

**Indian River County
Purchasing Division
1800 27th Street
Vero Beach, FL 32960
Phone (772) 226-1416**



ADDENDUM NO. 3

Date: **May 20, 2020**

Project Name: **INDIAN RIVER COUNTY MAIN LIBRARY ROOF REPLACEMENT
(IRC-1838)**

Bid Number: **2020029**

Bid Opening Date: **Wednesday, June 3, 2020 at 2:00 p.m.**

This addendum is being released to modify the bid documents and answer questions.

The information and documents contained in this addendum are hereby incorporated in the invitation to bid. **This addendum must be acknowledged where indicated on the bid form, or the bid will be declared non-responsive.**

Modifications to Bid Documents:

Specifications and Plan sheets have been revised, as described in the attached "Specification and Drawing Update for Addendum No. 3" memo and modifications from REI.

Replace the previously provided specification and plan sections with those listed in the attachments at the end of this addendum.

Question 1. The bid form indicates to include 16 cubic feet of existing Lightweight Concrete Replacement in the bid and provide a unit cost, however, Lightweight Concrete is not priced out per Cubic Foot. Could you please advise if this could be changed to Square Foot?

Architect's Response:

Please provide pricing as noted.

Question 2. Will the awarded contractor be required to perform a Lightweight Concrete Compressive Strength Test in order to determine that the PSI of the existing LWC meets the requirements of the Florida Product Approval?

Architect's Response:

The contractor pull tests will take the place of compressive strength testing.

Question 3. This question was asked at the on-site pre-bid. What would be a good laydown/staging area.

Answer:

See attached map of laydown area.

Question 4. This question was asked at the on-site pre-bid. Who is responsible trimming the trees that are overhanging the roof?

Answer:

The Indian River County Facilities Division will trim trees prior to commencement of work.

Question 5. In reviewing the bid documents for the Main Library, please advise us on page 10 of 39 under Licensure, it states that you must also be licensed by Indian River County?
Please advise us direction regarding the Indian River County license.

Answer:

The successful bidder must be registered with the Indian River County Building Division, Contractor Licensing prior to execution of the agreement. Information on registration may be obtained at <https://www.irccdd.com/>

Question 6. Section 070150 Part 1, 1.1.A #5 speaks of installation and/or modification of through wall over flow scuppers. Is this a misprint and something that is not intended to be part of the project? PART 3.9 A states locate bottom of overflow scupper 2" above roof surface. Letter C states extend opening through parapet.

Architect's Response:

There are no overflow scuppers required for this roof replacement project. Please reference addendum 03 which clarifies drainage requirements.

Question 7. Section 070150- page 4 part 3.3 A#1 states to locate conduits attached to underside of deck prior to re-roofing. Again is this a misprint and something that is not intended to be part of the scope of work? As we are not penetrating the existing deck with new fasteners that I am aware of unless it may be in an area of severely deteriorated metal decking.

Architect's Response:

Locating underdeck conduits will only be required if work activities require penetrating the structural steel deck.

Question 8. Section 075216 PART 2.3, letter K, Page 6 speaks of a low profile expansion joint? Can you please explain where this is to occur on the project if this detail is to be used?

Architect's Response:

There are no low profile expansion joints planned for this roof replacement project. Please reference addendum 03 which clarifies product requirements.

Question 9. Section 075216 PART 3.3, PAGE 9, letter I, #2 speaks of new retrofit roof drains. Section 2214010 storm drainage Part 2, 2.1, letter A, states to replace the existing cast iron clamping ring, drain strainer, and drain bolts. Which instructions are we to follow? Section 07516 or Section 221400? Please advise.

Architect's Response:

All drains are to use the specified retrofit drain inserts with the one exception being the drain located in the northwest corner of the building. Please reference the contract drawings for drawings for retrofit drains and drain refurbishment locations.

Question 10. Drawing Sheet R2- Building Code Summary states Ultimate Design Wind Speed 170 MPH. Are the wind pressure listed below that heading, the Ultimate Design Pressures? Or are the wind pressures listed below that, the Nominal Design Pressures as that will make a difference in the fastening patterns and ability to receive an NOA as far as I am aware of.

Architect's Response:

The wind pressures noted on the drawing are service load nominal wind pressures and are not eligible for further reduction. Please reference addendum 03 which clarifies wind pressure nominal status.

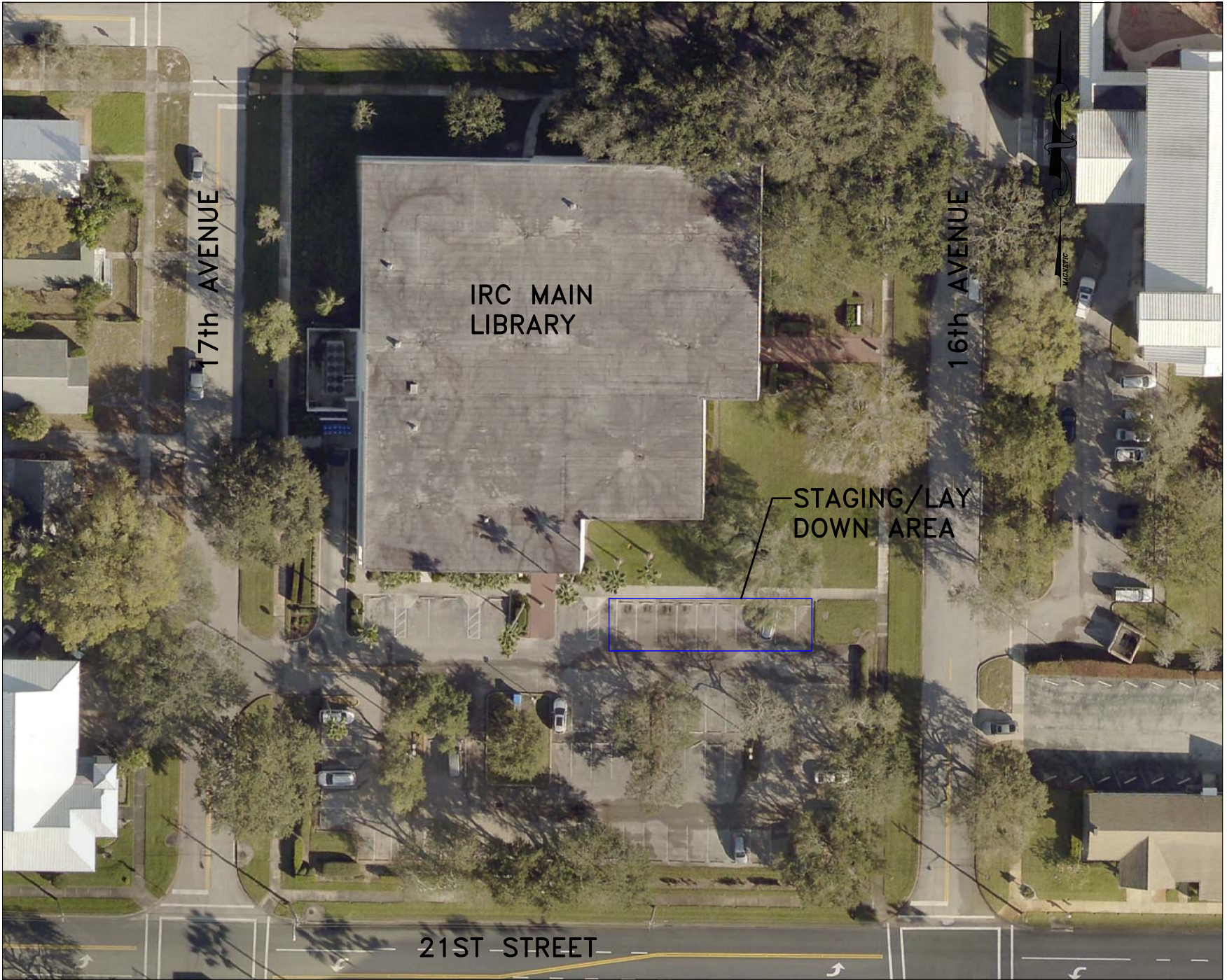
Question 11. Are the uplift calculations on the bottom of Roof Plan R2 ultimate or nominal? Can they be factored by multiplying by .6?

Architect's Response:

The wind pressures noted on the drawing are service load nominal wind pressures and are not eligible for further reduction. Please reference addendum 03 which clarifies wind pressure nominal status.

Attachments:

1. Staging Area Map
2. Specification and Drawing Update for Addendum No. 3 memo and modifications, REI Engineers
3. Replace Specification Section "07 01 50 Preparation for Reroofing" with attached "07 01 50 Preparation for Reroofing (Revision 1)"
4. Replace Specification Section "07 252 16 Modified Bitumen roofing" with attached "07 52 16 Preparation for Modified Bitumen roofing (Revision 1)"
5. Replace Specification Section "Contract Drawing R1" with attached "Contract Drawing R1 (Revision No. 1)". Contract drawing has been updated to clarify electrical conduit flashing requirements.
6. Replace Specification Section "Contract Drawing R2 (Revision No. 1)" with attached "Contract Drawing R2 (Revision No. 2)". Contract drawing has been updated to clarify wind pressure designation.
7. Replace Specification Section "Contract Drawing D2" with attached "Contract Drawing D2 (Revision No. 1)". Contract drawing has been updated to clarify electrical conduit flashing requirements.



STAGING/LAY DOWN AREA LOCATION MAP

DATE: May 15, 2020
FROM: REI Engineers
REFERENCE: **Specification and Drawing Update for Addendum No. 3**
Indian River County
IRC-1838 Indian River County Main Library Roof Replacement

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents, including changes to the specifications and drawings as follows:

CHANGES TO SPECIFICATIONS:

1. Replace Specification Section ““07 01 50 Preparation for Reroofing” with attached “07 01 50 Preparation for Reroofing (Revision No. 1)”. Specification section has been updated to clarify the existing single ply attachment method and drainage requirements.
2. Replace Specification Section ““07 52 16 Modified Bitumen Roofing” with attached “07 52 16 Modified Bitumen Roofing (Revision No. 1)”. Specification section has been updated to clarify product requirements.

CHANGES TO DRAWINGS:

1. Replace Specification Section “Contract Drawing R1” with attached “Contract Drawing R1 (Revision No. 1)”. Contract drawing has been updated to clarify electrical conduit flashing requirements.
2. Replace Specification Section “Contract Drawing R2 (Revision No. 1)” with attached “Contract Drawing R2 (Revision No. 2)”. Contract drawing has been updated to clarify wind pressure designation.
3. Replace Specification Section “Contract Drawing D2” with attached “Contract Drawing D2 (Revision No. 1)”. Contract drawing has been updated to clarify electrical conduit flashing requirements.

ALL OTHER REQUIREMENTS AND PROVISIONS OF THE BIDDING DOCUMENTS REMAIN UNCHANGED. ACKNOWLEDGE RECEIPT OF THIS ADDENDUM ON THE BID FORM. FAILURE TO DO SO MAY BE CAUSE FOR REJECTION OF THE BID.

END OF ADDENDUM

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.

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 adhered with bitumen ribbons
 - 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.

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. Stagger end laps a minimum of 3 feet.
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

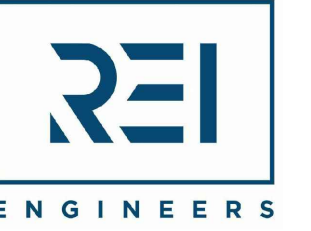
limited to reinstallation of roof system, installation of additional tapered insulation and/or installation of additional base plies.

3.4

CLEANING

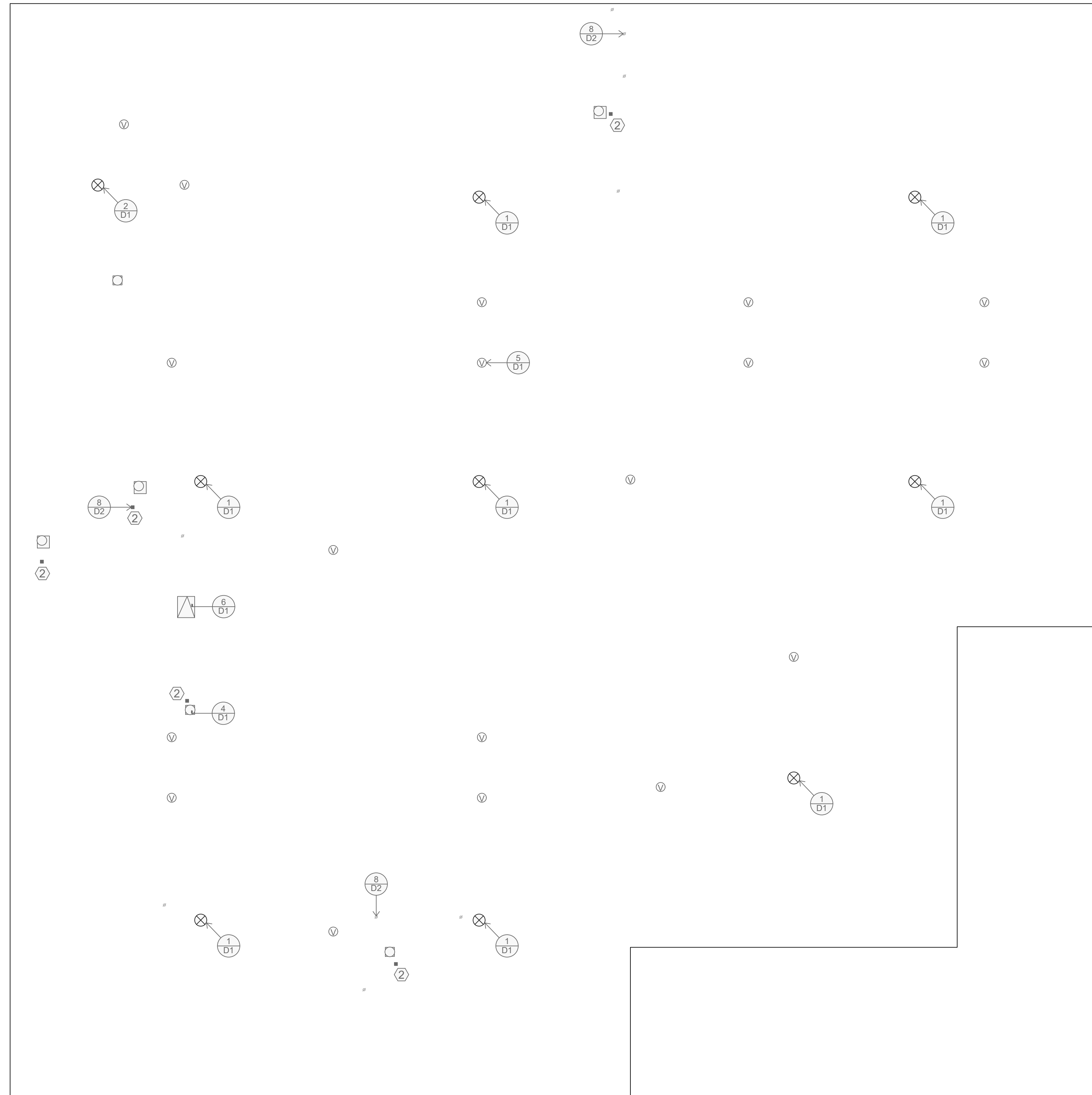
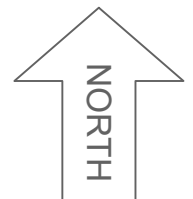
- A. Remove all debris and excess material from the roof area. Pick-up all loose fasteners and sheet metal scraps.
- B. The Contractor shall clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.

END OF SECTION 07 52 16



10150 HIGHLAND MANOR DR
SUITE 200
TAMPA, FL 33610
813.944.2137

ROOFING, WATERPROOFING
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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

REVISION # REVISION DATE

①	05-15-2020
②	
③	
④	

SCALE: AS NOTED

DATE: 12-04-2019

SHEET DESCRIPTION: ROOF PLAN

REI PROJECT NO: 019TPA-027

SHEET: R1

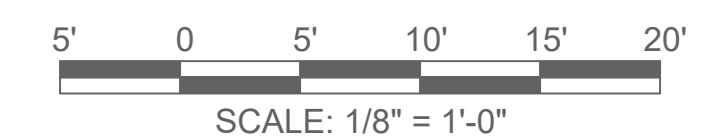
KEY	
	ROOF EDGE
	STRUCTURAL SLOPE
	ROOF DRAIN
	SOIL STACK/PIPE
	EXISTING PITCH PAN
	ONE WAY VENT
	CURB WITH FAN
	ROOF HATCH
	SECTOR DESIGNATION
	DETAIL NUMBERS
	DRAWING NOTE

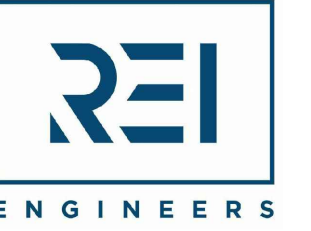
*CONTRACTOR TO VERIFY FOR BIDDING PURPOSES

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

NOTES:

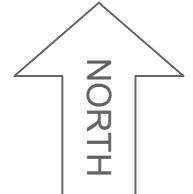
- ① PROVIDE NEW ONE WAY VENTS PLACED WITHIN 5 FEET OF ROOF SLOPE RIDGE HIGH POINT.
- ② REMOVE EXISTING ELECTRICAL CONDUIT PITCH PAN AND RE-FLASH ELECTRICAL CONDUIT WITH FLUID APPLIED FLASHING





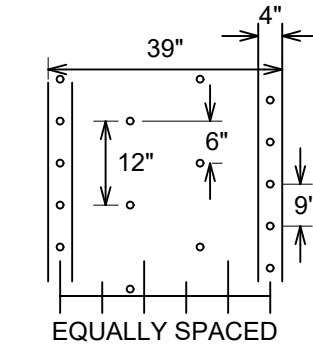
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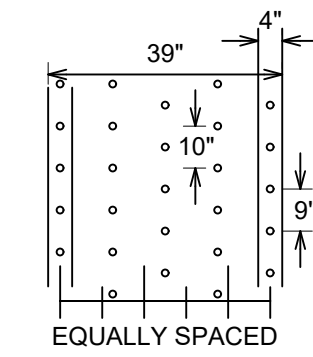


FL PRODUCT APPROVAL Δ
FL984-R13 (LWC-135)

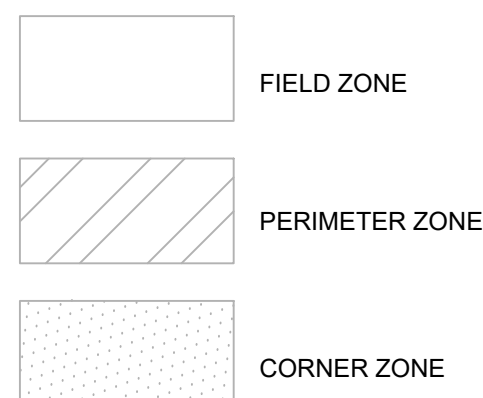
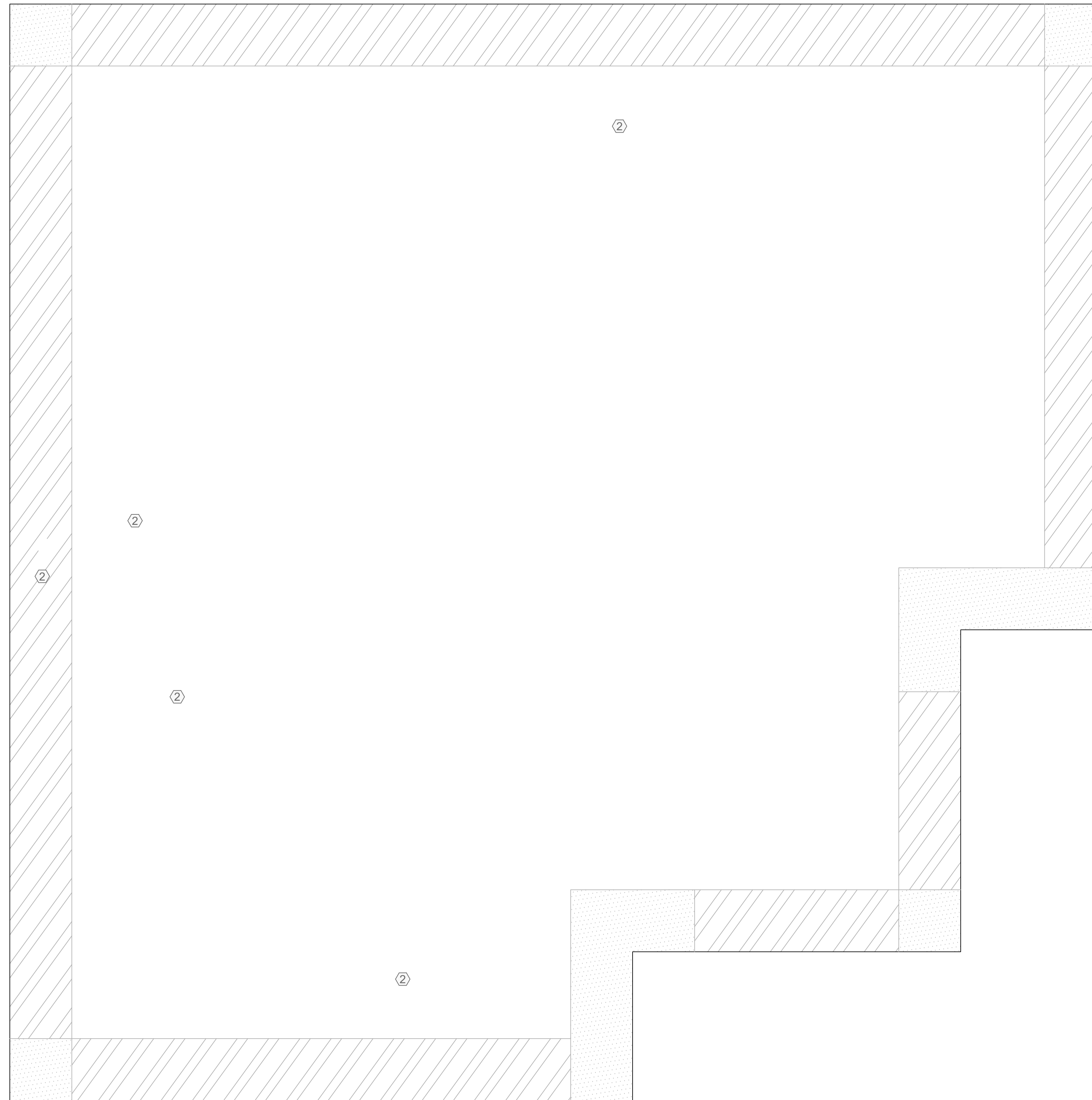
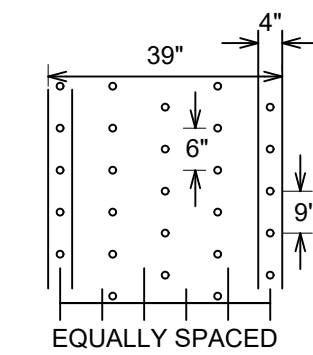
FIELD PATTERN
9" AT LAPS
2 INTERMEDIATE ROWS AT
12" STAGGERED



PERIMETER PATTERN
9" AT LAPS 3 INTERMEDIATE
ROWS AT 10" STAGGERED



CORNER PATTERN
9" AT LAPS 3 INTERMEDIATE
ROWS AT 6" STAGGERED



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
NOMINAL WIND PRESSURES (PSF):	
ZONE 1:	-59.0
ZONE 2:	-89.4
ZONE 3:	-127.5
ZONE SIZE (A):	10.2 FT
ENERGY CODE ROOF INSULATION:	CONDITIONED
CONDITION SPACE DESIGNATION:	SPACE



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VERO BEACH, FL 32960
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REVISION # REVISION DATE

Δ	03-11-2020
Δ	05-15-2020
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SCALE:

AS NOTED

DATE:

12-04-2019

SHEET DESCRIPTION:
BUILDING CODE

REI PROJECT NO:

019TPA-027

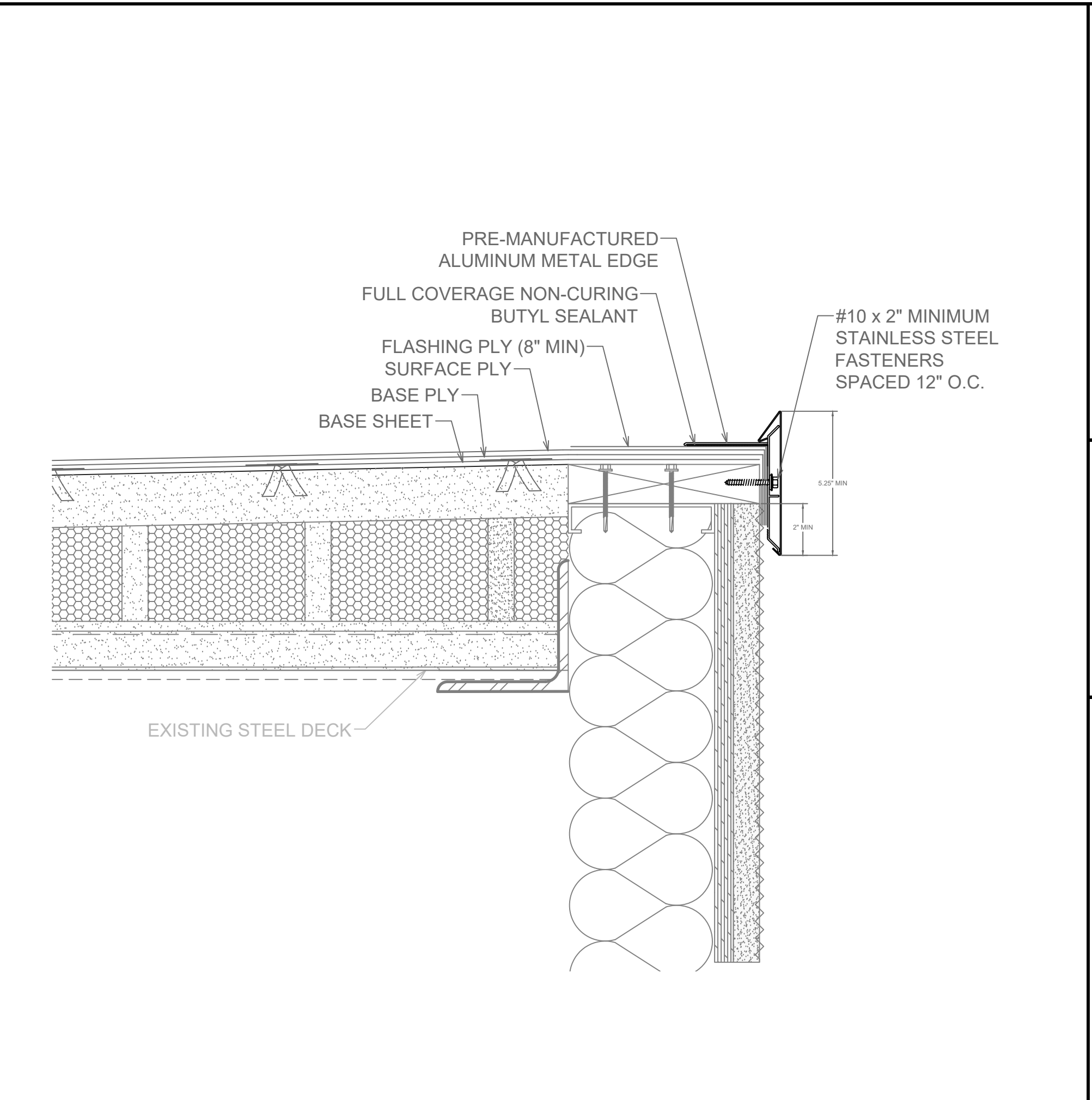
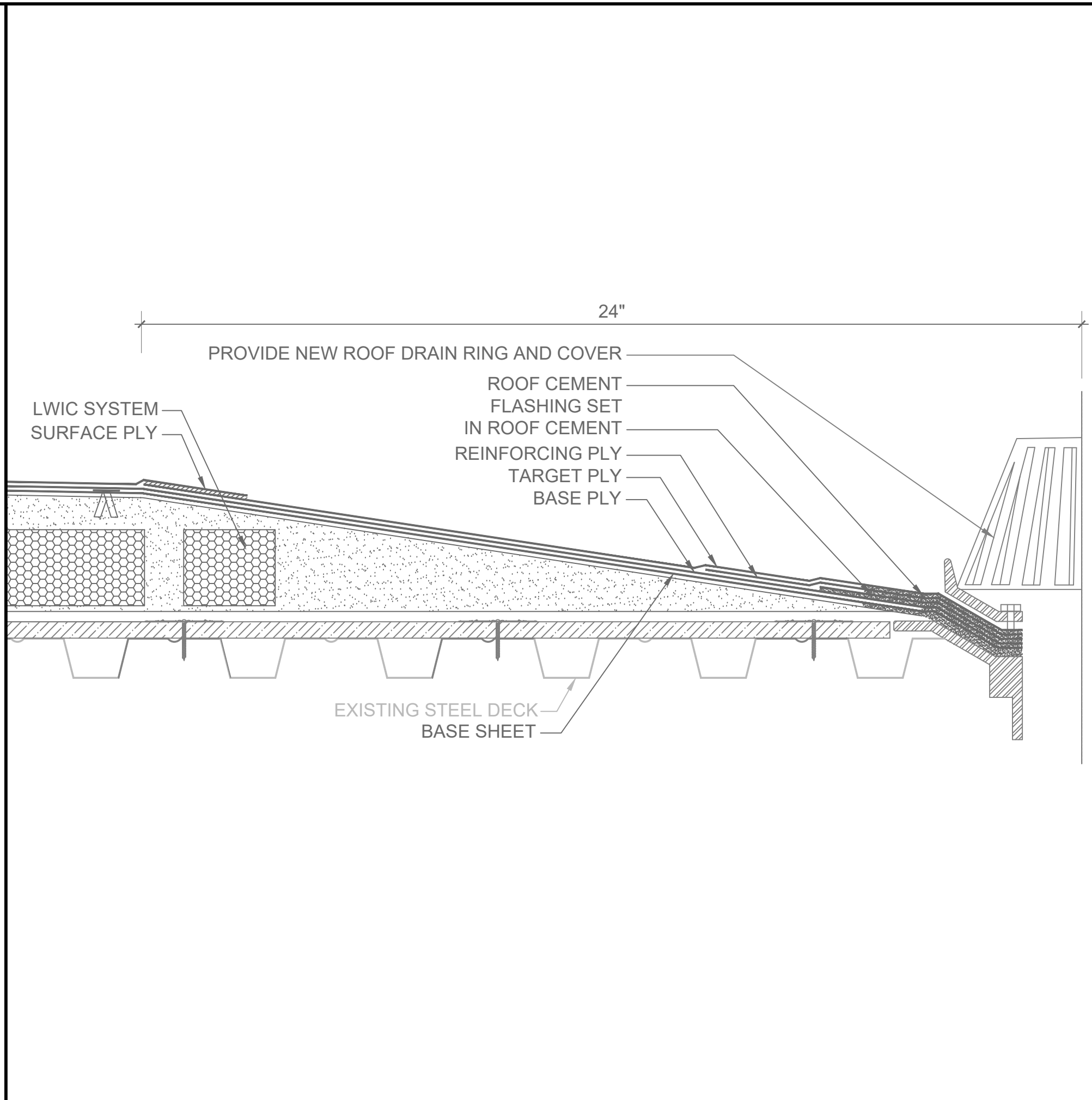
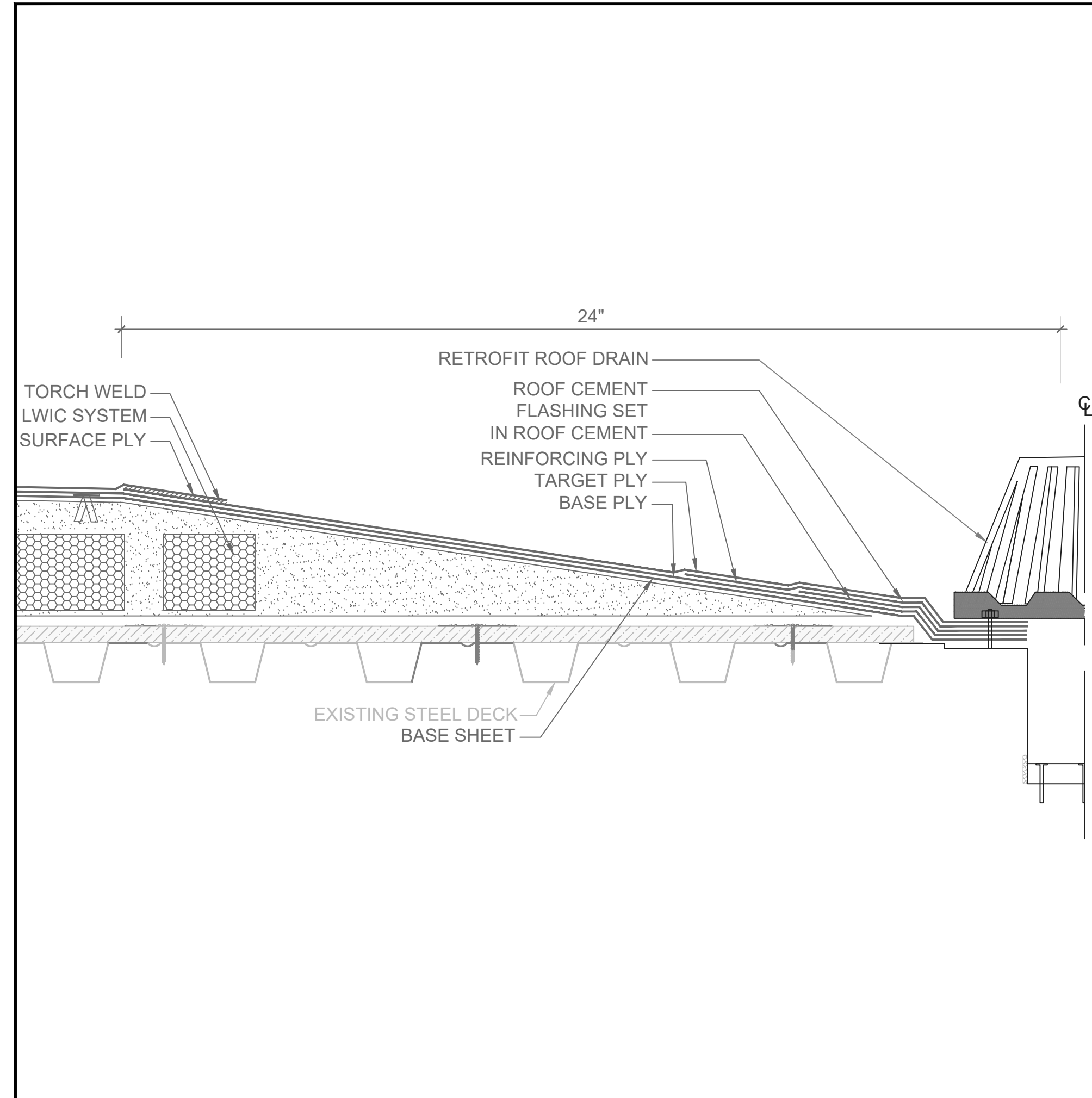
SHEET:

R2



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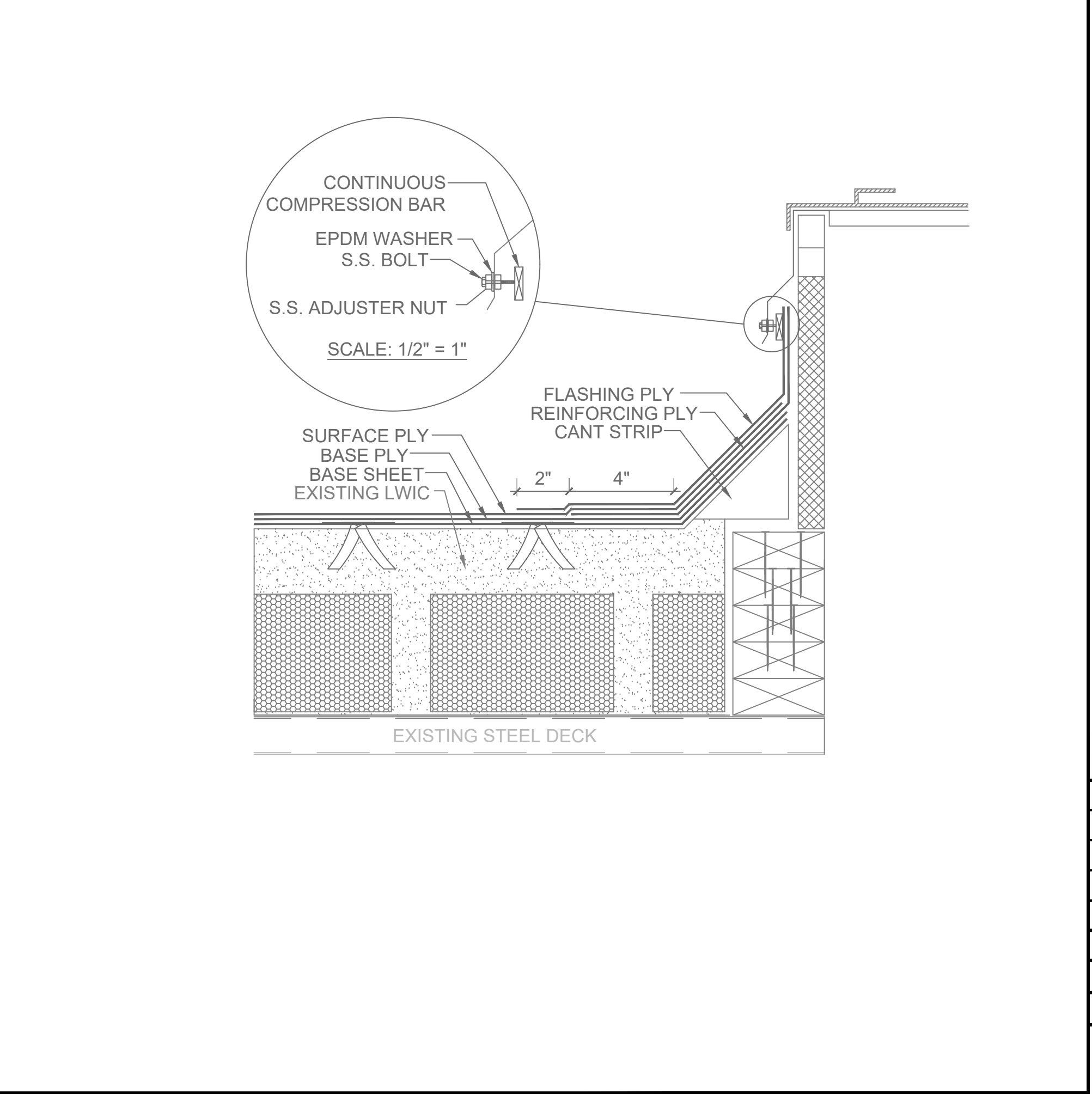
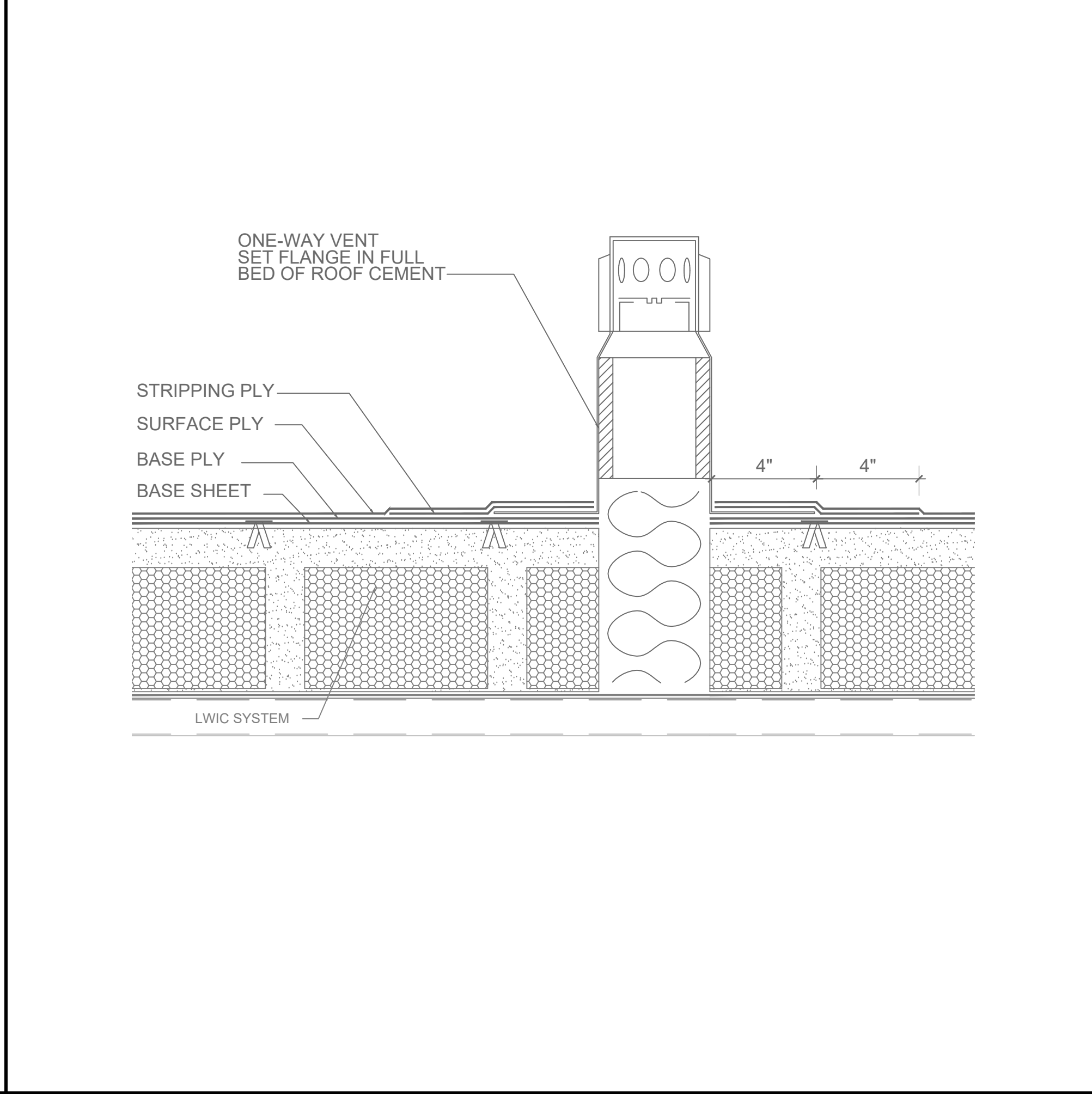
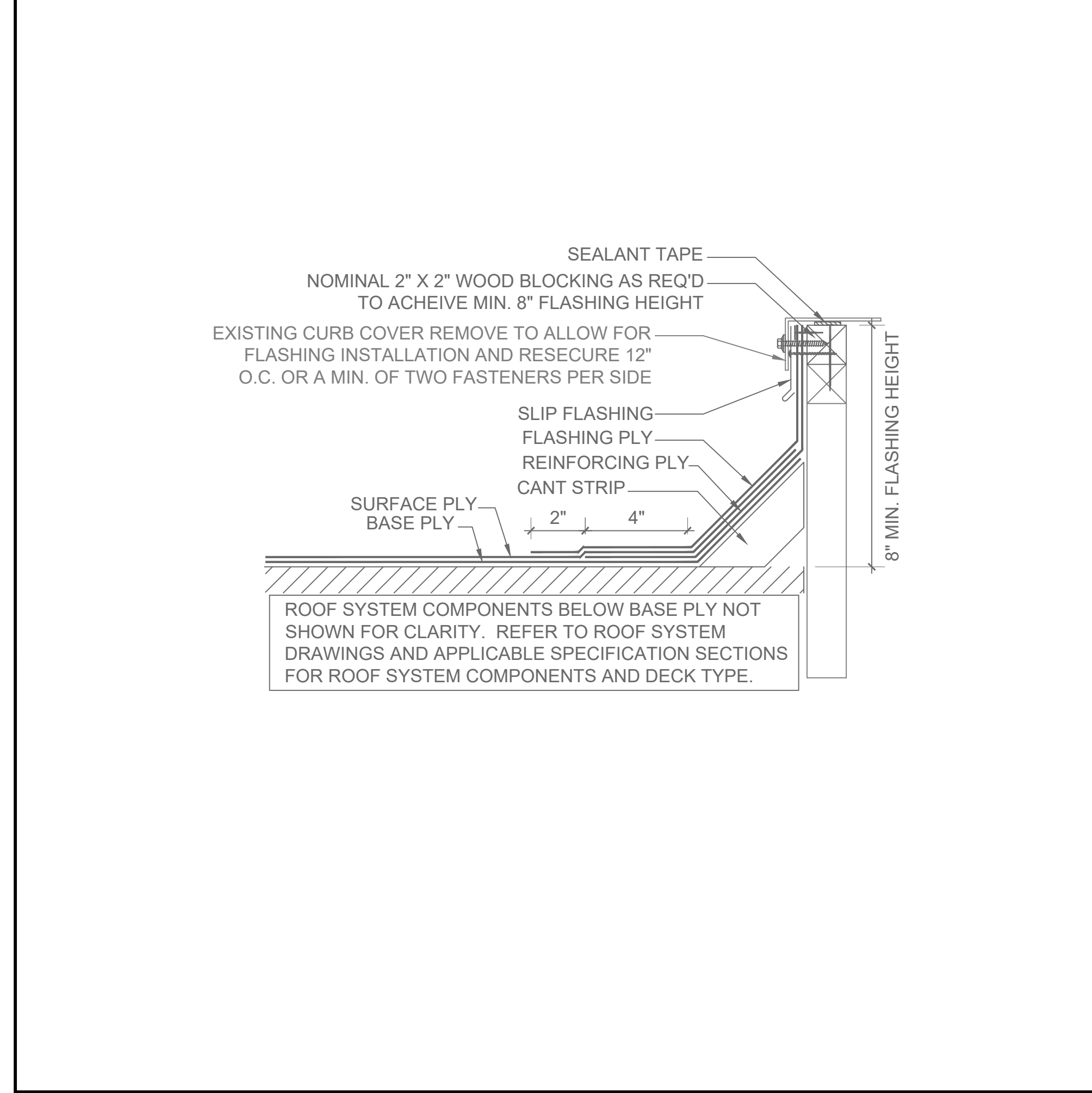
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AND BUILDING ENVELOPE
ENGINEERS & CONSULTANTS
CERTIFICATE NO. C-1520



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

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

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



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

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

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

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1600 21st STREET

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

DRAWING:

D1

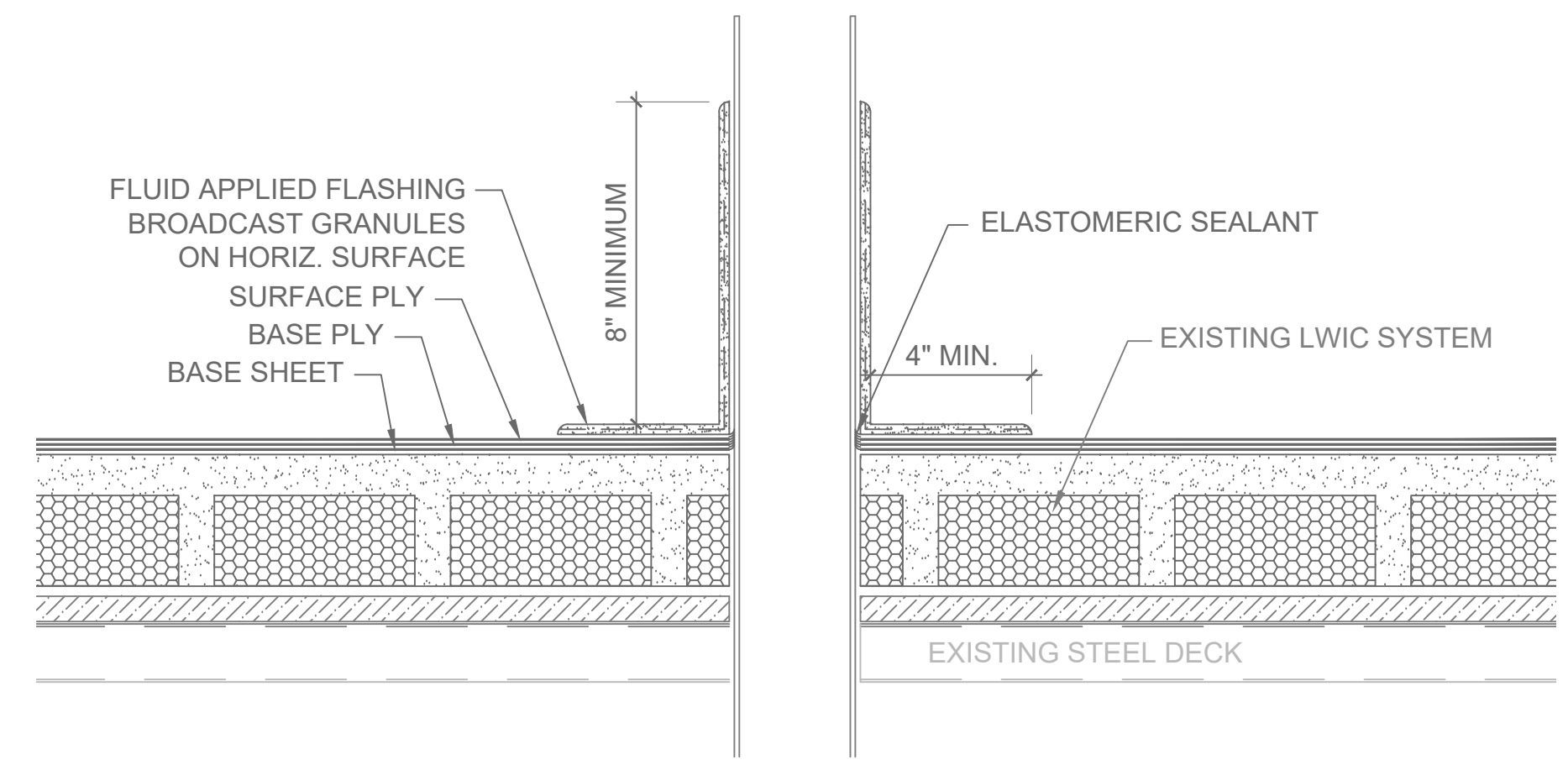
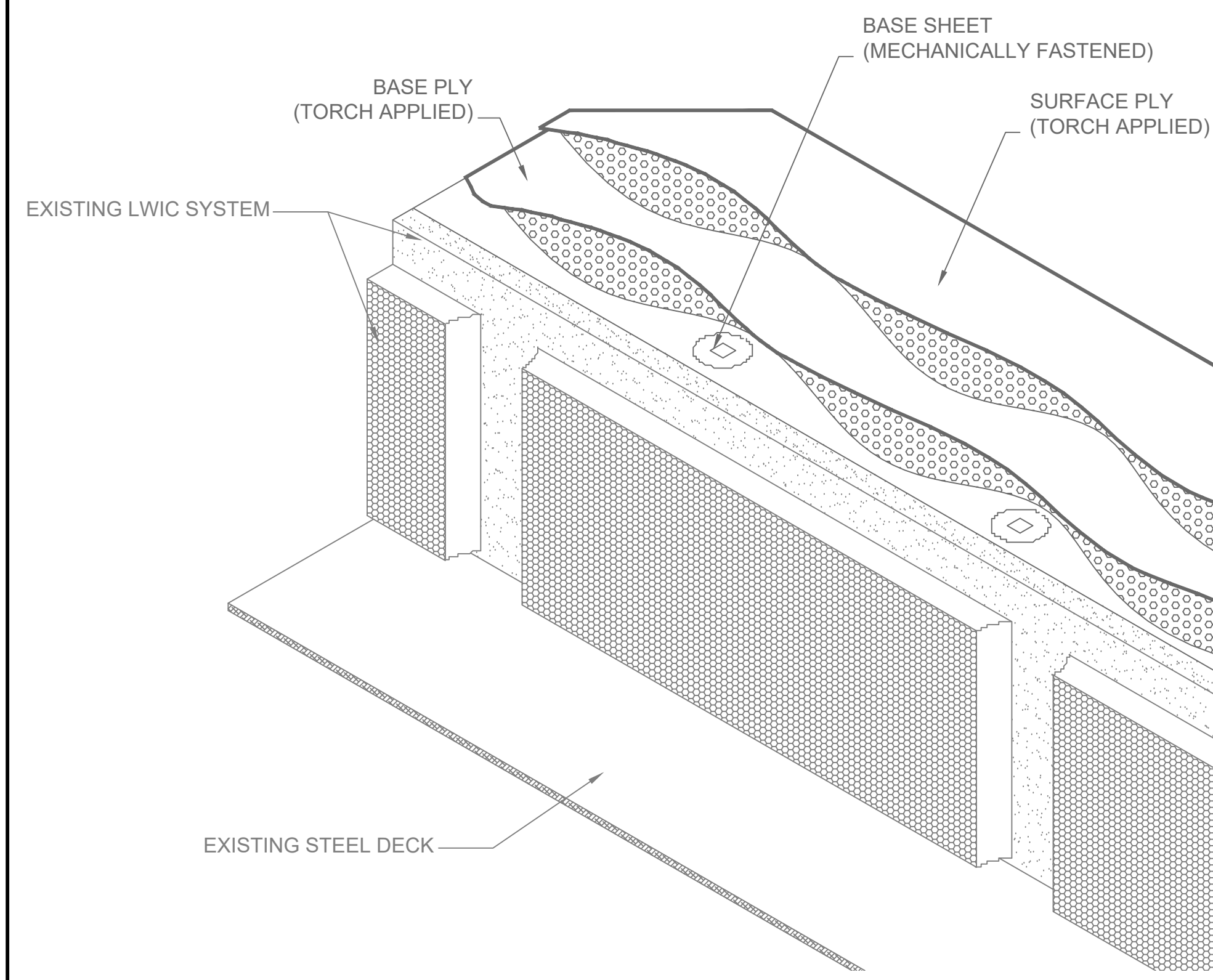
ROOF DETAILS



ENGINEERS

10150 HIGHLAND MANOR DR
SUITE 200
TAMPA, FL 33610
813.944.2137

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



7 ROOF SYSTEM

SCALE: NOT TO SCALE

8 PIPE PENETRATION / ELECTRICAL CONDUIT PENETRATION Δ

SCALE: 3"=1'-0"

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REVISION #	REVISION DATE
1	05-15-2020
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3	
4	

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

DRAWING:
D2
 ROOF DETAILS