PROJECT MANUAL

FOR

PHASE II ACCESSIBILITY RENOVATIONS AT THE BARNSTABLE COMMUNITY HORACE MANN CHARTER PUBLIC SCHOOL

BARNSTABLE, MASSACHUSETTS

TOWN OF BARNSTABLE

Bidding Documents

April 25, 2018

Prepared by:

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PHASE II ACCESSIBILITY RENOVATIONS

BARNSTABLE COMMUNITY HORACE MANN CHARTER PUBLIC SCHOOL **# OF PAGES**

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TECHNICAL SPECIFICATIONS

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SECTION 01 85 10 DRAWING LIST

GENERAL

G0-01 COVER SHEET

LANDSCAPE

L1-01 SITE PLAN

L1-02 ENLARGED PARTIAL SITE PLAN

ARCHITECTURAL

A1-00 OVERALL FIRST FLOOR KEY PLAN

D1-01 ENLARGED TOILET ROOM DEMOLITION PLAN-WEST END

A1-01 ENLARGED TOILET ROOM INSTALLATION PLAN-WEST END

A2-01 ENLARGED BOYS TOILET ROOM ELEVATIONS

A2-02 ENLARGED GIRLS TOILET ROOM ELEVATIONS

A3-01 TOILET ROOM ACCESSIBILITY LEGEND

A3-02 PARKING ACCESSIBILITY LEGEND

A4-01 WEST ENTRY PARTIAL ELEVATION

A9-01 EXISTING PHOTOS

PLUMBING

P4-01 ENLARGED TOILET ROOM PLANS WEST AND PLUMBING

ELECTRICAL

E1-01 SITE PLAN AND ELECTRICAL SYMBOL LIST

E2-01 PARTIAL FLOOR PLAN-ELECTRICAL

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 10 00 SUMMARY OF WORK

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 PROJECT

A. Project Name: Phase 2 Accessibility Renovations at the Barnstable Community Horace Mann Charter Public School.

B. Project Location

1. 165 Bearse's

   Way Hyannis,

   MA 02601

C. Owner's Name: Town of Barnstable.

D. Architect's Name: CBI Consulting LLC.

1.03 WORK UNDER THIS CONTRACT

A. The work to be done under this contract consists of executing and completing all work required for Phase 2 Accessibility Renovations at the Barnstable Community Horace Mann Charter Public School in Hyannis, MA.

B. In general, the Contractor shall supply all material, labor, equipment, insurance, temporary protection, tools and appliances necessary for the proper completion of the Work as described in the Plans and Specifications, in

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accordance with good construction practice, and as required by the materials manufacturers.

C. Supply all shoring and protection necessary to protect the occupants, building site, building systems, and landscape areas. All means and methods are the responsibility of the Contractor. The Contractor is solely responsible for safety on the job site.

D. All materials shall be new and of the best quality.

E. General Information

1. If there is a conflict between or within any part of the plans and the specifications, the more stringent requirement shall apply at the sole discretion of the Architect.
2. This document describes (but is not exclusive of) the accessibility upgrade of the Boy's and Girl's Toilet Rooms on the first floor of the west wing and providing an accessible route and entrance also on the first floor of the west wing. The work shall be constructed so as to meet all requirements of the Massachusetts State Building Code, current edition, in addition to all other applicable codes and regulations.
3. The School will be occupied for the duration of the project.

F. The work will include all operations necessary to deliver the building(s) and ancillary on and off-site amenities in a fully installed and operable condition including all utility and site work and obtaining all necessary licenses, permits, and certificates.

G. The following is the scope of work. All work required without limiting the generality thereof includes all labor, materials, equipment, and services required to perform the work fully in the drawings and specifications and includes, but is not limited to, the following:

1. General:
   a. Repair and/or replace all landscape areas, turf areas, walkways and pavements that have been disturbed by the work or Contractor activities to their original condition and to the complete satisfaction of the Owner and Architect.
   b. All Contractor lay-down, storage, dumpsters, etc. shall be limited to the area indicated on the Site Plan. Provide a Site Utilization Plan for approval.
   c. There will be other work (by Owner) occurring at the school. The Contractor shall cooperate with and schedule all work to accommodate the Town of Barnstable.
2. Work at Boy's and Girl's Toilet Rooms on the first floor of the west wing:
   a. Coordinate sequencing of work with the General Contractor and sub-contractors so that adjacent work is provided on a timely basis.
   b. Remove and dispose of existing toilet room fixtures and accessories to

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accommodate new layout, as indicated on the Drawings. Install new fixtures, toilet partitions, and accessories as indicated on the Drawings. Owner will install paper towel, toilet tissue and soap dispensers.

c. Patch and repair all damaged glazed block wall and ceramic tile floor finishes in the Boy's and Girl's Toilet Rooms. Match existing finishes.
d. Refer to Unit Price Schedule for additional glazed block replacement and re-pointing quantities.
e. Remove and install new handicap signage.

3. Work at Exterior Door:
   a. Remove and dispose of existing aluminum double leaf entry door at the first floor, west entrance where indicated on the Drawings, and provide a fiberglass reinforced double leaf entry door with removable mullion, and access hardware. Existing aluminum frame and wood trim is to remain. Install signage, audio, video cameras, and monitors as indicated on the Drawings.
4. Work at Site:
   a. Remove and dispose of existing paved walkway, and install new pavement from handicap parking stalls to the west entrance through the play area.
   b. Provide accessible hardware on existing, exterior metal gate from handicap parking stalls (west parking area).
   c. Install signage, audio, video cameras, and monitors as indicated on the Drawings.
   d. Stripe accessible parking stalls as indicated on the Drawings.
   e. Install handicap signage at accessible parking stalls.

1.04 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in the contract documents portion of the project manual.

1.05 OWNER OCCUPANCY

A. Owner intends to occupy the Project during construction.

B. **The School Department will not allow access to the building at any time during the school year. The work shall take place over the summer while classes are not in session only.**

C. Cooperate with Owner and Owner's Project Manager to minimize conflict and disturbance, and to facilitate Owner's operations and the School Department's Schedule. Cooperate with any changes in the School Schedule.

D. Schedule the Work to accommodate Owner occupancy and school schedule.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas of the Building specifically indicated to receive work. Contractors shall not roam halls or be allowed into

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areas of the building that are not scheduled for work.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others.
   3. Work by Owner.
      a. Repair work will be ongoing in the building throughout the duration of the project. None of the work is expected to impact the work of this contract.
      b. Cooperate with Owner's staff and separate contractors in all work that is to be performed.
   4. Use of site and premises by the public.
   5. Use of the building as the Town of Barnstable's Emergency Shelter.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered. Provide protected cover over all exterior doors.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Existing building spaces may not be used for storage.

E. Time Restrictions: Limit conduct of work to the hours of 7 AM – 4 PM.

F. Utility Outages and Shutdown:
   1. Limit disruption of utility services to hours the building is unoccupied.
   2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days' notice to Owner and authorities having jurisdiction.
   3. Prevent accidental disruption of utility services to other facilities.

1.07 EXAMINATION OF SITE AND DOCUMENTS

A. A pre-bid conference will be held at the location, date and at the time indicated in the Invitation to Bid.

B. The bidders are expected to examine and to be thoroughly familiar with all contract documents and with the conditions under which the work is to be carried out. The Owner will not be responsible for errors, omissions, and/or charges for extra work arising from the General Contractors or Subcontractors failure to familiarize themselves with the contract documents. Bidders should be familiar with the conditions and requirements of where they are required in any part of the work to produce a given result, and confirm that the contract documents are adequate and that they will produce the required results.

C. All bidders must inspect the existing site and make their own assessment of the

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work required to achieve the complete, finished conditions specified in the Contract Documents.

D. Failure to adequately inspect the site and/or correctly assess existing conditions shall not be cause for additional payment.

E. Every contractor will be bound by the scope of work of the Contract Documents and shall make the inspections necessary to assure that the bid price includes the complete scope.

1.08 SUPERVISION OF WORK

A. The Contractor shall be held directly responsible for the correct installation of all workperformed under this Contract. The Contractor must make good repair, without expense to the Owner, of any part of the new work, or existing work to remain, which may become inoperative on account of leaving the work unprotected or unsupervised during construction of the system or which may break or give out in any manner by reason of poor workmanship, defective materials or any lack of space to allow for expansion and contraction of the work during the Contractor's warranty period, from the date of finalacceptance of the work by the Owner.

B. The Contractor shall furnish a competent Massachusetts licensed superintendent approved by the Owner and Architect. The licensed superintendent shall supervise allwork under this contract and who shall remain on duty at the site throughout the Contract period while work is in progress.

1.09 FIELD MEASUREMENTS

A. Although care has been taken to ensure their accuracy, the dimensions shown for existing items and structures are not guaranteed. It is the responsibility of the Contractor to verify these dimensions in the field before fabricating any construction component.
No claims for extra payment due to incorrect dimensions will be considered by the Owner.

1.10 DAMAGE RESPONSIBILITY

A. The Contractor shall repair, at no cost to the Owner, any damage to building elements, site appurtenances, landscaping, utilities, etc. caused during demolition operation andwork of this Contract.

B. The Contractor shall secure the work area and equipment at the end of each workday.

1.11 OWNER FURNISHED PRODUCTS

A. Products indicated “N.I.C.” (Not in Contract), or “E. O.” (Equipment by Owner), or“O.F.O.I.” (Owner Furnished Owner Installed), or other similar acronyms as defined in the contract documents will be furnished and installed by the Owner. Coordination andprovision of service lines for such products shall be included under these ConstructionContract Documents.

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1.12 INTENT OF THE PROJECT MANUAL

A. Words in the singular shall also mean and include the plural, wherever the context so indicates, and words in the plural shall mean the singular, wherever the context soindicates.

B. Wherever the terms "shown on drawings" are used in the specifications, they shall mean "noted", "indicated", "scheduled", "detailed", or shall refer to any other diagrammatic or written reference made on the drawings.

C. Wherever the terms "furnish", "install" or "provide" are used in the contract documents, it shall mean to "connect", "apply", "erect", "construct", or similar terms in order tomake operative, and to supply all labor and materials, including miscellaneous fittings, hardware, and accessories necessary to complete the installation of the specified item.

D. All the work of the project is "related" in some fashion either by direct contract, sequencing, or coordination. It is the Contractor's responsibility to perform all the work and coordinate all the various trades and types of "related" work in order to meet theschedule and quality standards of the Project.

E. Means and methods of construction as well as compliance with OSHA and all othersafety laws and regulations is the exclusive responsibility of the Contractor, his Subcontractors, suppliers, consultants, and servants. The Architect does not have control of the job site.

F. Wherever the term "material" is used in the specifications it will mean any "product","equipment", "device", "assembly", or "item" required under the Contract, as indicated by trade or brand name, manufacturer's name, standard specifications reference or to other description.

G. The terms "approved" or "approval" shall mean the written approval of the Owner or Architect.

H. The term "specifications" shall mean all information contained in the bound or unbound volume, including all "Contract Documents" defined herein, except for the drawings

I. The terms "directed", "required", "permitted", "ordered", "designated", "prescribed", and similar words shall mean the direction, requirement, permission, order, designation or prescription of the Owner or Architect; the terms "approved", "acceptable","satisfactory", and similar words shall mean approved by, acceptable or satisfactory tothe Owner or Architect; and the terms "necessary", "responsible", "proper", "correct",and similar words shall mean necessary, reasonable, proper or correct in the judgment of the Owner or Architect.

J. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction or in crawl spaces.

K. "Exposed" means not installed underground or "concealed" as defined above.

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L. "Removed" means complete removal of item, and complete disposal in an approved manner.

1.13 ERRORS, OMISSIONS, AND CONFLICTS IN THE PROJECT MANUAL

A. In the case of conflicts in the Drawings and the Specifications noticed by the Contractor, the Architect shall be notified immediately in writing of such errors and/or omissions. In no case shall the Contractor proceed without written authorization from the Architect.

B. If there is a conflict between or within any part of the plans and the specifications, the more stringent requirement shall apply at the sole discretion of the Architect.

1.14 UNFORESEEN FIELD CONDITIONS

A. In the case of unforeseen field conditions, the Contractor shall notify the Owner and Architect immediately in writing of such conditions. In no case shall the Contractor proceed without written authorization from the Architect. If such unforeseen conditions result in additional expense, the Contractor shall not proceed without the written approval of the Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Correlation of Contractor submittals based on changes.

E. Procedures for preparation and submittal of application for final payment.

1.03 RELATED REQUIREMENTS

A. Section 01 22 00 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.

1.04 SCHEDULE OF VALUES

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.

B. Forms filled out by hand will not be accepted.

C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

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D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.

E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

F. Revise schedule to list approved Change Orders, with each Application For Payment.

1.05 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement Submit Pencil Requisition for Owner, OPM and Architect's approval prior to submitting Application for Payment.

B. Forms filled out by hand will not be accepted.

C. For each item, provide a column for listing each of the following:

1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Total Completed and Stored to Date of Application.
7. Percentage of Completion.
8. Balance to Finish.
9. Retainage.

D. Execute certification by signature of authorized officer.

E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

G. Submit six (6) copies of each Application for Payment.

H. Include the following with the application:

1. Transmittal letter as specified for Submittals in Section 01 30 00.
2. Construction progress schedule, revised and current as specified in Section 01 30 00.
3. Certified Payrolls.
4. Partial release of liens from major Subcontractors and vendors.

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5. Project record documents as specified in Section 01 78 00, for review by Owner which will be returned to the Contractor.
6. Affidavits attesting to off-site stored products.

I. When Architect requires substantiating information, submit data justifying dollaramounts in question. Provide one copy of data with cover letter for each copy ofsubmittal. Show application number and date, and line item by number and description.

1.06 MODIFICATION PROCEDURES

A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.

B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
2. Promptly execute the change.

D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or reviseddrawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which therequested price will be considered valid. Contractor shall prepare and submit a fixedprice quotation within 5 days.

E. Contractor may propose a change by submitting a request for change to Architect,describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 60 00.

F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.

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4. For change ordered by Architect without a quotation from Contractor, the amountwill be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

G. Substantiation of Costs: Provide full information required for evaluation.

1. On request, provide the following data:
   a. Quantities of products, labor, and equipment.
   b. Taxes, insurance, and bonds.
   c. Overhead and profit.
   d. Justification for any change in Contract Time.
   e. Credit for deletions from Contract, similarly documented.
2. Support each claim for additional costs with additional information:
   a. Origin and date of claim.
   b. Dates and times work was performed, and by whom.
   c. Time records and wage rates paid.
   d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

K. Promptly enter changes in Project Record Documents.

1.07 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:

1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 22 00 UNIT PRICES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

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C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 UNIT PRICE REQUIREMENTS

A. The Unit Prices for items set forth in the Schedule of Unit Prices shall be used to determine adjustments to the Contract Sum when changes in the Work involving said items are made in accordance with Article 8 of the General Conditions and other sections of the Contract Documents.

B. Unit Prices listed under ADDITIONS have been computed to include net cost plus overhead, profit, and bond and all other charges required to complete the work item.

C. Unit Prices net cost includes the cost of all labor, materials, equipment, disposal, and all other costs required to complete the work item.

D. Materials, methods of installation, and definitions of terms set forth under the various Unit Price items in the Schedule of Unit Prices shall be as indicated in the Contract Documents.

E. Unit costs will <u>not</u> be adjusted if the quantities approved in the field by the

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Architect vary from the base contract quantities listed in the Project Manual.

1.03 APPLICABILITY OF UNIT PRICES

A. The payment lines shall be determined in the field by the Architect. Unit Prices are for more work or less work than is included in the base contract for the various tasks included. Quantities to be included in the base contract are listed in the Unit Price Schedule.

B. Prior to commencing removal or placement of materials set forth in the Schedule of Unit Prices, the Contractor shall notify the Architect in sufficient time to permit proper measurements to be taken on behalf of the Owner. Only quantities which have been approved in writing by the Architect will be considered in the determination of adjustments to the Contract Sum. Unit costs shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead, profit, bond and general conditions.

C. Performance of Work which is not required under the Contract Documents or which is not authorized by Change Order, whether or not such Work item is set forth hereunder as a Unit Price item, shall not be considered cause for extra payment. The Contractor will be held fully responsible for such unauthorized work, including the performance of all corrective measures required by the Architect.

D. See attached **Unit Price Schedule**:

#	DESCRIPTION OF WORK	UNIT	BASE BID QUANTITY	REFERENCE DETAILS	ADD / DEDUCT UNIT
1	Remove existing Glazed Block at bathroom walls and install Glazed Block furnished by Owner.	EA	20*		_____ / EA

*Indicates that the quantity listed is in addition to all the scope areas

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shown, indicated, or noted on the plans.

E. All repair locations will be determined and marked in the field by the Architect. Repairs may be located at small individual locations throughout the entire scope area.

F. The Owner reserves that right to increase or decrease the unit cost quantities without any adjustment in the unit prices.

G. Take all measurements and compute quantities. Measurements and quantities will be verified by the Architect.

H. Assist by providing necessary equipment, workers, and survey personnel as required.

I. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

J. Unit costs include pro-rata share of Contractor's, general conditions, staging, insurance, bond, overhead, and profit, etc.

1.04 PAYMENT

A. Unit Price work performed without the approval of the Architect will not be paid for.

B. Payment for work governed by Unit Prices will be made on the basis of the actual measurements and quantities of work that is incorporated in or made necessary by the work and accepted by the Architect, multiplied by the unit price, with no allowance for waste.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 30 00 ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

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1.02 SECTION INCLUDES

A. Preconstruction meeting.

B. Project Coordination

C. Site mobilization meeting.

D. Progress meetings.

E. Construction progress schedule.

F. Daily Reports

G. Progress photographs.

H. Submittals for review, information, and project closeout.

I. Number of copies of submittals.

J. General Notes

K. Insurance

L. Submittal procedures.

1.03 RELATED REQUIREMENTS

A. Section 01 32 16 - Construction Progress Schedule: Form, content, and

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administration of schedules.

B. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.

C. Section 01 78 00 - Closeout Submittals: Project record documents.

1.04 PROJECT COORDINATION

A. Owner's Project Manager (OPM): Mark Marinaccio.

B. Cooperate with the OPM and the School Department's authorized representative inallocation of mobilization areas of site; for field offices and sheds, for site access, traffic, and parking facilities and enclosures and protection of building and site areas.

C. During construction, coordinate use of site and facilities through the OPM.

D. Comply with OPM's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

E. Comply with instructions of the OPM for use of temporary utilities and construction facilities.

F. Coordinate field engineering and layout work under instructions of the Project Coordinator.

G. Coordination with Building Procedures

1. The safety and welfare of the students, staff, and guests of the Barnstable Community Horace Mann Charter Public School are the utmost concern of the project. All work by theContractor, his Sub-Contractors, suppliers, and employees shall be performed in a way that will safeguard this concern. Safety is the sole responsibility of theContractor on the jobsite. Extraordinary care must be taken throughout the project to coordinate work activities with the School schedules, procedures, and activities.
2. All construction activities and deliveries to the site are to be coordinated with the OPM and the School Department's authorized representative.
3. Pre-construction meeting shall be held with the Owner’s Project Manager, theContractors, and Architect, to coordinate locations for dumpsters and chutes, deliveries, worker parking, material storage, as well as to discuss safety, scheduling, and procedures.
4. Contractor shall restrict hazardous items and activities to locations that will have the least impact on the daily operations. All material storage, locations of cranes, dumpsters, workers access, etc. will be only in areas approved by the OPM and the School Department's authorized representative.
5. Install, at a minimum, when work is performed overhead, covered walkway protection at all entrance and exit doors, at areas of construction,

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to the facility during construction activities, 10'-0" minimum length, of pipe scaffolding, plywood, planking, orange plastic fencing, and yellow safety tape. Safety is the soleresponsibility of the contractor, regardless of the information in this specification.

6. Contractor shall provide signage and other safety barriers at the site and within the building adequate to support their safety program.
7. The Contractor shall provide, erect and maintain barricades with any required egress, access doors, lighting, ventilation, guard rails and all other appurtenances required to protect the general public, visitors, staff, and workers while construction is in progress. Safety is the sole responsibility of the Contractor on the job site.
8. Contractor shall temporarily close toilet rooms while under construction. Contractor shall provide all protections necessary for the safety of the building and its occupants. All protections shall be removed immediately upon completion of the work. Dust and debris shall be immediately cleaned and vacuumed to the satisfaction of the OPM and School Department's authorized representative. Damage as a result of the work will be repaired to the satisfaction of, and at no additional cost to, the Owner.

1.05 CORI REQUEST FORM

A. All personnel working at the sites will be required to fill out a Barnstable Public Schools CORI request form.
   1. All forms shall be submitted to Barnstable Public Schools one week prior to the applicant being on site.
   2. The General Contractor will update the list as required to reflect current workers on site.
   3. All workers must pass the CORI background check in order to work on this site.

B. The General Bidder, and all the sub-contractors are hereby notified that CORI checks are required for all personnel that will be working on site at any of the Town of Barnstable School properties. It is each individual contractor's responsibility to submit the required paperwork to the State, in advance of the work, so as not to delay the schedule for any possible employee that will access the site. Approval by the state for must be delivered to the Owner in advance of the work. Payments will be withheld to the contractor if he/she fails to submit the proper CORI certifications in advance of the work.

1.06 SCHEDULING

A. Time is of the essence in this project.
   a. Temperature is a critical factor in the construction work. Adhere to manufacturer's specifications and installation

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instructions.

b. **The anticipated Start Date of the Work is June 25, 2018. All work shall besubstantially complete by August 17, 2018**

c. **The School Department will not allow access to classrooms at any given time during the school year**. The Contractor shall work with the School Department to establish a schedule of operations to accommodate the School Department. The Contractor shall not work inside Classrooms that are occupied by teachers and students.

d. The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time

e. Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 7:00 a.m. and 4:00 p.m. on Monday through Friday. No work is to be done on holidays or Weekends unless approved by the Owner in advance.

f. The Contractor is responsible for the security and stability of partially completed work until the project is accepted by the Owner.

B. The Contractor shall schedule the work of this Contract so as to perform and complete the Work of the Contract according to the following schedule. The Contractor shall within seven (7) days of the Notice of Contract Award, submit a schedule to the Owner and Architect for review.

C. Between the time period of the general bid due date and Construction Commencement, the Contractor shall take all necessary measures to complete the Work of this Contract. It is expected that the Contractor utilize the time period between the bid date and construction start date to schedule and coordinate the work and work sequence, prepare shop drawings and submittals for approval and order materials. The Owner shall issue a Notice to Proceed. If the work is not complete by the completion date, the Contractor will be subject to liquidated damages.

D. The Contractor shall be responsible for providing any and all measures and/or temporary construction required to control the transmission of dust, particles, and fumes from construction activities.

E. The Contractor shall be responsible on a daily basis for informing the designated Owner's representative of all persons on-site that day associated with the Work. The Contractor shall establish a daily reporting system of all activities which is acceptable to the Owner.

F. The Construction schedule shall indicate the dates for start and completion of each work item or task required with all milestones using a Bar Chart subject to approval by the Architect.

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G. Contractor shall update the Construction schedule weekly. Requisitions for payment must be accompanied by an updated schedule. The on-site superintendent shall meet with the Owner's Authorized Representative daily to inform them of the dailyprogress and review the schedule for the next three (3) days.

H. The Awarding Authority's review of the project construction schedule shall not extend to the accuracy or other matters dealt with in the schedule, including but not limited to whether work is omitted, whether duration of activity is reasonable, the level of labor, materials or equipment, the Contractor's means, methods, techniques, procedures or sequence of construction, or whether the sequence and timing for work remaining are practical. The accuracy, correctness of all work, sequencing, and schedules shall remain the sole responsibility of the Contractor. Neither the Awarding Authority's review of a schedule nor a statement of resubmittal not required shall relieve the Contractor for the responsibility for complying with the contract schedule, adhering to sequences of work, or from completing any omitted work with the Contract Time.

1.06 COORDINATION

A. The Contractor shall submit for approval to the Owner and OPM a detailed operational plan showing the sequence of operations prior to commencement of any work at the site. Any changes to this operational plan must be approved by the Owner and OPM.

B. The Contractor must retain on the Work during its progress a competent full-time non-working licensed construction superintendent, satisfactory to the Owner. This representative shall not be changed, except with the consent of the Owner. The representative shall be in full charge of the work and all instructions given to this person by the Architect shall be binding.

C. The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan.

D. The Contractor shall provide:

1. Notification to the Owner two (2) weeks before any work is scheduled at the site/building.
2. Notification to the Owner in writing forty-eight (48) hours before work is scheduled in any particular area.
3. An updated schedule monthly with the application for payment. Payments will not be authorized until the updated schedule is received and approved.
4. The Contractor must supply to the Owner the cell phone number of a responsible person who may be contacted during non-work-hours for emergencies on the Project.

1.07 SUBCONTRACTORS

A. Subcontractors are subject to approval by the Owner.

1.08 CONSTRUCTION REVIEW

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A. All materials and workmanship shall be subject to review by the Architect and alldesignated representatives of the Owner. Such review may take place at any time during the construction, and wherever work relating to this project is underway. The Contractor shall notify the Architect of any approaching stage of the work likely torequire his/her attention, and the Architect shall have the right to reject all defectiveor non-conforming workmanship and material, and to require its replacement.

a. If any un-reviewed work is covered up without approval, the Contractor shall bear the costs of uncovering it upon request.

1.09 CODES

A. Codes, standards, and publications of private and public bodies mentioned in thesespecifications, and other such standards and specifications, refer to the latest edition thereof at the time of taking bids unless a specific edition is designated, and shall be considered and integral part of the Contract Documents.

1.10 COORDINATION OF WORK

A. Contractor shall coordinate all construction work with the Owner's Project Manager.

B. Contractor is responsible for all building and sidewalk permits, police details as required as well as any other requirements that may be imposed by the Town.

C. After the demolition and removal of the existing roofing, the Contractor shall be responsible for the protection and security of the roof decks and interior spacesbelow prior to the installation of the new roofing (same day).

1.11 FIELD MEASUREMENTS

A. Before ordering any materials or performing any work, the Contractor or his/hersubcontractors shall inspect all existing conditions and perform all measurements atthe building. No extra charge or compensation will be allowed because of differences between the drawings and the actual dimensions. Any differencesbetween the Project Manual and the actual conditions found shall be submitted to the Architect for direction before proceeding with the work.

1.12 CUTTING AND PATCHING

A. The work to be performed under this Contract shall include all cutting and patching necessary to accommodate new work.

B. Each Filed Sub-Bidder shall be responsible for temporary removal, and removal and disposal of existing materials to accommodate their work, unless noted otherwise.

1.13 PERMITS

A. Procurement of building permits shall be the responsibility of the Contractor. Requests for inspections by the Building Inspector and the obtaining of requiredsignatures by Inspection on permits is the responsibility of the

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Contractor. **Permit fees will NOT be waived**.

1.14 HOUSEKEEPING AND PROTECTION OF EXISTING CONDITIONS

A. Protections

1. Maintain the premises in a safe, orderly condition at all times. Protect construction, furnishings, equipment and other items.
2. Property Protection: The General Contractor shall take all measures necessary to protect the Owner's property.
3. Security: The General Contractor shall take every possible precaution to maintain the security of the buildings and site. The Contractor shall cooperate with the Owner fully and follow the Owner's directions as issued. The Contractor shall control and restrict access to areas of work to prevent injury to persons and property.
4. The Contractor shall properly cover, protect and maintain floor and finished surfaces to prevent damage. Replace protective coverings which become wet, torn or ineffective.
5. Finished Surfaces Protection:
   a. The Contractor shall restrict traffic on finished surfaces required to perform the work of this Contract and permit traffic only required to properly complete the Work.
   b. Effectively protect surfaces to prevent damages to existing substrates, new finishes, and to finished roofing work. Provide temporary walkways and work platforms as needed.
   c. Load distribution: The Contractor and any Subcontractor shall not load or permit any part of the structure to be loaded in any manner that will damage the existing structure or endanger the safety of persons or property. Such loads shall include live and dead loads and all moving, vibratory, temporary and impact loads.
6. Correction by the Contractor
   a. At no additional cost to the Owner, the General Contractor shall immediately correct all deficiencies, including damages to the building, site and site surfaces, damages to furnishings, damages to equipment or systems, damage to adjacent properties, and all other damage caused by the General Contractor or its Subcontractors during the execution of the Work of this Contract. Any and all damages resulting from inadequate, insufficient or defective temporary protections installed by the Contractor during the work of this Contract, shall be corrected by the General Contractor at no additional cost to the Owner

B. Requirements Related to Building Users' Furnishings, Equipment and Other Items

1. The General Contractor is responsible for protecting all furnishings, equipment and items from damage (including construction generated dust)

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during the entire construction period.

2. The General Contractor shall be responsible for moving and re-setting up all furniture, fixed and movable equipment, file and storage cabinets, recreation equipment, boxes, and all other items to accomplish the work of both the General Contractor and the Subcontractors in its entirety.

C. Dust, Dirt, and Fume Control

1. The Contractor shall take all necessary precautions and provide all necessary temporary construction to effectively contain dust, dirt and fumes within the areas of work and within the work limits. Temporary construction shall be provided to effectively prevent dust and dirt from entering areas of the buildings or adjacent buildings, satisfying all City, State and Federal laws, codes, and requirements.

D. Rubbish Removal

1. The Contractor shall remove all rubbish, waste, tools, equipment and appurtenances caused by and used in the execution of the Work; but this shall in no way be construed to relieve the Contractor of his primary responsibility for maintaining the building and Project site clean and free of debris, leaving all work in a clean condition and satisfactory to the Official.
2. Immediately after unpacking, the Contractor shall collect and remove from the building and Project site all packing materials, case lumber, excelsior, wrapping and other rubbish.
3. Rubbish removal shall occur so that trash and debris are contained in closed and secured waste containers.

E. Dumping

1. The contractor shall submit an affidavit certifying legal and proper dumping and disposal (including locations) of all materials from the project.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required:

1. Owner.
2. Owner's Project Manager.
3. Architect.
4. Contractor.

C. Agenda:

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1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures
6. Designation of personnel representing the parties to Contract, Owner and Architect.
7. Review of Commissioning - related requirements, testing and procedures.
8. Distribution of Contact Information
9. Site Utilization Plan, for Owner approval, including review of all dumpster, lay-down/ storage areas, trailers and staging area locations.
10. Temporary Power and Water.
11. Inclement Weather.
12. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
13. Scheduling.

3.02 SITE MOBILIZATION MEETING

A. Owner will schedule meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:

1. Contractor.
2. Owner.
3. Architect.
4. Contractor's Superintendent.
5. Major Subcontractors.

C. Agenda:

1. Use of premises by Owner and Contractor.
2. Owner's requirements and occupancy prior to completion.
3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey and building layout.
6. Security and housekeeping procedures.

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7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Architect will make arrangements for regular job meetings, prepare agenda with copies for participants, and preside at meetings.

B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Owner's Project Manager, Architect, as appropriate to agenda topics for each meeting.

C. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule

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defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 5 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

3.05 PROGRESS PHOTOGRAPHS

A. Take photographs as evidence of existing project conditions.

3.06 DAILY PROGRESS REPORTS

A. Provide a copy of the daily superintendent report to the Owner's project manager's clerk daily.

3.07 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:

1. Product data.
2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Provide submittals as indicated in Section 01 30 00; 3.10.

C. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

D. Samples will be reviewed only for aesthetic, color, or finish selection.

E. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

F. Apply Contractor's stamp, signed or initialed certifying that review, approval,verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

3.08 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for

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information:

1. Design data.
2. Certificates.
3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout:

1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

3.10 PRE-CONSTRUCTION PHOTOS

A. Contractor shall submit pre-construction photos on one CD that documents all pre-existing building and site conditions. All damages observed after construction shall be deemed the responsibility of the Contractor unless otherwise documented.

B. Submit for Owner's benefit during and after project completion.

3.11 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review. Provide electronically, digital copies of all submittals in addition to hard copies required:

1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies that Contractor requires, plus one copy to be retained at the project site, plus twocopies to be retained by the Owner, and two copies that will be retained by Architect.
2. Larger Sheets, Not Larger Than 36 x 48 inches: Submit the number of opaque reproductions that Contractor requires, plus one copy to be retained at the project site, plus two copies to be retained by the

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Owner, and two copies that will be retained by Architect.

B. Documents for Information: Submit two copies.

C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.

1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.12 SUBMITTAL PROCEDURES

A. Transmit each submittal with a copy of approved submittal form.

B. Transmit each submittal with approved form.

C. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

D. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

E. Schedule submittals to expedite the Project, and coordinate submission of related items.

F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Architect review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

3.13 GENERAL NOTES

A. CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND COORDINATING ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. IN CASE OF CONFLICT, THE ARCHITECT SHALL BE NOTIFIED AND SHALL RESOLVE THE CONFLICT.

B. IN ANY CASE OF CONFLICT BETWEEN OR WITHIN THE DRAWINGS AND THE PROJECT SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN AT THE SOLE DISCRETION OF THE ARCHITECT.

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C. THE CONTRACTOR SHALL MAKE NO DEVIATION FROM DESIGN DRAWINGS WITHOUT PRIOR REVIEW BY THE ARCHITECT.

D. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.

E. ALL WORK SHALL COMPLY WITH APPLICABLE CODES AND LOCAL LAWS AND REGULATIONS.

F. GENERAL CONTRACTOR SHALL COORDINATE LOCATIONS OF OPENINGS, PITS, BOXES, SUMPS, TRENCHES, SLEEVES, DEPRESSIONS, GROOVES, AND CHAMFERS, WITH MECHANICAL, ELECTRICAL AND PLUMBING TRADES.

G. THE STRUCTURAL DESIGN OF THE BUILDING IS BASED ON THE FULL INTERACTION OF ALL ITS COMPONENT PARTS. NO PROVISIONS HAVE BEEN MADE FOR CONDITIONS OCCURRING DURING CONSTRUCTION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO MAKE PROPER AND ADEQUATE PROVISIONS FOR STABILITY OF, AND ALL STRESSES TO THE STRUCTURE DUE TO ANY CAUSE DURING CONSTRUCTION.

H. CONTRACTOR SHALL NOT SCALE DRAWINGS. CONTRACTOR SHALL REQUEST ALL DIMENSIONS OR INFORMATION REQUIRED TO PERFORM THE WORK FROM THE ARCHITECT. WORK COMPLETED BY THE CONTRACTOR WITHOUT DIMENSIONS OR INFORMATION SHALL BE DONE AT THEIR OWN RISK AND, IF DEEMED INCORRECT BY THE ARCHITECT, SHALL BE REMOVED AND REINSTALLED TO THE SPECIFICATIONS OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.

I. CODES: THE PROJECT IS BASED ON THE REQUIREMENTS OF THE MASSACHUSETTS STATE BUILDING CODE - NINTH EDITION.

J. THE PLANS WERE COMPILED FROM VARIOUS SOURCES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND DIMENSIONS.

K. FOR ALL ITEMS THAT ARE TO BE REUSED AND/OR REINSTALLED AS PART OF THE WORK:

ALL ITEMS THAT ARE TO REMAIN ARE TO BE PROTECTED FROM DAMAGE. IF ANY DAMAGE OCCURS THE CONTRACTOR SHALL REPAIR THE ITEM SO IT IS IN A LIKE NEW CONDITION OR REPLACE IT WITH A NEW ITEM THAT FUNCTIONS THE SAME OR BETTER THAN THE ORIGINAL ITEM.

ALL ITME THAT ARE TO BE TEMPORARILY REMOVED AND REINSTALLED ARE TO BE CAREFULLY REMOVED AND MOVED TO A

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PROTECTED AREA ON SITE OR TO AN OFF-SITE FACILITY. THE ITEM IS TO BE CLEANED AND PREPARED FOR REINSTALLATION. ALL FITTINGS AND CONNECTION POINTS ARE TO BE INSPECTED AND REPAIRED. PROVIDE NEW FASTENERS AND CAREFULLY TRANSPORT THE ITEM BACK TO ITS ORIGINAL LOCATION AND CAREFULLY REINSTALL. IF ANY DAMAGE OCCURS THE CONTRACTOR SHALL REPAIR THE ITEM SO ITI IS IN A LIKE NEW CONDITION OR REPLACE IT WITH A NEW ITEM THAT FUNCTIONS THE SAME OR BETTER THAN THE ORIGINAL ITEM.

3.15 INSURANCE

A. The Contractor shall purchase and maintain, at his expense all insurance required by the Contract. Documents and all insurance required by the applicable laws of Massachusetts, including but not limited to, General Laws, Chapter 146, in connection with all hoisting equipment.

B. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death and all property damage including, without limitation, damage to buildings and adjoining the site of construction which might arise from and during operations under this contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them including:

1. Statutory Worker's Compensation and Employer's Liability

   The contractor shall provide insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws (so-called Worker's Compensation Act) to all persons to be employed under this contract and shall continue in force such insurance as aforesaid shall be deemed a material breach of this Contract and shall operate as an immediate termination thereof. The contractor shall, without limiting the generality of the foregoing, conform to the provisions of Section 34A of Chapter 149 of the General Laws, which Section is incorporated herein by reference and made a part of hereof.

2. Comprehensive General Liability Insurance

   Minimum bodily injury limits of $ 500,000 per person and $ 1,000,000 per accident, and property damage limits of $ 500,000 per accident and $ 1,000,000 aggregate during any 12 month period, shall include the following:

   a. Public liability (bodily injury and property damage)

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b. X.C.U. (explosion, collapse, and underground utilities)

c. Independent contractor's protective liability.

d. Products and completed operations.

e. Save harmless agreement for Owner and Architects set forth in ARTICLE 10.11 of the GENERAL CONDITIONS.

3. Comprehensive All Risk Motor Vehicle Liability Insurance

   Minimum bodily injury limits of $ 500,000 per person, $ 1,000,000 per accident, and property damage limit of $ 1,000,000 per accident.

4. All Risk Insurance

   Covering all Contractor's equipment with a provision for Waiver of Subrogation against the Owner.

5. Excess Liability Insurance in Umbrella Form with combined Bodily Injury and Property Damage Limit of $ 1,000,000.

6. Town of Barnstable and CBI Consulting, LLC shall be listed as Additional Insured with a Waiver of Subrogation on the insurance policy for this project.

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 32 16 CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, bar chart type.

1.03 SUBMITTALS

A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within five (5) days after review of preliminary schedule, submit draft of proposed complete schedule for review.

D. Within five (5) days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Submit the number of opaque reproductions that Contractor requires, plus one copy for the Owner's Project Manager and one copy that will be retained by Architect.

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1.04 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

B. Diagram Sheet Size: Maximum 22 x 17 inches or width required.

C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Identify work of separate stages and other logically grouped activities.

D. Provide sub-schedules for each stage of Work identified in Section 01 10 00.

E. Provide sub-schedules to define critical portions of the entire schedule.

F. Include conferences and meetings in schedule.

G. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.

I. Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.

J. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.04 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.

B. Illustrate order and interdependence of activities and sequence of work; how start of agiven activity depends on completion of preceding activities, and how

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completion of the activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:

1. Preceding and following event numbers.
2. Activity description.
3. Estimated duration of activity, in maximum 15 day intervals.
4. Earliest start date.
5. Earliest finish date.
6. Actual start date.
7. Actual finish date.
8. Latest start date.
9. Latest finish date.
10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
11. Monetary value of activity, keyed to Schedule of Values.
12. Percentage of activity completed.
13. Responsibility.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and re-computation of all dates and float.

E. Required Reports: List activities in sorts or groups:

1. By preceding work item or event number from lowest to highest.
2. By amount of float, then in order of early start.

3.05 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 5 days.

3.06 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

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D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

3.07 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 40 00 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. Mock-ups.

B. Control of installation.

C. Tolerances.

D. Testing and inspection services.

E. Manufacturers' field services.

1.03 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

B. Section 01 42 16 - Definitions.

C. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.04 REFERENCE STANDARDS

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).

B. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and

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Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2014.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2013.

D. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2014a.

E. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2013.

F. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2010.

1.05 SUBMITTALS

A. Testing Agency Qualifications:

1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time specialist and responsible officer.
2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design conceptexpressed in the contract documents, or for Owner's information.

C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.

1. Include:
   a. Date issued.
   b. Project title and number.
   c. Name of inspector.
   d. Date and time of sampling or inspection.
   e. Identification of product and specifications section.
   f. Location in the Project.
   g. Type of test/inspection.
   h. Date of test/inspection.
   i. Results of test/inspection.
   j. Conformance with Contract Documents.
   k. When requested by Architect, provide interpretation of results.
2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with

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information given and the design concept expressed in the contract documents, or for Owner's information.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.

1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, andfinishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application orinstallation.

F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.

1. Submit report in duplicate within 10 days of observation to Architect for information.
2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.06 PULL-OUT TESTS

A. The Contractor shall perform pull-out tests to determine the length and type of fastener required to provide adequate withdrawal resistance from every substrate.

B. A minimum of two (2) pull out tests shall be performed per section to be fastened. More tests shall be performed if required by the Architect or OPM or the materialmanufacturer.

C. Submit a report from the fastener supplier and the product manufacturer describing the pull out tests, the recommended fasteners, and that they are covered under themanufacturer's warranty.

1.07 TESTING AND INSPECTION AGENCIES

A. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. Contractor Employed Agency:

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1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, and ASTM C1093.
2. Laboratory: Authorized to operate in the State in which the Project is located.
3. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
4. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program

D. The Contractor shall cooperate with the inspector and/or testing laboratory, furnish materials and labor as may be required and provide for convenient access to all parts of the Work for purposes of inspection and testing.

E. The Contractor shall accept as final the results of all such inspection and testing.

F. The inspector and/or testing laboratory reserves the right to require the Contractor to perform removal of materials installed by the Contractor. Make all cuts in accordance with the recognized standard practices. Remove materials only in the presence of the inspector.

1. Immediately after removing each material sample identify each by number and exact location by gummed label attached to a smooth surface of the cut sample.
2. Submit the cut samples directly to the inspector after applying identification.
3. Replace the cut with new materials, matching those removed, immediately after each removal, and insure that the replacement is completely watertight.

G. The removal cuts shall be subjected to various tests, including moisture content, density, thickness, compressive strength, composition, conformance with ASTM specifications where applicable, conformance with the recommendations of the manufacturers whose materials were used.

H. Bear all costs for tests where materials or systems have been found unacceptable and all costs for replacement required due to such unacceptability.

I. If any replacement Work is required, such Work will also be subject to the terms of this Specification.

PART 2 PRODUCTS - NOT USED

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PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work, and will be required for each typical installation detail / condition by the General Bidder and each Filed Sub-Bidder.

B. Provide supervisory personnel who will oversee mockup construction. Provide workers that will be employed during the construction at Project.

C. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

E. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

F. Accepted mock-ups shall be a comparison standard for the remaining Work.

G. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

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B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. See individual specification sections for testing required.

B. Testing Agency Duties:

1. Test samples of mixes submitted by Contractor.
2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests and inspections required by Architect.
7. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:

1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
   a. To provide access to Work to be tested/inspected.
   b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
   c. To facilitate tests/inspections.
   d. To provide storage and curing of test samples.
4. Notify Architect and laboratory 24 hours prior to expected time for

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operations requiring testing/inspection services.

5. Employ services of an independent qualified testing laboratory and pay foradditional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and toinitiate instructions when necessary.

B. Submit qualifications of observer to Architect 10 days in advance of required observations.

1. Observer subject to approval of Architect.
2. Observer subject to approval of Owner.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 42 16 DEFINITIONS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.03 DEFINITIONS

A. "Consultant": Any reference to "Designer", "Engineer" or "Architect" in this Project Manual, Specification or on the drawings shall refer to CBI Consulting, LLC, 250 Dorchester Avenue., Boston, Massachusetts 02127, (617) 268-8977, Steven Watchorn, Project Manager.

B. Furnish: To supply, deliver, unload, and inspect for damage. See also 01 10 00 Intent of the Project Manual.

C. "Owner": Any reference to the Owner shall be the Town of Barnstable.

D. "Owner's Project Manager": Any reference to Owner's Project Manager (OPM) in this Project Manual, Specification, or on the drawings shall refer to Mark Marinaccio, Project Architect for the Town of Barnstable Structures & Grounds.

E. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use. See also 01 10 00; 1.11 Intent of the Project Manual.

F. Product: Material, machinery, components, equipment, fixtures, and systems

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forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

G. Project Manual: The book-sized volume that includes the procurement requirements, the contracting requirements, and the specifications.

H. Provide: To furnish and install. See also 01 10 00; 1.11 Intent of the Project Manual.

I. Supply: Same as Furnish. See also 01 10 00; 1.11 Intent of the Project Manual.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. Temporary utilities.

B. Temporary telecommunications services.

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Security requirements.

F. Vehicular access and parking.

G. Waste removal facilities and services.

H. Field offices.

1.03 GENERAL

A. The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such prior to Substantial Completion must be with the concurrence of the Architect. The Contractor bears full responsibility for re-providing any facility removed prior to Substantial Completion.

B. Removal of all temporary facilities shall be a condition precedent to

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SubstantialCompletion unless directed otherwise by the Architect or specifically noted in the Specifications.

C. The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to Work under this Contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor and Industries Regulation 454 CMR.

D. Safety is the sole responsibility of the Contractor on the job site. Contractor is notified that the building will be occupied by staff and administration during construction. The Architect does not havecontrol of the job site in any way.

1.04 TEMPORARY UTILITIES

A. Owner will provide the following:

1. Electrical power, consisting of connection to existing facilities, except for temporary heat.
2. Water supply, consisting of connection to existing facilities.
3. It is the responsibility of the Contractor to make provisions to extend the utility from the nearest service outlet designated by the Owner to the point of use.

B. If the Owner finds that the Contractor has been using excess quantities of water and electricity, the Owner will require the contractor to pay for all electrical power and water required for construction purposes, and to provide and pay for sub-meters to monitor the usage.

C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

D. The Contractor shall provide extensions, including (but not exclusive of) piping, hoses, and extension cords to existing utilities as required to perform the Work.

E. The Contractor shall provide an adequate supply of cool drinking water with individual drinking cups for personnel on the job.

1.05 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:

1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
2. The Contractor shall provide a separate cell phone for the use of the Contractor's Project Superintendent.
3. The Contractor shall pay for the installation and removal of the foregoing

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temporary cell phone and for all calls and charges in connection therewith.

4. No telephone service will be provided by the Owner.
5. All telephone numbers for the project team shall be available to the project team. Provide cell phone for the Project Superintendent at the job site.
6. Provide 24-hour emergency phone numbers for the Contractor's Project Manager and Superintendent.
7. Internet Connections: Minimum of one; Cable modem or faster. Internet may be connected to Owner's existing system if sufficient capacity exists. If not, theContractor shall provide and pay for additional service.
8. Email: Account/address reserved for project use.

1.06 TEMPORARY SANITARY FACILITIES

A. Portable toilets shall be provided by the Contractor.

B. Use of the building's facilities by the Contractor shall not be permitted.

C. Protect the facilities from damage or vandalism.

D. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

E. Maintain Portable Toilets daily in clean and sanitary condition until Substantial Completion. Portable Toilets shall be emptied twice per week, minimum, and more often if required by the Owner. At Substantial Completion, professionally clean the site and return them to their original condition.

1.07 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of siteand to protect existing facilities and adjacent properties from damage from constructionoperations and demolition. This includes removing and storing all ladders and stagingfrom the site overnight to prevent access to the roof.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building. Such protective measures shall also be located and constructed as required by other local, state, and federal ordinances, laws, codes, or regulations.

C. Provide protection for plants and grass area. Replace damaged landscaping.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

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1.08 FENCING

A. Provide minimum 6 foot high security fence around all storage areas, equipment storage areas, staging, and any areas providing access to above grade work areas. Equip all areas providing access to the fenced areas with vehicular and pedestrian lockable gates. Provide Construction site signage, as well.

B. Site safety is the sole responsibility of the Contractor on the job site.

1.09 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.10 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as indicated to separate work areas from all Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Wood Framing and sheathing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.11 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Coordinate with Owner's security program.

C. Secure all tools and equipment at all times. Do not leave any tools or equipment in any areas where students can or will have access.

D. Security of the job site is the sole responsibility of the contractor.

1.12 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Designated existing on-site roads may be used for construction traffic.

F. Existing parking areas in locations indicated on the Site Plan, may be used

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forconstruction parking, subject to coordination with the Owner, and approval of the Site Utilization Plan.

G. Designate one parking space for Owner and Architect use.

1.13 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable materialoutside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.14 FIELD OFFICES

A. The Owner will provide a space within the building for use by the Contractor as an office. Locations as directed by the Owner.

B. Weekly job meetings shall be held at the job site.

C. The following furniture and equipment shall be provided in good condition. The furniture and equipment shall remain the property of the Contractor after Substantial completion of the Work.

1. One workstation desk and chair.
2. One coat rack and 12 wall coat hooks.
3. One plan rack and shelves for samples.
4. One 4-drawer metal file cabinet with lock and key.
5. One accurate outside mercury thermometer.
6. Two wall calendars.
7. One Conference table, 4' x 10', with seating for six (6).
8. One facsimile machine / wireless printer with copying capability and a dedicated phone line for the FAX machine.
9. One 12.1 megapixel digital camera with software and 8GB memory card. Contractor shall supply all batteries needed.
10. Two 4’ x 8’ white marker boards, with two (2) boxes of assorted dry erase markers.

D. The offices, equipment, and furnishings shall be maintained by the Contractor in a clean and orderly condition.

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1.15 TEMPORARY STAGING, STAIRS, CHUTES

A. Except as otherwise specified, the Contractor shall furnish, install, maintain in safe condition, and remove all scaffolds, staging, and planking over 8 ft. in height, required for the use of all trades for proper execution of the Work, except as noted.

B. The Contractor shall furnish, install, maintain in safe condition, and remove all temporary ramps, stairs, ladders, and similar items as required for the use of all trades for the proper execution of the Work.

C. The Contractor shall furnish, install, maintain, and remove covered chutes from the work area. Such shall be in convenient locations and permit disposal of rubbish directly into trucks or disposal units.

D. Debris shall not be allowed to fall freely from upper levels of the building. Materials shall not be thrown or dropped from open windows or the roof.

E. The General Bidder is responsible for erecting and maintaining, in safe condition, all scaffolding or staging required on the job, as well as all hoisting, to perform all the work in their scope, for the use of all Sub-Contractors, and for use by the Architect who will need to review the work or mark or verify quantities on the project. Any scaffolding shall include a protective screen securely attached to the scaffold for the entire height of the scaffold.

F. Provide any and all additional protection required to keep the building from being damaged by the staging, hoisting, or any construction work. Protect parapets and roof edges with plywood at all swing staging. Protect landscaping from mechanical lifts, scaffolding, and all construction activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 60 00 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material,labor, and equipment be furnished complete in every respect, and that this Contractorshall provide all material, labor, and equipment needed and usually furnished inconnection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations and procedures.

F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.03 SUBMITTALS

A. Refer to Section 01 30 00 for additional requirements.

B. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1. Submit within 15 days after date of Agreement.
2. For products specified only by reference standards, list applicable reference standards.

C. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data.

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Supplement manufacturers' standard data to provide information specific to this Project. The General Contractor shall include an electronic copy with all submittals.

D. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. DO NOT USE products having any of the following characteristics:

1. Made of wood from newly cut old growth timber.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

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2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

C. A request for substitution constitutes a representation that the submitter:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
2. Will provide the same warranty for the substitution as for the specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance willrequire revision to the Contract Documents.

E. Substitution Submittal Procedure:

1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

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C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

H. Comply with manufacturer's warranty conditions, if any.

I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

K. Prevent contact with material that may cause corrosion, discoloration, or staining.

L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material,labor, and equipment be furnished complete in every respect, and that this Contractorshall provide all material, labor, and equipment needed and usually furnished inconnection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.

C. Pre-installation meetings.

D. Cutting and patching.

E. Cleaning and protection.

F. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

G. General requirements for maintenance service.

1.03 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary of Work: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 30 00 - Administrative Requirements: Submittals procedures,

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Electronic document submittal service.

C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.

D. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.

E. Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.

F. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

G. Section 02 41 00 - Selective Demolition: Demolition of whole structures and parts thereof; site utility demolition.

1.04 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.

1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
2. Identify demolition firm and submit qualifications.
3. Include a summary of safety procedures.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:

1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate Contractor.
6. Include in request:
   a. Identification of Project.
   b. Location and description of affected work.
   c. Necessity for cutting or alteration.
   d. Description of proposed work and products to be used.
   e. Alternatives to cutting and patching.
   f. Effect on work of Owner or separate Contractor.
   g. Written permission of affected separate Contractor.

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h. Date and time work will be executed.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.06 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.
1. Minimum of 5 years of documented experience.

B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.07 PROJECT CONDITIONS

A. Use of explosives is not permitted.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.

2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.

E. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

1. Pest Control Service: Weekly treatments.

F. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

G. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.08 COORDINATION

A. See Section 01 10 00 for occupancy-related requirements.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

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C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new operating equipment arecompatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electricalwork that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building.Utilize spaces efficiently to maximize accessibility for other installations, formaintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of work of separate sections.

H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work,

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includingelements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of examination, preparation and installation procedures.

2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity forreplacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify that construction and utility arrangements are as shown.

2. Report discrepancies to Architect before disturbing existing installation.

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3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.

1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
2. Remove items indicated on drawings.
3. Relocate items indicated on drawings.
4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; removeexisting finish if necessary for successful application of new finish.
5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allowaccess or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
   b. Provide temporary connections as required to maintain existing systems in service.

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4. Verify that abandoned services serve only abandoned facilities.
5. Remove abandoned pipe, ducts, conduits, and equipment, including those aboveaccessible ceilings; remove back to source of supply where possible, otherwise capstub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing 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 ofdivision and make recommendation to Architect.
2. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to berefinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:
1. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

J. Clean existing systems and equipment.

K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

L. Do not begin new construction in alterations areas before demolition is complete.

M. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.

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4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-conforming work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. Patching:

1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinishentire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing otherimperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

E. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on the site.
2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

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3. Do not dispose of wastes into streams or waterways.

F. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

G. Do not allow materials and rubbish to drop free or be thrown from upper floors, but remove by use of a material hoist or rubbish chutes.

H. Maintain the Site free from accumulations of waste, debris, and rubbish.

I. Provide on-site containers for collection of waste materials and rubbish.

J. At the end of each day, remove and legally dispose waste materials and rubbish from site.

K. Disposal of materials shall be in compliance with all applicable laws, ordinances, codes, and by-laws.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofingmaterial manufacturer.

G. Prohibit traffic from landscaped areas.

H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.10 FINAL CLEANING

A. Prior to submitting a request to the Architect to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.

B. Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final

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inspection.

C. Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.

D. Employ experienced workmen or professional cleaners for final cleaning.

E. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.

F. Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.

G. All broken or defective glass caused by the Contractor's Work shall be replaced at the expense of the Contractor.

H. Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.

I. Clean and polish all new and existing glass and plastic glazing (if any) throughout the building(s), on both sides. Clean plastic glazing in accordance with the manufacturer's directions. This cleaning shall be completed by qualified window cleaners at the expense of the Contractor just prior to acceptance of the Work.

J. Wash and polish all mirrors.

K. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.

L. Polish glossy surfaces to a clear shine.

M. Do the final cleaning of resilient floors and wood floors as specified under the respective sections of the Specifications.

N. Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.

O. Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decayable materials.

P. In cleaning items with manufacturer's finish or items previously finished by a Subcontractor, care shall be taken not to damage such manufacturer's or Subcontractor's finish. In cleaning glass and finish surfaces, care shall be taken not to use detergents or other cleaning agents which may stain adjoining finish surfaces. Any damage to finishes caused by cleaning operations shall be repaired at the Contractor's expense.

Q. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.

R. Ventilating systems - Replace filters and clean ducts, blowers, and coils if units were operated during construction.

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S. Owner's responsibility for cleaning commences at Substantial Completion.

3.11 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

1. Provide copies to Architect and Owner.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List forContractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completioninspection.

E. Owner will occupy all of the building as specified in Section 01 10 00.

F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

H. Accompany Project Coordinator on Contractor's preliminary final inspection.

I. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

J. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.12 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specifiedwarranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 78 00 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.03 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.04 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment. All submittals shall also be submitted in digital format.

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B. Operation and Maintenance Data:

1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

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E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Contractor shall maintain and record all changes to the plans throughout the entire project and shall submit as-built drawings of the entire project, in electronic AutoCAD and PDF format, prior to final payment. The Town and the Architect will provide existing AutoCAD base files for the sole purpose of the Contractor to generate the as-built drawings. Legibly mark each item to record actual construction including:

1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
2. Field changes of dimension and detail.
3. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

1. Product data, with catalog number, size, composition, and color and texture designations.
2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning 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.

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Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation andmaintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:

1. Description of unit or system, and component parts.
2. Identify function, normal operating characteristics, and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation andmaintenance of the specific products.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Include sequence of operation by controls manufacturer.

H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

I. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specificationsections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

D. Prepare data in the form of an instructional manual.

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E. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

H. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

I. Dividers: Provide tabbed dividers for each separate product and system; identify thecontents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

L. Arrangement of Contents: Organize each volume in parts as follows:
1. Project Directory.
2. Table of Contents, of all volumes, and of this volume.
3. Operation and Maintenance Data: Arranged by system, then by product category.
   a. Source data.
   b. Product data, shop drawings, and other submittals.
   c. Operation and maintenance data.
   d. Field quality control data.
   e. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item ofwork. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

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E. The General Contractor and Roofing Filed Sub-Bidder shall each perform a 1-year warranty inspection.

F. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

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DIVISION 02 EXISTING CONDITIONS

SECTION 02 41 00 SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Selective Demolition work required to complete the work of the contract including all the Selective Demolition work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Selective Demolition work with all the other trades for the project. Provide all demolition and disposal work to complete the work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

B. Selective Demolition includes, but is not limited to:

1. General:
   a. Abatement and legal disposal of hazardous materials disturbed by the demolition activities. Refer to Sections 02 82 00 for hazardous materials abatement and disposal requirements and Lead Paint Consideration.

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b. Contractor shall coordinate all of the work and verify all existing conditions.

2. Selective Demolition at Boys and Girls Toilet Rooms:
   a. Remove and dispose of select plumbing fixtures, by Plumbing Filed Sub-Bidder.
   b. Remove select locations of glazed block in areas of plumbing fixtures to accomodate plumbing work.
   c. Carefully remove and dispose of select toilet partitions. Reinstall according to installation plan.
   d. Sawcut, remove and dispose of floor tile at select plumbing fixtures and floor drain locations.
   e. Remove and dispose of grab bars.
   f. Carefully remove accessories: paper towel, soap and toilet tissue dispensers. Return to Owner.
   g. Remove and dispose of toilet room signage.
3. Selective Demolition at West Entry:
   a. Remove and dispose of double door and all associated hardware. Aluminum frame to remain in place.
   b. Coordinate and schedule all demolition work with Owner in advance of shutting off water or power.
5. Demolition shown on the drawings and where necessary to provide a complete door installation as per good construction practices.
6. All Temporary protections shall be the responsibility of the General Bidder. No plastic sheet panels will be allowed on exterior doors overnight. The General Contractor shall be responsible for maintaining secure weather-tight openings until the doors are replaced.

1.03 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.04 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.

1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
2. Identify demolition firm and submit qualifications.

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3. Include a summary of safety procedures.

C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.06 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.
2. Comply with applicable requirements of NFPA 241.
3. Use of explosives is not permitted.
4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
5. Provide, erect, and maintain temporary barriers and security devices.
6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
7. Do not close or obstruct roadways or sidewalks without permit.
8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Protect existing structures and other elements that are not to be removed.

1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

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E. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

F. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

G. Perform demolition in a manner that maximizes salvage and recycling of materials.

1. Dismantle existing construction and separate materials.
2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.02 EXISTING UTILITIES

A. Protect existing utilities to remain from damage.

B. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

C. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

D. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

E. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.03 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify that construction and utility arrangements are as shown.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

C. Provide temporary closures that are weathertight throughout all demolition and construction activities.

D. Remove existing work as indicated and as required to accomplish new work.

1. Remove items indicated on drawings.

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E. Protect existing work to remain.

1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

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SECTION 028213

ASBESTOS ABATEMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. General Provisions of Contract, including General Supplementary Conditions shall apply to this Section.

B. Limited Hazardous Building Materials Inspection Report prepared by Fuss & O'Neill EnviroScience, LLC (January 2018).

1.02 SCOPE OF WORK

A. Work outlined in this Section includes all work necessary for the removal, packaging, transporting, and disposing of asbestos-containing materials (ACM) and asbestos-containing waste materials (ACWM) impacted during the Phase II, Accessibility Renovations project (the "Work") to occur at the Barnstable Community Horace Mann Charter Public School located at 165 Bearses Way in Hyannis, Massachusetts (the "Site").

B. Work shall be performed by a MADLS-licensed Asbestos Abatement Contractor (the "Contractor") with certified Asbestos Workers and Supervisor(s). Training shall be in accordance with MADLS Regulation 453 CMR 6.00.

1.03 PROJECT DESCRIPTION

A. The Base Bid includes removal, packaging, transporting, and disposing of ACM and ACWM, as identified herein, conducted by workers meeting the requirements of OSHA Title 29 CFR, Part 1926.1101 for Class I and II work. This shall include all necessary demolition to access ACM for abatement.

B. Materials, as discovered outside of those listed (either above or below), will be measured and paid or credited by unit prices to be negotiated prior to commencement of the Work. The quantities are estimates only and should be field-verified by the Contractor.

C. The following table summarizes the locations of the Base Bid work with estimated ACM quantities. Note quantities provided below are order-of-magnitude estimates only. Refer to the Demolition Drawings for locations.

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BASE BID - ASBESTOS

MATERIAL TYPE	LOCATION	QUANTITY	NOTES
Pipe Insulation	Concealed Locations within Bathrooms (e.g., drop soffit, pipe chase, wet wall, fixed ceiling, etc.)	75 LF	1,2,3
Pipe-Fitting Insulation	Concealed Locations within Bathrooms (e.g., drop soffit, pipe chase, wet wall, fixed ceiling, etc.)	35 EA	1,2,3

EA = Each; LF = Linear Feet

Notes:
1 Denotes material type is assumed to contain asbestos.
2 Denotes material type is concealed within pipe chases and/or wet walls.
3 Denotes material type shall be abated within a negative pressure enclosure.

D. A portion of the Work may be performed in multiple mobilizations, at different periods of time, in conjunction with other trades (i.e., other trades work, demolition work, etc.).

E. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the Consultant prior to chemicals being delivered to the Site.

F. The Contractor shall be responsible for providing temporary water, power, and heat (as needed) at the Site to perform the Work. Temporary lighting within the work areas must be connected to ground-fault circuit interrupter (GFCI) power panels installed by a Commonwealth of Massachusetts-licensed electrician (permitted as required) and located outside of the work areas.

1.04 DEFINITIONS

A. The following definitions relative to asbestos abatement apply:

1. Abatement: Procedures to control fiber release from ACM; includes removal, encapsulation, and enclosure.
2. ACM: Asbestos-containing material(s).
3. Air Monitoring: The process of measuring the total airborne fiber concentration of an area or a person.
4. Amended Water: Water to which a surfactant (wetting agent) has been added.
5. Architect: CBI Consulting, LLC.
6. Asbestos: The name given to a number of naturally-occurring, fibrous silicates. This includes the serpentine and the amphiboles forms, and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically-altered.
7. Asbestos Abatement: Any activity to control fiber release from ACM; includes removal, encapsulation, enclosure, and repair.

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8. Asbestos Abatement Project: All activities, including site preparation and clean-up, associated with asbestos abatement, from the time of initial arrival of the contractor on-site through obtaining an acceptable final clearance air sampling in the abatement areas(s) and/or removal of all abated ACM from the project site, whichever is later.
9. Asbestos-Containing Waste Material (ACWM): Any friable ACM removed during a demolition/renovation project and anything contaminated in the course of a demolition/renovation project including asbestos waste from control devices, bags or containers that previously contained asbestos, contaminated clothing, materials used to enclose the work area during the demolition/renovation operation, and demolition/renovation debris.
10. Asbestos Fibers: Those particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
11. Asbestos Project Designer: The MADLS-certified Asbestos Project Designer for this project is Mr. Dustin A. Diedricksen (Certification No. AD000037).
12. Asbestos Supervisor: Any employee of a MADLS-licensed Asbestos Abatement Contractor who possesses a valid MADLS certification and EPA accreditation as an Asbestos Supervisor.
13. Asbestos Work Area: A regulated area, as defined by OSHA Title 29 CFR, Part 1926.1101, where asbestos abatement operations are performed, which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated areas for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.
14. Asbestos Worker: Any employee of a MADLS-licensed Asbestos Abatement Contractor who possesses a valid MADLS certification and EPA accreditation as an Asbestos Worker.
15. Clean Room: An uncontaminated area or room, which is a part of the worker decontamination enclosure system with provisions for storage of worker street clothes and protective equipment.
16. Competent Person: As defined by OSHA Title 29 CFR, Part 1926.1101, a Site representative who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure. The Competent Person has authority to take prompt corrective measures and to eliminate such hazards during asbestos removal. The Competent Person shall be properly trained in accordance with EPA's Model Accreditation Plan (MAP).
17. Consultant: Fuss and O'Neill EnviroScience, LLC.
18. Containment: An enclosure which surrounds the location where ACM and/or other toxic or hazardous substance removal is conducted, and establishes a controlled work area.
19. Contractor: Any person, firm, corporation, or other entity who has a valid Asbestos Abatement Contractor license issued by MADLS for the purpose of entering into, or engaging in, asbestos abatement work.
20. Curtained Doorway: A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of three feet apart can form an airlock.

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21. Decontamination Enclosure System (Decon): A series of connected areas, with curtained doorways between adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
22. Encapsulant: A liquid material which can be applied to ACM, that controls the possible release of asbestos fibers either by creating a membrane over the surface (bridging encapsulant), or penetrating the material and binding its components together (penetrating encapsulant).
23. EPA: The United States Environmental Protection Agency.
24. Equipment Room: Any contaminated area or a room that is part of the worker decon with provisions for storage of contaminated clothing and equipment.
25. Fixed Object: Unit of equipment or furniture in the work areas that cannot be removed from the work area.
26. Friable ACM: Any material that contains greater than one percent (> 1%) asbestos as determined using the method specified in Title 40 CFR, Part 763, Appendix A, Subpart F, Section 1, via PLM, or is presumed to contain asbestos, that can be crumbled, pulverized, or reduced to powder by hand pressure (when dry).
27. HEPA Filter: High-Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2 1979.
28. HEPA-Filtered Work Area Ventilation System: A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
29. HEPA-Vacuum Equipment: Vacuum equipment where all the air drawn into the machine is expelled through a HEPA filter with none of the air leaking past it and with a HEPA-filter as the last filtration stage.
30. MADLS: The Commonwealth of Massachusetts Department of Labor Standards.
31. MassDEP: The Commonwealth of Massachusetts Department of Environmental Protection.
32. Movable Object: Unit of equipment of furniture in the work area that can be removed from the work area.
33. NESHAP: National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.
34. Non-Friable ACM: Any material that contains > 1% asbestos as determined using the method specified in EPA Title 40 CFR, Part 763, Appendix A, Subpart F, Section 1, via PLM, or is presumed to contain asbestos, that cannot be crumbled, pulverized, or reduced to powder by hand pressure (when dry).
35. NPE: Negative Pressure Enclosure.
36. OSHA: The Occupational Safety and Health Administration.
37. Owner: Barnstable Public Schools
38. Permissible Exposure Limit (PEL): The maximum total airborne fiber concentration to which an employee is allowed to be exposed. The new limit established by OSHA Title 29 CFR, Part 1926.1101 is 0.1 fibers/cc as an eight (8)-hour time-weighted average (TWA), and 1.0 fibers/cc averaged over a sampling period of thirty (30) minutes as an Excursion Limit. The Contractor shall be responsible for maintaining work areas in a manner that this standard is not exceeded.

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39. Project Monitor: A professional capable of conducting air monitoring and analysis of schemes. This individual should be an industrial hygienist, an environmental scientist, or a Consultant with experience in asbestos air monitoring, personal protection equipment, and abatement procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.
40. RCRA: The Resource Conservation and Recovery Act (EPA Title 40 CFR, Parts 260 - 265).
41. Regulated Area: An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area, within which, total airborne fiber concentrations exceed, or there is a reasonable possibility that they may exceed, the PEL.
42. Shower Room: A room between the Clean Room and the Equipment Room in the decon with hot and cold running water suitably arranged for employee showering during decontamination. The Shower Room is located in an airlock between the contaminated area and the clean area.
43. Site: Barnstable Horace Mann Charter Public School located at 165 Bearses Way in Hyannis, Massachusetts.
44. Surfactant: A chemical wetting agent added to water to improve penetration into ACM.
45. Totally-Enclosed Manner: A manner that will ensure no exposure of human beings or the environment to a concentration of asbestos.
46. Transport Vehicle: A motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.
47. TWA: Time-Weighted Average.

1.05 CONSULTANT

A. The Owner/Architect shall retain a third-party, industrial hygiene firm (the "Consultant") for the purposes of project management and monitoring during Asbestos Abatement activities. At the discretion of the Owner/Architect, the Consultant will represent the aforementioned during the abatement project. The Contractor will regard the Consultant's direction as authoritative and binding, as provided herein, in matters particularly, but not limited to the following:

1. Work area approval.
2. Monitoring results review.
3. Completion of the various work segments.
4. Final abatement completion.
5. Data submission.
6. Daily field punch list items.

B. The Commonwealth of Massachusetts Department of Labor Standards (MADLS) Asbestos Consultant - Project Designer for this Asbestos Abatement Project is Mr. Dustin A. Diedricksen (Certification No. AD000037).

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1.06 USE OF THE CONTRACT DOCUMENTS

A. It shall be incumbent upon the Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the Site and understand the existing conditions.

B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern the Work.

C. It is not intended that this Section show every detail of the Work, but the Contractor shall be required to furnish, within the Contract Sum, all material and labor necessary for the completion of the Work in accordance with the intent of this Section.

D. In case of ambiguity among the Contract Documents, the more stringent requirement, as determined by the Consultant, shall prevail.

E. The Work includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts.

F. All items not specifically mentioned in the Contract Documents, but implied by trade practices to complete the Work, shall be included.

1.07 SITE EXAMINATION

A. It is understood that the Contractor has examined the Site and made their own estimates of the facilities and difficulties attending the execution of the Work and has based their price thereon.

B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the Site.

1.08 CONTRACTOR QUALIFICATIONS

A. The Contractor shall submit a record of prior experience in asbestos abatement projects, listing no less than three completed projects in the past year of similar size and scope. The Contractor shall list the experience and training of the Asbestos Supervisor and the Asbestos Abatement Workers The information that should be included is as follows:

1. Project Name and Address
2. Owner's Name and Address
3. Architect's Name
4. Consultant's Name
5. Contract Amount
6. Date of Completion
7. Extras and Changes

B. The Contractor selected must currently hold a valid MADLS Asbestos Abatement Contractor license.

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C. Submit a written statement regarding whether the Contractor has ever been cited for non-compliance with federal, state, or local asbestos regulations pertaining to worker protection, removal, transport, or disposal.

1.09 ADDITIONAL GENERAL REQUIREMENTS

A. The Contractor shall employ a competent, MADLS-certified Asbestos Abatement Supervisor with at least three years of experience on projects of similar scope and magnitude, who shall be responsible for all work involving asbestos abatement as described in the Contract Documents and defined in applicable regulations and have full-time, daily supervision of the same. The Supervisor shall be the competent person as defined by Occupational Safety and Health Administration (OSHA) regulations.

B. If required by federal, state, local, or any other authorities having jurisdiction over such work, the Contractor shall allow the Work of this contract to be inspected. The Contractor shall immediately notify the Owner, Architect, and Consultant and shall maintain written evidence of such inspection for review by the aforementioned parties.

C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.

D. The Contractor shall immediately notify the Owner, Architect, and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or of occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the aforementioned parties for verification and recording.

1.10 SUBMITTALS

A. The Contractor shall submit the following to the Consultant, in one complete package, prior to the pre-construction meeting and at least ten (10) business days before the start of the Work:

1. Submit a schedule to the Owner/Architect and the Consultant that defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, decontamination, and final clearance air monitoring (if applicable).
2. Submit copies of all notifications, permits, applications, licenses and like documents required by federal, state, or local regulations obtained or submitted in proper fashion. The Contractor's supervisor and laboratory information (Fuss & O'Neill EnviroScience, LLC - AA000198) submitted on Asbestos Notification Form (ANF-001) must be accurate or a revision will be required.
3. Submit the name and address of the hauling contractor and the landfill to be used. Also, submit current, valid operating permits and certificates of insurance for the transporter and landfill.
4. Submit a detailed, site-specific work plan including, but not limited to, decon construction, work area isolation, and removal methods.
5. Submit the training, medical, and respirator fit test records as well as a current, valid MADLS certification of each employee who may be on the Site.

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6. If the Contractor's MADLS-certified Asbestos Abatement Supervisor is not conducting OSHA-required employee exposure monitoring, submit the name, address, and qualifications of the air sampling professional that the Contractor proposes to use on this project for this task. The Contractor shall note if this does not apply.
7. Submit the name, address, and qualifications of proposed laboratories intended to be utilized for Contractor personal air sampling analysis as required by this Section.
8. Submit detailed product information on all materials and equipment proposed for asbestos abatement work on this project. This includes all SDS for products and chemicals that may be used on the project.
9. Submit a chain-of-command for the project. The chain-of-command should include the name, title, and contact number for each person listed.
10. Submit a site-specific Emergency Action Plan for the project. The Emergency Action Plan may include emergency procedures to be followed by Contractor personnel to evacuate the building, hospital name and phone number, most direct transportation route from the Site, emergency telephone numbers, etc. If this information is contained within an Emergency Action Plan prepared by the Site's General Contractor, a copy shall be submitted for review.
11. Submit a written, site-specific Respiratory Protection Program for employees undertaking the Work, including make, model, and National Institute of Occupational Safety and Health (NIOSH) approval numbers of respirators to be used at the Site. The Contractor shall note if the Respiratory Protection Program is not required at the Site and why.
12. Submit the proposed electrical safeguards to be implemented by a Commonwealth of Massachusetts-licensed electrician, including but not limited to: location of transformers, GFCI outlets, lighting, and power panels necessary to safely perform the Work, including a description of electrical hazards and a safety plan for common practices in the work area. This may also include a safety plan for temporary lighting, extension cords, and other powered equipment used in the work area (locations, daily inspections, etc.).
13. Submit the proposed worker orientation plan that, at a minimum, includes a description of asbestos hazards and abatement methodologies, a review of worker protection requirements, and the outline of safety procedures.

No work on the Site will be allowed to begin until the Owner/Architect and the Consultant approve the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

B. The Contractor shall submit the following to the Consultant during the Work:

1. Copies of training, MADLS certifications, respirator fit test records, and medical records for new employees to start work 24 hours in advance of the new employee arriving at the Site.

C. The Contractor shall submit the following to the Owner at the completion of the Work. The Owner reserves the right to retain payment(s) until all items are received in completion:

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1. Original final completed copies of the WSR, signed by all transporters and the designated disposal site owner/operator.
2. Original final completed copies of weight tickets, recycling tickets, and manifests for all specified materials.
3. Contractor's logs (daily activity logs, daily sign in sheets, containment sign-in sheets), and all worker training, MADLS certifications, medical records, and respirator fit test records.
4. Copies of all OSHA personal monitoring results.

1.11 REGULATIONS AND STANDARDS

A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos abatement. Specifically, the Contractor shall comply with the requirements of the following:

1. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) Regulations (Title 40 CFR, Part 61, Subpart M).
2. EPA Asbestos Hazards Emergency Response Act (AHERA) Regulations (Title 40 CFR, Part 763, Subpart E).
3. OSHA Asbestos Regulations (Title 29 CFR, Parts 1910.1001 and 1926.1101).
4. Department of Transportation (DOT) Hazardous Waste Transportation Regulations (Title 49 CFR, Parts 170 - 180).
5. MassDEP Asbestos Regulations (310 CMR 7.00 and 7.15).
6. MADLS "The Removal, Containment or Encapsulation of Asbestos" Standards for Asbestos Abatement (453 CMR 6.00).
7. Life Safety Code, National Fire Protection Association (NFPA).
8. Local health and safety codes, ordinances or regulations pertaining to asbestos remediation and all national codes and standards including American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), and Underwriter's Laboratories (UL).

1.12 EXEMPTIONS

A. Any deviations from the Contract Documents require the written approval and authorization from the Owner and Consultant. Any deviations that may impact the bid cost shall be delineated with the bid for the Owner to review.

B. Any modifications from the standard work practices identified in MADLS Regulations 453 CMR 6.00 or MassDEP Regulations 310 CMR 7.00 and 7.15 must be requested in writing and approved in writing by both regulatory agencies. The Consultant shall develop a Non-Traditional Asbestos Abatement Work Practice (NTWP) on behalf of the Owner. If the Contractor intends to request a NTWP for this project, the nature of the NTWP shall be disclosed in the Bid Documents, and the cost savings associated with said NTWP shall be provided for Owner's consideration. A NTWP shall not be filed without prior Owner and Consultant approval.

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1.13 FINAL RE-OCCUPANCY AIR CLEARANCE

A. Following the completion of the encapsulation phase of the Work, the Consultant shall collect final re-occupancy clearance air samples inside the negative pressure enclosure (NPE) work area per MADLS regulatory requirements for re-occupancy.

B. The Owner shall be responsible for payment of the sampling and analysis of the initial final clearance air samples only. If the first set of samples fails to satisfy the re-occupancy criteria, the Contractor shall be responsible for payment of all costs associated with the collection and analysis of additional final clearance air samples.

C. The Contractor shall not conduct demolition or other removal activities during final clearance air sampling for re-occupancy.

1.14 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

A. The Contractor shall make the following notifications and provide the submittals to the following agencies prior to the start of work. Submissions may be made electronically on eDEP File. This notification is required ten (10) calendar days prior to the start of the abatement project. The supervisor and laboratory information (Fuss & O'Neill EnviroScience, LLC - AA000198) submitted on the form must be accurate or a revision will be required.

1. Commonwealth of Massachusetts Department of Environmental Protection
Asbestos Program
Enforcement Division
P.O. Box 4062
Boston, MA 02211

2. Commonwealth of Massachusetts Department of Labor Standards
19 Staniford Street, 2nd Floor
Boston, MA 02114

B. The minimum information included in the notification to these agencies includes:

1. Building Owner/Operator Name and address.
2. Building location.
3. Building size, age, and use.
4. Amount of asbestos to be removed.
5. Asbestos Abatement Supervisor Name and Certification Number.
6. Laboratory Analytical Name and License Number.
7. Work schedule, including proposed start and completion date.
8. Asbestos removal procedures to be used.
9. Name and location of disposal site for generated asbestos waste, residue, and debris.

1.15 WORK SITE SAFETY PLAN

A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the Site. The safety plan should include provisions for the following:

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1. Injured worker evacuation.
2. Emergency and fire exit routes from all work areas.
3. Emergency first aid treatment.
4. Local telephone numbers for emergency services including ambulance, fire, and police.
5. A method to notify building occupants in the event of a fire or other emergency requiring building evacuation.

B. The Contractor shall be responsible for training all workers in these procedures.

1.16 INDEPENDENT AIR SAMPLING AND ASBESTOS ABATEMENT MONITORING

A. This Subsection describes independent air sampling work being performed on behalf of, and paid for by, the Owner. This Subsection describes air monitoring conducted by the Consultant to verify that the building, beyond the work area, and the outside environment remains uncontaminated. Personal air monitoring required by OSHA is work to be performed by the Contractor and is within the Contract Sum. A negative exposure assessment will not be reviewed and/or approved by the Consultant; it shall be the Contractor's responsibility to determine its validity.

B. The purpose of the Consultant's air monitoring is to verify proper engineering controls in the work areas including, but not limited to:

1. Building contamination outside the work area by airborne fibers.
2. Filtration failure or differential pressure system rupture.
3. Air contamination outside the building envelope by airborne fibers.

C. If any of the above occurs, the Contractor shall immediately cease Asbestos Abatement activities until the fault is made correct. Do not recommence work until authorized by the Consultant.

D. The Consultant may monitor total airborne fiber concentrations outside the work area. The purpose of this air monitoring will be to detect total airborne fiber concentrations outside the NPE, which may challenge the effectiveness of the work area isolation procedures to protect the ambient areas inside and at the exterior of the Site.

E. To determine if the elevated total airborne fiber concentrations encountered during abatement operations have been reduced to an acceptable level, the Consultant will sample and analyze ambient air in accordance with final clearance air sampling requirements.

F. The Consultant may perform on-site monitoring throughout the project, as follows:

1. All work procedures may be monitored by the Consultant to assure that areas outside the designated work areas will not be contaminated.
2. Prior to work on any given day, the Contractor's designated "competent person" shall discuss the day's work schedule with the Consultant to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the Site or the employees. This includes a visual inspection of the work area and the decon.

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1.17 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

A. The Contractor shall independently retain an air-sampling professional or the MADLS-certified Asbestos Abatement Supervisor shall monitor total airborne fiber concentrations in the worker breathing zones to establish conditions and work procedures for maintaining compliance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.

B. The Contractor's air sampling professional shall document all air sampling results and provide a report to the Consultant within 48 hours after sample collection.

C. All air sampling shall be conducted in accordance with methods described in OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.

1.18 PROPER WORKER PROTECTION

A. This Subsection describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

B. All workers are to be accredited as Abatement Workers as required by the EPA AHERA Title 40 CFR, Parts 763 Appendix C to Subpart E, February 3, 1994.

C. The Contractor is required to be certified and accredited as required by MADLS.

D. In accordance with OSHA Title 29 CFR, Part 1926, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include, but is not limited to the following:

1. Methods of recognizing asbestos
2. Health effects associated with asbestos
3. Relationship between smoking and asbestos in producing lung cancer
4. Nature of operations that could result in exposure to asbestos
5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
    a. Engineering controls
    b. Work Practices
    c. Respirators
    d. Housekeeping procedures
    e. Hygiene facilities
    f. Protective clothing
    g. Decontamination procedures
    h. Emergency procedures
    i. Waste disposal procedures
6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by OSHA Title 29 CFR, Part 1910.134
7. Appropriate work practices for the work
8. Requirements of medical surveillance program
9. Review of OSHA Title 29 CFR, Part 1926
10. Pressure Differential Systems
11. Work practices including hands on or on job training

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12. Personal Decontamination procedures
13. Air monitoring, personal and area

E. The Contractor shall provide medical examinations for all workers who may encounter a total airborne fiber concentration of 0.1 fibers/cc or greater for an 8-hour TWA. In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the work area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in Title 29 CFR, Part 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

F. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:

1. Non-essential personnel are prohibited from entering the work area.
2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" that are posted at the entry points to the enclosure system, and shall be equipped with properly fitted respirators and protective clothing.
3. All personnel who are exiting from the decon shall be properly decontaminated.
4. Asbestos waste that is removed from the work area must be properly bagged and labeled in accordance with these Specifications. Asbestos waste removed from a NPE must be immediately transported off-site or immediately placed in locked, posted temporary storage on-site, and removed within 24 hours of the project conclusion.
5. Any materials, equipment, or supplies that are removed from the decon shall be thoroughly cleaned and decontaminated by wet-cleaning methods and/or HEPA vacuuming of all surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. Deliver all materials in the original packages, containers, or bundles bearing the brand name, manufacturer name, and product technical description.

B. The Contractor shall have a sufficient inventory of, or dated purchase orders for, materials necessary for the Work (e.g., protective clothing, respirators, respirator filter cartridges, polyethylene (poly) sheeting of proper size and thickness, tape, spray adhesive, air filters, etc.).

C. Damaged or deteriorating materials are not permitted for use and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed as ACWM.

D. Poly sheeting (packaged in a roll to minimize the frequency of joints) shall be delivered to the Site with factory label indicating four (4) or six (6)-mil thickness.

E. Poly disposable bags shall be 6-mil with OSHA-required pre-printed labels (OSHA Title 29 CFR, Part 1926.1101(k)(8)(iii)).

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F. Tape or adhesive spray shall be capable of sealing joints in adjacent poly sheeting, and shall be able to attach poly sheeting to finished or unfinished surfaces of dissimilar materials. Tape and adhesive spray shall also be capable of adhering under both dry and wet conditions (including use of amended water).

G. Surfactant (wetting agent) shall consist of fifty percent (50%) polyoxyethylene ether and 50% polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of 1 ounce surfactant to 5 gallons of water, or as directed by manufacturer.

H. Removal encapsulant shall be non-flammable, factory-prepared penetrating chemical encapsulant deemed acceptable by the Consultant. Usage shall be in accordance with manufacturer's printed technical data.

I. The Contractor shall have spray equipment capable of mixing wetting agent with water. Spray equipment shall be capable of generating sufficient pressure and volume; the hose length must reach all areas within the work area.

J. Impermeable containers shall be used to receive and retain any asbestos-containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Title 29 CFR, Part 1926.1101(k)(8)(iii) [June 1, 2015 requirements]. Containers must be airtight and watertight.

K. Labels and signs, as required by OSHA Title 29 CFR, Part 1926.1101, will be used. Encapsulant shall be bridging or penetrating type which has been deemed acceptable by the Consultant. Usage shall be in accordance with manufacturer's printed technical data.

2.02 TOOLS AND EQUIPMENT

A. The Contractor shall provide all clean tools and equipment necessary for asbestos abatement activities.

B. The Contractor's air monitoring professional or Abatement Supervisor shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements. The equipment shall function properly and air samples shall be calibrated with a recently calibrated (within 6 calendar months) rotometer.

C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the Work, including protective clothing, respirators, respirator filter cartridges, poly sheeting of proper size and thickness, tape, spray adhesive, and air filters.

D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and/or electrical power sources (e.g., generators, etc.). Any electrical-connection work affecting the building electrical power system shall be performed by a Commonwealth of Massachusetts-licensed electrician, permitted as required.

E. The Contractor shall be responsible for coordinating electrical and water services, and shall pay for these services for the duration of the project (if applicable).

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F. The Contractor shall assist the Consultant by providing necessary tools and equipment (e.g., coveralls, ladders, extension cords, lighting, etc.) for the Consultant to perform project monitoring activities (e.g., final visual inspection(s), in-progress and final clearance air sampling, etc.). The Consultant reserves the right to reject such items that are deemed unsafe and/or do not function properly, and may request items be replaced with adequate replacements. The work areas must be safe to enter/occupy by the Consultant at all times.

G. The Contractor shall have available shower stalls and plumbing, including sufficient hose length and drain system, or an acceptable alternate.

H. If required, HEPA-filtered work area ventilation systems shall contain HEPA filter(s) and be capable of sustaining sufficient air exhaust to create a minimum negative air pressure of -0.02 inches of water column within NPE with respect to the outside area. Digital monometers shall be supplied for Class 1 work. Equipment shall be checked for proper operation by smoke tubes or differential pressure gauge before the start of each shift and at least twice during the shift. Adequate exhaust air shall be provided for a minimum of 4 air changes per hour within the NPE. No air movement system or air-filtering equipment shall discharge unfiltered air outside the work area. The Contractor will have reserve units so that system will operate continuously.

I. HEPA-Vacuum Equipment, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION MEETING

A. A pre-construction meeting may be scheduled prior to the start of Work. The Contractor must attend this meeting (as required by the Owner); the assigned Asbestos Abatement Supervisor must also attend this meeting.

B. The Contractor shall present a detailed project schedule and project submittals at the pre-construction meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and the Consultant will inform the Contractor of any scheduling adjustments for this project.

C. Following the pre-construction meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.02 WORK AREA PREPARATION - NEGATIVE PRESSURE ENCLOSURE (NPE)

A. Where necessary, deactivate electrical power, including receptacles and light fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating when amended water spray may contact the fixture. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a Commonwealth of Massachusetts-licensed electrician (permitted as required) and located outside the work areas.

B. Temporary power shall be continuous power. Portable generators are not authorized for use during interior asbestos abatement without an approved NTWP.

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C. HEPA-filtered work area ventilation systems shall be utilized during the installation of enclosures and supports where ACM may be disturbed.

D. Deactivate and/or isolate heating, ventilating, and air conditioning (HVAC) systems or zones to prevent contamination and fiber dispersal to other areas of the building or structure. During the Work, vents within the work area shall be covered with two (2) layers of 6-mil poly sheeting completely sealed with duct tape. If deactivation is not possible, isolation shall include a hard barrier, such as plywood or rigid-foam insulation board, securely affixed to active duct openings prior to covering with 2 layers of 6-mil poly sheeting completely sealed with duct tape.

E. The Contractor shall be responsible for removing furniture, equipment, and any other materials to be salvaged from the work areas. The Contractor shall be responsible for removing all solid waste within the work areas. The Contractor shall pre-clean moveable objects within the proposed work areas using HEPA-vacuum equipment and/or wet-cleaning methods as appropriate and remove such objects from work areas.

F. Completely seal all openings including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other work area penetrations with 6-mil poly sheeting sealed with duct tape. This includes doorways and corridors that will not be used for passage during work.

G. Pre-clean fixed objects within the work areas with HEPA-vacuum equipment and/or wet-cleaning methods as appropriate, and enclose with 6-mil poly sheeting completely sealed with duct tape.

H. Clean the proposed work areas using HEPA-vacuum equipment or wet-cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

I. After HEPA-vacuum cleaning, where wall materials are not being abated, cover fixed walls with 2 layers of 4-mil poly sheeting. Where fixed walls do not form a barrier, 2 layers of 6-mil poly sheeting shall be applied to a rigid framework of wood, metal, or polyvinyl chloride (PVC). Where flooring materials are not being abated, cover the floor with 2 layers of 6-mil poly sheeting. Where ceiling materials are not being abated, cover ceilings with 2 layers of 4-mil poly sheeting in accordance with current MassDEP Regulation 310 CMR 7.15(7)(c)(6). All overlaps shall be completely sealed with tape and spray adhesive.

   1. Where floors and walls are covered by ceramic tile or other impervious materials that are free from holes, drains, cracks, fissures or other openings and which may be thoroughly decontaminated by washing at the conclusion of work shall not be required to adhere to 310CMR 7.15(7)(c)(5).

J. Pursuant to MassDEP Regulation 310 CMR 7.15(7)(c)(4), large openings such as open doorways, elevator doors, and passageways shall be first sealed with solid construction materials, such as plywood over studding, which shall constitute the outermost boundary of the Asbestos Abatement work area. All cracks, seams, and openings in such solid construction materials shall be caulked or otherwise sealed, so as to prevent the movement of asbestos fibers out of the work area.

K. Maintain emergency and fire exits from the work areas, or establish alternate exits satisfactory to fire officials.

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L. Clean and remove ceiling-mounted objects, such as lights and other items not sealed-off, which interfere with asbestos abatement. Use hand-held, amended water sprayers or HEPA-vacuum equipment during fixture removal to reduce settled fiber dispersal.

M. Create pressure differential between work areas and adjacent unregulated areas by the use of acceptable HEPA-filtered work area ventilation systems sufficient to provide 4 air changes per hour, and create a negative air pressure of -0.02 inches of water column within the NPE with respect to the adjacent area as measured on a manometer.

N. If a Consultant is retained for pre-abatement services, the Contractor and the Consultant shall visually inspect barrier several times daily to assure an effective seal and the Contractor shall repair defects immediately.

3.03 DECONTAMINATION ENCLOSURE SYSTEM (DECON)

A. The Contractor shall establish a three-chamber remote decon consisting of (in-series) equipment room, shower room, and clean room at the perimeter of the regulated work area. The only access between contaminated and uncontaminated areas shall be through this decon. If it is not feasible to erect a contiguous decon, the Contractor shall establish a remote decon in as close proximity to the work area as is feasible. Use of a remote decon shall be specified on the Contractor's Asbestos Notification Form (ANF-001).

B. Access between rooms in the decon shall be through double-flap, curtained openings. The clean room, shower room, and equipment room within the decon shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.

C. If feasible, the Contractor shall establish, contiguous with the work area, an equipment decon consisting of 2 totally-enclosed chambers divided by a double-flapped, curtained opening. No personnel are permitted to enter or exit through this unit.

D. Construct the decon with wood or metal framing, cover both sides with 2 layers of 6-mil poly sheeting, completely sealed with spray adhesive, and taped at the joints.

3.04 ASBESTOS REMOVAL PROCEDURE - GENERAL

A. Prior to the removal of ACM, the Contractor shall ensure that work area preparations have been conducted in accordance with applicable Subsections of this Section.

B. The Contractor shall have a MADLS-licensed Asbestos Supervisor on the Site at all times to ensure establishment of a proper NPE and proper work practices throughout project.

C. If a Consultant is retained for pre-abatement services, abatement work shall not commence until authorized by the Consultant.

D. The Contractor shall properly coordinate abatement work with other trades, new construction, and Site use. The Contractor shall be responsible for addressing any concerns to the Owner and/or Consultant.

E. With a fine mist, spray ACM/ACWM with amended water using airless spray equipment or apply an approved removal wetting agent to reduce the release of fibers during removal operation.

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F. Remove wet ACM/ACWM in manageable sections to keep fiber concentrations to a minimum. Material drop shall not exceed 8 feet.

G. Remove ACM/ACWM by standard methods, as appropriate. Fill disposal containers as removal proceeds; seal filled containers and clean containers before removal to equipment decon. Wet clean each container thoroughly, double bag, and apply caution labels, if required.

H. After completion of stripping work, all surfaces from which ACM/ACWM have been removed shall be wet brushed, using a nylon brush (wire brushes are prohibited), wet-wiped, and sponged or cleaned by an equivalent method to remove all visible material (including pipe-thread sealant) to bare substrate (e.g., metal pipe, etc.). During this work, the surfaces being cleaned shall be kept wet.

I. Remove and containerize all visible accumulations of ACM and ACWM. During cleanup, utilize brooms, non-metal dustpans, and rubber squeegees to minimize damage to floor covering. Non-porous materials (i.e., metal) to be removed from the work area during abatement activities for recycling/disposal as solid waste shall be cleaned and visually inspected by an Asbestos Project Monitor prior to removal from work areas.

J. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decon at an appropriate time in the cleaning sequence. All asbestos waste in 6-mil poly disposal bags shall be double-bagged in the equipment decon before removal from the Site.

K. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), they shall cause all abatement work to stop until the Contractor takes the necessary steps to decontaminate these areas and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections verify decontamination.

L. After completion of the initial final cleaning procedure, including removal of the inner layers of poly sheeting but prior to encapsulation, a pre-sealant inspection shall be conducted by the Consultant. The pre-sealant inspection shall verify that ACM and residual dust has been removed from the work area.

3.05 ASBESTOS REMOVAL PROCEDURES - GLOVE BAG OPERATIONS

A. Specifications:

1. Glove bags shall be constructed of 6-mil poly and be seamless at the bottom.
2. Glove bags used on pipe-fitting insulations and other pipe connections must be designed for that purpose and used without modifications, per manufacturer instructions for use.

B. Work Practices:

1. Glove bags may be used inside of an NPE to minimize airborne asbestos fiber concentrations within the Asbestos Work Area. An NPE shall be required for final clearance air sampling as necessary for re-occupancy (in accordance with MADLS and AHERA regulations).
2. At least 2 persons shall perform Class I glove bag removal operations.

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3. Each glove bag shall be installed so it completely covers the circumference of the pipe or other structure where the work is to be performed.
3. Glove bags shall be smoke-tested for leaks and any leaks sealed prior to use.
4. Glove bags may be used only once and may not be moved.
5. Glove bags shall not be used on surfaces where temperature exceeds 150°F.
6. Prior to disposal, glove bags shall be collapsed by removing air within them using HEPA-vacuum equipment.
7. Before beginning the operation, loose and friable material adjacent to the glove bag operation shall be rendered intact by the use of re-wettable, plaster-impregnated cloth.
8. Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material that shall withstand pressure of ACM waste and water without losing integrity.
9. Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected.

3.06 CONSULTANT'S AIR SAMPLING RESPONSIBILITIES

A. If required or retained for this service, air sampling will be conducted by the Consultant's Asbestos Project Monitor to determine the effectiveness of the work area controls in preventing asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to comply with OSHA regulations for worker safety.

B. The Consultant's Asbestos Project Monitor will collect and analyze air samples during the following period:

1. Removal Period: If required or retained for this service, the Consultant's Asbestos Project Monitor will provide continual evaluation of the building air quality during removal, using their best professional judgment in respect to the MADLS guidance level of 0.010 fibers/cc and the background airborne fiber concentration, if established during the pre-abatement period.

a. If the Consultant's Asbestos Project Monitor determines that the building air quality has become contaminated from the abatement project, they shall immediately inform the Contractor to cease all removal operations, and implement a work stoppage cleanup procedure. The Contractor shall conduct a thorough cleanup of the building areas designated by the Consultant. No further removal work may occur until the Asbestos Project Monitor has determined through air sample collection and analysis that the airborne fiber concentrations are at or below the MADLS re-occupancy standard.

2. Post-Abatement Period: The Consultant's Asbestos Project Monitor will conduct air sampling following the final cleanup phase of the project, once the "no visible, suspect dust or debris" criterion, as established by the Consultant's Asbestos Project Monitor, has been met and the work area has been encapsulated by the Contractor. Final clearance air samples shall be collected in accordance with the MADLS re-occupancy clearance standard.

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a. As required, the Consultant's Asbestos Project Monitor will collect final re-occupancy clearance air samples inside the work area at the completion of abatement work. These final clearance air samples shall be analyzed in accordance with requirements of EPA Title 40 CFR, Part 763, Subpart E and MADLS Regulation 453 CMR 6.00.

b. Final clearance air sample collection and analysis will be in accordance with MADLS Regulation 453 CMR 6.14(5)(b)(2)(c). A minimum of 5 samples per clearance will be collected and analyzed. Sample collection and analysis shall be in accordance with NIOSH 7400 Method and include aggressive air-sampling techniques to obtain a minimum air volume of 1,200 liters.

c. Analysis will include a minimum of 5 air samples inside the work area utilizing aggressive methods for analysis by TEM method with an average limit of 70 structures per square millimeter (S/mm^2) of filter surface or, as allowable, PCM using the NIOSH 7400 protocol.

d. The Owner shall be responsible for payment for the initial final clearance air sampling performance, only. If the first set of samples fails to satisfy the re-occupancy criteria, the Contractor shall be responsible for payment of all costs associated with the additional final clearance air sampling and analysis.

e. The Contractor shall properly schedule abatement work and other site activities at appropriate times and locations to prevent cross-contamination and/or dust in areas where the Consultant's Asbestos Project Monitor will conduct air sampling.

3.07 CONSULTANT'S INSPECTION RESPONSIBILITIES

A. The Consultant's Asbestos Project Monitor may conduct inspections throughout the progress of the abatement project. Inspections will be conducted to document the abatement work progress, as well as the Contractor's procedures and practices.

B. The Consultant's Asbestos Project Monitor may perform the following inspections during abatement activities:

1. Pre-Commencement Inspection: If required or retained for this service, pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed 24 hours prior to the time the inspection is needed. If deficiencies are noted during the pre-commencement inspection, the Contractor shall perform the necessary adjustments to obtain compliance.

2. Work Area Inspections: If required or retained for this service, work area inspections shall be conducted on a daily basis, at the discretion of the Consultant. During the work inspections, the Consultant's Asbestos Project Monitor shall observe the Contractor's removal procedures, verify barrier integrity, monitor HEPA-filtered work area ventilation systems, assess project progress, and, if deficiencies are noted, inform the Contractor of specific remedial activities.

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C. The Consultant's Asbestos Project Monitor shall perform the following inspections after removal activities are completed:

1. Pre-Sealant Inspection: If required or retained for this service, the Consultant's Asbestos Project Monitor will conduct a pre-sealant inspection, at a time requested by the Contractor. The Consultant shall be informed 24 hours prior the time that the inspection is needed. The pre-sealant inspection shall be conducted after completion of the initial cleaning procedures, but prior to encapsulation. The pre-sealant inspection shall verify that all ACM and residual debris have been removed from the work area. If the Consultant's Asbestos Project Monitor identifies residual dust or debris during the pre-sealant inspection, the Contractor shall re-clean to meet the "no visible, suspect dust or debris" standard.
2. Final Visual Inspection: When abatement is complete, the Consultant's Asbestos Project Monitor will conduct a final visual inspection inside each regulated work area. The Consultant shall be informed 24 hours prior to the time that the inspection is needed. Following the removal of the inner layer of poly sheeting, but prior to final clearance air sampling, the Consultant's Asbestos Project Monitor will conduct a final visual inspection inside the work area. If residual dust or debris is identified during the final inspection, the Contractor shall re-clean to meet the "no visible, suspect dust or debris" standard.

3.08 ASBESTOS DISPOSAL

A. ACM and/or ACWM disposal (including supplies, rags, disposable clothing, respirator filter cartridges, etc.) shall be completed in accordance with MassDEP and EPA regulations. Waste receptacles (bags, drums, etc.) shall be labeled in accordance with the most current OSHA regulations (Title 29 CFR, Parts 1910.1001 and 1926.1101) and contain the following:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

B. Disposal site approvals shall be obtained and accepted prior to the start of asbestos removal activities.

C. A copy of the signed disposal authorization shall be provided to the Owner, Consultant, and any required federal, state, or local agencies.

D. Copies of all Waste Shipment Records (WSR) shall be provided to the Owner no later than 35 calendar days from when the waste was removed from the Site for inclusion in the project file. The Contractor shall document the specific amount of waste on each WSR, portion/location of the Site building it was generated from, and the type of waste. Upon receipt of the ACM waste, the landfill operator shall sign the WSR so the quantity of asbestos debris leaving the Site and arriving at the landfill is documented for the Owner.

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E. All wash water and shower water shall be collected and filtered through a five-micron filter before discharge to a sanitary sewer with prior appropriate permitting or publicly-owned treatment works (POTW) approval. Alternately, wash and shower water can be used to moisten ACWM.

F. All ACWM shall be transported in covered sealed vans, boxes, or dumpsters which are physically isolated from the driver by an airtight barrier. All vehicles must be properly-licensed to meet Commonwealth of Massachusetts and United State Department of Transportation (DOT) requirements.

G. Any vehicles used to store or transport ACWM will either be removed from the Site at night, or securely locked and posted to prevent disturbance.

H. Any incident and/or accident that may result in spilling or exposure of ACWM outside the containment, on and off the property, and all related issues shall be the sole responsibility of the Contractor.

END OF SECTION

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SECTION 028310

LEAD-BASED PAINT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. General Provisions of Contract, including General Supplementary Conditions shall apply to this Section.

B. Limited Hazardous Building Materials Inspection Report prepared by Fuss & O'Neill EnviroScience, LLC (January 2018).

1.02 SUMMARY OF WORK

A. Work of this Section includes requirements for worker protection and waste disposal related to demolition activities involving the disturbance of lead-based paint (LBP)-coated building components and surfaces (the "Work") at the Barnstable Community Horace Mann Charter Public School located at 165 Bearses Way in Hyannis, Massachusetts (the "Site"). The Work shall also include lead-containing building components including, but not limited to, glazed ceramic block that will be impacted during selective demolition activities.

B. The Site is considered a "Child Occupied Facility"; therefore, all Work shall be conducted as Lead-Safe Renovation by licensed Contractors in accordance with 454 CMR, Part 22.03(3) or by licensed de-leading contractors in accordance with 22.03(1) hereinafter referred to as Lead-Safe Renovation Contractors. As noted, the Work is not a de-leading project in accordance with 105 CMR, Part 460.000.

C. Lead Safe Work Practices: Exposure levels for lead in the construction industry are regulated by the Occupational Safety and Health Administration (OSHA) Title 29 CFR, Part 1926.62. Additionally, the Commonwealth of Massachusetts Department of Labor Standards (MADLS) Regulation 453 CMR, Part 22.00 for Renovation and "Lead Safe Renovation" shall apply to this "Child Occupied Facility". Note the project is not being performed as a de-leading project pursuant to Commonwealth of Massachusetts Department of Public Health Regulations. Construction activities disturbing surfaces with lead-containing paint that are likely to be employed, such as demolition, sanding, grinding, welding, cutting and burning, have been known to expose workers to levels of lead in excess of the OSHA Permissible Exposure Limit (PEL). All work specified in the Contract Documents shall also be in conformance with this Section.

D. A LBP screening was not conducted at the Site. However, based on building age and observed painted building components, LBP is likely present at concentrations greater than or equal to one milligram of lead per square centimeter (≥ 1.0 mg/cm^2). The procedures referenced herein shall be utilized during required demolition work, specified elsewhere, that may impact lead-containing building components and surfaces.

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E. Work impacting LBP-coated components may result in dust and debris exposing workers to levels of lead above the Occupational Safety and Health Administration's (OSHA) Action Level (AL). Worker protection, training, and engineering controls referenced herein shall be strictly followed, until completion of exposure assessment with results indicating exposures below the "Action Level". This Section does not involve lead abatement, but identified worker protection requirements for trades involved in the demolition and disposal procedures if LBP is involved in the demolition waste stream.

F. Responsibilities of Lead-Safe Renovation Contractors: The responsible party of the Lead-Safe Renovation Contractor or other entity conducting renovation/demolition work shall ensure the following:

1. All persons performing renovation/demolition work are responsible persons or employees of the Lead-Safe Renovation Contractors.
2. A person who is Certified as a Lead-Safe Renovator Supervisor or a licensed De-leader Supervisor (hereinafter referred to as the "Supervisor") shall be assigned to the project for each contractor performing renovation/demolition work where lead paint is to be disturbed and be on site at all times during lead-safe Renovation Work.
3. All workers performing Lead-Safe Renovation shall be certified as Lead-Safe Renovator Supervisors or have received requisite training in accordance with 454 CMR, Part 22.08(4)(i).
4. Prior to the start of work the Lead-Safe Renovation Contractor shall ensure pre-renovation notification requirements for providing EPA Pamphlet are adhered to.
5. The Lead Safe Renovation Contractor and Supervisor shall ensure that lead safe work practice requirements are utilized in accordance with 454 CMR, Part 22.11(9).
6. The required record keeping documentation of the lead-safe Renovation Work shall be maintained as required in accordance with 454 CMR, Part 22.13(2).

G. Responsibilities of Lead-Safe Renovation Supervisors: The responsible party of the Lead-Safe Renovation Contractor shall ensure the following:

1. The Supervisor shall be assigned to the project for each contractor performing renovation/demolition work where lead paint is to be disturbed and be on site at all times during lead-safe Renovation Work.
2. The Supervisor shall oversee and ensure that lead safe work practice requirements are utilized in accordance with 454 CMR, Part 22.11(9) and provide on-the job training for workers in the work practices to be utilized in the performance of their work tasks.
3. In the absence of testing of painted surfaces to be disturbed by a licensed Lead Inspector or Risk Assessor, use an EPA recognized test kit to determine the presence or absence of lead on surfaces and components to be affected or disturbed during selective demolition activities or assume surfaces contain lead and utilize work practices.
4. Upon the completion of the Work, conduct the required visual clearance inspection and cleaning verification as required by 454 CMR, Part 22.11(9)(h).

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H. Waste characterization has not been performed due to the allowance for exemption of materials such as scrap metal, which are to be recycled or salvaged. Anticipated waste handling shall include the following:

1. All metal waste shall be recycled as scrap metal in accordance with exemptions.
2. Wood debris coated with LBP shall require testing by TCLP to determine disposal requirements by the Contractor. Waste shall be included for disposal as presumed hazardous lead waste for bidding purposes. If TCLP results identify waste as non-hazardous, Contractor shall be requested to provide a credit for disposal as hazardous to the Owner.
3. All debris from surface preparations, paint removal, coring, drilling, cutting, sanding, selective demolition, etc. shall be considered hazardous lead waste and properly disposed by Contractor generating such waste through their operations.

1.03 DEFINITIONS

A. The following definitions relative to LBP shall apply:

1. Action Level (AL): The allowable employee exposure, without regard to use of respiratory protection, to an airborne concentration of lead over an eight (8)-hour time-weighted average (TWA) as defined by OSHA. The current action level is thirty micrograms per cubic meter (30 $\mu g/m^3$) of air.
2. Architect: CBI Consulting, LLC.
3. Area Monitoring: The sampling of lead concentrations, which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.
4. Biological Monitoring: The analysis of a person's blood and/or urine, to determine the level of lead concentration in the body.
5. CDC: The Center for Disease Control.
6. Certification: The authorization to act as a Lead-Safe Renovator Supervisor on renovation projects, which is conferred by MADLS to persons who have successfully completed the initial training and refresher training for Lead-Safe Renovation Supervisors.
7. Change Room: An area provided with separate facilities for clean protective work clothing and equipment and for street clothes, which prevents cross-contamination.
8. Child-Occupied Facility: A building, or a portion of a building, constructed prior to 1978, and visited by the same child of less than six years of age on at least two different days within any week (Sunday through Saturday), provided that each day's visit lasts at least three hours and the combined weekly visits last at least six hours, and the combined annual visits last at least 60 hours. Child-Occupied Facilities may be located in target housing or in public or commercial buildings. With respect to common areas in public or commercial buildings that contain Child-Occupied Facilities, the Child-Occupied Facility encompasses only the exterior sides of the building that are immediately adjacent to the Child-Occupied Facility.

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9. Cleaning Verification Card: A card developed and distributed, or otherwise approved by EPA for the purpose of determining, through comparison of wet and dry disposable cleaning cloths with the card, whether post-renovation cleaning has been adequately completed.
10. Competent Person: A person employed by the Contractor who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions, and who has authorization to take prompt corrective measures to eliminate them as defined by OSHA.
11. Consultant: Fuss & O'Neill EnviroScience, LLC.
12. EPA: The United States Environmental Protection Agency.
13. Exposure Assessment: An assessment conducted by an employer to determine if any employee may be exposed to lead at or above the AL.
14. High-Efficiency Particulate Air (HEPA): A type of filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater.
15. HUD: The United States Housing and Urban Development.
16. Lead: Refers to metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.
17. Lead Work Area: An area enclosed in a manner to prevent the spread of lead dust, paint chips, or debris resulting from LBP disturbance.
18. Lead-Based Paint: Refers to paints, glazes, and other surface coverings containing a toxic level of lead.
19. Minor Repair And Maintenance Activities: Renovation, repair and painting activities that disrupt six square feet or less of painted surfaces per room for interior work or 20 square feet or less of painted surface for exterior work where none of the work practices prohibited by 454 CMR, Part 22.11(9)(a) are used and where the work does not involve window replacement or demolition of painted surfaces.
20. MSHA: The Mine Safety and Health Administration.
21. NARI: The National Association of the Remodeling Industry.
22. NIOSH: The National Institute of Occupational Safety and Health.
23. OSHA: The Occupational Safety and Health Administration.
24. Owner: Barnstable Public Schools.
25. Permissible Exposure Limit (PEL): The maximum allowable limit of exposure to an airborne concentration over an 8-hour TWA, as defined by OSHA. The current PEL for lead is fifty (50) $\mu g/m^3$ of air. Extended workdays lower the PEL by the formula: PEL equals 400 divided by the number of hours of work.
26. Personal Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour TWA concentration in accordance with OSHA Title 29 CFR, Parts 1910.1025 and 1926.62. Samples shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a sphere with a radius of eighteen (18) inches and centered at the nose or mouth of an employee.
27. Recognized Test Kit: A commercially available kit recognized by EPA pursuant to Title 40 CFR, Part 745.88 as being capable of determining the presence of lead at regulated concentrations in a paint chip, paint powder, or painted surface.
28. Renovation Project or Work: The renovation, repair, or painting of target housing or Child-Occupied Facility, or portion thereof, which results in or may result in the disturbance of LBP or LBP debris.

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29. Resource Conservation and Recovery Act (RCRA): RCRA establishes regulatory levels of hazardous chemicals. There are 8 heavy metals of concern for disposal: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Six (6) of the metals are typically in paints, excluding selenium and silver.
30. Responsible Person(s): A person or persons having management control over an entity or employer. In the case of a corporation, the responsible person(s) shall be the officers of the corporation and any other managing agent of such corporation. In the case of a sole proprietorship or a partnership, the responsible person(s) shall be the owners or partners and any other managing agent of such sole proprietorship or partnership. In the case of a limited liability company the responsible person(s) shall be the members and managers, if any, of such company.
31. SDS: Safety Data Sheets.
32. Site: Barnstable Community Horace Mann Charter Public School located at 165 Bearses Way in Hyannis, Massachusetts
33. Target Housing: Any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless a child under the age of six resides or is expected to reside in such housing) and any zero-bedroom dwelling.
34. Toxic Level of Lead: A level of lead, when present in dried paint or plaster, contains more than 0.50% lead by dry weight as measured by atomic absorption spectrophotometry (AAS) or 1.0 milligram per square centimeter (mg/cm^2) as measured by on-site testing utilizing an x-ray fluorescence analyzer.
35. Toxicity Characteristic Leaching Procedure (TCLP): The EPA required sample preparation and analysis method for determining the hazard characteristics of a waste material. Waste must be disposed as Hazardous Waste if a TCLP analytical result indicates leaching greater than or equal to five milligrams per liter ($\geq$ 5.0 mg/L).
36. TWA: Time-Weighted Average.

1.04 REGULATIONS AND STANDARDS

A. All applicable regulations, standards, and ordinances of federal, state, and local agencies are applicable and made a part of this Section. This includes, but is not limited to, the following:

1. American National Standards Institute (ANSI)
   a. ANSI 288.2 - 1980 Respiratory Protection
2. Code of Federal Regulation (CFR)
   a. Title 29 CFR, Part 1910.134 - Respiratory Protection
   b. Title 29 CFR, Part 1910.1025 - Lead
   c. Title 29 CFR, Part 1910.1200 - Hazard Communication
   d. Title 29 CFR, Part 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists
   e. Title 29 CFR, Part 1926.57 - Ventilation
   f. Title 29 CFR, Part 1926.59 - Hazard Communication in Construction
   g. Title 29 CFR, Part 1926.62 - Lead in Construction Interim Final Rule
   h. Title 40 CFR, Parts 124 and 270 - Hazardous Waste Permits

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i. Title 40 CFR, Part 172 - Hazardous Materials Tables and Communication Regulations
j. Title 40 CFR, Part 178 - Shipping Container Specifications
k. Title 40 CFR, Part 260 - Hazardous Waste Management Systems: General
l. Title 40 CFR, Part 261 - Identification and Listing of Hazardous Waste
m. Title 40 CFR, Part 262 - Generators of Hazardous Waste
n. Title 40 CFR, Part 263 - Transporters of Hazardous Waste
o. Title 40 CFR, Part 264 - Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
p. Title 40 CFR, Part 265 - Interim Statutes for Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
q. Title 40 CFR, Part 268 - Lead Disposal Restrictions
r. Title 49 CFR, Parts 170 - 180 Hazardous Wastes

3. Commonwealth of Massachusetts Regulations

a. 454 CMR, Part 22.00 - Deleading And Lead-Safe Renovation Regulations

4. Underwriters Laboratories, Inc. (UL)

a. UL586 - 1990 High Efficiency Particulate Air Filter Units

1.05 QUALITY ASSURANCE

A. Hazard Communication Program

1. The Contractor shall establish and implement a Hazard Communication Program as required by OSHA Title 29 CFR, Part 1926.59.

B. Compliance Plan (Site-Specific)

1. The Contractor shall establish a written compliance plan, which is specific to the Site, to include the following:

a. A description of work activity involving LBP disturbance including equipment used, material included, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
b. Engineering controls used to control lead exposure.
c. The proposed technology the Contractor will implement in meeting the PEL.
d. Air monitoring data documenting the source of lead emissions.
e. A detailed schedule for implementing the program, including documentation of appropriate supply of equipment, etc.
f. Proposed work practice which establishes proper protective work clothing, housekeeping methods, hygiene facilities, and practices.
g. Worker rotation schedule (if proposed), to reduce TWA.
h. A description of methods for informing workers of potential lead exposure.

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C. Hazardous Waste Management

1. The Contractor shall establish a Hazardous Waste Management Plan, which shall comply with applicable regulations and address the following:

   a. Hazardous waste identification.
   b. Estimated waste disposal quantity.
   c. Names and qualifications of each subcontractor who will be transporting, storing, treating, and disposing wastes.
   d. Disposal facility location and 24-hour point of contact.
   e. Establish EPA state hazardous waste and identification numbers, if applicable.
   f. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
   g. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, if applicable, and transport equipment.
   h. Qualifications of laboratory to be utilized for TCLP sampling and analysis, if applicable.
   i. Spill Prevention, Control, and Countermeasure (SPCC) Plan.
   j. Work plan and schedule for waste containment, removal, treatment, and disposal.

D. Medical Examinations

1. Before exposure to lead-contaminated dust, provide workers with a comprehensive medical examination as required by OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.
2. The examination shall not be required if adequate records show that employees have been examined as required by OSHA Title 29 CFR, Part 1926.62 within the last year.
3. Medical examination shall include, at a minimum, biological monitoring and approval to wear respiratory protection.

E. Training

1. The Contractor shall ensure that workers are trained to perform LBP disturbing activities and disposal operations prior to the start of work, in accordance with OSHA Tile 29 CFR, Part 1926.62.

F. Respiratory Protection Program

1. The Contractor shall furnish each employee required to wear a negative pressure respirator with a respirator fit test at the time of initial fitting and at least once every 6 months thereafter, as required by OSHA Title 29 CFR, Part 1926.62.
2. The Contractor shall establish a Respiratory Protection Program in accordance with ANSI Z88.2 and OSHA Title 29 CFR, Parts 1910.134 and 1926.62.

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1.06 SUBMITTALS

A. The Contractor shall submit the following to the Consultant, in one complete package, prior to the pre-construction meeting and at least ten (10) business days before the start of the Work:

1. Copies of medical records for each employee to be used on the project, including results of biological monitoring and a notarized statement by the examining physician that such an examination took place.
2. Copies of Lead-Safe Renovator's Contractor license and Certifications of Lead-Safe Renovator Supervisor training certificates.
3. Submit record of successful respirator fit testing performed by a qualified individual within the previous six (6) months, for each employee to be used on this project with the employee's name and social security number with each record.
4. The name and address of Contractor's blood lead testing lab, OSHA-CDC listing, and Certification in the Commonwealth of Massachusetts.
5. The name and address of Contractor's personal air monitoring and waste disposal lead testing laboratory/ies.
6. Name, address, and ID number of the hazardous waste hauler, waste transfer route, and proposed disposal site.

No work on the Site will be allowed to begin until the Owner and the Consultant, as listed herein, accept the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation accurately, completely, and in a timely manner does not constitute a cause for change order or a time extension.

B. The Contractor shall submit to the Consultant and maintain a copy on site the following submittals during the job:

1. Results from personal air samples.
2. Medicals, certificates, and fit test 24 hours in advance of any new employee starting on the project.
3. Copies of all licenses required to be held by Lead-Safe Renovation Contractors.
4. Copies of all Certifications (training certificates) required to be held by Lead-Safe Renovator Supervisors carrying out the Work.
5. Records related to lead paint testing either by a licensed inspector or risk assessor or by Lead-Safe Renovator Supervisor utilizing Recognized Test Kit.
6. Records relating to compliance with distribution of lead hazard information requirements in accordance with 454 CMR, Part 22.11(8) and 40 CFR, Parts 745.84 and 745.86(b)(2-5)
7. A copy of a sign in and sign out log book as required in 454 CMR, Part 12(2)(a)8.

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C. The Contractor shall submit to the Consultant the following submittals upon completion of the work:

1. Copies of manifests and receipts acknowledging disposal of all hazardous waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.
2. Provide information identifying the manufacturer and model of any test kits used for paint testing by the Lead-Safe Renovator Supervisor including a description of the components that were tested identifying the locations and results within 30 days of project completion.
3. Provide a written Certification that a Lead-Safe Renovator Supervisor was assigned to the Project, provided oversight of the work and where applicable performed the post-renovation cleaning verification.
4. Provide a written Certification by the Lead-Safe Renovator Supervisor which includes the required elements in accordance with 40 CFR, Part 745.86 (b).
5. If dust wipe clearance sampling is performed instead of or in addition to cleaning verification as permitted by 454 CMR, Part 22.11(9), provide the results of such testing.

1.07 PERSONAL PROTECTION

A. Exposure Assessment

1. The Contractor shall determine if any worker will be exposed to lead at or above the AL.
2. The exposure assessment shall identify the level of exposure a worker would be subjected to without respiratory protection.
3. The exposure assessment shall be achieved by obtaining personal air monitoring samples representative of a full shift, at least an 8-hour TWA.
4. During the period of the exposure assessment, the Contractor shall institute the following procedures for worker protection:

    a. Protective clothing shall be utilized
    b. Respiratory protection
    c. Change areas shall be provided
    d. Hand washing facilities and shower shall be provided
    e. Biological monitoring
    f. Worker training

B. Respiratory Protection

1. The Contractor shall furnish appropriate NIOSH/MSHA-approved respirators for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of OSHA Title 29 CFR, Part 1926.62.
3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of HEPA-filter cartridges and spare parts on-site for all types of respirators in use.

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5. The following minimum respirator protection for use during paint removal or demolition of components and surfaces with LBP shall be the half-face, air-purifying respirator with a minimum of dual P100 filter cartridges (for exposures not in excess of 500 $\mu g/m^3$ or 10 x PEL).

C. Protective Clothing

1. Personal protective clothing shall be provided for all workers, supervisors, and authorized visitors entering the Lead Work Area.
2. Each worker shall be provided daily with a minimum of two (2) complete disposable coverall suits.
3. Removal workers shall not be limited to 2 coveralls, and the Contractor shall supply additional coveralls as necessary.
4. Under no circumstances shall anyone entering the abatement area be allowed to re-use a contaminated disposable suit.
5. Disposable suits (Tyvek™ or equivalent) and other personal protective equipment (PPE) shall be donned prior to entering a Lead Work Area. A Change Room shall be provided for workers to don suits and other PPE with separate areas to store street clothes and personal belongings.
6. Eye protection for personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.
7. Goggles with side shields shall be worn when working with power tools, a material that may splash or fragment, or if protective eye wear is specified on the SDS for a particular product to be used on the project.

1.08 PERSONAL MONITORING

A. General

1. The Contractor shall be required to perform the personal air sampling activities during LBP disturbing work. The results of such air sampling shall be posted, provided to individual workers, and submitted to the Client, as described herein.

B. Air Sampling

1. Air samples shall be collected for the duration of the work shift or for 8 hours, whichever is less. If working conditions remain unchanged, personal air samples need not be collected every day after the first day; however, they must be collected each time there is a change in removal operations, either in terms of the location, or in the type of work. Sampling will be used to determine the 8-hour TWA. The Contractor shall be responsible for personal air sampling as outlined in OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.

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2. Air sampling results shall be reported to individual workers, in written form, no more than 48 hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analyst's name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in $\mu g/m^3$.

C. Testing Laboratory

1. The Contractor's testing lab shall be currently participating in AIHA's Environmental Lead Laboratory Accreditation Program (ELLAP). The Contractor shall submit to the Consultant for review and acceptance, the name and address of the laboratory, certification(s) of AIHA participation, a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control Program.

PART 2 PRODUCTS

2.01 GENERAL

A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner and Consultant prior to use. Any requests for substitution shall be provided in writing to the Owner and Consultant. The request shall clearly state the rationale for the substitution.

B. Submit to the Owner and Consultant product data for all materials and equipment and material samples to be considered as an alternate.

C. Product data shall consist of manufacturer catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, SDS, and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products, or equipment and show performance characteristics and capacities.

D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

2.02 MATERIALS AND PRODUCTS

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.

B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.

C. The Contractor shall have a sufficient inventory of, or dated purchase orders for, materials necessary for the work (e.g., protective clothing, respirators, respirator filter cartridges, polyethylene (poly) sheeting of proper size and thickness, tape, spray adhesive, air filters, etc.).

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D. Materials

1. Poly sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating 6-mil.
2. Poly disposable bags shall be 6-mil. Tie wraps for bags shall be plastic, five (5)-inches long (minimum), pointed and looped to secure filled poly bags.
3. Tape or spray adhesive will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheeting to finished or unfinished surfaces of dissimilar materials and capable of adhering onto both dry and wet conditions, including use of amended water.
4. Impermeable containers are to be used to receive and retain any lead-containing or lead-contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with EPA and DOT standards.

2.03 TOOLS AND EQUIPMENT

A. Provide suitable tools for all LBP disturbing operations.

B. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and/or electrical power sources (e.g., generators, etc.). Any electrical-connection work affecting the building electrical power system shall be performed by a Commonwealth of Massachusetts-licensed electrician, permitted as required.

C. HEPA-Vacuum Equipment, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

D. HEPA-filtered exhaust systems shall be used during powered dust-generating removal operations. Using powered equipment without HEPA exhaust systems in-place on this Site is prohibited.

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION MEETING

A. At least one week prior to the start of the Work, a Pre-Construction Meeting can be scheduled and must be attended by the Contractor and any Subcontractors. The assigned Contractor Site Supervisor must attend this meeting.

B. The Contractor shall present a detailed project schedule and project submittal package at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.

C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.02 WORKER PROTECTION/TRAINING

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A. The Contractor shall provide appropriate training, PPE, and biological monitoring for each worker and ensure proper usage during potential lead exposure and the initial exposure assessment.

3.03 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall be responsible for establishing and maintaining controls referenced herein to prevent lead contamination outside the Lead Work Area.

B. The Contractor shall also be responsible for conducting work with applicable federal, state, and local regulations as referenced herein.

C. The Contractor shall ensure that access to the Lead Work Area shall be limited to persons directly engaged in carrying out the work. Limitations on access to the Lead Work Area shall be in place at all times when work is in progress and until such time as the standards for post-renovation cleaning set forth in accordance with 454 CMR, Part 22.11(9)(h) are met as applicable.

3.04 WORKER HYGIENE PRACTICES (REQUIRED DURING INITIAL EXPOSURE ASSESSMENT AND IF RESULTS OF AIR SAMPLING ARE ABOVE OSHA AL)

A. Lead Work Area Entry

1. Workers shall don PPE, including respiratory protection, disposable coveralls, gloves, headgear, and footwear, prior to entering the Lead Work Area.

B. Lead Work Area Departure

1. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room to remove coveralls and footwear and place in hazardous waste disposal container.

C. Hand-Washing Facilities

1. All workers must wash their hands and faces upon leaving the Lead Work Area.

D. Equipment

1. All equipment used by workers inside the Lead Work Area shall be wet-wiped or bagged for future decontamination before removal from the work area.

E. Prohibited Activities

1. Under no circumstances shall the prohibited work practices identified in 454 CMR, Part 22.11(9)(a) or 40 CFR, Part 745.85 (a)(3) be utilized. In addition under no circumstances shall workers eat, drink, smoke, chew gum, or tobacco, or remove their respirators in the Lead Work Area.

F. Shock Hazards

1. The Contractor shall be responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground-fault circuit interrupters (GFCI).

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3.05 LEAD WORK AREA (REQUIRED DURING INITIAL EXPOSURE ASSESSMENT AND IF RESULTS OF AIR SAMPLING ARE ABOVE OSHA AL)

A. The Contractor shall place signs and other barriers or other appropriate means necessary to ensure the security of the Lead Work Area. Warning signs shall be posted in accordance with 29 CFR, Part 1926.62 at all entrances and exits from the Lead Work Area. Signage shall be a minimum of 20" x 14" and shall state the following:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING OR DRINKING
UNAUTHORIZED ENTRY PROHIBITED

B. The Contractor shall designate a Change Room as specified in this Section. The Change Room shall consist of 2 layers of 6-mil poly sheeting on the floor surface adjacent to the Lead Work Area. The Change Room shall have separate storage facilities for street clothes to avoid cross-contamination.

C. The Contractor shall provide potable water for hand and face washing.

D. Requirements for Exterior Renovations: The following minimum work practices shall be utilized during the Work to ensure proper protection of areas outside of the Lead Work Area do not become contaminated by the Work, to facilitate post cleaning and to protect existing property.

1. Where renovation/demolition work involves the disturbance of lead paint, lead painted structures or lead paint debris on the side of a building, all doors and windows within a horizontal distance of 20 feet from the area where the work is taking place, on the same floor, and all floors below, shall be closed for the duration of the work.
2. The ground and any plants or shrubs in the area shall be covered with a tarpaulin, plastic sheeting or other appropriate impermeable material. The covering shall extend 10 feet from the surfaces to be disturbed or a sufficient distance to collect any and all falling paint debris whichever is greater.
3. Exterior renovation work shall be conducted in a manner to confine any generated lead dust or debris to the Lead Work Area, and in no circumstances shall the migration of lead dust or debris be permitted to an abutting property.
4. Paint chips or other materials containing lead during work operations shall not be allowed to fall distances in excess of 40 feet without the use of a dust-tight chute or enclosure.

3.06 LEAD WORK AREA CLEAN-UP

A. The Contractor shall remove all loose chips and debris from floor/ground surfaces and place in hazardous waste disposal bags including all interior and exterior surfaces that may have become contaminated with lead dust or debris

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B. The Contractor shall HEPA vacuum adjacent surfaces to remove dust and debris and clean with wet wiping or washing with solutions of tri-sodium phosphate or household detergent.

C. Polyethylene sheeting and other barriers utilized to separate the Lead Work Area from non-Lead Work Areas shall remain in place until thorough cleaning and verification has been performed.

D. The Supervisor shall perform post cleaning visual inspections for interior areas that may have been contaminated by the Work; this shall be completed by visual comparison to an EPA-approved Cleaning Verification Card to ensure all surfaces meet clearance.

3.07 WASTE DISPOSAL

A. The Contractor shall segregate all paint debris resulting from surface preparation and/or selective demolition for disposal as hazardous waste.

B. Cost for disposal of hazardous lead-paint/lead-containing debris shall be included in the bid.

C. The Contractor's contractual liability shall be the proper disposal of all non-hazardous and hazardous wastes generated at the Site in accordance with all applicable federal, state, and local regulations as referenced herein.

D. Disposal costs shall be included in the bid as hazardous waste. Should TCLP testing results identify waste as non-hazardous for disposal, the Contractor shall provide a cost change proposal for the reduction of cost for waste disposal to the Architect.

E. Plastic sheeting and personal protective equipment utilized during the Work shall be disposed of as non-hazardous waste at the conclusion of work

3.08 CONSULTANT

A. The Owner may retain a Consultant for the purpose of construction administration and project monitoring during the Work at the Site.

B. The Consultant will represent the Owner in all tasks of the project at the discretion of the Owner.

END OF SECTION

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DIVISION 04 MASONRY

SECTION 04 20 00 UNIT MASONRY

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Unit Masonry work required to complete the work of the contract including all the Unit Masonry work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Unit Masonry work with all the other trades for the project. Provide all demolition and disposal work to complete the work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all work of each section and each Sub-Contractor for the entire project so that all work can be properly and completely performed. Provide labor, materials and equipment necessary to complete the work of this section.

B. Unit Masonry includes, but is not limited to:

1. Infill glazed block at wall behind new wall hung sinks, replaced floor-mounted toilets, and removed fixtures.
2. All glazed block infill and replacement shall match existing adjacent glazed block.
3. Glazed block to be supplied by owner, installed by contractor.

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1.03 SECTION INCLUDES

A. Ceramic Glazed Structural Clay Facing Tile.

B. Mortar and Grout.

C. Refer to the Drawings for additional requirements.

1.04 RELATED REQUIREMENTS

A. Section 02 41 00 - Selective Demolition

B. Section 05 50 00 – Metal Fabrications: Loose steel lintels.

B. Section 22 00 00 - Plumbing: Installation of hangers and supports for plumbing fixtures.

1.05 REFERENCE STANDARDS

A. ASTM C126 - Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units; 2015.

B. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2011.

C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.

D. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.

E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).

F. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.

G. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 GLAZED BLOCK UNITS

A. Glazed block units to be supplied by Owner and installed by Contractor.

2.01 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I.

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B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.

D. Grout Aggregate: ASTM C404.

E. Water: Clean and potable.

2.02 MORTAR **AND GROUT MIXES**

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.

1. Interior, non-loadbearing masonry: Type O.
2. Color to match existing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:

1. Bond: To match existing.
2. Coursing: To match existing.
3. Mortar Joints: To match existing.

3.04 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Remove excess mortar and mortar smears as work progresses.

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D. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

E. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

3.05 LINTELS

A. Install loose steel lintels over openings.

3.06 CUTTING AND FITTING

A. Cut and fit for chases, pipes, and plumbing hangers. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.07 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

END OF SECTION

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DIVISION 08 WINDOWS AND DOORS

SECTION 08 43 13 ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Aluminum Framed Storefront work required to complete the work of the contract including all the Aluminum Framed Storefront work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Aluminum Framed Storefront work with all the other trades for the project. Provide all demolition and disposal work to complete the Aluminum Framed Storefront work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

B. Aluminum Framed Storefront work includes, but is not limited to:

1. Provide labor, materials and equipment necessary to complete the work of the storefront replacement , and without limiting the generality thereof include:
2. Field observations and measurements of existing openings and conditions and furnishing of shop drawings and product submittals.

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3. Removal of existing aluminum double door in its entirety including all associated hardware. Aluminum frame to remain in place.
4. Removal of other existing work as required for the proper installation and operation of the new units.
5. Removal from site and legal disposal of all removed materials, debris, packaging, banding and all other surplus materials and equipment.
6. Furnish a warranty for all completed work as specified.
7. Include wide style Aluminum doors where indicated on the Drawings. Refer to 08 71 00 and 08 71 06 for Door Hardware and Hardware Schedule.

1.03 SECTION INCLUDES

A. Aluminum-framed double leaf swinging door, with insulated tempered vision glass.

B. Infill panels of metal.

C. Weatherstripping, hardware, and accessories.

1.04 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware: Hardware items other than specified in this section.

B. Section 08 80 00 - Glass and Glazing: Glass and glazing accessories, including insulated panels.

1.05 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.

B. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; 2009.

C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.

D. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2012.

E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

G. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.

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H. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

I. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.

J. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

K. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.

L. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

M. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

N. ASTM E331 - Standard Test Method for Water Penetration of Exterior Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).

1.06 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.07 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required. Include all Enlarged Elevations, and Details indicating system components and all surrounding conditions and items to which the work of this Section will be attached, with dimensions. Shop Drawings must be certified by a Massachusetts Registered Professional Engineer.

D. Samples: Submit two samples 12x12 inches in size illustrating finished aluminum surface, glass, infill panels, glazing materials.

E. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

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F. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

G. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

H. Report of field testing for water leakage.

I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.08 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum five years of documented experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.10 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Check dimensions of openings in the actual framing work, by accurate field measurement before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress as directed by the Contractor.

1.11 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Contractor Shall correct defective Work within a two (2) year period after Date of Substantial Completion.

C. Provide ten year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

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D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN – AULMINUM FRAMED ENTRANCE

A. Thermally-Broken:

1. Basis of Design: Kawneer: Trifab 451 UT, Thermal Storefront Entry.

B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:

1. EFCO, a Pella Company: www.efcocorp.com.
2. Wasau Window and Wall Systems.
3. Or Approved Equal.

2.02 STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.

1. Glazing Rabbet: For 1 inch insulating glazing.
2. Glazing Position: Centered (front to back).
3. Finish: Class II natural anodized.
   a. Factory finish all surfaces that will be exposed in completed assemblies.
4. Finish Color: Approved by Owner and Architect from manufacturer's standard colors..
5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

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9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
11. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.
12. Preparation for Window Treatments: Provide reinforced interior horizontal head rail. Refer to Drawings for locations.

B. Performance Requirements:

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   a. Positive Design Wind Load: 18 lbf/sq ft.
   b. Negative Design Wind Load: -23.4 lbf/sq ft.
   c. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Water Penetration Resistance: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 10 psf.
3. Air Leakage: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 1.57 psf pressure differential across assembly.
4. Condensation Resistance Factor of Framing: 68, minimum, measured in accordance with AAMA 1503.

2.03 COMPONENTS

A. Glazing: As specified in Section 08 80 00.

B. Swing Doors: Glazed aluminum.

1. Thickness: 1-3/4 inches.
2. Top Rail: 5 inches wide.
3. Vertical Stiles: 5 inches wide.
4. Intermediate Rail: 6 inches wide.
5. Bottom Rail: 10 inches wide.
6. Glazing Stops: Square.
7. Finish: Class II natural anodized.

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2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209 (ASTM B209M); nominal .062 inch (1.6 mm) wall; with exposed surfaces finished to match window color and finish performance; concealed fasteners; required weather seals; designed for unrestricted expansion and contraction. All aluminum brake metal fastened with continuous metal cleat shall be .040 inch, with .063 inch cleat, minimum. All brake metal without continuous cleat shall be .063 inch, minimum.

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

D. Fasteners: Stainless steel.

E. Sealant for Setting Thresholds: Non-curing butyl type.

F. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

G. Glazing Accessories: As specified in Section 08 80 00.

H. All aluminum brake metal fastened with continuous metal cleat shall be .040 inch with .063 inch cleat. All brake metal without continuous cleat shall be .063 inch.

2.05 FINISHES

A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.

B. Color: As selected by Architect from manufacturer's standard range.

2.06 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

D. Threshold: Extruded aluminum, thermally broken, one piece per door opening, ribbed surface; ¼" height, handicap accessible.

E. Refer to Section 08 71 00 and 08 71 06 for additional Door Requirements.

2.07 MAINTENANCE MATERIAL

A. Upon delivery, obtain signed receipt from Owner's representative. Include copy of receipt with closeout submittals.

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PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install door in accordance with manufacturer's instructions.

B. Attach to frame to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Install hardware using templates provided.

F. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements 01 40 00

3.04 ADJUSTING

A. Adjust operating hardware for smooth operation.

3.05 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

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DIVISION 08 WINDOWS AND DOORS

DIVISION 08 71 00 DOOR HARDWARE

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Door Hardware work required to complete the work of the contract including all the Door Hardware work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Door Hardware work with all the other trades for the project. Provide all demolition and disposal work to complete the Door Hardware work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all work of each section, each Sub-Contractor for the entire project so that all work can be properly and completely performed.

B. Door Hardware work includes, but is not limited to:

1. Provide labor, materials and equipment necessary to complete the work of providing accessible door hardware for the west entrance and west gate, and without limiting the generality thereof include:
2. Field observations and measurements of existing openings and conditions and furnishing of shop drawings and product submittals.

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1.03 RELATED DOCUMENTS

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

1.04 SUMMARY

A. This Section includes commercial door hardware for the following:
   1. Double swinging entrance door (west entry).
   2. Gate (west, rear)

B. Door hardware includes, but is not necessarily limited to, the following:
   1. Mechanical door hardware.
   2. Electromechanical door hardware.
   3. Cylinders specified for doors in other sections.

C. Related Sections:
   1. Division 08 41 13 - Aluminum Framed Entrances and Storefront.
   2. Electrical power and final connections to electro-mechanical and electronic hardware (specifications on Electrical Drawings).

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ICC/IBC - International Building Code.
   3. NFPA 70 - National Electrical Code.
   4. NFPA 80 - Fire Doors and Windows.
   5. NFPA 101 - Life Safety Code.
   6. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:
   1. ANSI/BHMA Certified Product Standards - A156 Series
   2. UL10C Positive Pressure Fire Tests of Door Assemblies
   3. Door and Hardware Institute (DHI) Installation Guide (1986 Edition)
   4. Door and Hardware Institute (DHI) Keying Terminology (1989 Edition)

1.05 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

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B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
   a. Type, style, function, size, label, hand, and finish of each door hardware item.
   b. Manufacturer of each item.
   c. Fastenings and other pertinent information.
   d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   e. Explanation of abbreviations, symbols, and codes contained in schedule.
   f. Mounting locations for door hardware.
   g. Door and frame sizes and materials.
   h. Warranty information for each product.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
   a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.

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b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Proof of Certification: Provide copy of manufacturer(s) official certification or accreditation document indicating proof of status as a qualified installer of Windstorm assemblies.

E. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

F. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

G. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.06 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

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D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

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H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.08 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.09 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after

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final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Twenty five years for manual surface door closer bodies.
4. Two years for electromechanical door hardware.

1.10 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the Architect, Owner, and their designated consultants.

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2.02 MANUFACTURERS

A.	Butt Type Hinges	Hager Companies	St Louis, MO
		Stanley	New Britain, CT
		McKinney	Scranton, PA
B.	Exit Devices	Von Duprin (No-Sub)	Indianapolis, IN
C.	Door Closers	LCN (No Sub)	Needham Heights, MA
E.	Thresholds & Gasketing	By Door Mfg.	
F.	Electric strike, Power Supply	Von Duprin	Indianapolis, IN
		HES	Phoenix, AZ

2.03 HANGING DEVICES

A. Butt Type Hinges: Unless otherwise noted, hinges when listed in sets shall be the five knuckles type and they shall meet or exceed ANSI/BHMA 156.1. Hinges shall have a lifetime warranty and all must be from the same manufacturer. Electrify hinges as listed in and provide proper mortar boxes. Swing clear electrified hinges shall be from the same manufacturer as the other hinges needed on the project.
   1. Hager, BB1262 series or as listed in sets.
   2. Stanley, FBB278 series.
   3. McKinney, TA4895 series.

2.04 EXIT DEVICES

B. Exit devices: Subject to compliance with this article, provide heavy duty, security, fire rated and non-fire rated exit devices from the same manufacturer as listed below that conforms to ANSI/BHMA A156.3 Standard Grade 1 and shall have the proper UL listings and labels. Electrify devices as listed in sets include switches and power supplies/controllers these shall be from same manufacturer to keep the proper warrantee and labeling. Provide KNURLING as required by code. Types and functions as listed in sets.
   1. Egress and Fire Safety Exit Devices:
      a. Von Duprin, 99, series as listed in sets or approved equal.
   2. Unless otherwise noted, when trims are listed they shall be Heavy Duty. Provide KNURLING as required by code.
      a. Von Duprin, trim as listed in sets or approved equal.

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2.04 THRESHOLDS, WEATHER-STRIPPING, GASKETING AND MISCELLANEOUS ITEMS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Provide perimeter gasketing, door bottoms, thresholds, astragals, etc, from one on the listed manufacturers that conforms with ANSI/BHMA A156.22 standard and to the Energy Code requirements for air infiltration per ASTM E283-91.

1. Thresholds: (Where shown on drawings provide expansion or other needed cover plates equal to Hager 626S x proper width and fasteners, see details on drawings).
   a. By Door Mfg.
2. Door sweeps, exterior openings:
   a. By Door Mfg.
3. Exterior weatherstripping:
   a. By Door Mfg.

2.05 ELECTRIC STRIKES, POWER SUPPLIES

A. Electric strikes, power supplies: Provide grade one electric strike compatible with Von Duprin 88 series rim exit devices. Provide 900 series power supplies from Von Duprin as listed in sets.

1. Von Duprin, 6300 series or other series is needed.
2. HES, approved equal to above.

2.06 FINISHES

A. Conform to ANSI/BHMA A156.18 Standard for architectural finishes, brush stainless steel 630 (US32D) or 689 (AL/CLR), as listed in sets. Use brushed chrome 626 or 652 (US26D) only as listed in sets.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

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2.07 KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
5. Keyway: Manufacturer's Standard.Match Facility Standard.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

F. Construction Keying: Provide construction master keyed cylinders.

G. Cylinders will be the same type as existing and a continuum of the existing keying system at the school. Contact Architect for details. Provide construction keying for the project, construction cores and keying shall be returned to supplier.

1. Keying System:
   a. Construction cylinders shall be keyed alike.
   b. Keys:
      1) CMK - Masters: 4

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2) MK - 6

3) Change keys: 3 per keyed cylinder

B. Provide (2) extra keyed cores and tag them maintenance.

2.08 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Acceptable Manufacturers:
   a. LCN 4110 (facility standard) or approved equal.
   a. Corbin Russwin Hardware (RU) – DC6000 Series.
   b. Norton Door Controls (NO) - 7500 Series.
   c. Yale Locks and Hardware (YA) - 4400 Series.

C. Door Closers, Surface Mounted (Unitrol): Unitrol arms to have door stop mechanism to absorb dead stop shock on arm and top hinge. Hold-open arms to have a spring loaded mechanism in addition to shock absorber assembly. Arms to be provided with rigid steel main arm and secondary arm lengths proportional to the door width.

1. Acceptable Manufacturers:
   a. LCN 4110 (facility standard) or approved equal.
   b. Corbin Russwin Hardware (RU) - Unitrol Series.
   c. Norton Door Controls (NO) - Unitrol Series.
   d. Yale Locks and Hardware (YA) - Unitrol Series.

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2.09 ELECTRONIC ACCESSORIES

A. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Acceptable Manufacturers:
   a. Securitron (SU) - BPS Series.

2.10 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.02 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

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3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with manufacturer requirements.

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.03 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.04 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.05 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

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3.06 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.07 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. HW Set # 1 - Pair, exterior aluminum doors with access control
   a. Four (4) Swing clear hinges BB1262 4.5” x US26D

      Two (2) Elec. Swing clear hinges BB1262 4.5” x ETW10 x US26D

      One (1) Elec. concealed vert. rod QEL RX 9947 x TL 376T x US26D

      One (1) Elec. concealed vet. rod QEL RX 9947 x DT x US26D

      One (1) Power supply PS914 x 2RS

      Two (2) Offset pulls H12L x US32D

      Two (2) Door closers LCN 4110

      One (1) Power supply controller 2902

      One (1) Under desk push switch 2-679-0708 (for temporary retraction of device)

      One (1) Card reader, DPS and power source (see Electrical spec on Drawings)

      One (1) Threshold, weatherstripping is by Door Mfg.

      One (1) Riser and point-to-point wiring diagram

   b. Operations Descriptive: Doors are normally closed and secure. Entry by using card Access reader or being “buzzed in”. During certain programmable time periods, doors can be dogged electronically, thus act as push-pulls. Free egress at all times.
2. HW Set # 2: Single, exterior gate with access control.
   a. Hinges, closer and exit device to remain, add the following items:

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One (1) Electric strike Non- Fail Safe Compatible with existing 88 series rim device.

One (1) Power supply controller PS 902

One (1) Card reader, remote switch and power source (see Electrical spec on Drawings)

One (1) Riser and point-to-point wiring diagram

b. Operations Descriptive: Gate is normally closed and secure. Entry by using card Access reader or being “buzzed in”. During certain programmable time periods, door can be dogged electronically, thus act as push-pull. Free egress at all times.

END OF SECTION

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DIVISION 08 WINDOWS AND DOORS

SECTION 08 80 00 GLASS AND GLAZING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Glass and Glazing work required to complete the work of the contract including all the Glass and Glazing work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Glass and Glazing work with all the other trades for the project. Provide all demolition and disposal work to complete the Glass and Glazing work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all work of each section and each Sub-Contractor for the entire project so that all work can be properly and completely performed.

B. Glass and Glazing work includes, but is not limited to:

1. All Glass and Glazing lites on the double swinging entry door shown on the drawings and where necessary to provide a complete installation as per good construction practices.

1.03 SECTION INCLUDES

A. Insulating glass units.

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B. Glazing compounds and accessories.

1.04 RELATED REQUIREMENTS

C. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing furnished as part of storefront assembly.

1.05 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2011).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

E. ASTM C1036 - Standard Specification for Flat Glass; 2011.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.

H. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2015.

I. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2012a.

J. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.

K. GANA (SM) - GANA Sealant Manual; 2008.

L. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.

M. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014.

N. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2014.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

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C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

D. Samples: Submit two samples 10 by 10 inch in size of glass units.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.07 FIELD CONDITIONS

A. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including replacement of failed units.

D. Polycarbonate Sheet Glazing: Provide a five (5) year manufacturer warranty to include coverage for breakage, coating failure, abrasion resistance, including replacement of failed units.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.

1. Design Pressure:
   a. Positive Design Pressure: 20 psf.
   b. Negative Design Pressure: -26 psf.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.

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3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
4. Glass thicknesses listed are minimum.

B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier.
1. In conjunction with vapor retarder and joint sealer materials described in other sections.

C. Thermal and Optical Performance: Provide glass products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 5.2/6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 5.2/6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.02 GLASS MATERIAL

A. Float Glass: Provide float glass based glazing unless noted otherwise.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.
2. Heat-Strengthened and Fully Tempered Types: ASTM C1048, Kind HS and FT.
3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 and 16 CFR 1201 criteria.
4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.03 INSULATING GLASS UNITS

A. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Warm-Edge Spacers: Polypropylene and stainless steel.

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4. Spacer Color: Grey.
5. Edge Seal:
6. Purge interpane space with dry air, hermetically sealed.

B. Type IG-1 - Insulating Glass Units: Vision glass, double glazed.
   1. Applications: Exterior glazing unless otherwise indicated.
      a. For use in all window and storefront framing systems unless noted otherwise.
   2. Space between lites filled with argon.
   3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum tempered.
      a. Tint: Clear.
      b. Coating: Low-E (passive type), on #2 surface.
   4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum Tempered.
      a. Tint: Clear.
   5. Total Thickness: 1 inch.
   6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.38, maximum.
   7. Solar Heat Gain Coefficient (SHGC): 0.40 percent, maximum.
   8. Glazing Method: Dry glazing method, gasket glazing.

C. Type IG-5 - Insulating Glass Units: Safety glazing.
   1. Applications:
      a. Glazed lites in exterior doors.
      b. Glazed sidelights and panels next to doors.
      c. Other locations required by applicable federal, state, and local codes and regulations.
   2. Space between lites filled with air.
   3. Glass Type: Same as Type IG-1 except use fully tempered float glass for both outboard and inboard lites.
   4. Total Thickness: 1 inch.

2.04 GLAZING UNITS

A. Type OP-1 - Laminated Metal Faced Opaque Window Panel.
   1. Applications: Exterior glazing unless otherwise indicated.
      a. For use as the opaque panel in glazed window units.
   2. Composition of panel
      a. Outer face: smooth aluminum sheet, kynar finish to match window or storefront frame finish.
      b. Exterior Substrate: Tempered Hardboard

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c. Core: Isocyanurate
d. Interior Substrate: Tempered Hardboard
e. Inner face: smooth aluminum sheet, kynar finish to match window or storefront frame finish.

3. Thermal Transmittance (U-Value): 0.16, maximum.
4. Glazing Method: Dry glazing method, gasket glazing.

2.05 GLAZING COMPOUNDS

A. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.06 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Silicone, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

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3.03 INSTALLATION, GENERAL

A. Install glazing sealants in accordance with ASTM C1193, GANA Sealant Manual, and manufacturer's instructions.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove non-permanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

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DIVISION 09 FINISHES

SECTION 09 30 00 TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Cementitious backer board as tile substrate.

1.02 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136.1 and TCNA (HB) on site.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All products by the same manufacturer. Match existing.

1. American Olean Corporation: www.americanolean.com.
2. Dal-Tile Corporation: www.daltile.com.
3. Or Approved Equal.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Ceramic Mosaic Tile, Type __: ANSI A137.1, and as follows:

1. Size and Shape: 2 inch square, 1 inch square, 1 inch by 2 inch. Match existing.
2. Color(s): to match existing.
3. Trim Units: Matching bead, cove, and surface bullnose shapes in sizes coordinated with field tile.

2.02 SETTING MATERIALS

A. Manufacturers:

1. ARDEX Engineered Cements: www.ardexamericas.com.
2. Bostik Inc: www.bostik-us.com.
3. LATICRETE International, Inc: www.laticrete.com.

B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4, ANSI A118.15.

1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.

2.03 GROUTS

A. Manufacturers:

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1. ARDEX Engineered Cements: www.ardexamericas.com.
2. Bostik Inc: www.bostik-us.com.
3. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com.

B. Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.

1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.

2.04 THICK-BED MATERIALS

A. Mortar Bed Materials: Portland cement, sand, latex additive, and water.

B. Cleavage Membrane: No. 15 asphalt-saturated felt.

2.05 ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.

1. Type: Fluid-applied.
2. Thickness: 20 mils, maximum.
3. Crack Resistance: No failure at 1/16 inch gap, minimum.

B. Backer Board: Cementitious type complying with ANSI A118.9-SystemDeleted; high-density, glass fiber-reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11-SystemDeleted and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

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3.03 INSTALLATION - GENERAL

A. Install tile and grout in accordance with applicable requirements of ANSI A108.1A thru A108.13, manufacturer's instructions, and TCNA (HB) recommendations.

B. Lay tile pattern to match existing adjacent patterning.. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Sound tile after setting. Replace hollow sounding units.

G. Keep control and expansion joints free of mortar, grout, and adhesive.

H. Keep expansion joints free of adhesive or grout. Apply sealant to joints.

I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

L. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.

1. Use uncoupling membrane under all tile unless other underlayment is indicated.

3.05 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.

B. Cleavage Membrane: Lap edges and ends.

C. Mortar Bed Thickness: 5/8 inch, unless otherwise indicated.

3.06 CLEANING

A. Clean tile and grout surfaces.

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3.08 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

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DIVISION 10 SPECIALTIES

SECTION 10 14 00 SIGNAGE

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Signage work required to complete the work of the contract including all the Signage work shown on the plans, listed in the specification, and needed to install a complete assembly in every way. Coordinate the Signage work with all the other trades for the project. Provide all demolition and disposal work to complete the Signage work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor’s responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

B. Signage work includes, but is not limited to:

1. Fabricate and install one sign denoting "Girl's Restroom" with copy and pictograms including the ISA symbol of wheelchair accessibility.
2. Fabricate and install one sign denoting "Boy's Restroom" with copy and pictograms including the ISA symbol of wheelchair accessibility.
3. Fabricate and install one sign denoting handicapped parking with copy and pictograms including the ISA symbol of wheelchair accessibility.

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4. Fabricate and install one sign denoting van-accessible parking with pictograms including the ISA symbol of wheelchair accessibility.
5. Fabricate and install two signs denoting accessible entry with pictograms including the ISA symbol of wheelchair accessibility.
6. Remove existing signs, if present, where they interfere with the installation of new signs.

1.03 SECTION INCLUDES

A. Room and door, and accessible parking signs.

1.04 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.

D. 521 CMR - Massachusetts Architectural Access Board (MAAB) Standards for Accessible Design.

E. ADAAG Braille Standards

F. State and Federal MUTCD Codes.

1.05 SUBMITTALS

A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

B. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, pictograms, sign and letter sizes, fonts, and colors.

a. Submit for approval by Owner through Architect prior to fabrication.

C. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

E. Shop Drawings: Submit shop drawings showing layout for all signs, profiles, and product components, including dimensions, anchorage, and accessories.

F. Maintenance Materials: Furnish for Owner, maintenance data for installed products, including precautions against harmful cleaning materials and methods.

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1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Supplier: Obtain all products in this section from a single supplier.

C. Regulatory Requirements: Products shall meet requirements of the Massachusetts Architectural Access Board Regulations (MAAB), the Americans With Disabilities Act Accessibility Guidelines (ADAAG), ANSI Requirements and local amendments and modifications.

D. Installer: Installation should be performed by installer specialized and experienced in work similar to that required for this project.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs and accessible parking signs in sequential order of installation, labeled by floor or building.

C. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:

1. Back Bay Sign: www.backbaysign.com
2. ASI Sign Systems, Inc., InTouch: www.asisignage.com
3. Best Sign Systems, Inc: www.bestsigns.com.
4. Cosco Industries (ADA signs); ADA Series 2: www.coscoarchitecturalsigns.com.
5. Or Approved Equal.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with the Massachusetts Architectural Access Requirements, the ADA Standards for Accessible Design, and ANSI/ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most stringent requirements.

B. Room and Door Signs: Provide a sign for each doorway at each accessible toilet room (first floor west wing).

1. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.

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2. Character Height: 1 inch.
3. Sign Size: 8"x8".
4. Rest Rooms: Identify with pictograms, the names "GIRLS" and "BOYS", ISA symbol and braille.

C. Accessible Entrance

D. Accessible parking including van parking.

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.

1. Material: Photopolymer
2. Frame: none.
3. Edges: Square.
4. Corners: Square.
5. Thickness: 1/8"
6. Wall Mounting of One-Sided Signs: Double sided VHB tape adhesive.
7. Braille: Grade 2 with domed or round shape. Provide Braille translation on every sign.

B. Color and Font: Unless otherwise indicated:

1. Character Font: Helvetica, Arial, or other sans serif font. Font to be approved by Architect.
2. Character Case: Upper case only.
3. Background Color: Solid color. Color to be chosen by Architect from manufacturers standard colors..
4. Character Color: Contrasting color. Color to be chosen by Architect from manufacturers standard colors.

C. Accessible Parking Signs (Massachusetts State)

1. Material: Heavy gauge .080 rust-free aluminum with Engineer grade prismatic reflective sheeting.
2. Pre-drilled holes for wall mounting.
3. Color and font per Massachusetts specification. Meets State and Federal MUTCD codes.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

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C. Install product at heights from floors and distances from openings to conform to the Massachusetts Architectural Access Board Requirements, the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and applicable local amendments and regulations.

D. Locate signs where indicated:

1. Room and Door Signs: Locate on wall at latch side of door with the lowest row of text at 48" minimum above the finished floor and the highest row of text at 60" maximum above the finished floor.
2. In front of each sign, maintain an 18"x18" clear floor space beyond the door swing.
3. If no location is indicated obtain Architect and Owner's instructions.
4. In general, all signage mounting heights / locations per building shall be uniform.

E. Protect from damage until Substantial Completion; repair or replace damage items.

F. Signs fabricated incorrectly shall be promptly replaced at no cost to the Owner.

END OF SECTION

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DIVISION 10 SPECIALTIES

SECTION 10 21 13.19 PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Plastic Toilet Compartments work required to complete the work of the contract including all the Plastic Toilet Compartments work shown on the plans, listed in the specification, and needed to install a complete assembly in every way. Coordinate the Plastic Toilet Compartments work with all the other trades for the project. Provide all demolition and disposal work to complete the Plastic Toilet Compartments work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor’s responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

B. Plastic Toilet Compartment Work includes, but is not limited to:

1. Fabrication and installation of toilet room partitions at the Girl's and Boy’s Toilet Rooms, first floor, west wing.

1.03 SECTION INCLUDES

A. Solid plastic toilet compartments.

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B. Refer to the Drawings for additional requirements.

1.04 RELATED REQUIREMENTS

A. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.05 REFERENCE STANDARDS

A. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.

1.06 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors in walls.

1.07 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.

C. Product Data: Provide data on panel construction, hardware, and accessories.

D. Samples: Submit two samples of partition panels, 4 by 4 inch in size illustrating panel finish, color, and sheen.

E. Manufacturer's Installation Instructions: Indicate special procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Solid Plastic Toilet Compartments to match existing:

1. Basis of Design: Scranton Products, www.scrantonproducts.com, Hiny Hiders: floor-mounted overhead braced, Glacier grey
2. Or Approved Equal.
3. Ampco Products, Inc: www.ampco.com.
4. Metpar Corp; Polly: www.metpar.com.
5. Partition Systems International of South Carolina; PolyLife HDPE Toilet Partitions: www.psisc.com.
6. Substitutions: Section 01 60 00 - Product Requirements.

2.02 SOLID PLASTIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286, floor-mounted headrail-braced.

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1. Color: To be selected by Architect. Match existing partitions.

B. Doors:

1. Thickness: 1 inch.
2. Width for Handicapped Use: provide 32 inch clear opening at doors.
3. Height: 55 inch.

C. Pilasters:

1. Thickness: 1 inch.
2. Width: As required to fit space; minimum 3 inch.

2.03 ACCESSORIES

A. Pilaster Shoes: Formed plastic to match, 3 in high, concealing floor fastenings.

B. Head Rails: Hollow anodized aluminum, 1 by 1-1/2 inch size, with anti-grip profile and cast socket wall brackets.

C. Pilaster Brackets: Natural anodized aluminum.

D. Wall Brackets: Continuous type, natural anodized aluminum.

E. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.

1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.

F. Hardware: Satin stainless steel:

1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
2. Door Latch: Slide type with exterior emergency access feature.
3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
4. Coat hook with rubber bumper; one per compartment, mounted on door.
5. Provide door pull for outswinging doors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify correct spacing of and between plumbing fixtures.

C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

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B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

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DIVISION 10 SPECIALTIES

SECTION 10 28 00 TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Toilet Accessories work required to complete the work of the contract including all the Toilet Accessories work shown on the plans, listed in the specification, and needed to install a complete assembly in every way. Coordinate the Toilet Accessories work with all the other trades for the project. Provide all demolition and disposal work to complete the Toilet Accessories work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor’s responsibility to review all the work of each section, each sub-contractor, and each file sub-bidder for the entire project so that all the work can be properly and completely performed.

B. Toilet Accessories work includes, but is not limited to:

1. Provide new grab bars at the Boy's Toilet and Girl's Toilet accessible toilet stalls.
2. Carefully remove toilet room accessories indicated on Drawings and return to Owner.

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1.03 SECTION INCLUDES

A. Accessories for toilet rooms.

B. Grab bars.

C. Refer to the Drawings for additional requirements.

1.04 RELATED REQUIREMENTS

A. Section 10 21 13.19 - Plastic Toilet Compartments.

1.05 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015.

1.06 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

1.07 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Toilet Accessories:

1. AJW Architectural Products: www.ajw.com.
2. ASI - American Specialties, Inc: www.americanspecialties.com.
3. Bradley Corporation: www.bradleycorp.com.
4. Approved Equal.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

B. Stainless Steel Tubing: ASTM A269/A269M, Type 304 or 316.

2.03 TOILET ROOM ACCESSORIES

a. Grab Bars: Stainless steel, nonslip grasping surface finish.

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1. Standard Duty Grab Bars:
   a. Push/Pull Point Load: 250 pound-force, minimum.
   b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
   c. Length and Configuration: As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

1. Grab Bars: As indicated on the drawings.

3. Other Accessories: Installed by Owner.

3.03 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

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SECTION 220000

PLUMBING

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END OF INDEX

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SECTION 220000

PLUMBING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 00 00 as part of this Section.

B. Examine all other Sections of the Specifications for requirements which affect Work of this Section whether or not such Work is specifically mentioned in this Section.

C. Coordinate Work with that of all other trades affecting or affected by Work of this Section. Cooperate with such trades to assure the steady progress of all Work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the Work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all labor, materials, equipment, services and accessories necessary to furnish and install the work of this Section, complete and functional, as indicated in the Contract Documents and as specified herein.

B. The work covered by this Section of the Specifications includes the furnishing of all labor and materials and in performing all operations in connection with the installation of the Plumbing Work.

C. Without limiting the generality thereof, the work to be performed under this Section includes:
1. Complete Sanitary, Waste & Vent System connecting new fixtures to existing systems.
2. Complete Potable Cold and Hot Water System connecting new fixtures to existing system.
3. Insulation.
4. Fixtures and Equipment
5. Connection to Equipment Furnished by Others
6. Flushing, Sterilization, and Tests
7. Furnishing of Access Panels

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8. Drilling, Coring and Cutting & Patching of holes and openings where the largest dimension thereof does not exceed 12 inches for Plumbing Piping and Equipment.
9. Demolition of existing Plumbing Equipment and Disconnecting, Capping, and otherwise making inactive, all existing Plumbing Services in the various areas where Demolition and Removal Work is required; and removing, relocating, and reinstalling existing Plumbing items to the extent specifically noted in the documents. Remove all piping hangers and equipment in accordance with the description in paragraph 1.17.
10. Scaffolding, Rigging, and Staging required for all Plumbing Work. Comply with Division 1 requirements.
11. Smoke and Firestopping Seals and sealing of all wall penetrations as detailed on the drawings. Refer to Section 078400 which defines the firestopping materials and methods.
12. Prior to start of the work, the Plumbing Sub-Contractor shall identify and locate all of the existing sanitary drains located below slab in the work area, and provide the services of an outside firm who shall run an underground video camera, locating all lines including depth, preparing a video and identifying any problem areas. The Plumbing Sub-Contractor shall rod-out and power wash all existing sanitary drains in the work area prior to making any tie-ins. Turn over a copy of the video and report to the Architect.
13. When open-flame or spark producing tools such as blower torches, welding equipment, and the like are required in the process of executing the work, the General Contractor shall be notified not less than twenty four hours in advance of the time that the work is to begin and the location where work is to be performed. Provide fire protective covering and maintain constant non-working fire watch, paying all fees, where work is being performed and until it is completed. Fee for fire watch shall be included in the bid.

1.03 RELATED WORK

A. The following Related Work will be performed under the designated Sections:

1. Cutting and Patching beyond 1.02C.8 above: SECTION 010450 - CUTTING AND PATCHING
2. Excavation and Backfill: DIVISION 31 - EARTHWORK
3. Finish Painting: SECTION 099000 - PAINTING
4. Installation of Access Panels: SECTION describing material in which panel is installed.
5. Toilet Room Accessories: SECTION 108000 - TOILET ACCESSORIES
6. Temporary Facilities: SECTION 015000 - TEMPORARY FACILITIES

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1.04 CODES, ORDINANCES, AND PERMITS

A. Perform all work in accordance with the requirements of the Town of Barnstable Building Department, Massachusetts State Plumbing Codes, D.E.P., A.D.A., NFPA, The Architectural Barrier Code, and applicable State and Federal Laws. Give all requisite notices, file all requisite plans, and obtain all permits required to perform all Plumbing Work. Where the Contract Documents indicate more stringent requirements than the above Codes and Ordinances, the Contract Documents shall take precedence.

B. Obtain all permits, inspections, and approvals, from the governing authorities and pay all fees and include cost in the bid.

1.05 DISCREPANCIES IN DOCUMENTS

A. Where Drawings or Specifications conflict or are unclear, advise Designer in writing before Award of Contract. Otherwise, Designer's interpretation of Contract Documents shall be final, and no additional compensation shall be permitted due to discrepancies or unclarities thus resolved.

B. Where Drawings or Specifications do not coincide with manufacturers' recommendations, or with applicable codes and standards, alert Designer in writing before installation. Otherwise, make changes in installed work as Designer requires within Contract Price.

C. If the required material, installation, or work can be interpreted differently from drawing to drawing, or between drawings and specs, this contractor shall provide that material, installation, or work which is of the higher standard.

D. It is the intent of these contract documents to have the contractor provide systems and components that are fully complete and operational and fully suitable for the intended use. There may be situations in the documents where insufficient information exists to precisely describe a certain component or subsystem, or the routing of a component. In cases such as this, where the contractor has failed to notify the Designer of the situation in accordance with the paragraph above, the contractor shall provide the specific component or subsystem with all parts necessary for the intended use, fully complete and operational, and installed in workmanlike manner either concealed or exposed per the design intent.

E. In cases covered by the paragraph above, where the contractor believes he needs engineering guidance, he shall submit a sketch identifying his proposed solution and the Designer shall review, note if necessary, and approve the sketch.

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1.06 MODIFICATIONS IN LAYOUT

A. HVAC, Plumbing, Fire Protection, and Electrical Drawings are diagrammatic. They indicate general arrangements of mechanical and electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structure and other trades and to meet architectural requirements.

B. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Designer.

C. Check Contract Drawings as well as Shop Drawings of all subcontractors to verify and coordinate spaces in which work of this Section will be installed.

D. Maintain maximum headroom at all locations. All piping and associated components to be as tight to underside of structure as possible.

E. Make reasonable modifications in layout and components needed to prevent conflict with work of other trades and to coordinate according to Paragraphs A, B, C, D above. Systems shall be run in a rectilinear fashion.

F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Designer for review and approval.

1.07 SHOP DRAWING AND MATERIAL SCHEDULES

A. Refer to SECTION 013000 - SUBMITTALS for submittal of Shop Drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in or additional connections, piping, supports or construction, same shall be provided as the responsibility, and at the expense, of the Plumbing Subcontractor.

B. Fabrication of any material or performing of any work prior to the final approval of the Submittals will be entirely at the risk of the Subcontractor. The Subcontractor is responsible for furnishing and installing materials called for in the Contract Documents, even though these materials may have been omitted from approved Submittals.

C. Submit Shop Drawings for the following materials and equipment.
1. Valves, Piping, couplings and Fittings
2. Fixtures, Drains and Equipment including Supports
3. Access Panels and Covers
4. Insulation
5. Drains, and Hydro Mechanical Specialties
6. Hose Bibbs
7. Hangers, Anchors, Guides, and Supports including Seismic Restraints
8. Cleanouts

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9. Piping Identification System

1.08 COORDINATION DRAWINGS

A. Before materials are purchased or Work is begun, prepare and submit to the Architect, Coordination Drawings showing the size and location of all equipment and piping lines relevant to the complete system. Ensure that these Drawings are compatible and correctly annotated and cross-referenced at their interfaces (match lines).

B. Coordination Drawings are for the Contractor's and the Architect's use during Construction and shall not be construed as replacing any Shop or Record Drawings required elsewhere in these Contract Documents.

C. Detailed procedures for Coordination Drawings are contained in DIVISION 01 - GENERAL REQUIREMENTS of these Contract Documents.

1.09 RECORD DRAWINGS

A. General: Refer to DIVISION 01 - GENERAL REQUIREMENTS for general requirements for maintaining as-built drawings and submitting final reproducible record documents.

B. The General Contractor will provide two sets of Drawings to the Plumbing Subcontractor, one set of which shall be maintained at the site and which shall, at all times, be accurate, clear, and complete, showing the actual locations of all equipment and piping as it is being installed. The Record Drawings shall be available to the Architect/Engineer's field representative at all times.

C. Provide electronic AutoCAD drawings to indicate revisions to piping size and location both exterior and interior; including locations of valves and other equipment requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; concealed equipment, dimensioned to column line; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located.

D. Include in the Record Drawings any addenda, sketches, and supplementary Drawings issued during the course of construction.

E. Non-availability of Record Drawings or inaccuracies therein will postpone the final inspection until they are available.

F. All valves shown on these Drawings shall be numbered with numbers corresponding to those on the valve charts.

G. All costs related to the foregoing requirements shall be paid by the Plumbing Subcontractor.

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1.10 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Provide operating instructions to the Owner's designated representative with respect to operation functions and maintenance procedures for all equipment and systems installed. At the completion of the project, turn over to the Architect four (4) complete manuals, in three-ring, loose-leaf binders, containing the following:

1. Complete Shop Drawings of all equipment.
2. Operation description for all systems.
3. Names, addresses, and telephone numbers of all suppliers of the system.
4. Preventative maintenance instructions for all systems.
5. Spare parts lists of all system components.
6. Four copies of video of below slab piping.
7. Valve tag chart.

B. Provide DVD recording of operation and maintenance training sessions and include as part of O & M Manual submittal. Training session video recording and DVDs shall be performed by a professional videographer. Provide indexed table of contents for DVD recording.

1.11 GUARANTEE

A. Refer to Division 1 of the Contract. Guarantee all work under this Section free from defects in workmanship and materials for a period of one (1) year from the date of final acceptance of the building, as set forth in the Contract. Replace any such defective work developing during this period, unless such defects are clearly the result of bad usage of equipment by others. Where such defective work results in damage to work of other Sections of the Specifications, restore such work to its original condition by mechanics skilled in the affected trade.

1.12 DRAWINGS

A. All work shown on the Drawings is intended to be approximately correct to scale, but shall be taken in a sense as diagrammatic. Sizes of pipes and general method of running them are shown, but it is not intended to show every offset and fitting. To carry out the true intent and purpose of the plans, furnish all necessary parts to make complete working systems ready for use. The Plumbing Drawings are intended to show the main stacks and risers and may or may not necessarily show all runout piping particularly in lavatories and gang toilet areas. Contractor shall include all runout piping to all referenced scheduled fixtures and equipment appearing on the Plumbing Drawings.

B. All floor drains installed on this project shall be equipped with trap primers. The trap primer and piping is not shown on the drawings and shall be located in the field by the Contractor as dictated by field piping conditions.

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C. The Plumbing Drawings and Specifications are intended to supplement each other so that any details shown on the Drawings and not mentioned in the Specifications, or vice-versa, shall be executed the same as if mentioned in the Specifications and shown on the Drawings.

D. Refer to the Architectural, Structural, and other Mechanical and Electrical Drawings, which indicate the construction in which this Work shall be installed. Locations shown on the plans shall be checked against the general and detailed Drawings of the construction proper. All measurements shall be taken at the Building.

1.13 VALVE TAGS, NAMEPLATES, AND CHARTS

A. All valves on pipes of every description shall have neat circular brass valve tags at least 1-1/2 in. in diameter attached with brass hook to each valve stem. Stamp on these valve tags, in letters as large as practical, the number of the valve and the service, such as "H.W., C.W.", for hot water and cold water respectively. The numbers for each service shall be consecutive. Where valves are located above ACT ceilings, furnish and install valve finder ceiling tack, tack shall be minimum 7/8 in. diameter with 1/2 in. steel point, color as determined by Owner.

B. All valves on tanks and pumps shall be numbered by 3 in. red metal discs with white numbers 2 in. high, secured to stem of valves by means of small solid link brass chain, to correspond to numbers indicated for valves on the Record Drawings and on two (2) printed detailed lists. These printed lists shall state the numbers and locations of each valve and the fixture or group of fixtures which it controls, and other necessary information such as requiring the opening or closing of another valve or valves when any one valve is to be opened and closed, and shall be prepared in form to meet approval of the Architect, and shall be framed under glass.

C. Nameplates, catalog numbers, and rating identifications shall be securely attached to Electrical and Mechanical equipment with screws or rivets. Adhesives or cements will not be permitted.

1.14 PIPE MARKER IDENTIFICATION SYSTEM

A. Mark all piping installed under this Section and at all Access Panels with a marking system in basic colors conforming to those specified in ANSI/ASME A-13.1. Markings shall indicate pipe content and direction of flow. Markers shall be applied at all valves and tee joints, and on straight runs of pipe at every 20 ft.-0 in. on center.

B. Markers shall be vinyl snap-around pipe type system. Adhesive markings are not acceptable.

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C. Clearly mark potable and non-potable water system with 4 inch wide colored bands, with arrow for direction of flow, every twenty-five (25) feet on center on all piping installed whether it is concealed or exposed and also on both sides of floor and/or wall penetrations. Mark potable water green and non-potable yellow. Within 6 in. of each band identify with letter "Potable C.W.", Non-Potable H.W." Color of letter shall match banding.

1.15 SANITARY, WASTE, AND VENT SYSTEMS

A. Furnish and install complete Sanitary, Waste, and Vent, Systems (all hereinafter called Drainage Systems) to convey wastes from all Soil and Waste Stacks, Fixtures, and Equipment, as indicated and/or described in these Plans and Specifications. Urinal waste shall be 2 in. cast iron or sizes indicated on the drawings. Waste piping smaller than 3 in. shall not be used underground. The use of double "Y's" in the horizontal shall not be permitted. All piping shall be installed straight and true and located concealed within building construction.

B. All horizontal Drainage Systems Piping within the building, 3 in. and smaller, shall be pitched at least 1/4 in. per ft. in the direction of flow. Drainage Piping 4 in. and larger shall be pitched at least 1/8 in. per ft. Make changes in direction of drainage lines with 45 wyes, long turn wyes, or sweep bends.

C. Furnish and install all cleanouts indicated on the Drawings and/or where required in Drainage Pipes regardless of size so that the distance between cleanouts does not exceed 45 ft. o.c. Cleanouts shall be installed at the base of all risers and at each change of direction.

D. Refer to drawings for termination points, which generally are connection to existing piping.

1.16 DOMESTIC WATER SYSTEMS (POTABLE & NON-POTABLE)

A. Furnish, install, sterilize, and test in accordance with the documents and the Plumbing Code, complete potable and non-potable Domestic Cold, Hot, and Hot Water Recirculating Systems including all piping, valves, low point drains, shock absorbers, hangers, insulation, backflow preventers and water heating equipment. Clearly mark the systems as provided above. This work shall start as indicated on the Drawings.

B. In general, piping shall pitch upward in the direction of flow with each branch and riser separately valved and with 1/2 in. hose end drain on the outlet side of the valve and at all low points in the system. Install shutoff valves for each battery of fixtures and other valves as necessary to isolate any part of each system.

C. Install shock absorbers on hot and cold water piping to each fixture. Provide shock absorbers at all quick closing valves and as shown on the Drawings and/or specified.

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D. Install a 1/2 inch hose bibb in each toilet room. The hose bibb shall be installed under a lavatory.

1.17 DEMOLITION

A. When and as directed by the General Contractor perform all demolition work.

B. All hangers, valves, piping, pumps, fixtures, controllers, and other miscellaneous equipment and materials in the existing building not specifically designated for reuse in the documents shall remain the property of the Owner.

C. Remove as indicated existing Plumbing piping, fixtures, and equipment including all hangers and supports and disconnect all Plumbing connections to equipment to be removed under other Sections of the Specifications. Clean, recondition, and relocate where indicated all items to be reused.

1. Carefully remove toilet room fixtures and trim and deliver in good condition to an on-site location designated by the Architect. The Owner will review all the fixtures and trim and select the items to be kept and the items to be disposed. The disposal of all items not wanted by Owner is specified by the Demolition Section.
2. In cases where main piping is to remain, remove all existing piping to fixtures being removed and cap said piping back to riser or main. All caps or plugs to be installed shall be of like material as pipe being capped or plugged.
3. All piping, valves, hangers, and fittings shall be removed from ceiling and walls as indicated and placed on the floor by this Section. The General Contractor shall remove from the floor and dispose.
4. Any disputes between this Subcontractor and other Contractors or Subcontractors relative to the responsibility for removal of equipment shall be referred to the Architect for decision. The Architect's decision shall be firm and binding and to whomever he designates responsibility for removal of equipment shall do so without any additional cost to the Owner.

1.18 PAINTING

A. All interior exposed piping is to be painted and all painting, except as noted, will be done by the Painting Subcontractor. All uncovered piping and hangers shall be thoroughly cleaned of rust, oil, and other containments by the Plumbing Subcontractor and left ready to receive primer coat.

B. Painting for pipe markings shall be done under this Section.

1.19 HOISTING EQUIPMENT AND MACHINERY

A. Unless otherwise specified, all hoisting and rigging equipment and machinery required for the proper and expeditious prosecution and progress of the Work of this Section shall be furnished, installed, operated and maintained in safe condition by each sub-contractor, as specified under Section 015000, TEMPORARY FACILITIES AND CONTROLS.

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1.20 STAGING AND SCAFFOLDING

A. Unless otherwise specified, each sub-contractor shall provide all lifts and man-lifts, and furnish, erect and maintain in safe condition, all staging and scaffolding as specified under Section 015000 Temporary Facilities and Controls, as needed for proper execution of the work of this Section. Staging and scaffolding shall be of adequate design, erected and removed by experienced stage builders having all accident prevention devices required by Federal, state and local laws.

1.21 BREAKDOWN

A. Submit a breakdown of the contract price to aid the Architect in determining the value of the work installed as the job progresses.

B. No requisition will be approved until the breakdown is delivered to the Architect.

1.22 VISIT TO SITE

A. Prior to submitting a Bid, visit the site of work and become familiar with existing conditions. Any assumptions made are at this Subcontractor's expense.

PART 2 PRODUCTS

2.01 GENERAL

A. All materials and equipment furnished under this SECTION shall be new, unused, first quality of a manufacturer of established reputation. Each valve, fitting, section of pipe, and piece of equipment supplied to project shall have cast or indelibly stamped thereon the manufacturer's name, pressure rating where applicable, type, and any other specific information provided by manufacturer. Materials shall conform to Massachusetts Code as a minimum requirement and shall appear on the Massachusetts Approved Plumbing Products list.

2.02 PIPE AND FITTINGS

A. Pipe and fittings shall conform to the latest A.S.A., A.S.T.M., C.A., and F.S. standards.

B. All piping installed under this SECTION shall be in accordance with the following:

Service	Material
Underground Drainage and Vent piping	Service weight cast iron soil pipe-coated bearing collective trademark of the Cast Iron Soil Pipe Institute (CISPI)

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Above ground Drainage and Vent, piping 2 in. and larger	No Hub cast iron soil pipe and fittings bearing collective trademark of the CISPI
Above ground drainage, and Vent piping 2 in. and smaller	Type 'L' hard tempered copper tubing
Trap primer piping from Primer to floor drain	Type 'K' soft rolled copper tubing with Swaged ends
Domestic water piping above ground (potable & non-potable)	Type 'L' hard tempered copper tubing

C. Fittings for underground Drainage Piping shall be service weight bell and spigot pattern C.I. soil pipe fittings. Above ground shall be no hub C.I. soil pipe fittings, Massachusetts Standard.

D. Fittings for sweat drainage piping shall be cast bronze or wrought copper of recessed drainage pattern.

E. Fittings for Type 'L' hard tempered copper tubing shall be cast bronze or wrought copper sweat type, water pattern fittings.

2.03 JOINTS

A. Joints for underground cast iron bell and spigot soil pipe shall be made up with jute or oakum packing, caulked with 16 oz. of molten virgin pig lead per nominal inch diameter of pipe or with resilient gaskets. Above ground shall be made up of heavy duty – 4 band stainless steel clamps, and gaskets. Couplings shall be in compliance with CISPI 310 and shall bear the mark of NSF International. Couplings shall be Husky "SD 4000", Clamp - All HI-TORQ 125, Mission "HW", or equal.

B. Copper tubing and sweat fittings shall be assembled with lead free solder, Silverbrite, Oatey, Harris, or equal, and a non-corrosive flux recommended by the manufacturer (includes waste piping and water piping).

C. Joints between copper waste/vent tubing and cast iron shall be made with cast iron threaded fittings and copper thread by sweat fittings.

D. Joints between copper tubing and ductile iron water pipe or at flanged joints to tanks shall be made with a combination iron and brass flange with composition gasket and iron bolts.

E. Joints at water heaters or other tanks having threaded connections shall be made up with dielectric unions.

F. Joints between floor or wall flanges and fixtures shall be made with one-piece special molded neoprene gaskets which shall be furnished by the fixture manufacturer.

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G. Threaded pipe joints including plastics shall be made up with teflon tape.

2.04 VALVES

A. Furnish and install valves where indicated on the Drawings or where specified and located so that they may be operated, repaired, or replaced with a minimum effort and repacked under pressure.

B. The following list of valves is intended only as a guide for type and quality. Valves shall be as manufactured by Apollo, Milwaukee, Nibco, Elkhart, Watts or approved equal.

Shutoff valves 2 in. and smaller	Apollo #70LF-202 through #70LF-208 solder end lead-free ball valves
Shutoff valves, 2-1/2 in. and 3 in.	Apollo #70LF-109 and #70LF-100 lead-free
Balancing valves	Bell & Gossett Model CB lead free calibrated balance valve.
Gate valves 4 in. and larger	Jenkins 651-A
Stop and waste valves 1 in. and smaller	Apollo #95LF-203 through #95LF-205, lead-free
Check valves	Walworth #406 SJ

2.05 INSULATION

A. Insulation for all water piping whether concealed or exposed shall be 1 in. thick, heavy density, preformed snap-on insulation equal to Johns Manville Micro-Lok HP, 850 degrees snap-on system. Insulation for cold water piping shall have a factory applied vapor barrier with ends and butts sealed with overlapping 4 in. sealing strips.

B. Valves and fittings shall be insulated with pre-formed fiberglass fitting insulation cut from dense fiberglass blanket and covered with pre-molded P.V.C. fitting covers. P.V.C. covers shall overlap the adjoining insulation and shall be secured with pressure sensitive vinyl tape over a vapor barrier adhesive seal at the joints. (Note: Staples or tacks are not permitted on covers).

C. All insulation shall have self-sealing type, all service jacket (ASJ-SSL) factory applied. At all exposed piping, cover jacket with continuous P.V.C. jacket.

D. Sealers, solvents, tapes, and adhesives, and mastics used in conjunction with the installation of insulation under this Section shall possess the maximum possible fire safe qualities available and shall be NFPA approved.

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E. Covering shall be applied over clean and dry surfaces. No covering shall be applied until after the approval of all pressure and leakage tests.

F. Insulation shall be as manufactured by Johns Manville, Inc., Owens-Corning Fiberglass Corporation SSL II-ASJ, or Knauf Insulation 1000. Insulation shall be applied by skilled insulation mechanics in a first class manner.

2.06 TRAPS

A. Furnish and install traps with cleanouts on all fixtures and equipment requiring connection to the sanitary system of the same size and material as the pipe on which they occur. Traps installed on threaded pipe shall be recessed drainage pattern.

2.07 DRAIN VALVES

A. It shall be possible to drain the water from all sections of the Potable and Non-Potable Hot and Cold Water Piping. Furnish and install 1/2 in. x 3/4 in. hose end ball valves with cap and chain. (see 2.04 for model no.)

2.08 SHOCK ABSORBERS

A. Furnish and install, where shown on Drawings and where required to prevent water hammer, Zurn Manufacturing Company model 1250-XL lead free shock absorbers, or equal, as manufactured by J.R. Smith Manufacturing Company, Josam Manufacturing Company, or equal.

B. Installation of absorbers shall be as per manufacturer's recommendations.

2.09 PIPING ACCESSORIES

A. Trap primer connections are required on all floor drains to maintain trap seal. Trap primers shall be Precision Plumbing Products, Inc. Model P/N-PR-500 prime-rite trap-primer valve or shall, where appropriate, be Zurn, Josam, Smith or equal in-line connections installed on flush valve supply. Provide access panel at lal valve locations.

2.10 HOSE BIBB

A. Hose bibb shall be T & S Brass or equal model #B-720 modified, chrome plated, 3/4 in. hose end, integral stop, vacuum breaker, modified with lock shield and loose tee handle.

B. Hose bibbs shall be manufactured by T&S Brass, Speakman, Chicago, or equal.

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2.11 CLEANOUTS

A. Cleanout plugs on the Sanitary System shall be of heavy cast brass of the screwed type. Plugs shall be full size up to and including 4 inch.

B. For piping running under floor slab, cleanouts shall be brought up to just under the floor slab level. Furnish and install access cover for all floor-type cleanouts, Zurn ZN-1400 Series with scoriated nickel bronze or by Josam, J.R. Smith, or equal.

2.12 ACCESS DOORS

A. Furnish Access Doors for access to all concealed control valves, cleanouts, valves, expansion joints, and to all other concealed parts of the Plumbing System that require accessibility for the proper operation and maintenance of the system. These doors shall be installed under the appropriate SECTION of the Specifications as determined by the surface upon which the panels are mounted.

B. All Access Doors shall be located in a workmanlike manner in closets, storage rooms, and/or other non-public areas, positioned so that the valve or part can be easily reached, and the size shall be sufficient for this purpose (minimum size 12 in. x 16 in.). Furnish Access Doors for each pipe space to permit thorough inspection of same. When access doors are required in corridors, lobbies, or other habitable areas, they shall be located as directed by the Architect.

C. Access doors shall be prime painted and completed with cylinder lock and two (2) keys as manufactured by Acudor, Inland Steel Products Company "Milcor", or Walsh-Hannon-Gladwin, Inc., "Way Loctor". Type shall be as follows:

1.	Acoustical Tile Ceiling	Acudor AT-5020
2.	G.W.B. Surfaces	Acudor DW-5040
3.	Masonry Construction	Acudor UF-5000
4.	Fire Rated Construction	Acudor FB-5060

D. Access Door Shop Drawings shall be submitted to the Architect for approval.

2.13 SUPPLEMENTARY STEEL, CHANNEL, AND SUPPORTS

A. Furnish and install all supplementary steel, channels, and supports required for the proper installation, mounting, and support of all equipment.

B. Supplementary Steel and Channels shall be firmly connected to building construction in a manner approved by the Architect.

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C. The type and size of the Supporting Channels and Supplementary Steel shall be determined by the Plumbing Subcontractor and shall be sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.

D. All Supplementary Steel and Channel shall be installed in a neat and workmanlike manner parallel to the walls, floor, and ceiling construction. All turns shall be made with 90 deg. fittings, as necessary to suit the construction and installation conditions.

2.14 HANGERS, ANCHORS, GUIDES, AND PIERS

A. All piping shall be supported from the Building Structure by means of approved hangers and supports. Piping shall be supported to maintain required grading and pitching of lines, to prevent vibration, and to secure piping in place, and shall be so arranged as to provide for expansion and contraction.

B. The spacing for hangers for horizontal piping shall be in accordance with the following:
1. Cast Iron Soil Pipe: 5 ft.-0 in. at the hubs for 5 ft. lengths. For 10 ft. lengths, use one (1) hanger at the hub and one (1) at midpoint of the length. Install cast iron pipe in accordance with CISPI Handbook - latest edition.
2. Copper Tubing: 6 ft.-0 in. o.c. for 1-1/4 in. and smaller, and 10 ft.-0 in. o.c. for 1-1/2 in. and larger.

C. Hanger rod diameter shall be as follows:

Pipe Size	Rod Diameter
1/2 in. thru 2 in.	3/8 in.
2-1/2 in. and 3 in.	1/2 in.
4 in. and 5 in.	5/8 in.
6 in.	3/4 in.
8 in. and over	7/8 in.

D. Vertical lines shall be adequately supported at their bases by a suitable hanger placed in the horizontal line near the riser and at every 10 ft. interval.

E. All Hangers shall be adjustable Clevis Hanger. Hanger rods shall have machine threads. Malleable iron brackets of approved type shall be used along the walls. All Hangers for copper tubing shall be copper plated except where pipe is insulated, in which case, Steel Clevis Hanger and pipe shield shall be used.

F. Piping shall not be hung from the hangers of other trades.

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G. Hangers shall be manufactured by Grinnell, Carpenter and Paterson, Fee and Mason, or equal.

H. Wire and strap hangers will not be permitted in this installation.

I. Install a 14 gauge metal pipe shield between pipe insulation and all pipe hangers. Hangers shall be sized so that the pipe insulation passes through the hanger and is supported on the shield.

2.15 DRAINS

A. Furnish and install all floor drains where shown on the Drawings.

B. All floor drains in flooring systems without waterproofing membranes shall have galvanized iron clamping rings with 6-pound lead flashing to bond 9 in. in all directions. All drains shall be checked with Architect's Drawings to determine depth of the flashing collar. Brass extension pieces shall be provided if necessary.

C. All floor drains installed on this project shall be fitted with Automatic Trap Primer Connections. Field determine appropriate location for Trap Primer valve and drain piping.

D. Drain Schedule:
1. Type "A" –Zurn #ZN-415-5BZ-P dura coated cast iron body with bottom outlet, combination invertible membrane clamp, adjustable collar, seepage slots, type BZ polished nickel bronze, light-duty, leveling strainer, trap primer connection.

E. Drains shall be of one manufacturer, by Zurn, J.R. Smith, Josam, or equal.

2.16 PLUMBING FIXTURES

A. Furnish and install all fixtures and equipment, including supports, connections, fittings, and any incidentals, to make a complete installation in accordance with the Drawings and as specified.

B. The Architect shall be final judge as to whether fixtures and trim fulfill the requirements of the Specifications and as to whether they are of suitable quality.

C. All fixtures requiring hot and cold water shall have the cold water faucet on the right hand side of the fixture and the hot water faucet on the left hand side of the fixture.

D. Escutcheons shall be furnished and installed on all supplies and traps. Escutcheons shall be one (1) piece chrome plated brass with set screws.

E. All fixtures shall have the manufacturer's guaranteed label or trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.

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F. Unless otherwise specified, faucets and all exposed fittings shall be chromium plated.

G. All supply pipes shall run in a reasonable straight vertical line from the stops to faucets. Traps shall be installed perpendicular to walls.

H. Vitreous china and acid resisting enameled fixtures shall be of one manufacturer by Sloan, American Standard, Toto, or equal. Trim shall be Symmons, Speakman, Chicago, T & S Brass, or equal. Flush valves shall be Sloan, Toto, Zurn, or equal.

I. Note: All fixtures and fittings shall be vandal proof mounted, unless specifically noted otherwise.

J. Carefully coordinate roughing for flush valves so that the dimension from top of fixture to C-L of flush valve is a minimum of 6 in..

K. Fixture Schedule:

1. P-1 Water Closet, Accessible:
   American Standard Madera Youth 2599.001, white, elongated bowl, vitreous china, floor mounted water closet.

   Sloan “Royal” 111, exposed manually operated, water conserving flush valve with vacuum breaker, 1.6 gallons per flush.

   Olsonite 10CT solid plastic white open front seat with check hinge.

   Cast iron floor flange secured to floor slab; Bolt Caps.

2. P-2 Urinal:
   Sloan Model WEUS 1000.1001-0.25, complete high efficiency urinal system with exposed, manually operated, 0.25 gallon per flush flush valve and vitreous china urinal.

   Zurn Z-1222 concealed support.

   Urinal mounting shall conform to Accessibility Standards. Refer to Architect’s Drawing and request direction in field in writing before installing.

3. P-3 Wall Hung Lavatory:
   Kohler Soho K-2054, wall mounted 20 in. x 18 in. vitreous china lavatory, 4-inch centers, punched for concealed armchair carrier.

   Chicago EQ-A12C-13ABCP, self-generating with battery backup sensor faucet with 0.35gpm outlet, 4-inch centers, dual supply with integral concealed thermostatic mixing valve.

   McGuire Model 155-WC, 1-1/4 in. offset drain with open grid strainer.

   McGuire Model H-167 (pair) C.P., 3/8 IPS angle supply with loose key stop.

   McGuire Model B-8902 C.P., 1-1/4 in. x 1-1/2 in. cast brass adjustable 'P' trap with cleanout and #17 ga. tubing outlet to wall.

   Zurn #Z-1231 floor mounted concealed arm chair carrier.

   Conceal all exposed roughing and electrical wiring components under lavatory with Truebro Model #2018 rigid PVC enclosure.

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2.17 UNION AND NIPPLES

A. All connections between copper tubing and galvanized piping or between copper tubing and all tanks (such as water heaters, chillers, and similar equipment) shall be made with dielectric unions and nipples.

B. All connection to Water Heaters, Meters, Pumps, and other equipment requiring maintenance or alteration shall be made up with unions. Unions on brass piping, 2 in. and smaller, shall be brass composition "E" in strict accordance with Federal Specification WW-U-516. On plastic piping, use unions of the same material as the piping.

C. All close and shoulder nipples shall be corresponding materials as the pipe and shall be extra heavy.

2.18 FIRESTOP SYSTEMS

A. General: Provide firestopping at all new fire-rated construction where penetrated by the Work of this Section.

B. Refer to Section 078400 - Firestopping, for all product requirements for maintaining integrity of fire-rated construction at penetrations.

2.19 SCAFFOLDS AND STAGING

A. General: Trade Contractors shall obtain required permits for, and provide scaffolds, staging, and other similar raised platforms, required to access their Work as specified in Section 01 50 00 - Temporary Facilities and Controls and herein.
   1. Scaffolding and staging required for use by this Trade Contractor pursuant to requirements of Section 01 50 00 - Temporary Facilities and Controls shall be furnished, erected, maintained in a safe condition, and dismantled when no longer required, by this Trade Contract requiring such scaffolding.
   2. Each Trade Contractor is responsible to provide, maintain and remove at dismantling, all tarpaulins and similar protective measures necessary to cover scaffolding for inclement weather conditions other than those required to be provided, maintained and removed by the General Contractor pursuant to MGL (Refer to Section 01 50 00 - Temporary Facilities and Controls and as additionally required for dust control).
   3. General Contractor is responsible to provide enclosures required for temporary heat; refer to Section 01 50 00 - Temporary Facilities and Controls.
      a. Furnishing portable ladders and mobile platforms of all required heights, which may be necessary to perform the work of this trade, are the responsibility of this Trade Contractor.

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2.20 HOISTING MACHINERY AND EQUIPMENT

A. All hoisting equipment, rigging equipment, crane services and lift machinery required for the work by this Trade Contractor shall be furnished, installed, operated and maintained in safe conditions by this Trade Contractor, as referenced under Section 01 50 00 - Temporary Facilities and Controls.

PART 3 EXECUTION

3.01 WORKMANSHIP AND INSTALLATION METHODS

A. All work shall be installed in a first-class manner consistent with the best current practices. All materials shall be securely installed plumb and/or level, and all flush mounted equipment shall have front edge flush with finished wall surface.

B. All piping shall be installed true to line and grade in the case of underground piping. All piping above ceilings or exposed shall be grouped together, be parallel to each other, and be either parallel or perpendicular to the structure. Utilize gang hangers wherever feasible. Group all valves together where feasible.

C. Training:
1. Train the Owner's maintenance personnel on troubleshooting procedures, and servicing and preventative maintenance schedules and procedures.
2. Schedule training with Owner through the Architect with at least 7 days prior notice.

3.02 WORK COORDINATION AND JOB OPERATIONS

A. The equipment shall not be installed in congested and possible problem areas without first coordinating the installation of same.

B. Particular attention shall be directed to the coordination of piping and other equipment installed in the ceiling areas. Coordinate the elevations of all piping in hung ceiling areas to insure adequate space for the installation of recessed lighting fixtures before other mechanical equipment is installed.

C. Furnish to the General Contractor, and all other Subcontractors, all information relative to the portion of the Plumbing installation that will affect them, sufficiently in advance so that they may plan their work and installation accordingly.

D. In case of failure to give proper information as indicated above sufficiently in advance, pay for all back-charges for the modification, renovation, and relocation of any portion of the work already performed.

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E. Obtain from the other trades, all information relative to the Plumbing Work to be executed in conjunction with the installation of their respective equipment.

3.03 CUTTING AND CORE DRILLING

A. Perform all cutting and core drilling operations that are outlined in Part 1 of this SECTION. Throughout the performance of the cutting and coring work, ensure that the structural integrity of the walls, floors, overhead structure, and other structural components, which are to remain, is maintained until permanent work is installed. Prior to any coring or cutting, verify all locations of same with the General Contractor. All cutting and coring is to be performed in accordance with approved Coordination Drawings

B. Cut all masonry and concrete with an approved diamond blade concrete saw in a neat straight direction, perpendicular to the plane of the wall or floor.

C. Use a core drilling process which produces clean, sharp edges and the minimum hole size which will accommodate the size of pipe sleeve specified. Submit procedures for cutting thru existing steel beams to Architect for review.

D. The patching of holes shall be performed by Plumbing Sub-contractor utilizing methods outlined for the finish trade involved. Holes shall be patched to the satisfaction of the Architect.

3.04 CLEANING AND PROTECTION

A. Protect all materials and equipment during shipment and so as to prevent damage. Water closets, lavatories, and sinks shall be boarded over and all other fixtures shall be protected with pasted on paper. Post notice prohibiting the use of the fixtures prior to completion. Assume full responsibility for protection of work until its completion and final acceptance.

B. Keep the premises reasonably clean at all times and remove rubbish caused by the Plumbing Work as directed by the Architect.

C. Upon completion of this work, clean all fixtures and equipment installed herein and replace damaged parts. Failure to fulfill this obligation will result in back-charges for correction of the defective work.

3.05 SLEEVES, INSERTS, AND ESCUTCHEONS

A. All piping passing through slabs, floors, walls, partitions, foundation walls and grade beams, shall be sleeved and all such sleeves shall be furnished and installed by the Plumbing Subcontractor as detailed on the Drawings and herein specified. Set sleeves in concrete floors and walls as soon as forms are set and before concrete is poured. Core drilling openings shall have a sleeve caulked and leaded in place.

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B. All pipes passing through floor, whether slab-on grade or above grade levels, shall be sleeved with sleeve extending 1 in. above floor. This includes all piping in toilet room pipe space, stairwells, closets, partitions and pre-cast planks.

C. All sleeves shall be Schedule 40 galvanized steel and shall be reamed. There shall be a minimum of 1 in. annular space between the sleeve and pipe provide greater clearance where seismic requirements dictate. Sleeves on insulated pipe shall be large enough to allow insulation to pass through sleeve. Sleeves on drywall, masonry, or concrete walls and partitions, shall be flush with wall on both sides.

D. The space between sleeve and pipe in all cases shall be filled with a U.L./F.M. approved caulking compound. This includes pipes concealed in chases and/or partitions.

E. Inserts where required shall be furnished and set by the Plumbing Subcontractor and where necessary may be drilled or power driven and shall be sized such that the insert will not exceed a depth of penetration of 1 in. into concrete.

F. Escutcheons: All exposed pipe, uncovered, passing through walls or floors or ceilings shall be fitted with C.P. brass spun or split type escutcheons with approved clamping device for holding in position. Floor escutcheons shall be deep enough to fit over sleeves, fastened to pipe, and extend down to floor.

3.06 TESTING

A. Test all Work in the presence of the Architect and/or Engineer and as required by Local Codes.

B. After Soil, Waste, and Vent Piping is in place and before being buried or furred in, plug lower ends and fill the system with water up to the top of stacks. Piping is to be left tight under these conditions and water lever shall be maintained intact for the period of at least four (4) hours.

C. Test all water piping by applying a hydrostatic pressure of 150 PSIG using a pump for this purpose. Make sure that all lines are properly plugged or capped and that air has been vented before applying pressure which shall remain constant without pumping for two (2) hours at least.

D. Any leaks in joints or evidence of defective pipe on fittings disclosed by test shall be immediately corrected by replacing defective parts with new joints or materials. No makeshift repair effected by caulking threaded pipe with lead wool, application or Wilky or patented compounds will be permitted.

E. Provide testing report for all systems tested.

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3.07 CHLORINATION

A. Upon completion of the Plumbing Work, thoroughly chlorinate the entire domestic water system before putting same in service. Chlorinate all work in the presence of the Architect and/or Engineer. The chlorinating agent shall be as a solution of sodium hypochlorite. Water shall be fed slowly into the new line with chlorine in the proper amount to produce a dosage of 50 PPM. Open and close all valves while system is being chlorinated.

B. After the sterilization agent has been applied for 24 hours, pay for an independent testing agency to test for residual chlorine. A residual of not more than 5 PPM shall be required in all parts of the line.

C. If test show 5 PPM or greater of residual chlorine, flush out system until all traces of the chemical used are removed.

D. Provide testing report from independent testing agency.

3.08 INSTALLATION OF FIRESTOP SYSTEMS

A. General: Install firestop systems at all fire-rated construction where penetrated by the Work of this Section.

B. Refer to Section 078400 - Firestopping, for all installation requirements for maintaining integrity of fire-rated construction at penetrations.

3.09 SYSTEM SHUTDOWNS

A. Coordinate shutdowns of existing systems with the Owner and submit a written request at least ten working days in advance. Minimize system shut downs as much as possible. Submit a list of all affected areas, the proposed work to be performed, and the expected length of the shut-down including time for retesting.

B. Provide temporary services to maintain active system during extended shut-downs as required for demolition and construction phasing.

END OF SECTION

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DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 11 23 AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Aggregate Base Courses Work required to complete the Work of the Contract including all the Aggregate Base Courses shown on the plans, listed in the specification, and needed to install a complete assembly in every way. Coordinate the Aggregate Base Courses Work with all the other trades for the project. Provide all demolition and disposal Work to complete the Aggregate Base Courses Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All Work of the Contract is related. It is the General Contractor's responsibility to review all Work of each section and each Sub-Contractor for the entire project so that all the Work can be properly and completely performed.

B. Aggregate Base Courses Work includes, but is not limited to:

1. Install base for paved bituminous walkway at West accessible entrance.

1.03 SECTION INCLUDES

A. Aggregate base course.

B. Paving aggregates.

C. Refer to the Drawings for additional requirements.

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1.04 RELATED REQUIREMENTS

A. Section 32 12 16 - Asphalt Paving: Binder and finish asphalt courses.

PART 2 PRODUCTS

2.01 MATERIALS

A. Coarse Aggregate : Coarse aggregate, conforming to State of Massachusetts Highway Department standard M2.01.3.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

A. Spread aggregate over prepared substrate to a total compacted thickness of 12 inches.

B. Place aggregate in maximum 4 inch layers and roller compact to specified density.

C. Level and contour surfaces to elevations and gradients indicated.

D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

END OF SECTION

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DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 12 16 ASPHALT PAVING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 DESCRIPTION OF WORK

A. Provide all the Asphalt Paving Work required to complete the Work of the Contract including all the Asphalt Paving Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way. Coordinate the Asphalt Paving Work with all the other trades for the project. Provide all demolition and disposal work to complete the Asphalt Paving Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All Work of the Contract is related. It is the General Contractor's responsibility to review all the Work of each section, each Subcontractor, and each file sub-bidder for the entire project so that all the Work can be properly and completely performed.

B. Asphalt Paving Work includes, but is not limited to:

1. Paved Walkway: Install paving at West entrance from accessible parking as indicated on Drawings.

1.03 SECTION INCLUDES

A. Single course bituminous concrete paving.

B. Double course bituminous concrete paving.

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1.04 RELATED REQUIREMENTS

A. Section 32 11 23 - Aggregate Base Courses: Aggregate base course.

B. Section 32 13 13 - Concrete Paving: Concrete substrate.

1.05 REFERENCE STANDARDS

A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types; 1997.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with State of Massachusetts Highways standard.

B. Mixing Plant: Conform to State of Massachusetts Highways standard.

C. Obtain materials from same source throughout.

D. Provide sufficient workmen and supervisors to be present at all times during the execution of this work, who will be thoroughly familiar with the type of injection techniques involved and the materials specified.

E. The Owner shall pay for testing and inspection during the paving operation.

F. Materials and methods of construction shall comply with the following standards:

1. Massachusetts Department of Public Works, Standard Specifications For Highways and Bridges, 1973:
   a. SECTION 420 - Class I Bituminous Concrete Base Course, Type I-1.
   b. SECTION 460 - Class I Bituminous Concrete Pavement.
   c. SECTION 860 - Reflective Pavement Markings.
2. American Society for Testing and Materials, (ASTM).
3. American Association of State Highway and Transportation Officials, (AASHTO).
4. Asphalt Institute (AI).

G. Promptly notify Designer of any unsatisfactory subgrade soil conditions.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for paving work on public property.

B. Comply with requirements for the Americans with Disabilities (ADA) and the Massachusetts Architectural Access Board (MAAB). If these requirements cannot be met with the grades and slopes indicated on the plans, notify the Designer immediately.

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1.08 FIELD CONDITIONS

A. Do not place asphalt Base Course when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

B. Do not place asphalt Surface Course when ambient base surface temperature is less than 60 degrees F, or surface is wet or frozen.

1.09 SUBMITTALS

A. Product Literature: Submit 4 copies of product data sheets and the manufacturer's installation instructions.

B. Submit complete materials list of items proposed for the work. Identify materials source.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aggregate for Base Course: In accordance with State of Massachusetts Highways standards.

2.02 ASPHALT PAVING MIXES AND MIX DESIGN

A. Base Course: 3.0 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

B. Wearing Course: 5 to 7 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

2.03 SOURCE QUALITY CONTROL

A. Test mix design and samples in accordance with AI MS-2.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 BASE COURSE

A. Place and compact base course.

3.03 PREPARATION - PRIMER

A. Apply primer in accordance with manufacturer's instructions.

B. Apply primer on aggregate base or subbase at uniform rate of 1/3 gal/sq yd.

C. Use clean sand to blot excess primer.

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3.04 PREPARATION - TACK COAT

A. Apply tack coat in accordance with manufacturer's instructions.

B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

3.05 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Place asphalt binder course within 24 hours of applying primer or tack coat.

B. Place wearing course within two hours of placing and compacting binder course.

C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.06 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Variation from True Elevation: Within 1/2 inch.

3.07 PAVEMENT MARKING

A. Do not apply pavement marking paint until layout, colors and placement have been verified with Designer.

B. Allow paving to age for a minimum of 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer’s recommended rates to provide a minimum wet film thickness of 15 mils.

3.08 WHEEL STOPS

A. Securely attach wheel stops to pavement with not less than two galvanized-steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

END OF SECTION

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DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 91 00 LANDSCAPING REPAIR

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

D. It is the intent of the Specifications and the Drawings to require that all the material, labor, and equipment be furnished complete in every respect, and that this Contractor shall provide all material, labor, and equipment needed and usually furnished in connection with such systems to provide a complete installation including all demolition, disposal, and patching of adjacent surfaces. Materials, equipment, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.02 WORK TO BE PERFORMED

A. Provide all the Landscaping Repair Work required to complete the work of the contract including all the Landscaping Repair Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all reinforcing, pinning, and finishes. Coordinate the Landscaping Repair Work with all the other trades for the project. Provide all demolition and disposal work to complete the Landscaping Repair Work. Patch to match all adjacent surfaces that are disturbed, left exposed, or unfinished. All work of the contract is related. It is the General Contractor's responsibility to review all work of each section and each Subcontractor for the entire project so that all work can be properly and completely performed.

B. Landscaping Repair Work includes, but is not limited to, replacing and planting of trees, shrubs and grass, including mulching, staking and related planting procedures of landscaping items only if damaged during construction.

1. Preparation of final sub-grades in planted areas.
2. Furnishing topsoil at areas to be planted.

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3. Planting mixes
4. Protection, maintenance and guarantee of plant materials.
5. Existing tree protection and care

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1.04 SECTION 02 41 00, SELECTIVE DEMOLITION

1.05 QUALITY ASSURANCE

A. Comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

B. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be dimensioned as it stands in its natural position.

C. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.

1.06 SAMPLES

A. Submit the following samples in accordance with the requirements of GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS.

1. Mulch
2. Anchors
3. Wire
4. Hose
5. Turnbuckles and cable clamps
6. Wrapping
7. Topsoil

B. Provide samples for testing as required by Architect.

PART 2 – PRODUCTS

2.01 TOPSOIL

A. Topsoil shall be a fertile, friable natural topsoil not excessively acid or alkaline and tree of toxic substances harmful to plant growth. Topsoil shall be without admixture of subsoil and free from clay lumps, stumps, roots, debris, stones, or other similar substances 2" or more in diameter.

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1. It shall be obtained from a well-drained arable site with a history of good plant growth. Submit sample for approval by the Landscape Architect.

2.02 SLUDGE FERTILIZER

A. Sludge fertilizer shall be an organic activated, granular, heat dried sludge and shall contain the following minimum percentages by weight: 6% Nitrogen, 4% Phosphoric Acid, and other nutritious basic elements. The sludge fertilizer shall be delivered as specified in standard size bags, showing weight analysis and name of processor and shall be stored in a weatherproof storage place.

2.03 COMPOSTED COW MANURE

A. Manure shall be a derivative of cattle manure which has undergone a period of composting rendering it into a crumbly, odor free, weed free material containing beneficial natural soil bacteria. It shall be free of harmful chemicals and other injurious substances. Manure shall be free of refuse of any kind and shall not contain more than 25% of straw, shavings, leaves, or other material. Manure shall not be more than 2 years nor less than 9 months old.

B. A composition of peat moss or peat humus to which has been added dehydrated manure such as bovine in the proportion of 100 pounds of dehydrated manure per cubic yard of peat, may be substituted for manure as specified above.

2.04 BONE MEAL

A. Bone meal shall be commercial raw bone meal, finely ground, having a minimum analysis of 4% nitrogen and 20% phosphoric acid.

2.05 WATER

A. Water will be furnished by Owner on the site. Hose and other watering equipment shall be furnished by Contractor.

2.06 PLANT MATERIALS

A. Contractor shall replace in kind and plant all plants or lawn damaged or killed during construction. No substitutions will be permitted. All plants shall be nursery grown unless specifically authorized to be collected.

B. Plant shall be in accordance with the USA Standard for Nursery Stock of the American Association of Nurserymen.

C. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. All plants shall have been grown under climatic conditions similar to those in the locality of the site of the project under construction, or have been acclimated to such

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conditions for at least 2 years. Trees shall have straight trunks and all abrasions and cuts shall be completely culled over.

D. The root system of each shall be well provided with fibrous roots. All parts shall be sound, healthy, and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.

E. All plants must be moved with the root systems as solid units with balls of earth firmly wrapped with burlap. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous root feeding system necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants shall be freshly dug. No plants from cold storage or previously heeled-in will be accepted. All plants that cannot be planted at once must be heeled-in by setting in the ground and covering the balls with soil and then watering.

F. The height of the trees (measure from the crown of the roots to the tip of the top branch) shall be not less than that of the tree being replaced. The branching height for shade trees next to walks shall be 7'. This may be obtained by pruning after delivery if this does not ruin the shape or form of the trees or cause unsightly scares. All cuts shall be shellacked. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire or other causes. No pruning wounds shall be present having a diameter exceeding 2" and such wounds must show vigorous bark on all edges. No trees which have had their headers cut will be accepted.

G. Shrubs shall meet the requirements for spread of height of the shrub being replaced. The measurements for height are to be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification No. 1.

1. Single stemmed or thin plants will not be accepted. The side branches must be generous, well-twigged, and the plant as a whole well branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises or other root or branch injuries.

2.07 MULCH

A. Mulch material shall be softwood hemlock bark shredded into fibrous pliable slices generally not exceeding 1/2" in width.

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1. Mulch shall be 98% organic matter with the pH range 3.5 to 4.5. Moisture content of packaged material shall not exceed 35%. Submit sample.

2.08 STAKING MATERIALS

A. Stakes for supporting trees shall be of sound wood, uniform in size, free of knots and holes. They shall be nominal 2" x 4" and 10' long for support staking, 3' long for guy wire anchor stakes. Stakes shall be stained dark brown.

B. Wire for tree bracing and guying shall be pliable No. 12 gauge galvanized steel.

C. Hose for covering wire shall be new or used 2 ply reinforced rubber garden hose not less than 1/2" inside diameter.

D. Wrapping material shall be first quality, heavy waterproof crepe paper manufactured for this purpose, or first quality burlap not less than 4" nor more than 6" wide of suitable strength and manufactured for this purpose.

2.09 SEED

A. Seed mixture shall be fresh, clean, new crop seed. Grass shall be of the previous year's crop and in no case shall the weed seed content exceed 0.25% by weight. The seed shall be furnished and delivered in the proportion specified below in new, clean, sealed and properly labeled containers. All seed shall comply with State and Federal seed laws. Submit manufacturer's Certificates of Compliance. Seed that has become wet, moldy or otherwise damaged shall not be acceptable. Chewings fescue, hard fescue, tall fescue and Ryegrass shall contain Acromonium endophytes. Seed containing endophyte must be kept cool and dry at all times; do not stockpile in the sun.

1. Seed Mixture Composition (not to be used on terraces)

	Proportion By Weight	Germination Minimum	Purity Minimum
a. Common Name			
b. Creeping Red Fescue	50%	85%	95%
c. Kentucky Bluegrass	40%	85%	
d. Perennial Rye	10%	90%	

e. Bluegrass and ryegrass varieties shall be within the top 50 percent and 25 percent respectively, of varieties tested in National Turfgrass Evaluation Program, or currently recommended as low maintenance varieties by University of Massachusetts or the University of Rhode Island.

f. Seeding rate for the General Lawn Seed Mix shall be 6 pounds per 1,000 square feet.

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PART 3 - EXECUTION

3.01 METHODS

A. Personnel: The planting and lawn construction shall be performed by personnel familiar with the accepted procedure of planting and under the constant supervision of a qualified planting foreman.

B. Planting Seasons:

1. Deciduous plants shall be planted only when dormant, that is, before leaves appear in the spring and subsequent to their loss in the fall, unless otherwise directed by the Architect.
2. Evergreen plants may be planted in the spring until new growth appears and any time between September 15 and November 30.
3. If the building completion date prohibits in-season planting, the Contractor shall complete his work within the project date and prepare himself for out-of-season planting, including wiltproofing and extra watering.
   a. Plant guarantee periods remain as stated below. No frozen ground planting.

C. Lawn Replacement

1. Remove all areas of dead lawn including root system. The Architect shall be the sole authority as to the extent of lawn replacement areas.
2. Contractor to provide a minimum of 6" of new loam in all areas of lawn replacement. Peat moss shall be mixed into existing hard and/or clay type soil. Architect shall determine the need for and amounts of peat moss required.
3. New grass shall be sod of rye grass, blue grass or a combination of both.
4. Apply starter fertilizer to all areas of newly planted grass.
5. Maintain constant moist soil conditions, a minimum of thirty days.

D. Planting of Trees, Shrubs, and Vines:

1. Unless otherwise directed by the Architect, the indication of a plant to be replaced is to be interpreted as including the digging of a hole, furnishing a plant of the specified size, the work of planting and mulching, and guying, staking and wrapping where called for.
2. One or more stockpiles of approved backfill mixture shall be maintained at all times during the planting operations. The backfill mixture shall consist of 50% topsoil and 50% specified composted cow manure by volume, thoroughly mixed together. The following shall be added to each area of tree replacement:
   a. 5 lbs. of sludge fertilizer
   b. 5 lbs. of bone meal

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c. 5 lbs. of cottonseed meal
   1) The following shall be added to each area of lawn replacement:
   (a) 1 lb. sludge fertilizer
   (b) 1 lb. bone meal
   (c) 1 lb. cottonseed meal

3. Locations for all plants shall be staked on the ground and must be approved by the Architect before any excavation is made. Adjustments in locations and outlines shall be made as directed. In the event that areas for planting are prepared and backfilled with Backfill Mixture to grade prior to commencement of lawn operations, they shall be so marked that when the work of planting proceeds, they can be readily located.
   a. In case underground obstructions such as ledge or utilities are encountered, locations shall be changed under the direction of the Architect without extra charge.
4. Holes for trees shall be at least 2' greater in diameter than the spread of the root systems and at least 6" deeper than root ball. Holes for shrubs and vines shall be at least 12" greater in diameter than the spread of the root system and at least 18" deep.
5. Specified backfill mixture shall be spread and incorporated with loam in all areas of tree or lawn replacement and as directed by the Architect.
6. Planting: All plant roots and earthballs must be kept damp and thoroughly protected from sun and/or drying winds at all times from the beginning until the final operation, during transportation, and on the ground until the final operation of planting. The plants shall be planted in the center of the holes and at the same depth as they previously grew. They shall be plumbed and turned as directed. Specified Mixture shall be backfilled in layers of not more than 9" and each layer watered sufficiently to settle before the next layer is put in place. Backfill Mixture shall be tamped under edges of balled plants. Enough Backfill Material shall be used to bring the surfaces to finish grade when settled.
   a. A saucer shall be provided around each plant.
   b. Plants must be flooded with water twice within the first 24 hours of time of planting.
   c. Wrapping: The trunks of all shade trees shall be wrapped spirally from the ground to the height of the second branches or as directed. Wrap brown cord 3" on center spirally to hold paper neatly in place.
   d. Provide a 3" layer (after settlement) of bark mulch over the surface of each saucer and over the entire area of shrub beds.
   e. Stake all trees.

E. PLANTING COORDINATION:

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1. Replacement plantings must match existing for type and caliber of trees and size of shrubs.
2. The Contractor shall be responsible for selection and tagging at nurseries stocking the specified materials.
3. Contractor shall inform Architect when planting will commence, anticipated delivery date of material and have made and provided for the staking of all plants and plant bed.
4. Failure to notify the Architect in advance, in order to arrange proper scheduling may result in loss of time or removal of any plant or plants not installed as specified or directed.

3.02 PRUNING

A. Each tree and shrub shall be pruned in accordance with American Nurserymen Association Standards to preserve the natural character of the plant.

B. All dead wood or suckers and all broken or badly bruised branches shall be removed. In addition, 1/3 of the wood may be removed by thinning out to balance root loss due to transplanting providing the natural character and form of the tree is preserved. Never cut a leader.

C. Pruning shall be done with clean, sharp tools.

D. Cuts over 1" in diameter shall be painted with an approved asphaltic tree paint. Paint shall cover all exposed living tissue.

3.03 MAINTENANCE

A. Maintenance shall begin immediately after each plant is planted. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected for a minimum of 30 days until provisional acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored and dead material removed. Stakes and wire shall be tightened and repaired.

1. Defective work shall be corrected as soon as possible after it becomes apparent and weather and season permit.

B. Upon completion of planting and prior to provisional acceptance, remove from the site excess soil and debris, and repair all damage resulting from planting operations.

C. Protection: Planting areas and plants shall be protected against trespassing and damage of any kind. This shall include the provision and installation of approved temporary fencing if necessary. If any plants become damaged or injured by vandalism or neglect of others prior to provisional acceptance, the Contractor shall treat or replace them at his own expense.

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3.04 ACCEPTANCE AND GUARANTEE

A. After the 30-day maintenance period, the Contractor shall request from the Architect an inspection to determine whether the plant material is acceptable. If the plant materials and workmanship are acceptable, written notice shall be given by the Architect to the Contractor stating that the guarantee period begins from the date of inspection.

B. If a substantial number of plants are sickly or dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all plants shall be extended until replacements are made. Replacements shall conform in all respects to specifications for new plants and shall be planted in the same manner.

C. Materials and Operations: All replacements shall be plants of the same kind and size specified on the plant list. They shall be furnished and planted as specified above. The cost shall be borne by the Contractor. Replacements resulting from the removal, loss or damage, due to occupancy of the project in any part, vandalism, or acts of neglect on the part of others, physical damage by animals, vehicles, etc., and losses due to curtailment of water by local authorities, will be approved and paid for by the Owner.

D. Plants shall be guaranteed for a period of one year after inspection and shall be alive and in satisfactory growth at the end of the guarantee period.

E. At the end of the guarantee period, inspection will be made again. Any plant required under this Contract that is dead or unsatisfactory shall be removed from the site. These shall be replaced during the normal planting season, until the plants live through one year.

END OF SECTION