**ADDENDUM B – March 28, 2019**

From: Tecton Architects, PC

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To: Prospective Bidders

This Addendum forms part of the Contract Documents and modifies the Construction Documents dated March 8, 2019, with amendments and additions noted below, for the Patio Roof Replacement at the Ocean Avenue LEARNing Academy, Ocean Avenue, New London, CT.

Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.

This Addendum consists of 4 pages and the following modifications:

**ATTACHMENTS**

1. **Non-Mandatory Pre-Bid Conference Sign-In Sheet**
2. **Drawing Sheet R1.03 ROOF SECTIONS AND DETAILS**
3. **Specification Section 07 53 23 ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING:**

**CHANGES TO SPECIFICATIONS**

4. **07 53 23 ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING:** Specification section reissued to clarify fastening of EPDM Membrane to concrete deck (adhered) and rigid insulation manufacturer.

**CHANGES TO DRAWINGS**

5. **R1.03 ROOF SECTIONS AND DETAILS:** Drawing reissued to provide additional information for railing assembly.

**WRITTEN CLARIFICATIONS**

6. **Question:** Is the intent to have the Railings dipped and then factory finished? Or field finished after galvanizing?
    a. **Answer:** Intent is to field-finish.
7. **Question:** ISO is above the EPDM, is the ISO specified water / weather resistant?
    a. **Answer:** Refer to revised specification section 07 53 23. Insulation is provided above EPDM.

8. **Question:** Bid date is still 4-3-2018 @ 10:00AM
    a. **Answer:** Yes.
9. **Question:** If the railings are field painted the intent is to go with ONE color—Correct? If not please send details showing a schedule of different colors?
    a. **Answer:** Correct, one color is to be field-applied.
10. **Question:** Painting intent color is to match the building—similar to the color of the existing railing-correct? If it is custom please specify make, #, sheen, etc.
    a. **Answer:** Correct, no custom color schemes or variations are contemplated.
11. **Question:** The existing pavers are we to discard or does the owner want for future?
    a. **Answer:** Per Specification Section 02 41 19 (1.02)(A)(4), concrete patio pavers are to be palletized for Owner's reuse.
12. **Question:** Can we offer voluntary VE items?
    a. **Answer:** Yes.
13. **Question:** Do the stair railings get painted?
    a. **Answer:** Yes, per drawing R1.03.
14. **Question:** Existing pavers we palletize and wrap and give to owner-Correct?
    a. **Answer:** Correct.
15. **Question:** No cleaning of existing pavers prior to doing #10-correct?
    a. **Answer:** Correct.
16. **Question:** Project intent is to Furnish and Install all New Pavers-correct?
    a. **Answer:** Correct.
17. **Question:** All wood + PVC moldings, etc., gets a finish-correct? Intent is to Match existing (1) color-correct? PVC Molding by finished white and do not paint?
    a. **Answer:** All trim to be field painted one color to match existing painted trim.
18. **Question:** Color scheme is simple IE(railings-1 color, if redwood gets painted – 1 color)-Correct? (As an example-we want to make sure the intent is not to paint every other clap board or railing a different color)
    a. **Answer:** One paint color will be selected to match existing painted trim.
19. **Question:** K3/R1.01 Estimators are asking how to seal EPDM to existing stair/Stringer?
    a. **Answer:** Refer to detail K11/R1.03. Fully adhere roof membrane around stringers. Provide any required membrane flashing to insure a weathertight installation.
20. **Question:** Do you know what color paver the owner is selecting?
    a. **Answer:** (1) Color will be selected from manufacturer's standard color line.

21. **Question:** Is the selection of SofTILE Pavers going to be all one color or a pattern with several different colors? If so can we get a drawing?
    a. **Answer:** (1) Color will be selected from manufacturer's standard color line.
22. **Question:** E5/R1.03 AT Storefronts=Looks like we have 6" from Structural Deck to Fin Top of Paver/Fin Floor- The code is R30 and you are showing R15 or 4" of insulation and then SofTiles (2") directly on insulation-correct/Please advise?
    a. **Answer:** The intent of roof replacement is to replace the existing insulation R-Value in-kind.
23. **Question:** The intent is to put 4" of insulation on the existing slab (no tapered) correct?
    a. **Answer:** Correct.
24. **Question:** Do we pull a permit or Owner? If us does the owner pay and we obtain? Or do we Obtain and pay?
    a. **Answer:** Contractor is responsible for obtaining and paying for permit.
25. **Question:** What is the composition of the Existing Roofing to be removed? BUR? EPDM?
    a. **Answer:** EPDM roof under paver system.
26. **Question:** If BUR on Conc Deck, are we required to remove ALL Residual asphalt and or membrane materials stuck to deck?
    a. **Answer:** EPDM is the roofing at the patio. Contractor is responsible for removing all existing material for a suitable installation of new material.
27. **Question:** Have Test Core been done to identify the thickness of material to be removed?
    a. **Answer:** No.
28. **Question:** Has the Existing Roofing System been tested for Asbestos containing materials?
    a. **Answer:** No. Owner will be responsible to testing and removing ACM.
29. **Question:** Please provide an Elevation of New Railing System indicating Post Spacing and a Detail of typical Post Mounting requirements. Details shown on R1.03 and specifications do not provide adequate information for misc. metals sub-contractor to price out.
    a. **Answer:** Post spacing to be 4' on center maximum, refer to revised sheet R1.03.
30. **Question:** There is a note on R1.02 that indicates to "install new metal flashing along wall where former flashing was removed". Typical Rising Wall Detail B3/R1.03 does not show any new or existing Metal counter flashings?
    a. **Answer:** Design intent is to maintain existing flashing component that may be under the existing storefront system (existing storefront system is not scheduled to be removed). Provide new in-kind flashing where it

can be replaced, ie: along existing brick walls & counterflashing not under existing storefront system. Match existing flashing types.

31. **Question:** Specification Section 075323;3.06;G+H indicates insulation to be Mechanically Fastened to deck with Cover Board Both Mechanically Fastened and Adhered at the same time. Details on R1.03 indicate a Concrete Slab with the EPDM Membrane Adhered to the existing concrete deck and the insulation and cover board and Pavers on top of the Membrane (IRMA). Are we to Mechanically Fasten thru Insulation, Membrane and into the concrete deck as Specified? Typically in and IRMA configuration the membrane would either be loose laid or adhered to concrete roof deck with the Insulation pack and cover board loose laid with pavers or stone used as ballast to hold assembly down.
    a. **Answer:** Refer to revised specification section 07 53 23. EPDM is to be adhered to concrete deck with insulation and pavers to be loose-laid above membrane.

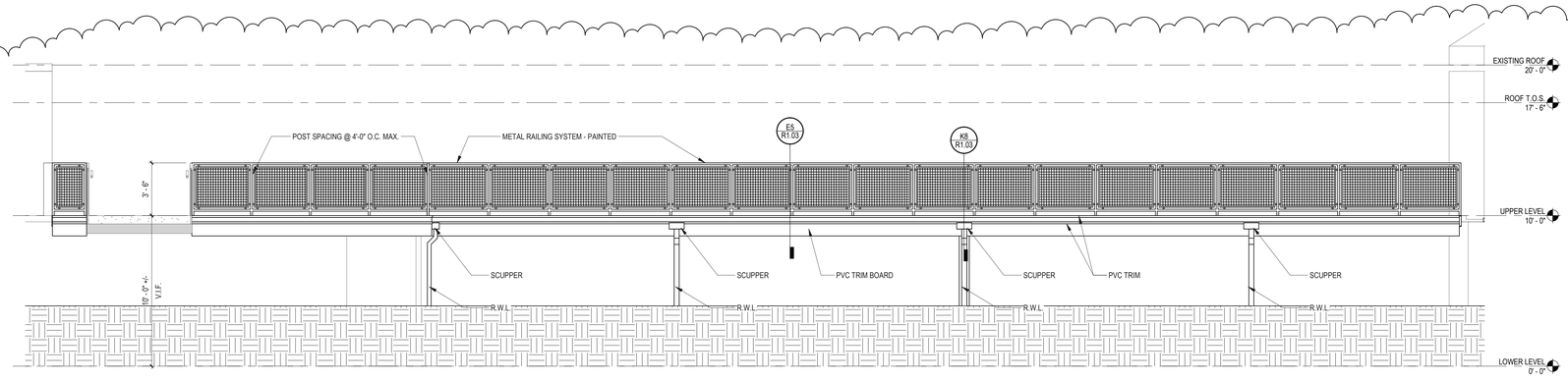
**END OF ADDENDUM B**

LEARN PATIO ROOF REPLACEMENT

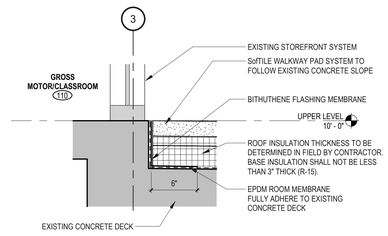
PRE-BID CONFERENCE 03/21/19 9:00 AM

SIGN-IN SHEET

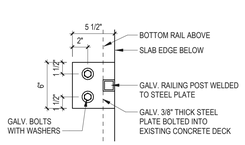
| NAME | COMPANY | CONTACT INFO |
| --- | --- | --- |
| JUSTIN HOPKINS | TECTON ARCHITECTS | justinh@tectonpc.com |
| GARY Cymbal | SSS | |
| Bill Reiss | Riversend | Riversend Construction @Yahoo.Com |
| (Tommy Mattutini See Card) | Silktown | chuck@Silktown Roofing.com |
| Francisco Pagan | Shoreline Restoration | shorelinerestoration@comast.Net |



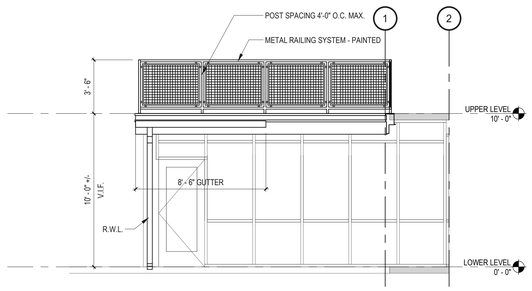

B12 METAL RAILING SOUTH ELEVATION
1/4" = 1'-0"



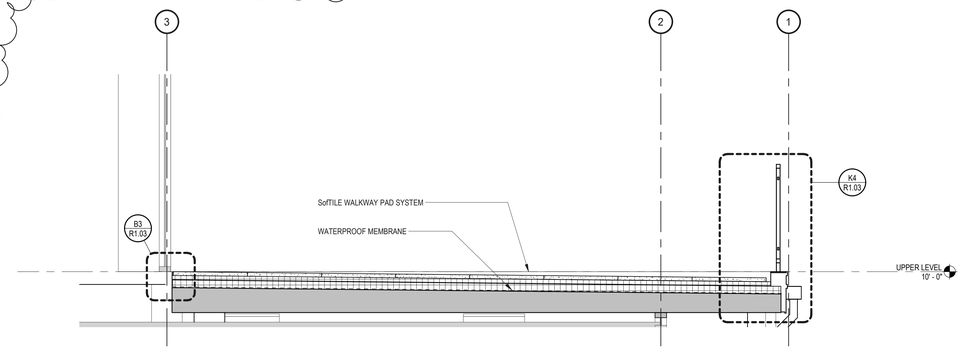

B3 SECTION DETAIL @ FLASHING
1 1/2" = 1'-0"



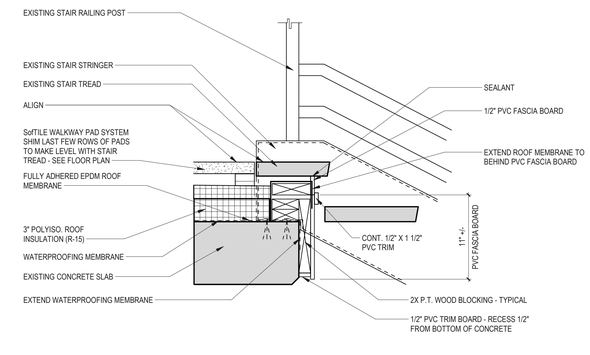

E11 PLAN DETAIL @ RAILING POST
1 1/2" = 1'-0"



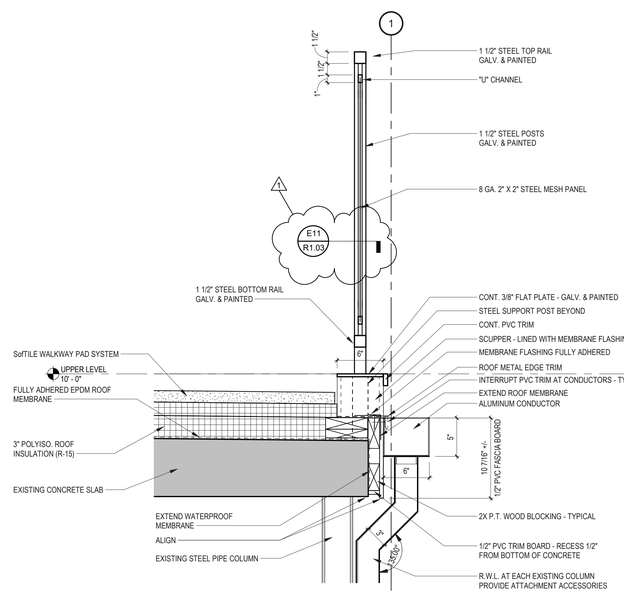

E9 METAL RAILING WEST ELEVATION
1/4" = 1'-0"



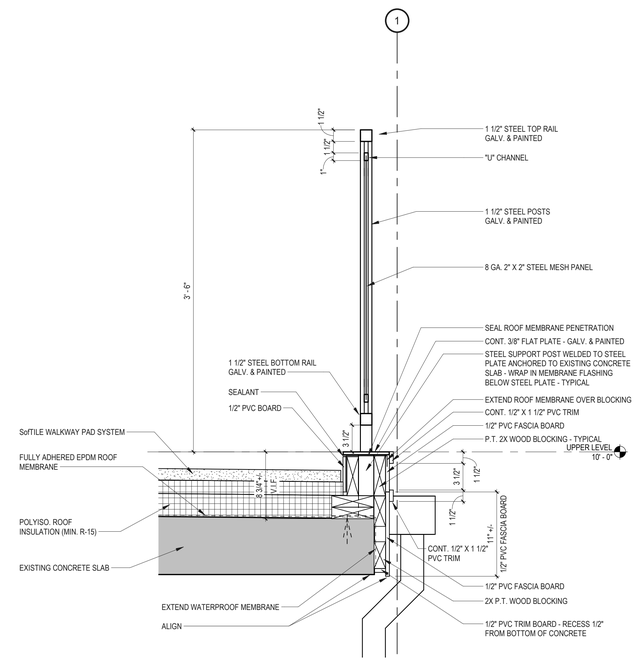

E5 PATIO ROOF SECTION
1/2" = 1'-0"




K11 SECTION DETAIL @ EXISTING TOP STAIR TREAD
1 1/2" = 1'-0"




K8 SECTION DETAIL @ SCUPPER
1 1/2" = 1'-0"




K4 SECTION @ GUARDRAIL SUPPORTS
1 1/2" = 1'-0"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Client/ Contractor

LEARN Regional Educational Service Center

44 Hatchetts Hill Road
Old Lyme, CT 06371

Project

Ocean Avenue LEARNing Academy

582 Ocean Avenue
New London, CT 06320

Key Plan

Seals
CONSTRUCTION DOCUMENTS

Issues

| Date | Description |
|---|---|

Revisions

| No. | Date | Description |
|---|---|---|
| 1 | 3/28/2019 | Addendum B |

Drawing Title
ROOF SECTIONS AND DETAILS

| | |
|---|---|
| Issue Date: | 03/08/19 |
| Project No: LRN01AR | Scale: As indicated |
| Project Manager: JH | Production Leader: CR |
| Project Architect: JH | Peer Reviewer: |

Drawing Number
R1.03

3/28/2019 11:07:09 AM C:\Users\CesarR\Documents\LRN01AR_ARCHITECTURAL_CENTRAL_R18_cesarr.rvt

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.01A, entitled "Related Documents."

### 1.02 SUMMARY

A. Section includes the following:

1. Adhered EPDM membrane roofing system.
2. Roof insulation.
3. Membrane base flashing.
4. Flashing for roof drains, vent piping, and all roof penetrations.
5. Furnish and install all wood nailers, blocking, and curbs.
6. All hoisting and scaffolding necessary for the completion of the roofing work.
7. Waste disposal.

B. Related Sections:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
2. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
3. Division 07 Section "Joint Sealants."
4. Division 22 Sections for installation of roof drains and related piping.

### 1.03 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

### 1.04 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.

1. Typical details including but not limited to scuppers, copings, fascia, penetrations, curbs, and roof drains.
2. Base flashings and membrane terminations.
3. Tapered insulation layout, including slopes.

4. Insulation fastening patterns.

C. Samples for Verification: For the following products:

1. 6-by-6-inch square of sheet roofing, of color specified, including T-shaped side and end lap seam.
2. 6-by-6-inch square of roof insulation.
3. 6-inch length of metal termination bars.
4. Six insulation fasteners of each type, length, and finish.
5. Six roof cover fasteners of each type, length, and finish.
6. 18-inch length of through-wall and counterflashing assembly. Include sample of fully soldered end dam, inside and outside corners, for the through-wall assembly.

## 1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and manufacturer.

B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system. Certification is required to be issued by manufacturer not less than one year prior to start of work.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of meeting performance requirements.
2. Submit certificate of roof membrane sheet thickness specified, signed by manufacturer's control manager. ASTM +/- tolerance for membrane thickness is not acceptable.
3. Submit cover letter provided by Manufacturer describing the system assembly components, fastening patterns and other details indicating approval of the project's design requirements.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

E. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.

F. Field quality-control reports.

G. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

H. Warranties: Sample of special warranties.

## 1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For membrane roofing system to include in maintenance manuals.

## 1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

1. The Installer shall be doing business under the same name for a minimum of 5 years prior to January 1, 2019, and have applied similar roofing systems on 10 or more projects which have been completed for more than two years.

    a. Furnish names and addresses of each project within 100 miles of Project.

C. Installer's Field Supervision: Maintain a full-time supervisor/foreman on-site during times that the roofing installation is in progress, who is experienced in installing roofing systems similar to type and scope required for this Project, and who is certified by the manufacturer as an approved applicator of the roofing system.

D. Technical Field Monitor: Arrange with an independent roofing consultant to provide the services of an on-site, full-time technical field monitor to observe the total roofing system installation, and to provide the following:

1. Field Supervision to be performed by a Registered Roof Observer certified by RCI, Inc.
2. Confirm that the Roofing Contractor's applicators have completed the membrane manufacturer's training program.
3. Monitor quality control over the total roofing operation, including but not limited to, wood blocking installation, roofing installation, metal work, flashing, and manufacturer supplied roofing system components and accessories required for the complete installation of the roofing system.

    a. Confirm that all work is in compliance with the Contract Documents and installed as required to obtain warranty.

4. Monitor the quality of the seams by taking a minimum of three cross seam cuts, measuring 2 by 6 inches, each day the membrane is installed. Patch test cuts with same material at no additional cost to Owner.

    a. Include field samples with weekly reports.

5. Inspect roof installation daily and prepare daily punchlist for corrective action by the Installer.
6. Provide a written daily report to the Architect, Project Manager, and Installer.

E. Source Limitations: Obtain components for membrane roofing system from or approved by roofing membrane manufacturer.

F. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories, roof-mounted equipment, and membrane air barriers.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

G. Field Quality Control Testing:

1. Membrane Testing for Water Tightness:

a. Water Testing of Drains: The Applicator shall water test drains according to membrane manufacturer’s most current Quality Assurance Procedures

## 1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

1. Store membrane rolls horizontally on pallets, fully protected from the weather with canvas tarpaulins. Non-vented, polyethylene tarpaulins are not permitted.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

## 1.09 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Substrate Conditions: Proceed with roofing installation after substrates have been inspected and determined to be in satisfactory condition. Commencement of work indicates acceptance of substrates.

## 1.10 WARRANTY

A. Special Warranty: Manufacturer's customized form, without monetary limitation, edge-to-edge, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, walkway products and other components of membrane roofing system.
2. Special warranty includes peak gust wind speed up to 100 mph.
3. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

## 1.11 GUARANTEE

A. Special Project Guarantee: Pursuant to Connecticut General Statute, Chapter 173, Section 10-291 provide an unlimited manufacturer's guarantee for watertightness covering material and workmanship on the entire roofing system including vapor retarders, insulation, bitumen, felts, membranes, flashings, metals, and other feature required by the roof design. All manufacturer's materials used in the roofing system must meet the latest ASTM standards for individual components of the roofing system. Provide a minimum roof pitch in all locations of 1/4-inch per foot.

1. Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.01 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7 and the Connecticut State Building Code.

1. Exposure Category: Exposure B.
2. Importance Factor: III.
3. Ultimate Design Wind Speed: 145 mph.

D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

### 2.02 EPDM MEMBRANE ROOFING

A. EPDM: ASTM D 4637, Type II, reinforced, uniform, flexible EPDM sheet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Carlisle SynTec Incorporated.
    b. Firestone Building Products.
    c. Johns Manville.

2. Thickness: 60 mils nominal.
3. Exposed Face Color: Black.

## 2.03 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.

B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.

C. Protection Sheet: Epichlorohydrin or neoprene non-reinforced flexible sheet, 55- to 60-mil- thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.

D. Bonding Adhesive: Manufacturer's standard.

E. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch-wide minimum, butyl splice tape with release film.

F. Lap Sealant: Manufacturer's standard, single-component sealant.

G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

H. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.

J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

## 2.04 ROOF INSULATION

A. Extruded-Polystyrene Board Insulation (Over Roof Membrane): ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively:

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Dow Chemical Company; Styrofoam Highload 40.
    b. GreenGuard; XPS Type VI.
    c. Owens Corning; Foamular 400.

2. Type VI, 1.80 lb/cu. ft.
3. Thermal Resistance: 5 year aged R-values of 5.4 and 5.0 minimum, at 40 deg. F and 75 deg. F respectively.
4. Compressive Strength: ASTM D1621, 40 psi.
5. Water absorption: ASTM C272, 0.1% by volume maximum.

### 2.05 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Cold Fluid-Applied Adhesive: Manufacturer's standard cold fluid-applied adhesive formulated to adhere roof insulation to substrate.

C. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing system manufacturer for application.

### 2.06 NAILERS, BLOCKING AND PLYWOOD

A. Comply with requirements for lumber and plywood specified in Division 06 Section "Miscellaneous Rough Carpentry."

### 2.07 NAILERS, BLOCKING AND PLYWOOD

A. Comply with requirements for lumber in Division 06 Section "Miscellaneous Rough Carpentry" for furnishing and installing wood blocking at roof penetrations.

B. Roof edge wood blocking, nailers and plywood furnished and installed by Division 06 Section "Miscellaneous Rough Carpentry."

## PART 3 - EXECUTION

### 3.01 EXAMINATION

A. Contractor shall examine substrates, areas, and conditions, with Roofing Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates.

B. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of the work indicates acceptance of substrates.

## 3.02 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

1. Do not permit waterstops to remain in contact with permanent roofing as the installation progresses.
2. Do not permit incompatible materials, including asphalt, coat tar, heavy oils, and roofing cements to come in contact with roofing membrane. If contact occurs, remove contaminated membrane and replace at no additional cost to the Owner.

## 3.03 FASTENER PULL-OUT TESTING

A. Retain independent testing and inspecting agency to conduct fastener pull-out tests according to SPRI FX-1, and submit test report to Architect and roofing membrane manufacturer before installing new membrane roofing system.

1. Obtain roofing membrane manufacturer's approval to proceed with specified fastening pattern. Roofing membrane manufacturer may furnish revised fastening pattern commensurate with pull-out test results.

## 3.04 TEMPORARY CUT-OFF

A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100 percent watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the waterstop. Waterstop shall be sealed to the deck or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant as specified. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.

B. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.

C. If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Contractor's expense.

## 3.05 WOOD NAILER AND BLOCKING INSTALLATION

A. Install continuous wood nailers at perimeter of the entire roof, around roof projections, penetrations, and locations indicated.

1. Do not use nailers less than three feet in length.
2. Build up nailer height to match thickness of substrate or insulation, with smooth transitions.

    a. Wood blocking and nailers are indicated in nominal lumber sizes. Where required, as indicated or not, provide ripped, continuous shims to create nailer height to match thickness of substrate or insulation.

B. Anchor nailers to resist a minimum force of 300 lbf in any direction. Provide a 1-1/2" space between lengths of nailers.

1. Anchor nailers with fasteners spaced at 12 inches on center, staggered 1/3 the nailer width and installed within 6 inches of each end.
2. Comply with fastening requirements of FM Loss Prevention Data Sheet 1-49.

## 3.06 INSULATION INSTALLATION

A. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

B. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

1. Where installing composite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer. Offset joints in insulation layers a minimum of 6 inches.

C. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

## 3.07 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.

B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.

    1. Apply a continuous bead of in-seam sealant before closing splice if required by membrane roofing system manufacturer.

H. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

I. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

J. Install membrane roofing and auxiliary materials to tie in to existing membrane roofing to maintain weather-tightness of transition.

K. Adhere protection sheet over membrane roofing at locations indicated.

## 3.08 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

## 3.09 FIELD QUALITY CONTROL

A. The Owner reserves the right to have the following inspections performed by the Owner's Commissioning Agent, or other consultant:

1. Infrared thermal scan of completed membrane roofing system.

B. Testing Agency: Engage a qualified independent testing and inspecting agency through the Roofing manufacturer to perform roof tests and inspections and to prepare test reports.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.

1. Notify Architect or Owner 48 hours in advance of date and time of inspection.

D. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

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

## 3.10 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

## 3.11 WASTE DISPOSAL

A. Excess materials are Contractor's property. At completion of roofing work, remove from Project site. Comply with Division 01 Section "Construction Waste Management and Disposal."

## 3.12 PROJECT COMPLETION

A. Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of the manufacturer shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner's Representative and the manufacturer prior to demobilization.

B. All Warranties referenced in this Section shall have been submitted and have been accepted at time of contract award.

**END OF SECTION**