Building Envelope Consultants, Ltd.
Architects • Engineers • Roof Consultants

Detroit, MI
Chicago, IL
Denver, CO
Tiburon, CA
St. Louis, MO
Indianapolis, IN
Kansas City, MO
Minneapolis, MN
HQ: Waukesha, WI

Addendum #2

Project: BL107-Biology Building-Repair & Replace Ballast & EPDM Roofs-20240623
Project Number: 20240623
Date: December 8, 2025

Notice to all Plan Holders/Bidders:
The following modifications, additions, deletions, clarifications and/or information are now part of the Contract Documents and shall be fully binding. This addendum must be acknowledged as part of the Bid Form.

Item #1 (Alternate Bid #4):
Ballasted EPDM overlay for roof areas G and H:

1. Remove ballast from the roof membrane, leaving sufficient ballast (wind rows) in place to maintain the integrity of the membrane until replacement. Completely remove and properly dispose of membrane, wet insulation, nailers and flashing components as needed for this alternate roof system.
   Note: The scope of replacement insulation to be included in this alternate: No moisture testing was performed. Assume area of wet/damaged insulation is 10% of the roof areas. Final contract costs to be adjusted based on actual field conditions, approvals and unit costs indicated on the bid form.
2. At damaged/wet insulation areas:
   - Match existing underlying components
   - For replacement insulation: To match existing roof system thickness.
3. Roof Area G: Add layers of insulation (2-inch thickness maximum) over the existing tapered system to achieve an average R-33. Install a 1/2" polyisocyanurate (20 psi) cover board.
4. Roof Area H: Install a 1/2" polyisocyanurate (20 psi) cover board over the existing structurally sloped insulation system.
5. Install a non-reinforced 60-mil EPDM system with a 25-year and a 90 miles per hour wind speed warranty. Provide flashing to accommodate manufacturer's 25-year warranty requirements. Provide a minimum 8-inch clearance from the finished surface of roof to bottom of flashing at all vertical surfaces. If roof area conditions prohibit 8-inch clearance contractor to provide variance from the membrane manufacturer, accepting the special condition in the warranty.
6. Install the protection mat smoothly and free of wrinkles prior to placing the stone ballast.
7. Uniformly distribute the existing ballast; do not add ballast to the existing roof areas.
8. Provide concrete pavers only at ladder step-off locations.

See the revised bid form

Item #2 (Coping Stone Sealant):
Use one-component, high-performance, non-priming, gun-grade, elastomeric polyurethane sealant. Acceptable manufacturers and types are Tremco (Vulkem 116) or Sika (NP1).

Item #3 (Coping Stone Storage):
Do not store the coping stones on the roof due to a loading concern.

End of Addendum No. 2

BID FORM

for

BL107-Biology Building-Repair & Replace Ballast & EPDM Roofs
Indiana University Bloomington
Bloomington, Indiana
IU 20240626

TO: The Trustees of Indiana University
Bloomington, Indiana

****Submit bid online via www.iuplanroom.com****

FROM:

Bidder's Name _____

Address _____

City, State, Zip Code _____

Phone Number _____ FAX Number _____

CONTACTS:

Bid / Contract Information: Name: _____

Phone: _____ E-mail: _____

Proposed Project Manager: Name: _____

Phone: _____ E-mail: _____

Indicate if your firm is a certified minority-, women-, or veteran-owned business ___Yes ___ No
If "Yes", please attach a copy of certification

FOR: **Unified Bid** to include General, Mechanical, and Electrical Construction Work

Bidders:

LUMP SUM BASE BID

The undersigned Bidder, with a complete understanding of existing conditions at the Project Site and a complete understanding of the Bidding Documents, including any Addenda acknowledged hereinafter, for Biology Building-Repair & Replace Ballast & EPDM Roofs on the Indiana University Bloomington campus, as prepared by Building Envelope Consultants, Ltd., hereby proposes to complete the project, in full and complete accordance with the requirements of the Bidding documents, for the LUMP SUM BASE BID PRICE of:

_____ Dollars $_____
(written amount) (numerals)

MAJOR SUBCONTRACTORS

Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and the Owner's Representative must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Owner's Representative.

If requested, the supplemental Subcontractors and Products List will be submitted by email to the Owner, bidtab@iu.edu, and Building Envelope Consultants Ltd. info@building-envelope.net within 48 hours of the bid opening. The understanding of the Owner and the design team is that these same Major Subcontractors will be the same subcontractors listed below.

The Contractor proposes to utilize the following primary subcontractors for the work indicated.

List one major subcontractor per trade. Any deviation could result in the Owner removing the bid from consideration.

Indicate which are certified by the State of Indiana as an MBE, WBE, or VBE company by circling the M/W/VBE after the name.

Roofing: _____ M/W/VBE

Mason: _____ M/W/VBE

Ballast Removal: _____ M/W/VBE

Fixed Wall Ladders: _____ M/W/VBE

Fall Protection Anchors/Guard Rails: _____ M/W/VBE

ALTERNATE PROPOSALS

1. Alternate proposals are requested under Alternates of the Bidding Documents. (See Specification Index)
2. The alternate proposal shall indicate the amount to be added to or deducted from the Lump Sum Base Bid if the alternate proposal is accepted by the Owner.
3. The alternate proposal shall include all costs necessary for the complete installation of the materials or items indicated for the alternate proposal, including materials, labor, equipment, operations, administration, overhead, profit, and taxes (as applicable).
4. The alternate proposal shall also include all costs for changes in the work (including work of other Separate Contracts) that will be made necessary by acceptance of the alternate proposal.
5. The Bidder shall submit prices for all the alternates listed below in the manner indicated. Cross out (Add) or (Deduct) as applicable. If there is no change in price to the Lump Sum Base Bid, write in "No Change".

Alternate No. 1: PROVIDE THE CHANGE IN COST TO UPGRADE THE BASE BID ROOF AREAS TO A 90-MIL ADHERED EPDM MEMBRANE WITH A 30-YEAR "TOTAL SYSTEM WARRANTY".

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

Alternate No. 2: PROVIDE THE CHANGE IN COST TO ADD **ROOF AREA I** WITH A 60-MIL ADHERED EPDM MEMBRANE AND A 25-YEAR "TOTAL SYSTEM WARRANTY".

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

Alternate No. 3: PROVIDE THE CHANGE IN COST TO ADD **ROOF AREA I** WITH A 90-MIL ADHERED EPDM MEMBRANE AND A 30-YEAR "TOTAL SYSTEM WARRANTY".

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

Alternate No. 4: Ballasted EPDM overlay for roof areas G and H.

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

UNIT PRICES

1. The following Unit Prices shall include all costs necessary for the complete installation of the materials or items indicated, including materials, labor, equipment, operations, administration, overhead, profit and taxes (if applicable).
2. These Unit Prices shall be used to determine the costs for changes in the work during the construction period, when agreed upon by the Owner.
3. These Unit Prices are submitted as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.
4. The Bidder shall submit one Unit Price for each of the following items, plus any other Unit Prices requested in the Bidding Documents, in the manner indicated.

Item	Unit	Price

Section (024100) – (Roof Removal and Substrate Preparation for Re-Roof)

1. **Unit Price No. 1**: Roof drain assembly replacement:
   Add/Deduct:_____dollars (each).
2. **Unit Price No. 2**: Roof drain clamping ring replacement:
   Add/Deduct:_____dollars (each).
3. **Unit Price No. 3**: Retrofit roof drain insert installation:
   Add/Deduct:_____dollars (each).
4. **Unit Price No. 4**: Clear/clean the drain of debris:
   Add/Deduct:_____dollars (each).

Roof Removal and Disposal of Non-Friable ACM (per owner rep.'s report)

5. **Unit Price No. 5**: Removal and Disposal of Non-Friable of Asbestos (Membrane):

Add/Deduct:_____dollars (per square foot).

6. **Unit Price No. 6**: Removal and Disposal of Non-Friable of Asbestos (Flashing):

Add/Deduct:_____dollars (per lineal foot).

7. **Unit Price No. 7**: Removal and Disposal of Non-Friable of Asbestos (Sealant):

Add/Deduct:_____dollars (per lineal foot).

Section 030150 – Concrete Roof Deck Repair

8. **Unit Price No. 8**: Repair at Opening Caused by Obsolete Roof Penetration Removal:

Add/Deduct:_____dollars (per square foot).

9. **Unit Price No. 9**: Localized Concrete Deck Repair:

Add/Deduct:_____dollars (per square foot).

10. Unit Price No. 10: Localized Pre-Cast Concrete Deck Joint Repair**:**

Add/Deduct:_____dollars (per lineal foot).

Section 040531 – Masonry Repairs

11. **Unit Price No. 11**: Masonry tuck pointing:

Add/Deduct:_____dollars (per lineal foot).

12. **Unit Price No. 12**: Repair/Replacement of damaged brick:

Add/Deduct:_____dollars (per square foot).

13. **Unit Price No. 13**: Repair/Replacement of damaged stone:

Add/Deduct:_____dollars (per square foot).

14. **Unit Price No. 14**: Repair/Replacement of damaged coping stone:

Add/Deduct:_____dollars (per lineal foot).

Section 053123 – Steel Roof Deck Repair/Replacement

15. **Unit Price No. 15**: Refastening of loose steel deck, at the rate indicated in Section 053123:

Add/Deduct:_____dollars (per square foot).

16. **Unit Price No. 16**: Steel deck brushing and priming:

Add/Deduct:_____dollars (per square foot).

17. **Unit Price No. 17**: Steel deck repair 12 inches x 12 inches or less:

Add/Deduct:_____dollars (per square foot).

18. **Unit Price No. 18**: Steel deck replacement:

Add/Deduct:_____dollars (per square foot).

Section 061053 – Miscellaneous Rough Carpentry for Roof Replacement

19. **Unit Price No. 19**: Removal and replacement of existing wood nailers and blocking, where existing are deteriorated, and/or at locations not indicated within the project drawings:

2" x 6" Add/Deduct:_____dollars (per lineal foot).

2" x 8" Add/Deduct:_____dollars (per lineal foot).

2" x 10" Add/Deduct:_____dollars (per lineal foot).

2" x 12" Add/Deduct:_____dollars (per lineal foot).

20. **Unit Price No. 20**: Removal and replacement of plywood, where existing is deteriorated, and/or at locations not indicated within the project drawings:

3/4" Add/Deduct:_____dollars (per square foot).

Section 061516 – Wood Roof Deck Repair/Replacement

21. **Unit Price No. 21**: Refastening of loose wood deck, at the rate indicated in Section 061516:

Add/Deduct:_____dollars (per square foot).

22. **Unit Price No. 22**: Wood deck repair 12 inches x 12 inches or less:

Add/Deduct:_____dollars (per square foot).

23. **Unit Price No. 23**: Wood roof deck replacement – wood plank deck:

Add/Deduct:_____dollars (per square foot).

24. **Unit Price No. 24**: Wood roof deck replacement – plywood deck:

Add/Deduct:_____dollars (per square foot).

Section 072224 – Roof Insulation and Re-cover Board

25. **Unit Price No. 25:** Provide a cost per square foot to adjust the amount of replacement insulation required at the facility indicated in Paragraph 1.1.A of Section 072224, as dictated by the Owner's representative:

Area G Add/Deduct:_____dollars (per square foot).

Area H Add/Deduct:_____dollars (per square foot).

TAX EXEMPTIONS

The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers of the tax exempt status of the Owner, as set forth in the General Conditions, and therefore, has not included these taxes in his Lump Sum Base Bid price.

SUBSTITUTIONS

The undersigned Bidder has based his bid upon the materials, products, articles, equipment, brands, manufacturers and processes described in the Bidding Documents or upon approved equivalents. Proof of equivalency of substitutions is the responsibility of the Bidder, but the Architect/Engineer shall be the sole judge of equivalency. Proposed equivalent substitutions shall be equal in all respects to the requirements of the Bidding Documents, including but not limited to the design, quality, physical size, performance characteristics, strength, previous history of use, and to the method of installation, attachment, or connection to related or adjoining work. Determination of equivalency of proposed substitutions shall be by the Architect/Engineer, before the bid opening date, as described in paragraph entitled "Substitutions" in the Instructions to Bidders.

COMPLETION DATE

The Undersigned Bidder agrees to coordinate and expedite his work and shall take into consideration any lead time and schedule parameters with all contractors, and that this Work will be completed within _____ **Calendar Days of Notice to Proceed**.

ASSIGNMENT OF COORDINATION

The undersigned Bidder agrees to the assignment of Mechanical and Electrical work to the successful General Contractor for the responsibility of complete coordination of the work as stated in the Instructions to Bidders.

PERFORMANCE AND PAYMENT BOND

The undersigned Bidder agrees, if awarded the Contract, to deliver to the Owner a satisfactory Performance Bond, in the full amount (100%) of the total Contract price, not later than the date of execution of the contract. The cost of the Bond shall be included in the Lump Sum Base Bid contained in this Proposal.

SUPPLEMENTAL AND REQUIRED DOCUMENTS

Bid Security; State Form 96 (Revised 2013); Written Drug Testing Program, which must be in full compliance with IC 4-13-18; a completed Minority, Women's and Veteran's Business Enterprise Participation Plan; Contractor Asbestos Certification; Asbestos Protocol for Contractors.

ADDENDA

The following Addenda have been received by the undersigned Bidder; and all costs resulting from these Addenda have been included in the preparation of this Bid Form:

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

SIGNATURES

1. **When a Bidder is an Individual**:

_____ _____

Witness Bidder

Date: _____ Address: _____

_____

2. **When a Bidder is a Partnership**: _____

Name of Partnership

Date: _____ Address: _____

_____

_____ _____

Partner Partner

3. When Bidder is a Corporation: _____

Name of Corporation

Date: _____ Address: _____

_____

By: _____

President

Attest: _____

Secretary

CORPORATE SEAL

END

****Submit bid online via www.iuplanroom.com****

SECTION 02 41 04

SELECTIVE ROOF REMOVAL AND PREPARATION FOR RE-COVER

PART 1 - GENERAL

1.1 SUMMARY

A. Existing roof system preparation related to the installation of re-cover roof systems. Preparation work may include removal of existing roof membranes and flashings or preparation of the surface of existing roof membranes and flashings; removal of localized areas of roof insulation, and inspection of existing structural deck.

B. **NOTE:** The scope of replacement insulation to be included in alternate #4: No moisture testing was performed. Assume area of wet/damaged insulation is 10% of the roof areas. Final contract costs to be adjusted based on actual field conditions, approvals and unit costs indicated on the bid form.

1.2 RELATED SECTIONS

A. Section 012200 – Unit Prices

B. Section 013300 – Submittal Procedures

C. Section 016000 – Product Requirements

D. Section 053123 – Steel Roof Deck Repair and Replacement

E. Section 072224 – Replacement Roof Insulation and Recover Board

1.3 UNIT PRICES

A. Provide unit prices for the work described in Articles 3.6 and 3.6. Refer to Section 012200.

1.4 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. American Society for Testing and Materials (ASTM)
      a. ASTM F1667 – Standard Specification for Driven Fasteners: Nails, Spikes, and Staples
   2. American National Standards Institute/Single Ply Roofing Industry (ANSI/SPRI)
   3. National Roofing Contractors Association (NRCA)

1.5 SUBMITTALS

A. Prior to the start of work, submit the following to the owner's representative for approval:
   1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

1.6 QUALITY ASSURANCE PROCEDURES

A. Applicator Qualifications: A qualified firm that is approved, authorized, or licensed to install the specified products and is eligible to receive a manufacturer's warranty. The firm shall have a minimum of 10 years documented experience performing work equal or similar to the specified work.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or owner's representative-mandated requirements are discovered, notify the owner's representative immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the owner's representative immediately for resolution.

1.7 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 016000 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Cover insulation, roofing materials, and other moisture-sensitive products with a canvas tarp.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not perform roof removal work during inclement weather.

B. Cold weather precautions:
1. Refer to product manufacturer and NRCA requirements and recommendations for cold weather application requirements and restrictions.

C. Safety Data Sheets (SDSs) of all specified products shall remain on site for the duration of this project.

PART 2 – PRODUCTS

2.1 REPLACEMENT DRAIN COMPONENTS

A. Roof drain assembly: Clamping ring type; cast iron drain bowl, clamping ring, strainer, and related fittings; such as Type 21500 or 21500-AE (Size as necessary to match existing drain pipe

size) by Josam Company.

1. Piping:
   a. To match existing, by size and type; as necessary to comply with applicable insurance requirements, and local codes.
2. Drain connectors, hangers, and clamps:
   a. Drain connections as required; as necessary to comply with applicable insurance requirements, and local codes.

B. Roof drain clamping ring (for use where existing is missing or damaged): Cast iron; type and size to fit existing drain bowl.

C. Roof drain strainer (for use where existing is missing or damaged): Cast iron; type and size to fit existing drain assembly.

2.2 RETROFIT ROOF DRAIN INSERTS

A. Retrofit roof drain insert: Retrofit drain assembly, clamping ring and strainer: Product such as "Hercules RetroDrain", manufactured by OMG Roofing Products, Agawam, MA, or approved equal. Size and configuration as necessary to accommodate existing roof drain and pipe.

2.3 OVERFLOW ROOF DRAIN COMPONENTS

A. Roof drain assembly: Clamping ring type; cast iron drain bowl, clamping ring, strainer, and related fittings; such as Type 21500-16 or 21500-AE-16 (Size as necessary to match existing drain pipe size) by Josam Company.

1. Piping:
   a. To match existing, by size and type; as necessary to comply with applicable insurance requirements, and local codes.

2. Drain connectors, hangers, and clamps: Drain connections as required; as necessary to comply with applicable insurance requirements, and local codes.

PART 3 - EXECUTION

3.1 GENERAL

A. Exercise caution to avoid damage to components indicated as "existing" or remaining in place. Do not disturb these components.

B. Prior to any cutting, drilling, or removals, view both sides of the surface affected. If damage occurs to existing components, repair or replace components defaced or damaged during removals to the satisfaction of the owner's representative.

C. Roof drain inspection, testing and verification:

1. Prior to work start, the contractor shall obtain the services of a licensed plumber. Plumber to verify the primary roof drains, overflow roof drains, and plumbing vents located within the project area are free of debris and properly functioning. The plumber shall perform test(s) of existing roof drain bowls and connections to determine if there are deficiencies. Notify the owner's representative immediately if defects are found in the roof drain bowl and/or roof drain assembly components, or if the roof drains and/or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. Plumbing work necessary to correct identified defects, and clear existing roof drains and vents shall be performed by a licensed plumber at the direction of the owner's representative. Prior to construction start, the contractor shall provide a letter to the owner's representative indicating this work has been completed, detailing the results of this roof drain inspection and testing, and identifying any corrective action needed. Refer to Section 013300.

2. After completion of roof replacement work, the contractor shall again obtain the services of a licensed plumber. The plumber is to verify that primary roof drains, overflow roof drains and plumbing vents located within the project area are free of debris and properly functioning. Notify the owner's representative immediately if defects are found in the roof drain flashing, roof drain bowl and/or roof drain assembly components, or if the roof drains and/or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. Plumbing work necessary to correct identified defects, and clear existing roof drains and vents shall be performed by a licensed plumber at the direction of the owner's representative. Upon completion of construction, the contractor shall provide a second letter to the owner's representative indicating this work has been completed, detailing the results of the roof drain inspection and testing, and identifying any corrective action needed. Refer to Section 013300.

D. Use of torches during roof removal and substrate preparation:
1. The use of torches is prohibited.

3.2 EXISTING ROOF SYSTEM PREPARATION

A. All removals shall be performed in a manner that does not cause damage to the underlying structural deck, or existing components indicated to remain in place.

B. Testing of existing structural decks:
1. If required by the roofing manufacturer, the contractor shall perform fastener pull-out testing of the existing structural deck. The number of tests required shall be determined by the manufacturer. Testing shall be performed in accordance with ANSI SPRI "Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners", unless otherwise determined by the roofing manufacturer. The contractor shall be responsible for costs associated with such tests.
2. If required by the roofing manufacturer, the contractor shall perform adhesion pull testing of the existing structural deck. The number of tests required shall be determined by the manufacturer. Testing shall be performed in accordance with ANSI SPRI "Standard Field Test Procedure for Determining the Uplift Resistance of Insulation Adhesive Combinations over Various Substrates" (IA-1), unless otherwise determined by the roofing manufacturer. The contractor shall be responsible for costs associated with such tests.

C. Existing roof membrane preparation:
1. For mechanically-attached single-ply roof membranes, back-out and remove membrane fasteners. Cut the existing membrane into manageable pieces. Discard the roof membrane, unless it has been identified to be recycled.
2. For ballasted roof membranes, remove ballast from the roof membrane, leaving sufficient ballast (wind rows) in place to maintain the integrity of the membrane until replacement. Within daily replacement areas, cut the existing membrane and discard.
3. For fully-adhered single-ply roof membranes, cut 2-inch wide strips from the existing membrane in a 10-foot by 10-foot "grid" pattern.

D. Remove existing flashing components at walls, unit and support curbs, roof hatch curbs, and skylight curbs if present to the underlying substrate. At tubular penetrations, H-column penetrations and pitch pans, remove flashing components as needed to prepare the penetration to receive new flashing components as indicated on the Project Drawings.

E. Inspect areas of suspected wet/damaged insulation. Remove areas of wet/damaged insulation visually confirmed to be in such condition down to the structural deck.
1. For components proposed to remain in place, notify the Owner of the existing condition observed and photographically document the existing condition found. At the discretion of the Owner, a credit may be requested for insulation components remaining in place less than those indicated for removal as part of the Base Proposal amount. Credit due

back to the Owner shall be determined by the unit price amount indicated for replacement insulation within the Section 012200.

F. Inspect areas adjacent to those of indicated suspected wet/damaged insulation.
1. If additional areas of suspected wet/damaged insulation are found, consideration may be given to removal of additional wet/damaged insulation components from the roof system to be recovered. For additional insulation components proposed for removal, notify the Owner of the existing condition observed and photographically document the existing condition found. At the discretion of the Owner, additional insulating components may be removed at additional cost to the Owner. Cost for removal of additional insulating components beyond what is indicated in the Base Proposal amount shall be determined by the unit price amount indicated for replacement insulation within the Section 012200.

G. At locations where insulation has been removed, inspect the underlying structural deck.
1. If loose, damaged or deteriorated roof deck is encountered, notify the Owner immediately. Refer to Sections 053123 and 030150 for roof deck repair/replacement procedures.

H. After removal of insulation components is complete, and any necessary structural deck work has been completed, replace areas of removed insulation with replacement insulation components. Refer to Section 072224 for product and installation requirements related to replacement insulation.

I. Remove obsolete/abandoned roof penetrations and equipment as noted on the Project Drawings. Prior to removals, confirm and coordinate removal of obsolete penetrations and equipment with the owner's representative. Repair openings created by the removal of penetrations and equipment as specified.

J. Do not begin recover work until the substrates have been prepared as specified, and are ready and acceptable to have materials installed. By beginning work, the Contractor acknowledges that the substrates are satisfactory.

K. To the extent possible, inspect the underside of the structural deck for conduit. If conduit is found to be present directly on the underside of structural decks, take necessary precautions to protect these conduits from puncture.

L. Contractor shall take all precautions during substrate preparation work to protect the building and adjacent surfaces from being soiled and damaged.

M. Coordinate substrate preparation work with new roofing work in such a manner as to keep the new roofing materials, building and building interior dry and watertight.

N. Do not stockpile or store debris on the roof or on the ground. Place all debris in a dumpster. Cover dumpsters left on site overnight with a tarp.

O. Existing roof system protection:
1. Do not use adjacent roof areas as storage areas for roofing materials.
2. Where excessive traffic over new or existing roofing is unavoidable, provide and use 3/4-inch plywood, set over a minimum of 1-1/2 inch thick rigid board insulation to protect roofing components in place (expanded polystyrene insulation is not acceptable).
3. When materials are stored on the roof, provide roof protection as indicated above.

3.3 DECK INSPECTION

A. Fastener pull-out testing of existing structural decks:
1. If required by the roofing manufacturer, the contractor shall perform fastener pull-out testing of the existing structural deck. The number of tests required shall be determined

by the manufacturer. Testing shall be performed in accordance with ANSI SPRI "Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners", unless otherwise determined by the roofing manufacturer. The contractor shall be responsible for costs associated with such tests.

B. Adhesions pull testing of existing structural decks:

1. If required by the roofing manufacturer, the contractor shall perform adhesion pull testing of the existing structural deck. The number of tests required shall be determined by the manufacturer. Testing shall be performed in accordance with ANSI SPRI "Standard Field Test Procedure for Determining the Uplift Resistance of Insulation Adhesive Combinations over Various Substrates" (IA-1), unless otherwise determined by the roofing manufacturer. The contractor shall be responsible for costs associated with such tests.

C. After completion of roof removal work, inspect the existing roof deck. If damaged or deteriorated roof deck is encountered, notify the owner's representative immediately. Refer to Sections 053123 and 030150 for roof deck repair/replacement procedures.

3.4 TEMPORARY DISPLACEMENT OF ROOFTOP EQUIPMENT

A. Temporary displacement of mechanical units:

1. The contractor to identify all rooftop units/equipment which is required to displace/lifted in order for installation of the roof system to meet flashing heights for full warranty.
2. If mechanical units are to be temporarily displaced, shut off all affected electrical, plumbing and gas lines and disconnect all electrical, plumbing, gas lines and ventilation ducts where required to allow for lifting mechanical units prior to work. All disconnection of plumbing, gas lines, electrical conduit and ventilation ducts is to be performed by a licensed mechanical/electrical contractor. Coordinate all disconnections with the owner's representative.
3. Lift units in a manner that will not cause damage to the mechanical unit, mechanical unit components or structural deck.
4. Prior to leaving the site, return units to their original position, resulting in a watertight condition.
5. Ensure mechanical units are returned to their previous operational condition prior to leaving the site.
6. Within high wind and hurricane zones, and if required by local codes: provide additional securement and strapping (hurricane straps) as required to mechanical units displaced during roof recover work.

B. Temporary displacement of gas lines, conduit, junction boxes and condensate lines:

1. Temporarily displace gas lines, conduit, junction boxes, condensate lines or other items that may interfere with roof recover work. Any necessary disconnection of gas lines, conduit and junction boxes is to be performed by a licensed mechanical/electrical contractor as applicable to the work being performed. Coordinate all disconnections with the owner's representative.

C. After completion of work, reinstall any mechanical units that have been temporarily displaced. Reconnect all electrical, plumbing, gas lines and ventilation ducts where required. All reconnection of plumbing, gas lines, electrical conduit and ventilation ducts is to be performed by a licensed mechanical/electrical contractor. Coordinate all reconnections with the owner's representative.

D. After completion of work, reconnect any gas lines, conduit and/or junction boxes have been disconnected. Reconnection of gas lines, conduit and/or junction boxes is to be performed by a licensed mechanical/electrical contractor as applicable to the work being performed. Coordinate all reconnections with the owner's representative.

3.5 ROOF DRAIN INSPECTION AND REPAIR

A. If drain assemblies are found to be damaged, contact the owner's representative. Replace drain assemblies found to be damaged ***(Unit Price Work)***:
   1. Remove and discard the entire roof drain assembly.
   2. Install replacement roof drain bowl, clamping ring, strainer and related fittings at locations of original drain assembly. Connect the bowls to the existing piping in accordance with manufacturer requirements and recommendations, and all local and state plumbing codes.

B. If the clamping ring is missing, damaged, or does not fit the drain strainer, install a new clamping ring ***(Unit Price Work)***.

C. If the roof drain strainer is missing, damaged, or plastic, install a new roof drain strainer.

3.6 RETROFIT ROOF DRAIN INSERT INSTALLATION

A. Install retrofit roof drain inserts following the requirements and recommendations of the retrofit roof drain insert manufacturer ***(Unit Price Work)***.

END OF SECTION

SECTION 07 22 24

ROOF INSULATION AND RE-COVER BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Installation of replacement roof insulation at areas determined to contain wet/damaged existing roof insulation, additional overlying insulation, and re-cover board over existing roof systems.

1.2 RELATED SECTIONS

A. Section 013300 – Submittal Procedures

B. Section 016000 – Product Requirements

C. Section 024104 – Selective Roof Removal and Preparation for Re-cover

D. Section 053123 – Steel Roof Deck Repair and Replacement

E. Section 072215 - Underlayment for Roof Replacement

F. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. American Society for Testing and Materials (ASTM)
      a. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
      b. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
      c. ASTM C1278 - Standard Specification for Fiber-Reinforced Gypsum Panel

1.4 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:
   1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

1.5 QUALITY ASSURANCE PROCEDURES

A. Applicator 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 a manufacturer's warranty. Company shall have a minimum of 10 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the owner's representative immediately for resolution.

1.6 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 016000 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Cover insulation, roofing materials, and other moisture-sensitive products with a canvas tarp. Protect foam insulation from direct sunlight exposure.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not perform work during inclement weather. Refer to product manufacturer for outdoor temperature requirements for installation of materials. Do not install materials at times when the outdoor temperature does not fall within the minimum/maximum temperature requirements of the manufacturer.

B. Cold weather precautions:
1. Store products that may be negatively affected by exposure to cold weather, such as primers, adhesives, sealants and cements, in a heated location. Refer to the roofing manufacturer and NRCA requirements and recommendations for additional cold weather application recommendations and restrictions.

C. Safety Data Sheets (SDSs) of all specified products shall remain on site for the duration of this project.

PART 2 – PRODUCTS

2.1 REPLACEMENT AND OVERLYING ROOF INSULATION

A. Roof Area G: Polyisocyanurate roof insulation; ASTM C1289, Type II, Class 1, Grade 2 (20 psi); Density (2 pounds per cubic foot), HCFC-Free and Zero Ozone Depletion Potential (ODP); product type acceptable to the roofing membrane manufacturer.
1. Thickness:
a. For replacement insulation: To match existing roof system thickness.

b. For overlying roof insulation: Add Layers of insulation (maximum 2-inch thick) over the existing tapered system to achieve an average R-33.

2. Long Term Thermal Resistance (LTTR) Value: 5.6 minimum per inch.

3. Board Size: 4-feet by 8-feet.

B. Roof Area H: Polyisocyanurate roof insulation; ASTM C1289, Type II, Class 1, Grade 2 (20 psi); Density (2 pounds per cubic foot), HCFC-Free and Zero Ozone Depletion Potential (ODP); product type acceptable to the roofing membrane manufacturer.

1. Thickness:

a. For replacement insulation: To match existing roof system thickness.

2. Long Term Thermal Resistance (LTTR) Value: 5.6 minimum per inch.

3. Board Size: 4-feet by 8-feet.

2.2 ROOF RE-COVER BOARD

A. Type: Polyisocyanurate; ASTM C1289, Type II; Class 1, 20 psi compressive strength, Density (2 pounds per cubic foot).

B. Thickness: 1/2-inch.

C. Board Size: 4-feet by 4-feet, unless otherwise recommended by the roofing membrane or cover board manufacturer.

2.3 CRICKET AND SADDLE INSULATION

A. Tapered polyisocyanurate roof insulation as necessary to achieve slopes and dimensions indicated in Article 3.3 and on the drawings, and as necessary to allow for proper drainage to existing drainage accessories; ASTM C1289, Type II, Class 1; Minimum 20 psi, Density (2 pounds per cubic foot); HCFC-Free and Zero Ozone Depletion Potential (ODP); product type acceptable to the roofing manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

A. Ensure that the substrate has been prepared as necessary, and is ready and acceptable to receive replacement insulation, overlying insulation, and re-cover board. Refer to Section 024104 for material removals and general work and substrate preparation requirements.

3.2 INSULATION AND RECOVER BOARD INSTALLATION

A. Closely butt the insulation boards and re-cover boards.

B. Stagger board joints by the maximum dimensions possible.

C. Neatly cut insulation and re-cover boards to fit around all penetrations through the roof deck. At locations where less than a full-sized sheet of insulation or recover board is required, use the largest size practical to fill in the area. Do not install numerous small sections of cover board or insulation at these locations.

D. Fill gaps between boards, and between boards and walls, curbs, blocking, and equipment with additional insulation material.

E. Protect all insulation and re-cover board from weather and standing water at all times. Do not install more insulation and recover board than can be completely covered with the roofing membrane on the same day.

F. Install temporary water cut-offs at the edges of insulation at the end of each workday.

G. Prior to installing the insulation, inspect the underside of the roof deck to determine if objects, such as sprinklers, lights, conduits, fans, or gas lines are attached to the deck. Exercise caution to ensure that insulation fasteners do not penetrate these objects.

3.3 INSULATION SADDLE AND CRICKET INSTALLATION

A. Where indicated on the Project Drawings, install insulation saddles and crickets to provide positive drainage to drainage accessories. Unless otherwise indicated on the Project Drawings, the width and finished slope of saddles shall be:
1. If the finished roof slope of the project roof area is 1/8-inch per foot, the finished slope of saddles shall be 1/4-inch per foot, and the length-to-width ratio of saddles shall be 2:1.
2. If the finished roof slope of the project roof area is 1/4-inch per foot, the finished slope of saddles shall be 1/2-inch per foot, and the length-to-width ratio of saddles shall be 3:1.
3. If the finished roof slope of the project roof area is 1/2-inch per foot, the finished slope of saddles shall be 1-inch per foot, and the length-to-width ratio of saddles shall be 4:1.

B. Adjust saddle and cricket dimensions, if necessary, to accommodate actual field conditions. Prior to saddle/cricket modifications, notify the Owner of proposed modifications for approval.

C. Adhere saddles and crickets using the specified adhesive.

D. Provide insulation crickets behind all roof curbs greater than 24-inches in width.

END OF SECTION

SECTION 07 53 24
BALLASTED EPDM ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements related to the installation of loose laid ballasted Ethylene Propylene Diene Monomer (EPDM) roofing membrane and flashings, related accessories, and warranty and guarantee requirements.

1.2 RELATED SECTIONS

A. Section 013300 – Submittal Procedures

B. Section 016000 – Product Requirements

C. Section 024104 – Selective Roof Removal and Preparation for Recover

D. Section 061053 – Miscellaneous Rough Carpentry for Roof Replacement

E. Section 072224 – Roof Insulation and Re-Cover Board

F. Section 076205 – Sheet Metal for EPDM Roofing

G. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 LIST OF APPROVED MATERIAL MANUFACTURERS

A. Substitutes for the manufacturers and materials listed below and on the following pages must be demonstrated to be “equals” to those specified. Requests for substitutes must be made in writing prior to the bid due date. If approval is obtained from BEC and/or the Owner’s representative for the proposed substitution, an addendum will be released to all bidders acknowledging acceptance of the substitution. Substitutions will not be accepted after the bid opening date.

B. Acceptable Manufacturers

1. Amrize
   26 Century Blvd.
   Suite 205
   Nashville, TN 37214
   https://amrize.com/us/en/amrize-homepage.html

2. Carlisle Syntec
   PO Box 7000,
   Carlisle, PA 17013
   (800) 479-6832
   www.carlislesyntec.com

C. Manufacturer of underlayment, fiber-reinforced gypsum panels, tapered Insulation, non tapered insulation, Cover Board and protection sheet: Same manufacturer as roof membrane. Manufacturer of Metal Roof Edging: Same manufacturer as roof membrane. Metal roof edging

products by other manufacturers are not acceptable. Field- or shop-fabricated metal roof edgings are not acceptable.

D. All roofing materials, roof membranes, and roof insulations, etc. furnished and installed by the Roofing Contractor in the execution of the project work shall have been tested by Underwriter's Laboratories (UL) for the application herein specified. All roof systems and materials shall be class "A" fire rated. All new roof assemblies shall comply with the building codes, ordinances, rules or regulations of the municipality in which the work is to be performed. All materials furnished and installed shall meet or exceed the listed ASTM or Federal Specifications.

1.4 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. American Society for Testing and Materials (ASTM)
      a. ASTM D4637 - Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane
   2. Certified Roofing Torch Applicator (CERTA) Program, developed by the Midwest Roofing Contractors Association (MRCA) and National Roofing Contractors Association (NRCA)
   3. American National Standards Institute, ANSI/SPRI RP-4 (current edition) Wind Design Guide for Ballasted Single-Ply Roofing Systems.
   4. National Roofing Contractors Association (NRCA)
   5. Underwriters Laboratories (UL)

1.5 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:
   1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

1.6 QUALITY ASSURANCE PROCEDURES

A. Applicator 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 a manufacturer's warranty. Company shall have a minimum of 10 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the owner's representative immediately for resolution.

1.7 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 016000 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Cover insulation, roofing materials, and other moisture-sensitive products with a canvas tarp.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not perform work during inclement weather. Refer to product manufacturer for outdoor temperature requirements for installation of materials. Do not install materials at times when the outdoor temperature does not fall within the minimum/maximum temperature requirements of the manufacturer.

B. Cold weather precautions:
1. Store products that may be negatively affected by exposure to cold weather, such as primers, adhesives, sealants and cements, in a heated location. Refer to the EPDM roofing manufacturer and NRCA requirements and recommendations for additional cold weather application recommendations and restrictions.

C. Safety Data Sheets (SDSs) of all specified products shall remain on site for the duration of this project.

1.9 MANUFACTURER WARRANTY AND CONTRACTOR GUARANTEE

A. Provide a manufacturer 25-Year Total System, Non-Pro-Rated Warranty (including roofing membrane, insulation, underlayment and flashings) covering materials and labor. The warranty shall include the following additional items:
1. Roofing inspection by a technical representative of the roofing membrane manufacturer 20 days after substantial completion. The technical representative shall provide a report of the inspection to the Owner no later than 15 days after the inspection.
2. Roofing manufacturer shall provide unlimited repairs during the warranty period with no cost limitation.
3. Temporary emergency repairs may be made by owner’s representative without voiding warranty provisions. Permanent repairs shall be made in accordance with the requirements of the roofing membrane manufacturer.
4. A copy of the Record Document Roof Plan Drawings, Roof Detail Drawings, and Record EPDM Roofing Specification Section shall be attached to the warranty.
5. Warranty coverage to include the following:
   a. Ordinary wear and tear from the elements
   b. Unintentional damage resulting from normal rooftop inspections, service or maintenance.
   c. Membrane cuts or punctures
   d. Defective workmanship used to install the roof system.
   e. Damages due wind speeds up to 90 miles per hour.

B. The Contractor shall provide a two-year contractor guarantee. At a minimum, the contractor guarantee shall include the following:
1. Contractor name, address, phone number and project contact name.
2. The project completion date, and date of guarantee expiration.

3. The contractor guarantee shall include, in writing, all project work, workmanship, and/or all materials installed by the contractor or subcontractors to be of a quality that will comply with all project specific requirements of the Construction Documents and other documents governing the specified work and workmanship through the guarantee period.
4. The contractor shall investigate roof leaks during the guarantee period within a reasonable time period, but in no instance greater than 24-hours after notification of a leak. The contractor shall repair leaks determined to be the cause of the specified work at no cost to the Owner.

PART 2 – PRODUCTS

2.1 EPDM ROOFING SYSTEM SUMMARY

A. The complete roofing membrane system assembly shall consist of products meeting or exceeding the requirements listed in Article 2.2.

B. The complete roofing system assembly shall achieve a UL Class A fire rating.

2.2 ROOFING MEMBRANE

A. EPDM roofing membrane; fire resistant, cured, non-reinforced, nominal 60-mil thickness, black color; in compliance with ASTM D4637.

B. EPDM flashing membrane:
1. Cured: fire-resistant, non-reinforced, nominal 60-mil thickness, black color; in compliance with ASTM D4637. Meeting or exceeding the standards listed in paragraph 2.2A.
2. Uncured: Non-reinforced, minimum 60-mil thickness, black color. Type approved by roofing manufacturer for specific flashing conditions encountered.

2.3 EPDM MEMBRANE SPLICE SYSTEM

A. Cleaner/primer: Product approved by roofing membrane manufacturer.

B. In-seam splice tape: Splice tape; minimum 6-inch width, product approved by the roofing membrane manufacturer.

2.4 OUTERSEAM FLASHING SYSTEM

A. Cleaner/primer: Product approved by roofing membrane manufacturer.

B. Outerseam flashing stripping: EPDM pressure-sensitive flashing product, as indicated on the project drawings.

2.5 PERIMETER REINFORCEMENT SYSTEM

A. Cleaner/primer: Product approved by roofing membrane manufacturer.

B. Reinforced perimeter fastening strip: Product approved by the roofing membrane manufacturer.

C. Fasteners and plates: Product approved by the roofing membrane manufacturer; 2-inch diameter plates and minimum #14 fasteners.

2.6 PERIMETER EPDM MEMBRANE STRIPPINGS

A. For use at locations where perimeter edge fascia metal stripping is required:
1. Bottom stripping: EPDM pressure-sensitive flashing product, minimum 5-inch width. Top stripping: EPDM pressure-sensitive flashing product, minimum 9-inch width.

2.7 RELATED EPDM PRODUCTS

A. Adhesives, cements, sealants, water cut-off mastics, prefabricated accessories, and other related items: Unless otherwise indicated, products manufactured by, or approved by the roofing membrane manufacturer.

2.8 FASTENERS

A. Roofing membrane and flashing fasteners: Unless otherwise indicated, types as required for project completion, and as recommended by the roofing membrane manufacturer and NRCA for the substrate condition encountered.

2.9 BALLAST

A. Evenly distribute the existing ballast; do not add ballast.

B. Walkway Pedestal Pavers:
1. Walkway pedestal pavers must be 23 ½” by 23 ½” by 2” thick minimum. Pavers must be precast concrete pavers weighing 22 psf with an elevated clearance of ½ from incorporated footing. Provide concrete pavers only at ladder step-off locations.

2.10 PROTECTION SHEET

A. Protection Sheet: Manufacturer’s recommended slip sheet, of type required for ballasted EPDM systems

2.11 MISCELLANEOUS

a. Walkpads: Product approved by the roofing manufacturer.

b. Splashblocks: Concrete; size as necessary to accommodate existing condition.

c. Pitch pan fill materials:
i. Non-shrink grout (for bottom fill): Quick-set, fast-drying grout; product acceptable to roofing manufacturer.
ii. Pourable sealer (for top fill): Two-part pourable elastomeric sealer, product acceptable to roofing manufacturer.

d. Pre-fabricated plumbing vent pipe extensions:
i. For use where necessary to achieve the 8-inch minimum flashing height:
1. Pre-fabricated plumbing vent extensions, such as Tubos Pre-Fabricated Pipe Extension, by Tubos, Inc., Clearwater, FL.
2. Product approved by the roofing manufacturer for this application.
3. Size and configuration of extension as necessary to match existing pipe diameter, providing the 8-inch minimum flashing height, and allowing for flashing as show on the drawings.

e. Acrylic elastomeric coating (for use at roof penetrations and other locations indicated on the project drawings). Product approved for use by the membrane manufacturer for this application, and meeting the following criteria:
   i. Meeting the requirements of ASTM D6083.
   ii. White color.

f. Pre-fabricated conduit and pipe supports:
   i. Acceptable Manufacturers:
      1. PHP Systems, Houston, TX, www.phpsd.com
      2. Miro Industries, Inc. Heber City, UT www.miroind.com
      3. Or approved equal.
   ii. For gas lines and conduit 2-1/2 inches and smaller.
      1. PP10 with roller by PHP Systems
      2. 3-RAH-7 by Miro Industries
   iii. For gas lines 2-1/2 inches and larger.
      1. PS-1-2 by PHP systems
      2. 6-H By Miro Industries
   iv. Product capable of accommodating the weight of the supported pipe at intervals recommended by the pipe support manufacturer.

g. Pre-fabricated duct supports:
   i. Acceptable Manufacturers:
      1. PHP Systems, Houston, TX, www.phpsd.com
      2. Miro Industries, Inc. Heber City, UT www.miroind.com
      3. Or approved equal.
   ii. Duct supports.
      1. PHP-D by PHP Systems
      2. 6-DS by Miro Industries
   iii. Product capable of accommodating the weight of the supported duct work at intervals recommended by the duct support manufacturer.

h. Rooftop unit support curbs: Product such as “Pate Equipment Supports” manufactured by The Pate Company, Lombard, IL, or approved equal.
   i. Size and configuration as necessary to accommodate existing rooftop unit.
   ii. Fabricated from 18 ga. galvanized steel, minimum, with welded seams; and a nominal 2-inch thick nailer affixed atop the curb support.
   iii. Fabricated to allow for a minimum flashing height of 8-inches, minimum.
   iv. Product approved by the roofing manufacturer for this application.

i. Rooftop unit supports: Product such as “Mechanical Unit Support-HD” manufactured by Miro Industries, Inc., Heber City, UT, or approved equal.
   i. Size and configuration as necessary to accommodate existing rooftop unit.
   ii. Polycarbonate bases and support pan.
   iii. Product approved by the Owner for this application.

PART 3 - EXECUTION

3.1 GENERAL

A. Refer to Sections 024104 for general work and substrate preparation requirements.

B. Ensure that the insulation and cover board substrate is installed as specified in Section 072224 are suitable to receive roofing membrane materials.

C. Use of torches during roof replacement:
   1. Not permitted.

3.2 ROOFING MEMBRANE INSTALLATION

A. Except as may be modified by the technical specifications and project drawings, install roofing membrane in accordance with the requirements and recommendations of the roofing membrane manufacturer, using the manufacturer's current printed instructions.

B. Do not use bituminous products in conjunction with EPDM materials. Petroleum-based products, grease, oil and solvents should not come in contact with the EPDM roof membrane system.

C. All membrane splicing and bonding surfaces must be clean and dry.

D. Install only as much roofing as can be completed in a work day, including flashing and detail work. All installed field seams shall be sealed to a watertight condition prior to leaving the site daily.

E. Sequence roofing work to eliminate the use of installed roofing as a walkway, or as a storage platform for materials.

F. Overnight tie-in: Care should be exercised to ensure that water does not flow beneath any existing or completed sections of the roof by temporarily sealing the loose edge of the membrane at the end of each work day and when the weather is threatening. The roofing membrane manufacturer's requirements should be followed closely. **Under no circumstance shall the roofing contractor leave an open, unsealed roof system upon completion of daily work. Owner's representative reserves the right to engage the services of a third-party service provider as needed to correct roofing left open or unsealed at the completion of daily work. The cost of such corrective work shall be the responsibility of the contractor.**

1. At the Pre-Construction Meeting, provide the completed "Contractor Watertight Integrity Acknowledgement Letter", included within this Section. The letter shall include the project name and address, and shall be signed by the project foreman and by an authorized contractor representative. After-hours emergency contact phone numbers shall be provided for the project foreman and authorized contractor representative.

G. The contractor is responsible for providing temporary repairs to existing roof systems scheduled for replacement, caused by excessive foot or vehicle traffic, equipment or material storage, or other contractor-related activities. Repairs shall be sufficient to provide a watertight condition until the damaged area is replaced.

H. Remove debris from the roof daily prior to leaving the site. Inspect the site at ground level. Remove any roof replacement related debris from the ground.

I. Do not use open flame to dry the roof membrane or to heat the flashing materials.

3.3 PERIMETER REINFORCEMENT SYSTEM INSTALLATION

A. Install perimeter reinforcement strips at the base of walls, curbs, hatches, area transitions, elevation changes, where indicated on the project drawings, and other locations recommended by the roofing membrane manufacturer.

B. Prior to installation of roofing membrane, position the reinforcing cover strip adjacent to the wall/curb transition. Spot-adhere the strip to the underlying cover board as necessary to hold in place.

C. Secure the strip with specified fasteners and 2-inch plates 12-inches o.c. Position the plates in a manner that allows the reinforcing perimeter strip to extend 1/2-inch, minimum out beyond the plate toward the wall//curb transition.

D. At locations where horizontal placement of the reinforcing perimeter strip and securement into the underlying structural deck is not possible or desirable, contact the roofing membrane manufacturer for instructions related to alternate placement and securement methods.

E. Install the fully-adhered membrane over the perimeter reinforcing strip, following the recommendations and requirements of the roofing membrane manufacturer for adhesion.

3.4 EPDM MEMBRANE SPLICE SYSTEM INSTALLATION

A. Ensure splice area is clean, dry and free of foreign material or contaminants.

B. Apply primer to the splice area as recommended by the roofing membrane manufacturer.

C. Install specified in-seam splice tape at field-spliced seams. Install in-seam splice system in accordance with roofing membrane manufacturer requirements. Position in-seam splice tape in a manner that allows a consistent 1/8-inch “bleed out” from overlying membrane sheet.

D. Set overlying EPDM roofing membrane sheet.

3.5 FLASHINGS AND STRIPPINGS

A. Complete all flashings on a daily basis as the roof system work progresses.

B. Wall flashings: Install flashings as indicated on the project drawings and in accordance with the requirements and recommendations of the roofing membrane manufacturer.
1. Follow manufacturer-generated details for flashing requirements at inside (90-degree) and outside (270-degree) corners of curbs and walls.

C. Roof curb and hatch flashings: Install flashings as indicated on the project drawings and in accordance with the requirements and recommendations of the roofing membrane manufacturer.
1. Follow manufacturer-generated details for flashing requirements at inside (90-degree) and outside (270-degree) corners of curbs and walls.
2. Install pressure-sensitive flashing at the base seam(s) of curbs and roof hatches:
   a. Ensure seam area is clean, dry and free of foreign material or contaminants.
   b. Apply primer to the outerseam flashing area as recommended by the roofing membrane manufacturer.
   c. Where indicated, install specified outerseam flashing at seams. Position the outerseam flashing over the center of the seam and install in accordance with the requirements of the roofing membrane manufacturer.

D. Tubular penetration flashings: Install tubular penetration flashings as indicated on the project drawings and in accordance with the requirements and recommendations of the roofing membrane manufacturer.
1. Finished tubular penetration flashings shall be a minimum of 8-inches above the finished roof membrane elevation.
2. Install pressure-sensitive flashing at the base seam(s) of tubular penetrations:
   a. Ensure seam area is clean, dry and free of foreign material or contaminants.
   b. Apply primer to the outerseam flashing area as recommended by the roofing membrane manufacturer.
   c. Where indicated, install specified outerseam flashing at seams. Position the outerseam flashing over the center of the seam and install in accordance with the requirements of the roofing membrane manufacturer.

E. Pitch pan flashings:
1. Install pressure-sensitive flashing at pitch pan penetrations. Refer to Section 076205 for pitch pan fabrication requirements. Install flashings as indicated on the project drawings.

2. Install pressure-sensitive flashing at the base seam(s) of pitch pans:
   a. Ensure seam area is clean, dry and free of foreign material or contaminants.
   b. Apply primer to the outerseam flashing area as recommended by the roofing membrane manufacturer.
   c. Where indicated, install specified outerseam flashing at seams. Position the outerseam flashing over the center of the seam and install in accordance with the requirements of the roofing membrane manufacturer.

F. Sheet metal flange strippings:
   1. Install pressure-sensitive flashing at perimeter edge metal flanges. Refer to Section 076205 for perimeter edge metal fabrication requirements.
      a. Install strippings as indicated on the project drawings.

G. Follow the additional requirements and recommendations of the roofing membrane manufacturer regarding flashing product installation.

3.6 PROTECTION MAT AND BALLAST

A. Install protection mat and ballast according to the requirements and recommendations of the roofing membrane manufacturer. Install the mat smoothly and without wrinkles.

B. Install protection mat over roofing membrane, overlapping a minimum of 6 inches. Install an additional protection mat layer at projections, pipes, vents, and drains, overlapping a minimum of 12 inches.

C. Distribute the existing stone ballast uniformly over roofing membrane; do not add ballast. Spread with care to minimize the possibility of damage to the membrane roofing system. Lay ballast as roofing membrane is installed, leaving roofing membrane ballasted at the end of the workday.

3.7 SHEET METAL FLASHINGS

A. Refer to Section 076205 for sheet metal flashing requirements related to EPDM roofing.

3.8 MISCELLANEOUS INSTALLATIONS/TREATMENTS

A. Return mechanical ventilator units to their original positions and secure to the existing curbs with EPDM-gasketed screws. Provide fasteners 12-inches, o.c., minimum, and within 2-inches of each end. Provide a minimum of two fasteners on each side of the curb.

B. Reconnect all electrical, plumbing, gas line and ventilation connections required to return mechanical units to their original operating condition. Retain a qualified, licensed electrical subcontractor to reconnect electrical equipment. Retain a qualified, licensed mechanical subcontractor to reconnect gas lines and ventilation connections. Coordinate required disconnections and reconnections with the Owner.

C. Walkpads/Pavers: Install walkpads/pavers only at ladder step-off locations.

D. Install splashblocks set on walkpads at locations indicated on the drawings.

E. Pitch pan fill materials: At locations indicated on the project drawings, provide pitch pans.
   1. After completion of pitch pan flashing/stripping installation, fill bottom of pitch pan with specified non-shrink grout, as shown on the project drawings.
   2. Complete pitch pan fill with pourable sealer. Install pourable sealer in a manner that does not allow for ponding water to collect on top of the completed pitch pan. If possible, tool or crown the sealer to create this condition.

F. Pre-fabricated plumbing vent pipe extensions:
1. Refer to manufacturer requirements and recommendations for installation.
2. Prior to flashing installation, seal intersection of pipe extension and existing plumbing vent.

G. Rooftop conduit and pipe supports:
1. Install adjustable prefabricated pipe supports at rooftop conduit and pipes.
2. Space pipe supports at intervals recommended by the support manufacturer, as determined by the diameter and weight of the conduit or pipe.
3. Separate the support from the roof surface by installing the support over roof walkway pads, installed as specified. Extend walkpads 4-inches, minimum beyond all sides of supports.

H. Rooftop unit support curbs:
1. Install unit support curbs where indicate on the project drawings.
2. Flash support curbs in accordance with the requirements of this Section, the project drawings, and the requirements and recommendations of the roofing membrane manufacturer.

I. Rooftop unit supports:
1. Install unit supports where indicated on the project drawings.
2. Separate the supports from the roof surface by installing the supports over roof walkway pads, installed as specified. Extend walkpads 8-inches, minimum beyond all sides of supports.

END OF SECTION