

**PROJECT MANUAL
FOR**



**IRC-1838 Indian River County
Main Library
Roof Replacement**

February 3, 2020

**REI PROJECT NUMBER
19TPA-027**



FLORIDA ENGINEERS LICENSE #26860

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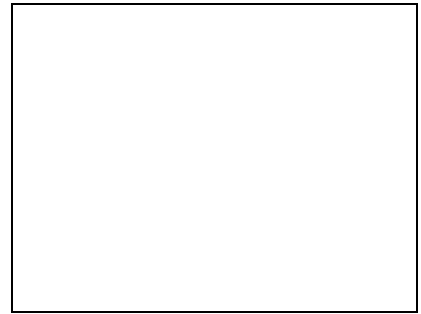
10150 Highland Manor Drive, Suite 200
Tampa, FL 33610

reiengineers.com
813.944.2137

SECTION 00 01 07

SEALS PAGE

PROFESSIONAL ENGINEER



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END OF SECTION 00 01 10

SECTION 00 01 15

LIST OF DRAWINGS

PART 1 GENERAL

The following drawings and details are included as part of the Contract Documents:

Drawing	Description	Date
R1	Roof Plan	12-4-2019
R2	Building Code	12-4-2019
D1	Roof Details	12-4-2019
D2	Roof Details	12-4-2019

END OF SECTION 00 01 15

SECTION 00 60 00

PROJECT FORMS

PART 1 GENERAL

1.01 GENERAL

A. The following documents are included in the Project Manual:

1. Roof Manufacturer's Acknowledgement - Section 00 62 33
2. Contractors Five-Year Warranty - Section 00 65 36
3. Asbestos Free Warranty - Section 00 65 37

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 00 60 00

SECTION 00 62 33

ROOF MANUFACTURER'S ACKNOWLEDGMENT

Owner: Indian River County

Project Name: IRC-1838 Indian River County Main Library Roof Replacement

Project Address: 1600 21st Street, Vero Beach, Florida, 32960

Roofing Contractor: _____

Address: _____

Telephone: _____

Facsimile: _____

This is to advise the Owner that having thoroughly reviewed the Specifications and Drawings contained within the Project Manual dated **February 3, 2020** for the above-titled project, we acknowledge that the roof system(s) and flashing system(s) specified are suitable for use on this project. Having reviewed the project requirements in detail, the Manufacturer will provide a written response to the Engineer seven days prior to the bid date, if conflicts between the Manufacturer's requirements occur with the above listed documents.

1. The manufacturer certifies that the installer is approved, authorized, or licensed by manufacturer to install specified roof system and is eligible to receive the specified manufacturer's warranty.
2. The manufacturer will comply with the specified requirements for on-site technical support.

_____ is hereby designated as our Liaison on this project.
(Print or type name of Liaison)

_____ Telephone

_____ Facsimile

_____ Roof Manufacturer's Company Name

_____ Roof Manufacturer Representative's Signature

_____ Date

_____ Roof Manufacturer Representative's Name

_____ Title

_____ Roof Manufacturer's Address

_____ Telephone

_____ Facsimile

END OF SECTION 00 62 33

SECTION 00 65 36

CONTRACTOR'S FIVE-YEAR WARRANTY

Know all men by these presents, that we, (Contractor) _____, having installed roofing system, flashings and sheet metal on the IRC-1838 Indian River County Main Library Roof Replacement Project under contract between Indian River County (Owner) and Contractor, warrant to the Owner with respect to said work that for a period of five (5) years from date of final completion, the work shall be absolutely watertight and free from any and all leaks, provided however the following are excluded from this Warranty:

- a. Defects or failures resulting from abuse by the Owner.
- b. Defect in design involving failure of (1) structural frame, (2) load bearing walls, and (3) foundations.
- c. Damages caused by fire, tornado, hail, hurricane, acts of God, wars, vandalism, riots or civil commotion.

We, Contractor, agree that should any leaks occur in the work we will perform emergency repairs within 24 hours notice and perform permanent repairs within a reasonable time in a manner to restore the work to a watertight condition by methods compatible to the system and acceptable under industry standards and general practice, all at no expense to the Owner.

We, Contractor, further agree that for a period of five (5) years from date of final completion referred to above, we will make repairs at no expense to the Owner to any defects which may develop in the work including but not limited to blisters, wrinkles, fish-mouths, ridges, splits and loose flashing in a manner compatible to the system and acceptable under industry standards and general practice as established by the Engineer.

Contractor shall attend two post construction field inspections: the first no earlier than twenty -three (23) months and no later than twenty-four (24) months after the date of final Completion and the second no earlier than fifty-nine (59) months and no later than sixty (60) months after the date of Final Completion. Contractor shall complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

Signature: _____ Title: _____

_____ State
 _____ County

I, _____, a Notary Public for _____ County, _____ State, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this _____ day of _____, 20_____.

 Notary Public (OFFICIAL SEAL)

My commission expires _____, 20_____.

END OF SECTION 00 65 36

SECTION 00 65 37

ASBESTOS FREE WARRANTY

Owner: Indian River County

Project Name: IRC-1838 Indian River County Main Library Roof Replacement

Project Address: 1600 21st Street, Vero Beach, Florida, 32960

Project Manual Date: February 3, 2020

Date of Substantial Completion: _____

Know all men by these present that we, _____
(Contractor, Subcontractor, Material Supplier or Equipment
Manufacturer)

having furnished labor, materials, equipment and/or supplies; removed existing roof system; installed new roof system and/or miscellaneous roof system components; from, to and/or on the above referenced Project under contract between the Owner and Contractor, warrant to Owner with respect to said work that no materials containing asbestos fibers were incorporated into the work, and that, to our knowledge and belief, no materials containing asbestos remain in or are covered by the work.

Exceptions:

If there are no exceptions, state "No Exceptions" here.

Signature: _____

Title: _____

<p>_____ State _____ County</p> <p>I, _____, a Notary Public for _____ County, _____ State, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.</p> <p>Witness my hand and official seal, this _____ day of _____, 20_____.</p> <p>_____ Notary Public</p> <p>My commission expires _____, 20_____.</p>	<p>(OFFICIAL SEAL)</p>
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END OF SECTION 00 65 37

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Name: IRC-1838 Indian River County Main Library Roof Replacement
 - B. Project Address: 1600 21st Street, Vero Beach, Florida, 32960
 - C. Owner: Indian River County
 - D. Engineer: The Contract Documents, dated February 3, 2020, were prepared by REI Engineers, Inc.
 - E. This work includes the provision of all labor, material, equipment, supervision and administration to integrate the work outlined in this project manual into the total building system such that no leakage into the system occurs. In general, the scope of work in the **Base Bid** will include:
 - 1. **Roof Section A:** (Approximately 29,397 square feet): Remove and dispose of the existing roof system including flashings and sheet metal down to the existing light weight insulating concrete deck; resecure the existing gravel stop edge nailers to remain in place; provide new wood nailers where indicated in Contract Drawings; mechanically attach base sheet; torch apply two-ply modified bitumen roof membrane and provide new sheet metal flashings and accessories to provide a complete, watertight, 20-year warrantable roof system.
 - 2. **Roof Section A:** (Approximately 16 cubic feet): Repair multiple existing light weight insulating concrete deck filler locations.
 - F. Asbestos Containing Roofing Materials (ACRM):
 - 1. It is the intention of these specifications that no asbestos bearing materials be incorporated into the work. In the event the Contractor should determine unanticipated asbestos bearing materials to be present in the existing building components, Contractor is to stop all work in the affected area, notify the Engineer and Owner, and provide temporary protection as required. Costs incurred, if any, due to the presence of hidden and/or unanticipated asbestos bearing materials will be authorized by Change Order to this contract.
 - G. The Contractor is responsible for all electrical, plumbing, mechanical, and other related trade work necessary to facilitate project operations. Contractor is responsible for re-locating any and all conduit, HVAC equipment, curbs, and/or plumbing necessary to comply with the requirements of these documents. All work shall conform to the requirements of the current Building Code approved in the State of the project location.
 - H. General requirements and specific recommendations of the material manufacturers are included as part of these specifications. The manufacturers' specifications are the minimum standards required for the completed systems. Specific items listed herein may improve the standards required by the manufacturers and will take precedence where their compliance will not affect the manufacturers' guarantee or warranty provisions.
- 1.02 CONTRACT**
- A. Project will be constructed under a single prime general construction contract.

1.03 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section.

1.04 SITE INVESTIGATION

- A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the Work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, ground water table or similar physical conditions at the site, the conformation and condition of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with all the available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. Field measurements shall be taken at the site by the Contractor to verify all data and conditions affected by the Work.

1.05 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. Section Identification: The Specifications use section numbers and titles to cross-reference Contract Documents. Sections in the Project Manual are in numeric sequence.; however, the sequence is incomplete. Consult the Table of Contents at the beginning of the Project Manual.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 11 00

SECTION 01 14 00

WORK RESTRICTIONS

GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for work sequence, work restrictions, occupancy requirements and use of premises.

1.02 WORK SEQUENCE

- A. The Work shall be conducted in the following sequences unless construction phases are otherwise specified.
 - 1. Construct Work in phases to accommodate the Owner's use; if applicable, of the premises during the construction period; coordinate the construction schedule and operations with the Owner and Engineer.
 - 2. Construct the Work in phases to provide for public convenience. Do not close off public use of facility until completion of one phase of construction will provide alternative usage.
 - 3. Construction shall be scheduled in such a manner that once work has commenced on one facility, the Contractor's work force shall remain at that facility continuously each work day through final completion at that facility.

1.03 OCCUPANCY REQUIREMENTS

- A. Owner Occupancy
 - 1. Owner will occupy the premises during the entire period of construction to conduct normal operations. Cooperate with Owner in all construction operations to minimize conflict, and to facilitate Owner usage.
 - 2. Contractor shall at all times conduct his operations as to ensure the least inconvenience and the greatest amount of safety and security for the Owner, his staff, and the general public.
 - 3. Control noise from operations so that building occupants are not affected.
 - 4. Control odors from air intakes so that building occupants are not affected.

1.04 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Limits: Confine constructions operations to areas of work being renovated as approved by Engineer and Owner.
 - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - 3. Move any stored materials and equipment that interfere with operations of the Owner.

B. Use of Existing Building

1. Maintain existing building in a weathertight condition throughout construction period.
2. Take every precaution against injuries to persons or damage to property.
3. Protect building, its contents, and its occupants during construction period.
4. The Contractor shall not overload or permit any part of the structure to be loaded with such weights as will endanger its safety or to cause excessive deflection. Materials placed on the roof prior to installation shall be equally distributed over the roof area.
5. Protect any existing surface improvements, such as pavements, curbs, sidewalks, lawn and landscaped areas, utilities, etc.
6. Repair to the Owner and Engineer's satisfaction, or to restore to a condition equal to that existing at the time of award of Contract, or to make restitution acceptable to the Owner, any and all damages to the building, its contents, or surface improvements resulting from, or attributable to, the work operation.

C. Transportation Facilities

1. Truck and equipment access:
 - a. Avoid traffic conflict with vehicles of the Owner's employees and customers, and avoid over-loading of street and driveways elsewhere on the Owner's property, limit the access of trucks and equipment to the designated areas.
 - b. Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the job site.
2. Contractor's vehicles:
 - a. Require contractor's vehicles, vehicles belonging to employees of the contractor, and all other vehicles entering the Owner's property in performance of the work the contract, to use only the designated access route.
 - b. Do not permit such vehicles to park on any street or other area of the Owner's property except in the designated area.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 14 00

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions after award of Contract.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, and equipment, of construction required by Contract Documents proposed by the Contractor are considered requests for "substitutions". The following are not considered substitutions:
 - 1. Revisions to Contract Documents requested by the Owner or Engineer.
 - 2. Specified options of products and construction methods included in Contract Documents.
 - 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

- A. After award, requests for approval of equivalent items shall be submitted in writing to the Engineer during the submittal process. After acceptance of project submittals, no further substitutions will be accepted. Refer to Section 01 33 00.
- B. Substitutions after award are solely for the convenience of the Contractor and will be considered and approved by Change Order which is accompanied by a credit to the Owner. The Contractor shall be required to bear any additional costs related to making the substituted material or system work, such as extra engineering, material or system modifications, or any time considerations relating to material or system installation requirements.
- C. Requests for approval of equivalent items shall be accompanied by information sufficient for the Engineer to make a determination as to the equivalency of a product. The determination of the Engineer of the equivalency of a product shall be final. The Engineer reserves the right to request information or documentation for evaluation including but not limited to the following:
 - 1. Statement indicating why specified product cannot be provided.
 - 2. Coordination of information, including a list of modifications needed to other parts of the work that will be necessary to accommodate proposed substitution.
 - 3. Product data including drawings, descriptions, and fabrication/installation procedures.
 - 4. Samples where applicable.
 - 5. Material test reports from a qualified testing agency indicating the interpreting test results for compliance with requirements.

6. Contractor's certification that proposed substitution complies with requirements in the contract documents and is appropriate for applications indicated.
7. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
8. If requesting product substitution after bid award, Contractor shall provide cost information including proposal of change, if any, in the contract sum.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 25 00

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
1. General project coordination procedures.
 2. Coordination.
 3. Administrative and supervisory personnel.
 4. Project meetings.
 5. Weekly Reports

1.02 COORDINATION

- A. Coordinate construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. The Contractor shall coordinate its operations with those included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Progress Reporting: The scheduling and sequence of all operations shall be carefully coordinated with the Owner and Engineer.
- C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-Construction conference.
 7. Pre-installation conferences.
 8. Project closeout activities.

1.03 PROJECT MEETINGS

A. Substantial Completion Inspection Meeting

1. Scheduled by Owner and Engineer upon written notification of substantial completion of work from the Contractor.
2. Attendance: Owner, Engineer, Contractor, material manufacturer.
3. Minimum Agenda: Walkover inspection; verification of substantial completion; identification of punch list items; identification of problems, which may impede issuance of warranties.
4. Refer to Section 01 77 00 for other requirements.

B. Final Inspection Meeting

1. Scheduled by Owner and Engineer upon written notification of final completion of work from the Contractor.
2. Attendance: Owner, Engineer, Contractor.
3. Minimum Agenda: Verification of final completion including the completion of the punch list items.
4. Refer to Section 01 77 00 for other requirements.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 31 00

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1.02 SUBMITTAL PROCEDURE

- A. General: The Contractor is responsible for providing the submittals to the Owner. Each submittal must be accepted in writing prior to commencement of work.
- B. Submission Requirements: Submit all required submittals electronically in pdf format to the Owner for review. The submittals will then be returned electronically to the Contractor with comments. Final submittals will require written responses to all Construction Document submittal comments.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as specified below. Time for review shall commence on Owner's receipt of submittal.
 - 1. Initial Review: Allow 7 work days for initial review of submittals.
 - 2. Allow 7 work days for processing each resubmittal.
 - 3. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals and provide letter describing in detail any proposed changes, substitutions, or deviations from the project or manufacturer's specifications. A written explanation of why substitutions should be considered is required and shall be included under the appropriate tab.
- E. Transmittal and Identification: Package submittals appropriately and include a title page and/or pdf bookmark for each numbered schedule of submittal item identified below. Owner will discard submittals received from sources other than Contractor. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
- F. Use for Construction: Use only final submittals with mark indicating action taken by Owner in connection with construction.

1.03 SCHEDULE OF SUBMITTALS

- A. Refer to the applicable specification section for complete list of submittal requirements for each section.
- B. The following submittal items shall be submitted electronically with a title page and/or pdf bookmark for each submittal item to meet the requirements specified herein:
 - 1. Roof Manufacturer's Acknowledgment Form (Section 00 62 33)
 - 2. Quality Requirements (Section 01 40 00)
 - a. Copy of Construction Permit
 - 3. Closeout Procedures

- a. Copy of all warranties to meet the requirements of their respective specification section.
- 4. Steel Deck Repair/Securement (Section 05 31 23)
- 5. Rough Carpentry (Section 06 10 00)
- 6. Preparation for Reroofing (Section 07 01 50)
- 7. Modified Bitumen Roofing (Section 07 52 16)
- 8. Sheet Metal Flashing and Trim (Section 07 62 00)
- 9. Manufactured Gravel Stops and Fascias (Section 07 71 19)
- 10. Roof Accessories (Section 07 72 00)
- 11. Storm Drainage (Section 22 14 00)
- 12. Shop drawings or letter stating that the contractor will install materials as detailed in the Contract Drawings unless properly authorized by the Engineer.
- 13. Existing damaged/dysfunctional components documentation (videotape, photos, etc.) including but not limited to; asphalt spills, windows, walls, sidewalks, paving, ceilings, etc. Lack of submission prior to commencement of work indicates Contractor has discovered no existing damaged components and takes responsibility for any damages caused by operations.
- 14. Complete list of materials with Safety Data Sheets (SDS)

PART 2 PRODUCTS

2.01 SUBMITTALS

- A. General: Prepare and submit Submittals required herein and by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Printed performance curves.
 - f. Operational range diagrams.
 - g. Compliance with recognized trade association standards.
 - h. Compliance with recognized testing agency standards.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or other printed data.
 - 1. Preparation: Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Shopwork manufacturing instructions.
 - f. Templates and patterns.
 - g. Schedules.
 - h. Notation of coordination requirements.

- i. Notation of dimensions established by field measurement.
- 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
- D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.
- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- G. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
- H. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
- I. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- J. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers. Any calculations or plans shall be signed and sealed by a registered professional.
- K. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's instructions, recommendations, guidelines, maintenance intervals and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

PART 3 EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Review each submittal, check for compliance with the Contract Documents and note corrections and field dimensions prior to submitting to Engineer/Owner.

3.02 ENGINEER'S ACTION

- A. Submittals: Engineer/Owner will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal item with an action stamp and will mark stamp appropriately to indicate action taken.
- B. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 35 00

HOT WORK OPERATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Hot work includes, but is not limited to open flames and spark producing operations, welding, cutting, grinding, torches, etc.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section including but not limited to:

- 1. Modified Bitumen Roofing Section 07 52 16

1.3 SUBMITTALS

- A. Certified Roofing Torch Applicator (CERTA) credentials from NRCA.

1.4 QUALITY ASSURANCE

- A. Torch Training: Torch operators shall be trained in accordance with the current published requirements of the Certified Roofing Torch Applicator (CERTA) Program. The CERTA Training Program may be obtained from NRCA/MRCA, 10255 W. Higgins Rd. Suite 600, Rosemont, IL 60018-5607.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. Torches shall not have pilot flames. The torch flames shall go out when the trigger is disengaged. Torches shall be of the "dead-man" type "trigger on/trigger off operation."
- B. Equipment, valves, regulators, tanks, hoses and all associated equipment shall be properly stored and handled and maintained as required by the respective equipment manufacturer and other applicable requirements.
- C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure and the requirements of the local Governing agency.

PART 3 EXECUTION

3.1 HOT WORK PERMIT

- A. The Contractor shall be responsible for all hot work and hot work monitoring. The Contractor shall be responsible for coordinating hot work with Owner.
- B. Hot work shall not be initiated until written approval from Owner has been provided to the Contractor.

- C. The Contractor shall be responsible for complying with the Hot Work Permit program, and ensuring all required precautions are met.
- D. The Contractor shall be responsible for the hot work operations of their subcontractors and shall monitor hot work operations conducted by their subcontractors.
- E. When Hot Work Permits are not provided by Owner, the Contractor shall utilize their own "in-house" hot work permit program to record and monitor hot work operations, including providing monitoring the area after hot work is completed.

3.2 WORK AREA

- A. The Contractor shall inspect conditions listed on the Hot Work Permit.
- B. The Contractor shall be responsible for inspecting the work area prior to beginning work. The Contractor shall notify the Owner of unsatisfactory conditions, and ensure conditions are satisfactory to proceed with work.
- C. Where torch application is specified, and fire safe conditions cannot be assured by the Contractor, the Contractor shall notify the Owner, the Engineer and Manufacturer immediately to develop alternate methods of material application to ensure fire prevention. Operations shall not proceed when unsafe conditions are found.
- D. The Contractor shall seal all building openings to prevent flames or burning debris from entering concealed spaces and building interior. All openings, roof deck joints, curbs, ducts, etc. shall be stripped or otherwise sealed and protected. Wood materials shall be protected as required to eliminate direct flame exposure from torch. Alternate methods of application are encouraged where fire prevention measures cannot be fully assured by the Contractor.
- E. The Contractor shall disconnect air handling equipment in the hot work area as required to prevent smoke and flames from being pulled into the building and equipment. This shall be coordinated 48 hours in advance with the Owner before disconnecting equipment.
- F. The Contractor shall remove all other combustibles from the hot work area. Remove all solvents, roofing adhesives, roofing cement, and all other flammable liquids from the hot work area.
- G. Contractor shall take all necessary measures to prevent fire exposure at roof tie-ins between new and existing roofing, at wood curbs, expansion joints and at rooftop equipment. All necessary materials and methods shall be provided by the Contractor to prevent fire at these locations.

3.3 FIRE WATCH

- A. The Contractor shall provide fire watch personnel to closely monitor and inspect the work area and adjacent areas for fires, smoldering materials, hot surfaces and smoke.
- B. The Contractor shall inspect and monitor the area between the roof deck and ceiling during and after hot work.
- C. The Contractor shall monitor conditions for the period of time specified by the Hot Work Permit, and as conditions dictate. The work area and adjacent areas shall be monitored no less than one hour after hot work has ceased. The time period shall be recorded by the Contractor.
- D. The Contractor shall provide designated fire watch personnel to monitor interior conditions and exterior conditions during, and after, hot work operations.

- E. The Contractor shall be responsible for properly training and instructing fire watch personnel of their responsibilities and duties.
- F. Fire watch shall meet the Owner's requirements as dictated by the Hot Work Permit Program.
- G. Contractor shall monitor the work area and building interior, and coordinate monitoring process with the Engineer and Owner 48 hours in advance of hot work. Contractor shall ensure proper hot work procedures are maintained in all curbs, ducts, concealed spaces and building interior.

3.4 FIRE PREVENTION AND FIRE SAFETY

- A. Fire prevention and fire safety shall be the Contractor's responsibility. Contractor shall be responsible for developing a pre-fire emergency plan, coordinated with the Engineer and Owner to plan for fire emergencies.
- B. It is the responsibility of the Contractor to enforce fire safety precautions and to ensure safety measures are followed at all times by the Contractor's and Subcontractor's personnel.
- C. Contractor shall be responsible for maintaining sufficient fire suppression equipment, including fire extinguishers and a charged water hose.

END OF SECTION 01 35 00

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.

1.02 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.03 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer/Owner.

1.04 SUBMITTALS

- A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.05 QUALITY ASSURANCE

- A. It is the intent under this contract that workmanship shall be of the best quality consistent with the materials and construction methods specified. The presence or absence of the Owner's or Engineer's representative shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the drawings and specifications. The Owner and Engineer shall have the authority to judge the quality and require replacement of unacceptable work or personnel at any time.
- B. Contractor and Subcontractors shall cooperate in the execution of their work and shall plan their work in such manners as to avoid conflicting schedules or delay of work. If any part of a Contractor's work depends upon the work of their Subcontractor, defects, which may affect that work, shall be reported to the Engineer/Owner in order that prompt inspection may be made, and defects corrected. Commencement of work by the Contractor or their Subcontractor where such condition exists will constitute acceptance of the other Contractor's work as being satisfactory in all respects to receive the work commenced, except

defects, which may later develop. Work of all trades under this contract shall be closely coordinated in such a manner as to obtain the best possible workmanship for the entire project. All components of the work shall be installed in accordance with the best practices of the particular trade. The Contractor is responsible to advise the Owner sufficiently in advance of operations to allow for assignment of personnel.

- C. Materials or methods described by words which, when applied, have a well known technical or trade meaning will be held to refer to such recognized standard. Standard specifications or manufacturer's literature, when referenced, shall be of the latest revision or printing unless otherwise stated, and are intended to establish the minimum requirements acceptable.
- D. All materials shall be new, all materials and workmanship shall be in every respect in accordance with the best modern practice.
- E. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or accepted, such materials shall be delivered to the site in original packages or containers with seals unbroken and labels intact and shall not be opened until inspected and approved by the Engineer/Owner.
- F. The Contractor's Foreman or Superintendent to maintain one complete set of the contract documents and approved submittals on the job site.
- G. Contractor shall be responsible to correct deficiencies identified by Engineer/Owner and non-conforming work within 24 hours of receipt of notification, either verbally or written, and submit a plan of action for addressing the deficiencies and non-conforming work. Further tear-off or commencement of other work shall not occur until all deficiencies and non-conforming work are properly addressed.
- H. At any time during the construction and completion of work covered by these Specifications, if the conduct of any workman of the various crafts be determined unsuitable or a nuisance to the Owner or Engineer, or if the workman be considered incompetent or detrimental to the work, the Contractor shall order such party removed immediately from the grounds with the person not returning at any time during the course of work on the project.
- I. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
- J. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- K. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- L. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.06 QUALITY CONTROL

- A. The authorized representatives and agents of Owner shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records.

- B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- C. Contractor's Responsibilities:
1. Repair and protection of work and materials are Contractor's responsibility.
 2. Should any work or materials not conform with requirements of the Specifications or become damaged during the progress of the work, such work or materials shall be removed and replaced, together with any work disarranged by such alterations, at any time before completion and acceptance of the project. All such work shall be done at the expense of the Contractor.
 3. Contractor will coordinate documents with manufacturer and perform such testing, reporting, and communication incidental to provisions of the warranty procedures.
- D. Manufacturer's Field Services: During construction and until substantial completion, manufacturer's representative shall perform quality assurance site visits every ten working days to ensure materials are being properly installed and as required to obtain the specified warranty.
1. The first site visit shall be performed within the first three (3) days of operations.
 2. Coordinate all site visits with Engineer. Submit reports of findings within one week of inspection. Payment applications will be rejected until applicable reports are received.
 3. Inspections to be performed by an employee of the selected manufacturer that is assigned full time to their technical services department. Sales personnel will not be acceptable for this function and may result in rejection of the work installed that does not fulfill this requirement.
 4. Manufacturer's final inspections shall be performed only with REI personnel in attendance. A minimum of seven days' written notice is required. Any manufacturer's final inspection conducted without REI personnel in attendance will be repeated at no additional cost to the Owner.
 5. Any violation of this requirement will result in the removal of that manufacturer for a period of not less than one year from the Engineer's accepted materials list.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Preliminary design mix proposed for use for material mixes that require control by

- testing agency.
- 6. Security and protection for samples and for testing and inspecting equipment at Project site.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Comply with the Contract Document requirements for Section 01 73 29-Cutting and Patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00

REFERENCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements relating to Referenced Standards.

1.02 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Installer": Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- J. "Experienced": When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- K. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.03 INDUSTRY STANDARDS

- A. **Applicability of Standards:** Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. **Publication Dates:** Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. **Conflicting Requirements:** If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
 - 1. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.
- D. **Abbreviations and Acronyms for Standards and Regulations:** Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

	Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov
CFR	Code of Federal Regulations Available from Government Printing Office www.access.gpo.gov/nara/cfr
FED-STD	Federal Standard (See FS)
FS	Federal Specification Available from National Institute of Building Sciences www.nibs.org

1.04 ABBREVIATIONS AND ACRONYMS

- A. **Industry Organizations:** Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org
ACI	American Concrete Institute/ACI International www.aci-int.org
ACPA	American Concrete Pipe Association www.concrete-pipe.org
AGC	Associated General Contractors of America (The) www.agc.org
AHA	American Hardboard Association www.ahardbd.org
AI	Asphalt Institute www.asphaltinstitute.org

AIE	American Institute of Engineers www.aionline.org
AISC	American Institute of Steel Construction www.aisc.org
AISI	American Iron and Steel Institute www.steel.org
AITC	American Institute of Timber Construction www.aitc-glulam.org
ALCA	Associated Landscape Contractors of America www.alca.org
ALSC	American Lumber Standard Committee www.alsc.org
ANLA	American Nursery & Landscape Association www.anla.org
ANSI	American National Standards Institute www.ansi.org
APA	APA - The Engineered Wood Association www.apawood.org
APA	Architectural Precast Association www.archprecast.org
ASCE	American Society of Civil Engineers www.asce.org
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org
ASTM International	ASTM International www.astm.org
AWI	Architectural Woodwork Institute www.awinet.org
AWPA	American Wood-Preservers' Association www.awpa.com
AWS	American Welding Society www.aws.org
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com
BIA	Brick Industry Association (The) www.bia.org
CCFSS	Center for Cold-Formed Steel Structures www.umn.edu/~ccfss
CDA	Copper Development Association Inc. www.copper.org
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org
CISPI	Cast Iron Soil Pipe Institute www.cispi.org
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org
CPA	Composite Panel Association (Formerly: National Particleboard Association) www.pbmdf.com
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org

CRSI	Concrete Reinforcing Steel Institute www.crsi.org
CSI	Construction Specifications Institute (The) www.csinet.org
DHI	Door and Hardware Institute www.dhi.org
EIMA	EIFS Industry Members Association www.eifsfacts.com
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org
FMG (FM)	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com
GA	Gypsum Association www.gypsum.org
GANA	Glass Association of North America (Formerly: FGMA - Flat Glass Marketing Association) www.glasswebsite.com/gana
HPVA	Hardwood Plywood & Veneer Association www.hpva.org
IGCC	Insulating Glass Certification Council www.igcc.org
IRC	Indian River County
LGSI	Light Gage Structural Institute www.loseke.com
MBMA	Metal Building Manufacturers Association www.mbma.com
MCA	Metal Construction Association www.metalconstruction.org
MFMA	Metal Framing Manufacturers Association
MIA	Marble Institute of America www.marble-institute.com
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org
NCMA	National Concrete Masonry Association www.ncma.org
NCPI	National Clay Pipe Institute www.ncpi.org
NECA	National Electrical Contractors Association www.necanet.org
NEMA	National Electrical Manufacturers Association www.nema.org
NETA	InterNational Electrical Testing Association www.netaworld.org
NFPA	National Fire Protection Association www.nfpa.org
NFRC	National Fenestration Rating Council www.nfrc.org
NGA	National Glass Association www.glass.org
NHLA	National Hardwood Lumber Association www.natlhardwood.org
NLGA	National Lumber Grades Authority www.nlga.org
NPA	National Particleboard Association (See CPA)

NRCA	National Roofing Contractors Association www.nrca.net
NRMCA	National Ready Mixed Concrete Association www.nrmca.org
NSA	National Stone Association www.aggregates.org
NTMA	National Terrazzo and Mosaic Association, Inc. www.ntma.com
NWWDA	National Wood Window and Door Association (See WDMA)
PCI	Precast/Prestressed Concrete Institute www.pci.org
PDCA	Painting and Decorating Contractors of America www.pdca.com
PDI	Plumbing & Drainage Institute www.pdionline.org
RCSC	Research Council on Structural Connections www.boltcouncil.org
RMA	Rubber Manufacturers Association www.rma.org
SDI	Steel Deck Institute www.sdi.org
SDI	Steel Door Institute www.steeldoor.org
SGCC	Safety Glazing Certification Council www.sgcc.org
SIGMA	Sealed Insulating Glass Manufacturers Association www.sigmaonline.org/sigma
SJI	Steel Joist Institute www.steeljoist.org
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org
SPI	The Society of the Plastics Industry www.plasticsindustry.org
SPIB	Southern Pine Inspection Bureau (The) www.spib.org
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org
SSINA	Specialty Steel Industry of North America www.ssina.com
SSMA	Steel Stud Manufacturers Association (Formerly: ML/SFA - Metal Lath/Steel Framing Association) www.ssma.com
SSPC	SSPC: The Society for Protective Coatings www.sspc.org
SWI	Steel Window Institute www.steelwindows.com
TCA	Tile Council of America, Inc. www.tileusa.com
TPI	Truss Plate Institute
UL	Underwriters Laboratories Inc. www.ul.com

WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and
	Door Association) www.wdma.com
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com
WWPA	Western Wood Products Association www.wwpa.org

- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA	BOCA International, Inc. www.bocai.org
IAPMO	International Association of Plumbing and Mechanical Officials (The) www.iapmo.org
ICBO	International Conference of Building Officials www.icbo.org
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.intlcode.org
SBCCI	Southern Building Code Congress International, Inc. www.sbcci.org

- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CPSC	Consumer Product Safety Commission www.cpsc.gov
EPA	Environmental Protection Agency www.epa.gov
OSHA	Occupational Safety & Health Administration www.osha.gov

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 42 00

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Engineer/Owner. Provide materials suitable for use intended.
- B. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide non-permanent bases for support.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Water: Potable.
- E. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- F. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure and the requirements of the local Governing agency.
- G. Lamps and Light Fixtures: Provide GFCI protected general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- H. Scaffolds: Scaffolds should be built in their entirety and not left unfinished or in an unsafe condition. All scaffolds must be tagged to indicate the latest inspection. Scaffolds should be tied into the structure as close to a 3:1 ratio as possible and repeated tie-ins shall follow OSHA guidelines. All scaffolds shall have safe access with stairs being the first choice over a ladder. Scaffolds should include netting on upper levels if there is any possibility for materials to fall over the toe boards, per OSHA guidelines.

PART 3 EXECUTION

3.01 TEMPORARY UTILITIES

- A. Water Service: Water for construction purposes will be available from the Owner at no charge. Contractor shall operate exterior hose bids only with properly fitted handles which shall be removed at the end of each work day. Any damage to hose bids or hose bib stems shall be repaired by Contractor. Hose bibs shall not be operated with pliers.
- B. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
 - 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

3.02 CONSTRUCTION FACILITIES

- A. Temporary construction facilities shall include the following:
 - 1. Field Office (if appropriate): prefabricated, mobile units or job-built construction with lockable entrances and serviceable finishes including lights and utilities.
 - 2. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities. Facilities will be located at sites approved by Owner.
 - a. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
 - b. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
 - c. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
 - 3. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations at a location approved by the Owner. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements. Use of Owner's waste disposal facilities is not acceptable.
 - a. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

3.03 VEHICULAR ACCESS AND PARKING

- A. Parking for Contractor vehicles may be available only in the approved Set-up and Staging area. No other vehicle parking on site will be allowed.

3.04 TEMPORARY BARRIERS AND ENCLOSURES

- A. Contractor shall provide temporary barriers and enclosures for protection from exposure, foul weather, construction operations and other activities. Contractor is responsible for protecting buildings and grounds from damages during construction.
- B. Contractor shall provide environmental protection by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Contractor shall provide storm water controls sufficient to prevent flooding from heavy rain.

- D. Contractor shall provide 6' chain link fencing with lockable gates and mesh to completely enclose the materials storage and staging area.

3.05 TEMPORARY CONTROLS

- A. Contractor shall provide security controls to protect work and materials at the project site.

3.06 PROJECT SIGNS

- A. Contractor shall provide temporary signs to provide information to building occupants directing them away from construction operations.

END OF SECTION 01 50 00

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This Section includes procedural requirements for cutting and patching.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

- A. Engineer's Approval: Obtain approval of cutting and patching before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
- B. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio. Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations sealed by a licensed Engineer in the state of the project showing integration of reinforcement with original structure.
- C. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.
- D. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.
- E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- F. Cutting and Patching Conference: If extensive cutting and patching is required, before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or

damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily

- cover openings when not in use.
 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
 5. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty and similar materials.

END OF SECTION 01 73 29

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. The Owner has established that this Project shall include proactive measures for waste management participation by all parties to the contract.
 - 1. The purpose of this program is to ensure that during the course of the Project all diligent means are employed to pursue practical and economically feasible waste management and recycling options.
 - 2. Waste disposal to landfills shall be minimized.

1.02 DEFINITIONS

- A. Waste: Any material that has reached the end of its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
- B. Construction waste: Solid wastes including, but not limited to, building materials, packaging materials, debris and trash resulting from construction operations.
- C. Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.
- D. Hazardous waste: Any material or byproduct of construction that is regulated by the Environmental Protection Agency and that may not be disposed in any landfill or other waste end-source without adherence to applicable laws.
- E. Trash: Any product or material unable to be returned, reused, recycled or salvaged.
- F. Landfill: Any public or private business involved in the practice of trash disposal.
- G. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials in a legal manner.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Final Acceptance.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Final Acceptance.
- J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- K. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.02 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Final Acceptance.
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - e. Remove debris and surface dust from roofs and walls.
 - f. Clean transparent materials and glass in windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - g. Remove labels that are not permanent.
 - h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess foreign substances.
 - j. Replace parts subject to unusual operating conditions.
 - k. Leave Project clean and ready for occupancy.

- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 74 00

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Warranties.

1.02 WARRANTIES

- A. Modified Bitumen Roofing System warranty as outlined in Section 07 52 16.
- B. Sheet Metal Finish warranty as outlined in Section 07 62 00.
- C. Manufactured Gravel Stops and Fascias warranty as outlined in Section 07 71 19.
- D. Contractor's five (5) year warranty on their company letterhead using sample contained in the Project Manual.
 - 1. Contractor will be required to attend two post construction field inspections: the first no earlier than twenty -three (23) months and no later than twenty-four (24) months after the date of Final Completion and the second no earlier than fifty-nine (59) months and no later than sixty (60) months. Contractor shall complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.
- E. Contractor's Asbestos-Free Warranty on their company letterhead using sample contained in the Project Manual.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 77 00

SECTION 05 31 23

STEEL ROOF DECK REPAIR

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Inspection, evaluation and remediation of existing steel roof deck. Remediation shall consist of the following:
 - 1. Repair of surface rust and through holes in steel decking.
 - 2. Replacement of damaged or deteriorated steel decking.
- B. Provide mechanical fasteners to secure steel decking to steel framing and to secure deck side and end laps.

1.1 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Rough Carpentry Section 06 10 00
 - 2. Preparation for Reroofing Section 07 01 50
 - 3. Modified Bitumen Roofing Section 07 52 16
 - 4. Storm Drainage Section 22 14 00

1.2 REFERENCES

- A. American Iron and Steel Institute (AISI) Standard- North American Specification for the Design of Cold-Formed Steel Structural Members, 2001 Edition with Supplement 2004.
- B. Steel Deck Institute, Inc. (SDI) Design Manual for Composite Decks, Form Decks, and Roof Decks (No. 31, 2007).
- C. American Institute of Steel Construction (AISC) Steel Construction Manual, 14th Edition.
- D. FM Global Data Sheet 1-28 Wind Loads to Roof Systems (Revised January 2000).
- E. American Welding Society (ANSI/AWS) D1.3 Structural Welding Code/Sheet Steel – 98 Structural Welding Code – Sheet Steel.
- F. ASTM International
 - 1. A653 (A653M)-06 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy - Coated (Galvannealed) by the Hot-Dip Process.
 - 2. A924 (A924M)-06 Standard Specification for General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.
 - 3. A 108-07 Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.

1.3 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.

- C. Latest edition of the Manufacturer's current material specifications and installation instructions.

1.4 QUALITY ASSURANCE

- A. Meticulous attention to the detail of installation and workmanship shall be provided to ensure the assemblage of products in the highest grade of excellence by skilled craftsmen of the trade.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Roof Deck: FM Approved or UL listed 22 gauge minimum; galvanized steel profile to conform to existing deck profile at end and side laps.
- B. Roof Deck Fasteners:
 - 1. Deck-to-structural steel: Fasteners shall be FM Approved, self-drilling deck fasteners of length and type as required by fastener manufacturer for thickness of structural steel. Acceptable manufacturers include:
 - a. ITW Buildex Corp. 12-24 Tek 5
 - b. SFS Intec Impax 12-24 SD5
 - c. Blazer 1/4-20 DP5
 - 2. Deck-to-deck side lap fasteners: Fasteners shall be FM Approved self-drilling deck side lap fasteners of length and type as required by fastener manufacturer for thickness of steel deck. Acceptable manufacturers include:
 - a. ITW Buildex Corp. 10-16 Tek 3
 - b. SFS Intec #10-16 SD3
 - c. Blazer #10-16 DP3
- C. Deck Repair Coating: Shall be high solids, low VOC, self-priming epoxy coating for use on steel structures such as:
 - 1. Amerlock 400 as manufactured by Ameron International
 - 2. Bar-Rust 231 as manufactured by Devoe
 - 3. High Build Epoxy Mastic as manufactured by Duron
 - 4. P45 Epoxy Mastic Coating as manufactured by Benjamin Moore & Co.
- D. Deck Repair Plates: Shall be galvanized steel plates of thickness indicated. Plates shall be sized to extend a min. 8" beyond the through hole in existing decking on all sides with plate edges resting completely on a rib.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Contractor shall inspect roof deck in work areas noted on roof plan. Notify engineer of additional damaged decking, or damaged structural elements.
- B. Before removing decking, cutting decking or fastening decking, the Contractor shall inspect interior conditions under the deck to prevent cutting or damaging the joists, electrical conduit, sprinkler piping, fixtures and utilities. The Contractor shall ensure conditions are satisfactory before proceeding with the work, and continuously monitor interior and exterior work conditions during demolition and construction operations.

- C. Commencement of work signifies Contractor's acceptance of conditions. Any defects in roofing work resulting from such accepted conditions shall be corrected to Engineer's satisfaction at no additional expense.
- D. The following descriptions indicate roof deck corrosion levels by degree. All roof deck areas are to be inspected and assessed a roof deck corrosion level of 1 through 5. Following the assessment, the appropriate Remediation Methods shall be conducted. Remediation methods shall follow the deck corrosion level descriptions.
 - 1. Degree #1
 - a. Red rust on top flange.
 - b. Dark brown rust scaling on top flange.
 - c. Dark brown rust scale removed by scraping/wire brushing to indicate minor pitting of the metal surface.
 - d. Deck flutes discolored.
 - 2. Degree #2
 - a. Red rust present on any of the deck surface.
 - b. Dark brown rust scale present on any of the deck surface.
 - c. Entire deck sections (flanges and flutes) have been or can be readily removed during examination or areas of decking are missing, up to 8" in any one direction.
 - 3. Degree #3
 - a. Red rust present on any of the deck surface.
 - b. Dark brown rust scale present on any of the deck surface.
 - c. Entire deck sections (flanges and/or flutes) have been or can be readily removed during examination or areas of decking are missing, from 8" to 13" in any one dimension.
 - 4. Degree #4
 - a. Red rust present on any of the deck surface.
 - b. Dark brown rust scale present on any of the deck surface.
 - c. Entire deck sections (flanges and/or flutes) have been or can be readily removed during examination or areas of decking are missing, from 13" to 24" in any one dimension.
 - 5. Degree #5
 - a. Red rust present on any of the deck surface.
 - b. Dark brown rust scale present on any of the deck surface.
 - c. Entire deck sections (flanges and/or flutes) have been or can be readily removed during examination or areas of decking are missing, 24" or greater in any one dimension.

3.2 PREPARATION

- A. Completely remove and/or vacuum debris from deck surface and ribs to allow for inspection of existing deck, and to fasten existing and new decking.
- B. Remove and properly dispose of all damaged decking (Corrosion Degree Level 5) and back-out/remove deck fasteners in the repair area.
- C. Contractor shall take all necessary precautions to prevent debris from entering building

space, and coordinate operations with Engineer and Owner.

- D. Contractor shall provide temporary protection of building interior and contents to prevent damage.

3.3 STEEL DECK REMEDIATION

A. Corrosion Degree 1:

1. Remove all loose dirt, rust, moisture, grease or other contaminants from the surface with a power wire brush.
2. Vacuum the roof deck surface clean.
3. Properly mix deck repair coating according to manufacturer's recommendations.
4. Do not mix more material than can be used in the materials expected pot life.
5. Material should be from 50° F to 90° F for optimum application.
6. Brush or roller apply deck repair coating as recommended by manufacturer.
7. Allow coating to dry a minimum of 30 minutes. Coating shall be dry to touch before roof insulation is installed.

B. Corrosion Degree 2:

1. Remove all loose dirt, rust, moisture, grease or other contaminants from the surface with a power wire brush.
2. Vacuum the roof deck surface clean.
3. Properly mix deck repair coating according to manufacturer's recommendations.
4. Do not mix more material than can be used in the materials expected pot life.
5. Material should be from 50° F to 90° F for optimum application.
6. Brush or roller apply deck repair coating as recommended by manufacturer.
7. Allow coating to dry a minimum of 30 minutes. Coating shall be dry to touch before deck repair plate is installed.
8. Mechanically attach 18 ga deck repair plate to deck ribs with deck to side lap fasteners 8" on center maximum or a minimum of 2 screws per side.

C. Corrosion Degree 3:

1. Remove all loose dirt, rust, moisture, grease or other contaminants from the surface with a power wire brush.
2. Vacuum the roof deck surface clean.
3. Properly mix deck repair coating according to manufacturer's recommendations.
4. Do not mix more material than can be used in the materials expected pot life.
5. Material should be from 50° F to 90° F for optimum application.
6. Brush or roller apply deck repair coating as recommended by manufacturer.
7. Allow coating to dry a minimum of 30 minutes. Coating shall be dry to touch before deck repair plate is installed.
8. Mechanically attach 16 ga deck repair plate to deck ribs with deck to side lap fasteners 8" on center maximum or a minimum of 2 screws per side.

D. Corrosion Degree 4:

1. Remove all loose dirt, rust, moisture, grease or other contaminants from the surface with a power wire brush.
2. Vacuum the roof deck surface clean.
3. Properly mix deck repair coating according to manufacturer's recommendations.
4. Do not mix more material than can be used in the materials expected pot life.
5. Material should be from 50° F to 90° F for optimum application.
6. Brush or roller apply deck repair coating as recommended by manufacturer.
7. Allow coating to dry a minimum of 30 minutes. Coating shall be dry to touch before deck repair plate is installed.
8. Mechanically attach 1/8" thick deck repair plate to deck ribs with deck to side lap

fasteners 8" on center maximum or a minimum of 2 screws per side.

E. Corrosion Degree 5:

1. Examine underside of steel deck for any conduit located directly below the deck surface, anything suspended or fastened to the deck surface, etc. If necessary, detach all objects from the bottom side of the deck to be removed.
2. Any deck meeting Corrosion Degree 5 shall be removed in its entirety.
3. Provide roof deck where existing is removed.
4. Overlap all deck end laps no less than 6" and as required to secure through both panels and into the structural steel. Lap ends only over structural framing. Deck fasteners shall penetrate deck panels no less than 2" from the edge of the panel.
5. Overlap all deck side laps to nest flush into neighboring deck panel. Install a minimum of two deck side lap fasteners.
6. Workers shall apply their weight over the area being fastened to prevent deck deflection and ensure complete contact between fasteners, deck and/or structural steel.
7. Follow deck Manufacturer's instructions and the latest edition of the Steel Deck Institute (SDI) Specifications and Commentary.

3.4 STEEL DECK SECUREMENT

A. Fasten all steel deck panels to steel framing and steel deck side laps as indicated in the contract drawings.

1. Field of Roof: Fasten deck to joists 12" on centers, one fastener in every other deck rib.
2. Perimeter of Roof: Fasten deck to joists 6" on centers, one fastener in every deck rib.
3. Deck Side-Lap Fastening:
 - a. Install two (2) deck panel side-lap fasteners between joists. Equally space the fasteners no greater than 30" apart.
4. Fastener position/location:
 - a. Deck fasteners shall be driven in the center of the bottom of the deck rib. The fasteners shall be driven within +/- 1/4" of the center of the structural steel bearing surface. The fasteners shall be driven along the center of the structural steel member, not near the edge of the structural steel.
 - b. Deck side lap fasteners shall be driven into the deck rib such that both panels are penetrated. The side lap fastener shall be located along the center of the bottom of the rib.
5. Workers shall apply their weight over the area being fastened to prevent deck deflection and ensure complete contact between fasteners, deck and/or structural steel.

3.5 INSTALLATION

- A. Contractor shall follow deck Manufacturer's instructions and the latest edition of the Steel Deck Institute (SDI) Specifications and Commentary.
- B. Deck panels shall be installed straight and true and shall be aligned with adjacent panels end and side laps without bending or binding the decking.
- C. Deck panel ribs shall contact bar joist top chord angles and other steel framing.

- D. At large deck penetrations with steel framing around the penetration, the deck ribs that are parallel to steel framing shall bear completely on steel framing. Framing shall be added by the Contractor.
- E. Where equipment, pipes, etc. penetrate the deck, the deck shall be cut to fit against the equipment, with no gaps between the deck and penetration exceeding ½". For support, the Contractor shall install steel framing around the penetration.
- F. Deck End Laps and Side Laps:
1. Deck end laps shall extend over the bar joist top chord angles, and fully over all other structural steel support members.
 2. Overlap all deck end laps no less than 4" and ensure both panels bear over the top chord of the joist.
 3. At deck end laps, deck fasteners shall penetrate both deck panels through the 4" lap. The fastener shall penetrate the two deck panels no less than 2" from the edge of each panel.
 4. Deck side laps shall nest flush into neighboring deck panels.
 5. Where deck sides terminate onto structural framing, the bottom of the deck rib shall bear fully on the steel framing.
 6. Fasten all deck panels to steel framing. Install deck side lap fasteners.
- G. Deck Fastening:
1. Field of Roof: Fasten deck to joists 12" on centers, one fastener in every other deck rib.
 2. Perimeter of Roof: Fasten deck to joists 6" on centers, one fastener in every deck rib.
 3. Workers shall apply their weight over the area being fastened to prevent deck deflection and ensure complete contact between fasteners, deck and/or structural steel.
- H. Deck Side-Lap Fastening:
1. Install two (2) deck panel side-lap fasteners between joists. Equally space the fasteners no greater than 30" apart.
 2. Workers shall apply their weight over the area being fastened to prevent deck deflection and ensure complete contact between fasteners, deck and/or structural steel.
- I. Fastener position/location:
1. Deck fasteners shall be driven in the center of the bottom of the deck rib. The fastener shall be driven within +/- 1/4" of the center of the structural steel bearing surface. The fasteners shall be driven along the center of the structural steel member, not near the edge of the structural steel.
 2. Deck side lap fasteners shall be driven into the deck rib such that both panels are penetrated. The side lap fastener shall be located along the center of the bottom of the rib.
- J. Deck openings less than 12":
1. Fasten 18 gage sheet metal over or around opening, into deck top flange spaced no greater than 12" apart.
 2. For above-deck roofing components, cut sheet metal to conform to penetration and fasten sheet metal to top flange of deck to support above-deck components.
 3. Where the hole/penetration is at a deck lap, fasten the deck side lap on either side of the hole/penetration to pull the lap together tight.

- K. Deck openings greater than 12" with steel framing around the perimeter of the opening:
 - 1. Fasten deck to framing 6" on centers (fasten each rib) around the perimeter of the opening.
 - 2. Where steel deck is parallel to steel framing, the deck rib shall bear completely on the steel framing. Fasten the deck 6" on centers along the rib that bears on the steel framing.
 - 3. Contractor shall install steel framing for full deck contact and support around the perimeter of the opening.
 - 4. Where gaps exist around penetration/equipment, cut sheet metal to conform to conditions and fasten to top flange of deck to ensure proper support of above-deck roofing components.

3.6 FIELD QUALITY CONTROL

- A. Contractor shall monitor the inside of the building at all times during removal and replacement of damaged steel decking to prevent damage to building, equipment and occupancy.
- B. Contractor shall monitor all hot work operations in strict accordance with the Owners requirements and local Code. These operations include, but are not limited to, cutting, welding, soldering, brazing, grinding, etc. and any and all other spark or flame producing operations.

END OF SECTION 05 31 23

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Rough Carpentry work required to facilitate installation of new roof assembly including:
 - 1. Provide pressure treated wood blocking and plywood sheathing.
 - 2. Re-securement of existing rough carpentry to remain in place.
 - 3. Removal and replacement of damaged, rotted or deteriorated rough carpentry with pressure treated rough carpentry to match existing.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Preparation for Reroofing Section 07 01 50
 - 2. Modified Bitumen Roofing Section 07 52 16
 - 3. Sheet Metal Flashing and Trim Section 07 62 00
 - 4. Manufactured Gravel Stops and Fascias Section 07 71 19

1.3 REFERENCES

- A. Refer to the following references, current edition for specification compliance:
 - 1. 2017 Florida Building Code
 - 2. American Society for Testing and Materials (ASTM)
 - 3. American Wood-Protection Association (AWPA)
 - a. AWPA E12 - Standard Method of Determining the Corrosion of Metal in Contact with Wood.
 - b. AWPA M4 - Standard for the Care of Preservative Treated Wood Products.
 - c. AWPA P5 - Standard for Waterborne Preservatives.
 - d. AWPA P23 - Standard for Chromated Copper Arsenate Type C (CCA-C).
 - e. AWPA P25 - Standard for Inorganic Boron (SBX).
 - f. AWPA P26 - Standard for Alkaline Copper Quat Type A (ACQ-A).
 - g. AWPA P27 - Standard for Alkaline Copper Quat Type B (ACQ-B).
 - h. AWPA P28 - Standard for Alkaline Copper Quat Type C (ACQ-C).
 - i. AWPA P29 - Standard for Alkaline Copper Quat Type D (ACQ-D).
 - j. AWPA P47 - Standard for DCOI/Imidacloprid/Stabilizer, Waterborne (EL2).
 - k. AWPA P48 - Standard for Copper Azole Type C (CA-C).
 - l. AWPA T1 - Use Category System: Processing and Treatment Standard.
 - m. AWPA U1 - Use Category System: User Specification for Treated Wood.
 - 4. American Plywood Association (APA)
 - 5. American National Standard
 - a. ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems
 - 6. Underwriters Laboratories, Inc. (UL)
 - 7. FM Global/Factory Mutual Research (FM)

1.4 DEFINITIONS

- A. Rough Carpentry includes carpentry work not specified as part of other Sections and generally not exposed.
- B. KDAT: Kiln Dried After Treatment.

1.5 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.

1.6 QUALITY ASSURANCE

- A. Contractor shall inspect wood to be installed for damage, warping, splits, and moisture content as defined by the applicable wood products industry standards. Materials that do not comply shall be rejected.
- B. Rough carpentry installation shall present a smooth, consistent substrate for roof system and flashing installation.
- C. Qualifications of workers: Provide sufficient, competent and skilled carpenters in accordance with accepted practices and supervisors who shall be present at all times during execution of this portion of the work, and who shall be thoroughly familiar with type of construction involved in this section and related work and techniques specified.
- D. Moisture Content:
 - 1. Treated wood products shall be KDAT.
 - 2. Treated lumber used in the roofing assembly shall not be stored or installed in a manner exposing it to rain.
 - 3. Moisture content of treated lumber shall be 19 percent or less before being covered/enclosed into roofing assembly.
 - 4. Contractor shall be responsible for ensuring lumber is delivered, stored and installed at 19% or less moisture content.
 - 5. Plywood shall be 18% or less before being covered/enclosed into roofing assembly.
- E. Each piece of treated lumber and plywood shall bear the stamp of the AWPA Quality Mark, indicating compliance with the requirements of the AWPA Quality Control Program.
- F. Lumber Standards: Comply with PS 20 and applicable rules of respective grading and inspecting agencies for species and products indicated.
- G. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel indicated.
- H. Installation of all required new rough carpentry for roofing and flashing terminations to ensure plumb, uniform and level metal flashings.
- I. Rough carpentry installation shall ensure roof membrane flashing transitions are smooth for complete roof drainage and appearance.
- J. Installation of all fasteners and associated materials to secure rough carpentry as detailed and specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Store a minimum of four inches above ground on framework or blocking. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks. Cover with protective waterproof covering providing for adequate air circulation and ventilation
- B. Exposure to precipitation during shipping, storage or installation shall be avoided. If material does become wet, it shall be replaced or permitted to dry prior to covering or enclosure by other roofing, sheet metal or other construction materials (except for protection during construction).
- C. Immediately upon delivery to job site, place materials in area protected from weather.
- D. Do not store seasoned materials in wet or damp portions of building.
- E. Protect sheet materials from corners breaking and damaging surfaces, while unloading.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Lumber: Shall Be No. 2 or better spruce or southern yellow pine. Shall be sound, thoroughly seasoned, dressed to nominal finish dimension, and free of warpage, cupping, and bowing. Dimensions shall be determined by job conditions or as indicated in detail drawings.
- B. Plywood Sheathing: Shall be structural 1 rated. Plywood shall be stamped APA RATED SHEATHING grade-C or better and shall be manufactured with exterior glue (exposure 1). Plywood shall have a minimum thickness of 3/4 inch or as required to match existing.
- C. Preservative Treatment:
 - 1. Treatment: ACQ as manufactured for Viance in accordance with AWPA U1 and P5, P26, P27, P28, P29 as appropriate. Use 0.15 lb/cu ft (2.4 kg/m³) of ACQ in accordance with AWPA U1: (UC3B) as appropriate.
 - 2. Treatment: Ecolife or EL2 as manufactured by Viance. Use 0.019 lb/cu ft (0.3 kg/m³) of Ecolife or EL2 (+ 0.2 lb/cu ft MCS) in accordance with AWPA U1 (UC3B) as appropriate.
 - 3. Engineers accepted equivalent.

2.2 FASTENERS

- A. General:
 - 1. All fasteners shall be stainless steel or as approved by Engineer.
 - 2. Fasteners securing pressure treated lumber shall be manufactured for corrosion resistance and exposures associated with pressure treated wood applications.
 - 3. Nails shall not be used at roof edges to fasten rough carpentry, lumber, plywood, etc. Screws, anchors, and/or machine bolts shall be used to secure rough carpentry at roof perimeter edges.
 - 4. Masonry screws, spikes, and drive-pins shall not be used to fasten edge/perimeter nailers to concrete decks. Minimum 1/2" diameter anchors or bolts shall be used to secure roof edge nailers to concrete substrates.
- B. Wood to steel deck and light gage steel framing (16-ga. or less):

1. Shall be #14-13 DP1, pancake or panhead, corrosion resistant, ASTM A153, FM Approved, self-drilling and self-tapping screw, length to provide minimum 3 pitches of thread through metal thicknesses. Acceptable manufacturers include:
 - a. ITW Buildex Teks
 - b. Concealor®
 - c. Blazer
 - d. SFS Intec
 - e. Engineers accepted equivalent.
- C. Wood to wood:
1. Screws: No. 10 or greater, stainless steel wood screws with flat head, or insulation screws. Length to embed into base substrate a minimum of 1-1/2".
 2. Nails: 8, 10 or 16 penny, stainless steel, ring shank nails. Length to embed into base substrate a minimum 1-1/2". Acceptable manufacturers include:
 - a. Maze Nails
 - b. Anchor Staple and Nail
 - c. Swan Secure Products
 - d. Manasquan Premium Fasteners
 - e. Engineers accepted equivalent.
- D. Wood to brick, concrete block, other masonry units, and solid concrete substrates:
1. Epoxy adhesive anchoring system: Minimum 1/2-inch diameter, corrosion resistant threaded rods supplied by the anchoring system manufacturer, length as required to provided minimum embedment as required by fastener manufacturer based upon substrate being secured. Screen for substrate provided by fastener manufacturer. Corrosion resistant nut and 1-1/2" diameter flat washer. Acceptable manufacturers include:
 - a. Hilti Hit Hy-10 Plus
 - b. Powers Fasteners, Inc. AC100 Anchoring System
 - c. ITW Ramset Epcon C6 Fast Curing Epoxy
 - d. Engineers accepted equivalent
- E. Wood to structural steel (greater than 12-GA.):
1. #12-24 DP5 (for steel thickness up to 1/2") or DP4 (for steel thickness from 1/8" to 3/8"), flat or hex head, corrosion resistant, self-drilling/self-tapping fastener of length to provide minimum 3 pitches of thread through metal thicknesses. Acceptable manufacturers include:
 - a. ITW Buildex Teks
 - b. SFS Intec
 - c. Blazer
 - d. Engineers accepted equivalent
- F. Toggle Bolt: Shall be 1/4" diameter toggle bolt consisting of machine screw and spring wing toggle with flat mushroom head, length as required by conditions.
- G. Washers: Fasteners heads for screws, anchors and bolts terminating at the surface of nailers shall be provided with a minimum 5/8 inch diameter, stainless steel or similar corrosion resistance flat washer provided by fastener manufacturer, unless washer is provided from factory as part of the fastener assembly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Contractor shall inspect substrates to receive rough carpentry, and ensure substrates are in satisfactory condition prior to installation of rough carpentry.
- B. Contractor shall inspect all new and existing rough carpentry including fasteners for material condition before proceeding with installation. Deteriorated, rotted, damaged, split, warped, twisted or wet materials shall be removed and replaced with specified materials. Refer to Section 01 22 00-Unit Prices.
- C. Contractor shall remove old cants, tapered edge strips, debris, old fasteners, etc. that interfere with the installation of new rough carpentry.
- D. Contractor shall notify Engineer in writing of unsatisfactory conditions.
- E. Commencement of work signifies Contractor's acceptance of substrates. Any defects in roofing work resulting from such accepted substrates shall be corrected at no additional expense to the Owner.

3.2 PREPARATION

- A. Steel/Metal Substrates:
 - 1. Any pressure treated wood to contact steel or metal shall have the steel/metal coated with a heavy coating of asphalt primer.
- B. Roof Deck and Structure:
 - 1. Roof deck and structure shall be dried and broomed and/or vacuumed clean of debris and foreign matter prior to installation of the new rough carpentry.
 - 2. Contractor shall adjust substrates to receive rough carpentry to ensure completed rough carpentry installation is acceptable for roofing and sheet metal flashings.
 - 3. Steel decking shall be coated with a uniform, heavy application of asphalt primer, or separated by membrane or other acceptable means to prevent contact between steel and treated wood products.
 - 4. Treated lumber shall not make direct contact with light gage steel decking.
- C. Masonry Walls:
 - 1. Adhesive anchors:
 - a. Contractor shall follow adhesive anchor manufacturer's published instructions for preparation and installation.
 - b. Pre-drill hole or clean-out existing gap/hole for adhesive anchors.
 - c. Use compressed air to blow-out all dust and moisture. Dust and moisture will result in failure of anchors and shall be removed before installing adhesive anchors.

3.3 INSTALLATION

- A. Remove existing damaged or deteriorated wood blocking, nailers, and curbs and replace with new material of same dimensions.
- B. Re-secure all existing wood nailers at roof edges that are to remain. Fastener type and spacing shall comply with this specification.
- C. Install new wood blocking, nailers, and curbs to achieve a minimum eight inch flashing height above the roof membrane. Wood nailers at perimeter roof edges and expansion

joints shall be installed to match insulation height. Maintain constant nailer height at perimeter edges.

- D. Wood blocking and nailers shall be installed concurrently with roof system installation. Removal of insulation and/or folding back of roof membrane to install wood blocking and nailers at a later date is not acceptable.
- E. Set rough carpentry to required levels and lines, with members plumb, true to line, material cut to fit, and braced to hold work in proper position. Use a belt sander to remove any obtrusive surface irregularities. Drive nails and spikes home; and pull bolt nuts tight with heads and washers in close contact with the wood.
- F. Fit rough carpentry to other construction; scribe and cope for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction. All joints between wood shall be installed for a smooth transition.
- G. Attachment:
 - 1. The Contractor shall consult the fastener manufacturer's published literature and follow the recommended requirements for pre-drilling, cleaning, placement and compatibility of substrates. Follow manufacturer's requirements for fasteners spacing, substrate preparation and substrate embedment where not specified.
 - 2. Securely attach rough carpentry work to substrate with fasteners. Anchor to resist a minimum force of 300 lbs/lineal foot in any direction.
 - 3. Rough carpentry attachment shall meet the requirements herein and that of the current FM Loss Prevention Data Sheet 1-49, Perimeter Flashing.
 - 4. Install bolts flush with the top surface of nailers where possible to avoid countersinking. Bolt bottom nailers then fasten upper nailers where possible. Countersink bolts, nuts and screws flush with wood surfaces only as detailed.
 - 5. Install fasteners without splitting wood. Pre-drill where necessary. Split or damaged wood shall be removed, or repaired and/or re-secured to provide acceptable conditions.
 - 6. For anchors, pre-drill concrete and masonry units to prevent damage or cracking of the masonry. Consult fastener manufacturer's published guides. Damaged masonry shall be repaired, and fasteners shall be removed and re-installed in an acceptable location.
 - 7. Fastener spacing: Fasteners shall be staggered 1/3 the board width and installed within 6" of each end.
 - a. Bolts, adhesive anchors, wedge and sleeve anchors, and machine bolts securing nailers shall be spaced 48 inches on center, staggered and an additional fastener within 6 inches of each end of nailer to prevent boards from twisting at board joints. Secure at 24" on center in corners (Zone 3) of the roof area.
 - b. Screws and 1/4 inch diameter anchors securing wood to concrete or masonry units shall be spaced 12 inches on center maximum, staggered, with fasteners installed at each end of nailer lengths to prevent wood from twisting at board joints.
 - c. Screws securing wood to wood shall be installed 12 inches apart, staggered, with two screws installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.
 - d. Screws securing wood to steel decking shall be 12 inches apart.
 - e. Self-drilling, and/or pre-drilled self-tapping screws securing wood to structural steel shall be spaced 12 inches apart, staggered, with one screw within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.
 - f. Nails securing wood to wood shall be spaced 12 inches apart, staggered, with two nails installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.

8. Plywood Sheathing Securement: Secure at 12" on center staggered each direction.
- H. Select fasteners of size and length that will not be exposed from the building interior and/or from the ground, or remove protruding fasteners, paint or finish to eliminate exposure.
- I. Thickness of wood nailers shall be flush with adjacent insulation and other materials. Additional fasteners shall be installed to ensure nailers are flush.
- J. Unless otherwise detailed, plywood used as blocking or shim shall be installed below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.
- K. Wood nailers at roof perimeters, expansion joints, roof area dividers, etc. shall not be less than 3 feet long.
- L. When multiple nailers are installed stacked two high or more, offset nailers no less than 12" such that joints at nailer end do not line-up vertically.
- M. Each end of nailers shall be fastened with additional fasteners to ensure a smooth transition at butted joints, and to prevent warping and/or twisting.
- N. Cants:
1. Add wood cants where required for membrane flashings.
 2. Where new wood cants are required, cut cant to form 45 degree transition using minimum 2" x 6" lumber, with a 5-1/2" face.
- O. Shims:
1. The Contractor shall add plywood and lumber shims as required for the specified height and thickness.
 2. Shims shall make full contact with stacked rough carpentry. Partial shim contact, and small shim pieces spaced apart are not acceptable.
 3. Plywood used as blocking or shim shall be installed below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.
- P. Curbs:
1. Adjust wood curbs to support rooftop piping, ducts, equipment, etc.
 2. Raise equipment to provide required flashing height for roofing.

3.4 CLEANING

- A. The Contractor shall ensure the site and building are cleaned to meet pre-construction conditions, as accepted by the Owner.
- B. The site and building shall be free of saw dust from pressure treated lumber, fasteners and other debris.
- C. Damages to the building, grounds, equipment and site shall be repaired or replaced by the Contractor to meet pre-construction conditions, as accepted by the Owner.

END OF SECTION 06 10 00

SECTION 07 01 50

PREPARATION FOR REROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparatory work to be completed prior to roof installation including but not limited to:
 - 1. Removal of existing roof assemblies down to the Lightweight insulating concrete deck.
 - 2. Repairs to structural deck.
 - 3. Soil pipe extensions.
 - 4. Raising of mechanical units/HVAC units to meet the required minimum flashing height.
 - 5. Installation and/or modification of through wall/edge primary/overflow scuppers.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Steel Roof Deck Repair/Securement Section 05 31 23
 - 2. Rough Carpentry Section 06 10 00
 - 3. Modified Bitumen Roofing Section 07 52 16

1.3 DEFINITIONS

- A. Removal: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain property of the Owner.
- B. Existing to remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.
- C. Material ownership: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site.

1.4 EXISTING ROOF ASSEMBLIES*

- A. Roof Section A
 - 1. Multi-ply built-up roofing membrane with a granule surfaced membrane cap sheet installed in hot asphalt
 - 2. Mechanically attached base sheet
 - 3. Thermoplastic membrane mechanically fastened
 - 4. Lightweight insulating concrete (with polystyrene filler insulation)
 - 5. Structural sloped steel deck

*Roof system composition is based on random sampling. Contractor is responsible for verification of roof system composition.

1.5 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.

- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- C. Latest edition of the Manufacturer's current material specifications and installation instructions.

1.6 QUALITY ASSURANCE

- A. Qualifications: Previous experience removing existing roof systems.
- B. Requirements: Contractor to comply with governing EPA regulations and hauling/disposal regulations of authorities having jurisdiction.

1.7 SCHEDULING

- A. Conduct demolition so that Owner's operations will not be disrupted. Provide 72 hours notification to Owner of activities that will affect Owner's operations.

1.8 WARRANTIES

- A. Any damage to existing items under warranty shall be repaired/replaced with materials acceptable to the Warrantor.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Lightweight Concrete Fill
 - 1. Lightweight insulating concrete patching compound incorporating cementitious binders, low density fine aggregates, and additives supplied by a single manufacturer.
- B. Steel Deck
 - 1. Refer to Specification Section 05 31 23.
- C. Wood Deck
 - 1. Refer to Specification Section 06 10 00.
- D. Galvanized Steel Plates for Concrete Deck Openings of size to extend a minimum of 6" beyond opening on each side of thickness as indicated in Contract Drawings.
 - 1. Deck opening up to 8" in any one direction: 18 gauge
 - 2. Deck opening from 8" to 13" in any one direction: 16 gauge
 - 3. Deck opening from 13" to 24" in any one direction: 1/8" thick
 - 4. Deck opening greater than 24" in any one direction: Steel deck or plate as determined by Engineer
- E. Soil Pipe Extensions (Tubos):
 - 1. Acceptable Manufacturer:
 - a. Tubos, Inc. www.tubos.biz
 - b. Engineers accepted equivalent
 - 2. Soil Pipe Extension: Solid-wall PVC fitting consisting of pipe and splice sleeve

inserts, configured for insertion and sealing to existing plumbing vent piping, sized to fit inside diameter of plumbing vent piping, enabling extension of piping to field-determined height:

- a. Material: Solid-wall PVC, white.
- b. Splice Sleeve Insert:
 - i. 6 inches Length at both ends of precut extension.
 - ii. Outside Diameter to be 1/4" less than outside diameter of soil pipe.
- c. Length:
 - i. Overall Length: 28 inches.
 - ii. Net Usable Length: 16 inches excluding Splice Sleeve Inserts.
- d. Sealant: Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT, and acceptable to roofing membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions to determine extent of demolition.
- B. Record the conditions of items to be removed/reinstalled and items to be removed/salvaged.
- C. Contractor shall not remove any element that may result in structural deficiency or collapse of any part of the structure or adjacent structures during demolition.
- D. Contractor to inspect substrate for soundness and notify Engineer in writing of any deficiencies. Commencement of work signifies Contractor's acceptance of site conditions.

3.2 PREPARATION

- A. Do not begin demolition until utilities have been disconnected/sealed and have been verified as such in writing.
- B. Do not close off or obstruct streets, walks or other adjacent occupied facilities without permission from Owner and authorities having jurisdiction.
- C. Provide safe conditions for pedestrians. Erect temporary protection such as walkways, fences, railings and canopies as required by OSHA and other governing authorities.
- D. Provide protection for adjacent building, appurtenances and landscaping to remain. Erect temporary fencing around trees to remain.
- E. Provide temporary weather protection as required to prevent water leakage and damaged to exterior or interior of adjacent structures.

3.3 UTILITIES/SERVICES

- A. Maintain existing utilities that are to remain in service and protect them against damage during selective site demolition unless authorized in writing by the Owner and authorities having jurisdiction.

1. Locate all conduits and equipment attached to the underside of the decking prior to reroofing. Insulation fastener locations are not to disturb existing conduits or interior components/equipment.
2. If utilities serving occupied portions of the site must be shut down, temporary services shall be provided.
3. Provide 72 hours notice to Owner if shut down is required.
4. Where services are to be removed, relocated or abandoned, provide necessary bypass connections to remaining occupied buildings and areas.

3.4 POLLUTION CONTROLS

- A. Use water, mist, temporary enclosures and other suitable methods to limit the spread of dust and dirt. Comply with local EPA regulations.
 1. Do not use water where damage may occur or where hazardous conditions would be created such as ice or flooding.

3.5 REMOVALS

- A. Demolish and remove existing construction only to the extent required by new construction.
- B. Remove all existing roofing, roof insulation, membrane and sheet metal and discard.
- C. Remove or correct any obstruction which might interfere with the proper application of new materials.
- D. Lift or remove all existing equipment so that existing flashings can be totally removed and new flashings installed.
- E. Remove debris from existing materials to provide clean, dry substrate.
- F. Demolish asphalt, concrete and masonry in small sections. Cut concrete and masonry at juncture with construction to remain using powered masonry saw, core drill or hand tools. Do not use powered impact tools.
- G. Remove and transport debris in a manner that will prevent damage/spills to adjacent buildings and areas.
- H. Dispose of demolished items and materials on a daily basis. On-site storage of removed items is not permitted.
- I. Transport demolished materials off-site and dispose of materials in a legal manner.
- J. Perform progress inspections to detect hazards resulting from demolition activities.

3.6 FLASHING HEIGHTS

- A. Permanently raise roof top equipment as required to achieve 8" minimum flashing height.
- B. Provide additional wood blocking to top of parapet walls and expansion joints to achieve minimum 8" flashing height.
- C. Extend all existing sanitary vents to height required by the applicable Plumbing Code, but no less than 8 inches and no more than 12 inches above the finished roof system.
 1. Preparation (Tubos)
 - a. Remove existing flashing from plumbing vent piping to extent required to

enable installation of new plumbing vent pipe extensions and completion of flashings.

- b. Clean plumbing vent piping to ensure that joint surfaces are clean, dry, and free from contamination including dirt, oils, grease, tar, wax, rust, and other substances that may inhibit adhesive or sealant performance.

2. Installation

- a. Insert end of plumbing vent pipe extension into existing plumbing vent piping.
 - i. Verify circumference of existing plumbing vent piping and plumbing vent pipe extension is appropriate to achieve secure, rigid installation.
 - ii. Mark plumbing vent pipe extension at required height above finished roof surface level, and cut to required length.
 - iii. Apply adhesive or sealant to plumbing vent piping as appropriate to existing pipe material and plumbing vent pipe extension, and mate plumbing vent pipe extension to existing piping. Apply adequate adhesive or sealant to achieve secure, rigid installation.

3.7 LIGHTWEIGHT CONCRETE FILL

- A. Remove all loose, wet, and deteriorated existing lightweight concrete fill from repair area.
- B. If fill is wet or deteriorated down to the steel form deck refer to Steel Deck Repair specification section.
- C. Mix lightweight concrete fill with water utilizing ratios, quantities, and methods recommended by the manufacturer.
- D. Slowly pour lightweight fill into repair area and screed off flush with surrounding existing fill.
- E. Mechanical attachment of base sheet may begin after the new fill has set.

3.8 STEEL PLATE INSTALLATION

- A. Mechanically attach deck repair plates to concrete deck with approved fasteners 6" on

3.9 SCUPPER INSTALLATION

- A. Locate bottom of overflow scupper 2 inches above surface of the roof system adjacent to the nearest roof drain (excluding sump).
- B. Remove existing masonry and store for reuse if in good condition. Reinstall masonry units to extent possible. Provide new brick or concrete masonry units to match existing.
- C. Extend opening through entire thickness of parapet. Take precautions to avoid damaging adjacent wall surfaces.
- D. Provide finished openings as indicated.
- E. Install veneer materials of same type, size and finish to match existing. Set units in full beds of mortar to match adjacent joints in thickness. Tool joints to match.
- F. Repair exterior finish to match adjacent surfaces.

3.10**CLEANING**

- A. Inspect the site daily and clean up debris and hazards at the end of each day. Adjacent roads, drives and walkways shall remain in operation and free from construction materials debris.
- B. Clean adjacent structures of dust dirt and debris. Return adjacent areas to original conditions to the satisfaction of the Owner.

END OF SECTION 07 01 50

SECTION 07 52 16

MODIFIED BITUMEN ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Mechanically attach base sheet to LWIC.
- B. Provide a torch applied SBS modified bituminous membrane system consisting of two plies of asphalt elastomeric membrane reinforced with polyester and/or fiberglass mat.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Steel Roof Deck Repair Section 05 31 23
 - 2. Rough Carpentry Section 06 10 00
 - 3. Preparation for Reroofing Section 07 01 50
 - 4. Sheet Metal Flashing and Trim Section 07 62 00
 - 5. Roof Accessories Section 07 72 00
 - 6. Storm Drainage Section 22 14 00

1.3 REFERENCES

- A. Refer to the following references, current edition for specification compliance:
 - 1. 2017 Florida Building Code
 - 2. National Roofing Contractors Association – NRCA
 - a. NRCA Roofing and Waterproofing Manual
 - 3. ASTM International
 - a. ASTM D 41 – Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - b. ASTM E 108 Standard Test Methods for Fire Tests of Roof Coverings
 - c. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction Materials.
 - d. ASTM D 3019 Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos Fibered and Non-Asbestos Fibered.
 - e. ASTM D 3409 Standard Test Method for Adhesion of Asphalt-Roof Cement to Damp, Wet, or Underwater Surfaces.
 - f. ASTM D 4479 Standard Specification for Asphalt Roof Coatings – Asbestos Free.
 - g. ASTM D 4586 Specification for Asphalt Roofing Cement, Asbestos Free.
 - h. ASTM D 6162 Specification for SBS Modified Bitumen Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
 - i. ASTM D 6163 Specification for SBS Modified Bitumen Sheet Materials Using Glass Fiber Reinforcements.
 - j. ASTM D 6164 Specification for SBS Modified Bitumen Sheet Materials Using Polyester Reinforcements.
 - 4. Asphalt Roofing Manufacturers Association – ARMA
 - 5. FM Global

- a. FM 4450 – Approval Standard for Class 1 Insulated Steel Deck Roofs
 - b. FM 4470 – Approval Standard for Class 1 Roof Coverings
6. Underwriters Laboratories, Inc. – UL
- a. UL 580 – Test for Uplift Resistance of Roof Assemblies
 - b. UL 790 – Tests for Fire Resistance of Roof Covering Materials
 - c. UL 1897 – Uplift Resistance for Roof Covering Systems

1.4 PERFORMANCE REQUIREMENTS

- A. Install roofing system to meet UL 790 Class A/ASTM E 108 Class A Fire Rating.
- B. Wind Design: Install roofing system to meet or exceed the requirements of the current adopted version of ASCE-7, and shall be an approved assembly tested to the wind uplift pressures listed on contract drawings.

1.5 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures for Submittals.
- B. Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- D. Submit documentation of approved, tested roof system to meet the specified requirements for the following:
 - 1. Wind uplift pressures
 - 2. UL Fire Resistance Rating

1.6 QUALITY ASSURANCE

- A. Roofing applicator shall be approved by the material manufacturer. Additionally, roofing applicator shall have the experience of 5 similar roof projects. Verification shall be provided to the Engineer upon request.
- B. Manufacturer shall have been producing modified bitumen products in the United States for a minimum of 10 years. The primary roofing products shall have maintained a consistent composition for a minimum of five years without a change in the basic product design or SBS modified bitumen blend (e.g. no substantive changes in product composition, polymer specification, asphalt or filler formulation).
- C. The base ply and flashing reinforcing ply shall be fully inspected by the Contractor and Manufacturer's technical representative and repaired and prepared to meet the Manufacturer's requirements prior to installing the surface ply.
- D. The base ply shall not be exposed for longer than the manufacturer's maximum requirement for exposure and shall be acceptable for surface ply applications. Any base ply exposed longer than the maximum requirement will be subject to rejection or additional remedial requirements prior to application of the surface ply.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery. Materials shall be delivered in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

- B. Storage: Store materials out of direct exposure to the elements on pallets at least 4 inches above ground level at site location acceptable to the Owner.
 - 1. Storage trailers are acceptable provided they are equipped with a lock and located at a site location acceptable to the Owner.
 - 2. Utilize tarps that will completely cover materials to prevent moisture contamination. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps.
 - 3. Install vapor retarders under material storage areas located on the ground.
 - 4. Store roll goods on end on a clean flat surface.
 - 5. Remove damaged or deteriorated materials from the job site.
- C. Handling. Material shall be handled in such manner as to preclude damage and contamination with moisture or foreign matter.

1.8 PROJECT CONDITIONS

- A. Environmental Requirements
 - 1. Roofing shall not be applied during precipitation and shall not be started in the event there is a probability of precipitation during applications.
 - 2. The membrane shall not be applied at or below the dew point temperature.
 - 3. When conditions are damp and where adjacent roof areas have moisture or dew, the roof shall be fully dried to prevent tracking water over the membrane substrates.
 - 4. At ambient temperatures of 40°F and below, including wind chill, take all precautions to ensure all adhesives and other materials maintain the minimum acceptable temperature at the point of roofing application as recommended by the membrane manufacturer.
- B. Protection
 - 1. Protect against staining and mechanical damage of adjacent surfaces and work areas during application. Staining, mechanical damage, or discoloration of the membrane shall be cause for rejection.
 - 2. Prevent smoke and other fumes/odors from entering facility by coordinating with Facility representative and by temporary intake shut down and/or covering intake.
 - 3. Protect materials being installed and storage of materials against wind related damage.
- C. Torch Operation and Safety
 - 1. Refer to Section 01 35 00-Hot Work Operations for torch operation and safety.

1.9 WARRANTY

- A. Manufacturer's Guarantee: Manufacturer's standard form, non-pro-rated, without monetary limitation or deductibles, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks or breaches in the primary roof membrane causing moisture to enter the substrate below (even if visible leaks are not observed inside the facility). Warranty to remain in effect for wind speeds up to 72 mph. Warranties requiring the Owner's signature will not be acceptable.
 - 1. Warranty to include but not be limited to membrane, insulation, base sheet, mastics, adhesives, fasteners, sealants, base flashings, etc.
 - 2. Warranty Period: Twenty years from date of Substantial Completion
 - 3. Manufacturer's Representative shall attend one post construction field inspection:

no earlier than fifty-nine (59) months and no later than sixty (60) months after the date of Substantial Completion. Submit a written report within seven (7) days of the site visits to the Engineer listing observations, conditions and any recommended repairs or remedial action.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements herein, the following manufacturers are approved:

1. Firestone Building Products
2. GAF Materials Corporation (GAF)
3. Johns Manville (JM)
4. Siplast
5. Engineer's Accepted Equivalent

2.2 MEMBRANE MATERIALS

A. Base Sheet: Glass-reinforced, asphalt-coated base sheet meeting ASTM D 4601 or ASTM D 4897, Type II. Provide vented sheets for application over lightweight insulating concrete substrates as required by the membrane manufacturer.

1. Firestone MB Base M
2. GAF Stratavent
3. JM Permaply 28
4. Siplast Parabase FS

B. Roof Membrane Assembly:

1. A dimensionally stable roof membrane assembly consisting of 2 plies of a prefabricated, reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane secured to a prepared substrate. Both reinforcement mats shall be impregnated and coated each side with a high-quality SBS modified bitumen blend.
2. The roof system shall pass ASTM D 5849, Resistance to Cyclic Joint Displacement at 14°F. Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles as manufactured and 200 cycles after heat conditioning according to ASTM D 5147.
3. Base Ply Membrane (Torch Applied): Glass fiber and/or polyester reinforced ply sheet manufactured for torch application, meeting or exceeding requirements of ASTM D 6163, D 6164, Type I or II, Grade S.
 - a. Firestone SBS Glass Torch Base
 - b. GAF SBS Heat Weld Smooth
 - c. JM Dynaweld Base
 - d. Siplast Paradiene 20 TG
4. Surface Ply Membrane (Torch Application): Glass fiber and/or polyester reinforced ply sheet manufactured for torch application, meeting or exceeding requirements of ASTM D 6163, D6164, Type I or II, Grade G. Granules to be white.
 - a. Firestone Premium FR Torch
 - b. GAF SBS Heat Weld Plus FR
 - c. JM Dynaweld Cap FR
 - d. Siplast Paradiene 30 FR TG

C. Flashing shall consist of:

1. Reinforcing/Stripping Ply (Torch Application):
 - a. Firestone SBS Poly Torch Base
 - b. GAF Ruberoid SBS Heat Weld Smooth
 - c. JM Dynabase HW
 - d. Siplast Paradiene 20 TG
 2. Flashing/Target Ply (Torch Application):
 - a. Firestone SBS Premium FR Torch
 - b. GAF SBS Heat Weld Plus FR
 - c. JM Dyanweld Cap 180 FR
 - d. Siplast Parafor 50 LT
- D. Fluid Applied Flashing System: Shall be membrane manufacturer's polyurethane or PMMA based resin with polyester fleece flashing system.
1. Firestone Ultraflash Liquid Flashing
 2. GAF Topcoat
 3. JM SeamFree PMMA Liquid Membrane
 4. Siplast Parapro

2.3 RELATED MATERIALS

- A. Asphalt: Shall be certified for full compliance with the requirements for Type III asphalt listed in Table 1, ASTM D-312. Each container or bulk shipping ticket shall indicate the equiviscous temperature (EVT), the finished blowing temperature (FBT), and the flash point (FP).
- B. Asphalt primer: Shall meet ASTM D-41 requirements and be approved for intended use by membrane manufacturer.
- C. Flashing Cement: An asphalt cutback mastic, reinforced with non-asbestos fibers, enhanced slump resistance, used for all flashing and vertical applications conforming to ASTM D 4586 Type II requirements.
 1. Firestone Multi-Purpose MB Flashing Cement
 2. GAF 202 Flashing Cement
 3. JM MBR Flashing Cement
 4. Siplast PA 828
- D. Solvent Free Adhesive: A single component, solvent-free modified asphalt adhesive designed for application of the specified roof membrane in areas below the fluid applied flashing.
- E. Utility Roof Cement: An asphalt cutback general utility mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges and temporary seals conforming to ASTM D 4586 Type II requirements.
- F. Sealant: An SBS polymer modified asphaltic flashing cement in a 10.4-ounce cartridge conforming to ASTM 4586 requirements approved by the roofing membrane manufacturer for use in conjunction with the roofing membrane materials.
- G. Ceramic granules: Shall be of color scheme matching the granule surfacing of the cap sheet comparable to No. 11 granules.
- H. Adhesive and Bitumen Overrun Surfacing (Cool Roof). Approved Products:

1. Siplast Synthetic Chips: Synthetic chips to match the factory applied reflective surfacing of the surface ply.
 2. Johns Manville Ceramic-coated Granules: Granules to be coated with JM CR Acrylic Seam Coating to match reflective surfacing of the surface ply.
- I. Metallic Powder: A finely graded metal dust as supplied or approved by the membrane manufacturer, used for covering bitumen overruns over the foil surfaced materials.
 - J. Walk Pad Material: Shall be a prefabricated (by the membrane manufacturer), puncture resistant polyester core reinforced, polymer modified bitumen sheet material topped with a ceramic granule wearing surface.
 - K. Low Profile Expansion Joint: Shall be flat, vulcanized waterproofing joint integral with roofing membrane to accommodate building movements up to 1" and manufactured for torch application such as Flamline by Situra, Inc. or engineers accepted equivalent. Must be approved by membrane manufacturer for inclusion in warranty.

2.4 FASTENERS

- A. Base Sheet Fasteners: Shall be G-90 galvanized steel one-piece unit with minimum 2.7" diameter plate and minimum 1.7" length. Fastener must be approved by the membrane manufacturer for use in lightweight insulating concrete and inclusion in warranty.
 1. Olympic 1.7 Base Sheet Fastener
 2. ITW Buildex 1.7" LWC
 3. Siplast NVS Fasteners
- B. Base Flashing Fasteners (Wood): Shall be galvanized ring shank nail with one-inch diameter cap, such as Regular Round Head Fasteners as manufactured by Simplex Nails. Fastener length shall be one inch minimum and must be approved by the membrane manufacturer for inclusion in warranty.
- C. Base Flashing Fasteners (Concrete/Masonry): Shall be 1/4" diameter metal-based expansion anchor for use in concrete or masonry substrates with length to penetrate substrate a minimum of 1-1/2".
- D. Termination Bar: 1/8" X 1" aluminum or stainless-steel flat bar with pre-drilled oversized or slotted holes 8" on center.

PART 3 EXECUTION

3.1 EXAMINATION

- A. A pre-job conference including the Engineer, Contractor, and the membrane manufacturer's representative shall be conducted prior to the application of the roofing.
- B. Contractor shall verify that work penetrating the roof deck or work which may otherwise affect the roofing has been properly completed.
- C. Contractor shall inspect insulation system substrate prior to application of membrane. Commencement of work signifies Contractor's acceptance of substrate. Any defects in roofing work resulting from such accepted substrates shall be corrected to Owner's satisfaction at no additional expense.

3.2 PREPARATION

- A. General. All surfaces shall be swept or vacuumed prior to commencement of roofing.

- B. Contractor shall coordinate closure of air intakes prior to application of primer and cold adhesives.
- C. All membranes shall be unrolled and allowed to relax in accordance with membrane manufacturer's recommendations or a minimum of thirty minutes, whichever is greater.
- D. Where walls, curbs, expansion joints, etc. present an unacceptable substrate for flashing and where flashings substrates are combustible, a layer of non-combustible overlayment insulation shall be fastened to provide a suitable substrate for flashing.

3.3 APPLICATION

- A. General:
 - 1. Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of the roofing membrane base ply shall immediately follow application of base sheet/insulation system as a continuous operation.
 - 2. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials (i.e. granules, etc.), and exercise care in ensuring that the finished application is acceptable to the Owner. Excessive footprints or impressions in the surface ply will be grounds for rejection thereby requiring complete membrane tear-off and replacement.
 - 3. Priming:
 - a. Prime metal flanges, concrete and masonry surfaces with a uniform coating of asphalt primer.
 - b. Primer shall provide full coverage to ensure surfaces are dark brown to black. No less than 1 to 1-1/4 gallons per square will be accepted.
 - c. Allow primer to fully dry prior to application of asphalt/adhesive.
 - 4. Inspect membrane and flashing application each day. Repair all deficiencies daily prior to beginning or resuming other work.
 - a. Membrane deficiencies shall be cut open and removed as necessary.
 - b. Repairs shall extend from lap to lap.
- B. Base Sheet: As a minimum the base sheet shall be mechanically attached in accordance with the base sheet fastening pattern in the contract drawings. If additional fastening is required by the manufacturer to achieve the required wind uplift resistance, the manufacturer's requirements shall be utilized. Starting at the low point of the roof, over a properly prepared substrate, apply base sheet in a shingle fashion with minimum 6" end laps and 3" side laps. Apply asphalt primer to head and plates of fasteners.
- C. Roof Membrane:
 - 1. Apply membrane in accordance with the manufacturer's instructions and the following requirements.
 - 2. Apply all layers of roofing free of wrinkles, creases or fishmouths.
 - 3. Exert sufficient pressure by use of roller or broom on the roll during application to ensure prevention of air pockets.
 - 4. Stagger the lap seams between the base ply layer and the finish ply layer.
 - 5. Apply all layers of roofing perpendicular to the slope of the deck.
 - 6. Fully bond the base ply to the prepared substrate, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application.

7. Fully bond the surface ply to the base ply, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the torch applicator. Stagger end laps of the surface ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the surface ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the surface ply a minimum 3 feet from end laps in the underlying base ply.
 8. Follow membrane manufacturer's recommendations if hot air welding of laps is required.
- D. Torch Application:
1. Utilize heat welders experienced in torch application.
 2. Warm the surface to which the membrane is being applied, preheat portions of the roll which are about to be applied and melt the modified asphalt on the back of the sheet which will be used to adhere the membrane. The area of the roll where the modified asphalt is being melted is the most critical. Roll must be heated evenly across the entire width of the sheet being heat welded.
 3. Ensure a small bead of asphalt precedes the roll as it is laid down. Bead of asphalt shall be visible to the applicator and should flow out on both sides of the sheet.
 4. Granule Embedment: Embed granules at all locations where membrane material will be installed over a granulated surface and a selvage edge is not present. Using a torch or embedment tool, heat the area and push the granules down into the heated bitumen. Do not scrape or remove the granules from the surface.
- E. Water cut-off: At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.
- F. Flashings: Shall be installed concurrently with the membrane installation.
1. Prior to installing flashings over plywood substrates, install a layer of rosin paper and base sheet. Secure materials to plywood with approved fasteners at 6" on center staggered in all directions.
 2. Prior to torch application along cant strips, provide self-adhered flashing ply in accordance with the below requirements.
 3. Base flashing shall be accomplished using a reinforcing ply and flashing ply. The reinforcing sheet shall be lapped a minimum of three (3) inches to itself and shall extend a minimum of four (4) inches onto the base ply surface from the base of the cant and a minimum of three (3) inches up the vertical termination above the toe of the cant. The flashing sheet shall be lapped a minimum of three (3) inches to itself and shall extend a minimum of six (6) inches from the toe of the cant onto the surface ply surface and a minimum of three (3) inches up the vertical termination above the toe of the cant or as noted in the detail drawings. Lap seams in the reinforcing layer shall never coincide with the laps of the flashing layer. The reinforcing sheet and flashing sheet shall be adhered by cold adhesive (in accordance with the manufacturer's guidelines). All flashing sheets shall be cut off the end of the roll and be applied vertically, always working to a selvage edge.
 4. Base flashing shall be mechanically terminated a minimum of eight (8) inches above the finished roof surface.
 - a. Wood Substrate: Base flashing shall be mechanically terminated using approved fasteners eight (8) inches on center. Fastener heads shall be covered with a three-course roof cement and fabric.
 - b. Concrete/Masonry Substrate: Base flashing shall be mechanically terminated using approved fasteners and termination bar.
 - c. Gypsum Sheathing Substrate over Metal Stud Wall: Base flashing shall

be mechanically terminated using approved fasteners and termination bar into each metal stud.

5. Base flashing shall be terminated at all roof edges by extending the base flashing at least two inches beyond the edge of the roof and mechanically attaching a termination bar vertically with appropriate fasteners eight inches on center. Provide a continuous bead of sealant along outside edge of termination bar.
6. Sheet metal incorporated into the roofing system shall be sealed off with stripping ply. Stripping plies shall be installed in roof cement and fit tight to the edge of the sheet metal. The stripping ply shall extend four inches beyond sheet metal onto roof membrane. Stripping ply shall be installed prior to application of surface ply.
7. Provide sealant installed to fill void between edge of sheet metal and surface ply edge (i.e. at metal edge, pipe penetrations, etc.) properly tooled to ensure adhesion and slope to shed water. Broadcast granules into properly installed sealant.

G. Fluid Applied Flashing Application

1. Using masking tape, mask the perimeter of the area to receive the flashing system. Apply resin primer to substrates requiring additional preparation and allow primer to set.
2. Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.
3. Refer to manufacturer's installation instructions for application rates and additional installation information.
4. Broadcast granules into horizontal surface of fluid to match adjacent surface ply.

H. Roof Drain

1. Provide roof drain flashings as indicated in detail drawing. Refer to the above requirements for fluid applied flashings.
2. Refer to Section 22 14 00.

I. Retrofit Roof Drain

1. Adhere base ply in full bed of solvent free adhesive around drain bowl.
2. Install retrofit roof drain according to manufacturer's installation instructions and strip-in with stripping membrane to extend 4" beyond drain flange.
3. Provide fluid applied flashing as shown in the contract drawings and indicated above.
4. Refer to Section 22 14 00.

J. Walk Pad Material

1. Apply walk pad material to a clean, dry surface.
2. Prior to application, cut walk pad material into maximum 5' lengths and allow to relax until flat. A straight edge or chalk line should be used to ensure straight square cuts. Do not cut the walk pad material directly on the roof surface.
3. Position walk pad material so as to leave minimum 2" gaps between panels to allow for proper drainage.
4. Adhere walk pad panels to surface ply with roof cement applied to the back of the panels in spots approximately 5" square. Use a notched trowel to keep the cement 3/8" thick.
5. Walk-in each panel to ensure complete contact with the membrane surface.
6. Provide walk pads at the following locations:
 - a. Around roof hatches.
 - b. Around HVAC units.

- K. Ponding Water: The ponding of any water on the roof surface after installation of the roofing system is not acceptable and will be grounds for rejection of the roof. Ponding is herein defined as precipitation remaining in a four square foot area or larger, 1/4 inch or deeper for a period of 24 hours from the termination of precipitation. Contractor shall not apply surface ply until verification of proper drainage has been determined. Contractor shall be responsible for modifications to roof system to ensure proper drainage including but not limited to reinstallation of roof system, installation of additional tapered insulation and/or installation of additional base plies.

3.4

CLEANING

- A. Remove all debris and excess material from the roof area. Pick-up all loose fasteners and sheet metal scraps.
- B. The Contractor shall clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.

END OF SECTION 07 52 16

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fabrication and installation of new sheet metal flashings and trim to provide a permanently watertight condition.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Rough Carpentry Section 06 10 00
 - 2. Modified Bitumen Roofing Section 07 52 16
 - 3. Manufactured Gravel Stops and Fascias Section 07 71 19

1.3 REFERENCES

- A. Refer to the following references for specification compliance:
 - 1. 2017 Florida Building Code
 - 2. ASTM International
 - 3. National Roofing Contractors Association (NRCA)
 - 4. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - a. Architectural Sheet Metal Manual, Seventh Edition – January 2012
 - 5. ANSI/SPRI ES-1

1.4 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- C. Pre-finished sheet metal and sealant color chart.
- D. Shop Drawings for any transitions and/or terminations not depicted in Contract Drawings.

1.5 QUALITY ASSURANCE

- A. Installation shall comply with the Contract Drawings. References to figures are from SMACNA Architectural Sheet Metal Manual, Seventh Edition – January 2012.
- B. Ensure work is free of leaks in all weather conditions.
- C. Fabricate metal edge and coping in accordance with ANSI/SPRI ES-1 requirements.
- D. Workmanship shall be first-class in every respect. The sheet metal work shall be assembled and secured in accordance with these specifications, the manufacturer's requirements and referenced standards.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. Storage: Store materials within areas designated or approved by the Owner. Ensure materials remain dry, covered and not in contact with the ground.
- C. Handling: Handle material in such manner as to preclude damage and contamination with moisture or foreign matter.

1.7 PROJECT CONDITIONS

- A. Environmental: Protect building and its components from the elements at all times during the project.
- B. Coordination and Scheduling: Coordinate all phases of work to allow continuity of work without delays.

1.8 WARRANTY

- A. Contractor to provide the pre-finished sheet metal manufacturer's thirty (30) year finish warranty from the date of substantial completion.
- B. Provide certification of air-dried kynar paint or powder coating for specified materials.

PART 2 PRODUCTS

2.1 PRE-FINISHED STEEL

- A. Galvalume coated steel meeting or exceeding AZ50 per ASTM A792. Manufacturer's smooth finish, pre-finished color coatings consisting of full strength 70% Kynar 500 fluorocarbon (Polyvinylidene Fluoride PVF2) coating over a urethane primer on the finish side, with primer and a wash coat on the reverse. All measurements per NCCA Technical Bulletin II-4 or ASTM D1005. A strippable plastic film should protect the finish during fabrication and installation. Manufacturer's standard color to be selected by Owner.
 - 1. 24 gauge
 - a. Slip Flashing
 - b. Receiver Flashing
 - c. Counterflashing

2.2 GALVALUME

- A. Galvalume coated steel meeting or exceeding AZ50 per ASTM A792
 - 1. 22 gauge
 - a. Continuous Cleat

2.3 FASTENERS

- A. Roofing Nails: 11 or 12 gauge stainless steel ring shank roofing nails with diamond point, minimum 3/8" diameter head and length as required to penetrate substrate a minimum of 1-1/4".
- B. Screws:
 - 1. Sheet metal to wood attachment (exposed): #12 stainless steel, 5/16 HWH with

- length to penetrate substrate a minimum of 1-1/2". Provide with bonded EPDM washer or washer specified below.
2. Sheet metal to wood attachment (concealed): #10 stainless steel, low profile pancake head with length to penetrate substrate a minimum of 1-1/2".
 3. Sheet metal to light gauge steel attachment: #14-13 DP1 stainless steel low profile pancake head of length as required for three threads to penetrate metal substrate or min. 1" penetration though wood substrates.
 4. Sheet metal to sheet metal attachment (exposed): 1/4" x 7/8" carbon steel, self-drilling point, self-tapping, zinc alloy hex head screws with bonded EPDM tubular washer under head of fastener; screw heads to match color of wall panel by means of factory applied coating.
- C. Concrete and Masonry Anchors: 1/4" diameter metal based expansion anchor with stainless steel pin of length to penetrate substrate a minimum of 1-1/2".
- D. Washers: Shall be stainless steel with neoprene gasket backing. Shall be 9/16" diameter for use with #12 screws and 5/8" diameter for use with 1/4" diameter concrete and masonry anchors.
- E. Rivets: #44 stainless steel rivets with stainless steel mandrel. Length of rivet to properly fasten particular sheet metal components. Rivets shall be factory painted to match adjacent sheet metal.

2.4 RELATED MATERIALS

- A. Sheet Metal Underlayment: 40-mil minimum thickness sheet; slip-resistant surfacing, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release paper backing; suitable for high temperature applications up to 250 degrees. Acceptable products include:
1. Mid-States Asphalt Quik-Stick HT
 2. Grace Ice and Water Shield HT
 3. Carlisle WIP 300 HT
- B. Silicone Sealant: Shall be a one-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant. Shall meet ASTM C 920, Type S, Grade NS, Class 100, Use M, G, A or O. Color to match adjacent materials.
- C. Sealant Tape: Minimum 1/2" wide non-skinning butyl sealant tape.
- D. Butyl Sealant: Shall be gun grade, non-skinning, non-hardening, flexible blend of butyl rubber and polyisobutylene sealant.
- E. Aluminum Tape: Pressure-sensitive, 2" wide aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as bond breaker under the metal edge cover plates.
- F. Backer Rod: Closed-cell polyethylene or polyurethane rods sized approximately 25% larger than joint opening.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Coordinate with other work for correct sequencing of items which make up the entire system.
- B. Ensure substrates are installed, secured and modified to accommodate sheet metal

flashings.

- C. Deficiencies associated with the sheet metal substrates shall be reported to Engineer before beginning sheet metal work. All such deficiencies shall be corrected before installing sheet metal flashings.

3.2 **INSTALLATION**

A. General:

1. All joints to be locked and sealed or soldered.
2. Provide for thermal movement (expansion and contraction) of all exposed sheet metal.
3. Where dissimilar metals contact, galvanic action shall be prevented by means of heavy coat of asphalt paint.
4. Prime all metal surfaces (top and bottom) to receive bituminous materials. Allow primer to dry thoroughly before application of bituminous materials.
5. All metal flanges shall be installed on top of membrane and adhered as indicated in detail drawings. Metal flanges connected to the roof shall be installed per membrane manufacturer's specifications and the requirements herein.
6. Various sheet metal sections shall be uniform with corners, joints and angles mitered, sealed and secured.
7. Exposed edges shall be returned (hemmed); both for strength and appearance, and sheet metal shall be fitted closely and neatly.
8. Provide cleats or stiffeners and other reinforcements to make all sections rigid and substantial.
9. Sheet metal shall be fabricated, supported, cleated, fastened and joined to prevent warping, "oil canning", and buckling.
10. All sheet metal details shall provide for redundancy including but not limited to sheet metal underlayment and/or sealants. This secondary protection shall be installed, sealed and lapped to ensure a redundant layer of protection will shed moisture infiltration in the sheet metal fails.

B. Sheet Metal Underlayment:

1. Fully adhere to substrates where indicated in Contract Drawings.
2. Lap adjoining sections a minimum of 3" and fully adhere.
3. Shall extend beyond wood blocking a minimum of 1" at roof edges and parapet walls.
4. At roof edges and parapet walls, sheet metal underlayment shall be installed concurrently with roof membrane and flashing installation. Temporary weather protection utilizing other materials is not acceptable when sheet metal underlayment is specified.

C. Fasteners: Shall be size and type required.

1. All fasteners to be rust resistant and compatible with materials to be joined.
2. All exposed fasteners shall be stainless steel screws with washers fastened through 5/16" predrilled oversized holes.
3. All exposed fasteners into concrete or masonry shall be metal based expansion anchor with stainless steel pin with washers fastened through 11/32" predrilled oversized holes.
4. All exposed fasteners shall have factory painted heads to match the sheet metal color.
5. Exposed horizontal surface fasteners are not acceptable.

D. Slip Flashing for Curbs

1. Fabricate slip flashing at curbs as shown in detail drawings in 10' lengths.

2. Slip flashing shall extend a minimum of 2 inches below base flashing termination and shall fit tightly against curb.
3. Secure slip flashing 12" on center of a minimum of two fasteners per side of the curb.
4. Notch and lap ends of adjoining sections not less than 4"; apply sealant tape between sections.
5. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2" on center.

E. Multiple Pipe Penetration

1. Fabricate pitch pan, pipe enclosure flashing, and closure cap as shown in detail drawings. Refer to SMACNA Architectural Sheet Metal Manual Figure 8-8B or 8-9A depending upon direction of pipes.
2. Size pitch pan minimum 2" larger than the penetration on all sides. Provide a 4" minimum flange and double walls with minimum depth of 6".
3. Set flange of pitch pan in full bead of roof cement and strip-in flange of metal edge as specified.
4. Install 2" wide aluminum tape around all sides of pitch pan extending 1/2" above top edge.
5. Fill pitch pan with non-shrink grout to a depth of 2" from the top of the tape.
6. Fill pitch pan with pourable sealer to the top of the tape. Slope to shed water.
7. Secure pipe enclosure flashing and cap as indicated in detail drawings.
8. Clean and solder all seams.

F. Base Flashing Closure

1. Install new closures where base flashings abruptly end.
2. Completely solder or seal all joints to be watertight.
3. Install closures over membrane and under finish ply of base flashing.
4. Extend closures up under counterflashings or copings.
5. Install closures to completely seal ends of base flashings, membrane and cants as well as end joints of edge metal.

3.3 CLEANING AND PROTECTION

- A. All sheet metal work shall be thoroughly cleaned of all asphalt, scrapes and dust.
- B. Scratches through the metal finish shall be replaced to the Owner's satisfaction.

END OF SECTION 07 62 00

SECTION 07 71 19

MANUFACTURED GRAVEL STOPS AND FASCIAS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide factory fabricated and finished roof edging.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Rough Carpentry Section 06 10 00
 - 2. Modified Bitumen Roofing Section 07 52 16
 - 3. Sheet Metal Flashings and Trim Section 07 62 00

1.3 REFERENCES

- A. 2017 Florida Building Code
- B. FM Global
- C. ANSI/SPRI ES-1

1.4 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- C. Latest edition of the Manufacturer's current material specifications and installation instructions.
- D. Shop drawings: Show profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.
- E. Samples: Available on request; sized to adequately represent material.

1.5 QUALITY ASSURANCE

- A. High performance roof edge shall be CERTIFIED by the manufacturer to comply with ANSI/SPRI Standard ES-1. Roof edge/gravelstop shall meet performance design criteria according to the following test standards: [select, if applicable]:
 - 1. ANSI/SPRI ES-1 Test Method RE-1 Test for Roof Edge Termination of Single-ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum 100 lbs/ft in accord with the ANSI/SPRI ES-1 Test Method RE-1. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 - 2. ANSI/SPRI ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1 Test Method RE-2. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
 - 3. The roof edge product shall be UL Classified by Underwriters Laboratories, Inc. or

other 3rd party verification of compliance with the ANSI/SPRI ES-1 Wind Design Standard.

1.6 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered in the manufacturer's original sealed, labeled containers.
- B. Store materials in a dry, protected, well-vented area. The contractor shall report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.
- C. Remove protective plastic surface film after installation.

1.7 PROJECT CONDITIONS

- A. Verify that other trades are complete before installing the roof edging.
- B. Mounting surfaces shall be straight and secure; substrates shall be of proper width.
- C. Refer to the construction documents, shop drawings and manufacturer's installation instructions.
- D. Coordinate installation with roof membrane manufacturer's installation instructions.
- E. Observe all appropriate OSHA safety guidelines for this work.

1.8 WARRANTY/GUARANTEE

- A. Shall be included in Roof System Warranty as specified in Section 07 54 00:
 - 1. Manufacturer shall guarantee that a standard size roof edge system, when installed per manufacturer's instructions, will not blow off, leak, or cause membrane failure, even in wind conditions up to 215 mph (extruded aluminum cleat), or the manufacturer shall replace or repair its materials for a period of twenty years.
 - 2. Finish Warranty: Shall be thirty (30) years.

PART 2 PRODUCTS

2.1 MANUFACTURER:

- A. The following manufacturer's are approved for use:
 - 1. W. P. Hickman Company
 - 2. Metal Era
 - 3. OMG Roofing Products
 - 4. Engineer's accepted equivalent

2.2 ROOF EDGE:

- A. Pre-manufactured Edge Metal: Decorative metal fascia with continuous extruded aluminum bar.
 - 1. Construction:
 - a. Fascia metal gauge:
 - i. .040 inch (1 mm) thick formed aluminum.

- b. Aluminum Finish:
 - i. Standard color Kynar-500 as selected by the Architect from roof edge manufacturer's color chart.
- c. Fascia: Standard 12 feet 0 inches (3.65 m) lengths.
- d. Extruded bar: Shall be continuous 6063-T6 alloy aluminum at 12 feet 0 inches (3.65 m) standard lengths with pre-punched slotted holes. All bar miters are welded.
 - i. Injection Molded EPDM Bar Splice to allow thermal movement expansion of extruded aluminum anchor bar.
 - ii. Fasteners: 2 inch (51 mm) stainless steel with driver.
- e. Model as required to meet field conditions and Contract Drawings.
- f. Performance:
 - i. Lifetime, 215 mph Wind Warranty.
 - ii. Tested per ANSI/SPRI ES-1 Standard to a design pressure of 290 lbs./ft² to comply with the International Building Code.
 - iii. Factory Mutual 1-645 approved for wind up lift protection.
 - iv. Miami-Dade Approved (No. 19-0430.02 12/11/23) to comply with the "High Velocity Hurricane Zone of the Florida Building Code".

2.3 ACCESSORIES:

- A. Corners, end caps, fascia sumps, or spillouts, etc. shall be fabricated by the roof edging manufacturer. Factory fabricated mitered corners shall have 12" nominal leg lengths.
- B. Provide matching ledgescaps, downspouts, or other special fabrications as detailed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the roof edging installation will not disrupt other trades. Verify that the substrate is dry, clean and free of foreign matter. Report and correct defects prior to any installation.

3.2 INSTALLATION

- A. Submit design drawings for review and approval to Engineer before fabrication.
- B. Installing contractor shall check as-built conditions and verify the manufacturer's roof edging details for accuracy to fit the wall assembly prior to fabrication. The installer shall comply with the roof edging manufacturer's installation guide when setting edging.
- C. Installer shall use stainless steel screw type fasteners as provided by manufacturer, nominal 1-1/4" length, with minimum 240 lb. pull-out resistance; suitable for the substrates to which being installed.
- D. Install waterproof sealant to underside of retainer base plate as recommended and supplied by the roofing membrane manufacturer.

END OF SECTION 07 71 19

SECTION 07 72 00

ROOF ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide roof accessory assemblies as indicated and required by the Contract Drawings:
 - 1. Provide pipe supports for all rooftop conduit, gas lines, electrical lines, condensation lines, etc.
 - 2. Provide PVC pipe to route condensation from HVAC p-traps to nearest drainage point.
 - 3. Provide one-way moisture relief vents.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section, including but not limited to:
 - 1. Modified Bitumen Roofing Section 07 52 16

1.3 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- C. Latest edition of the Manufacturer's current material specifications and installation instructions.
- D. Shop Drawings of fixed interior ladder.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.
- B. Storage: Adequately protect against damage while stored at the site.
- C. Handling: Comply with Manufacturer's instructions.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify all dimensions required.

1.6 WARRANTIES

- A. All roof accessories provided through roof system manufacturer shall be included in the specified roof system manufacturer's warranty.

PART 2 PRODUCTS

2.1 MATERIALS

- A. One-way moisture relief vents: Shall be of spun aluminum construction (plastic vents are

not acceptable) and designated for "one-way" venting with a minimum venting volume of 42 cfm:

1. Marathon MC Vent
2. Engineers approved equivalent

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.
- B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work

3.2 INSTALLATION

- A. Venting
 1. Provide for interior venting; install one-way moisture relief vents at an approximate rate of one vent per 1500 square feet of roof area.
 2. Locate vent locations symmetrically by chalk line. Refer to Contract Drawing for one-way vent layout.
 3. Core 6" dia. hole in LWIC system down to but do not damage temporary membrane.
 4. Fill void in LWIC with fiberglass batt insulation.
 5. Refer to Section 07 52 16-Modified Bitumen Roofing for specific flashing requirements:
 - a. Prime both sides of metal flange and set in bed of roof cement.
 - b. Strip-in flange to base ply with stripping ply and cold adhesive. Stripping ply shall extend a minimum of 4" onto base ply and fit closely to lip of vertical sleeve.
 - c. Install elastomeric sealant in void between surface ply and base of sleeve.
 6. Install elastomeric sealant in void between surface ply and base of sleeve.

3.3 CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

END OF SECTION 07 72 00

SECTION 22 14 00

STORM DRAINAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water test of roof drains.
- B. Provide retrofit roof drains approved by roof system manufacturer.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications sections, apply to this section, including but not limited to:
 - 1. Modified Bitumen Roofing Section 07 52 16
 - 2. Sheet Metal Flashing and Trim Section 07 62 00

1.3 REFERENCES

- A. Refer to the following references for specification compliance:
 - 1. 2017 Florida Building Code
 - 2. Cast Iron Soil Pipe Institute - CISPI
 - a. CISPI 301 Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
 - b. CISPI 310 Specification for Coupling for use in connection with Hubless Cast Iron Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Application.
 - c. CISPI Pipe and Fittings Handbook
 - 3. ASTM International
 - a. ASTM A 74 Specification for Cast Iron Soil Pipe and Fittings Hub and Spigot.
 - b. ASTM A 888 Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Application.
 - c. ASTM C 564 Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
 - d. ASTM C 1277 Specification for Shielded Couplings joining hubless cast iron soil pipe and fittings.
 - e. ASTM D 2665 Specification for PVC Plastic Drain, Waste and Vent Pipe and Fittings.
 - f. ASTM D 2564 Solvent Cements for PVC Pipe and Fittings.
 - 4. American Society of Mechanical Engineers – ASME
 - a. ASME A112.21.2 Roof Drains
 - 5. International Association Plumbing & Mechanical Officials – IAPMO

1.4 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures.

- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- C. Shop Drawings: Include plans, elevations, sections and details.

1.5 QUALITY ASSURANCE

- A. Contractor shall ensure plumbing systems and components are installed by licensed, qualified personnel.
- B. Contractor shall ensure roof drains, couplings, piping, supports, fixtures, pipe hangers, fasteners, fittings, etc. are installed in compliance with the referenced plumbing code, and shall be installed in accordance with the component manufacturer's published guidelines and instructions, and referenced standards.
- C. Contractor shall be responsible for field testing of completed storm drain systems as required by the referenced plumbing code.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Materials shall be delivered in the manufacturer's original sealed and labeled packaging.
- B. Storage: Materials shall be stored as directed by Owner and Engineer, to prevent damage. Storage shall not encumber Owner's operations.
- C. Handling: Materials shall be handled in such a manner as to prevent damage and contamination.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Roof drains and associated plumbing shall be installed during periods of no precipitation to prevent water from entering the building.
 - 2. The Contractor shall be responsible for all necessary precautions to prevent damage to the building and contents during roof drain and associated plumbing installations.
 - 3. Comply with applicable rules and regulations of Authorities Having Jurisdiction pertaining to storm sewage systems.
- B. Protection:
 - 1. Contractor shall ensure roof drainage systems remain in service, and shall be restored fully operational before leaving the site.
 - 2. Contractor shall protect building interior and exterior surfaces during construction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Existing Roof Drains: Replace clamping ring and strainer dome to match existing roof manufacturer and model with cast iron clamping ring and strainer dome. Replace bolts stainless steel clamping ring bolts. Remove existing bolts and restore threads as necessary using taps to ensure positive fastening; clean metal shavings, chips and debris before fastening clamping ring.
- B. High Flow Retrofit Roof Drain: Shall be prefabricated aluminum drain insert composed of

11 gauge spun aluminum drain body, 17.5" diameter flange, cast aluminum clamping ring, cast aluminum strainer, built-in vortex breaker providing more consistent flow, watertight U-Flow seal and stem length and diameter as required by field conditions. Drain shall be approved by roof system manufacturer. Contractor shall field verify drain diameter and required stem length prior to ordering drains.

PART 3 EXECUTION

3.1 INSPECTION

- A. A pre-job conference including the Engineer, Contractor, and the Owner's representative shall be conducted prior to the installation of roof drains and associated piping and plumbing fixtures.
- B. Contractor shall verify that conditions are acceptable to begin the installation.
- C. Contractor shall be responsible for daily inspection of the plumbing installation to ensure conditions remain satisfactory.

3.2 PREPARATION

- A. The Contractor shall inspect all existing building components and conditions before proceeding with plumbing installation.
- B. Where decking is to be cut for new drains, the building interior shall be inspected for utilities, structural members and occupancy conditions to ensure conditions are satisfactory to proceed.
- C. Where decking is cut to install new roof drains, minimum 2" x 2" x 1/8" steel angle shall be installed on existing framing for additional deck support.
- D. Where new piping is to be installed, the Contractor shall inspect the piping route and hanger attachment points to ensure conditions are satisfactory to install piping and all associated plumbing fixtures for the completed drainage system.
- E. Route piping to maintain working spaces around electrical equipment by NEC.
- F. Piping and fixtures shall not be routed to interfere with the service of in-place equipment and systems.
- G. Do not close off or obstruct streets, walks or other adjacent occupied facilities without permission from Owner, Engineer, and Authorities Having Jurisdiction.

3.3 EXISTING ROOF DRAINS AND LEADERS

- A. Prior to commencement of any work on the project the Contractor shall inspect each existing roof drain for damage and water flow.
 - 1. Each drain shall be cleaned of accumulated debris and loose gravel. Drain bowl and drain outlet shall be cleaned of bitumen build-up to bare metal by hand scraping.
 - 2. A power vacuum shall be provided by the Contractor and utilized to vacuum debris, loose gravel, and bitumen scragging. Vacuum hose shall be of sufficient length to reach the first elbow in the drain line in order to vacuum the line.
 - 3. After cleaning bitumen from the drain bowl, Contractor shall inspect the bowl carefully for cracks, and the drain pipe connection for possible deterioration.
 - 4. Each drain shall be water tested for proper flow utilizing a minimum 3/4-inch hose. Water shall flow into the line under maximum pressure available for a period of not

- less than 15 minutes.
5. Inspection and testing operation shall precede any roofing tear-off. If deficiencies or damages are observed, Contractor shall record the deficiency on a Roof Plan and forward to the Engineer. The Engineer will notify the Owner's Maintenance Department accordingly. Contractor shall allow 48 hours after notification for any corrective work by the Owner.
 6. If no deficiencies or damages are reported to the Owner prior to commencement of work, Contractor shall assume full responsibility for the condition and operation of the drains.
- B. Contractor shall be responsible for installing drain plugs during roofing activities to prevent foreign materials from entering drainage system. Drain plugs shall be removed at the end of each work day to maintain drains in fully operational condition.
 - C. Clamping rings and bolts at roof drains shall be fully reinstalled at the end of each working day.
 - D. Drain piping clogged by construction debris shall be repaired by the Contractor at no cost to the Owner.

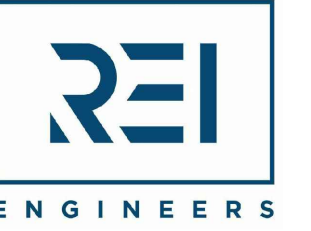
3.4 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred.
 1. Submit separate reports for each system inspection.
 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball of cylinder of size not less than 92.5 percent of piping diameter.
 - c. Crushed, broken, cracked or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping on watertight joints.
 3. Replace defective piping using new materials and repeat inspections.
 4. Reinspect and repeat procedure until results are satisfactory.

3.5 CLEANING

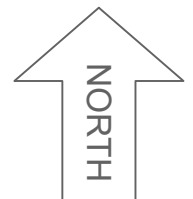
- A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION 22 14 00

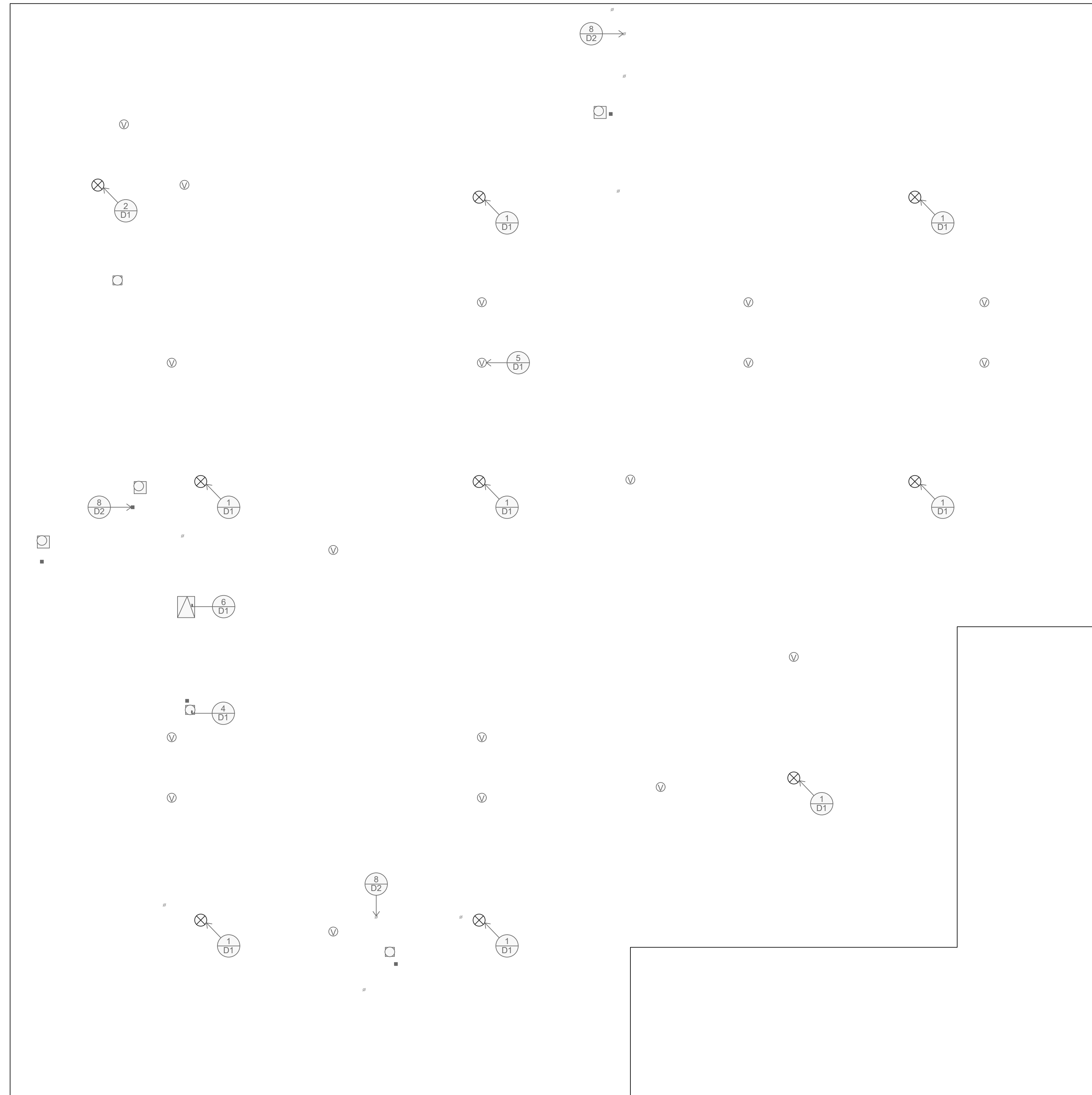


10150 HIGHLAND MANOR DR
SUITE 200
TAMPA, FL 33610
813.944.2137

ROOFING, WATERPROOFING
AND BUILDING ENVELOPE
ENGINEERS & CONSULTANTS
CERTIFICATE NO. C-1520



IRC-1838 INDIAN RIVER COUNTY MAIN LIBRARY
ROOF REPLACEMENT
1600 21st STREET
VERO BEACH, FL 32960
REI PROJECT# 019TPA-027



KEY	
	ROOF EDGE
	STRUCTURAL SLOPE
	ROOF DRAIN
	SOIL STACK/PIPE
	EXISTING PITCH PAN
	ONE WAY VENT
	CURB WITH FAN
	ROOF HATCH
	SECTOR DESIGNATION
	DETAIL NUMBERS
	DRAWING NOTE

*CONTRACTOR TO VERIFY FOR BIDDING PURPOSES

ROOF SECTOR	SQUARE FOOTAGE*
A1	29,397
TOTAL	29,397

NOTES:

- ① PROVIDE NEW ONE WAY VENTS PLACED WITHIN 5 FEET OF ROOF SLOPE RIDGE HIGH POINT.

REVISION # REVISION DATE

1	
2	
3	

SCALE:

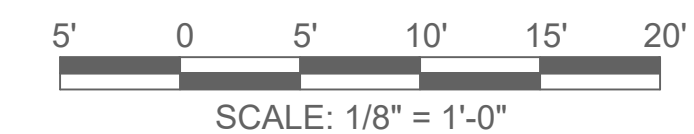
AS NOTED

DATE: 12-04-2019

SHEET DESCRIPTION:
ROOF PLAN

REI PROJECT NO: 019TPA-027

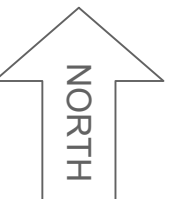
SHEET: R1



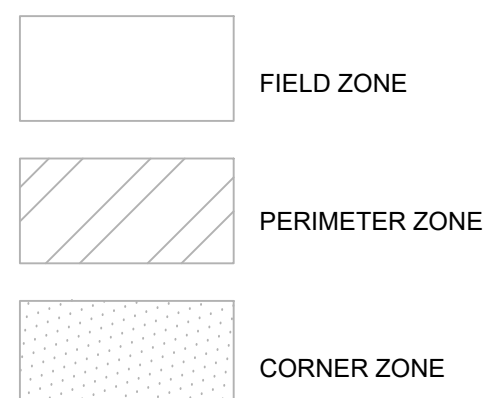
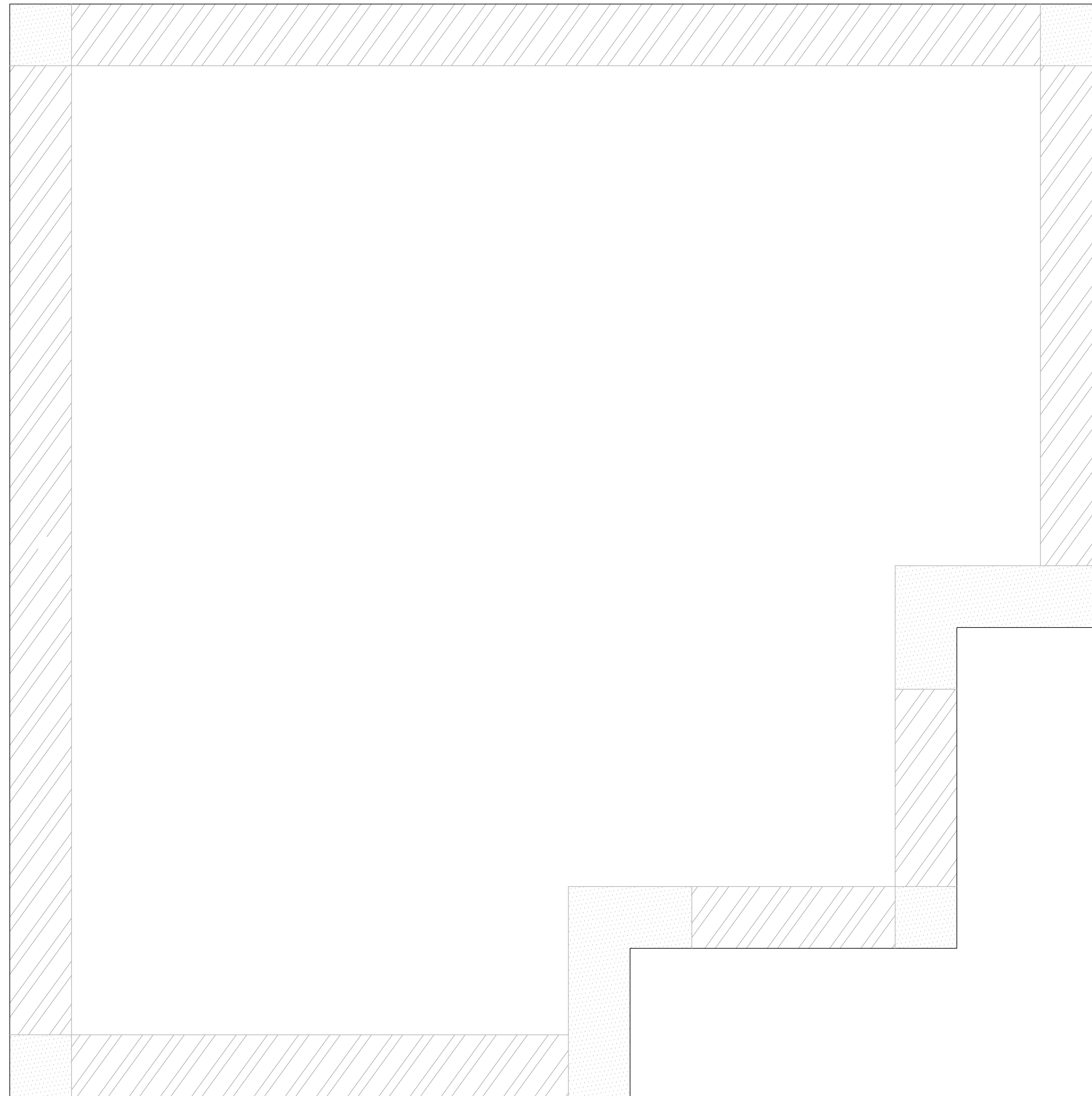


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813.944.2137

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ROOF REPLACEMENT
1600 21st STREET
VERO BEACH, FL 32960
REI PROJECT# 019TPA-027



BUILDING CODE SUMMARY:

ULTIMATE DESIGN WIND SPEED:	SECTION A1
RISK CATEGORY:	170 MPH
MEAN ROOF HT (H):	34 FT
EXPOSURE CATEGORY:	C
ENCLOSURE CLASSIFICATION:	PART. ENCLOSED
RISK CATEGORY:	III
WIND PRESSURES (PSF):	
ZONE 1:	-104.6
ZONE 2:	-117.3
ZONE 3:	-149.0
ZONE SIZE (A):	10.2 FT
ENERGY CODE ROOF INSULATION	CONDITIONED
CONDITION SPACE DESIGNATION:	SPACE

REVISION # REVISION DATE

1	
2	
3	

SCALE: AS NOTED

DATE: 12-04-2019

SHEET DESCRIPTION:
BUILDING CODE

REI PROJECT NO: 019TPA-027

SHEET: R2



ENGINEERS

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IRC-1838 INDIAN RIVER COUNTY MAIN LIBRARY

ROOF REPLACEMENT

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REI PROJECT# 019TPA-027

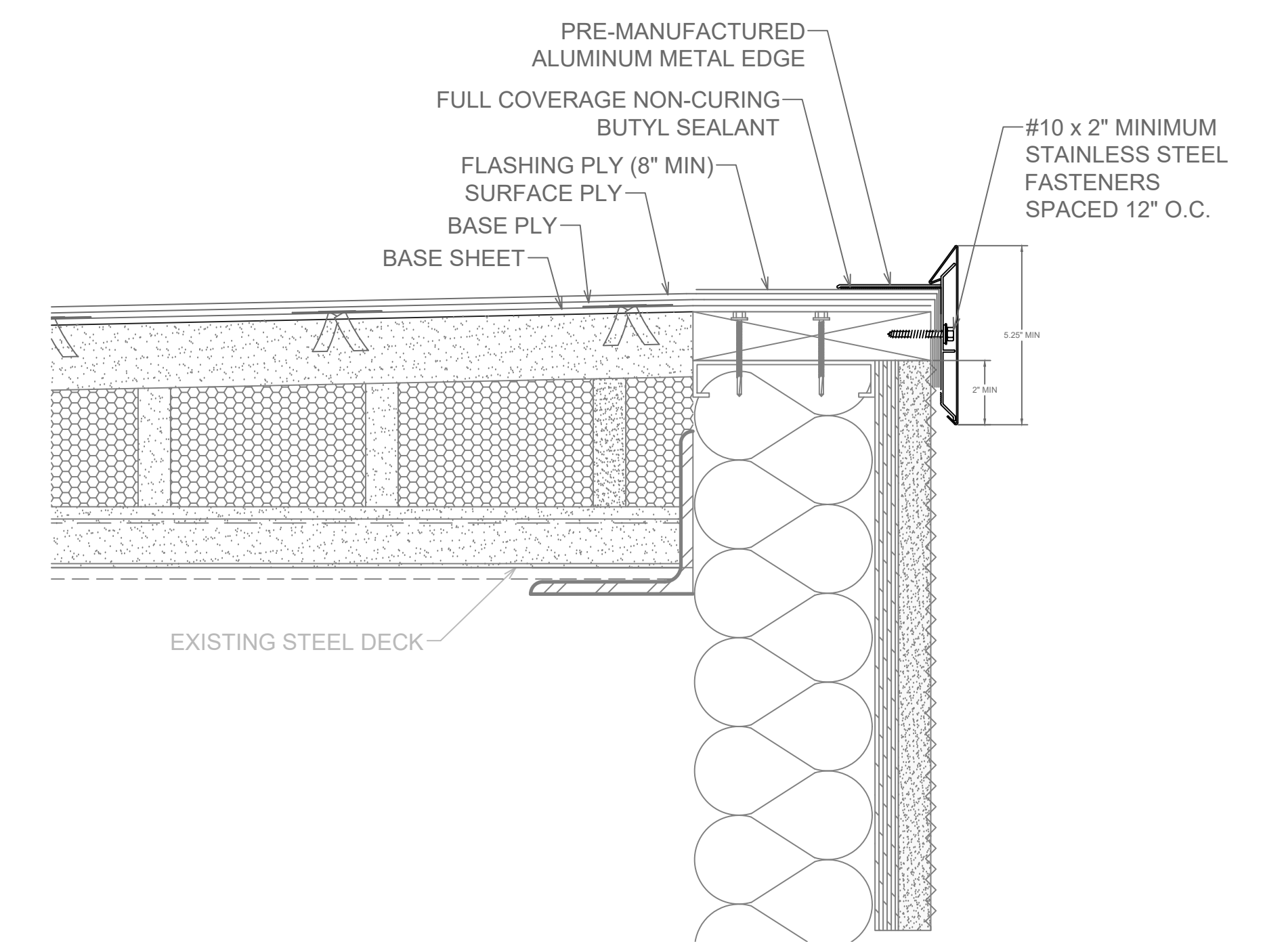
REVISION #	REVISION DATE
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DRAWN BY: M.RENNINGER
SCALE: AS NOTED
DATE: 12-04-2019

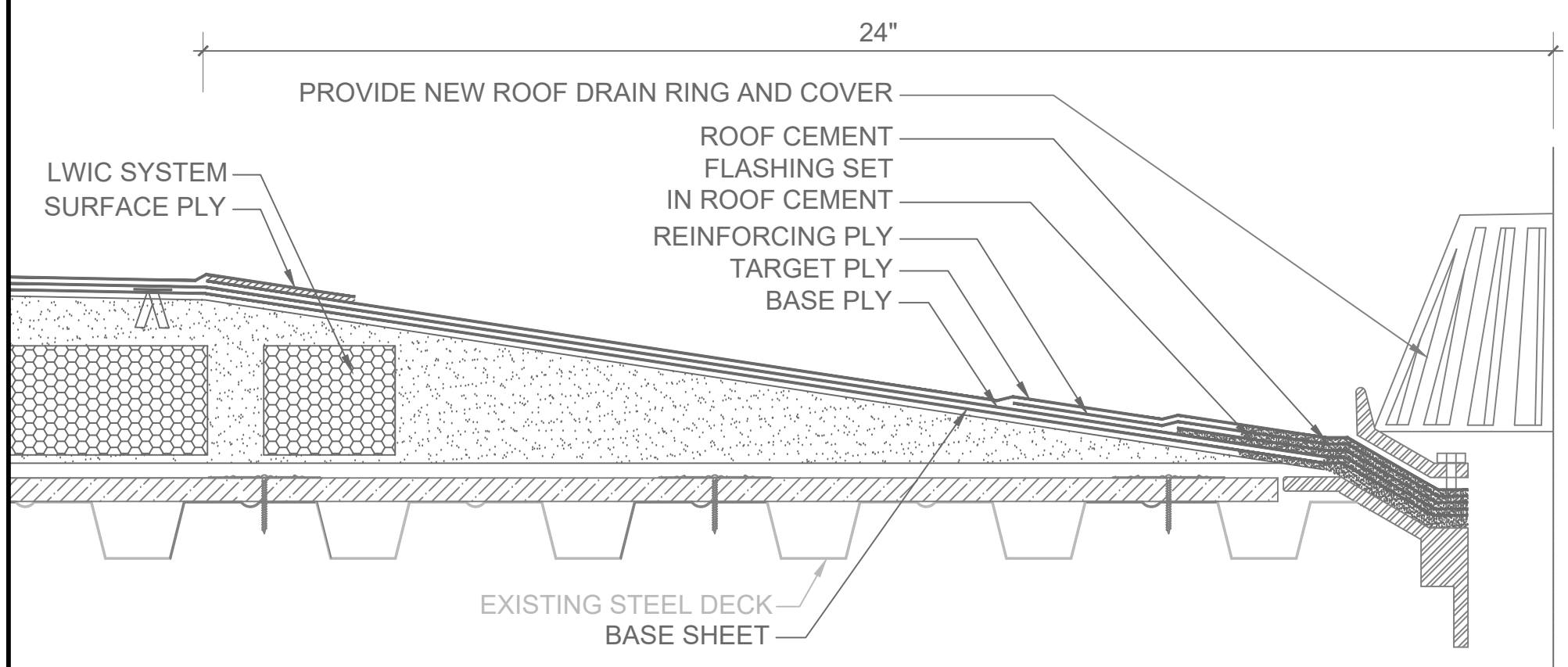
DRAWING:

D1

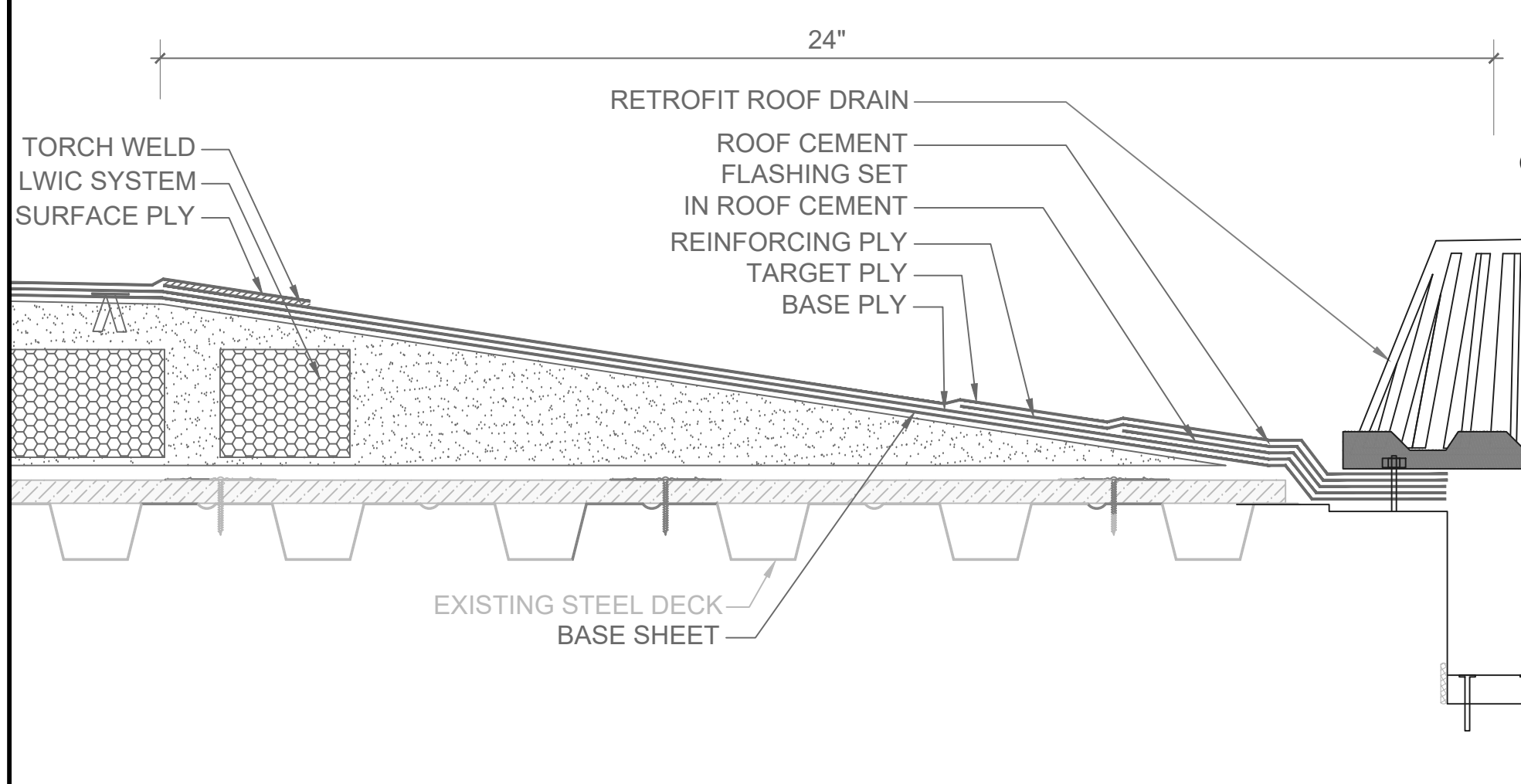
ROOF DETAILS



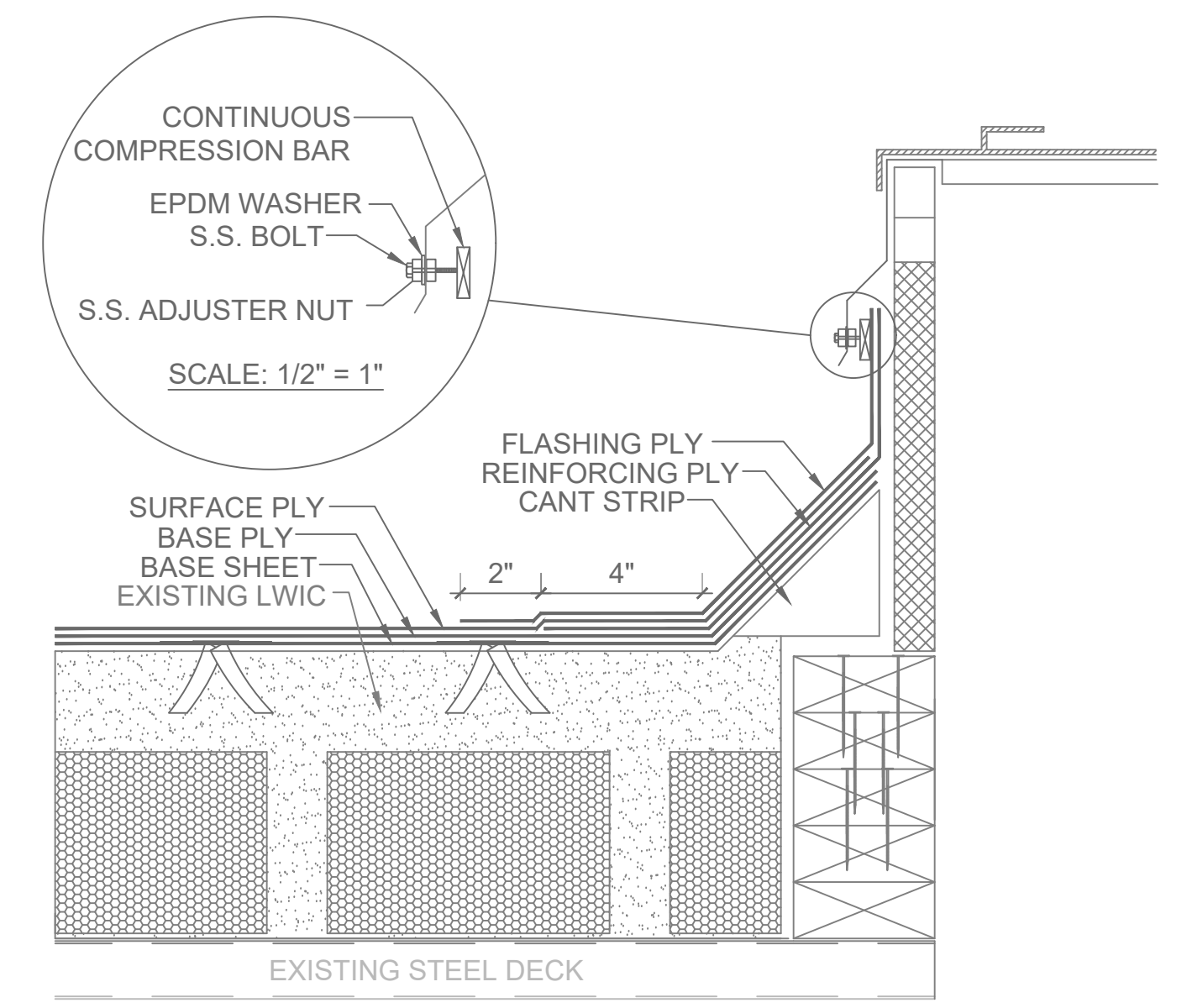
3 ROOF EDGE
SCALE: 3"=1'-0"



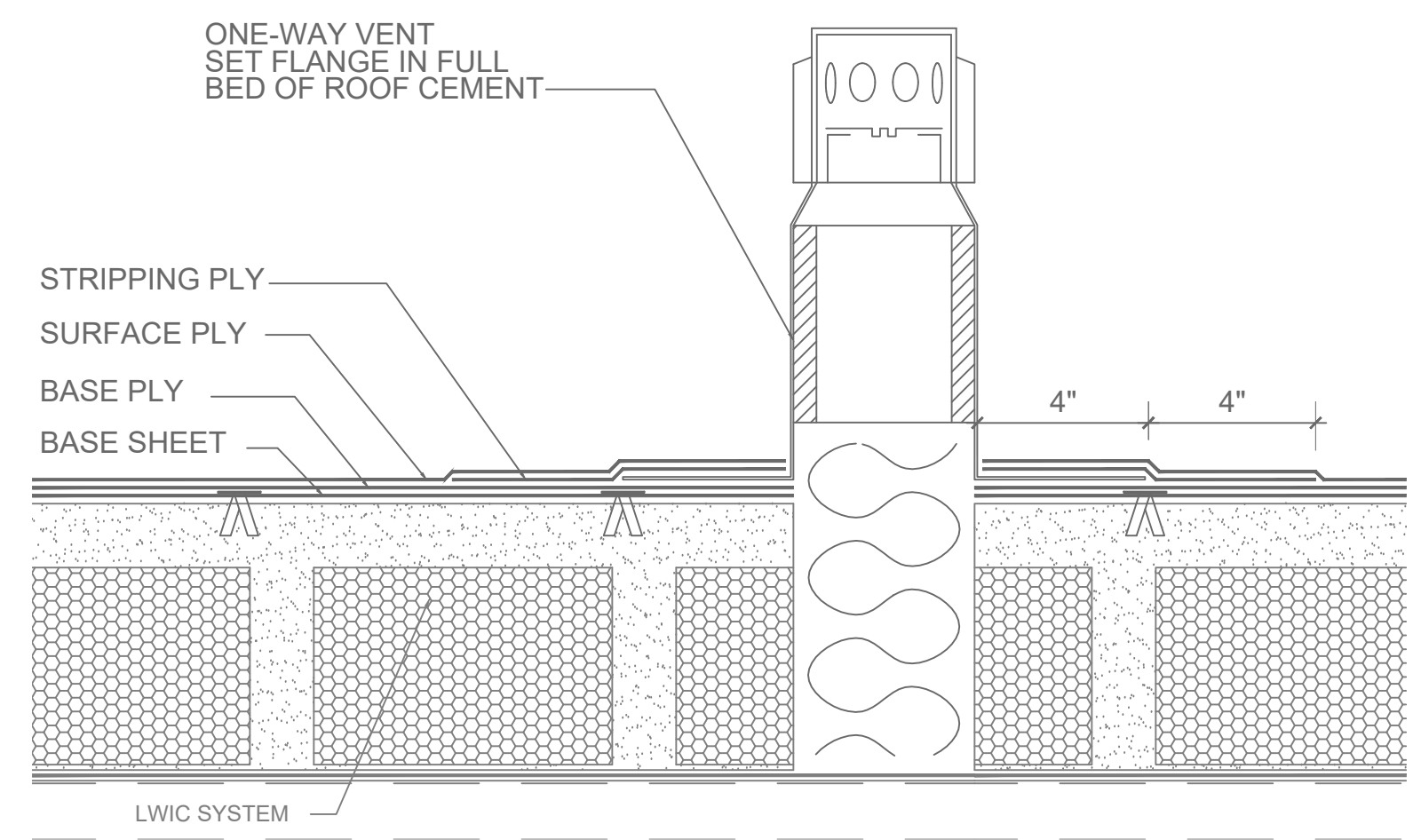
2 DRAIN
SCALE: 3"=1'-0"



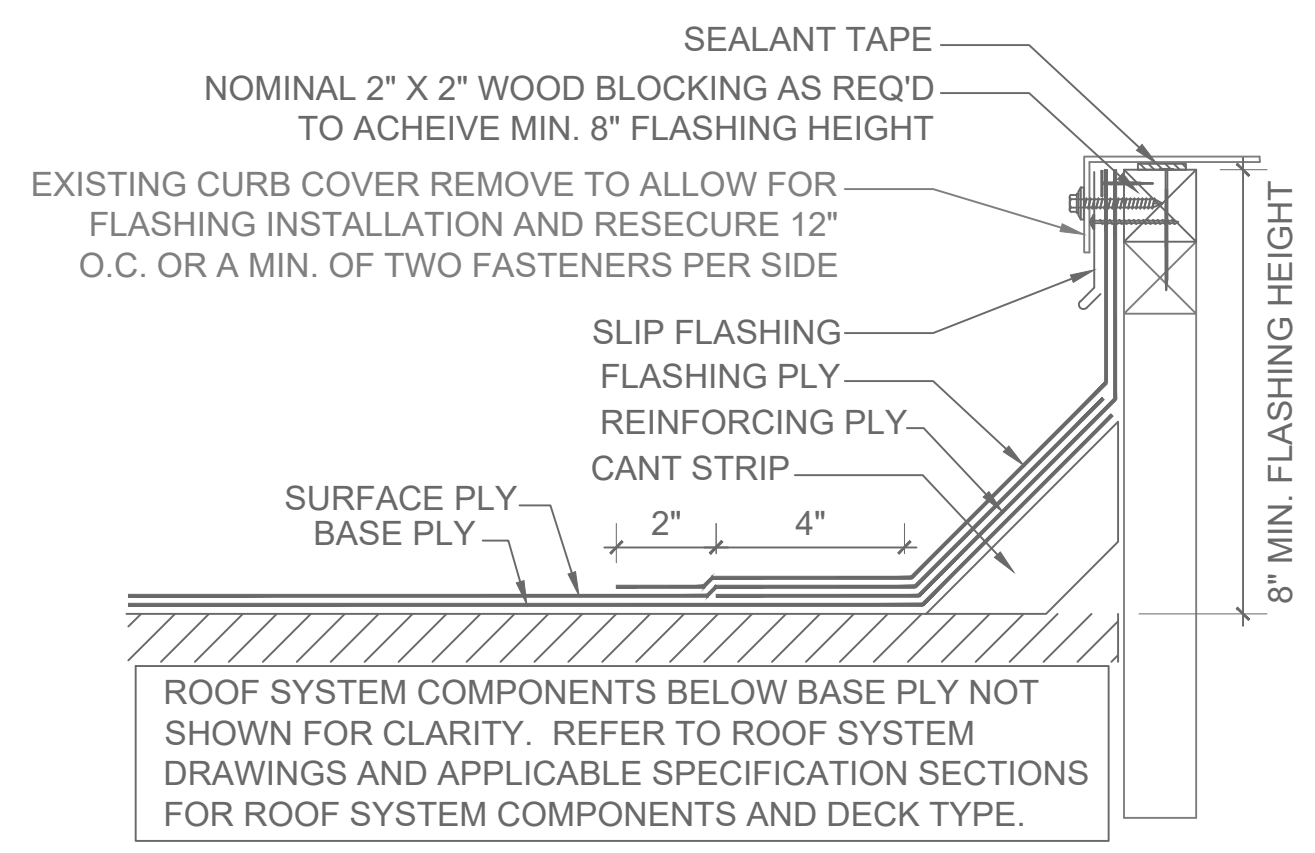
1 RETROFIT DRAIN
SCALE: 3"=1'-0"



6 ROOF HATCH FLASHING
SCALE: 3"=1'-0"



5 ONE-WAY VENT
SCALE: 3"=1'-0"



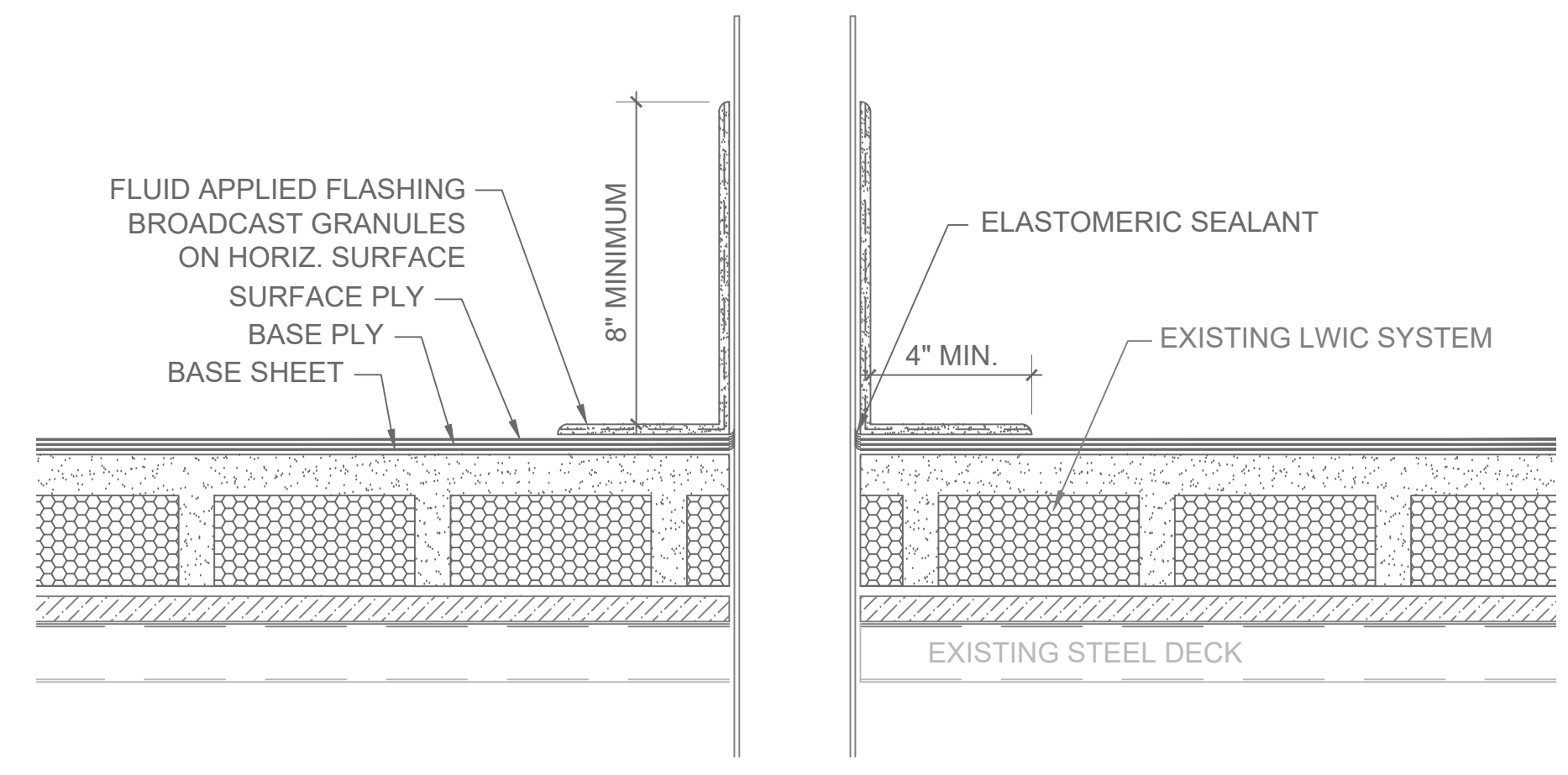
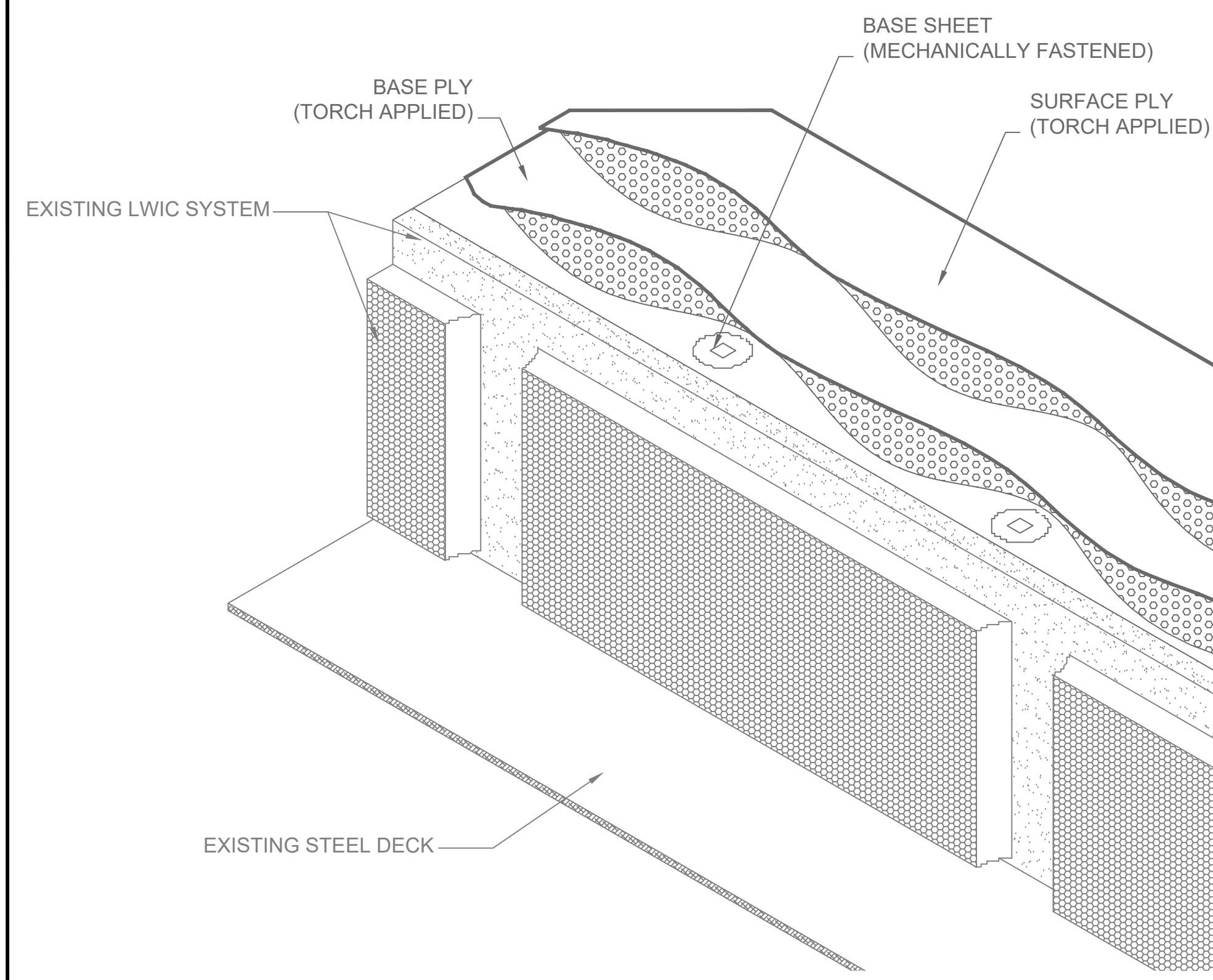
4 CURB FLASHING
SCALE: 3"=1'-0"



ENGINEERS

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7 ROOF SYSTEM
SCALE: NOT TO SCALE

8 PIPE PENTRATION
SCALE: 3"=1'-0"

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 1600 21st STREET
 VERO BEACH, FL 32960
 REI PROJECT# 019TPA-027

REVISION #	REVISION DATE
1	
2	
3	
4	

DRAWN BY: M.RENNINGER
 SCALE: AS NOTED
 DATE: 12-04-2019

DRAWING:
D2
 ROOF DETAILS