AND STORAGE: Package and protect materials during shipment. Uncrate and inspect materials for damage, dampness and wet-storage stains upon delivery to the job site. Remove from the site and replace damaged materials that cannot be restored to like-new condition. Handle sheet metal items to avoid damage to surfaces, edges, and ends. Store materials in dry, weather-tight, ventilated areas until immediately before installation.

1.6 GUARANTEE

- A. Guarantee all work against defects in materials and workmanship for two (2) years following final acceptance.

1. Provide duplicate original guarantees in writing on Contractor's letterhead.

2 PART 2 – PRODUCTS

2.1 MATERIALS

- A. Furnish sheet metal items in 8- to 10-foot lengths. Single pieces less than 8 feet long may be used to connect to factory-fabricated inside and outside corners, and at ends of runs. Provide accessories and other items essential to complete the sheet metal installation. These accessories shall be made of the same materials as the items to which they are applied. Fabricate sheet metal items of the materials specified below and to the gauge, thickness, or weight specified. Sheet metal items shall have manufacturer's durinodic coating finish unless specified otherwise.
- B. Brake Metal: ASTM B 209; 0.050-inch-thick aluminum, with two (2) coat Kynar finish (or approved equal), color to be selected by Architect and Owner from manufacturer's full range to match adjacent windows, meeting alloy standards 6063-T52. Provide for expansion and contraction, as well as cleats and other related items as recommended by the manufacturer.
 1. Approved manufacturers:
 - a. Architectural Products Company, Wood Ridge, NJ (800.631.8375)
 - b. Cheney Flashing Company, Trenton, NJ (800.322.2873)
 - c. Southern Aluminum Finishing Company, Atlanta, GA (800.241.7429)
 - d. Approved equal
- C. Fastener: Use the same metal or a metal compatible with the item fastened. Use stainless steel fasteners to fasten dissimilar materials.

3 PART 3 – EXECUTION

3.1 INSTALLATION

- A. Requirements: Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry and free of defects and projections which might affect the application. For installation of items not shown in detail or not covered by specifications conform to the applicable requirements of the SMACNA Architectural Sheet Metal Manual. Join sheet metal together as recommended by the manufacturer or by the SMACNA manual.
- B. Workmanship: Make lines, arises and angles sharp and true. Free exposed surfaces from visible wave, warp and buckle and tool marks. Fold back exposed edges neatly to form a ½ inch hem on the concealed side. Make sheet metal exposed to the weather watertight with provisions for expansion and contraction.
- C. Nailing: Confine nailing of sheet metal generally to sheet metal having a maximum width of 18 inches. Confine nailing or flashing to one edge only. Space nails evenly not over 3 inches on centers and approximately ½ inch from edge unless otherwise specified or

indicated. Face nailing will not be permitted.

- D. Bolts, Rivets and Screws: Install bolts, rivets and screws where indicated or required. Provide compatible washers where required to protect surface of sheet metal and to provide a watertight connection.
- E. Flat-Lock Seams: Finish not less than $\frac{3}{4}$ inch wide.
- F. Protection from Contact with Dissimilar Materials:
 - 1. Metal Surfaces: Paint surfaces in contact with mortar, concrete or other masonry materials with alkali-resistant coatings such as heavy-bodied bituminous paint.
 - 2. Wood or Other Absorptive Materials: Paint surfaces that may become repeatedly wet and in contact with metal with two coats of aluminum paint or a coat of heavy-bodied bituminous paint.
- G. Expansion and Contraction: Provide expansion and contraction joints at not more 32 foot intervals for aluminum and at not more than 40 foot intervals for other metals. Where the distance between the last expansion joint and the end of the continuous run is more than half the required interval, an additional joint shall be provided. Space joints evenly.

3.2 PAINTING: Field-paint sheet metal for separation of dissimilar materials.

3.3 CLEANING

- A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, handling marks, contamination from steel wool, fittings and drilling debris and scrub-clean. Free the exposed metal surfaces of dents, creases, waves, scratch marks and solder or weld marks.

3.4 REPAIRS TO FINISH

- A. Scratches, abrasions and minor surface defects of finish may be repaired in accordance with the manufacturer's printed instructions and as approved. Repair damaged surfaces caused by scratches, blemishes and variations of color and surface texture. Replace items which cannot be repaired.

3.5 FIELD QUALITY CONTROL

- A. Establish and maintain a quality control procedure for sheet metal used in conjunction with storefront framing to assure compliance of the installed sheet metalwork with the contract requirements. Work not in compliance with the contract shall be promptly removed and replaced or corrected. Quality control shall include, but not be limited to, the following:
 - 1. Observation of environmental conditions; number and skill level of sheet metal workers; condition of substrate.
 - 2. Verification of compliance before, during, and after installation.
 - 3. Inspection of sheet metalwork, for proper size and thickness, fastening and joining and proper installation.

- B. Procedure: Submit for approval prior to start of storefront framing work. Include a checklist of points to be observed. Document the actual quality control observations and inspections.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Building and site sealants

1.2 RELATED SECTIONS

- A. Section 06600 – Cast Plastic Fabrications
- B. Section 07421 – Composite Metal Building Panels
- C. Section 08520 – Aluminum Windows
- D. Section 08950 – Translucent Wall Assembly
- E. Section 09260 – Gypsum Board System
- F. Section 10210 – Metal Louvers

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:
 - C 920-11 Elastomeric Joint Sealants

1.4 SUBMITTALS

- A. Certificates of Conformance: Submit certificates from the manufacturers attesting that materials meet the specified requirements.
- B. Manufacturers' Data: Clearly mark data to identify material type to be provided.
- C. Sealants: Data for sealant shall include:
 - 1. Application instructions and precautions.
 - 2. Shelf life.
 - 3. Mixing instructions for multi-component sealants.
 - 4. Recommended cleaning solvents.
- D. Primer(s).
- E. Backstop Material(s).
- F. Colors: Submit one (1) sample of each color for each sealant type to verify that products match the colors indicated. Where colors are not indicated, submit not less than three (3) different samples of manufacturers' full range for selection by the Architect and Owner.
- G. Manufacturer's Test Report: Indicate sealant compatibility with commonly used substrates.

- 1.5 **SAMPLE JOINTS:** Before sealant work is started, provide a sample of each type of finished joint where directed. Sample shall show the workmanship, bond and color of sealant. The workmanship, bond and color of sealant throughout the project shall match the approved sample joints.
- 1.6 **ENVIRONMENTAL CONDITIONS:** The ambient temperature shall be within the limits of 40 and 100 degrees F when sealant is applied.
- 1.7 **DELIVERY AND STORAGE:** Deliver materials to the job site in unopened manufacturers' external shipping containers, with brand names, date of manufacture, color and material designation clearly marked thereon. Elastomeric sealant containers shall be labeled to identify type, class, grade and use. Carefully handle and store materials to prevent inclusion of foreign materials or subjection to sustained temperatures exceeding 100 degrees F or less than 40 degrees F.

2 PART 2 – PRODUCTS

- 2.1 **SEALANTS:** Provide one part polysulfide sealants that have been tested and found suitable for the substrates to which it will be applied.
 - A. For joints in vertical surfaces, provide ASTM C 920, Type S, Class 25, Grade NS, Use NT. For joints at aluminum surfaces, provide ASTM C 920, Type S, Class 25, Grade NS, Use A. For joints in horizontal surfaces, provide ASTM C 920, Type S, Class 25, Use T. Locations as indicated in Drawings. Color(s) to be selected by Architect and Owner from manufacturer's full range.
 - B. **Manufacturers:** The following manufacturers are approved for use:
 - 1. Tremco Incorporated, Ashland, OH (800.321.7906)
 - 2. Pecora Corporation, Harleysville, PA (800.523.6688)
 - 3. Sika Corporation, Lyndhurst, NJ (800.933.7452)
 - 4. Substitutions: In accordance with Section 01600.
- 2.2 **PRIMER FOR SEALANT:** Provide a nonstaining, quick-drying type of consistency recommended by the sealant manufacturer for the particular application.
- 2.3 **BOND BREAKERS:** Provide the type and consistency recommended by the sealant manufacturer for the particular application.
- 2.4 **BACKSTOPS:** Provide glass fiber roving or neoprene, butyl, polyurethane or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Backstop material shall be compatible with sealant.
- 2.5 **CLEANING SOLVENTS:** Provide type(s) recommended by the sealant manufacturer.

3 PART 3 – EXECUTION

3.1 SURFACE PREPARATION: Surfaces shall be clean, dry to the touch and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint and other foreign matter that would tend to destroy or impair adhesion. When resealing an existing joint, remove existing caulk or sealant prior to applying new sealant.

- A. Steel Surfaces: Remove loose mill scale by sandblasting or, if sandblasting is impractical or would damage finish work, scraping and wire brushing. Remove protective coatings by sandblasting or using a residue-free solvent.
- B. Aluminum or Bronze Surfaces: Remove temporary protective coatings from surfaces that will be in contact with sealant. When masking tape is used as a protective coating, remove tape and any residual adhesive just prior to sealant application. For removing protective coatings and final cleaning, use nonstaining solvents recommended by the manufacturer of the item(s) containing aluminum or bronze surfaces.

3.2 SEALANT PREPARATION: Do not add liquids, solvents or powders to the sealant. Mix multi-component elastomeric sealants in accordance with manufacturer's instructions.

3.3 APPLICATION

A. Joint Width-To-Depth Ratios:

1. Acceptable Ratios:

<u>JOINT WIDTH</u>	Minimum	Maximum
For metal, glass, or other nonporous surfaces:		
¼ inch (minimum)	¼ inch	¼ inch
Over ¼ inch	½ of width	Equal to width
For wood:		
¼ inch (minimum)	¼ inch	¼ inch
Over ¼ inch to ½ inch	¼ inch	Equal to width
Over ½ inch to 2 inches	½ inch	5/8 inch
Over 2 inches	(As recommended by sealant manufacturer)	

2. Unacceptable Ratios: Where joints of acceptable width-to-depth ratios have not been provided, clean out joints to acceptable depths and grind or cut to acceptable widths without damage to the adjoining work. Grinding shall not be required on metal surfaces.

B. Backstops: Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified. Install backstops in the following locations:

1. Where indicated.

2. Where backstop is not indicated but joint cavities exceed the acceptable maximum depths specified in paragraph entitled, "Joint Width-to-Depth Ratios."
- C. Primer: Immediately prior to application of sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.
- D. Bond Breaker: Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used, to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.
- E. Sealants: Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and can not be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. Sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant and tool smooth as specified.

3.4 PROTECTION AND CLEANING

- A. Protection: Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed five to ten (5-10) minutes after the joint is filled.
- B. Final Cleaning: Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.
 1. Masonry and Other Porous Surfaces: Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for twenty-four (24) hours then remove by wire brushing or sanding.
 2. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent-moistened cloth.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Extruded aluminum windows; fixed and project-out
- B. Operating hardware and insect screens

1.2 RELATED SECTIONS

- A. Section 07900 – Sealants
- B. Section 08950 – Translucent Wall Assembly

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Architectural Manufacturers Association (AAMA) Publications:

- 101-02 Windows, Skylights and Glass Doors
- 2605-11 Superior Performing Organic Coatings on Aluminum Extrusions and Panels

2. American Society for Testing and Materials (ASTM) Publications:

- A 123-09 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- B 221-12 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes
- E 283-04 Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen (R 2012)
- E 331-00 Water Penetration of Exterior Windows, Skylight, Doors and (R 2009) Curtain Walls by Uniform Static Air Pressure Difference
- E 547-00 Water Penetration of Exterior Windows, Skylights, Doors, and (R 2009) Curtain Walls by Cyclic Static Air Pressure Difference
- E 1886-05 Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
- E 1996-09 Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

3. Society for Protective Coatings (SSPC) Publications:

- Paint 15-04 Steel Joist Shop Primer/Metal Building Primer

1.4 SYSTEM DESCRIPTION

- A. Windows: Thermally broken, tubular aluminum sections, shop fabricated, factory pre-finished, vision glass, related flashings, anchorage and attachment devices.

1.5 PERFORMANCE REQUIREMENTS

- A. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with the International Building Code (IBC) and ASCE 7. The Contractor shall verify in certified engineering calculations the load pressure, demonstrating compliance with ASCE 7 as required by ASCE 7.
- B. Limit mullion deflection to flexure limit of glass with full recovery of glazing materials.
- C. System to accommodate, without damage to components or deterioration of seals, movement within system, movement between system and peripheral construction, dynamic loading and release of loads, deflection of structural support framing.
- D. Limit air leakage through assembly to 0.10 cfm/ft of vent/sash perimeter, measured at a reference differential pressure across assembly of 6.24 psf as measured in accordance with ASTM E 283.
- E. Water Leakage: None, when measured in accordance with ASTM E 331/E 547 with a static pressure of 12.0 psf.
- F. Vapor Seal with Interior Atmospheric Pressure of 1 inch sp, 72 degrees F, forty percent (40%) RH: No failure.
- G. System to provide for expansion and contraction within system components caused by a cycling temperature range of 170 degrees F over a twelve (12) hour period without causing detrimental effect to system components.
- H. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- I. Anti-Terrorism Force Protection Requirements – DoD Unified Facilities Criteria
 - 1. Design to meet the requirements of UFC 4-010-01 DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS, 9 February 2012.
 - 2. Design of framing and connections shall be based on the following design criteria:
 - a. Standoff Distance of 86 ft.
 - b. Applicable Explosive Weight of Type I.
 - c. Level of Protection of Low.
 - 3. Window manufacturer shall provide, with their bid/quote, a “Blast Narrative” describing which design method of the UFC 4-010-01 was utilized to show product compliance to the performance specification in F.2.a., b. and c. above.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.

- B. Shop Drawings: Elevations and window location charts indicating opening dimensions, framed opening tolerances, affected related work; installation requirements, scaled details of composite members, hardware and components not in manufacturer's data; and glazing details for factory glazed units.
- C. Product Data: Provide component dimensions, anchorage and fasteners, glass, internal drainage details including manufacturer's specifications, test reports from an AAMA accredited laboratory.
- D. Submit finish and color charts for selection by Owner and Architect.

1.7 QUALITY ASSURANCE

- A. Furnish written documentation that the windows for the project conform to ANSI/AAMA 101.
- B. Furnish visible, permanent IGCC certification labels for the CBA rating level on dual seal double insulating glass units.
- C. Conform to requirements of ANSI A117.1 and the Americans with Disabilities Act.

1.8 QUALIFICATIONS

- A. Manufacturer and Installer: Company specializing in manufacturing aluminum glazing systems with minimum three (3) years experience.

1.9 PRE-INSTALLATION CONFERENCE

- A. Convene one (1) week prior to commencing work of this Section, under provisions of Section 01300.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Protect pre-finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Do not install sealants when ambient temperature is less than 40 degrees F during and forty-eight (48) hours after installation.

1.12 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on Drawings.

1.13 COORDINATION

- A. Coordinate the Work with installation of masonry, floor finishes and other components or materials.

1.14 EXTRA MATERIALS

- A. One (1) extra set of glazed sash for each window size to be supplied at job completion for storage for future needs.
- B. One (1) screen for each window size to be supplied at job completion for storage for future needs.

1.15 MANUFACTURER'S WARRANTIES

- A. Total Window Installation
 - 1. The responsible Contractor shall assume full responsibility and warrant for one (1) year the satisfactory performance of the total window installation. This includes the glass, glazing, hardware, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, structural, and impact resistance adequacy as called for in the specifications and approved shop drawings.
 - 2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible Contractor at their expense during the warranty period.
- B. Provide written guarantee against defects in material and workmanship for five (5) years from the date of final shipment.
- C. Provide written ten (10) year warranty for insulated glass units that they will be free from obstruction of vision as a result of dust or film formation on the internal glass surfaces caused by failure of the hermetic seal due to defects in material and workmanship.
- D. Provide manufacturer's fifteen (15) year warranty on the Kynar finish coating.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. EFCO Corporation, Monett, MO (800.221.4169); **Series 2901**
- B. Other acceptable manufacturers offering equivalent Products:
 - 1. TRACO Corporation, Cranberry Township, PA (800.837.7001)
 - 2. Kawneer Company, Inc., Norcross, GA (770.449.5555)
 - 3. Oldcastle BuildingEnvelope, Santa Monica, CA (866.653.2278)
 - 4. Winco Windows, St. Louis, MO (800.525.8089)
- C. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

- A. Extruded Aluminum: ASTM B 221; 6063 alloy, T6 temper, minimum wall thickness of 0.125 inches.

- B. Fasteners: Stainless steel.
- C. Shop and Touch-Up Primer for Steel Components: SSPC Paint 15, Type 1, red oxide.

2.3 COMPONENTS

- A. Frames: 4½ inch wide profiles, thermally broken with interior portion of frame insulated from exterior portion; flush glass stops of snap-on type. Provide with customary fabricated components for proper operation for this setting and projected use.
- B. Insect Screens:
 - 1. Exterior Locations: Woven 0.009-inch diameter stainless mesh; 18/18 mesh size with PVC spline, full size of operable sash/unit as detailed. Screens shall be easily removable without the use of tools however shall have vandal proof fittings to mitigate removal from the exterior. Provide with intermediate stiffener bars on large units. Provide finish to match window color of rectangular sections with mesh set into frame and secured.
- C. Operable Sash Weather Stripping: Nylon pile with fin seal; permanently resilient, profiled to effect weather seal.

2.4 GLASS AND GLAZING MATERIALS

- A. Glass and Glazing Materials: Insulated level “D” glazing – Maximum +160/-160 D.P.
 - 1. Nominal 1-1/8-inch Low-E, argon filled, insulated unit of ¼ inch tinted heat strengthened exterior, ¼ inch air space, 5/8-inch laminated glass (HRG2) made of ¼ inch heat strengthened exterior, .050-inch Urethane, .080-inch Polycarbonate, .050-inch Urethane, ¼ inch heat strengthened interior.
 - a. Color as selected by Owner and Architect from manufacturer’s full range.

2.5 HARDWARE

- A. Project-Out Units:
 - 1. Sash Lock: Automatic sweep cam-type lock to window to frame, handed as required for locations. Mount cam lock no higher than 48 inches above finished floor. Interlock cams higher than 48 inches above finished floor with common operator so that windows can be opened from no higher than 48 inches above finished floor.
 - 2. Provide four (4) non-corrosive stainless-steel bar hinges on each side of each unit. Hinges to be loose rivets on motorized units.
 - 3. Limit Stops: Resilient rubber.
 - 4. Provide one (1) pole per large space (over 200 square feet in area) sized for the upper sash field height for proper operation, on manual units.

2.6 FABRICATION**A. General:**

1. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - a. Use sealant of matching color when sealant is necessary for fabrication.
3. Prepare components to receive anchor devices. Fabricate anchors.
4. Arrange fasteners and attachments to ensure concealment from view.
5. Mechanical fasteners, welded components and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.
6. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

B. Frame:

1. Frame components shall be mechanically fastened.

C. Operable Units:

1. All vent extrusions to be tubular.
2. Each corner shall be mitered, reinforced with an extruded corner key, hydraulically crimped and cold-welded with epoxy adhesive.
3. Prepare components with internal reinforcement for operating hardware.
4. Double weatherstrip operable units.

D. Screens:

1. Assemble insect screens of rolled aluminum rectangular tubular sections.
2. Miter and reinforce frame corners.
3. Fit mesh taught in frame into frame and secured.

E. Glazing:

1. Shop glaze window units.
2. All large missile impact (of any level) units shall be glazed with the manufacturer's structural sealant process provided the glass is held in place by a screw applied extruded aluminum glazing stop. The glazing stop must be isolated from the glazing material by a gasket and the fasteners must be hidden by a snap on aluminum cover.

2.7 FINISHES

- A. Finish coatings to conform to AAMA 2605.

- B. Interior and Exterior Exposed Aluminum Surfaces: Kynar finish coating, in full range of colors, as selected by Owner and Architect. Includes window screen frames.
- C. Coating Quantity: One (1) primer coat and one (1) color coat.
- D. Dry Film Thickness: Minimum 1.2 mils on exposed surfaces, except inside corners and channels.
- E. Concealed Steel Items: Galvanized in accordance with ANSI/ASTM A 123 to 2.0 oz/sq ft.
- F. Apply one (1) coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.

3.2 INSTALLATION

- A. Install window frames, glazing and hardware in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings as required by adjacent conditions.
- G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- H. Install perimeter sealant to method required to achieve performance criteria with backing materials, and installation criteria in accordance with Section 07900.

3.3 ADJUSTING

- A. Adjust work under provisions of Section 01700.

- B. Adjust operating hardware for smooth operation.

3.4 CLEANING

- A. Clean work under provisions of 01700.
- B. Remove protective material from pre-finished aluminum surfaces.
- C. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- D. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.5 PROTECTION OF FINISHED WORK

- A. Protect finished Work from damage.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Insulated translucent wall assembly

1.2 RELATED SECTIONS

- A. Section 07900 – Sealants
- B. Section 08520 – Aluminum Windows

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- C 297-04 Flatwise Tensile Strength of Sandwich Constructions
- C 1363-97 Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus
- D 635-03 Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
- D 1002-01 Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)
- D 1037-99 Evaluating Properties for Wood-Base Fiber and Particle Panel Materials
- D 1183-03 Resistance of Adhesives to Cyclic Laboratory Aging Conditions
- E 72-04 Conducting Strength Tests of Panels for Building Construction
- E 84-09 Surface Burning Characteristics of Building Materials
- E 661-03 Performance of Wood and Wood-Based Floor and Roof Sheathing Under Concentrated Static and Impact Loads

- 2. National Fenestration Rating Council (NFRC) Publications:

- 100-04 Determining Fenestration Product U-Factors

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's printed descriptive literature, specifications and installation instructions; show compliance with specified performance requirements.
- C. Shop Drawings:
 - 1. Include layouts, details of framing members, type and thickness of flashing and closures, interface with adjacent construction, fasteners and anchors and sealers.

- 2. If field measurements are taken prior to fabrication, include field measurements on shop drawings, clearly identified as such.
- D. Design Data: Structural calculations of horizontal and vertical forces generated at structural supports.
- E. Samples: Finish color charts or range of samples from manufacturer's entire collection.
- F. Fiberglass Glazing Sheet Samples: Two (2) 12-inch square samples.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum of ten (10) years experience in the fabrication and installation of products similar to those specified.
- B. Installer Qualifications: Manufacturer personnel or manufacturer's authorized installer.
- C. Pre-Installation Meeting: Convene just prior to start of site operations. Require attendance of installer and installation personnel. Cover procedures required to maintain proper working conditions and to coordinate with other work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Arrange deliveries to avoid delays but to minimize on-site storage.
- B. Deliver products in labeled protective packages.
- C. Deliver, handle and store in strict compliance with manufacturer's instructions and recommendations.
- D. Store panels on long edge several inches above ground, using blocking to prevent warping.
- E. Cover stored products to protect from damage due to weather, direct sunlight, excessive temperatures and construction operations.

1.7 OPERATION & MAINTENANCE INFORMATION FOR MATERIALS & FINISHES

- A. Building Products, Applied Materials and Finishes: Include product data, with catalog number, size, composition and color and texture designations.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition and details of installation. Provide recommendations for inspections, maintenance and repair.
- D. Additional Requirements: As specified in individual product specification Sections.

1.8 WARRANTY

- A. Provide manufacturer's written warranty for wall assembly warranting that assembly is free of defects in material and workmanship. Include repair or replacement of defective work for five (5) years from date of completion. Defects are defined to include uncontrolled leakage of water, abnormal aging or deterioration and failure to perform as specified.
- B. Provide manufacturer's written warranty for fiberglass glazing sheet warranting that material is free of defects. Include replacement of defective materials for ten (10) years from date of completion. Defects are defined to include fiberbloom, delamination of coating from exterior sheet and discoloration of more than fifteen percent (15%).
- C. Special Aluminum-Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.
 - 1. Failures include, but are not limited to, checking, crazing, peeling, chalking, and fading of finishes.
 - 2. Warranty Period: Ten (10) years from date of Substantial Completion.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Kalwall Corporation
- B. Major Industries, Inc.
- C. Structures Unlimited, Inc.
- D. CPI Daylighting, Inc.
- E. Substitutions: Under provisions of Section 01600.

2.2 ASSEMBLIES

- A. Performance Requirements:
 - 1. Wind Load on Panels: 53 psf.
 - 2. Seismic Loads: As required by Connecticut State Building Code.
 - 3. Dead loads.
 - 4. Anti-Terrorism Force Protection Requirements – DoD Unified Facilities Criteria
 - a. Design to meet the requirements of UFC 4-010-01 DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS, 9 February 2012.
 - b. Design of framing and connections shall be based on the following design criteria:
 - 1) Standoff Distance of 86 ft.
 - 2) Applicable Explosive Weight of Type I.
 - 3) Level of Protection of Low.
 - 4) Design Pressure: 80 PSF.

- c. Window manufacturer shall provide, with their bid/quote, a “Blast Narrative” describing which design method of the UFC 4-010-01 was utilized to show product compliance to the performance specification in A.5.a.1), b) and c) above.
- B. Aluminum framing system with translucent panels, factory-fabricated, complete with all flashings, connections, supports, anchors and hardware.
 - 1. Fabricate to actual dimensions of constructed work where possible; otherwise, allow for field adjustment using trim or flashing of adjustable size or configuration.
 - 2. Exposed Aluminum Finish (Interior and Exterior): Two (2) coat fluoropolymer coating, of seventy percent (70%) PVDF resin, complying with AAMA 2604. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer’s written instructions.
 - 3. Color: Selected by Architect and Owner from full range of manufacturer's colors.

2.3 PANELS

- A. Panels – Performance Requirements:
 - 1. Insulating Value: U-value of 0.23; R-value of 20.
 - 2. Determine insulating value by testing in accordance with ASTM C 1363; NFRC 100 certification of value is acceptable.
 - 3. Uniform Load Deflection: 3.5 inches, maximum, under 34 psf uniform loading, when tested in accordance with ASTM E 72.
 - 4. Concentrated Load Strength: Support 300-pound load without failure, applied to 3-inch diameter disc and tested in accordance with ASTM E 661.
 - 5. Internal Adhesive Tensile Strength: 750 psi, minimum, when tested in accordance with ASTM C 297 before and after two exposures to six cycles each of ASTM D 1037 aging conditions.
 - 6. Internal Adhesive Shear Strength: 700 psi, minimum, when tested in accordance with ASTM D 1002 after accelerated aging in accordance with ASTM D 1183.
- B. Panels: Double-faced, insulated, translucent fiberglass sandwich panels, composed of flat fiberglass glazing sheet laminated to aluminum grid core by heat and pressure process.
 - 1. Panel Thickness: 2¾ inches.
 - 2. Grid Pattern: 12 by 16½ inches as indicated in the documents.
 - 3. Exterior Sheet Thickness: 0.060-inch Hurricane High Impact.
 - 4. Interior Sheet Thickness: 0.045 inch.
 - 5. Sheet Color(s): White or crystal as selected from manufacturer's standard colors.
- C. Grid Core: Thermally broken extruded aluminum, alloy 6063-T6; I-beam shaped, continuous perimeter members interlocking with muntins/mullions; flat bonding contact surface without high or low points.
- D. Adhesive: Cover entire width of core member surface, with neat sharp bonding line edge.

- E. Fiberglass Glazing Sheet: Fiberglass reinforced resin sheet, uniform in color, free of ridges, wrinkles, clusters of air bubbles or pinholes and with the following characteristics:
 - 1. Interior Sheet Flammability: Flame spread not more than 20 and smoke developed not more than 200, when tested in accordance with ASTM E 84; burn extent not more than 1 inch, when tested in accordance with ASTM D 635.
 - 2. The exterior face shall have a permanent glass veil erosion barrier or similar coating (as determined by the Architect/Owner) integrally embedded to provide long term resistance to reinforcing fiber exposure degradation.

2.4 COMPONENTS

- A. Exposed Structural Members: If required, extruded aluminum, alloy 6063-T5 or 6061-T6, box-beam shaped.
 - 1. Type: Thermally broken, with metal surfaces in contact with outdoor air separated from metal surfaces in contact with indoor air.
 - 2. Batten receiving channels: Continuous, extruded as part of the structural member.
- B. Battens and Perimeter Closures: Fasten panels to structural members using screwed clamp-tight pressure bar/batten assemblies, with matching perimeter closure pieces.
 - 1. Screws: Self-tapping Type 304 stainless steel screws.
 - 2. Sealed with manufacturer's standard flexible sealing tape, factory applied under controlled conditions.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Take field measurements to verify that fabricated work will fit spaces intended.
- B. Verify that areas in which work is to be installed are ready for installation.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install in strict accordance with manufacturer's instructions and recommendations and with approved shop drawings; provide a complete weatherproof assembly.
- B. Anchor securely to supporting structure, but allow for differential and thermal movement.
- C. Separate aluminum members from dissimilar metals with protective coating or sheet capable of preventing electrolytic action.
- D. Ensure that weep and condensation control measures function properly.
- E. Coordinate with other work.

3.3 CLEANING AND REPAIR

- A. Remove labels, part number markings, sealant smears, handprints and construction dirt; protect installed work from damage.
- B. Clean all exposed surfaces immediately prior to final inspection, using non-abrasive materials and methods recommended by manufacturer.
- C. Repair damaged components and finishes in accordance with manufacturer's recommendations; replace work that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Gypsum board
- B. Metal stud wall framing
- C. Taped and sanded joint treatment

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 07213 – Batt and Blanket Insulation

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society for Testing and Materials (ASTM) Publications:

- C 475-02 Joint Compound and Joint Tape for Finishing Gypsum Board
- C 645-04 Nonstructural Steel Framing Members
- C 840-06 Application and Finishing of Gypsum Board
- C 1002-01 Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
- C 1396-06 Gypsum Board
- E 84-06 Surface Burning Characteristics of Building Materials

2. Gypsum Association (GA) Publications:

- 216-04 Application and Finishing of Gypsum Panel Products
- 600-03 Fire Resistance and Sound Control Design Manual

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on metal framing, gypsum board and joint tape and treatment material.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C 840 and GA 216.

1.6 QUALIFICATIONS

- A. Applicator: Company specializing in performing the work of this section with minimum five (5) years documented experience.

1.7 REGULATORY REQUIREMENTS

- A. Gypsum and Wall Board Panels: Conform to Class A(I) rating with a flame spread of 0 – 25 and smoke development of less than 50 in accordance with the requirements of class A material in accordance with ASTM E 84.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS – GYPSUM BOARD SYSTEM

- A. United States Gypsum Company, Chicago, IL (800.874.4968)
- B. Georgia-Pacific Corp., Atlanta, GA (404.652.4000)
- C. Gold Bond Building Products, Div of National Gypsum, Charlotte, NC (704.365.7300)
- D. Substitutions: Under provisions of Section 01600.

2.2 FRAMING MATERIALS

- A. Studs and Tracks: GA 216 and GA 600; galvanized sheet steel, 20 gauge thick (except where height and weight restrictions require a heavier gauge), C shape, with knurled faces.
- B. Fasteners: ASTM C 1002; GA 216.
- C. Furring, Framing and Accessories: ASTM C 645.
- D. Anchorage to Substrate: Tie wire, nails, screws and other metal supports, of type and size to suit application; to rigidly secure materials in place.

2.3 GYPSUM BOARD MATERIALS

- A. Abuse-Resistant, Mold-Resistant, Fire Rated Gypsum Board: ASTM C 1396; Type X, UL rated; thickness as indicated, maximum permissible length; ends square cut, tapered edges.

2.4 ACCESSORIES

- A. Corner Beads: Metal.
- B. Edge Trim: GA 201 and GA 216; Type LC bead.
- C. Joint Materials: ASTM C 475; reinforcing tape, joint compound (3 coats), adhesive and water.
- D. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board; manufactured by Sika, Lyndhurst, NJ (800.933.7452), Tremco (800.321.7906), or U.S. Gypsum Company.
- E. Control Joint: Roll-formed zinc with perforated flanges; 1¾ inch wide, with ¼ inch wide center channel; provide with removable tape strip over channel; acceptable product

equivalent to **No. 093** by U.S. Gypsum Company.

- F. Aluminum Reveal Molding: Extruded accessories of profiles and dimensions indicated.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fry Reglet Corp.
 - b. Gordon, Inc.
 - c. Pittcon Industries.
 - d. Substitutions: Under provisions of Section 01600.
 - 2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
 - 3. Finish: Mill.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that site conditions are ready to receive work and opening dimensions are as instructed by the manufacturer. Maintain temperature during installation between 55 and 80 degrees F.

3.2 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA 216 and manufacturer's instructions.
- B. Erect single layer standard board in most economical direction, with ends and edges occurring over firm bearing.
- C. Use screws when fastening board to metal framing.
- D. Double Layer Applications: Use gypsum backing board for first layer, placed perpendicular to framing members.
- E. Place second layer perpendicular to first layer. Offset joints of second layer from joints of first layer.
- F. Place corner beads at external corners. Use longest practical length. Place edge trim where board abuts dissimilar materials.
- G. Install control joints at junction of gypsum board partitions with walls or partitions of other finish material. Install control joints within long runs of partitions, ceilings or soffits at approximately 30'-0" on center or as indicated.

3.3 METAL STUD INSTALLATION

- A. Install studs in accordance with GA 216 and GA 600.
- B. Metal Stud Spacing: 16 inches on center, unless otherwise noted.
- C. Refer to Drawings for indication of partitions extending to finished ceiling only and for partitions extending through the ceiling to the structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
- D. Door Opening Framing: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height and between studs and adjacent studs.
- E. Blocking: Nail wood blocking to studs. Install blocking for support of wall cabinets, fire extinguisher cabinets and hardware.

3.4 JOINT TREATMENT

- A. Tape, fill and sand exposed joints, edges and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Suspended metal grid ceiling system and perimeter trim
- B. Acoustical panels
- C. Non-fire rated assembly

1.2 RELATED SECTIONS

- A. Section 09260 – Gypsum Board System

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- A 641-09 Zinc-Coated (Galvanized) Carbon Steel Wire
- C 423-09 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- C 635-07 Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- C 636-08 Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- E 84-11 Surface Burning Characteristics for Building Materials
- E 413-10 Classification for Rating Sound Insulation
- E 580-11 Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions
- E 795-05 Mounting Test Specimens during Sound Absorption Tests

1.4 SUBMITTALS

- A. Samples:
 - 1. One (1) acoustical unit of each type. Show the texture, finish and color.
 - 2. 1 linear foot of edge molding.
 - 3. Suspension runner.
- B. Manufacturer's Data: Standard catalog data for acoustical units and suspension systems.
- C. Manufacturer's Data: Catalog data for pan deterrtion ceiling including angle frames and strips, support details, mounting for light fixtures and mechanical systems.
- D. Certified Test Reports: Listing or labeling by Underwriters Laboratories attesting to conformance of the proposed materials to flame spread, smoke developed and fire endurance tests will be accepted in lieu of certified test reports.

1. Sound absorption, flame spread and smoke developed tests for acoustical units.
 2. Fire endurance test for ceiling system.
 3. Sound transmission test for ceiling system.
 4. Structural classification of suspension system and conformance with seismic criteria listed herein.
- E. Certificates of Conformance: Test reports by an independent testing laboratory attesting that acoustical ceiling systems meet specified requirements. Data attesting to conformance of the proposed system to Underwriters Laboratories Inc. requirements for the fire endurance rating listed in UL Fire Resistance Directory may be submitted for approval in lieu of test reports.
- 1.5 DELIVERY AND STORAGE: Deliver acoustical units in the manufacturer's original unopened containers with brand name and type clearly marked. Handle materials carefully and store them under cover in dry, watertight enclosures. Immediately before installation, store acoustical units for not less than twenty-four (24) hours at the same temperature and relative humidity as the space where they will be installed.
- 1.6 ENVIRONMENTAL CONDITIONS: For twenty-four (24) hours before, during and twenty-four (24) hours after installation of acoustical units, maintain temperature and relative humidity at typical in-service conditions. Interior finish work such as concrete work shall be completed and dry before installation. Mechanical, electrical and other work above the ceiling line shall be completed and approved prior to the start of acoustical ceiling installation.
- 1.7 EXTRA MATERIALS
- A. Provide 24 sq ft of extra panels of each type and size to Owner.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS – SUSPENSION SYSTEM

- A. Armstrong World Industries, Inc., Lancaster, PA (800.461.1308)
- B. BPB America, Inc., Tampa, FL (866.427.2872)
- C. Chicago Metallic Corp., Chicago, IL (800.323.7164)
- D. Substitutions: Under provisions of Section 01600.

2.2 SUSPENSION SYSTEM MATERIALS

- A. Non-Fire Rated Grid: ASTM C 635, heavy duty; exposed T; components die cut and interlocking.
 1. Finish: White.

2.3 MANUFACTURERS – ACOUSTICAL UNITS

- A. Manufacturer's specific products are listed by name in each ceiling subsection, corresponding with the order listed immediately below:

1. Armstrong World Industries, Inc.
2. BPB America, Inc., Tampa, FL (866.427.2872)
3. U.S. Gypsum Interiors, Chicago, IL (800.874.4968)
4. Substitutions: Under provisions of Section 01600.

2.4 ACOUSTICAL UNIT MATERIALS

A. Composition Lay-in Panels Non-Rated: Fissured:

1. **School Zone Fine Fissured**
2. **Fine Fissured**
3. **Radar**
 - a. Type III (Non-asbestos mineral composition with factory-applied standard washable painted finish.) Color: White.
 - b. Class: A, flame spread 25 or less.
 - c. Pattern: CE (perforated, small holes and lightly textured).
 - d. Noise Reduction Coefficient (NRC) Grade: 0.55 or greater when tested on Mounting Type E-400 of ASTM E 795.
 - e. Light Reflectance (LR) Coefficient: LR-1, 0.83 or greater.
 - f. Nominal Size: 24 by 48 inches.
 - g. Edge Detail: Square cut lay-in.

B. Contractor is to match existing but at a minimum provide the above and its corresponding grid.

2.5 HANGERS

- ##### A. Wires: ASTM A 641, composition 1010, soft annealed, light zinc coated finish, 0.1055 inches in diameter (12 gauge).

2.6 DESIGN CRITERIA FOR CEILING SYSTEM

- ##### A. Fire Endurance: Flame spread of acoustical units shall be twenty-five (25) or less and smoke development fifty (50) or less when tested in accordance with ASTM E 84.
- ##### B. Ceiling Sound Transmission Class: The ceiling sound transmission class (ceiling STC range) of the ceiling system shall be 30-34 when determined in accordance with CISCA Test Method AMA-1-II and reported in accordance with ASTM E 413 for 16 frequency data. Test ceiling shall be continuous at the partition and shall be assembled in the suspension system in the same manner that the ceiling will be installed on the project.
- ##### C. Ceiling Sound Absorption: Determine the NRC in accordance with ASTM C 423 Method of Test.

- #### 2.7 IDENTIFICATION OF ACCESS PANELS: Identify ceiling access panel by a number utilizing white identification plates or plastic buttons with contrasting numerals. The Plates or buttons shall be of minimum one-inch diameter and securely attached to the metal ceiling grid closest to the access unit. Identify the following systems:

- A. Heating and cooling systems including fire/smoke dampers.
- B. Plumbing system.
- C. Telephone and data cabling junction boxes.

3 PART 3 – EXECUTION

3.1 **SURFACE PREPARATION:** Examine surfaces to receive directly attached suspension wires for inappropriate support that would affect quality and execution of the work. Correct unacceptable conditions or reconfigure support system as required for a proper installation.

3.2 **INSTALLATION, SUSPENDED CEILINGS:**

- A. Suspended Ceilings: Install in accordance with ASTM C 636.
- B. Hangers: Space hangers 4 feet on centers each direction. Install additional hangers where required to support framing around beams, ducts, grilles and other penetrations through the ceiling.
- C. Suspension Members: Keep main runners and carrying channels clear of abutting walls and partitions. Provide at least two (2) main runners for each ceiling span.
- D. Acoustical Units: Edges of ceiling tiles shall be in close contact with metal supports with each other and in true alignment. Arrange units so that units less than ½ width are minimized.
- E. Wall or Edge Molding: Install wall molding at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
- F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.
- G. Do not eccentrically load system or produce rotation of runners.
- H. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.
- I. Seismic Restraint System: Provide seismic restraint for the suspension system in accordance with ASTM E 580 and as detailed.

3.3 **CLEANING:** Clean soiled or discolored unit surfaces after installation. Touch up scratches, abrasions, voids and other defects in painted surfaces. Remove damaged or improperly installed units and install new materials.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation and field application of paints and coatings

1.2 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:
 - D 16-11 Paint, Related Coatings, Materials and Applications

1.3 DEFINITIONS

- A. Conform to ASTM D 16 for interpretation of terms used in this Section.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on all finishing products.
- C. Samples: Submit two (2) sample sleeves, illustrating range of colors available for each surface finishing product scheduled. Architect will select colors from manufacturer's full color line.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.
- B. Applicator: Company specializing in performing the work of this section with minimum five (5) years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to Connecticut Building Code for flame and smoke rating requirements for finishes.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.

- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation and instructions for mixing and reducing.
- D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers – Paint
 - 1. ICI Paints, Cleveland, OH (800.454.3336)
 - 2. PPG Industries, Inc., Pittsburgh, PA (412.434.3131)
 - 3. Sherwin Williams Stores Division (800.474.3794)
- B. Manufacturers – Paint (Metal Surfaces)
 - 1. Hunting Specialty Products; **Hammerite**
 - 2. Benjamin Moore & Co., Montvale, NJ (800.344.0400); **Eggshell Finish House Paint with IronClad Galvanized Metal Latex Primer**
- C. Manufacturers – Stain
 - 1. Samuel Cabot, Inc., Newburyport, MA (800.877.8246)
 - 2. Benjamin Moore & Co., Montvale, NJ (800.344.0400)
 - 3. Pratt and Lambert Paint, Cleveland, OH (800.289.7728)
- D. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

- A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.

- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
- C. Fastener Head Cover Materials: Latex filler.

2.3 FINISHES

- A. Finish ratings of interior paints and coatings shall conform to the following criteria:
 - 1. Exits: Class A
 - a. All other Areas: Class A or B

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
 - 1. Plaster and Gypsum Wallboard: Twelve percent (12%).
 - 2. Masonry, Concrete and Concrete Unit Masonry: Twelve percent (12%).
 - 3. Wood: Fifteen percent (15%).

3.2 PREPARATION

- A. Remove or mask electrical plates, hardware, light fixture trim, escutcheons and fittings prior to preparing surfaces or finishing.
- B. Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.
- C. Seal with shellac and seal marks which may bleed through surface finishes.
- D. Existing Coatings: Remove surface irregularities by scraping or sanding to produce uniform substrate for coating application.
- E. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

- F. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- G. Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- H. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.
- I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- J. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items with incompatible surfaces to the finished coating system.
- K. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand wood and metal lightly between coats to achieve required finish.
- F. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
- G. Allow applied coat to dry before next coat is applied.

3.4 CLEANING

- A. Clean work under provisions of 01700.
- B. Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.5 SCHEDULE

- A. Wood – Painted:
 - 1. One (1) coat of latex primer sealer.
 - 2. Two (2) coats of latex enamel, gloss.

- B. Wood – Transparent:
 - 1. Filler coat (for open grained wood only).
 - 2. One (1) coat of stain.
 - 3. One (1) coat sealer.
 - 4. Two (2) coats of varnish, satin.

- C. Steel – Galvanized:
 - 1. One (1) coat galvanized primer.
 - 2. Two (2) coats of alkyd enamel, gloss.

- D. Steel – Primed:
 - 1. Touch-up with latex primer.
 - 2. Two (2) coats of latex enamel, gloss.

- E. Gypsum Board (Dry Environments):
 - 1. One (1) coat of latex primer sealer.
 - 2. Two (2) coats of latex enamel, eggshell.

- F. Concrete, Concrete Block:
 - 1. One (1) coat of primer sealer latex.
 - 2. Two (2) coats of acrylic latex, gloss.

END OF SECTION

1 PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Louvers and frames

1.2 RELATED SECTIONS

- A. Section 07900 – Sealants
- B. Section 08520 – Aluminum Windows

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- B 221-08 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes

- 2. American Architectural Manufacturers Association (AAMA) Publications:

- 2605-11 Superior Performing Organic Coatings on Aluminum Extrusions and Panels

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacture of AMCA certified louvers with three (3) years experience.

1.5 SUBMITTALS

- A. Indicate on shop drawings, layout, elevations, dimensions and tolerances; head, jamb and sill details; blade configuration; and frames.
- B. Submit manufacturer's installation instructions under provisions of Section 01300.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit data under provisions of Section 01700.

1.7 COORDINATION

- A. General Contractor is responsible for providing and coordinating the installation of louvers and steel support sections as indicated on construction drawings.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:

1. The Airlite Company, Marietta, OH (740.373.7676)
2. Arrow United Industries, Wyalusing, PA (570.746.1888)
3. Greenheck Fan Corp., Schofield, WI (715.359.6171)

B. Substitutions: Under provisions of Section 01600.

2.2 LOUVER MATERIALS

A. ASTM B 221; heavy gauge 6063-T5 extruded aluminum.

2.3 LOUVER FABRICATION

A. Louver Size: 4 inches deep, face measurements as indicated on construction documents.

B. Louver Blade: Sloped at minimum 45 degree angle, drainable; heavy gauge 6063-T5 extruded aluminum; .081 nominal wall thickness, minimum.

C. Louver Frame: Channel or flange shape, welded corner joints, minimum material thickness of .081 inches.

D. Head, Jamb and Sill Flashings: Roll formed to required shape, one piece per location.

E. Screens: Permanently install screen mesh in shaped frame with reinforced corner construction; screw to louver frame.

2.4 ACCESSORIES – LOUVERS

A. Insect Screen: 18 x 16 size aluminum mesh, set in aluminum frame.

B. Flashings: Of same material as louver frame.

C. Sealants: As specified in Section 07900.

2.5 FINISHES

A. Kynar finish applied following a thorough cleaning and pretreatment of the metal surface, in color from manufacturer's full range of colors as selected by Architect and Owner. Dry film thickness shall be greater than 1.2 mils. Coating shall meet the performance requirements of AAMA 2605.

B. Interior Aluminum Surfaces, Screens: Unfinished

3 PART 3 – EXECUTION

3.1 INSPECTION

- A. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION

- A. Install louver assembly in accordance with manufacturer's instructions.
- B. Install louvers level and plumb.
- C. Secure louvers in framing with fillet welds as recommended by manufacturer.
- D. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
- E. Install insect screening to interior of louver.
- F. Install perimeter sealant and backing rod in accordance with Section 07900.

3.3 ADJUSTING AND CLEANING

- A. Clean surfaces and components.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Horizontal blinds, 1 inch wide with headrails, tracks, cord locks and tilt wands

1.2 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. Federal Specifications (FS) Publications:

AA-V-200-73 Venetian Blinds

1.3 SUBMITTALS

- A. Shop Drawings and Literature: Submit in sufficient detail to verify installation method and compliance with requirements.
- B. Color Samples: Two (2) sets of color chips.
- C. Certificates of Compliance: Manufacturer's certification with test reports, for blinds.
- D. Numbering Plan: Two (2) copies of a numbering plan for identification of each blind with the proper installation location.

- 1.4 DELIVERY AND STORAGE: Deliver the blinds to the site in the manufacturer's original containers with the manufacturer's name and container contents clearly labeled. Store in a safe, dry, clean and well-ventilated area. Do not open containers until needed for installation unless verification inspection is required.

1.5 WARRANTY

- A. Provide lifetime warranty under provisions of Section 01740.
- B. Warranty: Include coverage of blind surface from discoloration due to cleaning, crazing or cracking and staining. Include coverage of controllers and operable components.

2 PART 2 – PRODUCTS

2.1 HORIZONTAL BLINDS

- A. Manufacturers

- 1. Levolor, A Newell Rubbermaid Company, High Point, NC (800.538.6567);
Riviera 1 inch Blind

2. Bali Graber, A Division of Window Coverings USA, Shoreline, WA (206.783.1047); **Ultra Mini Blind**
 3. Hunter Douglas, Upper Saddle River, NJ (800.789.0331); **Flexalum Decor 1 inch Blind**
 4. Substitutions: Under provisions of Section 01600.
- B. Blind Units: FS AA-V-200, Type II, 1 inch slats, except as modified herein.
- C. Size: Lengths and widths as required for installation between the jambs and mullions. Blind widths shall not exceed 3'-6" wide and shall be designed to fit from center line of mullion to center line of mullion.
- D. Headrail: .025 inch thick, U shaped, 1 inch x 1 inch (nominal) wide, with all hardware enclosed in the metal headrail.
- E. Unperforated Slats: Aluminum for Type II Venetian blinds. Magnesium aluminum alloy, 1 inch wide and .0075 inch thick prior to coating. Slats shall be unperforated.
- F. Ladders: Ladder tapes of plastic with integral, longitudinal reinforcing fibers.
- G. Cords: Steel beaded chain with associated hardware permanently attached to sill.
- H. Tilting Device: Transparent with a hexagonal cross section 5/16 inch across the flats. Locate on the best access side based on furniture layout. For two-color slats, device shall stop slats at no greater than a 70 degree upward angle from the horizontal and a zero degree downward angle from the horizontal when viewed from inside the room; permitting only the top color exposed to the outside. Provide tilting devices in sufficient lengths to extend to a distance 6 feet above finished floor.
- I. Lifting Cord Locks: Locate on the side opposite the tilting device enabling the blind to stop at any height of window opening.
- J. Color for Slats, Tape, Cords and Exposed Metal: Two (2) colors, with the space color as selected by Architect and Owner from the manufacturer's full range.

3 PART 3 – EXECUTION

- 3.1 **INSTALLATION:** Install blinds after the work of other trades, including painting, is substantially done. Install blinds level and in accordance with manufacturer's recommended installation instructions as approved. Use suitable type and size fasteners for the application. Isolate metal parts from direct contact with concrete, mortar or dissimilar metals. Ensure blinds installed on the removable aluminum window frame stop can be removable without disturbing the aluminum window frame. Include all hardware, brackets, anchors, fasteners and accessories necessary for a complete, finished installation.
- 3.2 **LOCATION:** Install blinds where indicated in the Drawings. Window locations and sizes are indicated in the construction plans and details. Provide the required quantity of blinds and carefully check the dimensions of all openings in the facility for exact sizing of the blinds to be

provided. Provide one (1) blind for each window bay, with no blind exceeding 30 inches in length. No blind may bridge over two (2) adjacent window bays.

- 3.3 IDENTIFICATION: In accordance with the numbering plan, mark each opening and the corresponding blind with identical numbers. For multiple windows separated by mullions, the space required by each blind shall be numbered separately. Use brass, aluminum, plastic, durable paper plates or stamp to place corresponding numbers on unexposed surfaces of openings and the head box. Fasten plates to the back of head box and to the sill track.
- 3.4 BLIND CORD CLEATS: Provide one (1) clear plastic cord cleat (with fastener to wood or aluminum window jambs) per window blind, mounted on the same side as the cord, approximately 48 inches above finished floor.

END OF SECTION

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Section 028213 – Asbestos Abatement

PART 1 GENERAL

1.1 SCOPE

- A. Work under this item shall include the abatement of asbestos containing materials (ACM) and associated work by persons who are knowledgeable, qualified, trained and licensed in the removal, treatment, handling, and disposal of ACM and the subsequent cleaning of the affected environment. ACM shall include material composed of any type of asbestos in amounts greater than one percent (1%) by weight. The Contractor performing this work shall possess a valid Asbestos Abatement Contractor license issued by the Connecticut Department of Public Health (CTDPH). Where areas to be abated contain materials with PCBs and asbestos the workers shall follow this Specification as well as Specification 02 84 33.
- B. These Specifications govern all work activities that disturb asbestos containing materials. All activities shall be performed in accordance with, but not limited to, the current revision of the OSHA General Industry Standard for Asbestos (29 CFR 1926.1001), the OSHA Asbestos in Construction Regulations (29 CFR 1926.1101), the USEPA Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR Part 61 Subpart M), the CTDPH Standards for Asbestos Abatement, Licensure and Training (19a-332a-1 through 16, 20-440-1 through 9 & 20-441), and the CTDEEP Special Waste Disposal Regulations (22a-209-8(i)).
- C. The asbestos abatement work shall include the removal and disposal of all ACM as identified on the Contract drawings and Specifications prior to the planned renovation/demolition project. The Connecticut Military Department will retain the services of a State of Connecticut licensed Project Monitor for protection of its interests and those using the building.
- D. Deviations from these Specifications require the written approval of the Engineer and Owner.
- E. The Contractor may elect to utilize an Alternative Work Practice (AWP), if approved by the CTDPH and the Engineer/Owner prior to the initiation of the abatement activities. An AWP is a variance from certain CTDPH asbestos regulatory requirements, which must provide the equivalent or a greater measure of asbestos emission control than the standard work practices prescribed by the CTDPH.

1.2 DESCRIPTION OF WORK

- A. The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer/Construction Manager. Proceed through the sequencing of the work phases under the direction of the Engineer/Construction Manager.

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- B. The asbestos abatement work shall include the removal of asbestos-containing materials as specified herein. This abatement project was designed by Mr. Donald LePage, a State of Connecticut licensed Asbestos Project Designer (#000233).

New London Armory – Exterior

Includes the removal of:

- **Interior/exterior glazing & caulking associated with all window types****

Notes:

- **Refer to PCB & Asbestos Drawings 1 & 2 for locations of ACM listed above.**
- ****Glazings and caulking associated with windows shall also be managed as EPA PCB Bulk Product Waste (>50 ppm). Abatement of these materials will coincide with PCB remediation as outlined in Section 02 84 33.**

A regulated area(s) shall be established at the perimeter of the work area(s), and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements. Visual inspection shall be performed by project monitor prior to work area being deregulated. No containment required for exterior abatements.

1.3 SUBMITTALS AND NOTICES

- A. The Contractor shall submit, in accordance with CTDPH Standard 19a-332a-3, proper notification using the prescribed form, to the Commissioner, State of Connecticut, Department of Public Health not fewer than ten (10) days prior to the commencement of work as follows:
1. Asbestos abatement projects involving greater than ten (10) linear feet (LF) or twenty-five (25) square feet (SF) of ACM (friable or non-friable) within a facility (i.e. interior abatement) and/or greater than 10 LF or 25 SF of friable ACM outside a facility, require an Asbestos Abatement Notification.
 2. At sites scheduled for demolition, asbestos abatement of exterior non-friable ACM or interior abatement involving less than 10 LF or 25 SF of ACM (friable or non-friable), and/or exterior abatement involving less than 10 LF or 25 SF of friable ACM require a Demolition Notification. In most cases, the Demolition Contractor is responsible for filing the Demolition Notification not fewer than ten (10) days prior to the commencement of demolition. However, if a portion of the demolition activities are scheduled to be conducted in conjunction with and/or under the supervision of an Asbestos Abatement Contractor (i.e. in the event of a structure which has been condemned, structurally damaged, and/or deemed unsafe for asbestos abatement activities); then it is the responsibility of the Asbestos Abatement Contractor to submit the Demolition Notification.

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3. In the event that an Asbestos Abatement Notification has been submitted and the subject facility is scheduled for demolition, a separate Demolition Notification form does not need to be submitted. In such cases, the submission of the Asbestos Abatement Notification form shall be deemed as satisfying the requirement for the notification of the demolition of the facility.
 4. The Contractor filing the proper notification is responsible for all associated fees.
 5. If the Contractor intends to dispose of ACM waste within the State of Connecticut, a copy of the Asbestos Abatement/Demolition Notification must also be submitted to the Department of Environmental Protection, Solid Waste Management Unit, and the Contractor must obtain a CTDEEP Special Waste Disposal authorization.
- B. Any Alternative Work Practice (AWP) specifically described in these Specifications is pre-approved and is to be utilized at all times. Additional AWP methods may be used if approved by CTDPH and the Engineer/Owner. Should the Contractor desire to use AWP procedures that have not been pre-approved, the Contractor shall submit in writing a description of the proposed methods to the Engineer/Owner and CTDPH for review and approval. Alternative procedures shall provide equivalent or greater protection than procedures which they replace. The Contractor is responsible for all fees associated with filing AWP applications which have not been pre-approved. Submission of AWP applications requires a CTDPH Project Designer License. The Contractor shall not proceed with any AWP other than those listed in this Specification without approval from both the CTDPH and the Engineer/Owner.
- C. Seven (7) working days prior to the commencement of asbestos abatement work (Pre-abatement Meeting), the Contractor shall submit to the Engineer/Owner for review and acceptance and/or acknowledgment of the following:
1. Copies of all required notifications.
 2. AWP applications/approvals.
 3. Permits and licenses for the removal, transport, and disposal of asbestos-containing or contaminated materials, including a CTDPH valid asbestos removal contractor's license.
 4. Documentation dated within the previous twelve (12) months, certifying that all employees have received USEPA Model Accreditation Plan approved asbestos worker/supervisor training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis, and copies of all employees CTDPH asbestos worker and/or supervisor licenses.

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5. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed herein have received the following:
 - a. Medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.1101
 - b. Respirator fit testing within the previous twelve (12) months, as detailed in 29 CFR 1910.134 (for all employees who must also don a tight-fitting face piece respirator)
 6. Copies of the EPA/State-approved certificates for the proposed asbestos landfill.
 7. Name and qualifications of the Asbestos Abatement Site Supervisor. This individual shall be the OSHA Competent Person for the abatement activities, shall have a minimum of three years working experience as an Asbestos Abatement Site Supervisor, shall be capable of identifying existing asbestos hazards and shall have the authority to implement corrective measures to eliminate such hazards. The Asbestos Abatement Site Supervisor shall be on-site at all times asbestos abatement is occurring, shall comply with applicable Federal, State and Local regulations which mandate work practices, and shall be capable of performing the work of this contract.
- D. No abatement shall commence until a copy of all required submittals have been received and found acceptable to the Engineer. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal to, and receipt of, all required paperwork by the Engineer.
- E. Provide the Engineer/Owner, within 30 days of completion of asbestos abatement, a compliance package; which shall include, but not be limited to, the following:
1. Asbestos Abatement Site Supervisor job log;
 2. OSHA personnel air sampling data and exposure assessments;
 3. Completed waste shipment records.

1.4 SEQUENCE OF WORK

- A. The Contractor shall proceed in accordance with the sequence of work as directed by the Engineer/Construction Manager. Work shall be divided into convenient Work Areas, each of which is to be completed as a separate unit.
- B. The Contractor shall use the following sequence for the asbestos abatement work:
 1. Release of work area to Contractor.
 2. A visual inspection of the work area to determine pre-existing damage to facility components.
 3. Removal of all moveable objects from the Work Areas undergoing abatement by the Contractor.

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4. All temporary utilities required for the project shall be on site and operational prior to the initiation of asbestos work.
5. Abatement of all asbestos-containing materials by the Contractor.
6. Final visual inspections by the Project Monitor.
7. Air sampling by the Project Monitor for re-occupancy.
8. Cleanup by the Contractor. Work Areas must be returned to their original condition or as directed by the Engineer/Project Monitor.
9. Removal of waste from the site.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description.
- B. No damaged or deteriorating materials shall be used. If material becomes contaminated with asbestos, the material shall be decontaminated or disposed of as asbestos-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.
- C. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating four (4) or six (6) mil thickness.
- D. Six (6) mil polyethylene disposable bags shall have pre-printed OSHA/EPA/DOT labels and shall be transparent.
- E. Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- F. Surfactant is a chemical wetting agent added to water to improve penetration and shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent. The surfactant shall be mixed with water to provide a concentration one (1) ounce surfactant to five (5) gallons of water, or as directed by the manufacturer.
- G. Spray equipment must be capable of mixing necessary chemical agents with water, generating sufficient pressure and volume; and equipped with adequate hose length to access all necessary work areas.
- H. Mechanical mastic removal equipment shall be suitable for the application and shall be operated in a manner which prevents damage to the underlying floor. Sanders, grinders,

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wire brushes and needle-gun type removal equipment shall be equipped with a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system.

- I. Containers for storage, transportation and disposal of asbestos containing waste material shall be impermeable and both air and watertight.
- J. Labels and warning signs shall conform to OSHA 29 CFR 1926.1101, USEPA 40 CFR Part 61.152, and USDOT 49 CFR Part 172 as appropriate.
- K. Encapsulant, a material used to chemically entrap asbestos fibers to prevent these fibers from becoming airborne, shall be of the type which has been approved by the Engineer. Use shall be in accordance with manufacturer's printed technical data. The encapsulant shall be clear and must be compatible with new materials being installed, if any.
- L. Glovebag assembly shall be manufactured of six (6) mil transparent polyethylene or PVC with two (2) inward projecting long sleeve gloves, an internal pouch for tools, and an attached labeled receptacle for waste.
- M. Mastic removal chemicals shall be low odor and non-citrus based, with a flash point in excess of 140° F.
- N. Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.
- O. Air filtration devices and vacuum units shall be equipped with HEPA filters.

2.2 TOOLS AND EQUIPMENT

- A. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance shall conform to OSHA requirements.
- B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.
- C. Electrical equipment, protective devices and power cables shall conform to all applicable codes.
- D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. Showers shall be equipped with hot and cold or warm running water. One shower stall shall be provided for each eight workers. Water is filtered through a 5 micron and a 10 micron filter prior to being discharged into the city sewer/sanitary system.
- E. The Contractor may need to supply electrical power to the site by either fuel operated generator(s) or temporary restoration of electrical service. Electrical power supply will be sufficient for maintaining in operation all equipment required for this project throughout the duration of the project.

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- F. Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area providing 4 air changes per hour. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. No air movement system or air filtering equipment shall discharge unfiltered air outside the Regulated Area. The Contractor shall provide actual airflow measurement of filtration units while the unit is in place and calculate actual air exchange rates.
- G. Pressure differential monitoring equipment shall be provided to ensure exhaust air filtration devices provide the minimum pressure differential required between the Work Area and occupied areas of the facility.
- H. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger.
- I. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.
- J. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the Work Area shall be provided as appropriate for the work.
- K. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Regulated area.
- L. Mechanical mastic removal equipment shall be suitable for the application and shall be operated in a manner which prevents excessive damage to the underlying floor.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The Abatement Contractor/Subcontractor shall possess a valid State of Connecticut Asbestos Contractor License. Should any portion of the work be subcontracted, the subcontractor must also possess a valid State of Connecticut Asbestos Contractor License. The Asbestos Abatement Site Supervisor employed by the Contractor shall be in control on the job site at all times during asbestos abatement work. All employees of the Contractor who shall perform work (i.e. Asbestos Abatement Site Supervisor, Asbestos Abatement Worker) shall be properly certified/licensed by the State of Connecticut to perform such duties.
- B. All labor, materials, tools, equipment, services, testing, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.

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- C. Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site for safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.
- D. The Contractor shall:
 - 1. Shutdown and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to the other areas of the building.
 - 2. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.
 - 3. Coordinate all power and fire alarm isolation with the appropriate representatives.
 - 4. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.
- E. If sufficient electrical service is unavailable, the Contractor may need to supply electrical power to the site by fuel operated generator(s). Electrical power supply shall be sufficient for all equipment required for this project in operation throughout the duration of the project. If the Contractor elects to supply electrical power to the work site through the use of generators, the Contractor shall ensure that each work area is a manageable size such that removal, final cleaning and reoccupancy testing can be accomplished within one work shift while negative air machines are operating.
- F. Negative pressure must be continuously maintained in each work area, until the area achieves satisfactory reoccupancy criteria and is approved by the Project Monitor to be deregulated. Negative air pressure must be maintained twenty-four (24) hours per day and the Contractor shall establish temporary electrical service to the site, rather than utilize generators.
- G. Water service may not be available at the site. Contractor shall supply sufficient water for each shift to operate the decontamination shower units as well as to maintain the work areas adequately wet.
- H. Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

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- I. Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.
- J. Data provided regarding asbestos sampling conducted throughout the structure(s) is for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the presence and location of all asbestos containing materials. The Contractor shall verify all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT, CTDPH and CTDEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.
- K. The Engineer will provide a Project Monitor to oversee the activities of the Contractor. No asbestos work shall be performed until the Project Monitor is on-site. Pre-abatement, during abatement and post-abatement air sampling will be conducted as deemed necessary by the Project Monitor. Waste stream testing will be performed, as necessary, by the Project Monitor prior to waste disposal.

3.2 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

- A. Pre-clean the work areas using HEPA filtered equipment (vacuum) and/or wet methods as appropriate, collecting and properly containing all dust and debris as asbestos-containing/asbestos contaminated waste. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.
- B. After pre-cleaning, movable objects shall be removed from the work areas with the utmost care to prevent damage of any kind and relocated to a temporary storage location coordinated with the Engineer. The Contractor is responsible for protecting all fixed objects that are permanent fixtures or are too large to remove and remain inside the Regulated Area. Fixed objects shall be enclosed with one layer of six (6) mil polyethylene sheeting sealed with tape.
- C. Where non-ACM insulation exists within a Regulated Area, the Contractor has the option of removing the non-ACM insulation material and disposing of as ACM debris, or decontaminating and protecting non-ACM insulation material with two (2) layers of six (6) mil polyethylene sheeting. Any non-ACM insulation removed shall be replaced with new material of equal or better quality at the Contractor's expense.

3.3 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. The Contractor shall establish contiguous to the Regulated Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series, as detailed below. Access to the Regulated Area shall only be through this enclosure.

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- B. Access between rooms in the Worker Decontamination Enclosure System shall be through airlocks. Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be contiguously connected with taped airtight edges, thus ensuring the sole source of airflow originates from outside the regulated areas, once the negative pressure differential within the Regulated Area is established.
- C. The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.
- D. The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water through the use of electric hot water heaters supplied by the Contractor. No worker or other person shall leave a Regulated Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an approved sanitary drain. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate.

3.4 EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

- A. The Contractor shall establish contiguous to the Regulated Area an Equipment/Waste Removal Decontamination Enclosure System consisting of two (2) totally enclosed chambers divided by a double flap curtained opening. Other effective designs are permissible. This enclosure must be constructed so as to ensure that no personnel enter or exit through this unit.
- B. The Contractor shall ensure that no personnel or equipment be permitted to leave the Regulated Area until proper decontamination procedures (including HEPA vacuuming, wet wiping and showering) to remove all asbestos debris have occurred. No asbestos-contaminated materials or persons shall enter the Clean Room.

3.5 SEPARATION OF WORK AREAS FROM OCCUPIED AREAS

- A. Seal off all windows, doorways, skylights, ducts, grilles, diffusers, vents, light fixtures, electrical receptacles, suspended ceiling tile systems and any other openings between the Regulated Area and the uncontaminated areas outside of the Regulated Area, including the outside of the building, with critical barriers consisting of a minimum of one (1) layer of six (6) mil polyethylene sheeting securing the edges with tape. Doorways and corridors which will not be used for passage during work and separate the regulated areas from occupied areas must be sealed with fixed critical barriers constructed of 2" x 4" wood or metal framing 16" O.C., with ½" plywood on the occupied side and two layers of six (6) mil polyethylene sheeting on the Regulated Area side to prevent unauthorized access or air flow.
- B. The Contractor shall create a negative pressure differential in the range of 0.02 to 0.04 inches of water column between the Regulated Area and surrounding areas by the use of acceptable negative air pressure equipment. Exhaust air filtration units shall be equipped

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with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area providing 4 air changes per hour. The Contractor shall provide a sufficient quantity of HEPA air filters to maintain the pressure differential throughout the duration of the project. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. Continuously monitor the pressure differential between the Regulated Area and surrounding area to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column. The Contractor shall provide actual air flow measurement of filtration units while the unit is in place and calculate actual air exchange rates. No air movement system or air filtering equipment shall discharge unfiltered air outside the Regulated Area.

- C. A Negative Pressure Enclosure (NPE) shall be constructed via covering of floor and wall surfaces with polyethylene sheeting sealed with tape. Polyethylene shall be applied alternately to floors and walls. Cover floors first, with a layer of six (6) mil polyethylene sheeting, so that polyethylene extends at least twelve (12) inches up on wall. Cover wall with a layer of four (4) mil polyethylene sheeting to twelve (12) inches beyond the wall/floor intersection, thus overlapping the floor material by a minimum of twenty-four (24) inches. Repeat the process for the second layer of polyethylene. There shall be no seams at wall-to-floor joints. Protect carpet and floor tile with two additional layers of six (6) mil reinforced polyethylene in addition to the prior two layers required.
- D. Conspicuously label and maintain emergency and fire exits from the Regulated Area satisfactory to fire officials.
- E. Post warning signs meeting the specifications of OSHA 29 CFR 1910.1001 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee or building occupant may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of workplace enclosure barriers.

3.6 ALTERNATE EXTERIOR NON-FRIABLE ASBESTOS SET-UP PROCEDURES

- A. In lieu of the establishment of a negative pressure enclosure (NPE) system as described by CTDPH Sections 19a-332a-5(c), 5(d), 5(e), and 5(h), non-friable ACM will be removed from exterior work areas within an outdoor Regulated Area(s). The regulated work area will be established by the use of appropriately labeled barrier tape and postings in compliance with CTDPH 19a-332a-5(a) as well as OSHA 29 CFR 1926.1101. A remote personnel decontamination unit as specified in Section 19a-332a-6 will be required. This method shall only be utilized provided exposure assessment air sampling data collected during the removal of the exterior non-friable materials indicates that the exposure levels during removal of such materials do not exceed 0.1 asbestos f/cc. Should exposure assessment air sampling data exceed this level, and engineering efforts to reduce the airborne fiber levels not be successful in reducing the levels to less than 0.1 f/cc, removal shall occur within these areas under full containment conditions.

3.7 ALTERNATE "SPOT REPAIR" ASBESTOS PROCEDURES

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- A. In lieu of the establishment of a negative pressure enclosure (NPE) system as described by CTDPH Sections 19a-332a-5(c), 5(d), 5(e), and 5(h), less than 3 LF or 3 SF of ACM will be removed as a “spot repair” in accordance with CTDPH Section 19a-332a-10. A regulated area will be established by the use of appropriately labeled barrier tape and postings in compliance with CTDPH 19a-332a-5(a) as well as OSHA 29 CFR 1926.1101. A remote personnel decontamination unit as specified in Section 19a-332a-6 will be required. Air-tight barriers will be constructed to assure that asbestos fibers released during abatement activities are contained within the work area. (Glovebags are permitted, as specified below.) ACM will be adequately wet prior to disturbance and remain wet until placed in leak-tight container. Following abatement, clean-up methods within the work area will include HEPA-filtered vacuuming or wet cleaning techniques until no visible residue remains.
- B. Glovebags utilized to perform “spot repair” activities on asbestos containing pipe insulation/mudded fitting insulation, in conformance with OSHA 29 CFR 1926.1101(g)(5)(ii), shall be:
1. constructed of 6 mil poly, seamless at bottom, unmodified
 2. installed so that it completely covers the circumference of pipe or other structure where work is to be done, with impermeable dropcloths placed on all surfaces beneath the work area
 3. smoke-tested for leaks and sealed, as needed
 4. used only once, may not be moved
 5. used only on surfaces with temperatures <150°F
 6. collapsed by removing air via HEPA-vacuum, prior to disposal
 7. adhered to surfaces which are intact, surfaces with loose and friable material shall be sealed in two layers of 6 mil poly or otherwise rendered intact
 8. capable of sustaining integrity at connection site to attached waste bag, which must have equivalent of sliding valve for disconnection (as applicable)
 9. performed by a minimum of two (2) persons
- C. Glovebags may also be used for “spot repair” abatement procedures involving additional materials (e.g. floor tile/linoleum, transite, etc.) provided that the glovebag is capable of fully enclosing the material to be removed.

3.8 PERSONNEL PROTECTION

- A. The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with OSHA, USEPA, USDOT, CTDEEP and CTDPH regulations.
- B. The Contractor shall provide and require all workers to wear protective clothing in the Regulated Areas where asbestos fiber concentrations may reasonably be expected to exceed the OSHA established Permissible Exposure Limits (PEL) or where asbestos contamination exists. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.
- C. Respiratory protection shall be provided and selection shall conform to the requirements of OSHA 29 CFR 1910.134 and 29 CFR 1926.1101 as well as the requirements of the

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CTDPH regulations and 42 CFR Part 84. A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134.

- D. All other necessary personnel protective equipment (i.e. hardhat, work boots, safety glasses, hearing protection, etc.) required to perform the asbestos abatement work activities shall conform to all applicable federal, state and local regulations.
- E. All other qualified and authorized persons entering into a Regulated Area (i.e. Project Monitor, Regulatory Agency Representative) shall adhere to the requirements of personnel protection as stated in this section.

3.9 ASBESTOS ABATEMENT PROCEDURES

- A. The Asbestos Abatement Site Supervisor, as the OSHA Competent Person shall be at the site at all times.
- B. The Contractor shall not begin abatement work until authorized by the Project Monitor, following a pre-abatement visual inspection.
- C. All workers and authorized persons shall enter and leave the Regulated Area through the Worker Decontamination Enclosure System, leaving contaminated protective clothing in the Equipment Room for reuse or disposal of as asbestos contaminated waste. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in a Regulated Area.
- D. During removal, the Contractor shall spray asbestos materials with amended water using airless spray equipment capable of providing a "mist" application to reduce the release of airborne fibers. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Regulated Area. Do not "flood" the area with hose type water supply equipment with the potential to create water releases from the regulated area.
- E. The Contractor shall continue to spray the asbestos materials with amended water, as necessary, throughout removal activities to ensure the asbestos materials remain adequately wet. The asbestos materials shall not be allowed to dry out.
- F. In order to minimize airborne asbestos concentrations inside the Regulated Area, the Contractor shall remove the adequately wetted asbestos in manageable sections. In addition, asbestos materials removed from any elevated level shall be carefully lowered to the floor.
- G. The Contractor shall promptly place the adequately wet asbestos material in disposal containers (six (6) mil polyethylene bags/fiber drum/poly-lined dumpsters, etc.) as it is removed. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape. As the disposal containers are filled, the Contractor shall promptly seal the containers, apply caution labels and clean the containers before transportation to the equipment decontamination area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Small components and asbestos-containing waste with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be

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placed in clean drums and sealed with locking ring tops. All waste containers shall be leak-tight, (typically consisting of two layers of 6 mil poly (or bags)), and shall be properly labeled and placarded with OSHA Danger labels, DOT shipping labels, markings and placards and USEPA NESHAP generators labels. Containers shall be decontaminated by wet cleaning and HEPA vacuuming within the equipment decontamination area prior to exiting the regulated area. Wet clean each container thoroughly before moving to Holding Area.

- H. If at any time during asbestos removal, the Project Monitor should suspect contamination of areas outside the Regulated Area, the Contractor shall immediately stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and/or visual inspections determine decontamination.
- I. After completion of abatement work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work the surfaces being cleaned shall be kept wet. Cleaning shall also include the use of HEPA filtered vacuum equipment.

3.10 CLEAN-UP PROCEDURES

- A. The Contractor shall also remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene engineering controls/barriers.
- B. The Contractor shall clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet sponging or wiping before moving such items into the Equipment Decontamination Enclosure System for final cleaning and removal to uncontaminated areas.
- C. The Contractor shall remove contamination from the exteriors of the air filtration devices, scaffolding, ladders, extension cords, hoses and other equipment inside the Regulated Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning. The Contractor shall wet wipe the Regulated Area beginning at the point farthest away from the negative air filtration units using cotton rags or lint free paper towels. Rags and towels shall be disposed of after each use. Workers should avoid the use of dirty rags to insure proper cleaning of surfaces. Mop the entire floor with a clean mop head and amended water. Water shall be changed frequently. For those Regulated Areas where lead is also disturbed, the cleaning shall also include a wet washing with a high phosphate detergent solution and HEPA vacuuming. Waste water shall be filtered using best available technology into leak-proof containers prior to being transported to a sanitary sewer for discharge.
- D. Once the Regulated Area surfaces have dried, the Project Monitor shall perform a thorough post abatement visual inspection utilizing protocols from the ASTM Standard E1368-90 *Standard Practice for Visual Inspection of Asbestos Abatement Projects*. All surfaces within the Regulated Area, including but not limited to ledges, beams, and hidden locations shall be inspected for visible residue. Evidence of asbestos contamination identified during

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this inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense, until the standard of cleaning is achieved.

- E. Once the area has received a satisfactory post-abatement visual inspection, any equipment, tools or materials not required for completion of the work, shall be removed by the Contractor from the Regulated Area. Negative air filtration devices shall remain in place and operating for the remainder of the clean-up operation.
- F. Following the post-abatement visual, the Contractor shall apply a lock-down encapsulant to all surfaces within the Regulated Area from which asbestos has been removed and the cleaned inner layer of polyethylene.

3.11 AIR MONITORING REQUIREMENTS

- A. The Contractor shall:
 - 1. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.
 - 2. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours and shall be available for review until the job is complete.
- B. The Project Monitor, acting as the representative of the Engineer during abatement activities, will:
 - 1. Collect air samples in accordance with the current revision of the NIOSH 7400 Method of Air Sampling for Airborne Asbestos Fibers while overseeing the activities of the Abatement Contractor. Frequency and duration of the air sampling during abatement will be representative of the actual conditions at the abatement site. The size and configuration of the asbestos project will be a factor in the number of samples required to monitor the abatement activities and shall be determined by the Project Monitor. The following schedule of samples may be collected by the Project Monitor:
 - a. Pre-Abatement (Optional)
 - i. Background areas
 - ii. Area(s) adjacent to Work Area(s)
 - iii. Work Area(s)
 - b. During Abatement (Optional)
 - i. At the exhaust of air filtering device
 - ii. Within Regulated Area(s)
 - iii. Area(s) adjacent to Regulated Areas(s)
(exterior to critical barriers)
 - iv. At the Decontamination Enclosure System

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- c. Post-Abatement (reoccupancy air clearance testing) **(REQUIRED)**
 - i. Interior Regulated NPE Area - At least five (5) per homogenous area

Abatement Activity	Pre-Abatement	During Abatement	Post-Abatement
Greater than 160 SF/260 LF – Interior	PCM	PCM	TEM
Greater than 3 LF/3 SF and Less than 160 SF/260 LF – Interior	PCM	PCM	PCM
Spot Removal and Glovebag Procedures (<3 LF/3 SF)	---	PCM	---
Exterior Friable/Non-Friable	---	PCM	---

C. If air samples collected outside of the Regulated Area during abatement activities indicate airborne fiber concentrations greater than original background levels, or greater than 0.1 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Regulated Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

3.12 POST-ABATEMENT REOCCUPANCY PROCEDURES

A. For interior NPE Regulated Areas, clearance air sampling will be performed by the Project Monitor as specified in the Air Sampling Schedule. Clearance sampling will be undertaken using aggressive sampling techniques. Sampling and analysis of clearance samples will follow State of Connecticut Regulations, Section 19a-332a-12. Areas which do not comply shall continue to be cleaned by and at the Contractors expense, until the specified Standard of Cleaning is achieved as evidenced by results of air testing. When the Regulated Area passes the re-occupancy clearance, controls established by these Specifications may be removed.

1. Air sampling will not begin until after the area has received an acceptable post abatement visual inspection, encapsulation has been completed, and no visible water, liquid encapsulant or condensation remain in the Regulated Area.
2. Sampling equipment will be placed at random throughout the Regulated Area.
3. The following aggressive air sampling procedures will be used within the Regulated Area during all air clearance monitoring:
 - a. Before starting the sampling pumps, direct the exhaust from forced air equipment (such as a 1 horsepower leaf blower) against all walls, ceilings, floors, ledges and other surfaces in the Regulated Area.
 - b. Pre-calibrate the sampling pump flow rates through the use of a rotameter calibrated to a primary standard.
 - c. Start the sampling pumps and sample for the required time.
 - d. Post-calibrate the sampling pump flow rates.

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4. Air volumes taken for clearance sampling shall be sufficient to accurately determine (to a 95 percent probability) fiber concentrations to 0.010 f/cc of air (1,200 liters).
5. Analysis shall follow the requirements of CTDPH 19a-332a-12.
6. Each homogeneous Regulated Area which does not meet the clearance criteria shall be thoroughly recleaned using HEPA vacuuming and/or wet cleaning, with the negative pressure ventilation system in operation. New samples shall be collected in the Regulated Area as described above. The process shall be repeated until the Regulated Area passes the test, with the cost of repeat sampling being borne entirely by the Contractor.
7. For an asbestos abatement project with more than one homogeneous Regulated Area, the release criterion shall be applied independently to each Regulated Area.
8. These clearance sampling procedures may also be implemented for exterior NPE work areas at the discretion of the Engineer.

3.13 POST ABATEMENT WORK AREA DEREGULATION

- A. The Contractor shall remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems leaving negative air filtration devices in operation. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. All waste generated during this disassembly process shall be discarded as ACM waste.
- B. A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain.
- C. The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer.

3.14 WASTE DISPOSAL

- A. Unless otherwise specified, all removed materials and debris resulting from execution of this project shall become the responsibility of the Contractor and removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.
- B. Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place.

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- C. OSHA “Danger” signs must be attached to vehicles used to transport asbestos-containing waste prior to loading ACM waste. The signs must be posted so that they are plainly visible.
- D. Waste haulers and disposal facilities utilized shall match those indicated on the submitted CTDPH notification.
- E. Ensure all waste containers (bags, drums, etc.) are properly packed, sealed and labeled with USEPA NESHAP generator labels, OSHA danger labels and DOT shipping labels. For each shipment of ACM waste, the Contractor shall complete an EPA-approved asbestos waste shipment record.
- F. Authorized representatives signing waste shipment records on behalf of the generator must have USDOT Shipper Certification training in accordance with HMR 49 CFR Parts 171-180.
- G. Transport vehicles hauling ACM waste shall have appropriate USDOT placards visible on all four (4) sides of the vehicle.
- H. The Contractor shall dispose of asbestos-containing and/or asbestos contaminated material at an EPA authorized site and must be in compliance with the requirements of the Special Waste Provisions of the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.
- I. Any asbestos-containing and/or asbestos-contaminated waste materials which also contain other hazardous contaminants shall be disposed of in accordance with the EPA’s Resource Conservation and Recovery Act (RCRA), CTDEEP and ConnDOT requirements. Materials may be required to be stored on-site and tested by the Project Monitor to determine proper waste disposal requirements.

END OF SECTION 02 82 13

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Section 028313 – Lead Paint Activity

PART 1: GENERAL

1.1 SCOPE

- A. Work under this item shall include the special handling measures and work practices required for renovation and demolition (construction) activities impacting various materials containing or covered by lead paint, including the loading, transportation and final off-site disposal of non-hazardous and/or hazardous lead construction and demolition waste, the recycling of metallic components covered with lead paint, and the subsequent cleaning of the affected environment. Lead paint includes paint found to contain any detectable amount of lead by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF).
- B. All activities shall be performed in accordance with, but not limited to, the current revision of the OSHA Lead in Construction Regulations (29 CFR 1926.62), the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260 through 274), the CTDEEP Hazardous Waste Regulations (22a-209-1 and 22a-449(c)) and the USDOT Hazardous Materials Regulations (49 CFR Parts 171 through 180).
- C. All activities shall be performed by individuals with appropriate levels of OSHA lead awareness and hazard communication training and shall supervised by the Contractors Competent Person on the job site at all times. The Contractors Competent Person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- D. Hazardous lead debris shall be transported from the Project by a licensed hazardous waste transporter and disposed of at an EPA permitted hazardous waste facility within 90 days from the date of generation.
- E. Deviations from these Specifications require the written approval of the Engineer/Owner.

1.2 DESCRIPTION OF WORK

- A. All work impacting the lead painted materials identified below shall be conducted within an established Regulated Area with a remote wash facility/decontamination system and the OSHA Lead in Construction Standard. In accordance with 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.
- B. Data for random lead testing conducted on surfaces throughout the buildings as well as any waste characterization results are available from the Engineer for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the extent of lead painted materials. The Contractor shall

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be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT and CTDEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

- C. The Contractor shall conduct exposure assessments for all tasks which impact lead paint in accordance with OSHA 29 CFR 1926.62(d) and shall implement appropriate personal protective equipment until negative exposure assessments are developed.
- D. The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer/Construction Manager. Proceed through the sequencing of the work phases under the direction of the Engineer/Construction Manager.

Non-metallic Components To Be Impacted - OSHA

Lead paint was not identified on any non-metallic components to be impacted as part of the proposed window renovation.

Metal Components To Be Impacted - OSHA

Lead paint has been identified on the interior metal window sills and the exterior metal window lentils. All work impacting those materials shall be conducted within an established lead control (regulated) area with a remote handwash facility/decontamination system in accordance with OSHA Lead in Construction Standards. In accordance with OSHA 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated area and limit the generation of airborne lead. All steel and metal waste generated from the work shall be segregated and recycled as scrap metal at an approved scrap metal recycling facility. The recycling of scrap metal (regardless of LBP concentration) is exempt from USEPA RCRA and CTDEEP Hazardous Waste Regulation.

Surface Preparations - OSHA

Surface preparation techniques such as sanding, sandblasting, scraping, etc. which are utilized on surfaces coated with lead paint must be conducted in accordance with the OSHA worker protection and USEPA RCRA/CTDEEP waste disposal standards. All work impacting those materials shall be conducted within an established lead control (regulated) area with a remote handwash facility/decontamination system in accordance with OSHA Lead in Construction Standards. In accordance with OSHA 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.

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- F. **Segregate all steel and metal components generated from the renovation/demolition of the buildings, regardless of lead content, for recycling as scrap metal. Recycling of lead painted metal is exempt from regulation by the USEPA and CTDEEP as hazardous waste.**

1.3 SUBMITTALS AND NOTICES

- A. Prior to the start of any work that will generate hazardous lead waste above conditionally exempt small quantities (greater than 100 kg/month or greater than 1000 kg at any time), the Contractor shall obtain from the Engineer/CTDEEP a temporary EPA Hazardous Waste Generators ID, unless otherwise directed by the Engineer.
- B. Prior to the generation of any hazardous waste, provide a copy of the USEPA permit for disposal of hazardous lead bearing waste for each proposed hazardous waste treatment storage disposal facility. Also provide a copy of each proposed hazardous waste transporters current USDOT Certificate of Registration and current Hazardous Waste Transporter permits for the State of Connecticut, the hazardous waste destination state and any other applicable states.
- C. Fifteen (15) working days prior to beginning work that impacts lead paint, the Contractor shall submit the following to the Engineer:
1. Work plan for work impacting lead paint including engineering controls, methods of containment of debris and work practices to be employed, as needed, to minimize employee exposure and prevent the spread of lead contamination outside the Regulated Area.
 2. For projects when the intent is to mitigate lead hazards and provide lead-safe conditions for building occupants, a valid CTDPH Lead Abatement Contractor License.
 3. Copies of all employee certificates, dated within the previous twelve (12) months, relating to OSHA lead awareness and hazard communication training and training in the use of lead-safe work practices. SSPC, HUD LSWP and USEPA RRP training programs may be deemed acceptable as meeting these requirements if it can be demonstrated that such training addressed all required OSHA topics.
 4. Name and qualifications of Contractor's OSHA Competent Person under 29 CFR 1926.62.
 5. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed therein have received the following:
 - a. medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.62;
 - b. biological monitoring within the previous six (6) months, as required in 29 CFR 1926.62;
 - c. respirator fit testing within the previous twelve (12) months, as required in 29 CFR 1910.134 (for those who don a tight-fitting face piece respirator)

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6. Name of proposed waste recycling facility for lead-painted asphalt, brick, stone, and concrete that meets CT Remediation Standard Regulations (RSR) GA/Residential Criteria. If these materials do not meet GA/Residential Criteria, they will be disposed of as a non-hazardous construction and demolition (C&D) waste.
 7. Names of the proposed non-hazardous construction and demolition (C&D) lead debris bulky waste disposal facility (CTDEEP-permitted Solid Waste landfill)
 8. Names of the proposed scrap metal recycling facilities. The Contractor shall submit to the Engineer all documentation necessary to demonstrate the selected facility is able to accept lead-painted scrap metal.
 9. Negative exposure assessments conducted within the previous 12 months documenting that employee exposure to lead for each task is below the OSHA Action Level of $30 \mu\text{g}/\text{m}^3$. If a negative exposure assessment has not been conducted, the Contractor shall submit its air monitoring program for the work tasks.
- D. No activity shall commence until all required submittals have been received and found acceptable to the Engineer/Owner. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal of acceptable documentation to, and review by, the Engineer/Owner.
- E. Provide the Engineer/Owner, within thirty (30) days of completion of the project site work, a compliance package; which shall include, but not be limited to, the following:
1. Competent persons (supervisor) job log;
 2. OSHA-compliant personnel air sampling data and exposure assessments;
 3. Completed waste shipment papers for non-hazardous lead construction and demolition (C&D) bulky waste disposal and scrap metal recycling
 4. Completed certified hazardous waste manifests for hazardous lead debris.

1.4 MEASUREMENT AND PAYMENT

The Contractor's cost proposal shall be based on the following criteria:

Measurement for payment shall be based on a lump sum price for the lead hazard control construction activities. Measurement of payment shall be based on a per ton price for transport and disposal of hazardous and non-hazardous lead waste.

No extra payment shall be made for the construction and removal of containments, any required barrier installation and removal, decontamination, dust control, site preparation, site restoration or waste disposal areas. The cost for these items shall be included in the base bid.

PART 2: PRODUCTS

2.1 MATERIALS

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- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with MSDS sheets as applicable.
- B. No damaged or deteriorating materials shall be used. If material becomes contaminated with lead, the material shall be decontaminated or disposed of as lead-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.
- C. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating six (6) mil thickness.
- D. Polyethylene disposable bags shall be six (6) mils thick.
- E. Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- F. Cleaning agents and detergent shall be lead specific, such as TriSodium Phosphate (TSP).
- G. Any chemical strippers and chemical neutralizers to be utilized shall be compatible with the substrate as well as with each other. Such chemical strippers shall contain less than 50% volatile organic compounds (VOCs) in accordance with RCSA 22a-174-40 Table 40-1.
- H. Labels and warning signs shall conform to OSHA 29 CFR 1926.62, USEPA 40 CFR 745, USEPA 40 CFR 260 through 274 and USDOT 49 CFR 172 as appropriate.
- I. Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.
- J. Air filtration devices and vacuum units shall be equipped with HEPA filters.

2.2 TOOLS AND EQUIPMENT

- A. The Contractor shall provide tools and equipment that are suitable for lead paint related activity:
 - 1. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.
 - 2. Electrical equipment, protective devices and power cables shall conform to all applicable codes.
 - 3. Where lead exposures are above the OSHA Action Level or PEL, the Contractor shall provide wash facilities/shower stalls and plumbing that include sufficient

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hose length and drain system or an acceptable alternate. One shower stall shall be provided for each eight workers.

4. Where lead exposures are above the OSHA PEL, the Contractor shall provide exhaust air filtration units that are equipped with HEPA filters to provide local exhaust ventilation at the work area to reduce airborne lead emissions.
5. The Contractor shall provide vacuum units of suitable size and capabilities for the project which have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger. HEPA vacuums shall also be equipped with a beater bar.
6. The Contractor shall provide ladders and/or scaffolds of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.
7. Protective clothing, respirators, and HEPA P100 filter cartridges shall be provided in sufficient quantities for the project.
8. Equipment suitable for building renovation/demolition and proper waste/debris collection/packing/removal, (e.g. excavators, grapples, backhoes, roll-offs, etc.) shall be provided by the Contractor as required.

PART 3: EXECUTION

3.1 GENERAL REQUIREMENTS

- A. All employees of the Contractor who perform work impacting lead paint shall be properly trained to perform such duties. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.
- B. Contractor shall provide all labor, materials, tools, equipment, services, testing, insurance (with specific coverage for work on lead), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications.
- C. Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site.
- D. As necessary, the Contractor shall:
 1. Shutdown and isolate heating, cooling, and ventilating air systems to prevent contamination and particulate dispersal to the other areas of the building.
 2. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.

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3. Coordinate all power and fire alarm isolation with the appropriate representatives.
 4. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.
- E. Ladders and/or scaffolds to be utilized throughout this project shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.
- F. Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.
- G. If adequate electrical supply is not available at the site, the Contractor shall supply temporary power. Such temporary power shall be sufficient to provide adequate lighting and power the Contractor's equipment. The Contractor is responsible for proper connection and installation of electrical wiring and shall ensure safe installation of electrical equipment in compliance with applicable electrical codes and OSHA requirements.
- H. If water service is not be available at the site for Contractor's use, the Contractor shall supply sufficient water for each shift to operate the wash facility/decontamination shower units in addition to the water needed at the work area.
- I. The Engineer may provide a Project Monitor to monitor compliance of the Contractor. In such cases no activity impacting lead paint shall be performed until the Project Monitor is on-site. Environmental sampling, including ambient air sampling, TCLP waste stream sampling and/or dust wipe sampling, will be conducted by the Engineer/Project Monitor as deemed necessary throughout the project. Air monitoring to comply with the Contractor's obligations under OSHA remains solely the responsibility of the Contractor.
- J. If air samples collected outside of the Regulated Area during activities impacting lead paint indicate airborne lead concentrations greater than original background levels or 30 ug/m³, whichever is larger, or if at any time visible emissions of lead paint extend out from the Regulated Area, an examination of the Regulated Area shall be conducted and the cause of such emissions corrected. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming work.
- K. Work outside the initial designated area(s) will not be paid for by the Engineer. The Contractor will be responsible for all costs incurred from these activities including repair of any damage.

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3.2 ESTABLISHMENT OF REGULATED WORK AREAS

- A. The Contractor shall establish a Regulated Area, through the use of appropriate barrier tape, or other means to control unauthorized access into the area when activities impacting lead paint are occurring.
- B. Warning signs meeting the requirements of OSHA 29 CFR 1926.62 shall be posted at all approaches to Regulated Areas. These signs shall read:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

- C. The Contractor shall implement appropriate engineering controls such as critical barriers, poly drop cloths, negative pressure, local exhaust ventilation, wet dust suppression methods, etc. as necessary, and as approved by the Engineer, to prevent the spread of lead contamination beyond the Regulated Area in accordance with the Contractor's approved work plan. Should the previously submitted work plan prove to be insufficient to contain the contamination, the Contractor shall modify its plan and submit it for review by the Engineer.
- D. For exterior work areas, the Contractor shall use a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system to remove any visible existing paint chips from the ground to a distance of 20' out from the base of the exterior surface scheduled for lead paint activity prior to commencement of work and extend a 6 mil polyethylene sheet drop cloth on the ground adjacent to the exterior surface scheduled for lead paint activity to contain debris/contamination.

3.3 WASH FACILITIES

- A. The Contractor shall provide handwash facilities in compliance with 29 CFR 1926.51(f) and 29 CFR 1926.62 regardless of airborne lead exposure.
- B. If employee exposure to airborne lead exceeds the OSHA Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$), shower rooms must be provided. The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water. Shower water shall be collected and filtered using best available technology and disposed of in accordance with all federal, state and local laws, regulations and ordinances.

3.4 PERSONNEL PROTECTION

- A. Exposure Assessments: The Contractor shall initially determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 micrograms per cubic meter ($30 \mu\text{g}/\text{m}^3$). Assessments shall be based on initial air monitoring results as well as other relevant information. The Contractor may rely on historical air monitoring data obtained within the past 12 months

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under workplace conditions closely resembling the process, type of material, control methods, work practices and environmental conditions used and prevailing in the Contractor's current operations to satisfy the exposure assessment requirements. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.

- B. Until a negative exposure assessment is developed for each task impacting lead paint, the Contractor shall ensure that all workers and authorized person entering the Regulated Area wear protective clothing and respirators in accordance with OSHA 29 CFR 1926.62. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings. Sufficient quantities shall be provided to last throughout the duration of the project.
- C. Protective clothing provided by the Contractor and used during chemical removal operations shall be impervious to caustic materials. Gloves provided by the Contractor and used during chemical removal shall be of neoprene composition with glove extenders.
- D. Respiratory protective equipment shall be provided and selection shall conform to 42 CFR Part 84, 29 CFR Part 1910.134, and 29 CFR Part 1926.62. A formal respiratory protection program must be implemented in accordance with 29 CFR Part 1926.62 and 29 CFR Part 1910.134.

3.5 AIR MONITORING REQUIREMENTS

- A. The Contractor shall:
 - 1. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.
 - 2. Conduct initial exposure monitoring to determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 micrograms per cubic meter. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.
 - 3. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.62. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours and shall be available for review until the job is complete.

3.6 LEAD PAINT ACTIVITY PROCEDURES

- A. The Contractor's Competent Person shall be at the job at all times during work impacting lead.

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- B. Work impacting lead paint shall not begin abatement work until authorized by the Engineer, following a pre-abatement visual inspection by the Project Monitor.
- C. Any activity impacting lead painted surfaces shall be performed in a manner which minimizes the spread of lead dust contamination and generation of airborne lead.
- D. The Contractor shall ensure proper entry and exit procedures for workers and authorized persons who enter and leave the Regulated Area. All workers and authorized persons shall leave the Regulated Area and proceed directly to the wash or shower facilities where they will HEPA vacuum gross debris from work suit, remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. Do not remove lead chips or dust by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed of in accordance with federal, state and local water discharge standards. Any permit required for such discharge shall be the responsibility of the Contractor.
- E. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in the Regulated Area.
- F. Utilize appropriate engineering controls and work practices (e.g. wet methods) as directed by 29 CFR 1926.62 (and 40 CFR 745.85 as applicable) to control lead emissions and contamination.
- G. Properly contain wastes containing lead paint for appropriate storage, transport and disposal.
- H. Stop all work in the regulated area and take steps to decontaminate non-work areas and eliminate causes of such contamination should lead contamination be discovered in areas outside of the regulated area.
- I. Special Requirements:
 - 1. Demolition/Renovation:
 - a. Demolish/renovate in a manner which minimizes the spread of lead contamination and generation of lead dust.
 - b. Implement dust suppression controls, such as misters, local exhausts ventilation, etc. to minimize the generation of airborne lead dust.
 - c. Segregate work areas from non-work areas through the use of barrier tape, poly criticals, etc.
 - d. Clean up immediately after renovation/demolition has been completed
 - 2. Chemical Removal:
 - a. Apply chemical stripper in quantities and for durations specified by manufacturer.

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- b. Where necessary scrape lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use sanding, hand scraping, and dental picks to supplement chemical methods as necessary.
 - c. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
 - d. Protect adjacent surfaces from damage from chemical removal.
 - e. Maintain a portable eyewash station in the work area.
 - f. Wear respirators that will protect workers from chemical vapors.
 - g. Do not apply caustic agents to aluminum surfaces.
3. Paint Stabilization/Liquid Encapsulation:
- a. Remove surface dust, dirt, mildew, scale, rust or other debris by scrubbing with detergent (lead-specific detergent solution) and rinsing. Remove loose paint using wet scraping methods until a sound surface is achieved. Remove unsound substrate not firmly adhered and repair with an appropriate patching material.
 - b. Remove and reinstall or protect electrical receptacles, hardware, and wall mounted objects from being painted-over by encapsulant. Protect adjacent finishes from paint splatter or other damage.
 - c. Apply encapsulant in a continuous coat. Number of coats is as specified in the manufacturer's instructions for application. Encapsulant shall be approved by the CTDPH for use. Use encapsulants only on substrates and locations approved for use in the manufacturers instructions.
 - d. Prior to application of encapsulants, perform the tape, X-cut tape and patch tests in accordance with the CTDPH guidance document information on Applying Liquid Encapsulants to Interior Surfaces for Property Owners and Lead Professionals to determine if the surface is suitable for encapsulation.
4. Mechanical Paint Removal:
- a. Provide sanders, grinders, rotary wire brushes, or needle gun removers equipped with a HEPA filtered vacuum dust collection system. Cowling on the dust collection system for orbital-type tools must be capable of maintaining a continuous tight seal with the surface being abated. Cowling on the dust collection system for reciprocating-type tools shall promote an effective vacuum flow of loosened dust and debris. Inflexible cowlings may be used on flat surfaces only. Flexible contoured cowlings are required for curved or irregular surfaces.

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- b. Provide HEPA vacuums that are high performance designed to provide maximum static lift and maximum vacuum system flow at the actual operating vacuum condition with the shroud in use. The HEPA vacuum shall be equipped with a pivoting vacuum head.
 - c. Remove lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use chemical methods, hand scraping, and dental picks to supplement abrasive removal methods as necessary.
 - d. Protect adjacent surfaces from damage from abrasive removal techniques.
 - e. "Sandblasting" type removal techniques should be performed within full containment negative pressure enclosures.
5. Component Removal/Replacement:
- a. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
 - b. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the building components by approved methods which will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
 - c. Clean up immediately after component removals have been completed. Remove any dust located behind the component removed.

3.7 PROHIBITED REMOVAL METHODS

- A. The use of heat guns in excess of 700 degrees Fahrenheit to remove lead paint is prohibited.
- B. The use of sand, steel grit, water, air, CO₂, baking soda, or any other blasting media to remove lead or lead paint without the use of a HEPA ventilated contained negative pressure enclosure is prohibited.
- C. Power tool assisted grinding, sanding, cutting, needle gun, power planing or wire brushing of lead paint without the use of cowled HEPA vacuum dust collection systems is prohibited.
- D. Lead paint burning, busting of rivets painted with lead paint, welding of materials painted with lead paint, and torch cutting of materials painted with lead paint is prohibited. Where cutting, welding, busting, or torch cutting of materials is required, pre-remove the lead paint in the area affected.
- E. Use of chemical strippers containing Methylene Chloride is prohibited.
- F. Compressed air shall not be utilized to remove lead paint.

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- G. Power/Pressure washing shall not be used to remove paint.

3.8 CLEAN-UP AND VISUAL INSPECTION/VERIFICATION

- A. The Contractor shall remove and containerize all lead waste material and visible accumulations of debris, paint chips and associated items.
- B. During clean up the Contractor shall utilize rags and sponges wetted with lead-specific detergent and water as well as HEPA filtered vacuum equipment.
- C. The Engineer will conduct a visual inspection of the work areas in order to document that all surfaces have been maintained as free as practicable of accumulations of lead in accordance with OSHA 29 CFR 1926.62(h). If visible accumulations of waste, debris, lead paint chips or dust are found in the work area, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean up of the work site.
- D. Dust wipe clearance testing, in accordance with CTDPH/USEPA/HUD protocols, will also be performed by the Engineer if so detailed in Section 1.2 Description of Work. If lead dust wipe levels are above CTDPH/EPA/HUD clearance criteria, the Contractor shall re-clean the work area and retesting shall be conducted at the Contractors expense. The testing and cleaning sequence shall be repeated until the clearance criteria levels have been achieved.

3.9 POST ABATEMENT WORK AREA DEREGULATION

- A. Following the visual inspection, (and clearance/verification testing if appropriate/specified), any engineering controls and warning signs implemented may be removed.
- B. A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain. If this final visual is acceptable, the Contractor shall reopen the Regulated Area and remove all signage.
- C. The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer/Owner.

3.10 NON-HAZARDOUS WASTE DISPOSAL/RECYCLING

- A. Non-metallic building debris waste materials tested and found to be non-hazardous Construction and Demolition (C&D) bulky waste shall be disposed of properly at a CTDEEP approved Solid Waste landfill.

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- B. Metallic debris shall be segregated and recycled as scrap metal at an approved metal recycling facility. The Contractor shall submit to the Engineer all documentation necessary to demonstrate the selected recycling facility is able to accept lead-painted scrap metal.
- C. Concrete, brick, stone, cured asphalt, etc. coated with any amount of lead paint cannot be crushed, recycled or buried on-site to minimize waste disposal unless representatively tested and found to meet the CTDEEP RSR GA/Residential Standards. Only CTDEEP defined "clean fill" can be recycled on-site or sent to a recycling facility.

3.11 HAZARDOUS LEAD WASTE DISPOSAL

- A. If required to dispose of any hazardous waste, the Contractor shall utilize a certified/permitted transporter for hazardous waste in compliance with DOT 49 CFR Part 172 and USEPA 40 CFR 260-274 and a permitted hazardous waste treatment storage disposal facility (TSDF) in compliance with USEPA 40 CFR 260-274.
- B. Hazardous lead bearing material must be offered for transportation and transported in compliance with the Code of Federal Regulations, Title 49, Chapter 1, Part 173, Subparts A, B, C, and D and Paragraph 178.118. Transport vehicles (hopper or dump type) must be free from leaks and discharge openings must be securely closed during transportation. All storage containers (roll offs or drums) shall have a protective liner and removable lid. These containers shall not have any indentations or damage that would allow seepage of the contained material.
- C. The disposal of hazardous lead bearing material must be in compliance with the requirements of, and authorized by, the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, and the USEPA.
- D. The disposal of hazardous lead bearing waste shall comply with the requirements of the Resource Conservation and Recovery Act (RCRA).
- E. Unless previous waste characterizations have been completed by the Engineer, all generated waste shall be containerized and stored on-site for hazardous waste determination via TCLP testing. TCLP testing and analysis shall be the responsibility of the Engineer.
- G. The dumpsters/containers containing hazardous waste are to be kept closed and covered and locked when not in active use for the loading of materials.
- H. All containers of hazardous lead bearing material shall be labeled in accordance with 29 CFR 1926.62 and EPA 40 CFR 260-270.
- I. All hazardous lead-bearing waste removed from the site by the Contractor shall be containerized in lined roll-offs or barrels. Store waste materials in U.S. Department of Transportation (49 CFR 178) approved containers. Properly label and placard each container to identify the type of waste (49 CFR 172) and the date the container was filled. The disposal containers shall be labeled with a six inch square, yellow, weatherproof, hazardous waste sticker in accordance with U.S. DOT regulations, by the Contractor.

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- J. The Contractor may not store containerized hazardous lead waste on the job site for in excess of 90 calendar days from the accumulation start date.
- K. When required to dispose of hazardous waste, the Contractor shall utilize a certified/permitted transporter for hazardous waste in compliance with USDOT 49 CFR Part 172 and USEPA 40 CFR 260-274 and a permitted hazardous waste treatment storage disposal facility (TSDF) in compliance with USEPA 40 CFR 260-274.
- L. The Contractor shall complete a Uniform Hazardous Waste Manifest, EPA Form 8700-22, and submit to the Engineer for review and generator sign-off prior to each load of hazardous waste scheduled to leave the site. Completed copies of the manifest shall be delivered by the Contractor to the Engineer within 30 calendar days following the date the load leaves the site.
- M. When all necessary procedures have been completed, then the hazardous waste shall be shipped to the hazardous waste disposal facility.
- N. Any spillage of debris during disposal operation, i.e., loading, transport and unloading, shall be cleaned up in accordance with the Code of Federal Regulations, Title 40, Chapter 1, Part 265, Subparts C and D, at the Contractor's expense.
- O. The Contractor is liable for any fines, costs or remediation costs incurred as a result of the failure to be in compliance with this special provision and all federal, state and local laws.
- P. Final payment requisitions for the contract will not be processed until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Engineer.

END OF SECTION 02 83 13



Lead Based Paint Measurement Summary Table

Device(s): Niton XLP301-A (Serial #25555) X Ray Fluorescence (XRF) Spectrum Analyzer
Site: New London Armory, Bayonet Road, New London, Connecticut
Project # : 277434-0000-0000
Date(s): 4/18/2017
Inspector: Gregory Kaczynski (Lead Inspector #002158)

Number	Room	Side	Structure	Feature	Material	Color	Condition	Reading (mg/cm2)	Precision (mg/cm2)	Depth Index	Duration (sec)	Date/Time
1	Shutter calibration							1.9	0.0	0.0	156.08	4/18/2017 8:57
2	0.3 calibration							0.3	0.1	1.02	4.55	4/18/2017 10:16
3	1.6 calibration							1.5	0.1	1.14	5.08	4/18/2017 10:17
4	3.5 calibration							3.6	0.2	1.32	7.98	4/18/2017 10:17
5	Room 36	D	Wall		Concrete	Tan/Beige	Intact	0.0	0.0	1.43	3.81	4/18/2017 10:26
6	Room 35	C	Window	Sill	Concrete	Tan/Beige	Intact	0.1	0.4	8.54	21.55	4/18/2017 10:29
7	Room 35	C	Window	Sill	Concrete	Tan/Beige	Intact	0.1	0.1	4.36	3.98	4/18/2017 10:30
8	0.3 calibration							0.3	0.0	1.18	11.04	4/18/2017 11:11
9	1.6 calibration							1.5	0.1	1.13	5.46	4/18/2017 11:12
10	3.5 calibration							3.4	0.3	1.24	4.53	4/18/2017 11:13
11	Room 4	A	Window	Sill	Metal	Tan/Beige	Intact	0.1	0.1	7.64	10.36	4/18/2017 11:16
12	Room 4	A	Wall	--	Concrete	Tan/Beige	Intact	0.0	0.0	1	4.18	4/18/2017 11:17
13	Room 1	A	Wall	--	Concrete	Tan/Beige	Intact	0.0	0.0	2.47	4.89	4/18/2017 11:19
14	Room 1	A	Window	Sill	Metal	Tan/Beige	Intact	0.0	0.4	10	23.34	4/18/2017 11:21
15	Room 1	A	Window	Sill	Metal	Tan/Beige	Intact	0.0	0.0	2.43	2.18	4/18/2017 11:21
16	Room 1	A	Window	Sill	Metal	Tan/Beige	Intact	-0.1	0.7	10	6.71	4/18/2017 11:22
17	Room 17	B	Window	Sill	Metal	Tan/Beige	Intact	0.1	0.4	10	16.98	4/18/2017 11:25
18	Room 17	B	Wall	--	Concrete	Tan/Beige	Intact	0.0	0.0	2.86	5.98	4/18/2017 11:25
19	Room 20	B	Wall	--	Ceramic	Tan/Beige	Intact	0.0	0.0	1.48	3.83	4/18/2017 11:27
20	Room 20	B	Window	Casing	Metal	Tan/Beige	Intact	0.0	0.0	1.16	3.98	4/18/2017 11:28
21	Room 25	B	Window	Casing	Metal	Tan/Beige	Intact	0.0	0.0	1.03	3.63	4/18/2017 11:30
22	Room 25	B	Window	Sill	Metal	Tan/Beige	Intact	0.3	0.6	10	9.21	4/18/2017 11:30
23	Room 25	B	Wall	--	Concrete	Tan/Beige	Intact	0.0	0.0	1.33	4.01	4/18/2017 11:31
24	Room 28	C	Window	Cover	Metal	Tan/Beige	Intact	0.0	0.0	1.16	3.25	4/18/2017 11:33
25	Room 28	C	Wall	--	Concrete	Tan/Beige	Intact	0.0	0.0	1	4.92	4/18/2017 11:34
26	Room 7	A	Wall	--	Concrete	Tan/Beige	Intact	0.0	0.0	1	3.64	4/18/2017 11:36
27	Room 7	A	Window	Sill	Metal	Tan/Beige	Intact	0.1	0.7	8.22	7.62	4/18/2017 11:37
28	--	D	Window	Lentil	Metal	Orange	Intact	6.8	3.4	1.49	2.36	4/18/2017 11:39
29	--	D	Window	Lentil	Metal	Orange	Intact	19.3	6.1	1.79	1.99	4/18/2017 11:40
30	--	C	Window	Lentil	Metal	Orange	Intact	16.2	6.1	1.74	1.63	4/18/2017 11:41

Lead paint includes paint found to contain any detectable amount of lead by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF).

Side A = Street side; Sides B, C, D follow clockwise



Lead Based Paint Measurement Summary Table

Device(s): Niton XLP301-A (Serial #25555) X Ray Fluorescence (XRF) Spectrum Analyzer												
Site: New London Armory, Bayonet Road, New London, Connecticut												
Project #: 277434-0000-0000												
Date(s): 4/18/2017												
Inspector: Gregory Kaczynski (Lead Inspector #002158)												
Number	Room	Side	Structure	Feature	Material	Color	Condition	Reading (mg/cm2)	Precision (mg/cm2)	Depth Index	Duration (sec)	Date/Time
31	--	C	Window	Lentil	Metal	Orange	Intact	11.3	4.4	1.61	2.18	4/18/2017 11:43
32	0.3 calibration	--	--	--	--	--	--	0.3	0.1	1.14	7.26	4/18/2017 12:03
33	1.6 calibration	--	--	--	--	--	--	1.5	0.1	1.09	7.26	4/18/2017 12:03
34	0.7 calibration	--	--	--	--	--	--	0.7	0.1	1.14	7.25	4/18/2017 12:04

Lead paint includes paint found to contain any detectable amount of lead by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF).

Side A = Street side; Sides B, C, D follow clockwise

REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS

Section 028433 - Removal and Disposal of Polychlorinated Biphenyls

PART 1 GENERAL

1.1 APPLICABLE PUBLICATIONS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to this work.

EPA PCB Regulations 40 CFR Part 761

PCB Bulk Product Waste Reinterpretation Memorandum (October 24, 2012)

1.2 DESCRIPTION

Work under this item shall include the abatement of: caulks and glazes that are to be managed as PCB Bulk Product Waste (>50 ppm) and removal of any abutting building materials (e.g. brick, sheetrock, metal window framing, etc. as identified in the Contract Plans) that are coated with or impacted by those caulks and/or glazings ("PCB Waste").

The work shall be performed by persons who are knowledgeable, qualified, trained and licensed in the removal, treatment, handling, and disposal of PCB contaminated wastes and the subsequent cleaning of the affected environment. Where areas to be abated contain materials with PCBs and asbestos the workers shall also have all the required asbestos licensing/training as required in Specification Section 028213.

THIS SPECIFICATION HAS BEEN DEVELOPED UTILIZING THE "NO KNOWLEDGE" APPROACH REGARDING PCB IN BUILDING COMPONENTS. THERE WAS NO SAMPLING PERFORMED ON ANY OF THE CAULKS/GLAZES THAT WERE IDENTIFIED AS BEING IMPACTED AS PART OF THIS PROJECT. THEREFORE THERE IS NO REQUIREMENT FOR THE TESTING OF ADJOINING SUBSTRATES OR EXTERIOR GROUND COVER. ALL IMPACTED SOURCE CAULKS/GLAZES AND SUBSTRATES WILL BE MANAGED AS >50 PPM PCB BULK PRODUCT WASTE.

1.2.1 REQUIREMENTS

Caulks/glazes to be managed as PCB Bulk Product Waste (≥ 50 ppm) at the New London Armory include the following:

- **Interior/exterior glazing & caulking associated with all window types**

NOTES:

- **Refer to PCB & Asbestos Drawings 1 & 2 for PCB material locations.**
- **Any non-porous components (metal window components, etc.) abutting the subject caulk shall be removed and disposed of as PCB Bulk Product Waste (and ACM waste as applicable) or the caulk will be removed to visual standards consistent with NACE Standard No.2, Near-White Blast Cleaned Surface Finish, for unrestricted use, in accordance with 40 CFR 761.79.**

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- Any adjacent brick/CMU to be removed to facilitate the installation of the new windows/doors/louwer, that are abutting caulks that are being managed as PCB Bulk Product Waste (>50 ppm), shall be removed and disposed of as PCB Bulk Product Waste according to the *PCB Bulk Product Waste Reinterpretation Memorandum* issued October 24, 2012.
- PCB Bulk Product Waste (caulk, glaze and substrate) shall be disposed of in accordance with 40 CFR 761.62(a), 62(b) and the October 24, 2012 Waste Reinterpretation Memo, and may be disposed of in a State permitted solid waste landfill, PCB TSCA Chemical Waste Landfill, RCRA Hazardous Waste Landfill, or high temperature incinerator.
- Caulkings and glazings associated with the windows also contain asbestos, therefore the workers shall also have all the required asbestos licensing/training as required in Specification Section 02 82 13. Abatement of these materials will coincide with asbestos removal.

The Owner shall hire a PCB Engineer for the duration of the PCB abatement work. The PCB Engineer shall provide a Project Monitor to oversee the activities of the Contractor. The area shall be considered cleaned when no visible caulk/dust residue remains.

These Specifications govern all work activities that disturb PCB-containing caulk and glazing and associated building material. All activities shall be performed in accordance with, but not limited to, OSHA Regulation 29 CFR 1926, EPA PCB Regulation 40 CFR Part inclusive.

This Specification will be utilizing the *PCB Bulk Product Waste Reinterpretation Memorandum* issued October 24, 2012 to designate building material (i.e. substrate) “coated or serviced” with PCB Bulk Product Waste at the time of designation for disposal to be managed as a PCB Bulk Product Waste.

Abatement work shall include the removal, transportation, and disposal of all PCB Wastes as identified on the Contract Documents and Specifications prior to any phased or planned renovation/demolition work involving the subject PCB areas. All PCB abatement material shall be disposed of by the Contractor as PCB Bulk Product Waste in accordance with 40 CFR Part 761.

Deviations from these Specifications require the written approval from the Owner.

1.3 DEFINITIONS

1.3.1 Contaminant Zones

Contaminant zones are those areas of active abatement and the waste storage area.

1.3.2 Abatement

The removal of PCB contaminated caulks/glazes and associated building materials in the manner specified in this section.

1.3.5 PCB Waste

PCB waste means caulk and glazing and impacted abutting building materials to the subject caulk and glazing to be managed as PCB Bulk Product Waste (>50 ppm).

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1.3.6 PCB Remediation Plan

Specification 028433.

1.3.7 Remedial Action Level

Concentration to which PCB contaminated building materials must be removed to verify completion of the abatement work.

1.3.8 PCB Contaminated Building Materials

Consists of those caulks and glazings identified as PCB Bulk Product Wastes. Also may include the building materials in which the caulks and glazings are in contact with which includes, but not limited to, window frames, window glass, brick, concrete, mortar, metal, and stone/or window sills.

1.3.9 Suitable Waste Storage Container

A container in which PCB wastes are placed for storage prior to transport offsite for disposal that is water tight, lined, and equipped with a cover that prevents the infiltration of rainwater into the container.

1.3.11 Waste Storage Area

The secured location in which the Contractor shall store PCB wastes prior to offsite transport for disposal. The Contractor shall consult with the Owner and the PCB Engineer to identify the location of Waste Storage Areas prior to generating any wastes. This area shall be secured and signed by the Contractor.

1.3.12 PCB Engineer

Responsible for overseeing PCB abatement work on behalf of the Owner. The PCB Engineer shall be represented daily onsite by the Project Monitor.

1.3.13 Owner

The Owner is the Connecticut Military Department, as further defined in the General Conditions.

1.3.14 Project Monitor

The onsite representative for the PCB Engineer responsible for overseeing daily work activities. The Project Monitor shall approve all containments prior to performance of abatement work; and for verifying that abatement has been successfully performed and allowing containments to be removed for reoccupancy.

1.4 SUBMITTALS

Submit the following documentation to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times. Submission must be made prior to the Pre-abatement Meeting, which will be held prior to the start of abatement at the

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Engineers direction. The Abatement Contractor, PCB Engineer, and Owner's Representatives shall be present at the meeting.

- 1.4.1 The following must be provided to the Owner, Construction Administrator, and the PCB Engineer seven (7) days prior to starting work.

As related to the PCB abatement work, site-specific Health and Safety Plan including the Emergency Response Plan and provisions for decontamination and a contingency plan for unforeseen emergencies. The Owner or PCB Engineer shall review such a plan only to determine if the plan meets basic regulatory requirements and the minimum requirements of these Specifications. The review will not determine the adequacy of the plan to address all potential hazards, as that remains the sole responsibility of the Contractor.

A Contractor Site PCB Work Plan describing the containment and air monitoring that will be employed during abatement activities. This work plan should also include information on how and where wastes will be stored and disposed of, and on how field equipment will be decontaminated.

Current certification of employee's OSHA health and safety training (HAZWOPER).

Certification of additional required health and safety training for Supervisors.

Qualifications and experience of the Site Safety Officer (SSO).

- 1.4.2 Seven (7) days prior to any worker accessing the site to perform the work described in this Section, the Contractor shall provide documentation, typed on company letterhead and signed by the Contractor, certifying that all employees assigned to the PCB abatement work listed therein have received the following:

Medical monitoring within the previous twelve (12) months, as required in 29 CFR 1910.120;

Respirator fit testing within the previous twelve (12) months as detailed in 29 CFR 1910.134 (for all employees who must also don a tight-fitting face piece respirator).

- 1.4.3 At least seven (7) days prior to performing any abatement work that shall generate PCB wastes, the Contractor shall submit copies of the EPA/State-approved permits for the proposed Solid Waste, Chemical Waste, or Hazardous Waste landfills and/or high temperature incinerator and a waste profile approved by the proposed landfill/incinerator indicating that the waste materials to be generated are acceptable to the facility.

- 1.4.4 Seven (7) days prior to the start of abatement work, material information for any proposed encapsulant indicating that these materials conform to the specifications contained within, if applicable.

- 1.4.5 No abatement shall commence until a copy of all required submittals have been received and found acceptable to the Owner and the PCB Engineer. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal, and receipt of, all the above required paperwork to the Owner and PCB Engineer.

- 1.4.6 Copies of all permits, licenses, certifications, including but not limited to, manifests and/or bill of lading for the removal, transport, and disposal of PCB waste material shall be

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submitted to the Owner and PCB Engineer no later than seven (7) business days after the Contractor receives such documents.

- 1.4.7 Notice shall be provided to the Owner and the PCB Engineer at least seven (7) business days prior to the start of work under this Specification. Such notice shall include an estimated completion date. If this work is phased over the duration of the project, then such notification requirements shall apply to each phase.

1.5 REGULATORY REQUIREMENTS

- 1.5.1 All abatement and decontamination wastes are to be handled and stored in accordance with the provision of 40 CFR Part 761 Subpart D. The Contractor shall be responsible for all costs associated with investigation and remediation of any releases due to their failure to handle abatement wastes in accordance with the regulatory requirements.

1.6 DELIVERY AND STORAGE

- 1.6.1 The Contractor shall deliver and store materials in a manner to prevent contamination, segregation, freezing, and other damage.

1.7 PROTECTION

1.7.1 Structures and Surfaces

The Contractor shall protect adjacent structures and surfaces from traffic or any other damage. The Contractor shall repair and reestablish damaged building materials that are to remain in place prior to acceptance of the work.

PART 2 PRODUCTS

- 2.1 All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description.
- 2.2 No damaged or deteriorating materials shall be used. If material becomes contaminated with PCBs, the material shall be disposed of as PCB waste material. The cost to dispose of this material shall be at the expense of the Contractor.
- 2.3 Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating six (6) mil thickness.
- 2.4 Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- 2.5 Containers for storage, transportation and disposal of PCB-containing waste material shall be impermeable and both air and watertight.
- 2.6 Labels and warning signs shall conform to OSHA 29 CFR 1926, USEPA 40 CFR Part 761 and USDOT 49 CFR Part 172 as appropriate.

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2.7 Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.

2.8 Air filtration devices and vacuum units shall be equipped with HEPA filters.

PART 3 EXECUTION

3.1 General Requirements for PCB Containing Building Material Abatement.

All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this work.

Prior to beginning work per these Specifications, the PCB Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site for safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this work.

3.2 Prior to the performance of any abatement work, the Contractor shall perform the following tasks.

Shutdown and isolate heating, cooling, and ventilating air systems to prevent contamination to the other areas of the buildings.

Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.

Coordinate all power and fire alarm isolation with the appropriate representatives.

When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

3.3 If sufficient electrical service is unavailable, the Contractor may need to supply electrical power to the site by fuel operated generator(s). Electrical power supply shall be sufficient for all equipment required for this work in operation throughout the duration of the work.

3.4 Negative pressure must be maintained in each active interior work area, until the area achieves satisfactory verification and reoccupancy criteria and is approved by the Project Monitor to be deregulated.

3.5 Water service may not be available at the site. Contractor shall supply sufficient water for each shift to operate the decontamination units as well as to maintain the work areas adequately wet.

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- 3.6 Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.
- 3.7 Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.
- 3.8 Data provided regarding PCB sampling conducted throughout the structure(s) is for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the presence and location of all PCB Waste. The Contractor shall verify all field conditions affecting performance of the work as described in these Specifications and in accordance with applicable OSHA, USEPA, USDOT, and CTDEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.
- 3.9 The PCB Engineer will provide a Project Monitor to oversee the activities of the Contractor. No PCB abatement work shall be performed until the Project Monitor is on-site.
- 3.10 All interior and exterior abatement areas are to be established in largely the same manner.

The abatement Contractor shall establish a Control Area around each area where removal actions are being performed. Only properly trained personnel associated with the removal or abatement will be allowed within the Control Areas that will be established by placing barriers with signs indicating that access to the area is restricted. The Contractor's site supervisor will maintain the Control Areas and escort unauthorized personnel from the area promptly. Only those personnel actively working on the removal or abatement, will be allowed within the Regulated/Containment Area and they shall be equipped with appropriate Personal Protective Equipment (PPE).

The Contractor shall pre-clean the work areas using HEPA filtered equipment (vacuum) and/or wet methods as appropriate, collecting and properly containing all dust and debris identified as PCB Waste. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

After pre-cleaning, movable objects shall be removed from the work areas with the utmost care to prevent damage of any kind and relocated to a temporary storage location coordinated with the PCB Engineer. The Contractor is responsible for protecting all fixed objects that are permanent fixtures or are too large to remove and remain inside the Regulated Area. Fixed objects shall be enclosed with one layer of six (6) mil polyethylene sheeting sealed with tape.

The Contractor shall establish remote to the Regulated Area but within the Control Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series.

The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water through the use of electric hot water heaters

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supplied by the Contractor. No worker or other person shall leave a Regulated Area without showering. Shower water shall be collected.

The Contractor shall ensure that no personnel or equipment be permitted to leave the Control Area until proper decontamination procedures (including HEPA vacuuming, wet wiping and showering) to remove all PCB debris have occurred. No PCB-contaminated materials or persons shall enter the Clean Room.

The Contractor shall seal off all windows, doorways, skylights, ducts, grilles, diffusers, vents, light fixtures, electrical receptacles, suspended ceiling tile systems and any other openings between the Regulated Area and the uncontaminated areas outside of the Regulated Area, including the outside of the building, with critical barriers consisting of a minimum of one (1) layer of six (6) mil polyethylene sheeting securing the edges with tape. Doorways and corridors which will not be used for passage during work and separate the regulated areas from occupied areas must be sealed with fixed critical barriers constructed of 2" x 4" wood or metal framing 16" O.C., with ½" plywood on the occupied side and two layers of six (6) mil polyethylene sheeting on the Regulated Area side to prevent unauthorized access or air flow.

For exterior work areas where federally regulated PCB caulks are being removed and uncontaminated building substrates are remaining (i.e. no contaminated substrate removal), a Regulated Area will be established and ground surfaces will be covered with 2 layers of 6 mil polyethylene sheeting to capture/collect any debris generated, and secured to prevent movement. The sheeting will extend a minimum of ten feet beyond the building area to be remediated and will be adhered to the building to prevent it from moving during the course of abatement. Barrier tape will be used to delineate this as the regulated area.

For exterior work areas where federally regulated PCB caulks AND contaminated building substrates are being removed, a Containment Enclosure shall be constructed by the Contractor via covering of floor and wall surfaces with polyethylene sheeting sealed with tape. Polyethylene shall be applied alternately to floors and walls. Cover floors first, with a layer of six (6) mil polyethylene sheeting, so that polyethylene extends at least twelve (12) inches up on wall. Cover walls with a layer of six (6) mil polyethylene sheeting to twelve (12) inches beyond the wall/floor intersection, thus overlapping the floor material by a minimum of twenty-four (24) inches. Repeat the process for the second layer of polyethylene. There shall be no seams at wall-to-floor joints. Contiguous to the containment, construct a single chamber airlock from six (6) mil polyethylene sheeting for entry/exit purposes into the regulated area. Where no walls exist (such as exterior work spaces) or a room is to be divided in half, the polyethylene sheeting itself shall comprise the containment structure and shall be supported with materials which will form the containment structure and which shall maintain such integrity throughout the duration of use. In lieu of a containment enclosure, the contractor may use grinding or cutting tools with local HEPA cowed ventilation as long as there are no visible emissions (must be approved by engineer). If a containment enclosure is not used, a Regulated Area will be established and ground surfaces will be covered with 2 layers of 6 mil polyethylene sheeting to capture/collect any debris generated, and secured to prevent movement. The sheeting will extend a minimum of ten feet beyond the building area to be remediated and will be adhered to the building to prevent it from moving during the course of abatement. Barrier tape will be used to delineate this as the regulated area.

For interior work areas involving federally regulated PCB caulks/glazes, a Containment Enclosure as described above shall be constructed, AND the Contractor shall also create a

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negative pressure differential within the containment in the range of 0.02 to 0.04 inches of water column between the Regulated Area and surrounding areas by the use of acceptable negative air pressure equipment to establish a Negative Pressure Enclosure (NPE). Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area providing 4 air changes per hour. The Contractor shall provide a sufficient quantity of HEPA air filters to maintain the pressure differential throughout the duration of the project. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. Continuously monitor the pressure differential between the Regulated Area and surrounding area to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column. The Contractor shall provide actual air flow measurement of filtration units while the unit is in place and calculate actual air exchange rates. No air movement system or air filtering equipment shall discharge unfiltered air outside the Regulated Area.

Conspicuously label and maintain emergency and fire exits from the Regulated Area satisfactory to fire officials.

The Contractor shall post warning signs to deter unauthorized personnel from entry. Additional signs may require posting following construction of workplace enclosure barriers.

3.11 Personnel Protection

The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with applicable OSHA, USEPA, USDOT, CTDEEP, CTDPH regulations, and other Contract provisions.

The Contractor shall provide and require all workers to wear protective clothing in the Regulated Areas where PCB contamination exists or is likely to exist. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.

Respiratory protection shall be provided and selection shall conform to the requirements of OSHA 29 CFR 1910.134 and 42 CFR Part 84. A formal respiratory protection program must be implemented in accordance with 29 CFR 1910.134.

All other necessary personnel protective equipment (i.e. hardhat, work boots, safety glasses, hearing protection, etc.) required to perform the PCB abatement work activities shall conform to all applicable federal, state and local regulations and other applicable provisions of the Contract.

All other qualified and authorized persons by the Owner and/or Contractor entering into a Regulated Area shall be required to adhere to the requirements of personnel protection as stated in this section and all other applicable provisions of the Contract. All unqualified and unauthorized persons shall be escorted outside of the Regulated Area and if due to other provisions of the Contract, escorted outside of the project site during the PCB work.

3.12 PCB Abatement Procedures

The Contractor's Site Supervisor, as the OSHA Competent Person shall be at the site at all times during the performance of abatement work.

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The Contractor shall not begin abatement work until authorized by the Project Monitor, following a pre-abatement visual inspection.

All workers and authorized persons shall enter and leave the Regulated Area through the contiguous airlock, leaving contaminated protective clothing in the airlock for disposal of as PCB contaminated waste. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in a Regulated Area.

Phasing of the work areas is to be coordinated with the Construction Manager. Phase areas may be combined or divided at the direction of the PCB Engineer/CM. Proceed through the sequencing of the work phases under the direction of the Engineer/CM.

During removal, the Contractor shall spray PCB containing building materials with water using airless spray equipment capable of providing a "mist" application to reduce airborne dust. Hose length shall be sufficient to reach all of the Regulated Area. Do not "flood" the area with hose type water supply equipment with the potential to create water releases from the regulated area.

The Contractor shall employ mechanical methods such as cutting, grinding, and pneumatic hammers to remove PCB contaminated wastes. The methods employed must not damage the integrity of the containment structure and shall not create a breach through which contaminated dust may escape. The Contractor shall be responsible for all costs associated with decontamination and remediation in the case of a containment breach.

In order to minimize PCB concentrations inside the Regulated Area, the Contractor shall remove the materials in manageable sections. In addition, PCB Waste materials removed from any elevated level shall be carefully lowered to the floor.

The Contractor shall promptly place the PCB Waste material in disposal containers (six (6) mil polyethylene bags/ poly-lined dumpsters, etc.) as it is removed. Large components removed intact may be wrapped in one (1) layer of six (6) mil polyethylene sheeting secured with tape. As the disposal containers are filled, the Contractor shall promptly seal the containers, apply caution labels and clean the containers before transportation to the airlock. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Small components and PCB Waste material with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. Drums may not be placed intact into final waste disposal containers intact and may be reused by the Contractor after the contents have been emptied. However, any drums use to handle wastes must be broken down and disposed of properly with other PCB wastes.

All waste containers shall be leak-tight. Containers shall be decontaminated by wet cleaning and HEPA vacuuming within the airlock prior to exiting the regulated area. Wet clean each container thoroughly before moving to a Waste Holding Area.

If at any time during PCB Waste removal, the Project Monitor should suspect contamination of areas outside the Regulated Area, the Contractor shall immediately stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas.

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After completion of abatement work, all surfaces from which PCB Waste has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material. Cleaning shall also include the use of HEPA filtered vacuum equipment.

The Contractor shall also remove and containerize all visible accumulations of PCB Waste and/or PCB contaminated debris which may have splattered or collected on the polyethylene engineering controls/barriers.

The Contractor shall clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet sponging or wiping before moving such items into the airlock for final cleaning and removal to uncontaminated areas.

The Contractor shall remove contamination from the exteriors of the air filtration devices, scaffolding, ladders, extension cords, hoses and other equipment inside the Regulated Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning. The Contractor shall wet wipe the Regulated Area beginning at the point farthest away from the negative air filtration units using cotton rags or lint free paper towels. Rags and towels shall be disposed of after each use. Workers should avoid the use of dirty rags to insure proper cleaning of surfaces. Mop the entire floor with a clean mop head and amended water. Water shall be changed frequently

Once the Regulated Area surfaces have dried, the Project Monitor shall perform a thorough post abatement visual inspection. The Project Monitor will visually inspect the Regulated Area and the surrounding Control Area to determine that the Contractor has sufficiently decontaminated and removed any dust that might contain PCBs. All surfaces within the Regulated Area, including but not limited to ledges, beams, and hidden locations shall be inspected for visible residue. Evidence of dust contamination that would be indicative of PCB contamination identified during this inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense, until the standard of cleaning is achieved.

Once the area has received a satisfactory post-abatement visual inspection, any equipment, tools or materials not required for completion of the work, shall be removed by the Contractor from the Regulated Area. Negative air filtration devices shall remain in place and operating for the remainder of the clean-up operation.

3.13 Phased PCB Abatement Procedures

Should the potential exist for an unsafe condition to be produced by removing PCB contaminated building materials prior to removing clean materials, then the Contractor shall notify the Owner and the PCB Engineer and Project Monitor of such concerns and mitigate potentially unsafe conditions.

Should PCB contaminated building material need to remain to prevent an unsafe situation, the PCB Engineer shall collect the required verification samples prior to the performance of any demolition in the area. The Contractor shall then physically demark the line of clean building materials as determined by the verification sampling on the structure by painting or otherwise marking the structure so that it is clearly visible.

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Once the area is marked, the Contractor may remove clean building materials as described elsewhere in the Contract Document. After the clean building materials have been removed to the marked line, PCB Contaminated building materials shall be abated according to the procedures stated in section 3.12 of this specification.

3.14 Post-Abatement Verification/Reoccupancy Procedures (where applicable)

Federally-Regulated PCB-Containing Materials

In work areas where federally regulated PCB caulks/glazes have been removed and no associated building materials substrate impact has been identified, such that all of the associated building material substrates are to remain in place, or all associated impacted substrates are to be removed, the remedial standard to be achieved is appropriate cleaning of the substrate such no visible caulking/glazing/paint residue remains. The Project Monitor shall perform the visual inspection to verify appropriate cleaning.

In all areas where federally-regulated PCB Wastes have been removed along with some portion of associated porous building material substrates, the remedial standard to be achieved by all verification samples of the remaining building substrate is <1 ppm total PCBs. If this standard is achieved then additional reoccupancy testing will be performed as described below. If the remedial standard is exceeded, the Contractor shall be instructed to remove additional building materials as instructed by the PCB Engineer.

The PCB Engineer shall collect verification samples as per the EPA Region 1 Standard Operating Procedure for Sampling Concrete at the frequency specified in PCB Remediation Plan. The verification samples will be analyzed for PCBs using EPA Methods 3540 and 8082. Analysis of verification samples will be expedited but the Contractor shall expect 48 to 72 hours (these hours do not include weekend and/or holiday hours) delay until analytical results are available.

In all interior work areas and exterior work areas where an enclosure was used, following completion of the visual inspections and the collection and analysis of verification samples indicating that remediation goals have been achieved, the PCB Engineer shall collect one or two reoccupancy wipe samples of horizontal surfaces within the containment area where dust would be expected to accumulate within each containment. The PCB Engineer shall obtain expedited analyses of these samples from an outside laboratory, but the Contractor shall expect 48 to 72 hours (these hours do not include weekend and/or holiday hours) delay until analytical results are available. The PCB Engineer shall instruct the Contractor to perform additional decontamination if wipe sample results are $\geq 1.0 \mu\text{g}/100 \text{ cm}^2$. Areas which do not comply shall continue to be cleaned by and at the Contractors expense, until the specified Standard of Cleaning is achieved as evidenced by results of wipe testing. When the Regulated Area passes the re-occupancy clearance, controls established by these Specifications may be removed.

Wipe sampling will not begin until after the area has received an acceptable post abatement visual inspection and verification sample results indicate compliance with remedial standards.

Analysis shall follow the requirements of EPA Methods 3540 and 8082.

Each homogeneous Regulated Area which does not meet the clearance criteria shall be thoroughly re-cleaned using HEPA vacuuming and/or wet cleaning, (with the negative

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pressure ventilation system in operation for interior containment areas). New samples shall be collected in the Regulated Area. The process shall be repeated until the Regulated Area passes the test, with the cost of repeat sampling being borne entirely by the Contractor.

For a PCB Waste abatement project with more than one homogeneous Regulated Area, the release criterion shall be applied independently to each Regulated Area.

3.15 Post Abatement Work Area Deregulation

The Contractor shall remove all remaining polyethylene, including critical barriers and airlocks with the negative air filtration devices in operation. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. All waste generated during this disassembly process shall be discarded as PCB Bulk Product Waste.

A final visual inspection of the work area shall be conducted by the Contractors Site Supervisor and the Project Monitor to ensure that all visible accumulations of PCB Waste materials have been removed and that no equipment or materials associated with the abatement work remain.

The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Owner.

3.16 Encapsulation Procedures (where applicable)

As applicable, the Contractor shall encapsulate building materials located in areas where renovation/demolition is not being performed as indicated (if any) on the Contract Drawings and these Specifications with an elastomeric, crack bridging, anti-carbonation, protective coating to be applied as the encapsulant.

The Contractor shall install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

All encapsulant materials shall be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material shall be removed from the site immediately. All materials shall be stored off the ground and protect from rain, freezing or excessive heat until ready for use.

The Contractor shall not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature are 45°F (7°C) and rising. Precautions shall be taken by the Contractor to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

The encapsulant shall be Sikagard 670W Clear, as manufactured by Sika Corporation, 1682 Marion Williamsport Road, Marion, Ohio, or equivalent. The Contractor shall provide submittals for the encapsulant to be used prior to bringing the materials onsite for use.

Elastomeric Acrylic Coating shall be one hundred percent (100%) Acrylic Emulsion with the following properties:

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- 3.16.1 Water vapor permeable
- 3.16.2 Can bridge dynamically moving cracks
- 3.16.3 Crack bridging properties maintained at low temperatures
- 3.16.4 The material shall be resistant to dirt pick-up and mildew
- 3.16.5 Pot Life: indefinite
- 3.16.6 Tack Free Time 6 Hours @ 73°F, 50% Relative Humidity. Final Cure < 24 Hours
- 3.16.7 Carbon Dioxide Diffusion: μCO_2 214,000 Carbon Dioxide Diffusion Resistance at 16 mils (400 microns)
- 3.16.8 $\text{SdCO}_2 = 299$ ft. (equivalent air thickness) i.e. Approx. 9-in. of standard concrete cover.
- 3.16.9 Water Vapor Diffusion: $\mu\text{H}_2\text{O}$ 2,146 Water Vapor Diffusion Resistance at 16 mils $\text{SdH}_2\text{O} = 2.6$ ft. (0.8m)
- 3.16.10 Moisture Vapor permeability (ASTM E96) 14.5 perms
- 3.16.11 Tensile Properties (ASTM D-412 Modified)
- 3.16.12 7 day-Tensile strength 190 psi (1.3 MPa) - Elongation at break 820% - 340% @ 0°F (-18°C)
- 3.16.13 Crack Bridging (at 16 mils = 400 microns DFT
- 3.16.14 Static (at -4°F/-20°C) 30 mils (0.75mm)
- 3.16.15 Dynamic >1000 cycles (at -4°F/-20°C) 12 mils (0.30mm)
- 3.16.16 Resistance to wind driven rain (TT-C-555B): No passage of water through coating
- 3.16.17 Weathering (ASTM G-23) 10,000 hours excellent, no chalking or cracking.
- 3.16.18 Solids Content: by weight – 62% by volume – 55%
- 3.16.19 Flame Spread and Smoke Development (ASTM E-84-94)
- 3.16.20 Flame Spread 5 Smoke Development 5 Class Rating A

Note: Tests above were performed with the material and curing conditions @ 71°F – 75°F and 45-55% relative humidity.

Building substrate to which the encapsulant coating is to be applied must be clean, sound, and free of surface contaminants. Remove dust, laitance, grease, oils, curing compounds, form release agents and all foreign particles by mechanical means. Substrate shall be in accordance with ICRI Guideline No. 03732 for coatings and fall within CSP1 to CSP3.

The Contractor shall stir materials to ensure uniformity using a low speed (400-600 rpm) drill and paddle. To minimize color variation, blend two batches of material. For small defects and cracks the Contractor shall apply Surface Filler by “Brush Grade” encapsulant generously over the center of the cracks. The Contractor shall feather material over a two-inch wide area and allow a minimum 24 hours to cure before overcoating. For large defects and cracks (cracks >20mils) the Contractor shall blow out the cut with oil-free compressed air and fill the crack with joint sealant conforming to specifications allowing for a small crest to remain as this will compensate for any shrinkage that might occur. The Contractor shall allow 24 hours-minimum cure before over coating with encapsulant.

REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS

For the final coating application, the Contractor shall apply by brush or roller over the entire area to be encapsulated by moving in one direction. The Contractor shall apply a minimum of two coats. Each coat should be applied at a rate not to exceed 100 sq. ft. per gallon. The total dry film thickness shall be minimum 8 - 10 dry mils per coat. Allow a minimum of 2 hours prior to re-coating. When applying the coating, never stop the application until the entire surface has been coated. Always stop application at an edge, corner, or joint.

3.17 Waste Disposal

If the Contractor chooses to store PCB Waste onsite prior to transport offsite for disposal, the Contractor shall construct a secured Waste Storage Area at a location agreed to by the Contractor and the PCB Engineer within contract limit lines. The contract limit lines are to be secured as described elsewhere in these Specifications and entry shall be limited to Contractor Personnel only. The Waste Storage Area shall enclose all Suitable Waste Storage Containers actively in use with temporary fencing. The fence shall be marked with a Large M_L mark as specified in 40 CFR Part 761 Subpart C. PCB Wastes shall be removed from the site within 90 days.

Unless otherwise specified by the Owner, all removed materials and debris resulting from execution of this work shall become the responsibility of the Contractor and removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place. A single liner may be employed as long as it entirely covers the interior of the waste container.

All containers used to transport PCB Waste for disposal must be marked with a Large M_L mark as specified in 40 CFR Part 761 Subpart C. The signs must be posted so that they are plainly visible.

Ensure all waste containers (bags, etc.) are properly packed, sealed and labeled with USEPA and USDOT shipping labels. For each shipment of PCB Waste, the Contractor shall complete a PCB waste shipment manifest.

Authorized representatives signing waste shipment records on behalf of the generator must have USDOT Shipper Certification training in accordance with HMR 49 CFR Parts 171-180.

Transport vehicles hauling PCB Waste shall have appropriate USDOT placards visible on all four (4) sides of the vehicle.

The Contractor shall dispose of federally regulated PCB Waste as PCB Bulk Product Waste per 40 CFR 761.62 and the *PCB Bulk Product Waste Reinterpretation Memorandum* issued October 24, 2012 at a solid waste landfill permitted under RCRA Title D or at a landfill permitted to receive such wastes (ex. RCRA hazardous landfill, facilities permitted to manage non-hazardous waste subject to 40 CFR 257.5-257.30 & a TSCA approved landfill). PCB waste (>50 ppm) shall be managed and profiled as such. Any further waste characterization sampling to satisfy contractors selected landfill shall be paid for by Contractor.

REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS

Any PCB Waste materials which also contain other hazardous contaminants shall be disposed of in accordance with the EPA's Resource Conservation and Recovery Act (RCRA), Toxic Substance Control Act (TSCA), and CTDEEP requirements. Materials may be required to be stored on-site and tested by the Project Monitor to determine proper waste disposal requirements.

3.18 Decontamination

The Contractor shall decontaminate all moveable equipment that contacts PCB Wastes in accordance with the procedures specified in §761.79(c). The Contractor shall not remove any equipment from the Contaminant Zone until it has been properly decontaminated.

Specifically, the Contractor shall employ double wash/rinse procedures as specified in 40 CFR Part 761 Subpart S or swab non-porous surfaces that have contacted PCB wastes with a solvent as specified in §761.79(c)(2)(i). The Contractor shall segregate all liquid waste streams and be responsible for characterizing these wastes for disposal purposes. Solid wastes generated during decontamination shall be stored for disposal with the other PCB wastes generated during remediation activities.

The PCB Engineer shall be responsible for ensuring that decontamination procedures are followed and that wastes are appropriately characterized and disposed of properly.

3.19 Project Closeout Data:

Provide the Owner and PCB Engineer, within 30 days after PCB Waste has been disposed of, a compliance package; which shall include, but not be limited to, the following:

- 3.19.1 Site Supervisor job log;
- 3.19.2 Completed waste shipment records.

The Contractor shall submit the original completed waste shipment records to the PCB Engineer.

3.20 Remedial Action Report

The Remedial Action Report (RAR) will be prepared upon receipt of all analytical data confirming that the removal action was complete and receipt of certifications of treatment/disposal from the treatment/disposal facility. The RAR report will be prepared by the PCB Engineer and will include the following.

- 3.20.1 Site description
- 3.20.2 A description of field procedures
- 3.20.3 Waste characterization sample data
- 3.20.4 Waste transport and treatment disposal information
- 3.20.5 Copies of waste manifests and bills of lading

END OF SECTION 028433

GENERAL NOTES

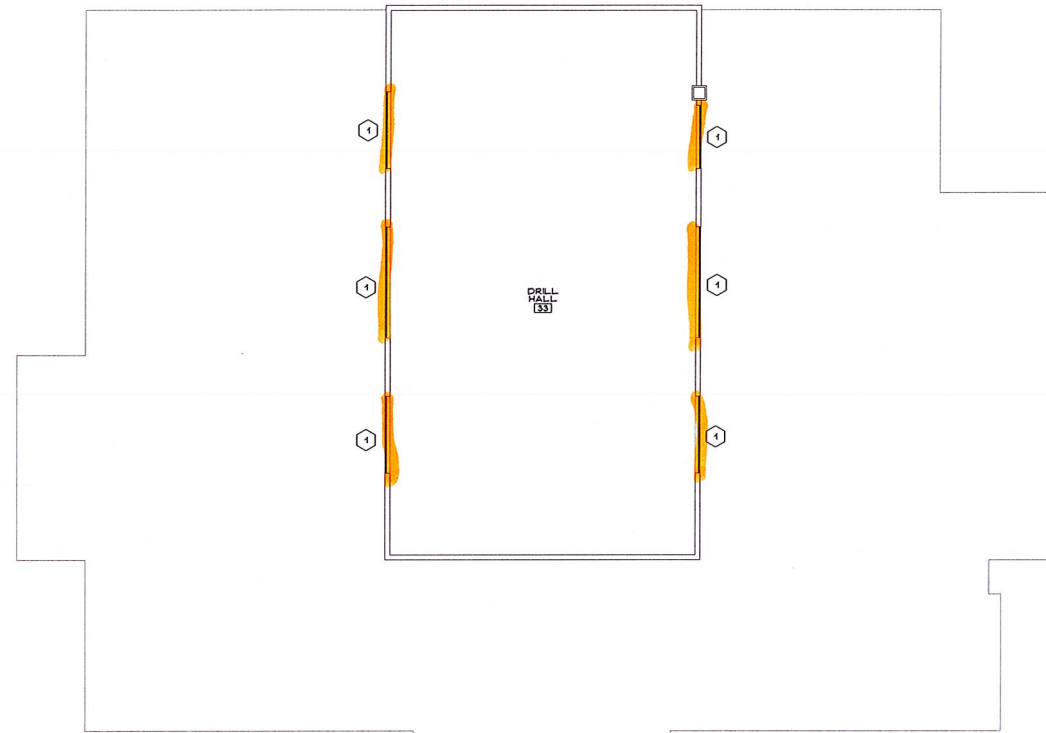
1. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL EXISTING CONDITIONS & DIMENSIONS PRIOR TO CONSTRUCTION.
2. SEE PROJECT MANUAL FOR ADDITIONAL INFORMATION REGARDING SCOPE OF WORK, PRICES & ALLOWANCES.
3. CONTRACTOR IS RESPONSIBLE TO INSURE THE BUILDING IS WEATHER TIGHT AND SECURED FROM INTRUSION AT THE END OF EVERY WORKING DAY TO THE NEXT PERIOD OF CONSTRUCTION.
4. CONTRACTOR IS RESPONSIBLE TO REPAIR OR REPLACE ANY AREAS DAMAGED OUTSIDE THE SCOPE OF WORK, RETURNING THEM TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO OWNER.
5. PATCH ALL EXISTING MATERIALS AFFECTED BY NEW CONSTRUCTION IN THIS PROJECT.
6. ALL MATERIALS & EQUIPMENT ARE NEW UNLESS OTHERWISE NOTED AS 'EXISTING'.
7. REMOVE ALL DEMOLISHED MATERIALS FROM SITE. LEAVE THE SITE CLEAN OF ALL CONSTRUCTION DEBRIS AT THE END OF EACH DAY.
8. CONTRACTOR TO PROVIDE FLUSH CONDITION AT ALL MASONRY OPENINGS CUT BACK EXISTING STEEL FRAMES AS REQUIRED.

SYMBOL LEGEND

- EXISTING WALLS TO REMAIN.
- - - - - EXISTING TO BE REMOVED.
- (X) - INDICATES CONSTRUCTION NOTE. - SEE NOTES BELOW
- (XX) - INDICATES DOOR NUMBER.
- (X/1) - ELEVATION OR SECTION NUMBER.
- (X/2) - DRAWING NUMBER.
- (X/3) - PLAN, SECTION, DETAIL OR ELEV. NUMBER.
- (X) - INDICATES DEMOLITION NOTE.
- (X) - INDICATES WINDOW TYPE.

DEMOLITION NOTES

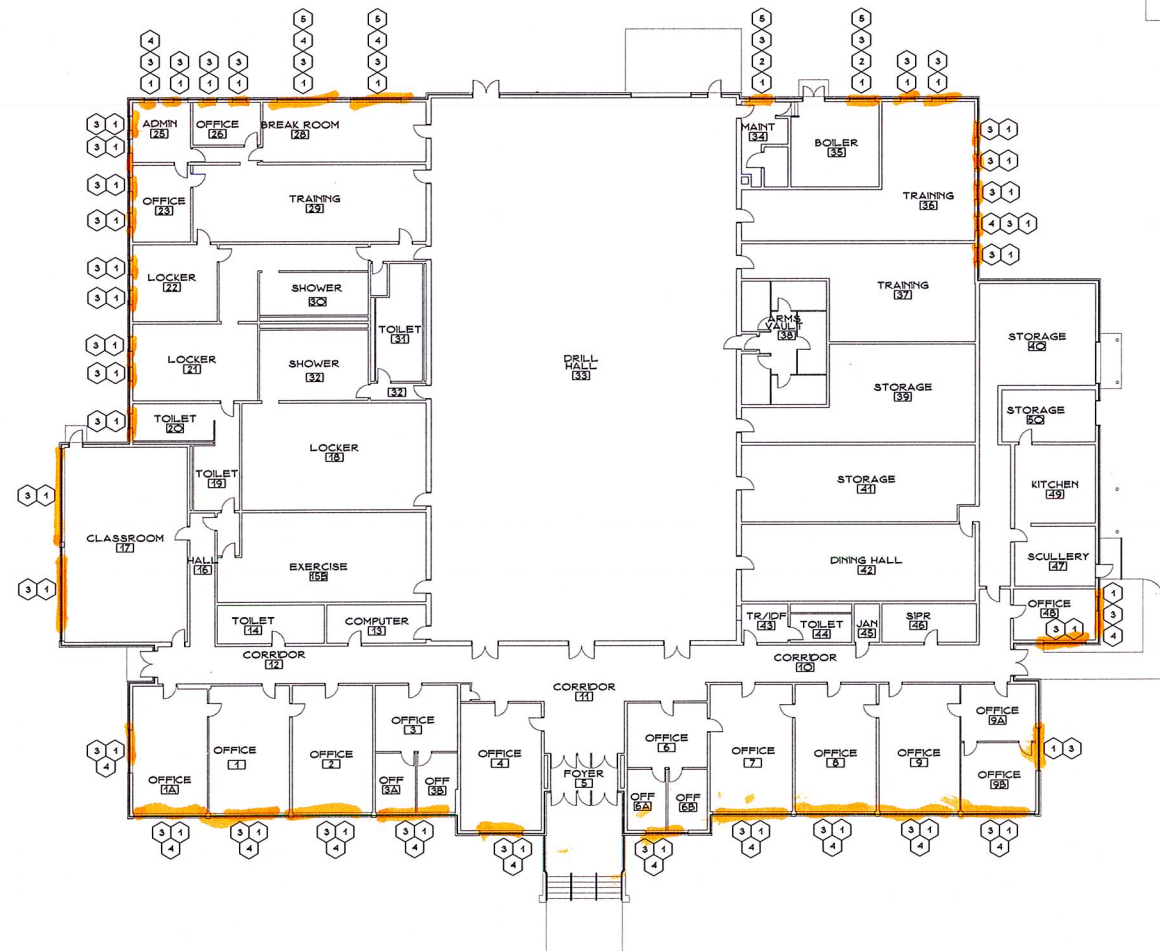
1. EXISTING STEEL WINDOW, FRAME & GLAZING TO BE REMOVED BY OTHERS. BLINDS, SILL, & ANY INTERIOR WORK/FINISHES TO BE REMOVED BY CONTRACTOR (CONTRACTOR TO COORDINATE DEMO WITH ABATEMENT CONTRACTOR)
2. EXISTING LOUVER TO BE REMOVED BY OTHERS DOWN TO THE SILL. SILL, & ANY INTERIOR WORK/FINISHES TO BE REMOVED BY CONTRACTOR (CONTRACTOR TO COORDINATE DEMO WITH ABATEMENT CONTRACTOR)
3. REMOVE & RETAIN FOR REINSTALLATION PORTION OF EXISTING ACOUSTICAL CEILING TILE IN ALL AREAS THAT ARE AFFECTED BY NEW WORK (CONTRACTOR TO COORDINATE DEMO WITH ABATEMENT CONTRACTOR)
4. EXISTING AC UNIT TO BE REMOVED BY OTHERS
5. REMOVE METAL SECURITY CAGE ON WINDOW AND ALL ASSOCIATED HARDWARE (PATCH AND REPAIR AS REQ.)



CLEARSTORY DEMO PLAN
SCALE: 1/16" = 1'-0"
ACTUAL NORTH PLAN NORTH

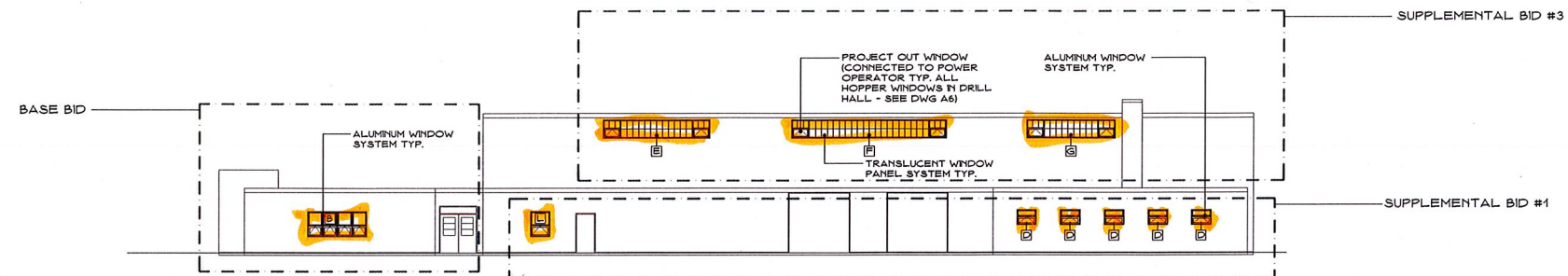
PCB + Asbestos Drawing 1

- ① All windows to be impacted have interior and/or exterior caulking which is ACM + PCB's.
 - ② All windows to be impacted have ACM and PCB window glazing.
- = ACM and PCB windows**

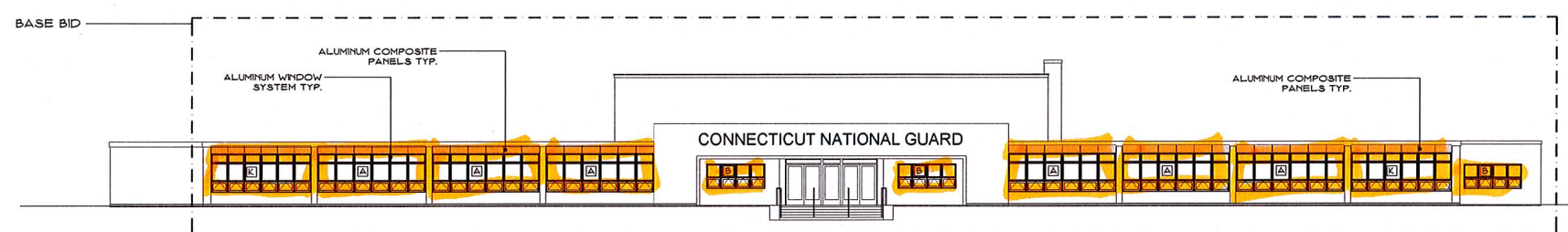


FIRST FLOOR DEMO PLAN
SCALE: 1/16" = 1'-0"
ACTUAL NORTH PLAN NORTH

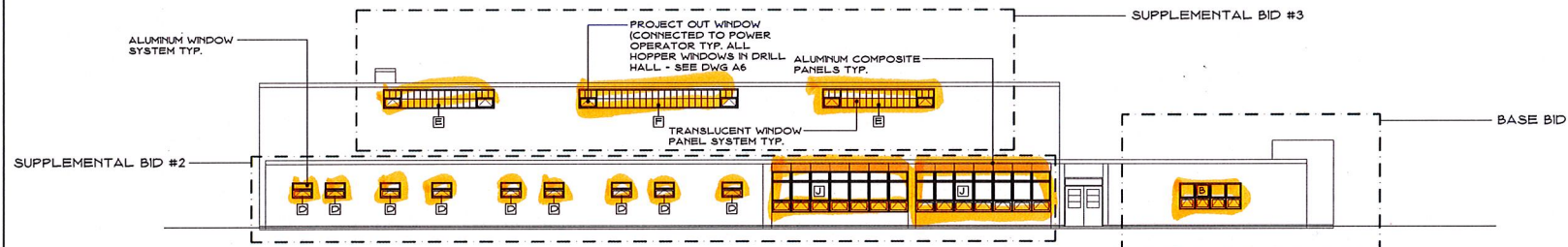
DRAWING TITLE			STATE OF CONNECTICUT DEPARTMENT OF PUBLIC WORKS	
REVISIONS			Drawings Prepared By	Date
Mark	Date	Description	SILVER / PETRUCELLI + ASSOCIATES	10/28/2013
			Architect / Engineer / Interior Designer	Scale
			3190 Whitney Avenue, Hamden, CT 06514-2340	1/16" = 1'-0"
			Tel. 203 230 9097 Fax. 203 230 8247	Drawn By
			sil@petrucci.com	D. LOMBARDI
			Project	Approved By
			NEW LONDON ARMY WINDOW REPLACEMENT	
CAD no.			Project #	Agency Tracking #
			BI-O-666	NL1101



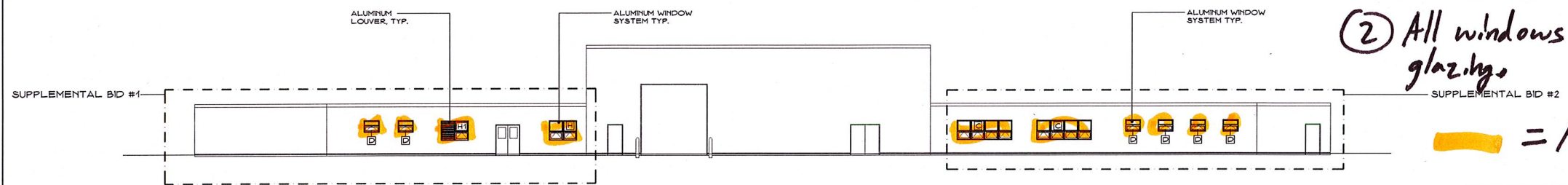
EAST ELEVATION ①
SCALE: 3/32" = 1'-0" A3



NORTH ELEVATION ②
SCALE: 3/32" = 1'-0" A3



WEST ELEVATION ③
SCALE: 3/32" = 1'-0" A3



SOUTH ELEVATION ④
SCALE: 3/32" = 1'-0" A3

GENERAL NOTES

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SYMBOL LEGEND

- — — — — - EXISTING WALLS TO REMAIN.
- — — — — - EXISTING TO BE REMOVED.
- (X) - INDICATES CONSTRUCTION NOTE - SEE NOTES BELOW
- (XX) - INDICATES DOOR NUMBER.
- (A/B) - ELEVATION OR SECTION NUMBER.
- (A/B/C) - PLAN, SECTION, DETAIL, OR ELEV. NUMBER.
- (X) - INDICATES DEMOLITION NOTE.
- (X) - INDICATES WINDOW TYPE.

CONSTRUCTION NOTES (X)→

1. REPLACE EXISTING CEILING TILES AS REQD PER INSTALLATION OF NEW WINDOW SYSTEM. SEE PROJECT MANUAL FOR ADDITIONAL INFORMATION.
2. INSTALL NEW BLINDS. SEE PROJECT MANUAL.
3. SAND, PRIME AND PAINT STEEL LINTELS.
4. SAND, PRIME AND PAINT JAMBS, AND HEAD (PATCH AND REPAIR AS REQ).
5. NEW CAST PLASTIC SILLS.
6. SAND, PRIME AND PAINT EXISTING CONC. SILL AS REQD PER INSTALLATION OF NEW WINDOW SYSTEM.

PCB + Asbestos Drawing 2

- ① All windows to be impacted have interior and/or exterior caulking which is ACM + PCB's.
- ② All windows to be impacted have ACM and PCB w. window glazing.

[Yellow highlight] = ACM and PCB windows

DRAWING TITLE		STATE OF CONNECTICUT DEPARTMENT OF PUBLIC WORKS	
REVISIONS		Drawings Prepared By	Date
Mark	Date	Description	
CAD no.		Project #	Agency Tracking #
		BI-O-666	NL1101

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NEW LONDON ARMOY
WINDOW REPLACEMENT
249 BALDWIN STREET
NEW LONDON, CONNECTICUT 06320

10/25/2013
Scale
3/32" = 1'-0"
Drawn By
D. LOMBARDI
Approved By
Drawing No.