

ADDENDUM NO. 2

**ROOF REPLACEMENT
DOMINIC MAI THANH LUONG SCHOOL
5100 CANNES STREET
NEW ORLEANS, LOUISIANA 70129**

OPSB Project No. ITB24-FAC-0006
VRA Project No. 23057
July 22, 2024

VERGES ROME ARCHITECTS

This Addendum is issued in accordance with the Plans and Specifications dated **February 1, 2024**, and Addendum NO. 1 dated **July 18, 2024**, shall become part of the Contract Documents. Contractor shall be cognizant of all the items contained herein. This addendum supersedes information noted where applicable. Revisions noted for plans to correspondingly revise specifications accordingly, and vice versa.

GENERAL

ITEM NO. 1

BID OPENING DATE CHANGE

Bid Opening Date has been CHANGED to "Thursday, August 1, 2024, at 2:00pm CDST". All other bidding details remain the same.

ITEM NO. 2

CONTRACTOR QUESTIONS

This is the Final Addendum. No further Contractor questions will be accepted.

SPECIFICATIONS

ITEM NO. 1

THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

SECTION 07 54 23

DELETE Section 07 54 23 – Thermoplastic-Polyolefin (TPO) Roofing, issued with Addendum No. 1, in its entirety. **ADD** the attached "SECTION 07 54 23 – THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING".

ITEM NO. 2

UNIT SKYLIGHTS

SECTION 08 62 00

"PART 2 – PRODUCTS", "2.1 PERFORMACE REQUIREMENTS", "A", **DELETE** items "1-3", **ADD** the following:

1. Provide skylights capable of withstanding wind zones, pressures, and zone dimensions specified on the Construction Drawings.
2. Unit skylights must be tested in accordance with AAMA \ WDMA \ CSA \ 101 \ I.S.2 \ A440 as required by Section 2405.5 of the International Building Code.
3. Units shall meet testing per Florida Building Code test protocols for High Velocity Hurricane Zones, protocols TAS 201, TAS 202, and TAS203.

CONTRACTOR QUESTIONS:

1. **It was stated at the Pre-Bid, that core samples were available. Please provide.**

There are no core samples or photos of cores samples available. See all available existing roof information, in attached "Roof Core Report", also previously sent in Addendum #1.

2. **Page 3 of the "Unit Skylight" spec, under "Performance Requirements": Minimum performance Grade: PG 165. The 165 is pressure in pounds per square foot. 165 = 400+ mph winds. No skylight manufacturer has skylights tested to 400 mph winds.**

The "PG 165" performance requirement has been removed. See clarifications in "Specifications", "Item No. 2" above.

3. **If a roofing contractor is ES-1 certified, and the manufacturer will warrant shop fabricated perimeter flashings, is that acceptable to the AOR?**

Yes. Roofing contractor to provide documentation of ES-1 certification for each different type of metal (i.e. edge metal, gutter, counter flashings, etc.) to be formed. Provide letter from roofing membrane manufacturer stating that roofing contractor formed metal will meet and be included in the Special Warranty.

4. **Is there an estimated budget?**

Estimated budget range is identified in Addendum No. 1.

5. **Please clarify what testing the Roofing Contractor is responsible for.**

Contractor is required to provide his certification for compliance with ES-1 for each of the metal items he is proposing to form. The membrane Manufacturer has to accept this certification and the non-premanufactured formed metal to be included in the warranty.

6. **The Thermoplastic-Polyolefin (TPO) Roofing specification as it is written, does not meet the Design Pressures or Wind Uplift requirements. Please provide a revised specification.**

See revised Section 07 54 23 - Thermoplastic-Polyolefin (TPO) Roofing included with this Addendum No. 2.

ATTACHMENTS:

Roof core report, dated 31 October 2023.
Section 07 54 23 - Thermoplastic-Polyolefin (TPO) Roofing

END OF ADDENDUM No. 2

Roof Core Report

OPSB - Luong School - Roof Replacement

Project Number: ITB24-FAC-0006

VRA Project Number: 23057

Prepared for: Russ M. Hogan, Assoc. AIA - VergesRome Architects, APAC

Prepared by: Mark Cook – Mark Cook Roofing Consultant LLC

Date of Field Work: 10-30-2023

Report Date: 10-31-2023

NOTES, OBSERVATIONS AND OPINIONS

On October 30, 2023, a site visit was conducted to perform roof core cuts at Luong School - 5100 Cannes Street, New Orleans, LA 70129.

Roof Core # 1:

- Single-ply membrane (recover system) over built-up roof (BUR) over lightweight insulating concrete over metal decking.

Roof Core # 2:

- Single-ply membrane (recover system) over built-up roof (BUR) over lightweight insulating concrete over metal decking.

Roof Core # 3:

- Single-ply membrane (recover system) over built-up roof (BUR) over lightweight insulating concrete over metal decking.

Roof Core # 4:

- Single-ply membrane (recover system) over built-up roof (BUR) over lightweight insulating concrete over metal decking.

The existing roof system was the same at all four (4) roof core locations. The existing lightweight insulating concrete is sloped toward the roof drains. The description of the findings is shown on the attached roof sketch. All test cuts were repaired using a 3 coursing of asphaltic roofing cement and fiberglass fabric.

Roof System Recommendations:

Roof System # 1

- Remove the single-ply membrane and the built-up roof down to the lightweight insulating concrete.
- Loose lay a venting base sheet.
- Mechanically fasten a minimum ½” gypsum cover board.
- Install ½” wood blocking at the perimeter to properly align with the new cover board height.
- Fully adhere a 60 mil TPO Single-Ply Membrane with heat / hot air welded seams.

Roof System # 2 (if improving R-Value is desired)

- Remove the single-ply membrane and the built-up roof down to the lightweight insulating concrete.
- Loose lay a venting base sheet.
- Mechanically fasten 1 ½” polyisocyanurate insulation. Install additional polyisocyanurate insulation using insulation adhesive (low rise foam) to achieve R-Value as desired.
- Install a minimum ½” gypsum cover board using insulation adhesive (low rise foam).
- Install wood blocking at the perimeter to properly align with the new insulation and cover board height as desired.
- Fully adhere a 60 mil TPO Single-Ply Membrane with heat / hot air welded seams.

Roof to Wall Condition Recommendation:

- Remove the existing metal gutters, downspouts, and wall panels around the existing upper roof section.
- Install a minimum ½” gypsum board along the wall to adhere the single-ply membrane.
- Install the single-ply membrane up to the top of the upper roof section.
- Install new metal gutters and downspouts.

Expansion Joint Recommendation:

- Install a metal standing seam expansion joint.



10/31/2023

Mark Cook, Consultant, RRO

Photo Attachments



Roof Core Cut: Single-Ply Membrane over BUR over LWC over metal decking



Roof Core Cuts were the same at all four (4) locations



All test cuts were repaired using a 3 coursing of asphaltic cement and fiberglass fabric



Overview: Metal wall panels



Overview



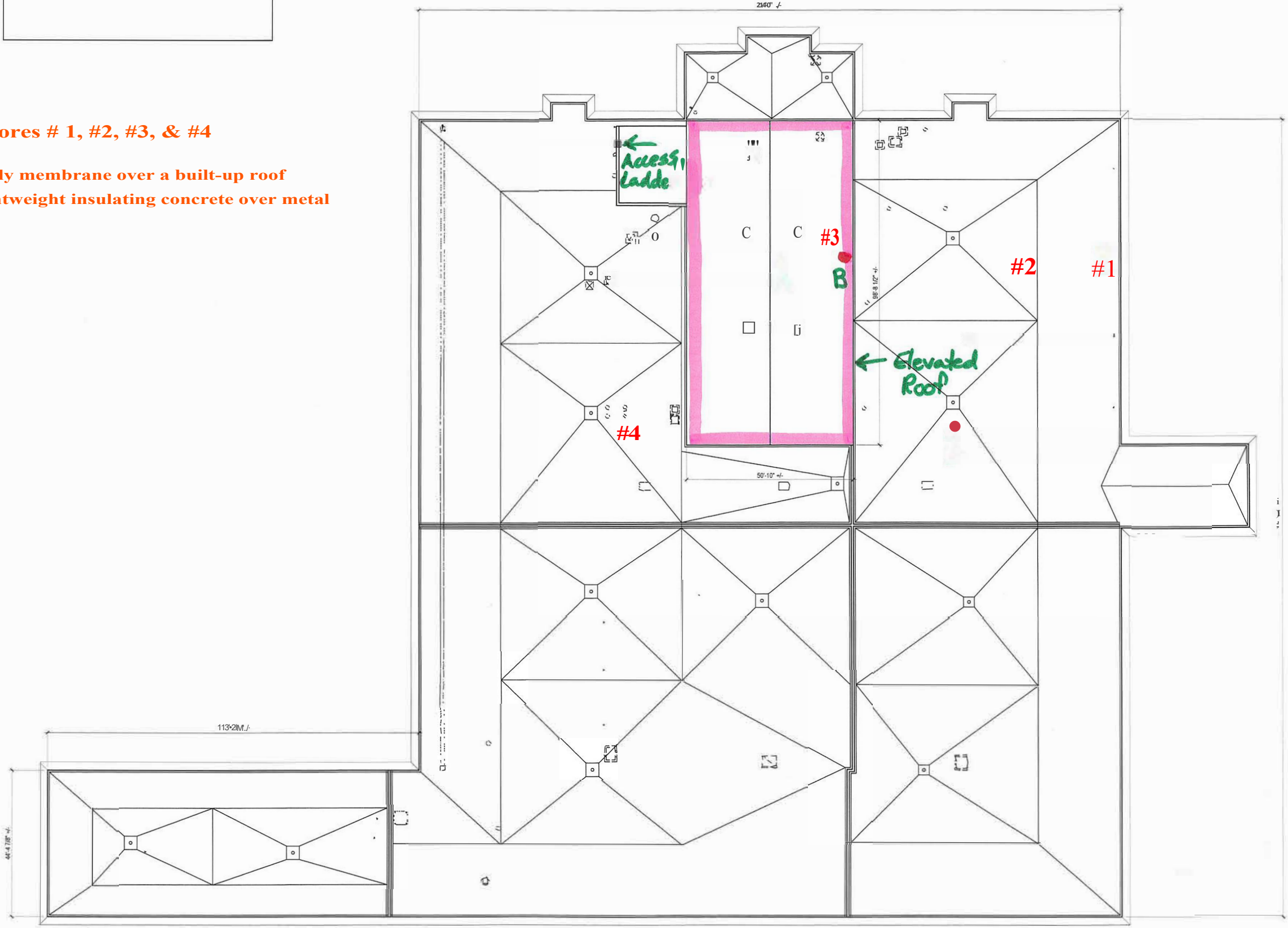
Overview

NOTES:
 1. INSERT TEXT HERE.

REVEL STREET SIDE

Roof Cores # 1, #2, #3, & #4

Single-Ply membrane over a built-up roof
 over lightweight insulating concrete over metal
 decking.



GRANVILLE STREET SIDE

N NEW ORLEANS STREET SIDE

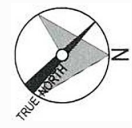
CANNES STREET SIDE

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POOLING
 CONSULTING
 ENGINEERS
 ARCHITECTS

DATE ISSUED	20 COCHR 22B
REVISED	
REVISED	
REVISED	
REVISED	
DRAWN BY	JH
CHECKED BY	AB
PHASE	SCHMATIC DESIGN
TITLE	23057 SITE PLAN
SHEET	A1.00

1 SITE PLAN
 A1.00 1/16" = 1'-0"



SECTION 07 54 23 - THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Venting Base Sheet.
4. Roof insulation.
5. Insulation accessories and cover board.
6. Asphalt materials.
7. Walkways.

B. Related Requirements:

1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood curbs, and blocking.
2. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counter-flashings.
3. Section 07 71 00 "Roof Specialties" for manufactured copings and roof edge flashings.
4. Section 07 72 00 "Roof Accessories" for manufactured pipe rooftop supports.
5. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to Work of this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.

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

- B. Preinstallation Roofing Conference: Conduct conference at **Project site**.

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

1.4 ACTION SUBMITTALS

A. Product Data:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Venting base sheet.
4. Roof insulation.
5. Insulation accessories and cover board.
6. Asphalt materials.
7. Walkways.
8. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav and / or SPRI's Directory of Roof Assemblies listing.

B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness of insulation.
2. Base flashings and membrane termination details.
3. Flashing details at penetrations.
4. Tapered insulation layout, thickness, and slopes.
5. Roof plan showing orientation of steel roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Samples for Verification: For the following products:

1. Roof membrane and flashings, of color required.
2. Walkway pads or rolls, of color required.

D. **ADDEN No. 2:** Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind zones, pressures, and zone dimensions specified on the Construction Drawings.

1.5 INFORMATIONAL SUBMITTALS

E. Qualification Data: For Installer and Manufacturer.

F. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of compliance with performance requirements.
 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- G. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.
- H. Evaluation Reports: For components of roofing system, from ICC-ES.
- I. Field Test Reports:
1. Concrete internal relative humidity test reports.
 2. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.
- J. Field quality-control reports.
- K. Sample Warranties: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.
- B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed or listed in FM Approvals' RoofNav or listed in SPRI's Directory of Roof Assemblies for roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

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

1.8 FIELD CONDITIONS

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

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, venting base sheet, and other components of roofing system from top of deck up.
 - 2. Warranty Period: **20-Years** from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, venting base sheet, for the following warranty period:
 - 1. Warranty Period: **Two-Years** from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing system and flashings to withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings to remain watertight.
 - 1. Accelerated Weathering: Roof to withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
 - 2. Impact Resistance: Roof membrane to resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Material Compatibility: Roofing materials to be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897:
 - 1. **ADDEN No. 2:** Wind zones, pressures, and zone dimensions are specified on the Construction Drawings.
- D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and are listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.
 - 1. Fire/Windstorm Classification: Class A Fire / Windstorm see pressures specified on drawings.
 - 2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 MH.

- E. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and are listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.
- F. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- G. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING SYSTEM

- A. TPO Sheet: ASTM D6878/D6878M, internally fabric- or scrim-reinforced, TPO sheet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle Syntec Systems.
 - b. Holcim Elevate.
 - c. Johns Manville; a Berkshire Hathaway company.
 - d. Prior approved equal.
 - 2. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.
 - 3. Thickness: 60 mils (1.5 mm), nominal.
 - 4. Exposed Face Color: White.

2.3 ACCESSORY ROOFING MATERIALS

- A. General: Accessory materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
 - 1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 60 mils (1.5 mm) thick, minimum, of same color as TPO sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Roof Vents: As recommended by roof membrane manufacturer.
 - 1. Size: Not less than 4-inch (100-mm) diameter.
- E. Bonding Adhesive: Manufacturer's standard.
- F. Slip Sheet: Manufacturer's standard, of thickness required for application.
- G. ADDEN NO. 1: Asphalt-Coated, Glass-Fiber-Mat, Venting Base Sheet: ASTM D4601/D4601M, Type II; nonperforated, asphalt-impregnated fiberglass reinforced, with mineral granular patterned surfacing on bottom surface.
- H. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

- I. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), prepunched.
- J. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.
- K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.4 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer..
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
- C. ADDEN NO. 1: Compressive Strength: 20 psi (138 kPa).

2.5 INSULATION ACCESSORIES AND COVER BOARD

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
- B. Fasteners: Factory-coated steel fasteners with metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.
- C. Induction-Welding Plates: Minimum 3-inch (76-mm) diameter with recessed center, 0.034-inch (0.86-mm) thick, aluminum-zinc-alloy-coated steel plates, factory-coated with adhesive formulated for roof membrane, with corresponding corrosion-resistant fasteners.
- D. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Modified asphaltic, asbestos-free, cold-applied adhesive.
 - 2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
 - 3. Full-spread, spray-applied, low-rise, two-component urethane adhesive.
- E. Glass-Mat Gypsum Cover Board: ASTM C1177/C1177M, water-resistant gypsum board.
 - 1. Thickness: 1/2 inch (13 mm).
 - 2. Surface Finish: As required by membrane manufacturer.

2.6 ASPHALT MATERIALS

- A. Roofing Asphalt: STM D312/D312M, Type III or Type IV or ASTM D6152/D6152M, SEBS modified.
- B. Asphalt Primer: ASTM D41/D41M.

2.7 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.
 - 1. Size: Approximately 36 by 60 inches (914 by 1524 mm).
 - 2. Color: Contrasting with roof membrane.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is as recommended by roofing system manufacturer, when tested according to ASTM F2170.
 - 4. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
 - 5. Verify that joints in precast concrete roof decks have been grouted flush with top of concrete.
 - 6. Verify that minimum curing period recommended by roofing system manufacturer for lightweight insulating concrete roof decks has passed.
 - 7. Verify any damaged sections of cementitious wood-fiber decks have been repaired or replaced.
 - 8. Verify adjacent cementitious wood-fiber panels are vertically aligned to within 1/8 inch (3.2 mm) at top surface.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Perform fastener-pullout tests according to roof system manufacturer's written instructions.
 - 1. Submit test result within 24 hours after performing tests.
 - a. Include manufacturer's requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.
- D. Install sound-absorbing insulation strips according to acoustical roof deck manufacturer's written instructions.

3.3 INSTALLATION OF ROOFING, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav or SPRI's Directory of Roof Assemblies listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.
- C. Install roof membrane and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

3.4 INSTALLATION OF INSULATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation.
- C. **ADDEN No. 1:** Installation Over Lightweight Insulating Concrete Decks Over Metal Decks:
 - 1. Loose lay vented base sheet over lightweight insulating concrete, with vented side down.
 - 2. Loose lay base layer of insulation with joints staggered not less than 24 inches (610 mm) in adjacent rows or end joints staggered not less than 12 inches (305 mm) in adjacent rows.
 - a. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
 - 1) Trim insulation so that water flow is unrestricted.
 - e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - g. Loosely lay base layer of insulation units over substrate.
 - h. **ADDEN No. 2: DELETED** Subparagraph.

3.5 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction.
 - 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - 2. At internal roof drains, conform to slope of drain sump.
 - a. Trim cover board so that water flow is unrestricted.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Loosely lay cover board over substrate.

- B. ADDEN No. 2:** Mechanically attach cover board through insulation layers and through base sheet and through lightweight insulating concrete, into metal decks, using mechanical fasteners specifically designed and sized for fastening specified cover board, insulation thicknesses, base sheet and lightweight insulating concrete thicknesses. Install fasteners at rates to achieve wind zones, pressures, and zone dimensions specified on the Construction Drawings.
- C. Install slip sheet over cover board and beneath roof membrane.
- D. Place plates on insulation in required fastening patterns to achieve specified wind pressures and secure in accordance with manufacturer's instructions.
1. Install plates and fasteners tight and flat to substrate with no dimpling, and with fastener extending 1 inch (25 mm) minimum into roof deck; do not overdrive fasteners.

3.6 INSTALLATION OF ADHERED ROOF MEMBRANE

- A. ADDEN No. 2:** Fully Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions and at rates to meet wind zones, pressures, and zone dimensions specified on the Construction Drawings.
- B. Unroll roof membrane and allow to relax before installing.
- C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- F. Hot Roofing Asphalt: Apply a solid mopping of hot roofing asphalt to substrate at temperature and rate required by manufacturer, and install fabric-backed roof membrane. Do not apply to splice area of roof membrane.
- G. Fabric-Backed Roof Membrane Adhesive: Apply to substrate at rate required by manufacturer, and install fabric-backed roof membrane.
- H. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.
- I. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- J. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.
1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
 4. Heat weld membrane lap seams on same day as membrane installation.

- K. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.7 ADDEN. No. 2: DELETED this Article in its entirety.

3.8 INSTALLATION OF BASE FLASHING

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.9 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
- B. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423