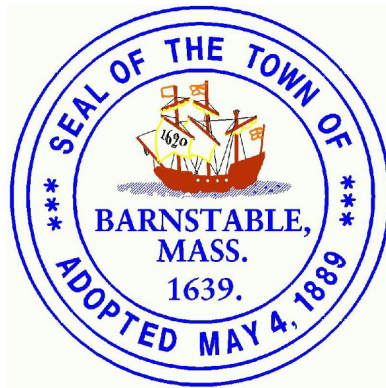


PROJECT MANUAL
FOR
BUILDING ENVELOPE REPAIRS
AT THE
BARNSTABLE INTERMEDIATE SCHOOL
BARNSTABLE, MASSACHUSETTS
TOWN OF BARNSTABLE



Bidding Documents

September 8, 2015

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CBI JOB NO.: 13165-C

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BUILDING ENVELOPE REPAIRS

BARNSTABLE INTERMEDIATE SCHOOL

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SECTION 00 85 10

DRAWING LIST

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DRAWING LIST

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A6-04	TYPICAL CURTAIN WALL DETAILS
A6-05	TYPICAL CURTAIN WALL DETAILS & PHOTOS
A6-06	TYPICAL STOREFRONT DETAILS
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SECTION 01 10 00

SUMMARY OF WORK

PART 1 GENERAL

1.1 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.

1.2 PROJECT

- A. Project Name: Building Envelope Repairs at the Barnstable Intermediate School.
- B. Project Location
 - 1. 895 Falmouth Road
Hyannis, MA 02601
- C. Owner's Name: Town of Barnstable.
- D. Architect's Name: CBI Consulting Inc..

1.3 WORK UNDER THIS CONTRACT

- A. The work to be done under this contract consists of executing and completing all work required for the Building Envelope Repairs at the Barnstable Intermediate 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 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 repair and/or replacement of portions of the EIFS walls, portions of the roofing, removal and re-installation of the windows, curtain walls and storefronts where indicated, installation of flashings, waterproofing and sealants, and replacement of roofing edge metal and doors. 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.
 2. Work at Exterior Walls:
 - a. Remove and dispose of existing EIFS assembly in its entirety, including (but not exclusive of) rigid polystyrene insulation board, starter tracks, fasteners, and building paper, around the windows, doors, curtain walls and storefronts, and along the soffits, parapets, roof edges and other areas indicated on the Drawings to accommodate flashings, metal panels, and waterproofing. Note: Refer to **Add Alternate #3** description below for EIFS work (at the Gymnasium) not included in Base Bid.
 - b. Remove and dispose of EIFS assembly at additional deteriorated areas around the building. Refer to Unit Price Schedule for quantities.
 - c. Install drainable self-adhered EIFS system, including starter tracks, mesh and coatings at all locations where existing EIFS has been removed. EIFS products shall be by a single source manufacturer. Provide continuous fluid-applied rapid-set air and water barrier by EIFS Manufacturer to the METAL WINDOWS FILED SUB-BIDDER for installation around window, door, curtain wall and storefront openings prior to their re-installation.
 - d. Install medium acrylic textured finish over 100% of the existing and replacement EIFS walls.
 - e. Temporarily remove building-mounted fixtures including lights, louvers and other devices to accommodate the work, and re-install upon completion of the Work.

SUMMARY OF WORK

3. Work at Roofs by ROOFING AND FLASHING FILED SUB-BIDDER:
 - a. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 - b. Remove and dispose of all roofing where indicated on the Drawings to accommodate work at roof drains, rooftop units parapet walls and other areas indicated on the drawings, including (but not exclusive of) all existing PVC membrane, insulation, edge metal, flashing, sealants and other associated roofing. Refer to **Add Alternate #1** description below for additional roof work not included in Base Bid.
 - c. Inspect existing wood blocking at the roof edges, and replace deteriorated materials with pressure treated wood blocking. Refer to Unit Price Schedule for Base Bid quantities.
 - d. Inspect existing plywood sheathing at the back of parapet walls, and replace deteriorated materials with fire retardant treated plywood. Refer to Unit Price Schedule for Base Bid Quantities.
 - e. Install new 60 mil PVC roofing system, complete with membrane, tapered rigid insulation, including all blocking, edge metal, sheet metal flashings, trim and sealants required for a complete watertight installation.
 - f. Remove and dispose of existing roof drains where indicated on the Drawings and install new roof drains.
 - g. Snake clear all roof drains to the street after completion of all roof work.
 - h. Remove and dispose of existing aluminum gutters and downspouts where indicated on the drawings and install new aluminum gutters and downspouts and in the profiles as indicated on the drawings.
 - i. Provide and install concrete splash blocks at all downspouts.
 - j. Provide and install painted wood stool and trim, and painted gypsum wallboard where indicated on the drawings where stool, trim and wallboard have been removed to accommodate the removal of windows, doors, curtain walls and store front systems.
 - k. Remove and dispose of existing electrical boxes at RTU 13, 15 and 16 and install new electrical boxes furnished by the Owner.
4. Work at Window and Door perimeters by WATERPROOFING, DAMPROOFING AND CAULKING FILED SUB-BIDDER:
 - a. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 - b. Install backer rod and sealants at perimeter of all windows, doors, curtain wall, storefront and Kalwall units scheduled to be removed and re-installed, by the WATERPROOFING, DAMPROOFING AND CAULKING FILED SUB-BIDDER.
5. Work at Windows, Doors, Curtain walls and Storefronts by METAL WINDOWS FILED SUB-BIDDER:
 - a. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 - b. Carefully remove, protect and reinstall existing aluminum windows, curtain walls and storefronts where indicated on the Drawings and install of

SUMMARY OF WORK

waterproofing, flashing, receptors, and other components at the perimeter of the openings.

- c. Remove and dispose of existing metal doors and frames where indicated on the Drawings and install new FRP doors in thermally-broken aluminum frames, complete with new threshold and door hardware.
 - d. Install thermal insulation at perimeter of all windows, doors, storefronts, curtain walls and Kalwall systems scheduled to be removed and reinstalled to completely fill gaps in the existing construction and between the receptors and the window units.
 - e. Provide and install sealants at all aluminum to aluminum joints at the windows, storefronts and curtain walls that are re-installed.
6. **Add Alternate #1:** Add Alternate #1 shall include PVC Roofing replacements including but not exclusive of areas indicated on Drawing #1 / A1-05 and #1 - #4 / A2-06, and Add Alternate #1 details on Drawings A4-01, A4-03, and A4-10, except for the Roof Drain replacements which shall be included in the Base Bid. Inspect existing Concrete Deck, and refer to Unit Price Schedule Items #1 and #2 for Concrete Deck Repairs.
 7. **Add Alternate #2:** Add Alternate #2 shall include E.I.F.S. re-coating at existing direct-applied finished soffits including but not exclusive of areas indicated on Partial First Floor Reflected Ceiling Plans A1-01.1, A1-01.2, and A1-01.3.
 8. **Add Alternate #3:** Add Alternate #3 shall include all the same scope of work of the project including but not exclusive of roofing replacements, door replacements, and E.I.F.S. replacements at (a new scope area:) the Gymnasium (between existing Column Grid #17 through Grid #22), including but not exclusive of areas indicated on A1-04, Drawing #1 / A2-02, Drawing #1 / A2-03 and Drawings #2 and #3 / A2-04, except for the Roof Drain replacement which shall be included in the Base Bid.
 9. **Add Alternate #4:** Add Alternate #4 shall include Site Storm Utility Drainage work, including associated selective demolition, Earthwork and Concrete work including but not exclusive of areas indicated on Drawing #1 / L1-01 and #2 and #3 / A1-01.

1.4 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.
- B. The project will be bid with the DCAMM Certified 'General Building' Contractor as the GENERAL BIDDER. There will be filed sub-bidders in the categories of 'METAL WINDOWS', 'WATERPROOFING, DAMPROOFING AND CAULKING', and 'ROOFING AND FLASHING'.

1.5 OWNER OCCUPANCY

- A. Owner intends to occupy the Project during construction.
- B. **The School Department will not allow access to more than four (4) classrooms at any given time during the school year to allow teachers and students to temporarily relocate to swing space provided by the School Department.** 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, and Classrooms shall not be turned back over for occupancy until all of the interior work at the openings is

SUMMARY OF WORK

complete.

- 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.

1.6 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 areas of the building that are not scheduled for work. Contractors shall not use the roof hatches for access to the roof.
- 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. 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.

1.7 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, that they are familiar with the conditions and requirements of both where they require, in any part of the work a given result to be produced, that the contract documents are adequate and they will produce the required results

SUMMARY OF WORK

1.8 SUPERVISION OF WORK

- A. The Contractor shall be held directly responsible for the correct installation of all work performed 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 final acceptance 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 all work under this contract and who shall remain on duty at the site throughout the Contract period while work is in progress.

1.9 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 and work 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 and provision of service lines for such products shall be included under these Construction Contract Documents, if indicated. Final connections from service lines to equipment will be by the Owner, unless otherwise indicated.

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 so indicates.
- 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 to make 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 the schedule and quality standards of the Project.

- E. Means and methods of construction as well as compliance with OSHA and all other safety 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 to the 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.
 - 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

SUMMARY OF WORK

01 10 00 - 7

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

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SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 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.

1.2 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.

1.3 RELATED REQUIREMENTS

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

1.4 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.
- 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.

1.5 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.
 - 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 dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.6 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 revised drawings 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 the requested price will be considered valid. Contractor shall prepare and submit a fixed price 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 be based on the fixed unit prices.
 - 4. For change ordered by Architect without a quotation from Contractor, the amount will 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.
- 1.7 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

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.1 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.

1.1 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 not be adjusted if the quantities approved in the field by the Architect vary from the base contract quantities listed in the Project Manual.

1.2 APPLICABILITY OF UNIT PRICES

- A. The payment lines shall be determined in the field by the Architect.

- B. 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.
- C. 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.
- D. 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.
- E. See attached **Unit Price Schedule**:

#	DESCRIPTION OF WORK	UNIT	BASE BID QUANTITY	REFERENE DETAILS	ADD / DEDUCT UNIT PRICE (Insert only one number)
1	Concrete Deck Crack Repair by Roofing File Sub-Bidder	LF	25* (Add Alt. #1)	#7A / A4-01	_____ / LF
2	Concrete Deck Patch Repair by Roofing File Sub-Bidder	SF	10* (Add Alt. #1)	#7B / A4-01	_____ / SF
3	EIFS Replacement at deteriorated areas	SF	500*	#2, #3 & #4 / A3-01	_____ / SF
4	2x6 P.T. Wood Blocking replacement at roof edge by Roofing File Sub-Bidder	LF	200*		_____ / LF
5	2x8 P.T. Wood Blocking replacement at window sills by Metal Window File Sub-Bidder	LF	200*		_____ / LF
6	¾" Fire Retardant Treated plywood sheathing at the roof side of the parapet walls	SF	64		_____ / SF
7	½" Gypsum Wallboard replacement, Painted, at window, storefront and curtainwall returns	SF	200*		_____ / SF

*Indicates that the quantity listed is in addition to all the scope areas shown, indicated, or noted on the plans.

- F. 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.
- G. The Owner reserves that right to increase or decrease the unit cost quantities without any adjustment in the unit prices.
- H. Take all measurements and compute quantities. Measurements and quantities will be verified by the Architect.
- I. Assist by providing necessary equipment, workers, and survey personnel as required.
- J. 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.

1.3 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

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
BARNSTABLE, MASSACHUSETTS
CBI JOB NO.: 13165-C

CBI Consulting Inc.
Boston, Massachusetts
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SECTION 01 23 00

ALTERNATES

PART 1 – GENERAL

1.1 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.

1.2 GENERAL

- A. The Add Alternate items as set forth in the Add Alternate Schedule below shall be used to determine adjustments to the Contract Sum if any of these Add Alternates are chosen by the owner to be added to the total Bid Price submitted by the Contractor.
- B. The Add Alternate prices as computed are to include net cost plus overhead, profit, bond and all other cost related to the work item.
- C. Add Alternate net cost to include the cost of all labor, materials, equipment, disposal, and all other costs that would have been required to complete the work item.

1.2. ADD ALTERNATE SCHEDULE

- A. This schedule lists the Add Alternates which are to be incorporated into the Contract Documents. Consult the Specification Sections and Plans for the scope of the work to be included in each Add Alternate.

GENERAL CONTRACTOR

1. **Add Alternate #1:** PVC Roofing replacements including but not exclusive of areas indicated on Drawing #1 / A1-05 and #1 – #4 / A2-06, and Add Alternate #1 details on Drawings A4-01, A4-03, and A4-10, except for the Roof Drain replacements which shall be included in the Base Bid..
2. **Add Alternate #2:** E.I.F.S. re-coating at existing direct-applied finished soffits including but not exclusive of areas indicated on Partial First Floor Reflected Ceiling Plans A1-01.1, A1-01.2, and A1-01.3.
3. **Add Alternate #3:** All work including but not exclusive of roofing replacements, door replacements, and E.I.F.S. replacements at the Gymnasium

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(between existing Column Grid #17 - #22), including but not exclusive of areas indicated on A1-04, Drawing #1 / A2-02, Drawing #1 / A2-03 and Drawings #2 and #3 / A2-04, except for the Roof Drain replacement which shall be included in the Base Bid.

4. **Add Alternate #4:** Site Storm Utility Drainage work, including associated selective demolition, Earthwork and Concrete work including but not exclusive of areas indicated on Drawing #1 / L1-01 and #2 and #3 / A1-01.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 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.

1.2 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.

1.3 RELATED REQUIREMENTS

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

1.4 PROJECT COORDINATION

- A. Owner's Project Manager (OPM): Mark Marinaccio.
- B. Cooperate with the OPM and the School Department's authorized representative in allocation 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 Intermediate School are the utmost concern of the project. All work by the Contractor, his Sub-Contractors, suppliers, and employees shall be performed in a way that will safeguard this concern. Safety is the sole responsibility of the Contractor on the jobsite. Extraordinary care must be taken throughout the project to coordinate work activities with the School schedules, procedures, and activities, and use of the building as the Town's Emergency Shelter.
 - 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, the Contractors, 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, 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 sole responsibility of the contractor, regardless of the information in this specification.
 - 6. Contractor shall cover and enclose all interior spaces without a suspended ceiling where roof work will occur above, with minimum 6-mil poly tarps before operations commence on the roof above to protect interior surfaces, furnishings and equipment from debris and dust. The contractor shall move all loose furniture in the classrooms to the center of the room and cover. All protections shall be removed immediately upon completion of the work, and the furniture returned to their original locations.

Dust and debris not contained by the tarps 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.

7. Contractor shall provide signage and other safety barriers at the site and within the building adequate to support their safety program.
8. 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 daily progress and review the schedule for the next three (3) days.

H. Scheduling

1. 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 instructions.
 - b. The anticipated Start Date of the Work is November 1, 2015. All work shall be substantially complete by **August 20, 2016**
 - c. **The School Department will not allow access to more than four (4) classrooms at any given time during the school year to allow teachers and students to temporarily relocate to swing space provided by the School Department.** 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, and Classrooms shall not be turned back over for occupancy until all of the interior work at the openings is complete.

I. Subcontractors

1. Subcontractors are subject to approval by the Owner.

J. Construction Review

1. All materials and workmanship shall be subject to review by the Architect and all designated 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 to require his/her attention, and the Architect shall have the right to reject all defective or non-conforming workmanship and material, and to require its replacement.
 - a. If any unreviewed work is covered up without approval, the Contractor shall bear the costs of uncovering it upon request.

K. Codes

1. Codes, standards, and publications of private and public bodies mentioned in these specifications, 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.

L. Coordination of Work

1. Contractor shall coordinate all construction work with the Project Coordinator.
 - a. 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.

- b. 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 spaces below prior to the installation of the new roofing (same day).
- M. Specification
1. A complete copy of the project manual, including plans and specifications shall be kept at the construction site at all times.
- N. Field Measurements
1. Before ordering any materials or performing any work, the Contractor or his/her subcontractors shall inspect all existing conditions and perform all measurements at the building. No extra charge or compensation will be allowed because of differences between the drawings and the actual dimensions. Any differences between the Project Manual and the actual conditions found shall be submitted to the Architect for direction before proceeding with the work.
- O. Cutting and Patching
1. The work to be performed under this Contract shall include all cutting and patching necessary to accommodate new work.
 2. Each Filed Sub-Bidder shall be responsible for temporary removal, and removal and disposal of existing materials to accommodate their work, unless noted otherwise.
 - a. All existing backer rod and sealants at the perimeter of windows, doors, storefronts and curtainwalls scheduled to be removed shall be removed and disposed of by the METAL WINDOWS Filed Sub-Bidder.
- P. Permits
1. Procurement of building permits shall be the responsibility of the Contractor. Requests for inspections by the Building Inspector and the obtaining of required signatures by Inspection on permits is the responsibility of the Contractor. **Permit fees will NOT be waived.**
- Q. 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

3.1 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:

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.

3.2 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.
 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.

**ADMINISTRATIVE
REQUIREMENTS**

- 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.

3.3 PROGRESS MEETINGS

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

3.4 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the 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 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.

3.5 PROGRESS PHOTOGRAPHS

- A. Take photographs as evidence of existing project conditions.

3.6 DAILY PROGRESS REPORTS

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

3.7 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.

3.8 SUBMITTALS FOR INFORMATION

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

3.9 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 two copies 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 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.
- 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 with Mechanical, Electrical and Plumbing trades.
- G. The Structural Design of the building is based on the full interaction of all it's 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 – Eight Edition.
- J. The plans were compiled from various sources. The Contractor is responsible for verifying all existing conditions and dimensions.

3.14 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.

3.15 OWNER'S COOPERATION

- A. The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan.
- B. 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 and Certified Payroll records are up to date.
- C. 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.

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 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.

1.2 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.3 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.

1.4 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

3.1 PRELIMINARY SCHEDULE

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

3.2 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.

3.3 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.4 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 a given activity depends on completion of preceding activities, and how 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 recomputation 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.
- 3.5 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.
- 3.6 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.
 - 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.
- 3.7 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

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

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Boston, Massachusetts
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SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 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.

1.2 SECTION INCLUDES

- A. Mock-ups.
- B. Control of installation.
- C. Tolerances.
- D. Testing and inspection services.
- E. Manufacturers' field services.

1.3 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.

1.4 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 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.

1.5 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 concept expressed 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 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, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- 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.

1.6 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 material manufacturer.
- 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 the manufacturer's warranty.

1.7 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:
 - 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

PART 3 EXECUTION

3.1 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.

3.2 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. Integrated Exterior Mockups: construct integrated exterior mockup. Coordinate installation of exterior envelope materials and products as required in individual

Specification Sections. Provide adequate supporting structure for mockup materials as necessary.

- C. Provide supervisory personnel who will oversee mockup construction. Provide workers that will be employed during the construction at Project.
- D. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- E. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- F. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
- G. Accepted mock-ups shall be a comparison standard for the remaining Work.
- H. 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.

3.3 TOLERANCES

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

3.4 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 operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional 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.

3.5 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 to initiate 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.

3.6 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

SECTION 01 42 16

DEFINITIONS

PART 1 GENERAL

1.1 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.

1.2 SUMMARY

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.3 DEFINITIONS

- A. "Consultant": Any reference to "Designer", "Engineer" or "Architect" in this Project Manual, Specification or on the drawings shall refer to CBI Consulting Inc., 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 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.

DEFINITIONS

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

CBI Consulting Inc.
Boston, Massachusetts
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- 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

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 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.

1.2 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.

1.3 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 Substantial Completion 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

TEMPORARY FACILITIES AND CONTROLS

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 during construction. The Architect does not have control of the job site in any way.

1.4 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.
- 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.

1.5 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 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, the Contractor shall provide and pay for additional service.
 8. Email: Account/address reserved for project use.

1.6 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.

1.7 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 site and to protect existing facilities and adjacent properties from damage from construction operations and demolition. This includes removing and storing all ladders and staging from 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.

1.8 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.

1.9 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.

TEMPORARY FACILITIES AND CONTROLS

- 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 for construction 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 material outside 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. Provide Construction Office Trailer: Weather tight, with lighting, electrical outlets, heating, cooling equipment.
- B. The Contractor shall provide a suitable Project Trailer at this location, 400 SF minimum, that shall be accessible at all times to the Owner's Representative, the Architect, and their authorized representatives. Locate offices a minimum distance of 30 feet from existing and new structures.
- C. The Owner will not provide any space within the buildings for use by the Contractor as an office. There is space on the property for contractor supplied site office trailers and storage units. Locations as directed by the Owner.
- D. Weekly job meetings shall be held at the job site.
- E. 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.

TEMPORARY FACILITIES AND CONTROLS

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.
11. One laptop computer for the exclusive use of the Owner's Representative with the following specs:

PROCESSOR	Intel® Core™ i5-2430M processor (2.40GHz, 3M cache, with Turbo Boost Technology 2.0))
OPERATING SYSTEM	Genuine Windows® 7 Professional, w XP Mode, No Media, 64-bit, English
PRODUCTIVITY SOFTWARE	Microsoft™ Office® Basic 2007
WARRANTY & SERVICE	1 Year Basic Limited Warranty and 1 Year NBD On-Site Service
LCD PANEL	15.6" HD (1366x768) Anti-Glare LED-backlit
MEMORY	8.0GB, DDR3-1333MHz SDRAM, 2 DIMMS
OPTICAL DRIVE	8X DVD+/-RW with double-layer DVD+/-R write capability, with Roxio Creator
VIDEO CARD	Intel® HD Graphics 3000
HARD DRIVE	320GB 7200RPM SATA Hard Drive
WI-FI WIRELESS CARD	Dell Wireless™ 1530 802.11a/g/n Draft Mini Card
WEBCAM	Light Sensitive Webcam and Noise Cancelling Digital Array Mic
BATTERIES	6-cell Lithium Ion Primary Battery
TOP SELLING SOFTWARE	Trend Micro Titanium Internet Security, 15 Month
DELL PRINTER	Dell 1135n Multifunction Laser Printer
SERVICE & SUPPORT	1 Year Basic Limited Warranty and 1 Year Advanced Exchange
DELL V305 ALL IN ONE PRINTER	Dell 1135n Laser Printer
ADOBE SOFTWARE	Adobe® Reader
SECURITY	Trend Micro Titanium Internet Security, 15 Month
ON-SITE SYSTEM SET-UP	Onsite System Setup
DELL DATASAFE™ ONLINE BACKUP	Online Data Back Up
SOUND OPTION	High Definition Audio 2.0

**TEMPORARY FACILITIES
 AND CONTROLS**

Customized Pictaflex LCD Back	No Customization LCD Option
Processor Branding	Intel Core i5 Duo Label

- E. The offices, equipment, and furnishings shall be maintained by the **Contractor** in a clean and orderly condition, and be removed upon receipt of written direction of the **Owner's Representative**.
- F. Provide wireless internet service in the office.

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

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 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.

1.2 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.

1.3 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. 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

2.1 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.

2.2 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.

2.3 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.

2.4 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

3.1 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 will require 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.

3.2 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.
- 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.

3.3 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

SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 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.

1.2 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.

1.3 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, 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.
- 1.4 REFERENCE STANDARDS
- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.
- 1.5 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.
 - h. Date and time work will be executed.
 - D. Project Record Documents: Accurately record actual locations of capped and active utilities.
- 1.6 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.

1.7 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.

1.8 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.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible 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 electrical work 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, for maintenance, 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

2.1 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

3.1 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, including elements 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.

3.2 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.

3.3 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.

3.4 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 for replacement.
- 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.

3.5 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 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; remove existing 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 allow access 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.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub 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 of division 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 be refinished, 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.

3.6 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.
 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, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.7 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.

3.8 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 roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.9 ADJUSTING

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

3.10 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Use cleaning materials that are nonhazardous.
- C. Clean exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances.

- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

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 for Contractor'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 Completion inspection.
- 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 specified warranty, 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.

END OF SECTION

SECTION 01 78 00

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 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.

1.2 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.3 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.

1.4 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.
- 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

3.1 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.
- 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:

CLOSEOUT SUBMITTALS

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.

3.2 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.

3.3 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. 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 and maintenance of the specific products.

3.4 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 and maintenance 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.

3.5 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 specification sections.
- 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.
- 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 the contents 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.

CLOSEOUT SUBMITTALS

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.

3.6 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 of work. 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.
- 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

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

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SECTION 02 41 00

SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 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.

1.2 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 accessories. Coordinate the Selective Demolition work with all the other trades for the project. Provide all Selective Demolition and disposal work to complete the re-roofing and related 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 and each Subcontractor for the entire project so that all the work can be properly and completely performed.
- B. Selective Demolition work includes, but is not limited to:
 - 1. Remove and dispose of existing roof, including all PVC membrane, cover boards, insulation, flashing, edge metal, sealants, crickets and other associated roofing materials and components where indicated on the drawings by the ROOFING AND FLASHING FILE SUB-BIDDER. Refer to Section 01 23 00 Alternates, for selective demolition included in Add Alternate #1 and Add Alternate #3.
 - 2. Remove and dispose of existing roof drains where indicated on the Drawings by the ROOFING AND FLASHING FILE SUB-BIDDER.
 - 3. Remove and dispose of existing gutter, and downspout where indicated on the drawing by the ROOFING AND FLASHING FILE SUB-BIDDER.
 - 4. Remove and dispose of existing EIFS assembly where indicated on the Drawings by the GENERAL BIDDER. Refer to Unit Price Schedule for additional quantities. Locations not indicated on the Drawings will be marked in the field by the Architect.

5. Remove and dispose of existing window jamb and head receptors where indicated on the Drawings by the METAL WINDOWS FILE SUB-BIDDER.
6. Remove and dispose of existing wood stool, wood trim, and gypsum wallboard return at openings to accommodate the window, door, storefront, and curtainwall removal and where indicated on the Drawings by the METAL WINDOWS FILE SUB-BIDDER.

1.3 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary of Work: Limitations on Contractor's use of site and premises.
- B. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- C. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- D. Section 07 01 50.19 - Preparation for Re-Roofing: Removal of existing roofing, roof insulation, flashing, trim, and accessories.

1.4 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 1. Areas for temporary construction and field offices.
 2. Areas for temporary and permanent placement of removed materials.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Temporary Protection: Sheet polyethylene; provide weights to retain sheeting in position.

PART 3 EXECUTION

3.1 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. 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.
3. Provide, erect, and maintain temporary barriers and security devices.
 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 5. Do not close or obstruct roadways or sidewalks without permit.
 6. 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.
 7. 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. Only remove what can be re-roofed with new materials in the same day or prior to impending weather.
- D. Remove loose refuse and dispose off site.
- E. Repair existing deck surfaces to provide smooth work surface for new roof system.
- F. 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.
- G. 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.
- H. If hazardous materials are discovered during removal operations that are not indicated on the hazardous materials report, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.2 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. 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.
- F. 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.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. 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.

3.3 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. Separate areas in which demolition is being conducted from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 .
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals; replace with new construction specified.
 - 2. Remove items indicated on drawings.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - 2. 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.
 - 3. Verify that abandoned services serve only abandoned facilities before removal.
 - 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
 - 1. Provide temporary protective sheeting over uncovered deck surfaces.
 - 2. Provide for surface drainage from sheeting to existing drainage facilities.
 - 3. Do not permit traffic over unprotected or repaired deck surface.
 - 4. Prevent movement of structure; provide shoring and bracing if necessary.
 - 5. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 6. Repair adjacent construction and finishes damaged during removal work.
 - 7. Patch as specified for patching new work.
- G. Protect the building, its contents and occupants from all damage from water, dust and debris. Restore all items to former condition.

3.4 DEBRIS AND WASTE REMOVAL

- A. Sweep roof surface clean of loose matter.
- B. Remove debris, junk, and trash from site.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

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SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Cold-Formed Metal Framing work required to complete the work of the contract including all the Cold-Formed Metal Framing 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 Cold-Formed Metal Framing work with all the other trades for the project. Provide all demolition and disposal work to complete the Cold-Formed Metal Framing 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. Cold-Formed Metal Framing work includes, but is not limited to:
 - 1. Fabrication and installation of cold formed steel stud framing.

1.3 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Roof and wall sheathing.
- B. Section 07 21 00 - Thermal Insulation: Insulation within framing members.
- C. Section 07 25 00 - Weather Barriers: Weather barrier over sheathing.
- D. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.4 REFERENCE STANDARDS

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.
- B. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- E. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2011c.
- F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a.
- G. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2011 w/Errata.
- H. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; American Welding Society; 2008.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
 - 1. Indicate stud, floor joist, and ceiling joist layout.
 - 2. Describe method for securing studs to tracks and for bolted framing connections.
 - 3. The Contractor shall engage the services of a professional engineer registered in the State of Massachusetts to prepare complete shop drawings and structural design computations of all Work of this Section, and such Drawings shall bear the engineer's professional seal. Note: Manufacturer's shop drawings stamped by the engineer are acceptable in lieu of those actually prepared by the engineer.
 - 4. The Structural design computations shall provide a complete structural analysis of all typical and special conditions of construction, and shall certify conformance to the governing laws and building code.

- D. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.
- E. Certifications: Submit to Architect a statement from manufacturer certifying that materials and sections provided comply with the minimum requirements specified in the Contract Documents. Include certificates of compliance for mechanical fasteners.
 - 1. Provide certification that welders employed in the Work of this project have satisfactorily passed AWS qualification tests within the previous 12 months.

1.7 QUALITY ASSURANCE

- A. Designer Qualifications: Design framing system 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 Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.
- D. Component Installation: In-place components will be inspected to confirm compliance with size, gauge and spacing requirements as well as bridging and cross brace requirements specified in the Contract Documents and in final shop drawings.
- E. Attachments: Welds and mechanical fasteners will be visually inspected to confirm that Project requirements for spacing and size are met. Verify that attachment of cold formed framing is in conformance with details shown in the Contract Documents or reviewed shop drawings. Attachments will be periodically inspected for tightness.

1.8 MOCK-UP

- A. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, sheathing, door frame, and exterior wall finish.
- B. Approved mock-up may remain as part of the Work.

1.9 DELIVERY AND STORAGE

- A. Protect metal framing units from rusting and damage. Deliver to the project site in manufacturer's unopened containers or bundles fully identified with name, brand, type, and grade. Store off the ground in a dry ventilated space or protect with suitable waterproof coverings.

PART 2 PRODUCTS

2.1 FRAMING SYSTEM

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Design Criteria: Provide completed framing system having the following characteristics:

1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100-12. Steel studs shall be minimum 18 gauge.
 2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
 3. Design Loads: As follows:
 - a. Wind Loads: 26.2 psf positive and -34.3 psf negative.
 4. Live load deflection meeting the following, unless otherwise indicated:
 - a. Roofs: Maximum vertical deflection under live load of 1/240 of span.
 - b. Exterior Walls: Maximum horizontal deflection under wind load of 1/180 of span.
 - c. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
 5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
- C. Shop fabricate framing system to the greatest extent possible.
- D. Deliver to site in largest practical sections.

2.2 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
1. Gage and Depth: As required to meet specified performance levels, at less than 18 gauge.
- B. Framing Connectors: Factory-made, formed steel sheet.
1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gage, 0.1345 inch, and factory punched holes and slots.
 2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
 3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
 - a. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.

5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections at third points.

2.3 FASTENERS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.
- C. Welding: In conformance with AWS D1.1/D1.1M.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

3.2 INSTALLATION OF STUDS

- A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.

END OF SECTION

BUILDING ENVELOPE REPAIRS
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SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Rough Carpentry work required to complete the work of the contract including all the Rough Carpentry 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 Rough Carpentry work with all the other trades for the project. Provide all demolition and disposal work to complete the Rough Carpentry 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. Rough Carpentry work includes, but is not limited to:
 - 1. Remove and dispose of deteriorated plywood at the roof side of the parapet walls and install plywood replacement. Refer to Unit Price Schedule.
 - 2. Replacement of concealed wood blocking, nailers, and supports where indicated on the Drawings. Refer to Unit Price Schedule for additional quantities.

1.3 SECTION INCLUDES

- A. Dimensional Lumber.
- B. Construction Panels.
- C. Accessories.
- D. Preservative treated wood materials.
- E. Fire retardant treated wood materials.

1.4 RELATED REQUIREMENTS

- A. Section 01 22 00 - Unit Prices for incorporation of unit price work.
- B. Section 07 54 30 - PVC Single-ply Roofing for all wood members in contact with roofing system.
- C. Section 07 61 00 - Sheet Metal Wall Panels for installation of metal wall panels over sheathing panels specified in this section.

1.5 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- B. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.
- D. AWWA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2012.
- E. PS 1 - Structural Plywood; 2009.
- F. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology, Department of Commerce; 2010.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent Exposure to precipitation during shipping, storage or installation.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for preservative treated wood products.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

- A. Wall Sheathing: Plywood, Fire Retardant – Treated (F.R.T) with a flame-spread index of 25 or less.

2.4 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations.
- B. Water-Resistive Barrier: As specified in Section 07 61 00.

2.5 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
 - 1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test extended for an additional 20 minutes before and after accelerated weathering test performed in accordance with ASTM D2898.

- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat all plywood sheathing panels.
 - c. Do not use treated wood in direct contact with the ground.
- C. Preservative Treatment:
1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber exposed to weather.
 - c. Treat lumber in contact with roofing, flashing, or waterproofing.
 - d. Treat lumber in contact with masonry or concrete.
 2. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - b. Treat plywood in contact with roofing, flashing, or waterproofing.
 - c. Treat plywood in contact with masonry or concrete.
 - d. Treat plywood less than 18 inches above grade.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.2 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

3.3 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at all roof openings except where prefabricated curbs are specified and where specifically indicated otherwise. Form corners by alternating lapping side members.

3.4 INSTALLATION OF CONSTRUCTION PANELS

- A. Wall Sheathing: Secure with long dimension parallel to grade, using nails or screws.

ROUGH CARPENTRY

1. Where metal wall panels are to be placed over the sheathing, place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.

3.5 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.6 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.7 CLEANING

- A. Waste Disposal:
 1. Comply with applicable regulations.
 2. Do not burn scrap on project site.
 3. Do not burn scraps that have been pressure treated.
 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE
SCHOOLHYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

CBI Consulting Inc.
Boston, Massachusetts
Tel: (617) 268-8977
Fax: (617) 464-2971

SECTION 06 20 00

FINISH CARPENTRY

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Finish Carpentry work required to complete the work of the contract including all the Finish Carpentry 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 Finish Carpentry work with all the other trades for the project. Provide all demolition and disposal work to complete the Finish Carpentry 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. Finish Carpentry work includes, but is not limited to:
 - 1. Finish carpentry items.
 - 2. Wood casings and moldings.

1.3 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.

FINISH CARPENTRY

06 20 00 - 1

PART 2 PRODUCTS

2.1 FINISH CARPENTRY ITEMS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI (AWS) for Premium Grade.
- B. Interior Woodwork Items:
 - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.

2.2 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.3 ACCESSORIES

- A. Wood Filler: Solvent base, tinted to match surface finish color.

2.4 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.

3.2 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.3 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

3.4 TOLERANCES

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

END OF SECTION

SECTION 07 01 50.19

FILE SUB-BID REQUIRED – ROOFING AND FLASHING

PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. ROOFING AND FLASHING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 070150.01 is described herein, in Sections 074213, 075430, 076200, 077050, 077123, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Preparation for Re-Roofing work required to complete the work of the contract including all the Preparation for Re-Roofing 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 Preparation for Re-Roofing work with all the other trades for the project. Provide all demolition and disposal work to complete the Preparation for Re-Roofing 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. Preparation for Re-roofing Work includes, but is not limited to:
1. Provide labor, materials and equipment necessary to complete the work of this Section.
 2. Roof tear-off. NOTE: Only remove as much roofing as can be completely reinstalled in one day so that the roof is always fully waterproofed with permanent roofing assemblies.
 3. Temporary roofing membrane.
 4. Roof re-cover preparation.
 5. Removal of base flashings.

1.4 MATERIALS OWNERSHIP

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

1.5 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: Roofing membrane, roof insulation, surfacing, and components and accessories between deck and top surface of roofing system.
- C. Roof Re-Cover Preparation: Existing roofing membrane that is to remain and be prepared for reuse.
- D. Roof Tear-Off: Removal of existing membrane roofing system from deck.
- E. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system.
- F. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- G. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.6 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.
- C. Fastener pull-out test report.

- D. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- E. Qualification Data: For Installer.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Reroofing Conference: Conduct conference at Project site. Comply with requirements in Division 01. Review methods and procedures related to roofing system including, but not limited to, the following:
 - 1. Meet with the Owner's Project Manager, Designer, the User Agency's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck repair installer, and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing system tear-off and replacement, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Examine existing roof drainage during each stage of reroofing.
 - 5. Examine existing deck substrate conditions and base flashing substrate for reuse.
 - 6. Review existing deck removal procedures and Barnstable Public Schools notifications.
 - 7. Review structural loading limitations of roof deck during reroofing.
 - 8. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect reroofing.
 - 9. Review HVAC shutdown and sealing of air intakes.
 - 10. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
 - 11. Review procedures for asbestos removal and discovery of asbestos-containing materials.
 - 12. Review existing conditions that may require notification of the Owner's Project Manager and Designer before proceeding.
 - 13. Review governing regulations and requirements for insurance and certificates if applicable.
 - 14. Review temporary protection requirements for existing roofing system that is to remain during and after installation.

1.8 FIELD CONDITIONS

- A. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- C. Conditions existing at time of inspection for bidding will be maintained by Barnstable Public Schools as far as practical.
- D. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

PART 2 PRODUCTS

2.1 TEMPORARY ROOFING MATERIALS

- A. Design and selection of materials for temporary roofing are responsibilities of Contractor.
- B. Temporary Protection: Sheet polyethylene; provide weights to retain sheeting in position.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing roof surface is clear and ready for work of this section.

3.2 PREPARATION

- A. Protect existing membrane roofing system that is indicated not to be reroofed.
- B. Coordinate with the Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
 - 1. If necessary to deactivate all or a portion of fire-detection system, provide a fire watch during work and for 2 hours after restart of fire-detection system.
- C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
 - 1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

- E. Maintain roof drainage system in functioning condition to ensure roof drainage at end of each workday.
 - 1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- F. Verify that rooftop utilities and service piping have been shut off before beginning the Work. Verify that fans and condenser units have been removed before beginning work.
- G. Sweep roof surface clean of loose matter.
- H. Remove loose refuse and dispose off site.

3.3 MATERIAL REMOVAL

- A. Remove only existing roofing materials that can be replaced with new materials the same day.
- B. Remove metal counter flashings.
- C. Scrape roofing gravel from existing built-up membrane surface .
- D. Remove damaged portions of roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets.
- E. Cut and lay flat any membrane blisters.
- F. Remove damaged insulation and fasteners, cant strips, blocking, and_____.
- G. Remove sheathing paper.
- H. Prepare existing concrete or metal deck surface. Remove all loose material, infill and prepare to provide smooth working surface for new roof system.

3.4 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner and Designer. Do not proceed with installation until directed by Owner and Designer.

3.5 INFILL MATERIALS INSTALLATION

- A. Immediately after removal of selected portions of existing membrane roofing system, and inspection and repair, if needed, of deck, fill in the tear-off areas to match existing membrane roofing system construction.
 - 1. Installation of infill materials is specified in Division 07 Section as indicated in Part 2.
 - 2. Install new roofing membrane patch over roof infill area. If new roofing membrane is installed the same day tear-off is made, roofing membrane patch is not required.

3.6 EXISTING BASE FLASHINGS

- A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
 - 1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.

- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings specified in Section 076200 - Sheet Metal Flashing and Trim.

3.7 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Storage or sale of demolished items or materials on-site is not permitted.
- C. TRANSPORT AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS OFF BARNSTABLE PUBLIC SCHOOL'S PROPERTY

3.8 PROTECTION

- A. Provide temporary protective sheeting over uncovered deck surfaces.
- B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
- C. Provide for surface drainage from sheeting to existing drainage facilities.
- D. Do not permit traffic over unprotected or repaired deck surface.
- E. Install recovery board over existing membrane.

END OF SECTION

SECTION 07 21 00

THERMAL INSULATION

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. METAL WINDOWS is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, "NOTICE TO ALL BIDDERS", and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 072100 is described herein, in Sections 081613, 084313, 084413, 085113, 087100, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-04, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all Thermal Insulation work required to complete the work of the contract including all the Thermal Insulation 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 Thermal Insulation work with all the other trades for the project. Provide all demolition and disposal work to complete the Thermal Insulation 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.

THERMAL INSULATION

- B. Thermal Insulation Work includes, but is not limited to:
 - 1. Installation of Batt insulation for filling perimeter window and door shim spaces.

1.4 REFERENCE STANDARDS

- A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- B. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2012.

PART 2 PRODUCTS

2.1 APPLICATIONS

- A. Insulation in Metal Framed Walls: Batt insulation with separate vapor retarder.

2.2 BATT INSULATION MATERIALS

- A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
 - 1. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
 - 2. Formaldehyde Content: Zero.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Tape seal tears or cuts in vapor retarder.

3.3 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 24 00

EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Exterior Insulation and Finish Systems (EIFS) work required to complete the work of the contract including all the Exterior Insulation and Finish Systems (EIFS) work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all accessories. Coordinate the Exterior Insulation and Finish Systems (EIFS) work with all the other trades for the project. Provide all demolition and disposal work to complete the Exterior Insulation and Finish Systems (EIFS) 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, and each Subcontractor for the entire project so that all the work can be properly and completely performed.
- B. Exterior Insulation and Finish Systems (EIFS) work includes, but is not limited to:
 1. Remove existing distress and construction deficiencies of exterior insulation and finish system (EIFS) cladding, including flashings and waterproofing, and install new EIFS, flashings and waterproofing where indicated and as detailed on the Drawings. Schedule work to allow all sub-contractors to perform their work and not expose the building construction or interior spaces to the weather for extended times. The building shall be weather-tight at the end of each work day. Do not remove more than what can be replaced in the same day.
 2. Resurface all EIFS walls on the entire exterior of the entire building – existing and new – after repairs are complete, to provide uniform appearance.
 3. Refer to Section 01 23 00 Alternates for E.I.F.S. work to be included in Add Alternate #2 and Add Alternate #3.

EXTERIOR INSULATION AND FINISH SYSTEMS

1.3 SECTION INCLUDES

- A. Composite wall and soffit cladding of rigid insulation and reinforced finish coating over cementitious base coat ("Class PM").
- B. Drainage and water-resistive barriers behind insulation board.
- C. Incidental uses of same finish coating applied directly to concrete and masonry.

1.4 RELATED REQUIREMENTS

- A. Section 07 62 00 - Sheet Metal Flashing and Trim: Perimeter flashings.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between EIFS and adjacent construction and penetrations through EIFS.

1.5 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2011.
- B. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- C. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2014.
- D. ASTM C 1382 - Specification for Sealants for EIFS
- E. ASTM C1397 - Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage; 2013.
- F. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive; 2005 (Reapproved 2010).
- G. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2011.
- H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
- I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).
- J. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2003 (Reapproved 2011).
- K. ASTM E 2430 - Specification for EIFS Reinforcing Mesh
- L. ASTM E2486/E2486M - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS); 2013.
- M. ASTM E 2568 - Specification for EIFS
- N. ASTM E 2570 - Specification for Water-Resistive Barrier Coatings.
- O. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- P. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- Q. ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems; 2009.
- R. ICC-ES AC235 - Acceptance Criteria for EIFS Clad Drainage Wall Assemblies; 2004

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(Editorially revised 2009).

- S. NFPA 259 - Standard Test Method for Potential Heat of Building Materials; 2013.
- T. NFPA 268 - Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2012.
- U. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate wall and soffit joint patterns, joint details, and molding profiles.
- C. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.
- D. Selection Samples: Submit manufacturer's standard range of samples illustrating available coating colors and textures.
- E. Verification Samples: Submit actual samples of selected coating on specified substrate, minimum 12 inches square, illustrating project colors and textures.
- F. Manufacturer's Installation Instructions: Indicate preparation required, installation techniques, and jointing requirements.

1.7 QUALITY ASSURANCE

- A. Maintain copy of specified installation standard and manufacturer's installation instructions at project site at all times during installation.
- B. EIFS Manufacturer Qualifications: Provide all EIFS products other than insulation from the same manufacturer with qualifications as follows:
 - 1. Member in good standing of EIMA (EIFS Industry Members Association).
 - 2. Manufacturer of EIFS products for not less than 25 years.
 - 3. Manufacturing facilities ISO 9001 certified.
 - 4. EIFS manufacturer shall have current valid code evaluation reports which list the EIFS materials to be used.
- C. Insulation Manufacturer Qualifications: Approved by manufacturer of EIFS and approved and labeled under third party quality program as required by applicable building code.
- D. Installer Qualifications: Company specializing in EIFS work, with minimum three years of documented experience, and approved by manufacturer.
 - 1. Contractor shall be knowledgeable in the proper handling, use and installation of the approved materials.
 - 2. Contractor shall employ skilled mechanics who are experienced and knowledgeable in the repair procedures and requirements of the specified project.
 - 3. Contractor shall have completed minimum three projects of similar size, scope and complexity to the project being specified.

4. Contractor shall provide the proper equipment, manpower and supervision on the job site to perform the repair procedures in accordance with the specifications.

1.8 MOCK-UP

- A. Construct pre-construction mock-ups of each typical EIFS application and condition on each specified substrate. The size of each mock-up shall match the size of each actual condition and shall include examples of all key conditions, and including all materials, flashings, joints, and edge conditions. Additional mock-ups are required after seasonal shut-down and start-up of construction activities, or whenever key on-site project management or installers are introduced to the project. Provide additional mock-ups if not approved. All mock-ups shall be approved by the Owner, Architect, and the Manufacturer's Representative. Mock-ups shall be provided at every different EIFS termination condition at every different repair type on the entire building.
- B. Locate mock-ups at approved location convenient for comparison to finished work as directed by the Owner and Architect.
- C. Mock-up shall include adjacent work by Filed Sub-Bidders at the same locations to show the proper sequencing and coverage of flashings.
- D. Mock-up may remain as part of the Work.
- E. Do not commence work without written mock-up approval.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to project site in manufacturer's original, sealed, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.
- B. Storage: Store materials as directed by manufacturer's written instructions.
 1. Protect adhesives and finish materials from freezing, temperatures below 40 degrees F and temperatures in excess of 90 degrees F. Do not store in direct sunlight.
 2. Protect Portland cement based materials from moisture and humidity. Store under cover off the ground in a dry location.
 3. Protect insulation materials from exposure to sunlight.

1.10 COORDINATION AND SCHEDULING

- A. Schedule repairs to permit inspections.
- B. Do not start repairs in an area unless sufficient work can be completed such that the area is weather-tight at the end of the work shift. Alternatively allow sufficient time before the end of the work shift to provide temporary weather protection until work can resume.
- C. Coordinate with all trades involved to schedule work to result in the proper sequencing of materials within the repair (proper lapping of water resistive system components and flashing).
- D. Schedule finish and coating application to large areas such that each day's application will end at an architectural break

1.11 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

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- B. Provide manufacturer's standard material warranty, covering a period of not less than 10 years.
- C. Provide separate warranty from installer covering labor for repairs or replacement for a period of not less than 5 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide EIFS component materials and coatings (as applicable) from single manufacturer. Specification is based on Sto Corp., because the existing adjacent wall and soffit systems to remain are by STO, but may be by an approved equal manufacturer.
- B. Basis of Design:
 - 1. Sto Corp., 3800 Camp Creek Parkway, Building 1400, Suite 120, Atlanta, GA 30331; www.stocorp.com, 1-800-221-2397.
 - 2. Dryvit Systems Inc., One Energy Way, West Warwick, RI; www.dryvit.com; 1-80-0-556-7752
 - 3. Parex USA Inc., 4125 E. LaPalma Ave, Suite 250, Anaheim, CA 92807; 1-866-516-0061; Info@parex.com.
 - 4. Or Approved Equal.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: DRAINAGE type; reinforced finish coating on flat-backed insulation board adhesive-applied directly to water-resistive coating over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.
- B. Allowable Wind Loading: At least 40 psf, positive and negative, determined in accordance with ICC-ES AC219 or AC235, using factor of safety of 3.0.
- C. Fire Characteristics:
 - 1. Flammability: Pass, when tested in accordance with NFPA 285.
 - 2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
 - 3. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot.
- D. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in accordance with ASTM E331 at 6.24 psf differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.

- E. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in accordance with ASTM E2273 for 75 minutes.
- F. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches in size.
- G. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or AC235.
- H. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycle 1, 5, or 9.
- I. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.
- J. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.
- K. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 500 liters of sand.
- L. Impact Resistance: Construct system to provide the following impact resistance without exposure of broken reinforcing mesh, when tested in accordance with ASTM E2486/E2486M:
 - 1. Standard: 25 to 49 in-lb, for areas not indicated as requiring higher impact resistance.
 - 2. High: 90 to 150 in-lb, for all areas unless noted otherwise.

2.3 MATERIALS

- A. Finish Coating Top Coat: Water-based, air curing, acrylic finish with integral color and texture.
 - 1. Texture: Medium, trowel applied: Sto Essence DPR.
 - 2. Colors: As selected by Architect from manufacturer's standard range. Two (2) colors will be used similar to the existing color pattern on the building.
- B. Base Coat: Acrylic- or polymer-modified, fiber reinforced Portland cement coating.
 - 1. Portland Cement: ASTM C150, Type I or II.
 - 2. Base Coat Thickness: 1/4 inch, minimum.
- C. Reinforcing Mesh: Balanced, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.
 - 1. Mesh - alkali-resistant, glass-fiber reinforcing mesh for use with Sto base coat products to provide crack resistance.

2. Detail Mesh - alkali-resistant, glass-fiber reinforcing mesh for use with Sto base coats to provide crack resistance and at system terminations.
 3. Armor Mat - high impact resistant, 15 oz. per sq. yd. alkali resistant, glass-fiber reinforcing mesh.
- D. Insulation Board: Molded expanded polystyrene (EPS) board insulation, ASTM C578, Type XI, with the following characteristics:
1. Board Thickness: As indicated on drawings to match existing being replaced.
- E. Water-Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to sheathing; and associated flashing tape and sealant shall be furnished and approved by EIFS manufacturer. The GENERAL BIDDER shall provide the water –Resistive Barrier Coating, Tape and Sealant for the METAL WINDOWS File-Sub-Bidder to install.
1. Sto Gold Coat – fluid-applied waterproof air-barrier coating where indicated on the drawings.
 2. StoGuard RapidSeal - gun-grade waterproof air barrier sealant for use to seal between water-resistive barrier and flashing elements and as transition at flashing, windows, mechanical penetrations and at system terminations where indicated on the drawings.
 3. StoGuard Fabric – non-woven fabric tape for use with Sto Gold Coat as a transition element by embedment of the StoGuard Fabric into wet Sto Gold Coat. Used as transition membrane between wall sheathing joints.

2.4 ACCESSORY MATERIALS

- A. Insulation Adhesive: Type required by EIFS manufacturer for project substrate: Sto Primer/Adhesive-B one component, polymer-modified, adhesive (for use over exterior glass mat faced gypsum sheathing (compliant with ASTM C 1177).
- B. Metal Flashings: As specified in Section 07 62 00.
- C. Trim: EIFS manufacturer's standard PVC, galvanized steel, or vinyl trim accessories, as required for a complete project and including starter track and drainage accessories.
- D. Sealant Materials: Sealant shall be low-modulus, comply with ASTM C 920, ASTM C 1382 and be ompatible with EIFS materials and as recommended by EIFS manufacturer.
- E. Exterior Soffit Vents: One piece, perforated, solid vinyl, with edge suitable for direct application to gypsum board and manufactured especially for soffit application. Provide continuous vent.

PART 3 EXECUTION

3.1 GENERAL

- A. Perform repairs in accordance with StoTherm EIFS Reference Guide :Repair and Maintenance: (available at www.stocorp.com)
- B. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
- C. Where different requirements appear in either document, comply with the most stringent.

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- D. Neither of these documents supercedes the provisions of the Contract Documents that define the contractual relationships between the parties or the scope of work.

3.2 EXAMINATION

- A. Inspect locations identified on the project drawings for repair.
- B. Establish clear understanding of the repair scope and process with the mechanics that will perform the work for each individual location.
- C. Verify that substrate is sound and free of oil, dirt, other surface contaminants, efflorescence, loose materials, or protrusions that could interfere with EIFS installation and is of a type and construction that is acceptable to EIFS manufacturer. Do not begin work until substrate and adjacent materials are complete and thoroughly dry.
- D. Verify that substrate surface is flat, with no deviation greater than 1/4 in when tested with a 10 ft straightedge.

3.3 SELECTIVE DEMOLITION

- A. Comply with StoTherm EIFS Repair and Maintenance Guide available at www.stocorp.com <http://www.stocorp.com>.
- B. Limit the depth of cuts through the EIFS lamina into the insulation board to prevent damage of the existing substrate to remain.

3.4 PREPARATION

- A. Apply primer to substrate as recommended by EIFS manufacturer for project conditions.

3.5 INSTALLATION - GENERAL

- A. Integrate all flashing repair and replacement with the water-resistive barrier system to provide direct and continuous drainage to the exterior of the wall.
- B. Provide back wrap EIFS terminations at grade, expansion joints, and perimeters of wall openings and mechanical penetrations. Provide minimum 1/2-inch-wide (12.5 mm) space between the back wrapped insulation and window/door frames. Install backer rod and sealant joint at perimeters of window, doors and mechanical penetrations.
- C. Terminate EIFS minimum 2-inches (51 mm) above paved grade and roofing materials.
- D. Terminate EIFS minimum 4-inches (102 mm) above soil and landscaped finished grades.

3.6 INSTALLATION - WATER-RESISTIVE BARRIER

- A. Apply barrier coating as recommended by coating manufacturer; prime substrate as required before application.
- B. Seal all substrate transitions and intersections with other materials to form continuous water-resistive barrier on exterior of sheathing, using method recommended by manufacturer.
- C. At door and window rough openings and other wall penetrations, seal water-resistive barrier and flexible flashings to rough opening before installation of metal flashings, sills, or frames, using method recommended by manufacturer.
- D. Lap flexible flashing or flashing tape at least 2 inches on each side of joint or transition.

- E. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations shown on the drawings. Provide vent area specified.

3.7 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Prior to installation of boards, install starter track and other trim level and plumb and securely fastened. Install only in full lengths, to minimize moisture intrusion; cut horizontal trim tight to vertical trim.
- C. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.
- D. On wall surfaces, install boards horizontally.
- E. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch.
- F. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.
- G. Rasp irregularities off surface of installed insulation board.
- H. Adhesive Attachment: Use method required by manufacturer to achieve drainage efficiency specified; do not close up drainage channels when placing insulation board.

3.8 INSTALLATION - FINISH

- A. Base Coat: Apply in thickness as necessary to align with existing adjacent EIFS coat to remain, and fully embed reinforcing mesh, wrinkle free, including back-wrap at all terminations of the EIFS. Install reinforcing fabric as recommended by EIFS manufacturer.
 - 1. Lap reinforcing mesh edges and ends a minimum of 2-1/2 inches.
 - 2. Allow base coat to dry a minimum of 24 hours before next coating application.
- B. At locations indicated, install second layer of reinforcing mesh embedded in second coat of base coating, tightly butting ends and edges of mesh.
- C. Apply finish coat after base coat has dried not less than 24 hours, embed finish aggregate, and finish to a uniform texture and color.
- D. Seal control and expansion joints within the field of exterior finish and insulation system, using procedures recommended by sealant and finish system manufacturers.

3.9 INSPECTION

- A. Quality control inspections shall be provided for by the owner or owner's representative. Comply with the Owner's Project Manager and Architect's requests to review the work, and provide vertical access for Owner-Architect review throughout the work.
- B. Inspections shall be provided at key intervals during each repair.
 - C. Inspect locations of flashing repair and other locations where existing EIFS must be removed after demolition of the EIFS is completed and before any existing flashing is removed. Verify that the proposed repair is constructible and will function in the manner

intended based on the visible conditions. Resolve any visible construction detail conflicts with the Architect before allowing the contractor to proceed with the repair.

- D. Inspect the condition of the water-resistive barrier and transition elements for visible evidence of material integrity and continuity of the system.
- E. Inspect the conditions of newly installed or replaced flashing and water-resistive barrier components before installing the replacement insulation. Verify that flashing and water-resistive barrier installation is in accordance with the repair detail design. Verify visible continuity of the water-resistive barrier system to direct water to the exterior of the wall via the flashing.
- F. Inspect the final appearance of each repair location to verify compliance with owner requirements.

3.10 CLEANING

- A. Clean EIFS surfaces and work areas of foreign materials resulting from EIFS operations.

3.11 PROTECTION

- A. Protect completed work from damage and soiling by subsequent work.

END OF SECTION

SECTION 07 42 13

FILE SUB-BID REQUIRED – ROOFING AND FLASHING

METAL WALL PANELS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. ROOFING AND FLASHING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 074213 is described herein, in Sections 070150.19, 075430, 076200, 077050, 077123, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all Metal Wall Panel work required to complete the work of the contract including all the Metal Wall Panel 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 Metal Wall Panel work with all the other trades for the project. Provide all demolition and disposal work to complete the Metal Wall Panel 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.

METAL WALL PANELS

- B. Metal Panel Work includes but is not limited to:
 - 1. Installation of pre-manufactured metal, end caps, and covers at the penthouses, along with accessory components, where indicated on the Drawings in the dimensions, profiles and shapes indicated and to fit the existing conditions for a complete and continuous, water-tight enclosure.

1.4 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wall panel substrate.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate dimensions, layout, joints, construction details, and methods of anchorage.
- C. Samples: Submit two samples of wall panel, 8 inch by 12 inch in size illustrating finish color, sheen, and texture.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years of experience.

1.7 MOCK-UP

- A. Construct mock-up of each metal panel, cap and cover type, 10 feet long by the height of the wall; include attachments to building frame, fasteners and sealants in mock-up.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. ATAS International, Inc.; Product Opaline - OPF: www.atas.com.
- B. Firestone Building Products LLC; ww.firestonebcco.com
- C. Architectural Building Components; www.archmetalroof.com
- D. Or Approved Equal.
- E. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 MANUFACTURED METAL PANELS

- A. Internal and External Corners: Aluminum, factory furnished flour polymer same thickness (minimum 20 gauge), and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
- B. Trim: Aluminum, factory furnished flour polymer same, thickness (minimum 20 gauge) and finish as exterior sheets; brake form to required profiles.
- C. Anchors: Stainless steel.
- D. Color: Match Existing.

2.3 ACCESSORIES

- A. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.
- B. Sealants:
 - 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
 - 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
- C. Sealants: Manufacturer's standard type suitable for use with installation of system; non-staining.
- D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, stainless steel. Fastener cap same color as exterior panel. Fasteners to be concealed with use of continuous metal cleats.
 - 1. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws.
- E. Field Touch-up Paint: As recommended by panel manufacturer.
- F. Bituminous Paint: Asphalt base.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane. Space at intervals indicated.

3.3 INSTALLATION

- A. Install panels on walls in accordance with manufacturer's instructions.
- B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
- C. Fasten panels to structural supports; aligned, level, and plumb.
- D. Locate joints over supports. Lap panel ends minimum 2 inches.
- E. Provide expansion joints where indicated.
- F. Use concealed fasteners unless otherwise approved by Architect.

3.4 TOLERANCES

- A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch.
- B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

3.5 CLEANING

- A. Remove site cuttings from finish surfaces.
- B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

SECTION 07 54 30

FILE SUB-BID REQUIRED – ROOFING AND FLASHING

PVC SINGLE PLY ROOFING

PART 1 - GENERAL

1.1 FILED SUB-BIDS

- A. ROOFING AND FLASHING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, "NOTICE TO ALL BIDDERS", and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 075430 is described herein, in Sections 070150.19, 074213, 076200, 077050, 077123, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the PVC Single Ply Roofing work required to complete the work of the contract including all the PVC Single Ply Roofing 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 PVC Single Ply Roofing work with all the other trades for the project. Provide all demolition and disposal work to complete the PVC Single Ply Roofing 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. PVC Single Ply Roofing work includes, but is not limited to:
1. Install fully adhered 80 mil thick PVC roofing membrane system with all flashings and other components where indicated on the drawings to comprise a complete roofing system covered by their 20 year Full System Warranty.
 2. Install new flat and tapered polyisocyanurate insulation system, fully adhered, in the configurations shown on the plans. Provide crickets of the same material. Pitch shall be as indicated on the drawings for the tapered insulation. Match adjacent existing slopes of the existing tapered insulation.
 3. **The work herein shall include the removal and lawful disposal of all existing roofing and related items required for the roofing work as specified hereinafter and as indicated on the Drawings. Remove all existing roofing membrane and insulation where indicated on the Drawings. Remove all existing membrane flashings, wood blocking, metal flashing, sealants, fasteners as well as any other item that would impede the installation of the new roof system.**
 4. Material removed from the building shall be disposed of in an appropriate manner and in a legal disposal area.
 5. Use of any mechanical equipment for demolition purposes is prohibited. No vibration will be permitted as part of the demolition and installation.
 6. Dumpster locations shall be approved by the owner in advance. Do not throw material from the roof into the dumpster. Contractor shall provide safety screening around each dumpster. Safety is the sole responsibility of the Contractor on the job site.
 7. Install all new pressure treated wood nailers and exterior grade plywood to accommodate the installation of the new roof. Install at all locations shown on the plans and details, and as specified by the Architect. Refer to Unit Price Schedule.
 8. Height and pitch of all nailers shall match the adjacent new insulation.
 9. This membrane is to be fully adhered to the insulation.
 10. Install all perimeter metal flashing edge metal including but not limited to: hook strips, counter flashing, expansion joints, skirts at mechanical units, accessories, stainless steel hose clamps, pipe clamps, and gravel stops of PVC coated metal in a standard color.
 11. Install all PVC roof accessories such as expansion joints, preformed boots and corners to install a complete watertight assembly to achieve a 20 year full systems warranty.
 12. Install all sealants and mastics associated with the roof assembly.

1.4 RELATED WORK.

- A. Section 06 10 00 - Rough Carpentry
- B. Section 07 01 50.19 - Preparation for Re-Roofing
- C. Section 07 61 00 - Sheet Metal Wall Panels
- D. Section 07 62 00 - Sheet Metal Flashing & Trim

**PVC SINGLE PLY
ROOFING
07 54 30 - 2**

- E. Section 07 70 50 - Roof Drains
- F. Section 07 71 00 - Roof Specialties

1.5 QUALITY ASSURANCE

- A. This roofing system shall be applied only by a Roofing Contractor authorized by the manufacturer prior to bid.
- B. Upon completion of the installation and the delivery to the manufacturer by the Applicator of a certification that all work has been done in strict accordance with the Contract Specifications and the manufacturer's requirements, an inspection shall be made by a Technical Representative of the manufacturer to review the installed roof system.
- C. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Architect and the roofing manufacturer.
- D. All work pertaining to the installation of the PVC membrane and flashings shall only be completed by Applicator personnel trained and authorized by the manufacturer in those procedures.
- E. Certain details may exceed those minimum requirements of the manufacturer. All work shown shall be included in the Scope of Work.
- F. Obtain products from a manufacturer producing PVC roof membrane and accessories for a period of at least 15 years, and the manufacturer produces their own materials.

1.6 SUBMITTALS

- A. Copies of the material specifications.
- B. Samples of each primary component to be used in the roof system and the manufacturer's current literature for each component.
- C. Written approval by the insulation manufacturer (as applicable) for use and performance of the product in the proposed system.
- D. Sample copy of the warranty.
- E. Sample copy of Applicator's warranty.
- F. Dimensioned shop drawings which shall include:
 - 1. Outline of roof with roof size and elevations shown.
 - 2. Profile details of flashing methods for penetrations.
 - 3. Technical acceptance from the manufacturer.
 - 4. Sheet and half sheet layout.
 - 5. Wind Uplift requirements.
- G. Certifications by manufacturers of roofing and insulating materials that all materials supplied comply with all requirements of the identified ASTM and industry standards or practices.
- H. Certification from the Applicator that the system specified meets all identified code and insurance requirements as required by the Specification.
- I. Material Safety Data Sheets (MSDS).

- J. Do not commence fabrication of any work or begin installation until approval has been obtained from the Architect.
- K. Submit the following samples in accordance with the provisions of SECTION 01300 - SUBMITTALS in GENERAL REQUIREMENTS.
 - 1. 2 of each fastener for attachment of each condition.
 - 2. 2'-0" LF of all tapes and sealants used to seal seams and edges.
 - 3. 12" x 12" insulation samples.
 - 4. PVC roofing membrane, membrane flashing, (plain and felt backed), termination bars, PVC coated and other metal flashings, hardware, disks, and incidental items.
 - 5. 12 inch section of all metal flashing types, counterflashings, and parapet caps in their final material and design configuration.

1.7 CODE REQUIREMENTS

- A. The applicator shall submit evidence that the proposed roof system meets the requirements of the local building code and has been tested and approved or listed by the following test organizations. These requirements are minimum standards and no roofing work shall commence without written documentation of the system's compliance, as required in the "Submittals" section of this Specification.
- B. The roof system shall be installed to withstand these following wind uplift pressures.
 - 1. Zone 1 (Field) - 30 psf
 - 2. Zone 2 (Edge) - 50.0 psf
 - 3. Zone 3 (Corners) - 75 psf
- C. Provide certifications from the Installer and Manufacturer that the overall insulation value of the proposed roofing assembly meets the specified insulation requirements.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.
- B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.
- C. Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions which may affect the ease of membrane weldability.
- D. All adhesives shall be stored at temperatures between 40° F (5° C) and 80° F (27° C).
- E. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
- F. All materials which are determined to be damaged by the Architect or roofing system's authorized Representative are to be removed from the job site and replaced at no cost to the Owner.

1.9 JOB CONDITIONS

- A. PVC materials may be installed under certain adverse weather conditions but only after consultation with manufacturer, as installation time and system integrity may be affected.
- B. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be cleaned and heat -welded before leaving the job site that day.
- C. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.
- D. All surfaces to receive new insulation, membrane or flashings shall be dry. The Applicator shall provide the necessary equipment to dry the surface of moisture prior to proceeding with installation.
- E. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- F. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.
- G. The Applicator is cautioned that certain PVC membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with PVC membranes. The Applicator shall consult the manufacturer regarding compatibility, precautions and recommendations.
- H. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over non-woven polypropylene fabric or plywood over insulation board shall be provided for all new and existing roof areas which receive rooftop traffic during construction.
- I. Prior to and during application, all dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air and/or similar methods.
- J. The Applicator shall follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction. The Contractor is solely responsible for safety on the job site.
- K. All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials.
- L. All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.
- M. The Applicator shall take precautions that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.

- N. Flammable adhesives shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.
- O. All rooftop contamination that is anticipated or that is occurring shall be reported to the manufacturer to determine the corrective steps to be taken.
- P. The Applicator shall verify that all roof drain lines are functioning correctly (disconnected, clogged or blocked) before starting work. Applicator shall report any such blockages in writing to the Architect for corrective action prior to installation of the PVC roof system.
- Q. Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner of such condition in writing for correction at the Owner's expense.
- R. Site cleanup, including both interior and exterior building areas which have been affected by construction, shall be completed to the Owner's satisfaction.
- S. All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.
- T. The fully adhered membrane shall not be installed under the following conditions without consulting the manufacturer's Technical for precautionary steps:
 - 1. The roof assembly permits interior air to pressurize the membrane underside.
 - 2. The wall/deck intersection permits air entry into the wall flashing area.
- U. Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times. Conduct a pre-construction meeting with building maintenance personnel to identify intake locations.
- V. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.
- W. At this time no hazardous materials are known to be on site. However, if hazardous materials are found they are to be brought to the attention of the Owner immediately.

1.10 BIDDING REQUIREMENTS

- A. Pre-Bid Meeting:
 - 1. A pre-bid meeting was held with the Architect to discuss all aspects of the project. The Applicator's field representative or roofing foreman for the work shall be in attendance.
- B. Site Visit:
 - 1. Bidders shall visit the site and carefully examine all the areas in the scope to view conditions which may affect proper execution of the work. All dimensions and quantities shall be determined or verified by the Contractor. No claims for extra costs will be allowed because of lack of full knowledge of the existing conditions unless agreed to in advance with the Owner or Architect.

1.11 WARRANTIES

- A. 20 Year Full-System Warranty

1. Upon successful completion of the work and prior to receipt of final payment, the Manufacturer's 20-Year Full System Warranty shall be issued. Roofing membranes, flashing, insulation (supplied by membrane manufacturer), and edge metal shall be included in the warranty. The Warranty shall include the wind uplift pressures in the roof requirements paragraph of this section. Warranty shall run concurrently with Contractor warranty.
- B. Applicator/Roofing Contractor Warranty
 1. The Applicator shall supply the Owner with a separate 1-Year workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Applicator warranty term, defective or otherwise not in accordance with the Contract Documents, the Applicator shall repair that defect at no cost to the Owner. The Applicator's warranty obligation shall run directly to the Owner, and a copy shall be sent to the manufacturer.
- C. Owner Responsibility
 1. Owner shall notify both the manufacturer and the Applicator of any leaks as they occur during the time period when both warranties are in effect.
- D. Applicator shall post signs provided by the manufacturer on the doors leading to the roof that indicate that the roof is new and under warranty, explaining procedures to follow.

PART 2 – PRODUCTS

2.1 GENERAL

- A. **Note:** The existing roof to remain that will be heat-weld to is a Sarnafil PVC roof.
- B. The components of the PVC Adhered roof system are to be products of an approved PVC manufacturer as indicated on the Detail Drawings and specified in the Contract Documents and as approved by the Owner and the Architect.
- C. Products listed are by Sarnafil. Products from other manufacturers listed below may be used, provided their characteristics meet or exceed the listed requirements. All materials are to be provided from a single source manufacturer, and shall be compatible with the existing adjacent Sarnafil PVC roof to remain.
 1. Duro-Last, Inc.; Duro-Tuff Membrane; www.duro-last.com
 2. Johns Manville; JM PVC
 3. Carlisle; Sure-Flex

2.2 MEMBRANE

- A. 60 Mil Thermoplastic membrane with a lacquer coating.
- B. Membrane shall conform to ASTM D4434-96 (or latest revision), "Standard for Polyvinyl Chloride Sheet Roofing". Classification: Type II, Grade I or Type III.
- C. Color of Membrane
 1. EnergySmart (white), initial reflectivity of 0.83, initial emissivity 0.92, solar reflective index (SRI) of >104.

2.3 FLASHING MATERIALS

A. Wall/Curb Flashing

1. Sarnafil G410 Membrane
 - a. A fiberglass or polyester reinforced membrane adhered to approved substrate using Sarnacol adhesive.
2. Sarnafil G459 Membrane
 - a. An asphalt-resistant, fiberglass or polyester reinforced membrane adhered to approved substrate using Sarnacol adhesive. Consult Product Data Sheet for adhesive rates and additional information.
3. Sarnaclad
 - a. A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Sarnaclad is a 25 gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported Sarnafil membrane laminated on one side. The dimensions of Sarnaclad are 4 ft x 8 ft (1.2 m x 2.4 m) or 4 ft x 10 ft (1.2 m x 3.0m). Consult Product Data Sheet for additional information.

B. Perimeter Edge Flashing

1. Sarnaclad
 - a. A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Sarnaclad is a 25 gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported Sarnafil membrane laminated on one side. The dimensions of Sarnaclad are 4 ft x 8 ft (1.2 m x 2.4 m) or 4 ft x 10 ft (1.2 m x 3.0m). Consult Product Data Sheet for additional information.

C. Miscellaneous Flashing

1. Sarnaflash
 - a. A prefabricated expansion joint cover made from Sarnafil membrane. Sarnaflash is designed for securement to wall or horizontal surfaces to span and accommodate the movement of new and existing expansion gaps from 1 inch to 4½ inches (25 mm to 114 mm) across. Available in 40 foot (12 m) rolls.
2. Sarnastack
 - a. A prefabricated vent pipe flashing made from 0.048 inch (48 mil/1.2 mm) thick Sarnafil G410 membrane. Available in five different sizes.
3. Sarnacircle-"G"
 - a. Circular 0.048 inch (48 mil/1.2 mm) thick G410 membrane patch welded over T-joints formed by overlapping thick membranes.
4. Sarnafiller
 - a. A urethane sealant used for pitch pocket topping. Sarnafiller is a two component sealant. Sarnafiller cures with excellent elasticity and adhesion to various surfaces.
5. Sarnacorner
 - a. Prefabricated outside and inside flashing corners made of 0.080 inch (80 mil /2.03 mm) thick membrane that are heat-welded to membrane or Sarnaclad base flashings. Sarnacorner is available in 2 outside sizes (5 inch and 8½ inch

diameter/127 mm and 215 mm) and 1 inside size.

6. Multi-Purpose Sealant
 - a. A proprietary sealant used at flashing terminations.
7. Sarnacol 2170 Adhesive
 - a. A solvent-based reactivating-type adhesive used to attach membrane to flashing substrate.
8. Sarnafelt
 - a. A non-woven polyester or polypropylene mat cushion layer that is necessary behind G410 or G459 Flashing Membrane when the flashing substrates are rough-surfaced or incompatible with the flashing membrane.

2.4 INSULATION/OVERLAYMENT/RECOVER BOARD

A. Insulation

1. A rigid polyisocyanurate foam insulation board with black mat facers. Available sizes 4 ft x 4 ft or 4 ft x 8 ft sizes, 2 inches thick.
 - a. Flame Spread Index: 25 or less, per ASTM E84.
 - b. Smoke Developed Index: 450 or less, per ASTM E84.
 - c. Compressive Strength: 20psi.

B. Coverboard

1. Glass mat faced high density polyisocyanurate board.
 - a. Thickness - 1/2"
 - b. Compressive Strength - minimum 100 psi
 - c. Insulation Value - minimum R2.5
 - d. Manufacturers:
 - 1) Sika-Sarnafil; SarnaTherm Roof Board-H
 - 2) Carlisle SynTec Systems; SecureShield HD

2.5 ATTACHMENT COMPONENTS

A. Membrane Adhesive

1. Sarnacol 2170 Adhesive
 - a. A solvent-based reactivating-type adhesive used to attach the membrane to the substrate, either horizontally or vertically. Consult Product Data Sheets for additional information. Application rates are as follows:
 - b. Note: Due to an increase in viscosity when outdoor temperatures during installation are below 40° F (5° C), add ½ gal/100 ft² (0.2 l/m²) to rate for estimating purposes. Do not install when air temperature is within 5° F of dew point. Solvent evaporation time increases significantly when temperatures drop. Ensure first layer of Sarnacol 2170 is fully dry before second layer is applied to the back of the membrane for proper reactivation
 - c. Use a water-filled, foam-covered lawn roller to consistently and evenly press the membrane into the adhesive layer.

A. Insulation Board Adhesive

1. Provide low-odor, VOC compliant, one step, low-rise urethane foam or one step foamable polyurethane adhesive to attach insulation to approved compatible substrates.

2.6 WALKWAY PROTECTION

A. SarnaTred

1. A polyester reinforced, 0.096 inch (96 mil./2.4 mm), weldable membrane with surface embossment. Used as a protection layer from rooftop traffic. SarnaTred is supplied in rolls of 39.3 inches, (1.0 m), wide and 32.8 feet, (10 m), long. Consult Product Data Sheet for additional information.

B. Sarnaplate

1. Used with various Sarnafasteners to attach insulation boards to roof deck. Sarnaplate is a 3 inch (75 mm) square or round, 26 gauge stamping of SAE 1010 steel with an AZ 55 Galvalume coating

C. Sarnastop

1. An extruded aluminum, low profile bar used with certain Sarnafasteners to attach to the roof deck or to walls/curbs at terminations, penetrations and at incline changes of the substrate. Sarnastop is a 1 inch (25 mm) wide, flat aluminum bar 1/8 inch (3 mm) thick that has predrilled holes every 6 inches (152 mm) on center.

D. Sarnabar

1. An FM-approved, heavy-duty, 14 gauge, galvanized or stainless, roll-formed steel bar used to attach membrane to roof decks. The formed steel is pre-punched with holes every 1 inch (25 mm) on center to allow various Sarnafastener spacing options.

E. Sarnacord

1. A 5/32 inch (4 mm) diameter, red-colored, flexible thermoplastic extrusion that is welded to the top surface of the Sarnafil membrane and against the side of the Sarnabar, used to hold the membrane in position. Consult Sarnafil Product Data Sheet for additional information.

2.7 VAPOR RETARDER

A. Self-Adhered

1. 32 mil thick self-adhered polyethylene vapor retarder/air retarder and compatible primer, where indicated on the Drawings.

2.8 MISCELLANEOUS ACCESSORIES

A. Aluminum Tape

1. A 2 inch (50 mm) wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as a bond-breaker under the cover strip at Sarnaclad joints.

B. Sealing Tape Strip

1. Compressible foam with pressure-sensitive adhesive on one side. Used with metal flashings as a preventive measure against air and wind blown moisture entry.

C. Multi-Purpose Tape

1. A high performance sealant tape with used with metal flashings as a preventive measure against air and wind blown moisture entry.

D. Sarnamatic 641mc

1. 220 volt, self-propelled, hot-air welding machine used to seal long lengths of

Sarnafil membrane seams.

- E. Perimat Welder
 - 1. 120 volt, self-propelled, hot-air welding machine used to seal long-lengths of Sarnafil membrane seams along perimeter details.
- F. Sarnasolv
 - 1. A high quality solvent cleaner used for the general cleaning of residual asphalt, scuff marks, etc., from the membrane surface. Sarnasolv is also used daily to clean seam areas prior to hot-air welding in tear off or dirty conditions or if the membrane is not welded the same day it is unrolled. Consult Product Data Sheet for additional information.
- G. SarnaTred
 - 1. A polyester reinforced, 0.096 inch, weldable membrane with surface embossment. Use as a protection layer from rooftop traffic. Provide the walkway pad from rolls 39.3 inches wide and 32.

2.9 SEALANTS AND PITCH POCKET FILLERS

- A. Sarnafil Multi-Purpose Sealant (for termination details).
- B. Sarnafiller (two-part urethane filler for pitch pocket toppings).
- C. Depending on substrates, the following sealants are options for temporary overnight tie-ins:
 - 1. Type III hot asphalt conforming to ASTM D312 (latest revision).
 - 2. Sarnafiller.
 - 3. Multiple layers of roofing cement and felt.
 - 4. Spray-applied, water-resistant urethane foam.
 - 5. Mechanical attachment with rigid bars and compressed sealant.

2.10 MISCELLANEOUS FASTENERS AND ANCHORS

- A. All fasteners, anchors, nails, straps, bars, etc. shall be post-galvanized steel, aluminum or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. All concrete fasteners and anchors shall have a minimum embedment of 1¼ inch (32 mm) and shall be approved for such use by the fastener manufacturer. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch (25 mm) and shall be approved for such use by the fastener manufacturer.

2.11 RELATED MATERIALS

- A. Wood Nailers
 - 1. Treated wood nailers shall be installed at the perimeter of the entire roof and around such other roof projections and penetrations as specified on Project Drawings. Thickness of nailers must match the insulation thickness to achieve a smooth transition. Wood nailers shall be treated for fire and rot resistance (wolmanized or osmose treated) and be #2 structural grade quality or better lumber. Creosote or asphalt-treated wood is not acceptable. Wood nailers shall conform to Factory

Mutual Loss Prevention Data Sheet 1-49. All wood shall have a maximum moisture content of 19% by weight on a dry-weight basis.

- B. Plywood
 - 1. When bonding directly to plywood, a minimum 3/4 inch (19 mm) CDX (C side out), smooth-surfaced exterior grade exposure 1 plywood with exterior grade glue shall be used. Rough-surfaced plywood or high fastener heads will require the use of Sarnafelt behind the flashing membrane. Plywood shall have a maximum moisture content of 19% by weight on a dry weight basis.

PART 3 – EXECUTION

3.1 PRE-CONSTRUCTION CONFERENCE

- A. The Applicator, Architect/Designer and Manufacturer(s) shall attend a pre-construction conference.
- B. The meeting shall discuss all aspects of the project including but not limited to:
 - 1. Applicator will discuss Safety with the Owner.
 - 2. Set up, access, crane and dumpster locations.
 - 3. Construction schedule.
 - 4. Contract conditions.
 - 5. Coordination of the work.

3.2 SUBSTRATE CONDITION

- A. Applicator shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.
- B. Applicator shall verify that the work done under related Sections meets the following conditions:
 - 1. Roof curbs, nailers, equipment supports, vents and other roof penetrations are properly secured and prepared to receive new roofing materials.
 - 2. All surfaces are smooth and free of dirt, debris and incompatible materials.
 - 3. All roof surfaces shall be free of water, ice and snow.

3.3 SUBSTRATE PREPARATION

- A. The roof deck and existing roof construction must be structurally sound to provide support for the new roof system. The Applicator shall load materials on the rooftop in such a manner to eliminate risk of deck overload due to concentrated weight. The Contractor shall ensure that the roof deck is secured to the structural framing according to local building code and in such a manner as to resist all anticipated wind loads in that location.
- B. Reroofing with Removal of Existing Roofing
 - 1. All existing roofing, base flashing, deteriorated wood blocking or deteriorated metal flashings shall be removed. Remove only that amount of roofing and flashing which can be made weathertight with new materials during a one-day period or before the onset of inclement weather.

3.4 SUBSTRATE INSPECTION

- A. A dry, clean and smooth substrate shall be prepared to receive the fully adhered roof system.
- B. The Applicator shall inspect the substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect the quality of work.
- C. The substrate shall be clean, smooth, dry, free of flaws, sharp edges, loose and foreign material, oil and grease. Roofing shall not start until all defects have been corrected.
- D. All roof surfaces shall be free of water, ice and snow.
- E. Prior to and during application all dirt, debris, and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air and / or similar methods to ensure that surface to receive insulation is clean, smooth, and dry.
- F. Sarnafil shall be applied over compatible and accepted substrates only.

3.5 REMOVAL OF EXISTING ROOFING AND MATERIALS

- A. Remove all existing roofing, existing caulking, counterflashing, and all items incidental thereto and make all conditions satisfactory for application of the new roofing system work under this Contract.
- B. All material shall be removed from roof by way of a crane and lowered down to dumpsters. Absolutely no material shall be thrown or dropped or in any other way released from the roof. See Section 01 05 00 - Coordination for further requirements.
- C. Dispose of all material in dumpsters which shall be trucked away when full. Location of dumpsters shall be as directed by the Owner.
- D. Remove no more roofing and flashing than can be replaced in its entirety by the new insulation, roofing and flashing systems in the same day's work, including all related work for this area, to maintain a watertight roof surface. Under no circumstances shall the Contractor subject the interior of the facility to water damage by failing to provide adequate protections in a weather emergency.
- E. Clean up all debris daily.
- F. Secure all materials on the roofs daily against high winds.

3.6 WOOD NAILER AND BACKING INSTALLATION

- A. Install continuous wood nailers at the perimeter of the entire roof and around roof projections and penetrations as shown on the Detail Drawings. Install plywood wall sheathing over brick masonry walls that are to be covered with membrane.
- B. Nailers shall be anchored to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons/lineal meter) in any direction. Individual nailer lengths shall not be less than 3 feet (0.9 meter) long. Nailer fastener spacing shall be at 12 inches (0.3 m) on center or 16 inches min. (0.4 m) on center only if necessary to miss the structural framing. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches (0.15 m) of each end. Two fasteners shall be installed at ends of nailer lengths. Nailer attachment shall meet this requirement and that of the current Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Thickness shall be as required to match the roof system.

- D. All existing nailer woodwork shall be removed.
- E. Nailers should gap 1/8" at ends and corners. The thickness of the nailer shall be provided such that the top of the nailer is flush with the adjacent insulation thickness or the surface to which the roofing membrane is to be applied. Shim with pressure treated stock to achieve correct height.
- F. Nailers can be single or multiple pieces of wood including dimensional lumber and plywood. When using multiple pieces stagger all joints, vertically. Heights shall match that of the adjacent insulation. Where insulation tapers, scribe wood blocking to match taper.
- G. Plywood backing should be gapped 1/8" at ends and corners. The thickness shall be as detailed on the plans. Fasteners shall be as detailed on the plans and at a minimum of 18" on center, staggered, if the spacing is not detailed.

3.7 VAPOR RETARDER, INSULATION AND COVERBOARD INSTALLATION

- A. On a clean deck, apply primer in accordance with manufacturers requirements. Install self-adhering vapor retarder continuously and adhered to all penetrations forming a complete membrane over the entire roof deck.
- B. Insulation boards and coverboards shall be installed in parallel courses with end joints staggered and adjacent boards butted together. Joints of alternate layers shall also be staggered. Joints shall be offset generally at one half the board width, but at a minimum of 12".
- C. Insulation and coverboard joints shall be 1/4 inch or less in width. Joints wider than 1/4 inch shall be filled with the same insulation.
- D. Where field trimmed, insulation and coverboards shall be fitted tightly around roof protrusions and terminations.
- E. Adhesive application where utilized shall be 100% coverage. Foam set up time is highly temperature sensitive. Accelerators shall be used when the air / surface temperature is 40 degrees F or below. Adhesive ribbon spacing to allow tested system to meet wind uplift requirements for field, edges and corners as indicated in Part 1 of this section.
- F. Set insulation and coverboards into the adhesive before the adhesive skins over and apply pressure with weights to assure full contact between the foam and the insulation boards and coverboards.
- G. Insulation shall be installed according to insulation manufacturer's instructions.
- H. Install tapered insulation in accordance with insulation manufacturer's shop drawings.
- I. Do not install more insulation board than can be covered with Sarnafil membrane by the end of the day or the onset of inclement weather.

3.8 INSTALLATION OF SARNAFIL MEMBRANE

- A. The surface of the insulation or substrate shall be inspected prior to installation of the Sarnafil roof membrane. The substrate shall be clean, dry, free from debris and smooth, with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.
- B. Sarnacol 2170 Adhesive:
 - 1. Over the properly installed and prepared substrate surface, Sarnacol 2170 adhesive shall be applied using solvent-resistant 3/4 inch (19 mm) nap paint rollers. The

adhesive shall be applied to the substrate at a rate according to Sarnafil requirements. The adhesive shall be applied in smooth, even coating with no gaps, globs, puddles or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be coated with adhesive. The first layer of adhesive shall be allowed to dry completely prior to installing the membrane.

2. When the adhesive on the substrate is dry, the Sarnafil roof membrane is unrolled. Adjacent sheets shall be overlapped 3 inches (75 mm). Once in place, one-half of the sheet's length shall be turned back and the underside shall be coated with Sarnacol 2170 adhesive at a rate of ½ gallon per 100 ft² (0.2 liters/m²). When the membrane adhesive has dried slightly to produce strings when touched with a dry finger, the coated membrane shall be rolled onto the previously-coated substrate being careful to avoid wrinkles. Do not allow adhesive on the underside of the Sarnafil membrane to dry completely. The amount of membrane that can be coated with adhesive before rolling into substrate will be determined by ambient temperature, humidity and crew. The bonded sheet shall be pressed firmly in place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. The remaining un-bonded half of the sheet shall be folded back and the procedure repeated.

Notes:

1. The Applicator shall count the amount of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
2. No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.

3.9 HOT-AIR WELDING OF SEAM OVERLAPS

A. General

1. All seams shall be hot-air welded. Seam overlaps should be 3 inches (75 mm) wide when automatic machine welding and 4 inches (100 mm) wide when hand-welding except for certain details.
2. Welding equipment shall be provided by or approved by Sarnafil. All mechanics intending to use the equipment shall have successfully completed a training course provided by a Sarnafil Technical Representative prior to welding.
3. All membrane to be welded shall be clean and dry.

B. Hand-Welding

Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

1. The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.
2. The nozzle shall be inserted into the seam at a 45-degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1-1/2 inch (40 mm) wide nozzle recommended for use. For corners and compound connections, the 3/4 inch (20 mm) wide nozzle shall be used.

- C. Machine Welding
 - 1. Machine welded seams are achieved by the use of Sarnafil's automatic welding equipment. When using this equipment, Sarnafil's instructions shall be followed and local codes for electric supply, grounding, and overcurrent protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. Not other equipment shall be operated off the generator.
 - 2. Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles. It is necessary to weld overlapping membranes prior to securing opposing side of membrane to prevent wrinkles with the High Speed Rail System.
- D. Quality Control of Welded Seams
 - 1. The Applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark gray material from the underside of the top membrane. On-site evaluation of welded seams shall be made daily by the Applicator to locations as directed by the Architect or Sarnafil's representative. One-inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

3.10 MEMBRANE FLASHINGS

- A. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the architect and Sarnafil. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.
- B. Sarnacol Adhesive for Membrane Flashings
 - 1. Over the properly installed and prepared flashing substrate, Sarnacol adhesive shall be applied according to instruction found on the Product Data Sheets. The Sarnacol adhesive shall be applied in smooth, even coatings with no gaps, globs or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.
 - 2. No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.
- C. Install Sarnadiscs according to the Detail Drawings with approved Sarnafasteners into the structural deck at the base of parapets, walls and curbs. Sarnarail or Sarnadiscs may be required by Sarnafil at the base of all tapered edge strips and at transitions, peaks, and valleys according to Sarnafil's details.
- D. Sarnafil's requirements and recommendations and the specifications shall be followed. All material submittals shall have been accepted by Sarnafil prior to installation.

- E. All flashings shall extend a minimum of 8 inches (0.2 m) above roofing level unless otherwise accepted in writing by the Architect and Sarnafil Technical.
- F. All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the Sarnafil membrane.
- G. All flashing membranes shall be mechanically fastened along the counter-flashed top edge with Sarnastop at 6-8 inches (0.15-0.20 m) on center.
- H. Sarnafil flashings shall be terminated according to Sarnafil recommended details.
- I. All adhered flashings that exceed 30 inches (0.75 m) in height shall receive additional securement. Consult Sarnafil Technical Department for securement methods.
- J. All mechanically-attached flashings that exceed 18 inches (0.46 m) in height shall receive additional securement. Consult Sarnafil Technical Department for securement methods.

3.11 METAL FLASHINGS

- A. Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:
 - 1. Factory Mutual Loss Prevention Data Sheet 1-49 (latest issue).
 - 2. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue.
- B. Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.
- C. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.
- D. Metal joints shall be watertight.
- E. Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 1 inch (25 mm).
- F. Airtight and continuous metal hook strips are required behind metal fascias. Hook strips are to be fastened 12 inches (0.3 m) on center into the wood nailer or masonry wall.
- G. Counter flashings shall overlap base flashings at least 4 inches (100 mm).
- H. Hook strips shall extend past wood nailers over finished wall surfaces by 1-1/2 inch (38 mm) minimums and shall be securely sealed from air entry.

3.12 SARNAFIL METAL BASE FLASHINGS / EDGE METAL

- A. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Sarnafil. Acceptance shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Applicator's expense.
- B. Sarnaclad metal flashings shall be formed and installed per the Detail Drawings.
 - 1. All metal flashings shall be fastened into solid wood nailers with two rows of post

galvanized flat head annular ring nails, 4 inches (100 mm) on center staggered.
Fasteners shall penetrate the nailer a minimum of 1 inch (25 mm).

2. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.
- C. Adjacent sheets of Sarnaclad shall be spaced ¼ inch (6 mm) apart. The joint shall be covered with 2 inch (50 mm) wide aluminum tape. A 4 inch minimum (100 mm) wide strip of Sarnafil flashing membrane shall be hot-air welded over the joint.
- 3.13 RAISING EXISTING CURBS
- A. Disconnect the curb below the existing exhaust fans.
 - B. Raise the curb and re-attach, providing the same or additional attachment, with new blocking or a steel liner to provide a minimum of 4" for the top of the membrane flashing to be above the top of the parapet.
 - C. Provide a smooth flat exterior surface on the exterior of the curb for the application of the flashing membrane.
- 3.14 WALKWAY INSTALLATION
- A. SarnaTred Walkway Pads
 1. Roofing membrane to receive SarnaTred Walkway shall be clean and dry. Place chalk lines on deck sheet to indicate location of SarnaTred. Apply a continuous coat of Sarnacol 2170 or 2170 VC adhesive to the deck sheet and the back of SarnaTred in accordance with Sika Sarnafil's technical requirements and press SarnaTred into place with a minimum 100 lb (45 kg) steel, membrane roller, by rolling in two directions. Clean the deck membrane in areas to be welded. Hot-air weld the entire perimeter of the SarnaTred to the Sarnafil deck sheet. Check all welds with a rounded screwdriver. Re-weld any inconsistencies. Do not run SarnaTred over Sarnabars or any membrane seams.
- 3.15 TEMPORARY CUT-OFF
- A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100% watertight seal. Even installing partial panels of insulation shall make the stagger of the insulation joints. The new membrane shall be carried into the waterstop. The waterstop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of off site. None of these materials shall be used in the new work.
 - B. If inclement weather occurs while a temporary waterstop is in place, the Applicator shall provide the labor necessary to monitor the situation to maintain a watertight condition.
 - C. If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Applicator's expense.
- 3.16 FIELD QUALITY CONTROL
- A. Inspection by Manufacturer: Provide final inspection of the roofing system by a

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HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

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Boston, Massachusetts
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Fax: (617) 464-2971

Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a sales person).

- B. The Contractor shall retain an independent Consultant to perform Wind Uplift Testing in accordance with FM 1-52 on the mock up and on production roof assemblies in the presence of the Commissioning Agent.
- C. Perform all corrections necessary for issuance of warranty.
- D. Inspection by Installer: Provide a warranty inspection with the Commissioning Agent prior to the termination of the installer's warranty period, and perform all corrections necessary for the terms of the warranty.

3.17 COMPLETION

- A. Prior to demobilization from the site, the work shall be reviewed by the Architect, a representative from the manufacturer and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of the manufacturer shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Architect and the manufacturer prior to demobilization.
- B. All Warranties referenced in this Specification shall have been submitted and have been accepted at time of contract award.

END OF SECTION

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SECTION 07 62 00

FILE SUB-BID REQUIRED – ROOFING AND FLASHING

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. ROOFING AND FLASHING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, "NOTICE TO ALL BIDDERS", and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 076200 is described herein, in Sections 070150.19, 074213, 075430, 076200, 077050, 077123, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Sheet Metal Flashing and Trim work required to complete the work of the contract including all the Sheet Metal Flashing and Trim work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all accessories. Coordinate the Sheet Metal Flashing and Trim work with all the other trades for the project. Provide all demolition and disposal work to complete the Sheet Metal Flashing and Trim 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, and each Subcontractor for the entire project so that all the work can be properly and completely performed.

B. Sheet Metal Flashing and Trim work includes, but is not limited to:

1. Furnish and install flashings, as shown in drawings, for all roofing and for all other metal flashing and trim shown on the plans including all metal flashing for the new EIFS work.
2. Flash all roof penetrations in the areas of reroofing.
3. Furnish and install sheet metal items, including flashings, counterflashings, and edge metal, scuppers, through-wall and head flashings and metal flashing and trim indicated on the drawings. PLEASE NOTE: All sill pan flashing at the windows, storefronts and curtainwalls shall be furnished and installed by the METAL WINDOWS Filed Sub-Bidder.
4. Reglets and accessories.

1.4 RELATED REQUIREMENTS

- A. Section 07 54 30 PVC Single Ply Roofing: Roofing system.
- B. Section 07 61 00 - Sheet Metal Roofing.
- C. Section 07 71 23 - Manufactured Gutters and Downspouts.
- D. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.5 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2013.
- B. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- D. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
- E. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2012.
- F. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012)e1.
- H. CDA A4050 - Copper in Architecture - Handbook; Copper Development Association, Inc.; current edition.
- I. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.6 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.7 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Samples: Submit two samples 12 x 12 inch in size illustrating metal finish color.

1.8 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA 1793 and CDA A4050 requirements and standard details, except as otherwise indicated.
- B. Maintain one copy of each document on site.
- C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 0.040 inch thick; plain finish shop pre-coated with fluoropolymer coating.
 - 1. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color: As selected by Architect from manufacturer's standard colors.
- B. PVC coated metal - See Section 07 54 30.
 - 1. Color: As selected by Architect from manufacturer's standard colors.

2.2 ACCESSORIES

- A. Fasteners: Stainless steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Protective Backing Paint: Zinc molybdate alkyd.
- D. Sealant to be Concealed in Completed Work: Non-curing butyl sealant.
- E. Sealant to be Exposed in Completed Work: ASTM C920; elastomeric sealant, 100 percent silicone with minimum movement capability of plus/minus 25 percent and recommended by manufacturer for substrates to be sealed; clear.
- F. Plastic Cement: ASTM D4586, Type I.
- G. Solder: ASTM B32; Sn50 (50/50) type.

2.3 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats of same material as sheet, minimum 2 inches wide, interlocking with sheet.

- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Tin edges of copper sheet to be soldered. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.
- G. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- H. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- I. Fabricate flashings to allow toe to extend 2 inches over roofing edge. Return and brake edges.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
- C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.3 INSTALLATION

- A. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Seal aluminum joints watertight.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

SECTION 07 70 50

FILE SUB-BID REQUIRED – ROOFING AND FLASHING

ROOF DRAINS

PART 1 – GENERAL

1.1 FILED SUB-BIDS

- A. ROOFING AND FLASHING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 077050 is described herein, in Sections 070150.19, 074213, 075430, 076200, 077123, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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 the equipment and materials to be furnished complete in every respect, and that this Contractor shall provide all items needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the Work shall be new and of the best grade of their respective kinds.

1.3 WORK TO BE PERFORMED

- A. Provide all the Roof Drain Work required to complete the Work of the Contract including all the Roof Drain Work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all hardware, finishes, and accessories. Coordinate the Roof Drain Work with all the other trades for the project. Provide all demolition and disposal Work to complete the Roof Drain 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 and Subcontractor for the entire project so that all the Work can be properly and completely performed.

- B. The Work of this Section includes, but is not limited to:
1. The Contractor shall remove existing and install new roof drain assemblies including cast iron drain bowls, below deck clamps, clamping ring assemblies, drain strainers, gravel guards, anchors, bolts, etc, as detailed on the plans as part of the Base Bid Scope of Work. The Contractor is responsible for providing any and all alterations to the roof drain assembly to accommodate the new Work. This includes the proper installation of all necessary drain supports and drain leaders.
 2. All new drains shall be tied into the existing cast iron drain leader pipes. If any PVC drain leaders are found during the work, they shall be brought to the attention of the Architect and Owner immediately for resolution. Do not solder or seal cast iron bowls to PVC pipe.
 3. Drain bowls shall be No Hub Bowls and be attached to the existing or new pipe with no hub fittings.
 4. Provide and install roof drain marker flags at all drains on the roof.
 5. Prior to the start of Work, Contractor shall inspect and verify the proper functioning of all roof drains, and identify those that are clogged or slow running. Contractor is to snake all drains at project completion to ensure that they are free flowing from roof level to the mains in the street. The Architect shall be notified three (3) days in advance of all snaking so that he can be on site to witness.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01300 - SUBMITTALS.
- B. Contractor shall provide four copies of manufacturer's descriptive literature and data sheets for each of the following:
 1. Roof drain assembly, including hangers and under deck clamps.
 2. Lead and oakum for pipe to pipe and pipe to drain connections.
 3. Manufacturer's literature on all products.

1.5 DELIVERY, HANDLING AND STORAGE

- A. Contractor shall comply with all recommendations of the pipe manufacturer and of applicable Technical Reports of the Cast Iron Soil Pipe Institute for handling and installation.
- B. All Work and materials shall be protected at all times. The Contractor shall make good all damage caused by his workmen either directly or indirectly. All pipe openings shall be closed with caps or plugs during installation. Equipment shall be tightly covered and protected against dirt, water, chemical or mechanical injury.
- C. All Work shall be performed in accordance with Massachusetts State Plumbing Code and best practices of the trade.
- D. The Contractor shall do all carting, handling and hoisting for his materials and equipment in a safe and satisfactory manner. Any damage resulting therefrom shall be repaired or paid for by this Contractor to the satisfaction of the parties concerned, at no additional cost to the Owner.

1.6 CODES, STANDARDS

- A. All Plumbing Work shall be done in accordance with all applicable codes and standards.

1.7 COORDINATION

- A. Coordinate all Work of this Section with other trades. Perform all Plumbing Work in a timely manner as not to delay other trades. This Plumbing Section shall coordinate all Work with the roofing and waterproofing trades to prevent exposure of the building to inclement weather at all times.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. All materials shall be selected so as to conform to all applicable local state and federal codes.
- B. Standard replacement Roof Drains shall be Model #1010-C as manufactured by Jay R. Smith Manufacturing Co., Montgomery, Alabama or approved equal product to match existing. Provide all necessary accessories, including, but not limited to the following: Cast iron body, vandal proof Cast iron strainer/dome, gravel guard, under deck clamps, bolted clamping collar. Other type drains may be used if pre-approved by the Architect; however, if this requires the cutting of larger holes and reinforcing at decks, perform this Work at no additional cost to the Owner. Drain replacement parts under this section to be furnished by the Contractor.
- C. Pipe Joint: No Hub Fittings.
- D. Pipe and Hangers: Piping 2 inches and larger shall be no-hub cast iron with rubber gaskets and mechanical couplings, supported with hangers at 5'-0" O.C. maximum.
- E. Pipe Insulation: Preformed OCF Fiberglass #25 ASJ with vinyl jacket, or approved equal, minimum of 1 inch thick or as required by applicable codes. Provide mitered sections of same material, by the same manufacturer complete with joint tape to cover fittings.
- F. Roof Drain Markers: Drain dome-mounted vertical fiberglass flag marker secured in aluminum socket in turn secured with pre-punched aluminum bracket configured for through-bolting to roof drain dome, by Roof Drain Marker Co., LLC, West Bridgewater, MA; (877) 571-6644; www.roofdrainmarker.com, or approved equal
1. Flag Marker: Pultruded fiber-reinforced polymer rod, 1/2 inch (12 mm) diameter by 48 inch (1219 mm) long, with reflective dual-colored reversible ends enabling marking of selected drains.
 - a. Flexural Strength, minimum, ASTM D 790, 700,000 psi (689 MPa).
 - b. Impact Strength, minimum, ASTM D 256: 40 ft-lb/in.
 2. Marker Base: 1 by 1 by 4 inch (25 by 25 by 102 mm) extruded aluminum bar, ASTM B 209 (ASTM B 209M), with milled flag receiver, threaded flag set screw retainer, and threaded base.
 3. Flag Bracket: 1 by 11 by 0.063 inch (25 by 25 by 1.60 mm) aluminum plate bracket, ASTM B 221 (ASTM B 221M).

4. Fasteners: Alloy Group 2 (A4) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

PART 3 – EXECUTION

3.1 INSTALLATION

- A. The plumbing details intend to show only the scope of the design, and the Contractor shall be responsible for the correct installation of his Work in a manner satisfactory to the best practices of his trade and to complete the scope of this Work in all respects.
- B. The Contractor shall also provide the necessary data and supervision for the provision of all openings in the structure, including bolt-hole templates, weights of equipment and manufacturer's recommendations for proper emplacement design.

3.2 DRAIN INSTALLATION

- A. All replacement roof drains shall be recessed into the existing deck.
- B. Install new roof drains in accordance with manufacturer's recommendations, ensuring all no-hub seal connections are proper to create a positive watertight connection with the new drain leader pipe including:
 1. Flash in flange up to and around vertical drain body bases.
 2. Install below-deck clamps.
 3. Install clamping ring over raised bases and tighten clamping ring against metal flashing until secure.
 4. Install strainer dome onto clamping ring and lock into place.
- C. Install new cast iron strainers on all drains to fit and clamp into the existing or new bowls.
- D. Install new cast iron pipe with hangers from structure per code 248 CMR.
- E. Install pipe insulation from drain to existing insulation on existing pipe to remain.
- F. Snake clear all existing drains from roof level to the mains prior to the start of construction and after the roof removal and replacement is complete and after all roof drain assemblies are properly installed and flashed. The Contractor shall report any non-functioning roof drains to the Owner prior to the start of construction. Contractor shall notify Architect three (3) days in advance so that he can be on site to witness snaking.
- G. Contractor shall test all drain lines in accordance with the Commonwealth of Massachusetts Fuel Gas and Plumbing Codes as indicated in 248 CMR, uniform State Plumbing Code Section 2.04: Scope and Application. All costs incurred for the testing, inspection and repairs shall be included in the bid.

END OF SECTION

SECTION 07 71 23

FILE SUB-BID REQUIRED – ROOFING AND FLASHING

MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. ROOFING AND FLASHING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 077123 is described herein, in Sections 070150.19, 074213, 075430, 076200, 077050, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Manufactured Gutters and Downspouts work required to complete the work of the contract including all the Manufactured Gutters and Downspouts 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 Manufactured Gutters and Downspouts work with all the other trades for the project. Provide all demolition and disposal work to complete the Manufactured Gutters and Downspouts 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. Manufactured Gutters and Downspouts work includes, but is not limited to:
 - 1. Furnish and install pre-finished aluminum gutters and downspouts where indicated on the Drawings. Gutters shall match size and profile of existing gutters to be removed and disposed of. Provide downspouts continuous full height of wall, securely attached, and install concrete splashblocks at base of all downspouts.

1.4 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2013.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.5 DESIGN REQUIREMENTS

- A. Conform to SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on prefabricated components.
- C. Samples: Submit two samples, minimum 6 inch long illustrating component design, finish, color, and configuration.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Gutters and Downspouts:
 - 1. W.P. Hickman Company; Wind Resistant Gutter: www.wph.com.
 - 2. ATAS International; www.atas.com
 - 3. SAF Perimeter Systems; www.saf.com/persys
 - 4. Or approved Equal

2.2 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.050 inch thick.

1. Finish: Plain, shop pre-coated with modified silicone coating.
2. Color: As selected from manufacturer's standard colors.

2.3 COMPONENTS

A. Gutters: Profile as indicated. Match existing.

B. Downspouts: Profile as indicated. Match existing.

C. Anchors and Supports: Profiled to suit gutters and downspouts.

1. Gutter Supports: Brackets with a twist at 18 inches on center with continuous stiffener bar at edge of gutter.

2.4 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.5 FACTORY FINISHING

A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that surfaces are ready to receive work.

3.2 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Slope gutters 1/4 inch per foot.
- C. Set splash pans under downspouts.

END OF SECTION

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

CBI Consulting Inc.
Boston, Massachusetts
Tel: (617) 268-8977
Fax: (617) 464-2971

SECTION 07 92 00

***FILE SUB-BID REQUIRED –
WATERPROOFING, DAMPROOFING, AND CAULKING***

JOINT SEALANTS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. WATERPROOFING, DAMPROOFING AND CAULKING is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, "NOTICE TO ALL BIDDERS", and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 079200 is described herein, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Joint Sealants work required to complete the work of the contract including all the Joint Sealants 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 Joint Sealants work with all the other trades for the project. Provide all demolition and disposal work to complete the Joint Sealants 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. Joint Sealants work includes, but is not limited to:
 - 1. Removal and disposal of all existing sealants and joint backing at window, door, storefront and curtain wall perimeters, mullions and trim scheduled to be removed shall be by the METAL WINDOWS Filed Sub-Bidder.
 - 2. Removal and disposal of all existing sealants and joint backing at existing York rooftop unit curbs and curb flashing, and installation of new sealants at the rooftop unit curb flashing as indicated on the Drawings, shall be by ROOFING AND FLASHING Filed Sub-Bidder.
 - 3. Removal and disposal of all existing sealants and joint backing at all EIFS joints and terminations shall be by the GENERAL BIDDER.
 - 4. Provide and install all sealants and joint backing as indicated on the Drawings and Specifications, and to provide a complete watertight installation as per good construction practice.

1.4 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.

1.5 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2015.
- C. ASTM C834 - Standard Specification for Latex Sealants; 2010.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- E. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2000 (Reapproved 2011).
- F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- G. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- H. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.

4. Substrates the product should not be used on.
 5. Substrates for which use of primer is required.
 6. Sample product warranty.
 7. Certification by manufacturer indicating that product complies with specification requirements.
- C. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.
- B. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
1. Adhesion Testing: In accordance with ASTM C794.
 2. Compatibility Testing: In accordance with ASTM C1087.
 3. Allow sufficient time for testing to avoid delaying the work.
 4. Deliver to manufacturer sufficient samples for testing.
 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
- C. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: At least 18 inch long.
 2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
 3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.
 4. Record results on Field Quality Control Log.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Nonsag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.

1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Dow Corning Corporation: www.dowcorning.com/construction.
3. Pecora Corporation: www.pecora.com.
4. Tremco Global Sealants: www.tremcosealants.com.
5. Or Approved Equal.

2.2 JOINT SEALANT APPLICATIONS

A. Scope:

1. Exterior Joints: Seal open joints, whether or not the joint is indicated on the drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames, trim, and adjacent construction.
 - b. Other joints indicated to be sealed on the Drawings and in other Sections.
3. Do not seal the following types of joints.
 - a. Intentional weepholes.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.

C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.

1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.

2.3 JOINT SEALANTS - GENERAL

2.4 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.

1. Movement Capability: Plus and minus 50 percent, minimum.
2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Color: To be selected by Architect from manufacturer's standard range.

JOINT SEALANTS

5. Cure Type: Single-component, neutral moisture curing.
6. Products:
 - a. Pecora Corporation; 864NST Low Modulus Architectural Silicone Sealant - Class 50: www.pecora.com.
 - b. Dow Corning Corporation; 795 Silicone Building Sealant: www.dowcorning.com.
 - c. Or Approved Equal.
- B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
 1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Products:
 - a. Pecora Corporation; DynaTrol I-XL General Purpose One Part Polyurethane Sealant: www.pecora.com.
 - b. Or Approved Equal.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 1. Color: To be selected by Architect from manufacturer's standard range.
 2. Products:
 - a. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
 - b. Or Approved Equal.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.5 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 1. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.2 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 - 1. Width/depth ratio of 2:1.
 - 2. Neck dimension no greater than 1/3 of the joint width.
 - 3. Surface bond area on each side not less than 75 percent of joint width.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.4 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 16 13

FILE SUB-BID REQUIRED – METAL WINDOWS

FIBERGLASS DOORS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. METAL WINDOWS is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 081613 is described herein, in Sections 072100, 084313, 084413, 085113, 087100, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Fiberglass Doors work required to complete the work of the contract including all the Fiberglass Doors 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 Fiberglass Doors work with all the other trades for the project. Provide all demolition and disposal work to complete the Fiberglass Doors 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. Fiberglass Doors work includes, but is not limited to:
1. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 2. Remove and dispose of existing doors and frames where indicated on the Drawings.
 3. Install continuous fluid-applied rapid-set waterproof air and vapor barrier (provided by GENERAL BIDDER and approved by EIFS Manufacturer) at entire door opening and extending as detailed onto face of existing exterior wall sheathing at all sides of opening. Provide mock-up for approval in advance of the work.
 4. Fiberglass reinforced polyester (FRP) doors.
 5. Aluminum Frames for fiberglass reinforced polyester doors.
 6. Hinges and other door hardware as specified in Section 08 71 00.
 7. Thresholds, weather-stripping and Accessories.

1.4 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware: Other door hardware.

1.5 REFERENCE STANDARDS

- A. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- B. ASTM D2126 - Respose of Rigid Cellular Plastics to Thermal and Humid Aging.
- C. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2014.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard details, installation instructions, and hardware and anchor recommendations.
- C. Test Reports: Show compliance with specified criteria.
- D. Shop Drawings: Show layout and profiles; include assembly methods.
1. Indicate product components, including hardware reinforcement locations and preparations, accessories, finish colors, patterns, and textures.
 2. Indicate wall conditions, door and frame elevations, sections, materials, gages, finishes, location of door hardware by dimension, and details of openings; use same reference numbers indicated on Drawings to identify details and openings.
- E. Selection Samples: Submit two complete sets of color chips, illustrating manufacturer's available finishes, colors, and textures.
- F. Door Corner Sample: Submit corner cross sections, 10 inch by 10 inch in size, illustrating construction, finish, color, and texture.

- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer; include detailed terms of warranty.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store materials in original packaging, under cover, protected from exposure to harmful weather conditions and from direct contact with water.
 - 1. Store at temperature and humidity conditions recommended by manufacturer.
 - 2. Do not use non-vented plastic or canvas shelters.
 - 3. Immediately remove wet wrappers.
- C. Store in position recommended by manufacturer, elevated minimum 4 inches above grade, with minimum 1/4 inches space between doors.

1.8 PERFORMANCE REQUIREMENTS

- A. Opaque doors shall have a minimum U-factor of 0.37

1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide ten (10) year manufacturer warranty covering materials and workmanship .

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Laminated Fiberglass Reinforced Polyester (F.R.P) Doors:
 - 1. Ceco Door Products; www.cecodoor.com.
 - 2. Kawneer Flushline FRP Doors: kawneer.com.
 - 3. Special-Lite; SL-17: www.special-lite.com.
 - 4. Or Approved Equal.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 DOOR AND FRAME ASSEMBLIES

- A. Door and Frame Assemblies: Factory-fabricated, prepared and machined for hardware.
 - 1. Door and frame pre-assembled, complete with hinges; shipped with braces, spreaders, and packaging as required to prevent damage.
 - 2. Mechanical Durability: Tested to ANSI/SDI A250.4 Level A (1,000,000 cycles), minimum; tested with hardware and fasteners intended for use on project.
 - 3. Screw-Holding Capacity: Tested to 900 psi, minimum.
 - 4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A; when tested in accordance with ASTM E84.
 - 5. Flammability: Self-extinguishing when tested in accordance with ASTM D635.
 - 6. Clearance Between Door and Frame: 1/8 inch, maximum.

7. Clearance Between Meeting Stiles of Pairs of Doors: 1/8 inch, maximum.
8. Clearance Between Bottom of Door and Finished Floor: 3/4 inch, maximum; not less than 1/4 inch clearance to threshold.

2.3 COMPONENTS

- A. Doors: Fiberglass reinforced polyester resin construction with reinforced core.
 1. Thickness: 1-3/4 inches, overall, with foamed in place polyurethane core and .120 inch thick face panels with pebble texture.
 2. Subframe and Reinforcements: Fiberglass pultrusions, polymer foam, stainless steel, or aluminum; no wood. Provide 3/8 inch diameter tie rod reinforcing, top and bottom.
 3. Waterproof Integrity: All edges, cut-outs, and hardware preparations factory fabricated of fiberglass reinforced plastic; provide cut-outs with joints sealed independently of glazing or louver inserts or trim.
 4. Hardware Preparations: Factory reinforce, machine, and prepare for all hardware including field installed items; provide solid blocking for each hardware item; make field cutting, drilling or tapping unnecessary; obtain manufacturer's templates for hardware preparations.
 5. Door Bottoms: Provide and install bottom cap and brush sweep at all doors.
- B. Frames: Profiles and dimensions as indicated on drawings; same type and construction used in mechanical durability test for doors.
 1. Construction :
 - a. Hardened Aluminum, 0.04 inch minimum wall thickness; natural anodized finish.
 2. Corner Joints: Mitered with concealed corner blocks or angles of same material as frame; fiberglass and aluminum joined with screws; steel and stainless steel spot welded; sealed watertight with silicone sealant.
 3. At hardware cut-outs provide continuous backing or mortar guards of same material as frame, sealed watertight.
 4. Frame Anchors: Stainless steel, Type 304; provide 3 anchors in each jamb for heights up to 84 inches with one additional anchor for each additional 24 inches in height.
- C. Hinge and Hardware Fasteners: Stainless steel, Type 304; continuous gear wood screws.
- D. Glass: Provide 1" insulated tempered glass to match glass in new window units. Refer to Door Type drawings for sizes and locations of glass units.
- E. Flashing: 0.040 Aluminum, as detailed on the Drawings.

2.4 ACCESSORIES

- A. Astragals for Inactive Leaves: Pultruded fiberglass angle or tee; same color as doors.
- B. Hardware: As specified in Section 08 71 00.
 1. Hinges: Continuous Hinges with concealed fastening.
 2. Weather-stripping: Continuous neoprene bulb gaskets at all heads and jambs. Continuous nylon brush at all sills.

FIBERGLASS DOORS

- C. Thresholds: ADA-compliant, Aluminum, with skid resistant surface, full width of door opening, 1/2 inch high by 6 inches wide; gray.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify actual dimensions of openings by field measurements before door fabrication; show recorded measurements on shop drawings.
- B. Do not begin installation until substrates have been properly prepared.

3.2 PREPARATION

- A. Remove existing doors and frames, and dispose of all removed materials in accordance with local authorities having jurisdiction.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Clean and prepare substrate in accordance with manufacturer's directions.
- D. Protect adjacent work and finish surfaces from damage during installation.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions; do not penetrate frames with anchors.
- B. Set units plumb, level, and true-to-line, without warping or racking doors, and with specified clearances; anchor in place.
- C. Separate aluminum and other metal surfaces from sources of corrosion of electrolytic action at points of contact with other materials.
- D. Repair or replace damaged installed products.

3.4 INSPECTION

- A. Each Door Opening shall be reviewed and approved by the Owners Project Manager Prior to the installation of the door and frame system.

3.5 ADJUSTING

- A. Lubricate, test, and adjust doors to operate easily, free from warp, twist or distortion, and to fit watertight for entire perimeter.
- B. Adjust hardware for smooth and quiet operation.
- C. Adjust doors to fit snugly and close without sticking or binding.

3.6 CLEANING

- A. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

3.7 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
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SECTION 08 43 13

FILE SUB-BID REQUIRED – METAL WINDOWS

ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. METAL WINDOWS is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 084313 is described herein, in Sections 072100, 081613, 084413, 085113, 087100, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 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.

1.3 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. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 2. Carefully remove, protect, and temporarily store, existing aluminum-framed storefront systems in their entirety where indicated on the drawings. Remove existing adjacent wallboard and VCT tile to accommodate the work. Limit removal to only what is necessary to complete the curtain wall removal, and cut lines straight and parallel with exterior wall.
 3. Inspect existing blocking exposed at sill to remain. Refer to Unit Price Schedule for replacement of deteriorated blocking.
 4. Install insulation in all voids and wall openings at perimeter of opening. Refer to Section 072100.
 5. Install continuous fluid-applied rapid-set waterproof air and vapor barrier, sealant and tape (provided by GENERAL BIDDER and approved by EIFS Manufacturer) at entire storefront opening and extending as detailed onto face of existing exterior wall sheathing at all sides of opening and lapping over sill flashing.
 6. Install continuous aluminum sill pan flashing below all storefronts scheduled to be removed and re-installed as detailed and securely fastened to substrate to allow water to be shed to the exterior. Seal all joints, watertight.
 7. Re-install existing aluminum-framed storefront systems in their entirety where indicated on the drawings. Provide all blocking, shim and fasteners required for a complete installation. Provide touch-up paint for damaged finishes to match existing to the complete satisfaction of the Owner and the Architect.
 8. Remove and dispose of all existing sealants and joint backing at window, storefront and curtain wall perimeters, mullions and trim scheduled to be removed, by METAL WINDOWS Filed Sub-Bidder.
 9. Provide and install sealant at all aluminum-to-aluminum joints at mullions, sash, receptors and trim at storefront components scheduled to be removed and re-installed. Note: Perimeter sealants shall be installed by WATERPROOFING, DAMPROOFING, AND CAULKING FILED SUB-BIDDER.

1.4 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.
- D. Door hardware.

1.5 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.

1.6 QUALITY ASSURANCE

- A. Mock-Up: Provide one complete mock-up prior to start of work, to be reviewed in the presence of the Architect and Owner's Project Manager and to include entire sequence of operations including adjacent work by the General Bidder.

1.7 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.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

- A. The following products are descriptions of existing storefront systems to be removed and reinstalled as indicated on the Drawings.
- B. Center-Set Style, Thermally-Broken:
 - 1. Basis of Design: EFCO Corporation; Series 403, Thermal Storefront Framing.
 - 2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.

2.2 SWINGING DOORS

- A. Wide Stile, Insulating Glazing, Not Thermally-Broken:
 - 1. Basis of Design: EFCO Corporation; Series D518, Durastile Heavy Duty.
 - 2. Thickness: 2 inches.

2.3 STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Finish: Class I color anodized.
 - a. Factory finish all surfaces that will be exposed in completed assemblies.
 - 2. 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.
 - 3. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 4. 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.
 - 5. 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.

6. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
7. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

2.4 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 1. Glazing stops: Flush.
- B. Swing Doors: Glazed aluminum.

2.5 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Exposed Flashings: Aluminum sheet, 18 gage, 0.040 inch minimum thickness or as indicated on the Drawings (whichever is more); finish to match framing members.
- D. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.6 FINISHES

- A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.
- B. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.7 HARDWARE

- A. For each door, include weather-stripping, sill sweep strip, and threshold Reinstall All other existing salvaged hardware.
- B. Weather-stripping: 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, one piece per door opening, ribbed surface; provide on all doors.

PART 3 EXECUTION

3.1 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.

3.2 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

ALUMINUM-FRAMED STOREFRONTS

- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Install hardware using templates provided.
- K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.

3.5 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.6 CLEANING

3.7 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

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SECTION 08 44 13

FILE SUB-BID REQUIRED – METAL WINDOWS

GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. METAL WINDOWS is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 084413 is described herein, in Sections 072100, 081613, 084313, 085113, 087100, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Glazed Aluminum Curtainwall work required to complete the work of the contract including all the Glazed Aluminum Curtainwall 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 Glazed Aluminum Curtainwall work with all the other trades for the project. Provide all demolition and disposal work to complete the Glazed Aluminum Curtainwall 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. Glazed Aluminum Curtain wall work includes, but is not limited to:
1. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 2. Carefully remove, protect, and temporarily store, existing aluminum-framed curtain wall systems in their entirety where indicated on the drawings. Remove existing adjacent wallboard and VCT tile to accommodate the work. Limit removal to only what is necessary to complete the curtain wall removal, and cut lines straight and parallel with exterior wall.
 3. Inspect existing blocking exposed at sill to remain. Refer to Unit Price Schedule for replacement of deteriorated blocking.
 4. Install insulation in all voids and wall openings at perimeter of opening. Refer to Section 072100.
 5. Install continuous fluid-applied rapid-set waterproof air and vapor barrier, sealant and tape (provided by GENERAL BIDDER and approved by EIFS Manufacturer) at entire curtain wall opening and extending as detailed onto face of existing exterior wall sheathing at all sides of opening and lapping over sill flashing below.
 6. Install continuous aluminum sill pan flashing below all curtain walls scheduled to be removed and re-installed as detailed and securely fastened to substrate to allow water to be shed to the exterior.
 7. Re-install existing aluminum-framed curtain wall systems in their entirety where indicated on the drawings. Provide all blocking, shim and fasteners required for a complete installation. Provide touch-up paint for damaged finishes to match existing.
 8. Remove and dispose of all existing sealants and joint backing at window, storefront and curtain wall perimeters, mullions and trim scheduled to be removed, by METAL WINDOWS Filed Sub-Bidder.
 9. Provide and install sealant at all aluminum-to-aluminum joints at mullions, sash, receptors and trim at curtain wall components scheduled to be removed and re-installed. Note: Perimeter sealants shall be installed by WATERPROOFING, DAMPROOFING, AND CAULKING FILEDSUB-BIDDER.

1.4 SECTION INCLUDES

- A. Aluminum-framed curtain wall, with vision glazing and glass infill panels.

1.5 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2012.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 2012.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

GLAZED ALUMINUM CURTAIN WALLS

- D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.
- E. 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).

1.6 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.

1.7 QUALITY ASSURANCE

- A. Mock-Up: Provide one complete mock-up prior to start of work, to be reviewed in the presence of the Architect and Owner's Project Manager and to include entire sequence of operations including adjacent work by the General Bidder.

1.8 MOCK-UP

- A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-ups.
- B. Locate on-site where directed by Architect. Mock-up may remain as part of the Work.
- C. Locate off-site where directed. Remove when directed.

1.9 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. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. The following products are descriptions of existing curtainwall systems to be removed and reinstalled as indicated on the Drawings.
- B. Glazed Aluminum Curtain Wall:
 - 1. EFCO, a Pella Company; 5600: www.efcocorp.com; 2-1/4" x 7" Framing
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 CURTAIN WALL

- A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Finish: Class I color anodized.
 - a. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.

2. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
- B. Water Penetration Resistance: No uncontrolled water on indoor face when tested as follows:
 1. Test Pressure Differential: 10 lbf/sq ft.
- C. Air Leakage: Maximum of 0.06 cu ft/min/sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 pounds per square foot pressure differential across assembly.

2.3 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.

2.4 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel; type as required or recommended by curtain wall manufacturer.
- C. Exposed Flashings: Aluminum sheet, 18 gage, 0.040 inch minimum thickness or as indicated on the Drawings (whichever is more); finish to match framing members.
- D. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.5 FINISHES

- A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.
- B. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other related work.
- B. Verify that curtain wall openings and adjoining air and vapor seal materials are ready to receive work of this section.
- C. Verify that anchorage devices have been properly installed and located.

3.2 INSTALLATION

- A. Install curtain wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings as detailed. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- H. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 0.5 inches per 100 ft, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
- C. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch and minimum of 1/4 inch.

3.4 INSPECTIONS

- A. Each curtainwall opening shall be reviewed and approved of by the Owner's Project Manager prior to the installation of the curtain wall system.

3.5 ADJUSTING

- A. Adjust operating sash for smooth operation.

3.6 CLEANING

3.7 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

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SECTION 08 51 13

FILE SUB-BID REQUIRED – METAL WINDOWS

ALUMINUM WINDOWS

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. METAL WINDOWS is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 085113 is described herein, in Sections 072100, 081613, 084313, 084413, 087100, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-07, A3-01 through A3-05, A4-01 through A4-10, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 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.

1.3 WORK TO BE PERFORMED

- A. Provide all the Aluminum Windows work required to complete the work of the contract including all the Aluminum Windows 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 Windows work with all the other trades for the project. Provide all demolition and disposal work to complete the Aluminum Windows 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

ALUMINUM WINDOWS

sub-bidder for the entire project so that all the work can be properly and completely performed.

- B. Aluminum Windows work includes, but is not limited to:
1. Coordinate sequencing of work with the General Bidder so that adjacent work is provided on a timely basis.
 2. Carefully remove, protect, and temporarily store, existing aluminum-framed window systems in their entirety where indicated on the drawings. Remove existing adjacent wallboard and trim to accommodate the work. Limit removal to only what is necessary to complete the curtainwall removal and as indicated on the Drawings, and cut lines straight and parallel with exterior wall.
 3. Remove and dispose of all aluminum jamb and head receptors. Inspect existing aluminum sill receptor to be re-installed and seal all holes except weeps.
 4. Inspect existing blocking exposed at sill to remain. Refer to Unit Price Schedule for replacement of deteriorated blocking.
 5. Install insulation in all voids and wall openings at perimeter of opening. Refer to Section 072100.
 6. Install continuous fluid-applied rapid-set waterproof air and vapor barrier, sealant and tape (provided by GENERAL BIDDER and approved by EIFS Manufacturer) at entire window opening and extending as detailed onto face of existing exterior wall sheathing at all sides of opening and lapped over sill flashing below.
 7. Install continuous aluminum sill pan flashing below all windows scheduled to be removed and re-installed as detailed and securely fastened to substrate to allow water to be shed to the exterior.
 8. Re-install existing aluminum-framed window systems in their entirety with new aluminum jamb and head receptors to match existing, where indicated on the drawings. Provide all blocking, shim and fasteners required for a complete installation. Provide touch-up paint for damaged finishes to match existing.
 9. Remove and dispose of all existing sealants and joint backing at window, storefront and curtain wall perimeters, mullions and trim scheduled to be removed, by METAL WINDOWS Filed Sub-Bidder.
 10. Provide and install sealant at all aluminum-to-aluminum joints at mullions, sash, receptors and trim at window components scheduled to be removed and re-installed.
Note: Perimeter sealants shall be installed by WATERPROOFING, DAMPROOFING, AND CAULKING FILED SUB-BIDDER.

1.4 SECTION INCLUDES

- A. Extruded aluminum windows with fixed sash, operating sash, and infill panels. Refer to Drawings.
- B. Operating hardware.
- C. Insect screens.

1.5 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 2012.

ALUMINUM WINDOWS

1.6 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.7 QUALITY ASSURANCE

- A. Mock-Up: Provide one complete mock-up prior to start of work, to be reviewed in the presence of the Architect and Owner's Project Manager and to include entire sequence of operations including adjacent work by the General Bidder.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN - AW PERFORMANCE CLASS WINDOWS

- A. The following products are descriptions of existing window systems to be removed and reinstalled (or replaced) as indicated on the Drawings.
- B. Grade: AAMA/WDMA/CSA 101/LS.2/A440 having Performance Class of AW, and Performance Grade at least as high as specified design pressure.
- C. Projected, Face of Sash Recessed From Face of Frame:
 - 1. Basis of Design: EFCO, a Pella Company; 2900 Series, 4-1/2" deep frame; out-swing projected (awning) and fixed: www.efcocorp.com.

2.2 WINDOWS

- A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
 - 1. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
 - 2. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
 - 3. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
 - 4. 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.
- B. Performance Requirements: Provide products that comply with the following:
- C. Fixed, Non-Operable Type:

2.3 COMPONENTS

- A. Insect Screens: Extruded aluminum frame with mitered and reinforced corners; screen mesh taut and secure to frame; secured to window with adjustable hardware allowing screen removal without use of tools.
 - 1. Hardware: Spring loaded steel pins; four per screen unit.
 - 2. Screen Mesh: Vinyl-coated fiberglass, window manufacturer's standard mesh.
 - 3. Frame Finish: Same as frame and sash.
- B. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.4 HARDWARE

- A. Operator: Lever action handle fitted to projecting sash arms with limit stops.

2.5 FINISHES

- A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.
- B. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.

3.2 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install sill and sill end angles.
- E. Set sill members and sill flashing in continuous bead of sealant.
- F. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- G. Install operating hardware not pre-installed by manufacturer.

3.3 TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.4 INSPECTION

- A. Each Window opening shall be reviewed and approved of by the Owner's Project Manager Prior to the installation of the window systems

3.5 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.6 CLEANING

- A. Remove protective material from factory finished aluminum surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.
- C. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

END OF SECTION

SECTION 08 71 00

FILE SUB-BID REQUIRED – METAL WINDOWS

DOOR HARDWARE

PART 1 GENERAL

1.1 FILED SUB-BIDS

- A. METAL WINDOWS is stipulated as a Filed Sub-Bid under Part B, Item 2, of the FORM FOR GENERAL BID.
- B. All sub-bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority as required by Section 44G of Chapter 149 of the General Laws, as amended.
- C. Sub-bids must be filed with the Awarding Authority in a sealed envelope, before the time stipulated on the ADVERTISEMENT, on the date stipulated in the ADVERTISEMENT.
- D. Specific information relating to sub-bidders is set forth in the CONTRACT DOCUMENTS under the heading, “NOTICE TO ALL BIDDERS”, and the attention of the sub-bidders is directed thereto.
- E. The work to be done under this Section 087100 is described herein, in Sections 081613, 084313, 084413, 085113, and on Drawings G1-01, L1-01, A1-01 through A1-06, A2-01 through A2-06, A3-01 through A3-05, A4-01 through A4-12, A5-01 through A5-03, A6-01 through A6-07, A7-01 through A7-03, and A8-01.

1.2 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.

1.3 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 accessories. 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 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. Door Hardware work includes, but is not limited to:
 - 1. Provide and install all door hardware for all new doors.
 - a. Include Hardware for Doors #19 and #28 in the Base Bid.
 - b. Include Hardware for Doors #17 and #18 in Add Alternate #3.
 - 2. Salvage, store and install existing cores in new doors. Hardware shall be compatible with existing Primus C Keyway 6 pin cores.

1.4 RELATED REQUIREMENTS

- A. Section 08 16 13 - Fiberglass Doors
- B. Section 08 43 13 - Aluminum-Framed Storefronts: Hardware for doors in storefront, including:
 - a. Integral weather-stripping.

1.5 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. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- D. BHMA A156.6 - American National Standard for Architectural Door Trim; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.6).
- E. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000; Builders Hardware Manufacturers Association; 2012 (ANSI/BHMA A156.13).
- F. BHMA A156.18 - American National Standard for Materials and Finishes; Builders Hardware Manufacturers Association, Inc.; 2012 (ANSI/BHMA A156.18).
- G. BHMA A156.21 - American National Standard for Thresholds; Builders Hardware Manufacturers Association; 2014 (ANSI/BHMA A156.21).
- H. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems, Builders Hardware Manufacturers Association; 2012 (ANSI/BHMA A156.22).
- I. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; Door and Hardware Institute; 2004.
- J. ICC A117.1 - Accessible and Usable Buildings and Facilities; International Code Council; 2009 (ANSI).
- K. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2013.
- L. NFPA 101 - Life Safety Code; National Fire Protection Association; 2012.
- M. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

1.6 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware will be installed upon.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- C. Convey Owner's keying requirements to manufacturers.
- D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by all affected installers.

1.7 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project.
- C. Hardware Schedule: Detailed listing of each item of hardware to be installed on each door. Use door numbering scheme as included in the Contract Documents. Identify electrically operated items and include power requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - a. Submit manufacturer's parts lists and templates.
- F. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.
- G. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- H. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - a. See Section 01 60 00 - Product Requirements, for additional provisions.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
- B. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with five years of experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.10 WARRANTY

- A. See Section 01 70 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year warranty for all hardware.

PART 2 PRODUCTS

2.1 DOOR HARDWARE - GENERAL

- A. Provide hardware specified or required to make doors fully functional, compliant with applicable codes, and secure to the extent indicated.
- B. Provide items of a single type of the same model by the same manufacturer.
- C. Provide products that comply with the following:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
 - 4. Applicable provisions of NFPA 101, Life Safety Code.
 - 5. Fire-Rated Doors: NFPA 80.
 - 6. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.
- D. Finishes: Provide door hardware of the same finish unless otherwise indicated.
 - 1. Finish: Satin chrome plated over nickel on brass or bronze, 626 (approx US26D).
 - 2. Finish Definitions: BHMA A156.18.
 - 3. Exceptions:
 - a. Where base metal is specified to be different, provide finish that is an appearance equivalent according to BHMA A156.18.

2.2 LOCKS AND LATCHES

- A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
 - 1. If no hardware set is indicated for a swinging door provide an office lockset.
 - 2. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
 - 3. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.
- B. Lock Cylinders: Manufacturer's standard tumbler type, six-pin standard core.
 - 1. Provide cams and/or tailpieces as required for locking devices required.
- C. Keying: Grand master keyed.
- D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.3 HINGES

- A. Manufacturers – continuous Hinges:
 - 1. Pemco HD, Select Products Limited, or Approved Equal.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.4 PUSH/PULLS

- A. Push/Pulls: Comply with BHMA A156.6.
 - 1. Provide push and pull on doors not specified to have lockset, latchset, exit device, or auxiliary lock.
 - 2. On solid doors, provide matching push plate and pull plate on opposite faces.
 - 3. On glazed storefront doors, provide matching push/pull bars on both faces.
- B. Manufacturers - Push/Pulls:
 - 1. Assa Abloy Brands; McKinney: www.assaabloydss.com.
 - 2. Hager Companies: www.hagerco.com.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.5 LOCKS AND LATCHES

- A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
 - 1. Hardware Sets indicate locking functions required for each door.
 - 2. If no hardware set is indicated for a swinging door provide an office lockset.
 - 3. Trim: Provide lever handle on outside of all locks unless specifically stated to have no outside trim.
 - 4. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.
 - 5. In door sections, where a lock cylinder referenced to Section 08 71 00 is specified, furnish and install a mortise lock cylinder keyed to the building keying system.
- B. Lock Cylinders
 - 1. Reinstall existing Primus C Keyway 6 pins cores..
- C. Keying: Grand master keyed.
 - 1. Include construction keying.
 - 2. Key to existing keying system.
- D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.6 MORTISE LOCKSETS

- A. Locking Functions: As defined in BHMA A156.13, and as follows:
 - 1. Passage: F01.
 - 2. Entry, Deadbolt: F20, may be locked without key, free egress.
 - 3. Always-Locked: F07, may not be left unlocked.
 - 4. Two-Key Entry: F09, outside locked by key from both sides, free egress.
 - 5. Exit Only: F07 or F31, may have outside trim, may not be left unlocked.
- B. Manufacturers - Mortise Locksets:
 - 1. Assa Abloy Brands; www.assaabloydss.com Corbin Russwin, Sargent, or Yale;

2. Sargent 80 Series Mortise SVR and Rim Devices, or approved equal.
3. Substitutions: See Section 01 60 00 - Product Requirements.

2.7 CLOSERS

A. Manufacturers - Surface Mounted Closers:

1. Assa Abloy Brands; www.assaabloydss.com Corbin Russwin, Norton, Rixson, Sargent, or Yale;
2. Sargent 351, or approved equal..
3. Substitutions: See Section 01 60 00 - Product Requirements.

2.8 GASKETING AND THRESHOLDS

A. Manufacturers - Gasketing and Thresholds:

1. Assa Abloy Brands; McKinney: www.assaabloydss.com.
2. National Guard Products, Inc: www.ngpinc.com.
3. Pemko Manufacturing Co: www.pemko.com. (Basis of Design).
4. Or approved equal.
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Gaskets: Complying with BHMA A156.22.

1. On each exterior door, provide weatherstripping gaskets, unless otherwise indicated; top, sides, and meeting stiles of pairs.
 - a. Basis of Design: Pemko 350CSPK
2. On each exterior door, provide door bottom sweep, unless otherwise indicated.
 - a. Basis of Design: Pemko 307AV
3. On active leaf of outswing doors, provide 'T' astragal.
 - a. Basis of Design: Pemko 355CV

C. Thresholds: Complying with BHMA A156.21.

1. At each exterior door, provide a heavy duty threshold, unless otherwise indicated.
 - a. Basis of Design: Pemko 1715AK
2. Field cut threshold to frame for tight fit.

D. Fasteners At Exterior Locations: Non-corroding.

2.9 PROTECTION PLATES AND ARCHITECTURAL TRIM

A. Drip Guard: Provide projecting drip guard over all exterior doors.

B. Manufacturers - Protection Plates and Architectural Trim:

1. Assa Abloy Brands; McKinney: www.assaabloydss.com.
2. C. R. Laurence Co., Inc: www.crl-arch.com.
3. Hager Companies: www.hagerco.com.
4. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha.
5. Or Approved Equal
6. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.

3.2 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Do not install surface mounted items until finishes applied to substrate are complete.
- D. Mounting heights for hardware from finished floor to center line of hardware item.
 - 1. For steel doors and frames: Comply with DHI "Recommended Locations for Architectural Hardware for Steel Doors and Frames."
- E. Set exterior door thresholds with full-width bead of elastomeric sealant on each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.3 ADJUSTING

- A. Adjust work under provisions of Section 01 70 00.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.4 CLEANING

- A. Clean adjacent surfaces soiled by hardware installation. Clean finished hardware per manufacturer's instructions after final adjustments has been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.5 PROTECTION

- A. Protect finished Work under provisions of Section 01 70 00.
- B. Do not permit adjacent work to damage hardware or finish.

PART 4 HARDWARE SETS

4.1 HARDWARE SETS - GENERAL

- A. These Hardware Sets indicate requirements for single doors of that type, with conditional requirements for pairs and other situations.
- B. Pairs of Swinging Doors: Provide one of each specified item on each leaf unless specifically stated otherwise. Treat pairs as two active leaves unless otherwise indicated.

- C. HW-CYL: Doors Whose Hardware is Specified in Other Sections But Which Must Be Keyed To Building System:
 - 1. Lock Cylinder, Mortise, keyed to building system.
- 4.2 SWING DOORS -- LOCKABLE, MAY BE LEFT UNLOCKED, KEY NOT REQUIRED TO LOCK
 - A. HW-13: Public Entrance, Exit Device, Lockable, Non-Fire-Rated: (Doors #17, #18 and #19) :
 - 1. Closer.
 - 2. Exit Device, Rim, Entry/Exit, Free Swing, pull outside trim.
 - 3. Pair: Concealed Surface vertical rod type devices.
- 4.3 SWING DOORS -- MAY NOT BE LEFT UNLOCKED (Door #28)
 - A. HW-30F: Always-Locked, Fire-Rated and Non-Fire-Rated where Closer is Desired:
 - 1. Closer.
 - 2. Lockset, Always-Locked.

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Gypsum Board Assemblies work required to complete the work of the contract including all the Gypsum Board Assemblies 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 Gypsum Board Assemblies work with all the other trades for the project. Provide all demolition and disposal work to complete the Gypsum Board Assemblies 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. Gypsum Board Assemblies work includes, but is not limited to:
 - 1. Painted Gypsum returns at window, door, storefront, and curtainwall openings where indicated on the Drawings. Refer to Unit Price Schedule for additional quantities to be carried in the Base Bid.

1.3 SECTION INCLUDES

- A. Metal stud wall framing.
- B. Metal channel ceiling framing.
- C. Gypsum wallboard.
- D. Joint treatment and accessories.

1.4 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.

GYPSUM BOARD ASSEMBLIES

1.5 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2012.
- D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.
- H. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- I. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing; 2013.
- J. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.
- K. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2013.
- L. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2013.

1.6 SUMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Manufacturers Product Data, including gypsum board accessories and joint finishing system.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 requirements or gypsum board manufacturer's recommendations, whichever are more stringent.
- B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 degrees F. For adhesive attachment and finishing of gypsum board, maintain not less than 50 degrees F for 48 hours before application and continuously after until dry. Do not exceed 95 degrees F when using temporary heat sources.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Provide all panels from a single-source manufacturer.

GYPSUM BOARD ASSEMBLIES

2.2 METAL FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 - 1. Studs: "C" shaped with flat or formed webs with knurled faces.
 - 2. Runners: U shaped, sized to match studs.
 - 3. Ceiling Channels: C-shaped.
- B. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI SG02-1.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.

2.3 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. Glass mat faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 - 3. Thickness:
 - a. Vertical Surfaces: 1/2 inch.
 - 4. Paper-Faced Products:
 - a. American Gypsum; EagleRoc Regular Gypsum Wallboard.
 - b. Georgia-Pacific Gypsum; ToughRock.
 - c. Lafarge North America Inc; Regular Drywall and Firecheck Type X and Type C.
 - d. USG Corporation; Sheetrock Brand Gypsum Panels.
 - e. Or Approved Equal.
- B. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 - 1. Application: Exterior sheathing, unless otherwise indicated.
 - 2. Edges: Square, for vertical application.

2.4 ACCESSORIES

- A. Water-Resistive Barrier: As specified in Section 07 25 00.
- B. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, coated glass fiber tape for joints.

GYPSUM BOARD ASSEMBLIES

2. Ready-mixed vinyl- based joint compound.
- C. Screws for Attachment to Steel Members Less Than 0.033 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium plated for exterior locations.
- D. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.2 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 1. Laterally brace entire suspension system.
- C. Studs: Space studs at 16 inches on center.
 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

3.3 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

3.4 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.

3.5 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.

2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
 - B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
- 3.6 TOLERANCES
- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
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SECTION 09 90 00

PAINTING AND COATING

PART 1 GENERAL

1.1 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Painting and Coating work required to complete the work of the contract including all the Painting and Coating work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all accessories. Coordinate the Painting and Coating work with all the other trades for the project. Provide all demolition and disposal work to complete the Painting and Coating 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. Painting and Coating work includes, but is not limited to:
 - 1. Prepare, prime and paint all interior wood stools and trim, at the windows storefronts and curtainwalls scheduled to be removed and reinstalled where indicated on the Drawings. .
 - 2. Prepare, prime and paint gypsum wallboard at all window and curtainwall jamb and head returns where indicated on the Drawings.
 - 3. Prepare, prime and paint gypsum wallboard returns at doors #10, #11, #17, #18, and #19 and #28.
 - 4. Remove all rust, prepare, prime and paint all rooftop units and curb framing.
 - 5. Touch-up paint all damaged surfaces to remain.

1.3 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints and other coatings.
- C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Floors, unless specifically so indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.4 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

1.5 SUBMITTALS

- A. Submit Manufacturers Literature on each product, including VOC information.
- B. Provide Mock-up of each condition and paint color.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Glidden Professional, a product of PPG Architectural Coatings: www.gliddenprofessional.com.
 - 2. Benjamin Moore & Co: www.benjaminmoore.com.
 - 3. Sherwin-Williams Company: www.sherwin-williams.com.
 - 4. Or approved equal.
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.

1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
1. Concrete Masonry: Interior/Exterior Latex Block Filler; MPI #4.
 2. Steel -- Shop Primer: Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
- C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. Architectural coatings VOC limits of the State in which the Project is located.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Colors: Selected by the Manufactures range and Approved by Owner to match existing Adjacent colors.

2.3 PAINT SYSTEMS - EXTERIOR

- A. Paint E-OP - All Exterior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including primed metal.
1. Preparation as specified by manufacturer.
 2. Two top coats and one coat primer recommended by manufacturer.
- B. Paint ME-OP-2A - Ferrous Metals, Primed, 2 Coat:
1. Remove all rust and prepare surfaces for painting.
 2. Primer: Apply zinc-rich rust-inhibitive primer for marine and offshore applications recommended by top coat manufacturer; SeaGuard Universal Primer by Sherwin Williams or approved equal. Provide five (5) dry mil thickness, minimum.
 3. Intermediate Coat: Modified epoxy phenalkamine, formulated specifically for immersion and atmospheric service in marine and industrial environments; Dura-Plate 235 Multi-Purpose Epoxy by Sherwin Williams or approved equal. Provide eight (8) dry mil thickness, minimum.
 4. Finish Coat: High performance, high-gloss acrylic polyurethane; Acrolon Ultra by Sherwin Williams or approved equal. Provide five (5) dry mil thickness, minimum.

2.4 PAINT SYSTEMS – INTERIOR

- A. Paint I-OP - All Interior Surfaces Indicated to be Painted or receive touch-up, Unless Otherwise Indicated: Including gypsum board and wood.
 - 1. Two top coats and one coat primer.
 - 2. Primer(s): As recommended by manufacturer of top coats.
- B. Paint WI-OP-2L - Wood, Opaque, Latex, 2 Coat:
 - 1. One coat of latex primer sealer.
 - 2. Semi-gloss: One coat of latex enamel.
- C. Paint CI-OP-2A - Concrete/Masonry, Opaque, Alkyd, 2 Coat:
 - 1. One coat of block filler.
 - 2. Semi-gloss: One coat of alkyd enamel.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.2 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or repair existing coatings that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

- I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- J. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-SP 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).
- K. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- L. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- M. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.3 APPLICATION

- A. Remove louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

- A. Protect finished coatings until completion of project.
- B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
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SECTION 23 00 00

TEMPORARY MECHANICAL DISCONNECTS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01000 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 the equipment and materials to be furnished complete in every respect, and that this Contractor shall provide all items needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.

1.2 WORK TO BE PERFORMED

- A. Provide all the Temporary Mechanical Disconnect work required to complete the work of the contract including all the Temporary Mechanical Disconnect work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all hardware, finishes, and accessories. Coordinate the Temporary Mechanical Disconnect work with all the other trades for the project. Provide all demolition and disposal work to complete the Temporary Mechanical Disconnect 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. Temporary Mechanical Disconnect Work includes, but is not limited to:
 - 1. Temporary removal of all existing louvers, vents, fans, ducts and other mechanical devices (to remain) within the window openings, through the wall, and on the roof to accommodate the work, and re-installation and reconnection of all units.
 - 2. Coordinate any removal of equipment from service with the Owner's representative to minimize disruptions to the building operations.

PART 2 – PRODUCTS

2.1 GENERAL

TEMPORARY MECHANICAL DISCONNECTS

- A. All fixtures, bolts and lag bolts shall be non-magnetic stainless steel.

PART 3 – EXECUTION

3.1 REMOVAL

- A. Air Conditioning and Mechanical units shall be disconnected and removed if their presence is in conflict with the removal or installation of the E.I.F.S., window or roof systems.
- B. If air conditioning or mechanical units are disconnected and removed, they shall be stored on site in a protected enclosure to protect them from any damage, inadvertent or otherwise. The Contractor shall be responsible for ensuring that all mechanical units are in proper working order.
- C. If any air conditioning or mechanical units are encountered which are not in proper working order, the Architect and the Owner shall be notified immediately.

3.2 MOUNTING

- A. The air conditioning and mechanical units shall be re-mounted to their original curbs or mounting frames and reconnected, tested, and inspected by the Architect or Owner before the area is completed.

END OF SECTION

DIVISION 26 ELECTRICAL

SECTION 26 00 00 ELECTRICAL

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- A. Include the General Conditions, Modifications to the General Conditions, and applicable parts of Division 01 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 the equipment and materials to be furnished complete in every respect, and that this Contractor shall provide all items needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds.
- E. Work described here in shall be interpreted as work to be done by the electrical subcontractor.

1.02 DESCRIPTION OF WORK

- A. Provide all the Electrical work required to complete the work of the contract including all the Electrical work shown on the plans, listed in the specification, and needed to install a complete assembly in every way, with all hardware, finishes, and accessories. Coordinate the Electrical work with all the other trades for the project. Provide all demolition and disposal work to complete the Electrical 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. Electrical Work includes, but is not limited to:
 - 1. Scope of the electrical work under this section is associated with the disconnecting, removal and reconnection of existing electrical equipment and wiring to accommodate the work of the Contract. The electrical equipment and wiring includes but is not limited to the following equipment types: surface mounted exterior wall lights, through-wall fans and louvers.
 - 2. Coordinate any disconnection of equipment from service with the Owner's representative to minimize disruptions to the building operations.
 - 3. Remove existing electrical boxes on existing rooftop units as noted on the drawings. Disconnect and install new electrical boxes furnished by the Owner for the existing rooftop HVAC units.

PART 2 – MATERIALS – NOT USED

PART 3 – EXECUTION

3.01 ELECTRICAL

- A. Prior to the removal of any piece of unit ventilation equipment the Electrical Contractor shall test the equipment to ensure it is functioning properly and report any problems to the general contractor and owner.
- B. The Electrical Contractor shall coordinate all interruptions of power to unit ventilator equipment with the Owner prior to any work.
- C. The Electrical Contractor shall disconnect and remove the existing unit ventilator feeder and control wiring and reconnect same as required by job condition and window installation.
- D. The Electrical Contractor shall replace existing equipment, disconnecting means that are in poor condition, and rewiring equipment needed by job conditions.
- E. After the existing equipment and wiring has been reconnected the Electrical Contractor shall test the equipment to ensure it is functioning properly and report any problems to the General Contractor and Owner.

END OF SECTION

SECTION 31 23 16

EXCAVATION AND BACKFILL

PART 1 GENERAL

1.1 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Excavation and Backfill work required to complete the work of the contract including all the Excavation and Backfill 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 Excavation and Backfill work with all the other trades for the project. Provide all demolition and disposal work to complete the Excavation and Backfill 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. Excavation and Backfill work includes, but is not limited to **Add Alternate #4** work, including:
 - 1. Excavating for building volume below grade, slabs-on-grade, and site structures.
 - 2. Trenching for utilities outside the building to daylight.
 - 3. Excavation to indicated pipe penetrations, saving soil for backfill, and replacing concrete slab on grade.
 - 4. Excavation to remove concrete walk and subsoil for placement of crushed stone and new concrete walk.
 - 5. Off-site disposal of all unsuitable materials.
 - 6. Dewatering as needed for site conditions

1.3 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill: Fill materials, filling, and compacting.

1.4 QUALITY ASSURANCE

- A. Comply with all rules, regulations, laws and ordinances of the Commonwealth of Massachusetts, and of all other authorities having jurisdiction. All labor, materials, equipment, and services necessary to make work comply with such requirements shall be provided without additional cost to Owner.
- B. Field Monitoring and Testing
 1. The Owner may retain the services of a Geotechnical Engineer or testing agency to test, observe and document the Contractor's earthwork activities to determine the work is completed in accordance with the Project Specifications and perform such other duties as are herein described throughout these Specifications.
 2. All fill materials and their placement will be subject to quality control testing. The Contractor will bear the cost of any tests which are needed to correct previously unacceptable work. Test results and lab recommendations will be available to the Contractor.
 3. Approvals given by the Architect or by the testing agencies shall not relieve the Contractor of his/her responsibility for performing the work in accordance with the Contract Documents.

1.5 PROJECT CONDITIONS

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Earth materials used as fill shall be as designated below:
- B. Crushed Stone: Shall consist of clean, hard, durable natural rock or granite, free of organic matter, rock dust, and other contaminants and conforming to ASTM specification C-33, Table 2, Size 57, 2 in. to #4 sieve size or conforming to Massachusetts DPW specification of M2.01.3.
- C. General Fill: Fill Type LF. Graded, free of lumps larger than 3 inches, rocks larger than 2 inches, and debris. Conforming to Massachusetts Highway Department M1.01.0.
- D. Structural Fill: Fill Type SF: conforming to Massachusetts Highway Department standard.

PART 3 EXECUTION

3.1 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.

3.2 EXCAVATING

- A. Excavate to accommodate new structures and construction operations.
- B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- D. Do not interfere with 45 degree bearing splay of foundations.
- E. Cut utility trenches wide enough to allow inspection of installed utilities.
- F. Hand trim excavations. Remove loose matter.
- G. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 23 23.
- H. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- I. Remove excavated material that is unsuitable for re-use from site.
- J. Remove excess excavated material from site.

3.3 PLACEMENT AND COMPACTION OF MATERIALS

- A. General
 - 1. All fill materials shall be placed "in-the-dry" on subgrades acceptable to the Architect.
 - 2. Placement of all specified fill materials shall be systematically conducted in the specified uniform layer thickness. Thickness in all cases is measured prior to compaction.
 - 3. Compaction of fill materials shall be conducted by a minimum of four (4) complete coverages with acceptable compaction equipment.
 - 4. Place in layers not to exceed twelve (12) inches.
- B. Compaction Equipment
 - 1. In all cases, the character, efficiency and acceptability of the Contractor's compaction equipment shall be subject to the approval of the Architect based on observed or documented field performance.
 - 2. Compaction in confined areas (against walls, piers, and in trenches) shall be conducted with acceptable equipment such as hand-guided vibratory compactors or mechanical tampers.
- C. Moisture Control
 - 1. The amount of moisture in any one layer of fill material shall be as uniform as practicable throughout. The upper limit of water content in materials shall be that which will permit handling, spreading and will permit proper compaction.
 - 2. Each layer of material which is too dry shall be sprinkled with water, and the water worked into the material by mechanical methods until a uniform distribution of moisture shall be accurately controlled in amount so that free water will not appear on the surface during, or subsequent to, compaction.

D. Stone Base Course

1. Place in layers not to exceed six (6) inch layers when utilizing light, hand-operated compaction equipment.

3.4 PAVING

- A. Place replacement paving in one lift.
- B. Compaction to meet the adjacent grades shall be conducted with acceptable equipment such as hand-guided vibratory compactors or mechanical tampers.

3.5 PROTECTION

- A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

SECTION 32 91 00

LANDSCAPING REPAIR

PART 1 – GENERAL

1.1 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.

1.2 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 the work of each section, and each Subcontractor for the entire project so that all the 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 disturbed or displaced by the work or damaged during construction.
 - 1. Preparation of final sub-grades in planted areas.
 - 2. Furnishing topsoil at areas to be planted.
 - 3. Planting mixes
 - 4. Protection, maintenance and guarantee of plant materials.
 - 5. Existing tree protection and care

1.3 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. SECTION 02 41 00, SELECTIVE DEMOLITION

1.4 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.

1.5 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

2.1 TOPSOIL

- A. Topsoil shall be a fertile, friable natural topsoil not excessively acid or alkaline and free 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.
 - 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.

2.2 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.

2.3 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.

2.4 BONE MEAL

- A. Bone meal shall be commercial raw bone meal, finely ground, having a minimum analysis of 4% nitrogen and 20% phosphoric acid.

2.5 WATER

- A. Water will be furnished by Owner on the site. Hose and other watering equipment shall be furnished by Contractor.

2.6 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 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 scars. All cuts shall be shellacked. The trunk of each tree shall be a single trunk growing from a single unutilized 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.

2.7 MULCH

- A. Mulch material shall be softwood hemlock bark shredded into fibrous pliable slices generally not exceeding 1/2" in width.
 - 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.

2.8 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.

2.9 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	Germination	Purity
Common Name		By Weight Minimum
Minimum		
a. Creeping Red Fescue	50%	85%
	95%	

- | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|
| b. Kentucky Bluegrass | 40% | 85% |
| 90% | | |
| c. Perennial Rye | 10% | 90% |
| 90% | | |
| d. 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. | | |
| e. Seeding rate for the General Lawn Seed Mix shall be 6 pounds per 1,000 square feet. | | |

PART 3 - EXECUTION

3.1 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
- 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:

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.

3.2 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.

3.3 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.

3.4 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

SECTION 33 41 11

SITE STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 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.

1.2 WORK TO BE PERFORMED

- A. Provide all the Site Storm Utility Drainage Piping work required to complete the work of the contract including all the Site Storm Utility Drainage Piping 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 Site Storm Utility Drainage Piping work with all the other trades for the project. Provide all demolition and disposal work to complete the Site Storm Utility Drainage Piping 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. Site Storm Utility Drainage Piping work includes, but is not limited to **Add Alternate #4** work including:
 - 1. Storm drainage piping, fittings, and accessories.

1.3 RELATED REQUIREMENTS

- A. Section 22 00 00 - Plumbing
- B. Section 31 23 16 - Excavation and Backfill and Backfill: Excavating of trenches.

1.4 DEFINITIONS

1.5 REFERENCE STANDARDS

- A. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2011.

- B. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.

1.6 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of pipes with size, location and installation of service utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.7 SUBMITTALS

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

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

- A. Provide products that comply with applicable code(s).
- B. Plastic Pipe: Poly Vinyl Chloride (PVC) material; inside nominal diameter of 6 inches, bell and spigot style solvent sealed joint end.

2.2 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

PART 3 EXECUTION

3.1 TRENCHING

- A. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.2 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
 - 1. Plastic Pipe: Also comply with ASTM D2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Connect to building storm drainage system.

BUILDING ENVELOPE REPAIRS
BARNSTABLE INTERMEDIATE SCHOOL
HYANNIS, MASSACHUSETTS
CBI JOB NO.: 13165-C

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3.3 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

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