PARTIAL ROOF REPLACEMENT
WORCESTER SENIOR CENTER

128 Providence Street, Worcester, MA

August 2023

Bid Set Specifications

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SECTION 01.11.00

SUMMARY OF WORK

I PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. This section supplements the Conditions of the Contract, Prime Requirements, Drawings, and all other parts of the Contract Documents.

B. This Contractor must be familiar with all other Divisions and Sections of the Specifications which affect the work of this Section.

1.02 REQUIREMENTS INCLUDED

A. Work under this Contract.
B. Examination of Site and Documents.
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1.03 WORK UNDER THIS CONTRACT

A. The work to be done under this contract consists of executing and completing all work required for the Partial Roof Replacement at the Worcester Senior Center, located at 128 Providence Street in Worcester Massachusetts.

B. The Prime Contractor for this project will be the roofing contractor, who will be solely in control of the performance or subcontracting of all work required. Where work to be subcontracted would normally be performed by licensed tradesmen (i.e. electrical disconnection of fans) the Prime contractor must arrange for licensed individuals to perform that work.

C. The scope of work, without limiting the generality thereof, includes all labor, materials, equipment and services required to perform the work described fully in the Drawings and Specifications and includes, but is not limited to the following major work:

1. Stripping one wing of the building to the deck and replacing the existing roofing system with a new single-ply roofing system, complete with all insulation, flashings, edge metals and coping.

2. Abatement of asbestos-containing roofing materials and legal disposal of all removed materials.

D. The following major elements will be performed by the Owner, under separate contracts, for which the Prime Contractor has a coordinating responsibility:

1. The owner will coordinate with any utility service vendors who's rooftop equipment will be impacted by the work to be performed. The Contractor is responsible for advising the Owner in a timely manner, when such work is to be performed.

E. The following major elements will be furnished by the Owner, for installation by the Contractor or sub-contractors:

1. None. Furnish all materials required for the complete project.

F. Reference to Drawings: The work to be done under this Contract is shown on the Drawings listed at the end of this Section.

G. Prevailing Wage: The Massachusetts Standard Labor Wage rates, as outlined in the exhibits, will be used in the construction of this project

1.04 EXAMINATION OF SITE AND DOCUMENTS

A. A pre-bid meeting will be held at the job site on the date and at the time indicated in the Invitation to Bid.

B. Bidders may also visit the site on a non-holiday weekday acceptable to the Owner, between the hours of 9:00 AM and 3:00 PM to visually inspect the location of the work and existing conditions that may affect new work.

C. 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 and Designers will not be responsible for errors, omissions, and/or charges for extra work arising from the Prime Contractor's or Subcontractor's failure to familiarize themselves with the contract documents. The Prime Contractor and Subcontractors acknowledge that they are familiar with the conditions and requirements of the contract documents where they require, in any part of the work a given result to be produced, and that the contract documents are adequate and will produce the required results.

1.05 CONTRACT METHOD

A. Work under this contract shall be lump sum price, for the scopes of work as described in these specifications and shown on the Drawings.

1.06 WORK SEQUENCE

A. The Work will be conducted in the following sequence of demolition/construction:

1. Actual sequence of the work will be left to the discretion of the Contractor, who will prepare a construction schedule showing the sequence and duration of work, for review and approval by the Owner.

2. Do not remove more roof than can be replaced in the same day.

1.07 SUPERVISION OF WORK

A. The Prime Contractor shall be held directly responsible for the correct installation of all work performed under this Contract. The Prime 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 Prime Contractor's warranty period, from the date of final acceptance of the work by the Owner.

B. The Prime Contractor shall furnish a competent Massachusetts licensed superintendent satisfactory to the Owner and to the Designer. 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. Submit the name and resume of the superintendent for approval to the Architect. Include experience with projects of equal size and complexity.

1.08 PRIME CONTRACTOR'S USE OF PREMISES

A. Use of the Site: Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.

2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Schedule and perform work to afford minimum of interruption to normal and continuous operation of utility systems. Submit for approval, a proposed schedule for performing work; including construction of new utilities, re-routing of existing utilities and final connection of new work to existing work. Schedule shall indicate shutdown time required for each operation.

C. The Prime Contractor shall schedule as per Section 01.50.00 - Temporary Facilities and Controls, the shutting down or interrupting any utilities, services or facilities which may affect the operation of the building outside the area of work or other buildings, services or facilities.

D. The Prime Contractor can gain access to the premises during the hours specified below. In addition the Prime Contractor and his personnel will limit themselves only within the working premises during working hours. If work needs to be scheduled during times other than those listed below, Prime Contractor shall inform the Owner one week prior to work.

1. Deliveries: 7:00 AM to 6:00 PM.
2. Work on site: 8:00 AM to 4:00 PM
3. Weekends: with Owner's prior approval.
4. Holidays: with Owner's prior approval.

E. The Prime Contractor shall verify that Subcontractors have visited the site and included all costs associated with the location of the project, and any restriction or limitations the location of the project may pose.

F. All contractors shall at all times conduct their operations in a courteous, professional manner while on the project or in the vicinity of the project. Harassment, offensive language or behavior will not be permitted on the site.

G. The Owner can neither accept nor assume responsibility for the security of the Contractor's material or equipment which is lost, stolen or vandalized. The Contractor is advised to exert caution in placement and storage of his equipment and material.

H. Parking: Parking within the parking lot will be limited, and typically in the spaces farthest from the entry.

Contractors may move vehicles up to the portion of the building receiving the work, to load and unload tools and materials, but should not expect to park close to the building.

I. Radios, tape players, “boom boxes”, or other audio entertainment equipment, including personal entertainment devices, shall not be allowed on the project site.

J. The Contractor shall not permit smoking within the building. Locate smoking areas away from entries, outdoor intakes, and operable windows, including adjacent buildings.

K. The Contractor shall not allow the use of intoxicating beverages or non-prescription controlled substance drugs upon or about the work site.

L. The Contractor shall provide and maintain in good serviceable condition at all times, warning signs and non-combustible barriers, forms and fire resistive tarps or plastic, each of which shall be approved by the Owner, shall be suitable for the purpose, and shall be installed adjacent to each work area, for complete enclosure and/or isolation of all excavations, wells, pits, manholes, shafts, overhead areas, etc., which are associated with the work under the contract. Barriers shall be a secure fence, guardrail, cover, or similar assembly designed and erected to provide protection for concrete, protection from the weather, and to prevent accidental access. Barrier tape and/or sawhorses shall not be used as a means of such access protection.

1.09 COORDINATION

A. The Prime Contractor shall be responsible for the proper fitting of all the work and for the coordination of the operations of all Subcontractors or material and persons engaged upon the work. The Prime Contractor shall do, or cause his agents to do, all cutting, fitting, adjusting, and repair necessary in order to make the several parts of the work come together properly.

1. Examine Contract Documents in advance of start of construction and identify in writing questions, irregularities or interference to the designer in writing. Failure to identify and address such issues in advance becomes the sole responsibility of the Prime Contractor. A conflict that would cause the reduction of the normal ceiling height of any occupied space is considered to be an interference.

B. Execute the work in an orderly and careful manner with due regard to the occupants of the facility, the public, the employees, and the normal function of the facility.

C. The work sequence shall follow planning and schedule established by the Prime Contractor as approved by the Designer and the Owner. The work upon the site of the project shall commence promptly and be executed with full simultaneous progress. Work operations which require the interruption of utilities, service, and access shall be scheduled so as to involve minimum disruption and inconvenience, and to be expedited so as to insure minimum duration of any periods of disruption or inconvenience.

D. The Prime Contractor shall review the tolerances established in the specifications for each type of work and as established by Subcontractor organizations. The Prime Contractor shall coordinate the various Subcontractors and resolve any conflicts that may exist between Subcontractor tolerances without additional cost to the Owner. The Prime Contractor shall provide any chipping, leveling, shoring or surveys to ensure that the various materials align as detailed by the Designer and as necessary for smooth transitions not noticeable in the finished work.

1.10 PROJECT MEETINGS

A. Project meetings shall be held on a weekly basis and as required subject to the discretion of the Owner.

B. Attendees: In addition to the Project Manager and Designer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future

activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

C. In order to expedite construction progress on this project, the Prime Contractor shall order all materials immediately after the approval of shop drawings and shall obtain a fixed date of delivery to the project site for all materials ordered which shall not impede or otherwise interfere with construction progress. The Prime Contractor shall present a list and written proof of all materials and equipment ordered (through purchase orders). Such list shall be presented at the meetings and shall be continuously updated.

D. Scheduling shall be discussed with all concerned parties, and methods shall be presented by the Prime Contractor, which shall reflect construction completion not being deferred or foreshortened. Identify critical long-lead items and other special scheduling requirements. The project schedule is to include time for submission of shop drawing submittals, time for review, and allowance for resubmittal and review.

1.11 PERMITS, INSPECTION, AND TESTING REQUIRED BY GOVERNING AUTHORITIES

A. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having any jurisdiction require any portion of the Work to be inspected, tested, or approved, the Prime Contractor shall give the Designer, the Owner or his/her designated representative, and such Authority timely notice (5 business days minimum) of its readiness so the Designer may observe such inspecting, testing, or approval.

B. Prior to the start of construction, the Prime Contractor shall complete application to the applicable Building Code enforcement authority for a Building Permit. Such Permit shall be displayed in a conspicuous location at the project site. The building permit fee shall be paid by the Contractor.

C. Unless otherwise specified under the Sections of the Specifications, the Prime Contractor shall pay such proper and legal fees to public officers and others as may be necessary for the due and faithful performance of the work and which may arise incidental to the fulfilling of this Contract. As such, all fees, charges, and assessments in connection with the above shall be paid by the Prime Contractor.

D. Prime Contractor and specialized Subcontractors as applicable shall identify all permits (other than Prime building permit) required from Authorities having jurisdiction over the Project for the construction and occupancy of the work. The Prime Contractor shall prepare the necessary applications and submit required plans and documents to obtain such permits in a timely manner, and shall furnish the required information to the Building Official and obtain the required permits as early as practicable after award of the Contract.

E. Prior to the start of construction, the Prime Contractor shall complete applicable applications, permits, and notifications to the MADEP, such as the Demolition/Construction form BWP AQ-06, and pay the required fees. These forms must be submitted at least 10 working days in advance of any regulated activity on the site. Demolition permits must be submitted for any work involving demolition, new construction and renovation.

1.12 CUTTING, CORING, AND PATCHING, UNLESS OTHERWISE INDICATED

A. The Prime Contractor shall perform and/or coordinate all cutting, coring, fitting and patching of the work as specified in Section 01.73.29 – Cutting and Patching.

B. The Prime Contractor shall coordinate that the work of the Subcontractor is not endangered by any cutting, coring, excavating, or otherwise altering of the work and shall not allow the cutting or altering the work of any Subcontractor except with the written consent of the Designer.

C. Performance:

1. Execute cutting and patching by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

(a) In general, where mechanical cutting is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.

(b) Prior to cutting and structural steel or concrete work, contact Designer and Project Structural Engineer in writing. Do not cut any structural steel and concrete work until approval has been granted by the Designer and the Project Structural Engineer.

2. Employ original installer or fabricator to perform cutting and patching for:

(a) Weather-exposed or moisture-resistant elements.
(b) Sight-exposed finished surfaces.

3. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

4. Restore work which has been cut or removed; install new products matching existing to provide completed Work in accordance with requirements of Contract Documents.

5. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

6. Patch with seams which are durable and as invisible as possible. Flash and seal all penetration of exterior work. Comply with specified tolerances for the work.

7. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.

(a) Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch.

8. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

(a) For continuous surfaces, refinish to nearest intersection.
(b) For an assembly, refinish entire unit.

D. Existing Utilities Services:

1. Interruptions to critical existing utility services will not be allowed except as scheduled per Section 01.50.00 - Temporary Facilities and Controls.

2. The Prime Contractor shall locate and record on Drawings all existing utilities along the course of the work by such means as the Designer and the Owner may approve, and shall preserve such marked locations until the work has progressed to the point where the encountered utility is fully exposed and protected as required. It shall be the Prime Contractor's responsibility to notify the proper authorities and/or utility company before interfering therewith.

3. Existing utilities that are indicated on the Drawings or whose locations are made known to the Prime Contractor prior to excavations, though accuracy and information as to grades and elevations may be lacking, shall be protected from damage during the excavation and backfilling operations and, if damaged by the Prime Contractor, it shall be repaired by the Prime Contractor at his/her own expense.

4. All exposed conduits, wires, and/or cables shall be provided with sufficient protection and support to prevent failure, fraying, or damage due to backfilling or other construction operations.

1.13 DEBRIS REMOVAL

A. The Prime Contractor shall coordinate the removal of all demolition and construction waste including waste by all Subcontractors from the job site on a daily basis.

B. Debris shall be legally disposed of in a D.E.P. approved disposal site.

C. The Prime Contractor shall bear responsibility for maintaining the building and site clean and free of debris, leaving all work in clean and proper condition satisfactory to the Owner and the Designer. The Prime Contractor shall ensure that each of the Subcontractors clean up during and immediately upon completion of their work. Clean up includes the following tasks:

1. Remove all rubbish, waste, tools, equipment, appurtenances caused by and used in the execution of work.

2. Sweep for nails using magnetic nail sweepers, daily.

D. Prevent the accumulation of debris at the construction site, storage areas, parking areas, and along access roads and haul routes.

E. Provide containers for deposit of debris and schedule periodic collection and disposal of debris.

F. Prohibit overloading of trucks to prevent spillage on access and haul routes.

G. The Prime Contractor shall be responsible for proper disposal of all construction debris leaving the site.

1.14 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 Prime 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.

1.15 SAFETY REGULATIONS

A. This project is subject to compliance with Public Law 91 596 "Occupational Safety and Health Act" latest edition (OSHA 29 CFR 1926), with respect to all rules and regulations pertaining to construction, including Volume 36, numbers 75 and 105, of the Federal Register, as amended, and as published by the U.S. Department of Labor.

B. Hazardous Waste Generation: Any work generating Hazardous or so-called Universal Wastes will comply with all requirements of 310 CMR 30.000. The proper storage, use and disposal of any hazardous chemicals or substances brought on site by the Contractor are the responsibility of Contractor. The Owner will not be responsible for any hazardous materials left on site, the cost to remove these materials will be the Contractor’s responsibility. All hazardous wastes generated as a result of demolition and remodeling shall be contained, collected, segregated, labeled per all applicable federal EPA, Massachusetts DEP, and Federal DOT regulations or other applicable local, state or federal hazardous waste regulations, pending the appropriate disposition.

1.16 OSHA SAFETY AND HEALTH COURSE DOCUMENTATION

A. OSHA Safety and Health Course Documentation Records: Chapter 306 of the Massachusetts Acts of 2004 requires that everyone employed at the jobsite must complete a minimum 10-hour long course in construction safety and health approved by the U.S. Occupational Safety and Health Administration (OSHA) prior to working at the jobsite. Compliance is required of Prime Contractors’ and Subcontractors’ on-site employees at all levels whether stationed in the trailer or working in the field. Unless the Massachusetts

Attorney General's office indicates otherwise, this requirement does not apply to home-office employees visiting the site or to suppliers' employees who are making deliveries.

B. OSHA 10 cards for anyone working on site are to be submitted prior to the first requisition.

C. Documentation records shall be initially compiled by the Prime Contractor and Subcontractors, and the Prime Contractor shall create and maintain a copy of the documentation on site at all times.

1.17 DAMAGE RESPONSIBILITY

A. The Prime 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.

1.18 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

1.19 ASBESTOS AND HAZARDOUS MATERIALS DISCOVERY

A. If unanticipated asbestos-containing materials or other Hazardous Materials not included in Contract are discovered at any time during the course of work, the Prime Contractor shall cease work in the affected areas only and continue work in other areas, at the same time notify the Designer of such discovery. Do not proceed with work in such affected areas until written instructions are received. If removal is required, payment will be made in accordance with the contract unit prices bid for each respective material. In the absence of unit prices, costs shall be negotiated or otherwise established prior to commencement of removal, in accordance with provisions of the Contract.

B. The Owner or Designer will work with the Contractor to initiate removal or encapsulation of the asbestos. An extension of the completion date may be granted equal to the time lost. Proper notification must be made to the MADEP through the ANF-001 form, and the Owner.

1.20 LIST OF DRAWINGS

T1 - COVER SHEET
A1 - ROOF PLAN
A2 - ROOF DRAINAGE PLAN
A3 - DETAILS

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01.31.00

PROJECT MANAGEMENT AND COORDINATION

I. PART I - GENERAL

1.01 GENERAL PROVISIONS

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.

1.02 SUMMARY

A. Without limitations, coordination will include Critical Path Method Scheduling (CPM), coordination of submittals, coordination of all elements of the Work, and coordination of contract closeout.

B. Description:

1. Coordinate scheduling, submittals, and work of the various trades and elements of the Work to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.

2. Coordinate sequence of the Work to accommodate Occupancy.

C. Meetings:

1. Prior to commencement of the Work, the Contractor shall meet in conference with the Owner and Architect to discuss and develop mutual understandings relative to administration of the quality assurance program, safety program, labor provisions, the schedule of work, and other procedures.

2. The Architect will regularly conduct job meetings, and keep the Owner informed of the progress and quality of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work. The Architect's minutes of meetings shall be the official minutes kept on the Project. The Architect shall provide copies of the meeting minutes to the Contractor and Owner.

3. In addition to progress meetings, hold coordination meetings and pre-installation conferences with personnel and Sub-Contractors to assure coordination of the Work. The coordination meetings are to be separate from the commissioning or commissioning meetings.

D. Coordination of Submittals:

1. Schedule and coordinate submittals.

2. Coordinate work of various trades having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

3. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other trades.

4. Change orders caused by lack of coordination will not be entertained.

1.03 PROJECT MANAGEMENT

A. Project Superintendent:

1. The Contractor shall employ a Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The Superintendent shall represent the Contractor, and

communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

2. The Superintendent shall be a competent and responsible employee, satisfactory to the Owner, who is regularly employed by the Contractor and is designated by the Contractor as its representative to be in full time attendance at the Project site throughout the construction of the Work.

3. The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors. The Superintendent shall be licensed consistent with the Massachusetts Building Code.

4. The Superintendent's resume shall be submitted to the Owner prior to commencement of construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has performed the same duties on previous construction projects similar to the Project.

5. The Superintendent shall attend each job meeting.

B. The Contractor must supply to the Owner the home telephone number of a responsible person who may be contacted during non-work-hours for emergencies on the Project.

C. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them, and whenever the Owner shall notify the Contractor, in writing, that any worker is, in its opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the Owner.

1.04 FIELD COORDINATION

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

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

C. Project scopes of limited complexity or limited utility installation will not require coordination drawings. The Prime Contractor remains responsible for field coordinating the work of all trades, to see that it comes together without conflict or loss of functionality.

1. Where field coordination is performed, the Prime Contractor shall advise the Designers of any conflict or field condition which results in the system being installed other than as designed.

2. In such instances, contractors are expected to propose alternative routes based on field conditions revealed through the performance of the demolition. Rerouting shall not be performed, however, until first approved by the Designers. No additional compensation will be due for field coordination efforts.

3. Where rerouting of utilities differently than designed creates a conflict with another trade, which was not forseen or properly coordinated between the contractors, the conflicting utility shall be revised at no expense to the Owner, to eliminate the conflict.

II. PRODUCTS (Not Used)

III. EXECUTION (Not Used)

END OF SECTION

SECTION 01.32.00

CONSTRUCTION PROGRESS DOCUMENTATION

I. PART I - GENERAL

1.01 GENERAL PROVISIONS

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.

1.02 REQUIREMENTS INCLUDED

A. Procedures and requirements for submission and review of progress schedules and reports.

1.03 RELATED SECTIONS

A. Section 01.11.00 – SUMMARY

1. Project meetings.

B. Section 01.31.00 - PROJECT MANAGEMENT AND COORDINATION

1. Progress and coordination meetings.

C. Section 01.33.00 - SUBMITTAL REQUIREMENTS

1. Project reports.
2. Schedule of values.
3. Shop drawings, product data, and samples.

1.04 SCHEDULES

A. The Prime Contractor is fully responsible for the project schedule, including the scheduling of the work of all sub-contractors.

B. At the pre-construction meeting, the Prime Contractor shall provide a draft overall construction schedule, showing activities for the performance of the work through project completion. If Notice to Proceed has not been issued and a start date not established, the contractor shall prepare a duration schedule, showing the time period associated with each activity, without filling in specific dates.

1. The Owner will review the draft schedule and advise of any critical dates when work cannot be performed or when work must occur to permit the continued use of the occupied facility.

2. Revise the draft schedule to reflect the Owner’s limitations, and resubmit for record.

C. If action submittals are not made at the time of the construction schedule, prepare a submittal schedule. The submittal schedule shall:

1. Identify all items to be submitted for the project.

2. Identify the date by which the submittal needs to be approved to leave adequate time for ordering, manufacturing and shipping to the site in time for installation by the scheduled date.

3. Identify the date the submittal will be made to the designers, to leave adequate time for review. Allow 7 days for submittals requiring only the Architect’s review and 10 days for submittals requiring review by

the engineers.

D. Weekly, prepare and submit a look-ahead schedule showing the major activities to be performed over the next two weeks, by trade. Update the look-ahead weekly; a two-week look ahead schedule does not mean the schedule is to be updated bi-weekly.

E. Monthly, update the overall construction schedule to reflect any slippage or acceleration in the project's performance.

F. The format of the schedules is not mandated, however, the schedules must be readily understandable. The Architect reserves the right to request an alternate format if the schedules do not clearly communicate the required information.

1.05 REQUESTS FOR INTERPRETATION (RFIs)

A. Where documents are unclear, or in the opinion of the contracts appear to contain conflicts or omissions, request a formal interpretation from the designers. The format of the RFI is not mandated, but contractors are encouraged to ask questions as clearly as possible. Designers are only required to rely on the information provided in the RFI when providing a response.

1. Any RFIs from sub-contractors should be channeled through the Prime contractor and not sent to the designers directly.

B. Should the answer require clarification, the designers may prepare sketches, memos and/or bulletins to memorialize the direction being given. The Prime Contractor is responsible for disseminating any clarifications given to sub-contractors as appropriate.

C. If the direction given results in a monetary change to the project cost, contractors must follow the procedures for contract modifications. Work performed based on direction given the in response to an RFI, without approval of a proposed change order, will be considered to be a no-cost change.

D. The Prime Contractor shall maintain an RFI log, recording all questions and answers, and referencing any SK's issued and change orders resulting from the clarifications. The log shall be updated and circulated to all parties each time an RFI is answered.

1.06 CONSTRUCTION CHANGE LOG

A. The Prime Contractor shall maintain a log of all construction changes, listing the Proposed Change Order (PCO) by number with a single line summary of the change and a listing of which PCOs were included in which Change Order.

B. The PCO log shall be provided fore review at each construction meeting.

II. PRODUCTS (Not Used)

III. EXECUTION (Not Used)

END OF SECTION

SECTION 01.33.00

SUBMITTALS

I. PART 1 - GENERAL

1.01 GENERAL PROVISIONS

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.

1.02 RELATED DOCUMENTS

A. This Section supplements the General Conditions.

B. Consult the individual sections of the specifications for the specific submittals required under those sections and for further details and descriptions of the requirements

1.03 GENERAL PROCEDURES FOR SUBMITTALS

A. Timeliness - The Contractor shall transmit each submittal to the Architect sufficiently in advance of performing related Work or other applicable activities so that the installation is not delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Architect in advance of the Work.

B. Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. Contractor's Review and Approval - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Architect. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To", "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section, or Drawing No. to which the submittal refers, purpose (first submittal, resubmittal), description, remarks, distribution record, and signature of transmitter.

D. Architect's Action - The Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:

1. Final Unrestricted Release: Where marked "No Exceptions Taken" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.

2. Final-But-Restricted Release: When marked "Note Markings" or “Comments Attached” the Work may proceed provided it complies with the Architect's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend on these compliances.

3. Returned for Resubmittal: When marked "Resubmit" or "Rejected" the Work covered by the submittal (such as purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in accordance with the Architect's notations stating the reasons for returning the submittal.

E. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

1.04 OR EQUALS

A. Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous.

B. In no case may an item be furnished on the Work other than the item named or described, unless the Architect, with the Owner's written concurrence, shall consider the item equal to the Item so named or described.

C. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Architect at the expense of the Contractor submitting the substitution.

1.05 SUBMISSION OF PRODUCT DATA

A. The Contractor shall submit an electronic copy of Product Data, in Adobe Acrobat (pdf) format to the Architect. All such data shall be specific and identification of material or equipment submitted shall be clearly marked or highlighted. Data of general nature will not be accepted.

B. Product Data shall be accompanied by a transmittal notice. The Contractor's stamp of approval shall appear on the printed information itself, in a location which will not impair legibility.

C. Product Data returned by the Architect as "Rejected" shall be resubmitted until the Architects approval is obtained.

D. When the Product Data are acceptable, the Architect will stamp them “No Exceptions Taken”, and return 1 copy to the Contractor. The Contractor shall provide and distribute additional copies as may be required to complete the Work.

E. The Contractor shall maintain one full set of approved, original, Product Data at the site.

1.06 SUBMISSION OF SHOP DRAWINGS

A. Shop Drawings shall be complete, giving all information necessary or requested in the individual section of the specifications. They shall also show adjoining Work and details of connection thereto.

B. Shop Drawings shall be for whole systems. Partial submissions will not be accepted.

C. The Architect reserves the right to review and approve shop drawings only after approval of related product data and samples.

D. Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Architect's stamp.

E. The Contractor shall submit to the Architect three (3) black line prints of each shop drawing or one electronic copy in Adobe Acrobat (pdf) format, at the Architect’s discretion. Prints may be mailed, delivered in roll form or emailed. Each submittal shall be accompanied by a transmittal notice bearing the Contractor's approval stamp.

F. When the Architect returns a marked submittal with the stamp "Resubmit" or "Confirm", the Contractor shall correct the original drawing or prepare a new drawing and resubmit three prints or an electronic version thereof to the Architect for approval. This procedure shall be repeated until the Architect's approval is obtained.

G. When the Architect returns submittal with the stamp "No Exceptions Taken", the Contractor shall provide and distribute the prints for all Contractor and Subcontractors use.

H. The Contractor shall maintain one full set of approved shop drawings at the site.

1.07 SUBMISSION OF SAMPLES

A. Unless otherwise specified in the individual section, the Contractor shall submit two specimens of each sample.

B. A transmittal notice with the Contractors stamp of approval shall be included with all sample submittals.

C. Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved on the Work.

D. Samples that can be conveniently mailed shall be sent directly to the Architect, accompanied by a transmittal notice. All transmittals shall be stamped with the Contractor's approval stamp of the material submitted.

E. All other samples shall be delivered at the field office of the Project Representative with sample identification tag attached and properly filled in.

F. If a sample is rejected by the Architect, a new sample shall be resubmitted in the specified manner. This procedure shall be repeated until the Architect approves the sample.

G. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the specifications, at no additional cost to the Owner.

1.08 SCHEDULE OF VALUES

A. Prior to the first request for payment, the General Contractor shall submit to the Designer and Owner, a Schedule of Values of the various portions of the Work in sufficient detail to reflect various major components of each Subcontractor, including quantities when requested, aggregating the total contract sum, and divided so as to facilitate payments for work under each Section. The schedule shall be prepared in such form as specified or as the Designer or the UMA Project Manager may approve, and it shall include data to substantiate its accuracy. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, including breakdown and values, requires the approval of the Designer and theOwner and shall be used only as a basis for the General Contractor's request for payment.

1. The General Contractor and all filed sub-bidders shall include on the Schedule of Values, a line item for “General Conditions” which shall equal roughly 10% of the respective contract value. This line items covers superintendence and management of the project, and will be paid out proportionally to the overall progress of the project.

2. Where materials are expected to be delivered to the site and requisitioned for prior to their installation, the value of the materials shall be shown separately from the value of the labor on the Schedule of Values.

3. A discreet line item for “Close Out” documentation, for each trade from which close out documents are required. Retainage is not to be used for the value of the close out effort.

END OF SECTION

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SECTION 01.50.00

TEMPORARY FACILITIES AND CONTROLS

I. PART I - GENERAL

1.01 GENERAL PROVISIONS

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.

1.02 REQUIREMENTS INCLUDED

A. Temporary Facilities and Controls including the following:

1. Temporary Water.
2. Weather Protection.
3. Heating During Construction.
4. Temporary Power.
5. Hoisting Equipment and Machinery.
6. Staging.
7. Maintenance of Access.
8. Dust Control.
9. Noise Control.
10. Indoor Air Quality (IAQ) Management.
11. Enclosures.
12. Cleaning During Construction.
13. Field Offices.
14. Telephone Service.
15. Sanitary Facilities.
16. Construction Barriers.
17. Parking.
18. Debris Control and Removal.
19. Safety Protection.
20. Vehicle and Equipment Protection.
21. Shoring.
22. Construction Fence.
23. Project Identification Sign.
24. Delivery of Materials.
25. Shut Down Notice.
26. Construction Cores.
27. Covered Walkways
28. Excavations and Field Survey Requirements

1.03 TEMPORARY WATER

A. Water may be used by the Contractor at the Owner's expense, through exterior sill cocks where present. Water may not be drawn from the building interior. If water is required for construction purposes but not available, the contractor shall provide such water at their expense.

B. Any temporary hoses and pipe lines and connections from the permanent service lines either outside or within the building, necessary for the use of the Prime Contractor and his Subcontractors shall be installed, protected, and maintained at the expense of the Plumbing Subcontractor.

C. Temporary hoses and temporary pipe lines used for transporting water shall not be run unattended or unprotected across parking areas, parking area entrance, walkways, plazas, or steps. Temporary hoses and temporary pipelines shall not be permitted to be installed along, through or across corridor and occupied rooms or spaces.

D. The Prime Contractor shall provide an adequate supply of drinking water from approved sources of acceptable quality, satisfactorily cooled, for his employees and those of his Subcontractors.

E. Use of the water may be discontinued by the Owner if, in their opinion, it is wastefully used.

1.04 WEATHER PROTECTION

A. It is the intent of these Specifications to require that the Prime Contractor shall provide temporary enclosures and heat to permit construction work to be carried on during the months of November through March in compliance with M.G.L. Chapter 149, Section 44D(G). Under no circumstances shall the Prime Contractor suspend any work during the months of November through March because of their reluctance to provide and pay for temporary weather protection. These Specifications are not to be construed as requiring enclosures or heat for operations that are not economically feasible to protect in the judgment of the Designer. Included in the preceding category, without limitation, are such items as site work, excavation, steel erection, erection of certain "exterior" wall panels, roofing, and similar operations.

B. "WEATHER PROTECTION" shall mean the temporary protection of that work adversely affected by moisture, wind, and cold, by covering, enclosing and/or heating. This protection shall provide adequate working areas during the months of November through March as determined by the Designer and consistent with the approved construction schedule to permit the continuous progress of all work necessary to maintain an orderly and efficient sequence of construction operations. The Prime Contractor shall furnish and install all "weather protection" material and be responsible for all costs, including heating required to maintain a minimum temperature of 50 degrees F. at the working surface. This provision does not supersede any specific requirements for methods of construction, curing of materials or the applicable general conditions set forth in the Contract Articles with added regard to performance obligations of the Prime Contractor.

1. Within 30 calendar days after his award of contract, the Prime Contractor shall submit in writing to the Designer for approval, three copies of his proposed methods for "Weather Protection."
2. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices. Heating devices which may cause damage to finish surfaces shall not be used.
3. The Prime Contractor shall furnish and install one accurate Fahrenheit thermometer at each work area as designated by the Designer. However, one additional accurate Fahrenheit thermometer shall be provided for every 2,000 square feet of floor space where the work areas exceed 2,000 square feet.

1.05 HEATING DURING CONSTRUCTION

A. Not applicable. Temporary heat should not be required for this project scope.

1.06 TEMPORARY POWER

A. Contractors may utilize electrical power where available in or around the Work Area, and the Owner shall pay the cost of electricity used.

1. The use of cordless tools is strongly encouraged.

2. Contractors shall provide their own electrical cords, and cords shall not be run through, across or draped within corridors or circulation spaces used by the public. If running electrical cords across circulation spaces is unavoidable, cords shall be secured to the floor with readily visible colored duct tape, and shall be removed as soon as power is no longer needed.

B. Modification of electrical panels is not permitted, except where higher voltages are required for specialty tools. Any panel modifications may only be performed by a licensed electrician, and with the Owner’s approval.

C. Generators for temporary power will be permitted, with the Owner’s permission, provided they are equipped with mufflers/silencers and set up where directed by the Owner. Should noise or exhaust fumes affect the use of the

building, the Owner reserves the right to suspend the use of generators.

1.07 HOISTING EQUIPMENT AND MACHINERY

A. All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work shall be furnished, installed, operated and maintained in safe condition by the individual Subcontractors and is so stated in each appropriately related Section of the Specifications. All costs for hoisting operating services shall be borne by the Subcontractors unless specifically excepted in the Contract Documents.

1. A licensed equipment manufacturer's representative shall be present at all times, to witness the erection and dismantling of all hoisting equipment and machinery, whenever such equipment is being erected or dismantled. No such work will be performed without the presence of such representative.

2. Hoisting equipment and machinery erection and dismantling shall be performed only by trained, certified, and experienced riggers qualified to perform such work.

3. Copies of such licenses and/or certifications, clearly indicating qualifications, shall be provided to the designer prior to commencement of such erecting and dismantling work.

B. Review Drawings for hoisting requirements and openness of traffic access routes to installed destinations of specified equipment and furnishings.

1.08 STAGING

A. All staging, planking and scaffolding, exterior and interior, required for the proper execution of the work and over eight feet in height, shall be furnished, installed, and maintained by the Prime Contractor.

1. Erection and dismantling of staging shall be performed only by trained, certified, and experienced staging personnel qualified to perform such work.

2. Copies of such certifications, clearly indicating qualifications, shall be provided to the Owner prior to commencement of such erecting and dismantling work.

3. All staging up to eight feet in height shall be provided by the individual Subcontractors as applicable to their work.

4. Use of staging extends to the Owner's contractors as may be listed in Section 01.11.00 - Summary of Work, where applicable.

1.09 MAINTENANCE OF ACCESS

A. The Prime Contractor shall provide and maintain for the duration of his contract, a means of access to, around and within the site, for vehicular traffic and authorized personnel. This means of access shall be construed to sustain the weight of equipment customarily engaged for use in construction projects of this type and magnitude. The Prime Contractor shall, without additional compensation from the Owner, furnish labor and materials as may be required from time to time to maintain this means of access in an acceptable condition as determined by the Designer. Pedestrian access shall provide adequate protection against falling debris, slippage, adequate lighting, warning and directional signs, and protection against construction activities.

1.10 DUST CONTROL

A. The Prime Contractor shall have all Subcontractors provide adequate means for the purpose of preventing dust caused by construction operations from creating a hazard, nuisance, and from entering adjacent occupied areas throughout the period of the construction contract.

B. This provision does not supersede any specific requirements for methods of construction or applicable general conditions set forth in the Contract Articles with added regard to performance obligations of the Prime

Contractor.

1.11 NOISE CONTROL

A. Work must be scheduled and performed in such a manner as to not interfere with the operations of the Owner. Construction work that is deemed by the Owner to be excessively noisy may be required to be done during non-normal working hours and at no additional expense.

B. Comply with requirements of authorities having jurisdiction. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.

C. Execute construction work by methods and by use of equipment which will reduce excess noise.
   1. Equip air compressors with silencers, and power equipment with mufflers.
   2. Manage vehicular traffic and scheduling to reduce noise.
   3. No heavy equipment may be started or idled before 7A.M.

1.12 INDOOR AIR QUALITY (IAQ) MANAGEMENT

A. Minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to environmental tobacco smoke. At a minimum, take the following measures:

   1. Prohibit smoking in the building.
   2. Locate exterior designated smoking areas away from entries, outdoor air intakes, and operable windows.

B. During Construction:

   1. During construction meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, Chapter 3, November 2007.

   2. Protect stored on-site and installed absorptive materials from moisture damage.

   3. If the Owner authorizes the use of permanent heating, cooling, and ventilating systems during construction, install filter media having a Minimum Efficiency Reporting Value (MERV) of 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction. Replace air filters immediately prior to occupancy. Replacement air filters shall have a MERV 13 according to ASHRAE 52.2.

1.13 ENCLOSURES

A. Provide temporary, insulated, weather tight closures of openings in exterior surfaces for providing acceptable working conditions and protection for materials, allowing for heating during construction, and preventing entry of unauthorized persons. Provide doors with self-closing hardware and locks.

B. All utilities including electric ducts, conduits, telephone lines, sprinklers, and other utilities shall be protected against damage from construction activity. The Prime Contractor shall be responsible for all damage to the utilities from construction and shall repair all such damage at no additional cost to Owner.

C. Provide temporary partitions and/or ceiling as required to separate work areas from occupied areas, to prevent penetration of dust and moisture into occupied areas, to prevent damage to existing areas and equipment. Construction shall be framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces; (STC rating 35 in accordance with ASTM E900. Flame Spread Rating of 25 in accordance with ASTM E84.)

1.14 CLEANING DURING CONSTRUCTION

A. Unless otherwise specified under the various Sections of the Specifications, the Prime Contractor shall perform clean-up operations during construction as herein specified.

B. Control accumulation of waste materials and rubbish; periodically dispose of off-site in a legal manner. The Prime Contractor shall bear all costs, including fees resulting from such disposal.

C. Clean interior areas prior to start of finish work and maintain areas free of dust and other contaminants during finish operations.

D. Clean all dirt and debris tracked into other buildings by construction personnel, to the satisfaction of the Owner.

E. Maintain project in accordance with all local and Federal Regulatory Requirements.

F. Store volatile wastes in covered metal containers, and remove from premises.

G. Prevent accumulation of wastes which create hazardous conditions.

H. Provide adequate ventilation during use of volatile or noxious substances.

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

1. Do not burn or bury rubbish and waste materials on site.
2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.
4. Identify potential sources of cleaning water runoff and propose abatement procedures.

J. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

K. Use only those cleaning materials and methods recommended by manufacturer of surface materials to be cleaned.

L. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and windblown debris, resulting from construction operations.

M. Provide on-site containers for collection of waste materials, debris, and rubbish.

N. Remove waste materials, debris and rubbish form the site periodically and dispose of at legal disposal dump site (DEP approved). Recycle where possible.

O. Handle material in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.

P. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.

1.15 FIELD OFFICES

A. No space within the building is available for the contractor's use as field offices.

B. If permitted by the Owner, the Prime Contractor may provide a suitable field office on site for its own use. The office trailer shall be relocated if required by the Owner., and shall be secured to the site as required by the Building Code.

1.16 TELEPHONE SERVICE

A. Wired telephone service to the office trailer or project site is not required, although contractors may elect to have such service at their own expense.

B. All Designers, Superintendents and Project Managers shall maintain cellular telephones and be reachable Monday - Friday between 8AM and 5PM, and after hours for emergency calls. Phone numbers shall be listed on a Project Directory, to be submitted at the pre-construction meeting.

1.17 SANITARY FACILITIES

A. Use of toilet facilities within the building is prohibited.

B. If an office trailer is provided, it may be equipped with toilet room containing a working chemical toilet, at the contractor's option. Trailer shall not be removed from site until at least one toilet room in new building is operational.

C. Otherwise, the Prime Contractor shall provide suitable toilet facilities on site, in a location as required by the Owner. Maintain chemical toilets where work is in progress and in quantity required by OSHA Code.

D. Chemical toilets and their maintenance shall meet requirements of state and local health regulations and ordinances and shall be subject to the approval the Resident Engineer and Designer.

E. If the Owner allows the use of public toilet rooms on site, the Prime Contractor shall take responsibility for maintenance and cleaning of such areas and shall leave them in first class condition equal to the accepted conditions of toilet facilities not used for construction personnel.

1.18 CONSTRUCTION BARRIERS

A. Contractors are advised that the building will be in continuous operation throughout the construction, mainly by elderly patons, many with mobility impairments. Safety of the patrons, and safe circulation around the site is of paramount importance.

B. Proper construction barriers shall be provided around the contract work areas as defined by the Contract Drawings or as directed by the Owner.

C. Construction barriers shall consist of traffic cones, ribbons, tapes, secure fencing, trench covers, wood barriers, warning signs, directional signs, and other traffic materials to keep traffic and people from area of construction and maintain ongoing operations.

D. Where roof work is performed within 10'-0" horizontally of any walkway or entrance, the walking surface shall be protected by overhead protection consisting of not less than pipe staging with overhead planks and side netting, but as required for the safe circulation of the patrons.

E. When demolition materials are removed from the roof, or new materials are loaded to the roof, the Prime Contractor shall have a person on the ground, to stop pedestrian traffic until safe. This person shall police the immediate area for loose debris and tripping hazards prior to allowing pedestrian circulation to resume.

F. Barriers shall be erected at such approved locations as are necessary, sufficiently cross-braced and supported adequately from floors and ceilings as required.

1.19 PARKING

A. Contractor's shall park where directed by the Owner, and move vehicles when requested by the Owner.

1. Contractors should anticipate being assigned the spaces which are the furthest from the building.

2. Access to loading docks, driveways, staff, faculty, visitor or tenant parking shall not be blocked by construction vehicles.

3. Parking in handicapped accessible spaces will not be permitted.

B. Idling of vehicles on site will not be permitted.

C. If the Owner authorizes parking on lawns, the Prime Contractor shall be responsible for repairing any damage to lawns or curbs from parked vehicles.

1.20 DEBRIS CONTROL AND REMOVAL

A. Debris shall not be permitted to accumulate or migrate and the work shall at all times be kept satisfactorily clean. Facility trash receptors shall not be used for the disposal of debris. Dumpsters shall be provided by the Prime Contractor for removal of debris for all Subcontractors.

B. Remove debris from the work site on a daily basis and dispose of same at any (private or public) DEP approved dump that the Prime Contractor may choose providing that the Prime Contractor shall make all arrangements and obtain all approvals and permits necessary from the owner or officials in charge of such dumps. During disposal process, copies of daily receipts from dumpsite shall be submitted on a regular basis.

1.21 SAFETY PROTECTION

A. At no time shall the work be left unattended without proper safety protection and shall not be left unprotected to the weather and accessible to the public. It is the responsibility of the Prime Contractor to maintain proper safety protection for the public while work is in progress or unattended.

1.22 VEHICLE AND EQUIPMENT PROTECTION

A. All construction activities shall be performed in such a manner so as not to dust, stain or damage any building elements, equipment, vehicles, etc. within general vicinity of the construction work area. Any damage to these items shall be cleaned and repaired at the expense of the Prime Contractor.

1. All construction vehicles and equipment on site shall be effectively disabled and secured when not in use.

1.23 SHORING

A. Not applicable.

1.24 CONSTRUCTION FENCE

A. A construction fence shall be provided at all areas where work is being performed and at all pedestrian walkways throughout construction. Fencing shall be kept in good repair at all times, and shall be arranged to maintain ongoing operation's access and egress.

B. Maintain pedestrian passages between the construction site and adjacent buildings.

C. Construction fences shall be six feet high and of chain link, or approved equal, erected in a substantial manner, straight, plumb and true as approved by the Designer.

D. Gates shall be built into fence at such approved locations as are necessary, well cross-braced and hung on heavy strap hinges with proper post and hook for double gates. Provide heavy hasps and padlocks for each gate. Provide a set of keys for each lock to Owner to facilitate emergency access.

E. Fencing shall be removed by the Prime Contractor at no cost to the Owner at such time before final completion as the Designer directs. Restore site to acceptable condition after removing fence.

1.25 PROJECT IDENTIFICATION

A. No project sign is required by the Owner.

B. If the Contractor wishes to provide a project sign, at his own expense, the Owner reserves the right to approve the content and appearance of the sign.

C. Any signs will be located on site where directed by the Owner, and shall be relocated or removed if the Owner so directs.

1.26 DELIVERY OF MATERIALS

A. All Materials shall be delivered to the Contractor's or Sub-Contractor's warehouse or may be delivered to the site if the Contractor's representative is present to receive them.

B. No materials will be received by the Owner's personnel.

1.27 SHUT DOWN NOTICE

A. The Contractor shall notify the Owner, at least fourteen (14) calendar days in advance, of the need for any utility shut down to install or modify any utilities or building systems. The shutdown request shall indicate:

1. The utility to be shutdown.
2. The duration of the shutdown.
3. The spaces anticipated to be affected by the shutdown.

B. Investigation of the existing systems to determine the areas served, the location of isolation valves or sub-panels, etc., is to be anticipated and included in the bid scope.

C. Shutdowns involving sprinkler systems or fire alarm systems, for which the Authority Having Jurisdiction (AHJ) requires a fire watch, the contractor performing the shutdown shall provide and pay for the fire watch at no additional cost to the Owner.

D. Utility shutdowns affecting other buildings will be limited to occur after normal working hours. No additional compensation will be paid for overtime.

1.28 EXCAVATIONS AND FIELD SURVEY REQUIREMENTS

A. Not applicable

II. PART II - PRODUCTS (Not Used)

III. PART III - EXECUTION (Not Used)

END OF SECTION
01.50.00

SECTION 01.77.00

CLOSEOUT PROCEDURES

I. PART 1 - GENERAL

1.01 SCOPE

A. This section lists the procedures required for the proper completion of this project including processing the Release of Retainage and making the Final Payment to the Contractor.

B. Consult the Individual sections of the specifications for requirements affecting Project Close Out.

1.02 RELATED DOCUMENTS

A. This section supplements the General Conditions.

B. Consult the individual sections of the specifications for specific items required under those sections.

1.03 SUBSTANTIAL COMPLETION

A. Prior to requesting Substantial Completion the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.

B. Upon completion of the items noted on the Contractor's list the Contractor shall notify the Architect that the Work is Substantially Complete. The Architect shall then conduct a similar thorough inspection. If the Architect agrees that the Work is Substantially Complete, the Architect will promptly make a thorough inspection and prepare a punch list, setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or incomplete. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.

C. The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Architect's punch list.

D. If the Architect determines that the Work is not Substantially Complete, the Architect shall inform the Contractor of those items that must be completed before the Architect will prepare a punch list. Upon completion of those items, the Contractor shall again request the Architect to prepare a punch list.

E. When the punch list has been prepared, the Architect will arrange a meeting with the Contractor and Subcontractors to identify and explain all punch list items and answer questions on work which must be done before final acceptance.

F. The Architect may revise the punch list, from time to time, to ensure that all items of Work are properly completed.

G. The Architect shall prepare the Certificate of Substantial Completion in accordance with the General Conditions.

H. The Contractors shall correct the items noted on the punchlist(s). The General Contractor shall check the work of his forces, and of all sub-contractors to verify that the work has been corrected, and notify the architect that the project is ready for reinspection. The Architect and Engineers may, at their discretion, check the work to confirm the punchlist has been completed, and advise the Owner.

1. If the Contractor calls for reinspection, and the Project is not actually ready or punchlist items have not been corrected and subsequent reinspections are required, the Architect reserves the right to bill

the Owner for the reinspections, and such monies will be deducted from the balance due to the Contractor.

1.04 RECORD DRAWINGS

A. As-built Drawings shall consist of all the Contract Drawings. As-built Drawings shall be kept up-to-date. Information from on-going Work shall be recorded on As-built Drawings within 48 hours of Work being performed.

B. The General Contractor and each Subcontractor shall be required to maintain one set of As-built Drawings, as the work relates to their Sections of the Specifications, at the site.

C. The As-built Drawings shall be stored and maintained in the General Contractor's field office or a secure location apart from other documents used for construction. The As-built Drawings shall be maintained in a clean, dry, and legible condition and shall not be used for construction purposes.

D. As-built Drawings, as submitted by the General Contractor shall be verified in the field by the Designer or his Consultants. Verification by the Designer shall occur during the construction process and prior to the related work being completed and covered up.

E. The As-built Drawings shall be available at all time for inspection by the Project Manager or Designer. All deficiencies noted shall be promptly corrected.

F. The following information shall be indicated on the As-Built Drawings:

1. Record all changes, including change orders, in the location, size, number and type both horizontally and vertically of all elements of the project which deviate from those indicated on all the Contract Drawings.

2. The tolerance for the actual location of utilities and appurtenances within the building to be marked on the As-built Drawings shall be plus or minus two (2) inches.

3. The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) ft. intervals and at all changes of direction.

4. The location of all internal utilities and appurtenances, concealed by finish materials, including but not limited to valves, coils, dampers, vents, cleanouts, strainers, pipes, junction boxes, turning vanes, variable and constant volume boxes, ducts, traps and maintenance devices. The location of these internal utilities, appurtenances, and devices shall be shown by offsets to the column grid lines on the Drawings, or marked accurately on the as-built reflected ceiling plans.

5. Each of the utilities and appurtenances shall be referenced by showing a tag number, area served and function on the As-built Drawings.

G. At the end of each month and before payment for materials installed, the General Contractor, each Subcontractor, the Architect and Project Manager shall review the As-built Drawings for purpose of payment.

1. If the changes in location of all installed elements are not shown on the As-Built Drawings and verified in the field, then the material shall not be considered as installed and payment will be withheld.

H. Prior to the installation of all finish materials, a review of the As-built Drawings shall be made to confirm that all changes have been recorded. All costs to investigate such conditions shall be borne by the applicable party as determined by the Designer.

I. At the completion of the contract, each Subcontractor shall submit to the General Contractor a complete set

of his respective As-built Drawings indicating all changes. After checking the above drawings, the General Contractor shall certify in writing on the title sheet of the drawings that they are complete and correct and shall submit the As-built Drawings to the Designer.

J. The original hand-noted as-Built Drawings shall be scanned in color to Adobe Acrobat (*.pdf) format and submitted on CD or DVD to the Designer, to be added to the complete plans as constructed.

1.05 RECORD SURVEYS

A. Not applicable.

1.06 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Consult the individual sections of the specifications for the specific requirements for those sections and for further details and descriptions of the requirements.

B. Prior to final payment and completion the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents.

C. Operating Instructions and Manuals:

1. Subcontractors, installers, and suppliers shall furnish to the Contractor two sets of operating and maintenance instructions of all mechanical, electrical, and manually operated equipment furnished and installed by them. Mechanical and electrical subcontractors shall furnish instructions as specified in their respective sections.

2. The Contractor shall collect all of the above instructions, bind them into two complete sets, and submit them to the Architect who will deliver them to the Owner.

3. The Contractor shall prepare a CD of all O&M items and deliver to the Owner.

4. Submission of operating and maintenance instructions shall be a condition precedent to final payment

D. Instruction of Owner's Personnel

1. Where specified in the individual sections of the specifications, the Contractor and Subcontractor shall instruct the Owner's personnel at the site, in the use and maintenance of equipment installed under the Contract.

2. Submission to the Architect of a certificate of compliance to this requirement, signed by the Contractor and the Owner's Representative, shall be a condition precedent to final payment.

1.07 PARTIAL RELEASE OF RETAINAGE

A. If within 65 days after Substantial Completion, any of the items on the Architect's punch list are not complete or if the Contractor has not provided the appropriate marked up As Built Drawings, Operating Manuals, Warranties, Guarantees, or Spare Parts the Architect shall assign a monetary value for each incomplete item as well as any other items as provided by M.G.L. c.30 §39K, and the Architect shall prepare a Certificate for Partial Release of Retainage.

B. If the Architect is required to prepare a Certificate for Partial Release of Retainage the Contractor shall complete all remaining Work in accordance with the provisions of the General Conditions.

C. The Contractor's signature on this Certificate shall be notarized.

D. The Contractor may make a request for additional releases of retainage when portions of the Work listed on the Architect's punch list have been satisfactorily completed. Each request shall be accompanied by a new

application for payment and a new signed and notarized Certificate for Partial Release of Retainage.

E. The Architect's inspections, required to complete the additional payment applications described above, are subject to provisions of the General Conditions.

F. If the Owner has required Performance and Payment Bonds, then prior to the partial release of retainage, the General Contractor shall submit to the Owner Consent of Surety to Partial Release of Retainage using AIA Document G707A or an equivilent document.

1.08 FINAL RELEASE OF RETAINAGE

A. Prior to the final release of retainage, the General Contractor shall submit to the Owner:

1. Consent of Surety, using AIA Document G707 or similar document, if performance and payment bonds were required for the project.

2. Contractor’s Affidavit of Release of Liens, using AIA Document G706A or equivalent. This document shall be accompanied by certified statements from all sub-contractors working on the project, that they have received all monies due, and have paid all suppliers and sub-sub contractors accordingly.

(a) Should any payments be outstanding and contingent upon receipt of the retainage in order to be paid, the General Contractor shall submit AIA Document 706, itemizing those items which have not been paid.

END OF SECTION

SECTION 02.08.00

ASBESTOS ROOF REMOVAL AND DISPOSAL

PART I - GENERAL

1.01 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS, which are hereby made a part of this section of the specifications.

B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of Article IV of the CONTRACT AND GENERAL CONDITIONS.

1.02 DEFINITIONS

A. The following definitions shall be applicable to this Section:

"Site": Refers to the Worcester Senior Center located at 128 Providence Street in Worcester, Massachusetts as described by the Contract Documents and Drawings.

"Owner": Refers to the City of Worcester and their designated, authorized personnel.

"Architect": Refers to Nault Architects Inc., 71 Hope Avenue, Worcester, Massachusetts and their designated, authorized personnel.

"Consultant": Refers to Atlas Technical Consultants LLC (ATLAS), 73 William Franks Drive, West Springfield, Massachusetts and their designated, authorized personnel.

"General Contractor": Refers to the Contractor who has been awarded the overall contract for roof replacement work as outlined by the Contract Documents.

"Roof Removal Contractor": Refers to Contractor who is performing the roof removal and replacement work as outlined by this Section.

1.03 SITE BACKGROUND/REGULATORY REQUIREMENTS

A. The Roof Removal Contractor shall be made aware that asbestos-containing roofing material is present on the following roof areas to be removed and replaced as part of the Contract.

- **Lower Roof (Built Up Roofing – All layers)**
- **Canopy Roof (Roof Paper Under Metal Flashing)**

1.04 GENERAL REQUIREMENTS/QUALIFICATIONS

A. Removal of the asbestos-containing roofing materials by Massachusetts licensed Asbestos Abatement personnel is not required. However, all workers involved with removal of the built up roofing shall have received at a minimum, 8-hour OSHA Class II Roofing Training. Note that personnel who have been trained in operations and maintenance (O&M) or asbestos worker (32 hour) and asbestos supervisor (40 hour) will also meet this requirement.

1.05 DESCRIPTION OF WORK

A. The Roof Removal Contractor shall refer to the Drawings and be responsible for verifying existing conditions and all quantity estimates of materials to be removed in preparation of their bids. No additional compensation and/or contract time shall be granted to the Roof Removal Contractor for failure to perform this requirement.

B. This section details all areas where asbestos roof removal work is to be performed and lists areas requiring special protection during the work. The Roof Removal Contractor shall furnish all labor, materials, services, training, insurance, and equipment as needed to complete the work.

C. The Roof Removal Contractor shall coordinate all work with the General Contractor including the sequencing of roof removal and the installation of new roofing materials at each roof location. The Roof Removal Contractor shall be responsible for making the building weather tight at any locations where the existing roofing is removed until the new roofing material can be installed. Additionally, at no time shall debris from the removal of the roof and/or installation of new roofing be allowed to fall into the interior of the building. The Roof Removal Contractor shall be responsible for implementing and/installation of special measures to prevent the migration of any debris or materials into the building.

D. Abatement of the asbestos roofing material by a licensed Asbestos Abatement Contractor is not required under this Contract. However, with regards to removal and/or disturbance of the asbestos-containing roofing materials, the Roof Removal Contractor shall be aware that the above referenced roofing materials contain asbestos and shall comply with all applicable regulations. Specifically, the Roof Removal Contractor shall comply with OSHA 29 CFR 1926.1101 Regulations with regards to protection of employees when performing this work and Massachusetts Department of Environmental Protection (MADEP) 310 CMR 7.15 (10) "Requirements for Removal of Asbestos-Containing Asphaltic Roofing and Siding Materials" and Massachusetts Department of Labor Standards (MADLS) 454 CMR 28.12 (1) as follows:

1. All asbestos waste shipped out of state for disposal shall be containerized, labeled and transported as asbestos containing waste material (ACWM) in accordance with 310 CMR 7.15 (15 thru 18). This shall include lining the dumpsters with two (2) layers of six mil polyethylene sheeting and appropriate labeling/placarding with asbestos signs.
2. Roof level heating and ventilation air intakes shall be isolated by covering the intakes with six-mil thickness plastic sheeting prior to the start of the removal work.

3. Roofing materials shall be removed intact to the greatest extent feasible.
4. All roofing materials shall be adequately wet during removal.
5. Where cutting machines are used in the removal, said cutting machines shall be equipped with a HEPA vacuum to capture dust produced by the cutting process. Cutting machines that are not equipped with a HEPA vacuum to capture dust produced by the cutting process shall only be used inside a work area for which containment sufficient to prevent visible emissions of fugitive dust to the ambient air has been established.
6. Where cutting machines are used in the removal, the roofing materials shall be adequately wetted throughout the cutting process.
7. Dust produced by power roof cutters operating on aggregate surfaces shall be removed by HEPA vacuuming. Dust produced by power roof cutters operating on non-aggregate, smooth surfaces shall be removed by HEPA vacuuming or wet wiping along the cut line.
8. Roofing materials shall not be dropped or thrown to the ground. Unless the roofing material is carried or passed to the ground by hand, it shall be lowered to the ground by crane or hoist or transferred in dust-tight chutes.
9. Removed roofing materials shall be kept adequately wet at all times. All removed roofing materials shall be placed in an impermeable waste bag (six-mil thickness), approved lined drums/containers or wrapped in plastic sheeting (minimum six-mil thickness), sealed with duct tape or the equivalent and lowered to the ground prior to the end of each work shift
10. Prior to the end of each work shift, all removed roofing materials shall be removed from the roof and placed in the on-site container which is lined with double 6 mil polyethylene sheeting and labeled as asbestos waste. Storage of removed roofing materials on the roof or ground shall NOT be permitted.
11. There shall be no visible emissions during the removal, processing, packaging or transporting of the roofing materials for disposal as asbestos-containing waste material (ACWM).
12. At the completion of the removal, a visual inspection shall be performed by the Consultant prior to any new roofing materials be installed back onto the roof deck.

1.06 SUBMITTALS

A. The following submittals are required for review and approval by the Architect prior to starting the work:

1. Copy of the Roof Removal Contractors Asbestos Training Certificates.
2. Copy of the asbestos notification with the MADEP (ANF01).
3. Chain-Of-Command list of all personnel on-site and emergency contact person(s)
4. Name of proposed waste hauler and proposed waste disposal site for the asbestos roof materials. A copy of the Waste Shipment Record for transport and disposal to be used shall also be provided.

B. In addition to the items required by other sections of the Project Manual, the following submittals are required for final payment

1. Copy of all Waste Shipment Records, signed by the landfill as receiving the waste.

1.07 CODES AND STANDARDS

A. All work shall conform to the standards set by applicable Federal, State and local laws, regulations, ordinances, and guidelines in such form in which they exist at the time of the work on the contract, and as may be required by subsequent regulations. In addition to any detailed requirements of the Specification, the Roof Removal Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storing of asbestos waste material.

B. All regulations and other governing agencies in their most current version are applicable throughout this project. Where there is a conflict between this Specification and the cited State, Federal, or local regulations, the more restrictive or stringent requirements shall prevail. This Section refers to many requirements found in these references, but in no way is it intended to cite or reiterate all provisions therein or elsewhere. It is the Roof Removal Contractor's responsibility to know, understand, and abide by all such regulations and common practices.

1.08 FEES, PERMITS & LICENSES

A. The Roof Removal Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or process in the performance of the work specified in this section. The Roof Removal Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights. The Roof Removal Contractor shall hold the Owner, Consultant and Architect harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing, patent or royalty fee for use in the performance of the job, the Roof Removal Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such rights.

B. Roof Removal Contractor shall be responsible for costs for notification requirements and all other fees related to the Roof Removal Contractors ability to perform the work in this Section.

C. Secure all necessary permits for work under this Section, including hauling, removal, and disposal, fire, and materials usage, or any other permits required to perform the specified work.

1.09 COORDINATION

A. Extend full cooperation to Owner in all matters involving the use of Owner's facilities. At no time shall the Roof Removal Contractor cause or allow to be caused conditions, which may cause risk or hazard to the general public, or conditions that might impair safe use of the facility.

1.10 SITE SECURITY

A. The Roof Removal Contractor is responsible for performing all work under this contract without contaminating the building or environment with asbestos fibers. This includes, but is not limited to interiors portions of building, HVAC systems, exterior building structures or ground surfaces, machinery and equipment and any other release into the environment. The Roof Removal Contractor is responsible for making right and clean-up of any such contamination as a result of their work and at their own expense.

B. The Roof Removal Contractor will be responsible for the security of the work area by allowing only authorized personnel into the work area during roof removal work. Signs will be posted as required by OSHA.

1.11 PROJECT CONSULTANT

A. The Architect (through the Owner) has retained ATLAS as their Consultant for the technical advisement and project management during removal of the asbestos-containing roof materials. The Roof Removal Contractor shall regard ATLAS's direction, as authoritative and binding as provided herein, in matters outlined by this Section.

B. ATLAS, acting as the Owner's Representative, will perform monitoring of Roof Removal Contractors work practices and performance, inspection of the worksite, and final visual inspections during roof removal procedures. ATLAS will review matters relating to safety, interpretation of the specifications, and scheduling of work, and will make decisions upon consultation with the Architect and Owner.

PART II - PRODUCTS

2.01 MATERIALS

A. All materials and equipment proposed to be used on this project shall be subject to the acceptance of the Owner, Architect and Consultant. The Roof Removal Contractor shall comply with local, state and federal regulations pertaining to the selection and use of materials and equipment on this project. The Roof Removal Contractor shall provide a submittal on all materials and equipment to be used for review and approval by the Architect prior to commencement of the work.

PART III - EXECUTION

3.01 PREPARATION AND REMOVAL PROCEDURES

A. All roof removal work shall comply with the provisions outlined herein and MADEP 310 CMR 7.15 (10) Regulations. Refer to Part 1.05 of this Section for additional specific requirements.

3.02 DISPOSAL

A. All costs associated with proper disposal of the asbestos-containing roofing (i.e. ACM roofing) on this project (whether in state at a solid waste landfill approved by the

MADEP or out of state at an approved landfill that accepts non-friable asbestos roofing materials) shall be borne by the Roof Removal Contractor. All materials shall be disposed of in accordance with all laws, and the provisions of this Section and any or all other applicable federal, state county or local regulations and guidelines. It shall be the sole responsibility of the Roof Removal Contractor to assure compliance with all laws and regulations relating to disposal.

B. Packaging: All removed roofing materials specified herein is considered asbestos-containing waste material (ACWM). All ACWM shall be packaged in accordance with the procedures outlined under this Section. All packaged ACWM shall be removed from the roof areas and placed directly into lined roll-offs and/or other approved container. No ACWM shall be allowed to be removed from the roof areas and stockpiled on the ground.

C. All containerized waste shall be shipped from the site directly to the approved waste disposal facility. Containerized waste shall **NOT** be transferred back to the Roof Removal Contractor's yard/facility.

D. OSHA/EPA labeling: Asbestos warning labels having permanent adhesive and waterproof print, or being permanently printed on the roll-offs and/or other approved container, shall be affixed to the outside of all asbestos containers. Labels will be conspicuous and legible and shall contain the following warning:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

E. DOT labeling and marking: A DOT "class 9" shipping label and DOT mark shall be applied to or be printed on each roll-off and/or other approved container.

F. Waste Transportation: All ACWM shall be transported in totally enclosed vehicles or containers that are designed, constructed, and operated to prevent spills, leaks or emissions. All ACWM waste shall be transported in compliance with 40 CFR Part 61 and applicable Department of Transportation (DOT), OSHA and local regulations. Each vehicle transporting asbestos-containing waste shall be marked with asbestos danger signs during loading and unloading of the waste, in accordance with the NESHAP, 40 CFR 61.150.

G. Asbestos waste shipment records: The Roof Removal Contractor shall prepare the waste shipment records for disposal of the ACWM. **All ACWM waste to be disposed of from the site shall be shipped on an approved "Asbestos Waste Shipment Record". A representative from Framingham Public Schools shall sign-off as "Generator" on the Asbestos Waste Shipment Record for each shipment leaving the site.**

H. The following information shall be included on the waste shipment record for each and every load of ACWM transported off-site:

1. The name, address and telephone number of the owner/operator of the facility or dumping ground where asbestos abatement activities have occurred;

2. The quantity and type (friable or non-friable) of the ACWM in cubic meters (cubic yards) and a description of the container used for shipment;
3. The name, address and telephone number of the person who conducted any asbestos abatement activity;
4. The name and telephone number of the disposal site operator;
5. The name and physical location of the disposal site;
6. The date transported;
7. The name, address, and telephone number of the transporter(s);
8. Certification by the owner/operator of the facility or dumping ground where asbestos abatement activities have occurred/where asbestos waste was generated that the contents of each shipment have been characterized, packaged, marked and labeled in accordance with 310 CMR 7.15;
9. Signature of each transporter confirming the contents of each shipment are in all respects in the proper condition for transport according to applicable international, federal, state and local regulations;
10. Signature by the receiving disposal facility confirming that: i) the quantity of ACWM listed on the waste shipment record is the same as the quantity accepted for disposal; and ii) it holds appropriate permits and/or authorizations to accept for disposal ACWM described on waste shipment records.

Note: The final waste shipment records (with signature of acceptance at the landfill) for disposal of ACM from the project site shall be received by the Owner within 30 days of shipment from the site.

3.03 QUALITY CONTROL AND AIR TESTING

A. A final visual inspection by the Consultant shall be performed for all areas where asbestos-containing roofing was removed. **This shall take place prior to new roofing being installed back onto the roof deck.**

C. The Consultant and site supervisor shall sign a "Certificate of Visual Inspection" specifying each work area has met acceptable visual inspection criteria and reveal no visible or suspect asbestos or other remnant debris or wastes generated during the asbestos roof removal work. Should any visible debris be found in the work area, it shall be repeatedly abated/cleaned by the Roof Removal Contractor in accordance with 310 CMR 7.15 until there is no visible debris.

END OF SECTION

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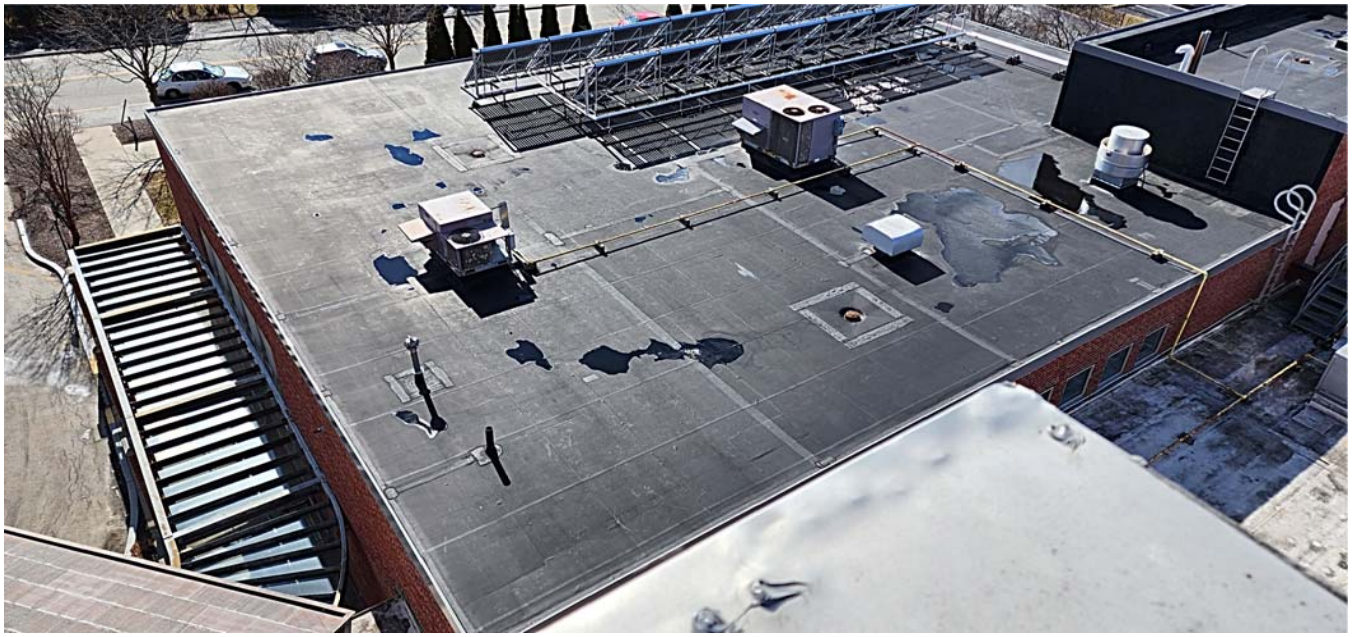
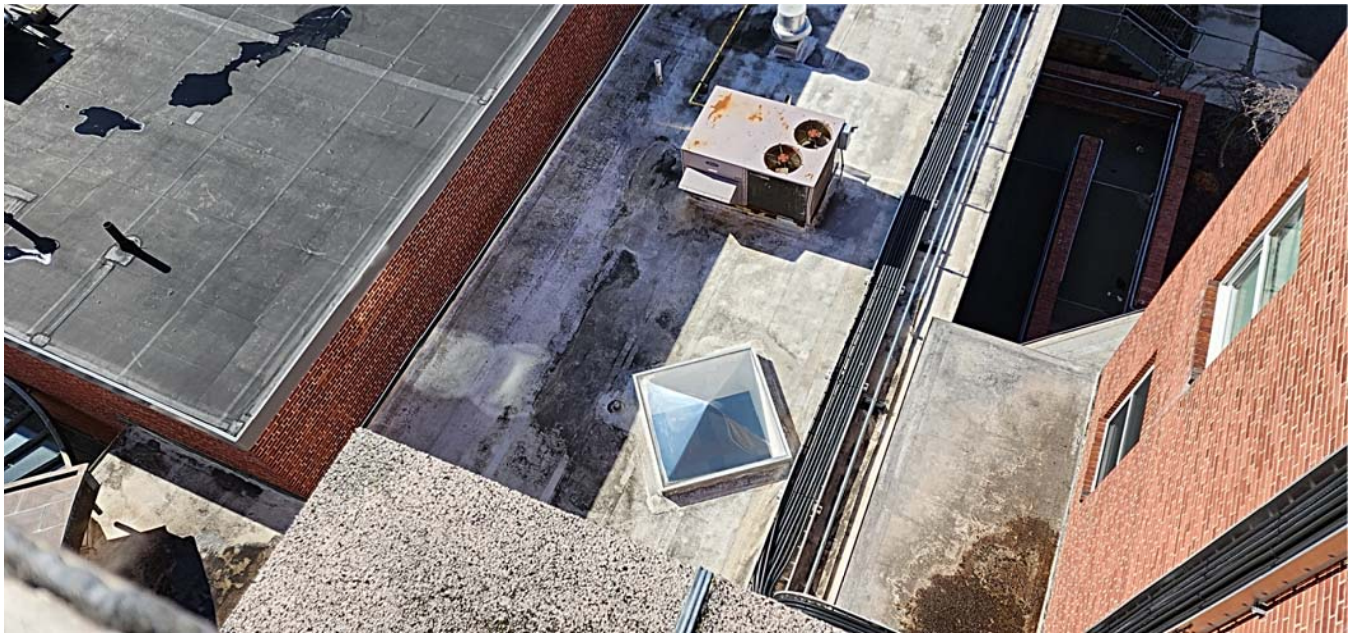
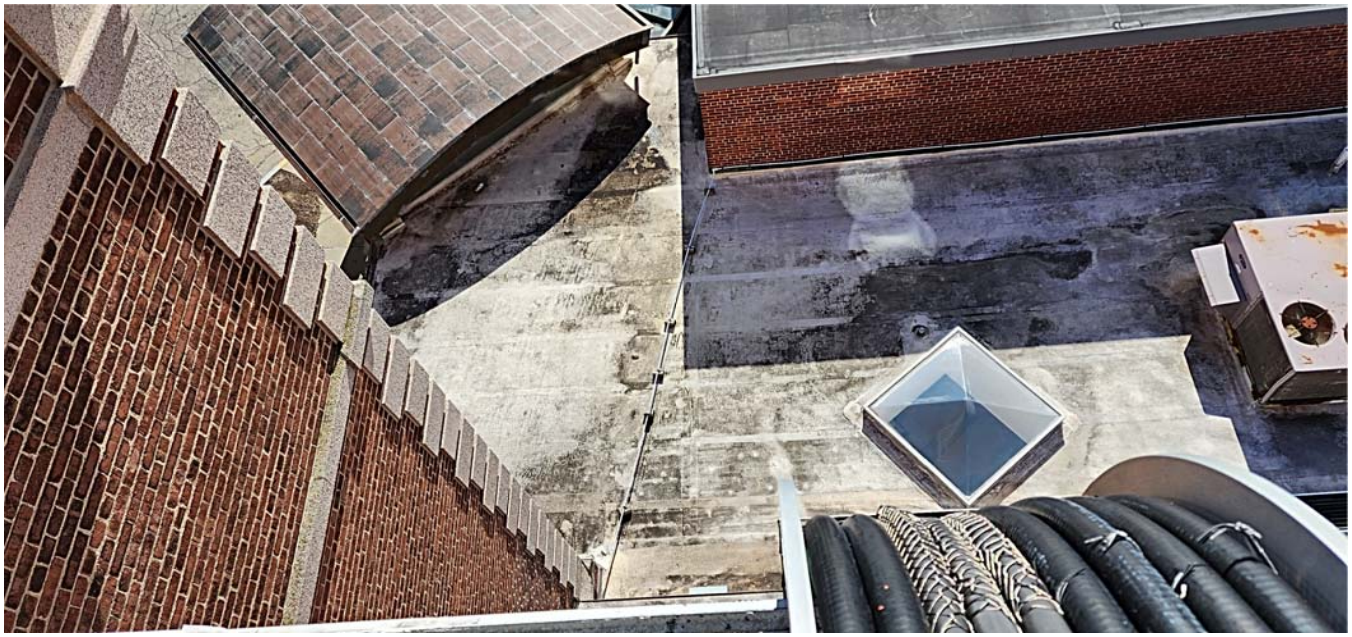
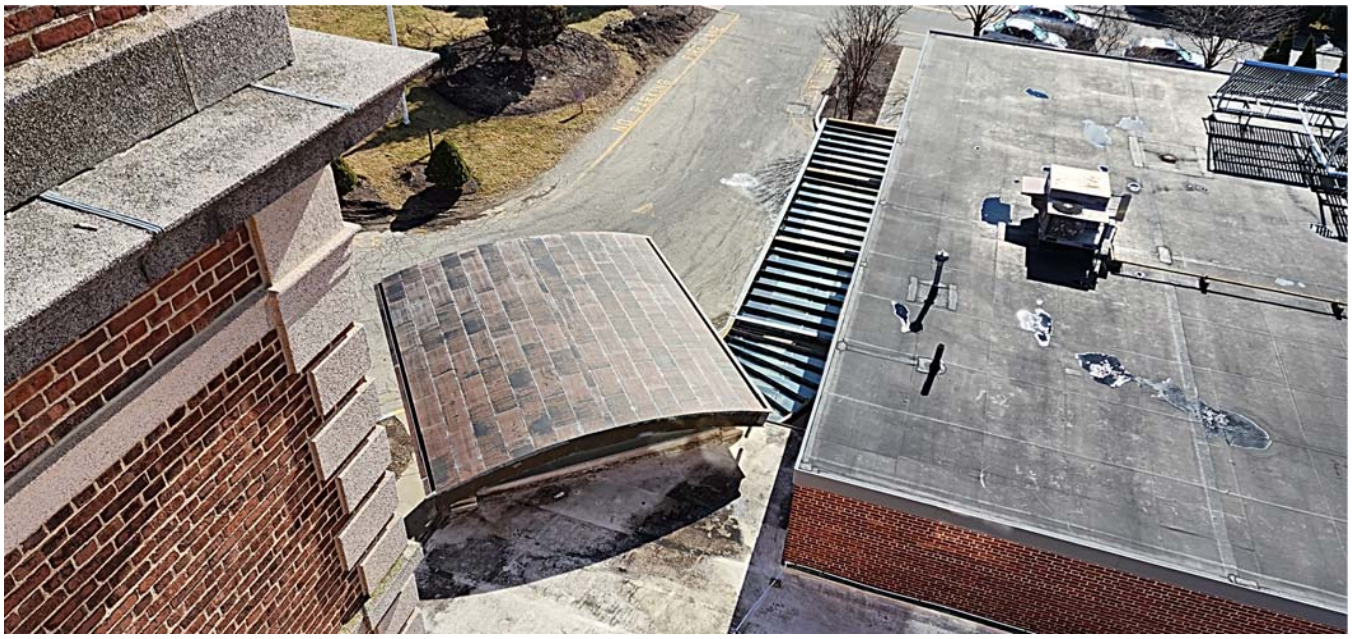
SECTION 02.22.00

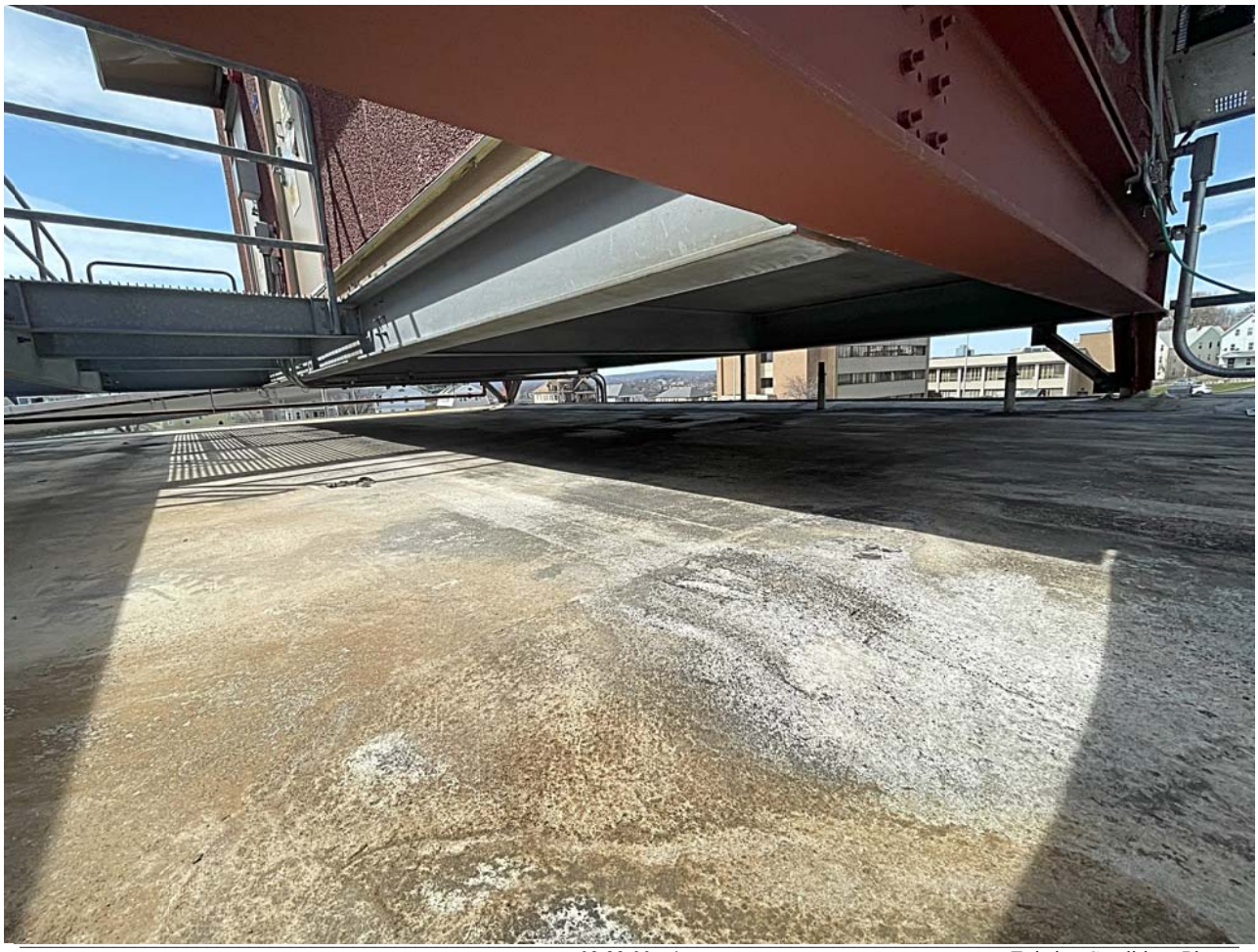
EXISTING CONDITIONS PHOTOS











SECTION 07.54.23

TPO ROOFING

I. PART 1 - GENERAL

1.01 GENERAL

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.

1.02 DESCRIPTION OF WORK

A. **Work included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Demolition of the existing roofing.
2. Preparation of roofing substrates.
3. Insulation.
4. Cover boards.
5. Single-ply roofing.
6. Metal roof edging and copings.
7. Flashings.
8. Walkway pads.
9. Rooftop utility supports.
10. Other roofing-related items specified or indicated on the drawings or otherwise necessary to provide a complete weatherproof roofing system.

B. **Alternates:** Not Applicable.

C. **Items to Be Installed Only:** Install the following items furnished by the trades listed below:

1. None.

D. **Items to Be Furnished Only:** Furnish the following items for installation by the designated Sections:

1. None.

E. **Related Work Specified Elsewhere:** The following items are not included in the Section, and will be performed under the designated Section:

1. 020800 - ASBESTOS ABATEMENT for the demolition procedures for roofing containing asbestos materials.

1.03 REFERENCES

A. Referenced Standards: These standards form part of this specification only to the extent they are referenced as specification requirements. The current version of all referenced standards shall apply.

1. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
2. ASTM C209 - Standard Test Methods for Cellulosic Fiber Insulating Board.
3. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
4. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
5. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient

Temperature Using a Portable Solar Reflectometer.
6. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
7. ASTM D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
8. ASTM D1079 - Standard Terminology Relating to Roofing and Waterproofing.
9. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
10. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
11. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
12. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
13. SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems. (ANSI/SPRI ES-1).

1.04 SUBMITTALS

A. Product Data:

1. Provide membrane manufacturer's printed data sufficient to show that all components of roofing system, including insulation and fasteners, comply with the specified requirements and with the membrane manufacturer's requirements and recommendations for the system type specified; include data for each product used in conjunction with roofing membrane.

2. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.

B. Shop Drawings:

1. Provide the roof membrane manufacturer's standard details customized for this project for all relevant conditions, including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, and drains.

2. For tapered insulation, provide project-specific layout and dimensions for each board.

C. Samples: not required.

D. Specimen Warranty: Submit prior to starting work.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Roofing installer shall have the following:

1. Certification by the membrane manufacturer of having passed the manufacturer's training to be an authorized installer of the specified system. Lack of certification to install the approved system(s) does not constitute justification for substituting the roofing system.

2. At least five years' experience in installing specified system.

B. Pre-Installation Conference: Before start of roofing work, Contractor shall hold a meeting to discuss the proper installation of materials and requirements to achieve the warranty.

1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work, including the roofing manufacturer's field representative.

2. Notify Architect well in advance of meeting.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.

B. Store materials clear of ground and moisture with weather protective covering.

C. Keep combustible materials away from ignition sources.

1.07 WARRANTY

A. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.

B. Installer's warranty: two years from Substantial Completion, including labor and material to restore weathertightness of the roof. Contractor must respond to request for service within 24 hours of notification.

C. Manufacturer's Warranty: no dollar limit coverage for 20 years and 80 mph windspeed, covering leaks caused by ordinary wear and tear from elements, manufacturing defects in any installed product, defective workmanship or windspeed damage up to the speed noted.

II. PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers:

1. Holcim Elevate (formerly Firestone), Nashville, TN. www.holcimelevate.com.
2. Carlisle Syntec Systems, Carlisle, PA https://www.carlislesyntec.com/
3. GAF, Parsippany, NJ www.gaf.com
4. Approved equal systems meeting the performance criteria specified herein.

   (a) Specializing in manufacturing the roofing system to be provided.
   (b) Minimum ten years of experience manufacturing the roofing system to be provided.
   (c) Able to provide a no dollar limit, single source roof system warranty that is backed by corporate assets in excess of one billion dollars.
   (d) ISO 9001 certified.
   (e) Able to provide polyisocyanurate insulation that is produced in own facilities.

2.02 ROOFING SYSTEM DESCRIPTION

A. Roofing System:

1. This specification is for a roofing ***system***. All materials offered by the membrane manufacturer shall be used as part of the system, including but not limited to insulation, coverboard, flexible and metal flashings, copings and edge metal and all adhesives and fasteners.

2. Third-party products not manufactured by the membrane manufacturer will only be considered when accompanied by a document on the membrane manufacturer's letterhead stating that they are acceptable for inclusion in the system warranty.

2.03 MEMBRANE MATERIALS

A. Roofing Membrane: Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer with ASTM D6878, with polyester weft inserted reinforcement and the following additional characteristics:

1. Thickness: 0.060
2. Puncture Resistance: 415 lbf minimum, when tested in accordance FTM 101C Method 2031.
3. Solar Reflectance: 0.79 minimum, when tested in accordance with ASTM C1549.

4. Color: White.

B. Curb and Parapet Flashing: Same material as membrane, with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice; precut to 18 inches wide.

C. Formable Flashing: Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber.

1. Thickness: 0.060 inch
2. Tensile Strength: 1550 psi minimum, when tested in accordance with ASTM D638 after heat aging.
3. Elongation at Break: 650 percent, minimum, when tested in accordance with ASTM D638 after heat aging.
4. Tearing Strength: 12 lbf minimum, when tested in accordance with ASTM D1004 after heat aging.
5. Color: White.

D. Tape Flashing: 5-1/2-inch nominal wide TPO membrane laminated to cured rubber polymer seaming tape, overall thickness 0.065-inch nominal.

E. Pourable Sealer: Two-part polyurethane, two-color for reliable mixing.

F. Seam Plates: Steel with barbs and Galvalume coating; corrosion-resistance complying with FM 4470.

G. Termination Bars: Aluminum bars with integral caulk ledge; 1.3 inches wide by 0.10 inch thick.

H. Cut Edge Sealant: Synthetic rubber-based, for use where membrane reinforcement is exposed.

I. General Purpose Sealant: EPDM-based, one-part, white general-purpose sealant.

J. Molded Flashing Accessories: Unreinforced TPO membrane pre-molded to suit a variety of flashing details, including pipe boots, inside corners, outside corners, etc.

K. Roof Walkway Pads: Non-reinforced TPO walkway pads, 0.156 inch by 30 inches by 50 feet long with patterned traffic bearing surface.

2.04 ROOF INSULATION AND COVER BOARDS

A. Polyisocyanurate Board Insulation: Closed cell polyisocyanurate foam with black glass reinforced mat laminated to faces, complying with ASTM C 1289 Type II Class 1, with the following additional characteristics:

1. Thickness: as indicated on Drawings, in multiple layers of thicknesses to be determined by the insulation manufacturer but not less than 2 layers in any location.

2. Provide tapered insulation where indicated to direct water to drains.

3. Size: 48 inches by 96 inches, nominal.

(a) Exception: Insulation to be attached using adhesive or asphalt may be no larger than 48 inches by 48 inches, nominal.

4. R-Value (LTTR): 1.0-minimum 5.7 R per inch.

5. Compressive Strength: 20 psi when tested in accordance with ASTM C 1289.

6. Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.

7. Recycled Content: 19 percent post-consumer and 15 percent post-industrial, average.

B. High Density Polyisocyanurate Cover Board: Non-combustible, water-resistant high density, closed cell polyisocyanurate core with coated glass mat facers, complying with ASTM D 1623, and with the following additional characteristics:

1. Size: 48 inches by 96 inches nominal.

   (a) Exception: Board to be attached using adhesive or asphalt may be no larger than 48 inches by 48 inches nominal.

2. Thickness: 0.5 inch.

3. R-Value: 2.5 based on ASTM tests C158 and C177.

4. Surface Water Absorption: <3%, maximum, when tested in accordance with ASTM C 209.

5. Compressive Strength: 80psi, when tested in accordance with ASTM 1621.

6. Density: 5pcf, when tested in accordance with ASTM 1622.

7. Mold Growth Resistance: Passed, when tested in accordance with ASTM D 3273.

8. Insulation Fasteners:

   (a) At metal decks: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.

   (b) At concrete decks: insulation adhesive, applied at the rate recommended by the membrane manufacturer for the windspeed required under the warranty specified. Mechanical attachment of the insulation to concrete decks is not permitted.

2.05 METAL ACCESSORIES

A. Metal Roof Edging and Fascia: Two-piece fascia consisting of an extruded aluminum anchor bar with a coated aluminum snap-on fascia cover.

1. Wind Performance:

   (a) Membrane Pull-Off Resistance: 100 lb/ft minimum, when tested in accordance with ANSI/SPRI ES-1 Test Method RE-1, current edition.

   (b) Fascia Pull-Off Resistance: At least the minimum required when tested in accordance with ANSI/SPRI ES-1 Test Method RE-2, current edition.

2. Fascia Face Height: 8-1/2 inches or as noted on drawings.

3. Edge Member Height Above Nailer: 1-1/4 inches.

4. Length: 144 inches.

5. Functional Characteristics: Fascia retainer supports while allowing for free thermal cycling of fascia.

6. Aluminum Anchor Bar: Continuous 6063-T6 alloy aluminum extrusion with pre-punched slotted holes; miters welded; injection molded EPDM splices to allow thermal expansion.

7. Snap-on Fascia Cover: 0.040" aluminum, kynar coated, color selected by Owner

8. Fasteners: Factory-provided corrosion resistant fasteners, with drivers; no exposed fasteners permitted.

9. Special Shaped Components: Provide factory-fabricated pieces necessary for complete installation, including miters, scuppers, and end caps; minimum 14 inch long legs on corner pieces.

2.06 ACCESSORY MATERIALS

A. Wood Nailers: PS 20-dimension lumber, Structural Grade No. 2 or better Southern Pine, Douglas Fir; or PS 1, APA Exterior Grade plywood; pressure preservative treated.

1. Width: 3-1/2 inches nominal minimum, or as wide as the nailing flange of the roof accessory to be attached to it.

2. Thickness: Same as thickness of roof insulation.

B. Rooftop Utility Supports ("Caddy Supports"): replace all wood sleepers supporting rooftop utilities with Eaton "Dura-Blok" or approved equal pre-fabricated supports constructed of 100% recycled rubber and polyurethane prepolymer with a uniform load capacity of 500 pounds per linear foot of support, meeting the following:

1. Width: as required for utility being supported
2. Height: as required by taper of roof and height of existing utility.
3. Include integral through-bolted unistrut galvanized per ASTM A653 for securing utilities to support
4. Attaching hardware: Zinc-plated threaded rod, nuts and attaching hardware per ASTM B633.

III. PART 3 INSTALLATION

3.01 GENERAL

A. Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for the specified roofing system. Where manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards. Comply with federal, state, and local regulations.

B. Obtain all relevant instructions and maintain copies at project site for duration of installation period.

C. Do not start work until Pre-Installation Notice has been submitted to manufacturer as notification that this project requires a manufacturer's warranty.

D. Perform work using competent and properly equipped personnel.

E. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

F. Install roofing membrane only when surfaces are clean, dry, smooth, and free of snow or ice; do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application; consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 degrees F.

G. Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.

1. Protect from spills and overspray from bitumen, adhesives, sealants, and coatings.

2. Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.

3. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.

H. Until ready for use, keep materials in their original containers as labeled by the manufacturer.

I. Consult membrane manufacturer's instructions, container labels, and Safety Data Sheets (SDS) for specific safety instructions. Keep all adhesives, sealants, primers, and cleaning materials away from all sources of ignition.

3.02 DEMOLITION

A. Protect existing rooftop equipment from damage during roofing demolition. In particular, protect the existing solar hot-water tubing system on the roof.

B. Where details call for new membrane to run up and over fan curbs requiring the fan to be lifted, schedule the shutdown of the fan as specified in 01.50.00 - TEMPORARY FACILITIES AND CONTROLS. Retain licensed electricians to disconnect/reconnect any electrical wiring.

C. Remove the existing roofing down to the roof deck. Materials and thicknesses vary, and include EPDM roofing installed over the original built-up roofing in some locations. Refer to Section 02.08.00 - ASBESTOS ABATEMENT and remove asbestos-containing materials accordingly.

1. Asphalt mopped onto the roof deck can remain, but any ballast present must be removed.

D. Remove all flashings, edge metal and parapet caps associated with the roofing system. Segregate materials for recycling where possible.

E. Transport demolition debris to dumpsters on grade by Lull or lift. Do not throw materials from the roof.

F. Where wet decks are revealed by demolition, dry decks by fan or blower prior to installing new roofing. Torches may not be used to dry decks.

G. Do not remove more roofing than can be replaced that same day. Coordinate sequence of removal to allow night seals to flash in the direction of water flow to the drains.

3.03 EXAMINATION

A. Examine roof deck to determine that it is sufficiently rigid to support installers and their mechanical equipment, and that deflection will not strain or rupture roof components or deform deck.

B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.

C. Examine roof substrate to verify that it is properly sloped to drains.

D. Verify that the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions; start of work constitutes acceptable of project conditions and requirements.

3.04 PREPARATION

A. Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.

B. Prior to proceeding, prepare roof deck so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease, and other materials that may damage the membrane.

C. Fill all surface voids in the immediate substrate that are greater than 1/4 inch (6 mm) wide with fill material acceptable insulation to membrane manufacturer.

D. Seal, grout, or tape deck joints, where needed, to prevent seepage of foreign materials into building.

3.05 INSULATION AND COVER BOARD INSTALLATION

A. Install insulation in configuration and with attachment method specified in Part 2.

B. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.

C. Lay roof insulation in courses parallel to roof edges. Where multiple boards are used to achieve the overall thickness, rotate subsequent layers and stagger joints.

D. Neatly and tightly fit insulation to all penetrations, projections, and nailers, with gaps not greater than 1/4 inch. Fill gaps greater than 1/4 inch with acceptable insulation. Do not leave the roofing membrane unsupported over a space greater than 1/4 inch.

E. Mechanical Fastening: Using specified fasteners and insulation plates engage fasteners through insulation into deck to depth and in pattern required by the membrane manufacturer for the specified warranty, or the following as a minimum:

1. Field: 8 fasteners
2. Perimeter: 12 fasteners
3. Corners: 16 fasteners

F. Adhesive Fastening: apply beads of insulation adhesive at the rate and spacing indicated on the approved shop drawings, or as indicated below at a minimum. Walk-in or roll boards as recommended by the membrane manufacturer. Allow adhesive to set up before proceeding with membrane installation.

1. Field: 12" on center
2. Perimeter: 6" on center
3. Corners: 4" on center

3.06 SINGLE-PLY MEMBRANE INSTALLATION

A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.

B. Lay out the membrane pieces so that field and flashing splices are installed to shed water.

C. Install membrane without wrinkles and without gaps or fishmouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.

D. Fully adhere membrane to the substrate, using the manufacturer’s recommended bonding adhesive. Apply adhesive to substrate and membrane, allow adhesive to tack and roll membrane onto substrate. Broom membrane to substrate to achieve full embedment and bond.

E. Edge Securement: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2 in 12 inches (1:6) using mechanically fastened reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.

1. Exceptions: Round pipe penetrations less than 18 inches in diameter and square penetrations less than 4 inches square.

F. Metal edging is not merely decorative; ensure anchorage of membrane as intended by roofing manufacturer.

3.07 FLASHING AND ACCESSORIES INSTALLATION

A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.

B. Metal Accessories: Install metal edgings, gravel stops, and copings in locations indicated on the drawings, with horizontal leg of edge member over membrane and flashing over metal onto membrane.

1. Follow roofing manufacturer's instructions.

2. Remove protective plastic surface film immediately before installation.

3. Install water block sealant under the membrane anchorage leg.

4. Flash with manufacturer's recommended flashing sheet unless otherwise indicated.

5. Where single application of flashing will not completely cover the metal flange, install additional piece of flashing to cover the metal edge.

6. If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, install an additional piece of self-adhesive flashing membrane over the metal lap to the top of the gravel stop; apply seam edge treatment at the intersections of the two flashing sections.

7. When the roof slope is greater than 1:12, apply seam edge treatment along the back edge of the flashing.

C. Flashing at Walls, Curbs, and Other Vertical and Sloped Surfaces: Install weathertight flashing at all walls, curbs, parapets, curbs, skylights, and other vertical and sloped surfaces that the roofing membrane abuts to; extend flashing at least 8 inches high above membrane surface.

1. Use the longest practical flashing pieces.

2. Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer's recommendations.

3. Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.

4. Provide termination directly to the vertical substrate as shown on roof drawings.

D. Roof Drains:

1. Taper insulation around drain to provide smooth transition from roof surface to drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope; slope not to exceed manufacturer's recommendations.

2. Position membrane, then cut a hole for roof drain to allow 1/2 to 3/4 inch of membrane to extend inside clamping ring past drain bolts.

3. Make round holes in membrane to align with clamping bolts; do not cut membrane back to bolt holes.

4. Apply sealant on top of drain bowl where clamping ring seats below the membrane

5. Install roof drain clamping ring and clamping bolts; tighten clamping bolts to achieve constant compression.

E. Flashing at Penetrations: Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.

F. Pipes, Round Supports, and Similar Items: Flash with specified pre-molded pipe flashings wherever practical; otherwise use specified self-curing elastomeric flashing.

G. Pipe Clusters and Unusual Shaped Penetrations: Provide penetration pocket at least 2 inches deep, with at least 1 inch clearance from penetration, sloped to shed water.

H. Structural Steel Tubing: If corner radii are greater than 1/4 inch and longest side of tube does not exceed 12 inches, flash as for pipes; otherwise, provide a standard curb with flashing.

3.08 ROOFTOP UTILITY SUPPORTS

A. Replace all wood sleepers and curbs supporting existing rooftop utilities with specified rubber utility supports.

B. Space supports at the utility owner's recommended spacing or 6'-0" on center, whichever spacing is greater.

C. The new roof utilizes tapered insulation which may result in the roof plane being at a different elevation than the original. Select supports of a height appropriate to fully support the utility, or provide adjustable height threadded rod standoffs to fully support the utility.

3.09 FINISHING AND WALKWAY INSTALLATION

A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.

B. Walkway Pads: Adhere to the roofing membrane in maximum 10 foot long sections, spacing each pad at minimum of 1.0 inch and maximum of 3.0 inches from each other to allow for drainage.

1. If installation of walkway pads over field fabricated splices or within 6 inches of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6 inches on either side.

2. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.

3.10 FIELD QUALITY CONTROL

A. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e., not a salesperson).

B. Perform all corrections necessary for issuance of warranty.

3.11 CLEANING

A. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.

B. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.

C. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

3.12 PROTECTION

A. Where construction traffic must continue over finished roof membrane, provide durable protection, and replace or repair damaged roofing to original condition.

END OF SECTION

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SECTION 08.62.00

UNIT SKYLIGHTS

I. PART 1 - GENERAL

1.01 GENERAL

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.

1.02 DESCRIPTION OF WORK

A. **Work included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Dome unit skylight with formed curb counterflashing for mounting on site-built or prefabricated roof curbs, for flat, low-slope and steep-slope roofing applications.

B. **Alternates:** Not Applicable.

C. **Items to Be Installed Only:** Install the following items furnished by the trades listed below:

1. None.

D. **Items to Be Furnished Only:** Furnish the following items for installation by the designated Sections:

1. None.

E. **Related Work Specified Elsewhere:** The following items are not included in the Section, and will be performed under the designated Section:

1. 07.54.23 - TPO Roofing, for wood blocking associated with skylight curbs.

1.03 REFERENCE STANDARDS

A. General: Applicable edition of references cited in this Section is current edition published on date of issue of Project specifications, unless otherwise required by building code in force.

B. American Architectural Manufacturers Association (www.aama.net), Window & Door Manufacturers Association (www.wdma.com).

1. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/ Specification for Windows, Doors, and Skylights (NAFS)

2. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products

3. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum and Panels

C. ASTM International: www.astm.org:

1. ASTM D1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastic
2. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings
3. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
4. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and

Curtain Walls by Uniform Static Air Pressure Difference

5. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques
6. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
7. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes

D. Code of Federal Regulations:

1. 29 CFR 1910.29 - Occupational Safety and Health Standards: Fall protection systems and falling object protection - criteria and practices.

1.04 COORDINATION

A. Coordinate and adjust dimensions, locations, and details of existing skylight curbs with unit skylight curb flashings. Verify requirements for roofing system terminations.

B. Coordinate unit skylight interior termination locations with structural layout, ceiling layouts, and other ceiling-mounted items.

1.05 ACTION SUBMITTALS

A. Product Data: For unit skylights. Include standard construction details, product performance characteristics, and material descriptions, dimensions of individual components and profiles, and finishes.

1. Include test reports of qualified independent testing agency or third party certificates verifying compliance with performance requirements.

B. Shop Drawings: For unit skylight work. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work.

1. Lighting photometric study indicating compliance with performance requirements in accordance with IESNA. Include layout, spacing criteria and foot-candle report.

1.06 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.07 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data.

1.08 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer listed in this Section with minimum 30 years' experience in the US manufacturing similar products in successful use on similar projects and able to provide unit skylights meeting requirements.

B. Installer Qualifications: Installer to be trained by or experienced with the installation of the unit skylight to be provided. If the installer has no experience, a manufacturer’s rep will be required to attend a pre-installation meeting to review proper installation techniques for a warrantied installation.

1.09 WARRANTY

A. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of skylights that fail in materials or workmanship under normal use within specified warranty

period.

1. Failures include, but are not limited to, the following:
2. Deterioration of metals, metal finishes, dome, and other materials beyond normal weathering.
3. Breakage of polycarbonate glazing.
4. Product leaks.

B. Warranty Period:

1. 15 Years: Polycarbonate dome skylights including water penetration and hail breakage for hailstones 2 inches and less in diameter. Mill finished aluminum skylight frames.

2. 10 Years: Yellowing of acrylic and polycarbonate skylight domes.

3. 5 Years: Acrylic and impact modified acrylic dome skylights, skylight model CDS with polycarbonate dome, aluminum curbs, external safety cage, internal safety screen accessory, internal security bars accessory, ventilation curb extension.

4. 1 Year: Steel curbs

II. PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide products of VELUX America LLC, Greenwood, SC 29648.

B. Substitutions: Equal products meeting or exceeding the criteria specified herein will be permitted.

2.02 DOME UNIT SKYLIGHT

A. System Description: Dome-style, curb mounted fixed skylight utilizing extruded aluminum frame counter-flashing with welded corners, a PVC inner frame allowing condensation drainage, structural sealant, integral double sided insulated aluminum curb and accessories, as required to meet installation and performance requirements indicated. Dome skylights shall be suitable for installation on flat roofs.

B. Acceptable Products:

1. VELUX America LLC, Model CMD-3 Dynamic Dome Skylight.

2. Approved equal meeting the criteria specified herein.

C. Dome Construction: Constructed of three layers of polycarbonate sheet, formed to a bubble or pyramidal profile, with interstitial airspace between, sealed with gasketing material.

1. Minimum sheet thickness: 0.118 inches.
2. Outer layer to have integral UV protective material.
3. Innermost layer to have a light-diffusing coating as required to meet SHGC and Haze requirements.

D. Aluminum Frame Counter-flashing: Maintenance-free, extruded aluminum, grade 6063-T6, 0.08 inch thick with mill finish. Counter-flashing frames completely welded in corners and counter flashes curb a minimum of 1.625 inches. Provide aluminum frame with at least 0.5 inch continuous ledge on each side of the skylight that is a pinch free access for stacking, manual transportation and mounting of skylights.

1. Unit Size: nominal 72" x 72" to fit existing curb.

E. 100% Thermally Broken PVC inner-frame for Condensation Drainage: Factory applied white PVC

inner-frame assembly providing a thermal break weather seal and drainage for condensation. The inner-frame design allows positive condensation to the exterior of the curb without exposed drainage openings in the aluminum frame that can introduce air infiltration into the skylight. The PVC inner-frame construction consists of coextruded fins allowing for a dry installation of skylight to the curb, eliminating weather seal strips or caulking at the top of the curb.

F. Structural Sealant: Factory applied sealant, bonding the dome to the aluminum frame and suitable for external exposure.

2.03 CURB

A. Reuse existing and pad as required to secure new skylight.

2.04 PERFORMANCE REQUIREMENTS

A. Unit Skylight Standard, Dynamic Dome model[s] [CMD2] [and] [DMD2] certified to AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS-17 or previous) as follows:

1. Design Pressure (DP): Minimum DP = +/- 30 psf. Dome shall not invert at positive design pressure.
2. Water Test Pressure: Minimum 15 psf with no leakage at 5 gallons per minute spray rate.
3. Air Leakage Rate: Maximum 0.061 cfm/ft2

B. Daylighting: Provide daylighting photometric performance comparable to basis of design product at layout indicated, based upon daylighting profile of March 21, 9:00 am local time, at Project location by simulation in accordance with IESNA guidelines.

C. Windborne-Debris Resistance:

1. Provide unit skylights capable of resisting impact from windborne debris, based on the pass/fail criteria as determined from testing glazed units representative of those specified, according to ASTM E 1886 and ASTM E 1996. Missile Level D, and +80/-80 psf cycle pressure.

D. Fire Testing for Roof Assemblies with Fire Classifications: Polycarbonate unit skylight tested in accordance with and listed as passing Class A Burning Brand test as described in ASTM E 108.

E. Dome Burn Rate: Tested in accordance with ASTM D 635 with a documented rating of CC1.

F. Dome Smoke Density Rating: Testing in accordance with ASTM D 2843 with a documented performance value less than or equal to 75.

G. Dome Self-Ignition Temperature: Tested in accordance with ASTM D 1929 with a documented performance value greater than or equal to 650 degrees Fahrenheit.

H. Dome Hail Resistance: Exterior dome tested in accordance with Factory Mutual 4430 to meet severe hail with 2.0 inch ice balls.

I. Energy Performance ratings as follows:

1. Thermal Transmittance: NFRC 100 maximum U-factor: 0.50
2. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC: 0.40
3. Percent Haze: ASTM D 1003: 90% - 100%

J. Fall Protection Standard Compliance: 29 CFR 1910.29: Skylight dome tested to support a minimum of 400 pounds over 1 square foot of the surface.

2.05 MATERIALS

A. Joint Sealants: as recommended by the skylight manufacturer for the application.

B. Mastic Sealants: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

2.06 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

III. PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the work.

B. Proceed with unit skylight installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install unit skylights in accordance with manufacturer's written instructions and approved shop drawings. Coordinate installation of units with installation of substrates, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that finished installation is weather tight.

1. Adjust existing curb with new pressure treated wood blocking to manufacturer’s required dimensions.

2. Anchor unit skylights securely to existing curb.

B. Where metal surfaces of unit skylights will contact incompatible metal or corrosive substrates, including preservative-treated wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation recommended in writing by unit skylight manufacturer.

C. For custom flashings, install unit skylight curb counter-flashing to produce weatherproof seal with curb and overlap with roofing system termination at top of curb.

3.03 FIELD QUALITY CONTROL

A. Work will be considered defective if it does not pass inspections.

B. Additional testing and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Prepare inspection reports.

3.04 CLEANING AND PROTECTION

A. Clean exposed unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

B. Replace glazing that has been damaged during construction period.

C. Protect unit skylight surfaces from contact with contaminating substances resulting from construction operations.

END OF SECTION