

SECTION 009113 – ADDENDUM ONE

PART 1 - ADDENDA

1.1 PROJECT INFORMATION

- A. Project Name: 23025 Greenwood Leflore Consolidated Schools MDE Reroofing.
- B. Owner: Greenwood Leflore Consolidated School District, 1901 Hwy 82 West, Greenwood, MS 38930
- C. Architect: Dale | Bailey, an Association, 188 E. Capitol Street, Suite 250, Jackson, Mississippi, 39201
- D. Architect Project Number: 23025
- E. Date of Addendum One: 17 July 2023

1.2 NOTICE TO BIDDERS

- A. This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders and Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.
- B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.
- C. The date for receipt of bids is unchanged by this Addendum at same time and location.

1.3 GENERAL

- A. Attached are the annotated Pre-Bid Meeting Minutes and Meeting Attendees dated 1 July 2023.

1.4 REVISIONS TO DIVISION 00 – PROCUREMENT REQUIREMENTS AND CONTRACTING REQUIREMENTS

- A. DOCUMENT 004113 – BID FORM. Delete this form in its entirety and replace it with new. See attached.

1.5 REVISIONS TO TECHNICAL SPECIFICATIONS

- A. Section 075552 – MODIFID BITUMINOUS PROTECTED MEMBRANE ROOFING. Delete this section in its entirety.



- B. Section 075423 – THERMOPLASTIC-POLYOLEFIN (TPO) Roofing (New). See attached. All new roofing shall be TPO for all campuses.

1.6 ATTACHMENTS

- A. Annotated Pre-Bid Meeting Minutes and Meeting Attendees dated 11 July 2023.
- B. This Addendum includes the following attached Specifications:
 - 1. Section 004113 – Bid Form dated 17 July 2023.
 - 2. Section 075423 – Thermoplastic-Polyolefin dated 17 July 2023.

END OF ADDENDUM ONE

Agenda

MINUTES FOR MEETING HELD ON 7/11/23



7/17/23

201 Park Court, Suite B
Ridgeland, MS 39157
P 601.790.9432
F 888.281.0547

11 July 2023

23025 Greenwood Leflore Consolidated School District MDE Roofing / Pre-Bid Meeting

1. General

- a. Please silence cell phones
- b. Sign-in sheet: Minutes will include list of meeting attendees
- c. Plan holders list: Minutes will include list of plan holders

Descriptions: This package contains 3 school sites for bids that will be awarded to a single Contractor. All work pertains to roofing and anything related to the demolition of existing roofing and installation of new roofing including but not limited to replacement of damaged substrates, disconnection and reconnection of electrical, new flashings, etc. **Must meet federal requirements for construction projects.**

One Jackson Place, Suite 250
188 East Capitol Street
Jackson, MS 39201-2100
P 601.352.5411
F 601.352.5362

2. Team

- a. Owner GLCSD / Greenwood, MS / Cynthia House
662-466-2077 Torien Howard
- b. Project Manager..... BPM / Ridgeland, MS / Gary Bailey
Jason Stewart
601-672-0203 Mark Pipper
- c. Architect..... Dale Bailey / Jackson & Ridgeland, MS / Gary Bailey
Russ Blount
601-506-9093 Paul Purser

161 Lameuse Street, Suite 201
Biloxi, MS 39530
P 228.374.1409
F 228.374.1414

3. Procurement and Contracting Requirements

- a. Advertisement for Bids
 - i. Advertisement date: June 29, 2023 and July 6, 2023
 - ii. Bid Receipt: **Bids to be opened at 2:00 PM on Thursday, July 27, 2023**
 - iii. Bid Location: Greenwood Leflore Consolidated School District, 1901 Hwy 82 West, Greenwood, MS 38930
- b. Bidder Qualifications
 - i. Bidders must be properly licensed under the laws governing their respective trades
 - ii. List all applicable state & local license & registration nos. on the outside of the bid envelope
- c. Bonding & Insurance
 - i. Bidders must be able to obtain insurance and bonds required for the Work

- d. Bid Security
 - i. A Bid Security in the amount of 5% of the total maximum bid amount is required
 - ii. Cash, cashier's check, certified check, US money order, or bid bond
 - e. Bid Form and Attachments
 - i. Acknowledgment of Addenda
 - f. Notice of Award
 - i. Offered within 90 days after receipt of bids
 - ii. Award will be made as soon as possible & successful bidder should be ready to secure bonds & insurance immediately
4. Communication during the Bidding Period
- a. Obtaining documents
 - i. Plan holders are required to register & order bid documents at www.dalebaileyplans.com
 - b. Bidder's Requests for Information
 - i. Binding answers to questions must be included in an **officially written addendum** and the Contractor or Subcontractor is encouraged to provide written communications to the Architect for proper response
 - ii. Address e-mailed written correspondence to biddinginfo@dalepartners.com
 - iii. No questions will be accepted after 5:00 PM on 06.20.22 in order to allow the Architect adequate time to prepare any necessary addenda
 - c. Addenda
 - i. Addendum no 1 **7/17/23** 07.20.23
 - ii. Addendum no 2 ???
5. Construction Documents
- a. Use of Site
 - i. Phasing
 - ii. Parking: coordinate with each school's administration
 - iii. Lay-down area: coordinate with each school's administration
 - b. Work Restrictions
 - i. Workdays
 - ii. Work times: **all times available; coordinate with each school to ensure access to working facilities are maintained**
 - iii. School testing times
 - c. Unit prices, contracts, alternates, & allowances
 - i. Unit prices: none.
 - ii. Alternates: none
 - iii. Allowances
 - 1. A. Allowance No. 01: Include the Sum of Eighty-Eight Thousand Dollars (\$88,000.00) total for Construction Contingency Allowance.

- d. Substitutions following award
 - i. Substitutions will be considered within 30 days of the contract award
 - ii. The burden of proof of "equal" will be on the Contractor or Vendor
- 6. Schedule
 - a. Project Schedule
 - i. GC to provide CPM type schedule, regularly updated
 - b. Contract Time
 - i. Notice to proceed will be the date of the sign contract upon award.
 - ii. Shall be fully complete by ~~12.30.23~~ 01/24/23
 - iii. Weather days are not allowable for a time extension
 - c. Liquidated Damages
 - i. \$500 each calendar day of the delay after Contract Time
- 7. Other Bidder Questions
 - a. The architect will record and distribute meeting minutes to attendees and others known by the Architect's office to have received a complete set of Procurement and Contracting Documents
 - b. Minutes of the meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents
 - c. Modifications to the Procurement and Contracting Documents are issued by written Addendum only
- 8. Site/facility visit or walkthrough
 - a. Site Exteriors are available; coordinate with Mr. Torien Howard for rooftop access

End

Meeting Attendees

201 Park Court, Suite B
Ridgeland, MS 39157
P 601.790.9432
F 888.281.0547

11 July 2023

23025 Greenwood Leflore Consolidated School District MDE Roofing / Pre-Bid Meeting

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	Name	Company	Phone	Email
1	Charles Brooks	Greenwood Leflore Consolidated School District		
2	Torien Howard	Greenwood Leflore Consolidated School District	(662) 466-2077	
3	Mark Pipper <i>MP</i>	Bailey PM	(601) 672-0203	mpipper@baileyarch.com
4	Gary Bailey	Dale Bailey		
5	Russ Blount	Dale Bailey	(601) 352-5411	russblount@dalepartners.com
6	Paul Purser <i>PP</i>	Dale Bailey	(601) 352-5411	paulpurser@dalepartners.com
7	<i>CHRIS CRISWELL</i>	<i>ECMC</i>	<i>601-624-0390</i>	<i>chris@ECMALONE.COM</i>
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9				
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DOCUMENT 004113 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: 23025 Greenwood Leflore Consolidated Schools MDE Reroofing.
- C. Project Locations:
 - 1. Site A: Amanda Elzy High: 604 Elzy Ave, Greenwood, MS 38930.
 - 2. Site B: Bankston Elementary: 1312 Grand Boulevard, Greenwood, MS 38930.
 - 3. Site C: Greenwood Middle: 1200 Garrard Ave, Greenwood, MS 38930.
- D. Owner: Greenwood Leflore Consolidated School District, 1901 Hwy 82 West, Greenwood, MS 38930.
- E. Architect: Dale | Bailey Architects, An Association, One Jackson Place, Suite 250, 188 East Capitol Street, Jackson, MS 39201.
- F. Architect Project Number: 23025.

1.2 CERTIFICATIONS AND BASE BID

- A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Dale | Bailey, An Association and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:
 - 1. _____ Dollars
(\$_____).

1.3 ALLOWANCES. Include the allowances below in the base bid. Refer to section 012100 - ALLOWANCES.

- A. Allowance No. 01: Lump Sum Contingency Allowance of Eight-Eight Thousand Dollars (\$88,000.00).

1.4 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 days after a written Notice of Award, if offered within 60 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's

check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. _____ Dollars
(\$_____).

B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.5 SUBCONTRACTORS AND SUPPLIERS

A. The following companies shall execute subcontracts for the portions of the Work indicated:

(OTHER CONTRACTOR) - Indicate: Non-DBE Firm, MBE Firm or WBE Firm

Name: _____ License Number: _____

(OTHER CONTRACTOR) - Indicate: Non-DBE Firm, MBE Firm or WBE Firm

Name: _____ License Number: _____

1.6 TIME OF COMPLETION

A. Successful bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work by Substantial Completion December 30, 2023. Work is subject to liquidated damages.

1.7 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

- 1. Addendum No. 1, dated _____.
- 2. Addendum No. 2, dated _____.
- 3. Addendum No. 3, dated _____.
- 4. Addendum No. 4, dated _____.

1.8 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto.

- 1. Bid Form Supplement - Bid Bond Form (AIA Document A310-2010).

1.9 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in Mississippi , and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.10 SUBMISSION OF BID

- A. Respectfully submitted this _____ day of _____, 2023 .
- B. Submitted By: _____
(Name of bidding firm or corporation).
- C. Authorized Signature: _____ (Handwritten signature).
- D. Signed By: _____ (Type or print name).
- E. Title: _____ (Owner/Partner/President/Vice President).
- F. Witnessed By: _____ (Handwritten signature).
- G. Attest: _____ (Handwritten signature).
- H. By: _____ (Type or print name).
- I. Title: _____ (Corporate Secretary or Assistant Secretary).
- J. Email: _____.
- K. Street Address: _____.
- L. City, State, Zip: _____.
- M. Phone: _____.
- N. License No.: _____.
- O. Federal ID No.: _____ (Affix Corporate Seal Here).

END OF DOCUMENT 004113

SECTION 075423 - THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanically fastened, thermoplastic polyolefin (TPO) roofing system.
2. Roof insulation.
3. Walkways.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav listing.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
- B. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

1.5 QUALITY ASSURANCE

- A. 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.

1.6 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. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
- B. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- C. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.
 - 1. Wind Uplift Load Capacity: 90 psf .

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

- 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. Cooley Group.
 - c. Custom Seal Inc.
 - d. Flex Membrane International Corp.
 - e. GAF.
 - f. IKO Innovati; IKO Industries Inc.
 - g. Johns Manville; a Berkshire Hathaway company.
 - h. Mule-Hide Products Co., Inc.
 - i. Versico Roofing Systems; Carlisle Construction Materials.
 - 2. Thickness: 60 mils , nominal.
 - 3. Exposed Face Color: White .

2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary 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, 55 mils thick, minimum, of same color as TPO sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Bonding Adhesive: Manufacturer's standard.
- E. Slip Sheet: ASTM D2178/D2178M, Type IV; glass fiber; asphalt-impregnated felt.

- F. Slip Sheet: Manufacturer's standard, of thickness required for application.
- G. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- H. 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.
- I. 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. Extruded-Polystyrene Board Insulation: ASTM C578, Type IV, 1.45-lb/cu. ft. minimum density, 25-psi minimum compressive strength, square edged.
 - 1. Thermal Resistance: R-value of 5.0 per inch.
 - 2. Size: 48 by 48 inches .
 - 3. Thickness:
 - a. Base Layer: 1-1/2 inches .
 - b. Upper Layer: .
- B. Tapered Insulation: Provide factory-tapered insulation boards.
 - 1. Material: Match roof insulation .
 - 2. Minimum Thickness: 1/4 inch.
 - 3. Slope:
 - a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
 - b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

2.5 INSULATION ACCESSORIES

- A. Fasteners: Factory-coated steel fasteners with metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.

2.6 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.
 - 1. Size: Approximately 36 by 60 inches.

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 minimum concrete drying period recommended by roofing system manufacturer has passed.
 2. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75 percent, or as recommended by roofing system manufacturer, when tested according to ASTM F2170.
 - a. Test Frequency: One test probe per each 1000 sq. ft. , or portion thereof, of roof deck, with not less than three tests probes.
 - b. Submit test reports within 24 hours after performing tests.
 3. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
 4. Verify that joints in precast concrete roof decks have been grouted flush with top of concrete.

3.2 PREPARATION

- A. 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.

3.3 INSTALLATION OF ROOFING, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav 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. Installation Over Metal Decking:
1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows .
 - a. Locate end joints over crests of decking.
 - b. 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.
 - 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. Loosely lay base layer of insulation units over substrate.
 - i. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.
 - 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. 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. Loosely lay each layer of insulation units over substrate.
 - i. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
 - 2) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 3) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
- D. Installation Over Wood Wood Panel Decking:

1. Mechanically fasten slip sheet to roof deck using mechanical fasteners specifically designed and sized for fastening slip sheet to wood decks.
 - a. Fasten slip sheet according to requirements in SPRI's Directory of Roof Assemblies for specified Wind Uplift Load Capacity.
 - b. Fasten slip sheet to resist specified uplift pressure at corners, perimeter, and field of roof.
2. Install base layer of insulation with joints staggered not less than 24 inches 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 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.
 - 1) Trim insulation so that water flow is unrestricted.
 - e. Fill gaps exceeding 1/4 inch with insulation.
 - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - g. Loosely lay base layer of insulation units over substrate.
3. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to wood decks.
 - a. Fasten insulation according to requirements in SPRI's Directory of Roof Assemblies for specified Wind Uplift Load Capacity.
 - b. Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
4. 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. Loosely lay each layer of insulation units over substrate.
 - i. Adhere each layer of insulation to substrate using adhesive according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
 - 2) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 3) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

E. Installation Over Concrete Decks:

1. Install base layer of insulation with joints staggered not less than 24 inches 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 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.
 - 1) Trim insulation so that water flow is unrestricted.
 - e. Fill gaps exceeding 1/4 inch with insulation.
 - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - g. Loosely lay base layer of insulation units over substrate.
 - h. Adhere base layer of insulation to concrete roof deck according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft., and allow primer to dry.
 - 2) Set insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
 - 3) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 4) 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. Loosely lay each layer of insulation units over substrate.
 - i. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F of equiviscous temperature.
 - 2) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 3) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 INSTALLATION OF MECHANICALLY FASTENED ROOF MEMBRANE

- A. Mechanically fasten roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. For in-splice attachment, install roof membrane with long dimension perpendicular to steel roof deck flutes.
- D. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- E. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- F. Mechanically fasten or adhere roof membrane securely at terminations, penetrations, and perimeter of roofing.
- G. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- H. In-Seam Attachment: Secure one edge of TPO sheet using fastening plates or metal battens centered within seam, and mechanically fasten TPO sheet to roof deck.
- I. 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 flashing sheet.
 - 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.
- J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.6 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.

3.7 INSTALLATION OF WALKWAYS

A. Flexible Walkways:

1. Install flexible walkways at the following locations:
 - a. Retain one or more subparagraphs below. Revise to suit Project.
 - b. Perimeter of each rooftop unit.
 - c. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - d. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
 - e. Top and bottom of each roof access ladder.
 - f. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
 - g. Locations indicated on Drawings.
 - h. As required by roof membrane manufacturer's warranty requirements.
2. Provide 6-inch clearance between adjoining pads.
3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.8 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