

ADDENDUM NO. 03

**PROJECT: Ossining Union Free School District
Park Early Childhood Center
Second Floor Classroom Addition**

SED PROJECT NO: 66-14-01-03-0-004-024

DATE: October 4, 2023

CPL PROJECT NO: 14428.20

Include this Addendum as part of the Contract Documents. It supplements portions of the original Specifications and Drawings, the extent of which shall remain, except as revised herein:

CLARIFICATIONS / RESPONSE TO BIDDER QUESTIONS:

- 1.1** Bid date has changed from Thursday 10/5/2023 to Thursday 10/12/2023 at the same time and location as previously noted.
- 1.2** Question: When is the Scaffolding and Protections Planned to be removed.
Answer: Section 01 11 00 – Milestone Schedule, 1.2
- Remove: “Perimeter Scaffolding, Protections and Egress Canopies Start 6/27/24 Finish 8/16/24”
 - Replace with “Perimeter Scaffolding, Stair tower, Protections and Egress Canopies (as per C002) Start 6/27/24 Finish 8/16/24”
 - Add to note 14: 01 1200 Summary of Multiple Contracts, 1.10 Contract No 1 General Work Contractor, C Special Notes Contract 1 – General Contractor:
 - “Perimeter Scaffolding, Stair tower, Protections and Egress Canopies (as per C002) are to be in place and completed by 8/16/24. They are to remain in place until Substantial Completion at which time they may be removed”

CHANGES TO THE PROJECT MANUAL:

- 1.3 Section 00 1116 Invitation to Bid**
A. Replace sheet “00 1116 1 Invitation to Bid” with attached “00 1116 1 Invitation to Bid”.
- 1.4 Section 00 4040 Form of Proposal – Electrical Construction**
A. Remove paragraph “1.06 Alternates”
- 1.5 Section 01 1100 Milestone Schedule**
A. Remove: “Perimeter Scaffolding, Protections and Egress Canopies Start 6/27/24 Finish 8/16/24” and replace with “Perimeter Scaffolding, Stair tower, Protections and Egress Canopies (as per C002) Start 6/27/24 Finish 8/16/24”
- 1.6 Section 01 1200 Summary of Multiple Contracts**
A. Add to note 14: 01 1200 Summary of Multiple Contracts, 1.10 Contract No 1 General Work Contractor, C Special Notes Contract 1 – General Contractor:
a. “Perimeter Scaffolding, Stair tower, Protections and Egress Canopies (as per C002) are to be in place and completed by 8/16/24. They are to remain in place until Substantial Completion at which time they may be removed”

Ossining Union Free School District
Park ECC Second Floor Addition
Addendum No. 03

1.7 Section 07 5320 EPDM Roofing

- A. Replace with attached section “07 5320 EPDM Roofing”

CHANGES TO THE DRAWINGS

1.8 None.

PREVIOUSLY ISSUED ADDENDA

- A. Addendum 1, dated September 22, 2023
- B. Addendum 2, dated September 29, 2023

END OF ADDENDUM NO. 03

**SECTION 00 1116
INVITATION TO BID**

THE OSSINING UFSD INVITES BIDS FOR "2022-2023 CIP -PARK ECC 2ND FL ADDITION" PROJECT. SEPARATE SEALED BIDS WILL BE RECEIVED AT THE OSSINING UFSD, 400 EXECUTIVE BOULEVARD, OSSINING, NY 10562, UNTIL 3:00 P.M., LOCAL TIME, ON 10-12-2023

1.01 PROJECT INFORMATION

- A. Project Identification: 2022-2023 CIP -Park ECC 2nd FL Addition
 - 1. Project Location(s):
 - a. Park ECC, 22 Edward Street, Ossining, NY 10562
- B. Owner: Ossining UFSD, 400 Executive Boulevard, Ossining, NY, 10562
 - 1. Owner's Representative:
 - a. Jared Mance
 - b. PH: 914-762-5740
- C. Architect/Engineer: CPL (Clark Patterson Lee), at 50 Front Street, Newburgh, NY 12550.
- D. Construction Manager: Arris Contracting Co Inc. - 189 Smith St, Poughkeepsie, New York 12601
 - 1. Construction Manager's Representative:
 - a. Chris Hanaburgh
 - b. PH: (845) 473-3600
- E. Project Description: Project consists of Second Floor, Four Classroom Addition and Cafeteria Expansion and Renovation.
- F. Construction Contract: Bids will be received for the following Work:
 - 1. Multiple Contract Project consisting of the following prime contracts:
 - a. General Construction.
 - b. Plumbing Construction.
 - c. Mechanical Construction.
 - d. Electrical Construction.

1.02 BID SUBMITTAL AND OPENING

- A. Owner will receive sealed lump sum bids until the bid time and date at the location given below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
 - 1. Bid Date: 10-12-2023
 - 1. Bid Time: 3:00 p.m. local time.
 - 2. Location: Ossining UFSD, 400 Executive Boulevard, Ossining, NY 10562
- B. Bids will be thereafter publicly opened.

1.03 BID SECURITY

- A. Bid security shall be submitted with each bid in an amount not less than five percent (5%) of the base bid in the form and subject to the conditions provided in the "Instructions to Bidders".

1.04 PREBID MEETING

- A. Prebid Meeting: A Pre-Bid meeting/walk-thru for the Project will be held at 4:00 p.m., local time on 09/19/23, starting at the Park ECC, 22 Edward Street, Ossining, NY 10562 Prospective bidders are **requested** to attend. Prospective bidders may visit the site during business hours by appointment by contacting Frank Roberts at 914-755-0930 .

1.05 DOCUMENTS

SECTION 075323 - EPDM ROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Adhered EPDM membrane roofing system.
 2. Substrate board.
 3. Vapor retarder.
 4. Roof insulation.
 5. Cover board.
- B. Section includes the installation of acoustical roof deck rib insulation strips furnished under Division 05 Section "Steel Decking."
- C. Related Sections:
1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
 2. Division 07 Section "Roof Specialties" for roof edge fascia
 3. Division 07 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS

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

1.3 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings, and on the following:
 - a. Risk Occupancy Category: III
 - b. Basic Wind Speeds (3-second gust as measured 33 ft above ground):
 1. 120 mph ultimate
 2. 93 mph nominal
 - c. Exposure Category: C.
 2. Field of Roof Uplift Pressure (Zone 1): -25 lbf/sf.
 3. Perimeter Uplift Pressure (Zone 2): -30 lbf/sq. ft.
 4. Corner Uplift Pressure (Zone 3): -35 lbf/sq. ft

- D. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals' markings.
1. Fire/Windstorm Classification: Class 1A-90.
 2. Hail Resistance: MH.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
1. Base flashings and membrane terminations.
 2. Tapered insulation, including slopes.
 3. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Qualification Data: For qualified Installer and manufacturer.
- D. Manufacturer Certificate: Signed by roofing manufacturer certifying that membrane roofing system complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of complying with performance requirements.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- F. Field quality-control reports.
- G. Maintenance Data: For membrane roofing system to include in maintenance manuals.
- H. Warranty:
1. Sample of Total System Warranty.
 2. Certification of the manufacturer's warranty reserve.
- I. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the Architect prior to the issuance of the manufacturer's warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Approvals approved for membrane roofing system identical to that used for this Project.
1. The manufacturer must have a minimum of 20 years' experience in the manufacturing of vulcanized thermal set sheeting and be the primary manufacturer of the EPDM membrane.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- C. The installer shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.
- D. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able to provide evidence of having at least ten years' successful experience installing single-ply EPDM roofing systems and having installed at least one roofing application of similar or equal scope. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.
 2. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experienced superintendent on the job at all times roofing work is in progress.
 3. There shall be a supervisor on the job site at all times while work is in progress.
- E. Source Limitations: Obtain components including roof insulation fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- F. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- G. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- H. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories 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 will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.

1.6 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.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.
- C. Do not disrupt activities in occupied spaces.

1.8 WARRANTY

- A. Total System Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Twenty (20) years from date of Substantial Completion.
 2. Warranty shall cover wind speeds up to 90 mph.
 3. Metal edge terminations shall be included in the warranty.

PART 2 - PRODUCTS

2.1 EPDM MEMBRANE ROOFING

- A. EPDM: ASTM D 4637, Type I, non-reinforced, uniform, flexible EPDM sheet.
 1. Manufacturers: Subject to compliance with requirements, provide Carlisle SynTec Incorporated or an equivalent from one of the following:
 - a. GAF
 - b. Genflex
 2. Thickness: 60 mils, un-reinforced.
 3. Exposed Face Color: Black.
 4. When a 10-foot wide membrane is to be used, the membrane shall be manufactured in a single panel with no factory splices to reduce splice intersections with 6-inch factory applied tape.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
- B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.
- C. Bonding Adhesive: Manufacturer's standard.

- D. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch- wide minimum, butyl splice tape with release film.
- E. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
- F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- G. Low-Rise, Urethane Adhesive: Roof system manufacturer's standard spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with membrane roofing.
- H. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8-inch-thick; with anchors.
- I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.
- J. RUSS (Reinforced Universal Securement Strip): a 6-inch-wide, 100-foot-long strip of reinforced EPDM membrane.
 - 1. 6-inch-wide RUSS shall be utilized horizontally or vertically (in conjunction with Seam Fastening Plates) below the EPDM membrane for additional membrane securement.
- K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.3 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1278/C 1278M, fiber-reinforced gypsum board.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Georgia-Pacific Corporation.
 - 1) Dens-Deck
 - 2. Thickness: Type X, 1/2 inch.
 - 3. Surface Finish: Unprimed.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to metal roof deck.

2.4 VAPOR RETARDER

- A. Self-Adhering-Sheet Vapor Retarder: ASTM D 1970, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil-total thickness; maximum permeance rating of 0.1 perm; cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor-retarder manufacturer.

2.5 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1. Use Type II, Class I, Grade 3 where indicated for higher compressive strength.
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.
 1. Provide minimum slope of 1/8 inch per 12 inches at reroofed areas.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- E. Insulation transitions/step offs greater than 1/2" will require a transition board such as a wood fiberboard tapered edge strip. Tapered insulation or crickets shall be overlaid with 1/2"

2.6 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and 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. Bonding Adhesive: Manufacturer's standard.
- D. Cover Board: ASTM C 1278/C 1278M, fiber-reinforced gypsum board.
 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Georgia-Pacific Corporation.
 - 1) Dens-Deck Prime
 2. Thickness: 1/2 inch.
 3. Surface Finish: Unprimed.

2.7 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16-inch-thick, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that 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 surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
 5. Verify that gypsum and concrete substrates are visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

- 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 installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
1. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.
 - a. Omit substrate board at gypsum decks and concrete decks.

3.4 VAPOR-RETARDER INSTALLATION

- A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches (90 and 150 mm), respectively.
1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board.
 2. Seal laps by rolling.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- C. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

3.5 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Minimum Average Thickness: As required to obtain an average thermal resistance of R-20.
1. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- G. Installation Over vapor barrier, substrate board and metal decking:
 - 1. Install base layer of insulation in foam adhesive with joints staggered not less than 24 inches in adjacent rows.
 - a. Trim insulation neatly to fit around penetrations and projections.
 - b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - c. 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.
 - 1) Trim insulation so that water flow is unrestricted.
 - d. Fill gaps exceeding 1/4 inch with insulation.
 - e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - f. Attach base layer of insulation to vapor barrier and substrate board using a full spread of specified insulation adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification,
 - 1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
 - 2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
 - 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
 - a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
 - 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 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.
 - e. Trim insulation so that water flow is unrestricted.
 - f. Fill gaps exceeding 1/4 inch with insulation.
 - g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - h. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
- H. Installation Over Concrete Decks:
 - 1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.

- a. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - b. 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.
 - 1) Trim insulation so that water flow is unrestricted.
 - c. Fill gaps exceeding 1/4 inch with insulation.
 - d. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - e. Adhere base layer of insulation to vapor retarder according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
- a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
 - b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
 - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - e. 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.
 - 1) Trim insulation so that water flow is unrestricted.
 - f. Fill gaps exceeding 1/4 inch with insulation.
 - g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - h. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
 - 1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 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 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. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:

- a. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
5. Walk the boards into the adhesive **and** roll using a 30" wide, 150 pound weighted steel roller to ensure full embedment. Constant weight may be required to achieve adequate adhesion.

3.7 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax a minimum of thirty (30) minutes before bonding.
- B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps. Position sheets to accommodate contours of the roof deck and shingle splices to avoid bucking water.
- D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.
- F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
 1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.
 2. Fold back the un-bonded half of the membrane sheet and repeat the bonding procedure.
 3. Install adjoining membrane sheets in the same manner, overlapping edges approximately 6" inches with 6" seam tape is required.
- G. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- H. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.
 1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
 2. Apply lap sealant and seal exposed edges of roofing terminations.
- I. Factory-Applied Seam Tape Installation: Clean and prime surface to receive tape.
 1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
 2. Apply lap sealant and seal exposed edges of roofing terminations.
- J. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- K. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.
- L. Install membrane roofing and auxiliary materials to tie in to existing membrane roofing to maintain weather-tightness of transition [**and to not void warranty for existing membrane roofing system**].

3.8 BASE FLASHING INSTALLATION

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

3.9 DAILY SEAL

- A. New roofing shall be complete and weather tight at the end of the workday. Care must be taken to avoid wicking water through the fleece by properly sealing exposed edges of the membrane
- B. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration. Use Pourable Sealer or other acceptable membrane seal in accordance with the manufacturer's requirements.

3.10 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.11 FIELD QUALITY CONTROL

- A. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
 - 1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of base flashing.
 - 2. Flood each area for 24 hours.
 - 3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for

- deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
 - C. Perform daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.
 - D. Prior to the manufacturer's inspection for warranty, Contractor must perform a pre-inspection to review all work and to verify all flashing and caulking has been completed.

END OF SECTION 075323