

**RICHMOND COMMUNITY SCHOOLS  
TEST INTERMEDIATE SCHOOL  
ROOF REPLACEMENT PROJECT**

**LWC Commission No. 24105.15**

**ADDENDUM #04  
July 22, 2024**

LWC, Inc.  
712 EAST MAIN ST  
RICHMOND, IN 47374

To Prospective Bidders:

This addendum is a modification of the Contract Documents for the above referenced project and is hereby incorporated into and becomes a part of said Contract Documents. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification. It is to be considered in the Proposals and covers additions to or changes in the Contract Documents as indicated below.

**Attachments:**

- Pre-Bid Agenda, Notes and Sign-in Sheet – July 9, 2024
- Substitution request approval – Mule Hide
- Revised specification sections.

**SUBSTITUTION REQUESTS**

Subject to compliance with all requirements of the Drawings and Specifications the following manufacturers are approved to Bid.

- Section 075323 – EPDM Roofing – Mule-Hide EPDM
  - o Required to use solvent based adhesives in lieu of acrylic – water based adhesive.

**GENERAL NOTES**

- Pre-bid Meeting – Held July 9, 2024, at 1:00 pm.
- **BID DATE CHANGE: Bid Date and time will be Wednesday, July 31, 2024, at 2:00 pm. (ADD 04)**
- **The last day for Bidder questions is July 29, 2024. (ADD 04)**
- **The last Addendum will be issued July 29, 2024. (ADD 04)**

**SPECIFICATIONS**

1. Section 073113 – Asphalt Shingles
  - a. Adjusted the warranty requirements.
  - b. Added manufacturer / products.
2. Section 075323 – EPDM Roofing
  - a. Clarified EPDM system to be fully adhered above the substrate board.

**DRAWINGS**

1. None

## PRE-BID MEETING

RCS – Test Intermediate School - Re-Roof  
July 09, 2024, at 1:00 AM

### 1) Introductions / Registration sheet

Greg Drennen, LWC

Todd Soprych, LWC

Steve Sweet, LWC

Dallas Fountain, Landmark Roofing

Alex Chomel, Chomel & Sons Roofing

Kyle Slaven, Whisenhunt Construction

Austin Goff, Nu-Tec

Adam Knott, Maumee River Roofing

Steve Walden, McGuff Roofing

Jack Blakley, Blakley's Roofing

Nick Trumpey, Blakley's Roofing

Matt Cole, B&B Roofing

Tony Reddington, South Central Roofing

Aristeo Santamaria, UQC

Steve Scott, UQC

Graylan Cunningham, JM

Steve Hubbard, SPG

### 2) Project Description

- a. The re-roofing work includes approximately 88,000 SF of roof area.
  - i. Base Bid Areas (D, F, G, H, I, J, L, M) = 30,823 SF
  - ii. Alternate Bid 01 Areas (K1, K2, SH) = 17,450 SF
  - iii. Alternate Bid 02 Areas (A, B, C, E, N) = 32,270 SF
- b. Work will include new EPDM roofing and insulation over most areas and new roof shingles.
- c. Existing roofing to be removed includes ballasted asphalt roofing, EPDM roofing and shingle roofing.
- d. Existing roof deck materials consist of the following:
  - i. Area A, C, D, E, F, G, I, K2 – 1 ½" metal deck.
  - ii. Area B – 2 ½" concrete deck
  - iii. Area H – 2" cement fiber deck
  - iv. Area K1 – 2 ½" concrete deck
  - v. Areas J, L, M and SH – wood roof deck
  - vi. Area N – 3 ½" to 7" concrete deck

3) Bids are due **Wednesday, July 31, 2024 by 2:00pm (ADD 04)**. Sealed bids will be received at Richmond Community Schools at 300 Hub Etchison Parkway, Richmond, Indiana 47374. Address bids to the attention Karen Scalf, Chief Operations Officer.

### 4) Addendums Issued to date = 3

- a. At least one additional addendum to be issued.
  - a. Notes from today

- b. Clarifications as needed.
  - b. Last day for addenda is **July 29, 2024 (ADD 04)**
    - a. All questions must be submitted by **July 29, 2024 (ADD 04)**.
- 5) Documents available from the following locations. Contractors may arrange for printed “hard copies” with the printer of their choice, at Contractor’s expense:
  - a. LWC’s FTP. For access, contact Greg Drennen – [gdrennen@lwcinspires.com](mailto:gdrennen@lwcinspires.com)
  - b. Eastern Engineering Plan Room
- 6) Single Prime General Contract
- 7) Owner is tax exempt.
- 8) Bidding and questions:
  - a. All questions must be submitted in writing to LWC, Inc. via email. No verbal answers will be given. Submit question to Greg Drennen – [gdrennen@lwcinspires.com](mailto:gdrennen@lwcinspires.com).
- 9) General Project schedule:
  - a. Preliminary Schedule in the specifications book.
- 10) Allowances
  - a. There is a 10% allowance required to be included in the Base Bid and Alternate bids as part of this Project.
- 11) Unit Prices
  - a. There are currently no unit prices.
- 12) Alternates
  - a. Alternate #01 – Various roof areas per Alternate Bid Roof Plan in the specs.
  - b. Alternate #02 – Various roof areas per Alternate Bid Roof Plan in the specs.
- 13) Temporary facilities as specified.
- 14) Contractor shall ensure site security.
- 15) Coordinate all site activities with Owner to ensure Owner access.
- 16) Bi-weekly progress meetings as stipulated in the project manual.
  - a. Contractor may utilize portion of site for meetings.
- 17) General questions?
- 18) Tour.

### **General Questions**

**Statement:** Doors are not to be propped open during construction.

**Statement:** Contractor to coordinate with owner all material storage and deliveries.

**Statement:** Specs call for a Roof Top Restraint System / Fall Restraint System. Only one Manufacturer is listed. To date no one has called them about this job.

Q.) what are the ceilings?

A.) All ceilings are drop ceilings

Q.) What is the backing on the Masonry

A.) Details show what's required. At a minimum there needs to be back-up for flashing where required

Q.) How are the overflows to be handled

A.) Sump Details have been provided. These are to be full bodied.

Q.) What Manufacturers offer 50 yr shingles with 25 yr labor non pro-rated

A.) Owens Corning – Platinum, Certainteed, GAF

Q.) Life Line system – Access to attic

A.) During the tour we have access to the attic

Q.) Specifications call for louvers – Where are these louvers

A.) During the tour you will see the louvers.

**Statement:** G.C. is required for this job, because this is more than just roof work. There is the replacing of the louvers, some masonry work, and covering the roof cap. Currently we do not have brick match.

Q.) Site Security?

A.) Temporary Fencing - chain link fencing. At areas where materials will be kept. Fencing high enough to deter folks from climbing, but low enough to keep them off the roof.

Q.) is overhead protection needed at doors

A.) yes

**Statement:** July 29<sup>th</sup> is when last substitutions can be submitted. (ADD 04)

**Requests for Information and Clarifications:**

<b>Q</b>	Should the small shingle roof area close to the boiler room be included in the project as part of Alternate #1:
<b>A</b>	Yes, include that roof area with Alternate 1.
<b>Q</b>	What areas of the roof have to be fully tapered insulation vs areas of structurally sloped roof?
<b>A</b>	Flat Roof Areas: Areas A; Area C – Over Corridor and Restrooms; Area D – Small roof area over Admin; Area M – tower roof; Area K-1 – Over the Choral room; Area N – Portion of roof over Chiller. – Refer to Color coded roof areas plan issued with Addendum 03.

<b>Q</b>	Note "A" says ALL coping shone shall be cleaned from atmospheric pollution and biological growth. All stone and brick shall be cleaned with a biological wash and low-pressure rinse. Does this mean all stone and brick on the entire project, or just those areas that are indicated on the drawings?
<b>A</b>	The intent is to clean all stone copings associated with roof work not the entire building.
<b>Q</b>	Masonry work occurs in a number of areas. Is that cost to be included with the Alternate bid or part of the base bid scope of work?
<b>A</b>	Masonry work pricing shall be included in the associated areas of work. Base Bid, Alternate Bids.

**END OF ADDENDUM #04**



# MEETING SIGN-IN SHEET

**PROJECT NAME** | RCS – TEST INTERMEDIATE SCHOOL – RE-ROOF  
**LWC PROJECT NO.** | 24105.15  
  
**DATE:** | 2024-07-09  
**TIME:** | 01:00 PM  
**LOCATION:** | TEST INTERMEDIATE SCHOOL

ATTENDEE NAME	COMPANY, PHONE, EMAIL
Dallas Fountain	Landmark Roofing, 214-385-4515, Dallas@landmarkroofingexperts.com
Austin Goff	New-Tec, 317-315-4375, agoff@newtecroofing.com
ADAM KNOTT	MANMEE RIVER ROOFING 260-579-0663 ADAM@MANMEE RIVER ROOFING
Steve Walden	McGuff Roofing 765-749-0157 JR @ mcguffroofing.com
Jack Blakley	Blakley's 317-558-1107 jackblakley@blakleys.com
Nick Trumpcy	Blakleys 317-437-8595 NickTrumpcy@blakleys.com
Matt Cole	BTB Roofing 317-223-4036 mcole@tecta-america.com
TOMMY REEDINGTON	SOUTH CENTRAL ROOFING treedington@scroof.com 812-341-8662
ALEX CHOMEL	CHOMEL & SON 765-265-1244
Aristeo Santamaria	UQC Aristeo@uniqualityco.com (919) 685-7346
Steve Scott	UQC Steve@uniqualityco.com 317-409-7161
GRAYLAW CONNIGHAM	JM G.SCOTTCONNIGHAM@gmail.com 317-260-3194



## SECTION 073113 - ASPHALT SHINGLES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Glass-fiber-reinforced asphalt shingles.
  - 2. Underlayment materials.
  - 3. Metal flashing and trim.

#### 1.2 ALTERNATES

- A. See Section 012300 "Alternates" for description of alternates affecting items specified under this Section.

#### 1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D1079 for definitions of terms related to roofing Work in this Section.

#### 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project Site

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Asphalt shingles.
  - 2. Underlayment materials.
  - 3. Asphalt roofing cement.
  - 4. Elastomeric flashing sealant.
- B. Shop Drawings: For metal flashing and trim.
- C. Samples: For each exposed product and for each color and blend specified, in sizes indicated.
  - 1. Asphalt Shingles: Full size.
  - 2. Ridge and Hip Cap Shingles: Full size.
  - 3. Exposed Valley Lining: 12 inches (305 mm) square.

- D. Samples for Initial Selection:
  - 1. For each type of asphalt shingle indicated.
  - 2. For each type of accessory involving color selection.
  
- E. Samples for Verification: For the following products, in sizes indicated:
  - 1. Asphalt Shingles: Full size.
  - 2. Ridge and Hip Cap Shingles: Full size.
  - 3. Exposed Valley Lining: 12 inches (305 mm) square.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each type of asphalt shingle and underlayment product indicated, for tests performed by a qualified testing agency
- C. Sample Warranty: For manufacturer's materials warranty.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For asphalt shingles to include in maintenance manuals.
- B. Materials warranties.
- C. Roofing Installer's warranty.

#### 1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Asphalt Shingles: 100 sq. ft. of each type and in each color and blend, in unbroken bundles.

#### 1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized installer who is trained and approved by manufacturer.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.

- B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.
- C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.
- D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

#### 1.11 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.
  - 1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

#### 1.12 WARRANTY – **ADD 04**

- A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Manufacturing defects.
    - 2. **Materials Warranty Period: Lifetime Limited**
    - 3. **Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 130 mph.**
    - 4. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 25 years from date of Substantial Completion.
- B. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 5 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 SOURCE LIMITATIONS

- A. Obtain each type of product from single source from single manufacturer.

2.2 MANUFACTURERS – **ADD 04**

- A. **Subject to compliance with all requirements of the drawings and specifications, provide asphalt shingle roofing systems by one of the following manufacturers:**
1. **Owens Corning – Duration Shingles**
  2. **Certainteed – Landmark Series**
  3. **GAF – Timberline Series**

2.3 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.
- B. Wind Resistance: Provide asphalt shingles that comply with requirements of ASTM D3161/D3161M, Class F, and with ASTM D7158/D7158M, Class H.

2.4 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D3462/D3462M, laminated, multi-ply overlay construction; glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
1. Butt Edge: Straight
  2. Strip Size: [Manufacturer's standard] <Insert strip size>.
  3. Algae Resistance: Granules resist algae discoloration.
  4. Color and Blends: As selected by Architect from manufacturer's full range
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles

2.5 UNDERLAYMENT MATERIALS

- A. Synthetic Underlayment: UV-resistant polypropylene, polyolefin, or polyethylene polymer fabric with surface coatings or treatments to improve traction underfoot and abrasion resistance; evaluated and documented to be suitable for use as a roof underlayment under applicable codes by a testing and inspecting agency acceptable to authorities having jurisdiction
1. Provide Roof Shingle Manufacturers recommended underlayment system that provides enhanced warranty coverage as part of an overall Lifetime warrantied system.

2.6 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.

- B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.
- C. Roofing Nails: ASTM F1667, stainless steel or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, sharp-pointed, with a 3/8- to 7/16-inch- (10- to 11-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through sheathing less than 3/4 inch (19 mm) thick.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

## 2.7 METAL FLASHING AND TRIM

- A. Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
  - 1. Step Flashings: Fabricate with a headlap of 2 inches and a minimum extension of 5 inches over the underlying asphalt shingle and up the vertical surface.
  - 2. Cricket and Backer Flashings: Fabricate with concealed flange extending a minimum of 24 inch beneath upslope asphalt shingles and 6 inches beyond each side of chimney and 6 inches above the roof plane.
  - 3. Open-Valley Flashings: Fabricate from metal sheet not less than 24 inches in lengths not exceeding 10 feet with 1 inch high, inverted-V profile water diverter at center of valley and equal flange widths of not less than 11 inches.
    - a. Hem flange edges for fastening with metal cleats.
    - b. Add stiffening ribs in flashings to promote drainage.
  - 4. Drip Edges: Fabricate in lengths not exceeding 10 feet with minimum 2-inch (51-mm) roof-deck flange and 1-1/2-inch (38-mm) fascia flange with 3/8-inch (10-mm) drip at lower edge.
  - 5. Vent-Pipe Flashings: ASTM B749, Type L51121, at least 1/16 inch (1.6 mm) thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches (102 mm) from pipe onto roof.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through asphalt shingles.

3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION OF UNDERLAYMENT MATERIALS

- A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.
- B. Self-Adhering, Polymer-Modified Bitumen Sheet: Install, wrinkle free, on roof deck.
1. Comply with low-temperature installation restrictions of underlayment manufacturer.
  2. Install lapped in direction that sheds water.
    - a. Lap sides not less than 4 inches (102 mm).
    - b. Lap ends not less than 6 inches (152 mm), staggered 24 inches (610 mm) between succeeding courses.
    - c. Roll laps with roller.
  3. Cover entire roof area to receive shingles.
  4. Lap and extend sheet underlayment around all roof penetrations, extending 24 inches beyond penetrating item and minimum 4 inches up face of penetrating item.
- C. Metal-Flashed, Open-Valley Underlayment: Install two layers of minimum 36-inch- (914-mm-) wide underlayment centered in valley.
1. Use same underlayment as installed on field of roof.
  2. Stagger end laps between layers at least 72 inches (1829 mm).
  3. Lap ends of each layer at least 12 inches (305 mm) in direction that sheds water, and seal with asphalt roofing cement.
  4. Fasten each layer to roof deck with underlayment nails located as far from valley center as possible and only to extent necessary to hold underlayment in place until installation of valley flashing.
  5. Lap roof-deck underlayment over first layer of valley underlayment at least 6 inches (152 mm).

### 3.3 INSTALLATION OF METAL FLASHING AND TRIM

- A. Install metal flashings and trim to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.

- C. Step Flashings: Install with a headlap of 2 inches (51 mm) and extend over underlying shingle and up the vertical face.
  - 1. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying shingle.
  - 2. Fasten to roof deck only.
- D. Cricket and Backer Flashings: Install against roof-penetrating elements extending concealed flange beneath upslope asphalt shingles and beyond each side.
- E. Counterflashings: Coordinate with installation of base flashing and fit tightly to base flashing. Lap joints a minimum of 4 inches (102 mm) secured in a waterproof manner.
  - 1. Install in reglets or receivers.
- F. Open-Valley Flashings: Install centered in valleys, lapping ends at least 24 inches in direction that sheds water. Fasten upper end of each length to roof deck beneath overlap.
  - 1. Secure hemmed flange edges into metal cleats spaced 8 inches apart and fastened to roof deck.
  - 2. Adhere minimum 10 inch wide strips of self-adhering, polymer-modified bitumen sheet to metal flanges and to underlying self-adhering sheet, polymer-modified bitumen sheet.
    - a. Place strips parallel to and over flanges so that they will be just concealed by installed shingles.
  - 3. Provide a closure at the end of the inverted-V profile of the valley metal to minimize water and ice infiltration.
- G. Rake Drip Edges: Install over underlayment materials and fasten to roof deck.
- H. Eave Drip Edges: Install below underlayment materials and fasten to roof deck.
- I. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

### 3.4 INSTALLATION OF ASPHALT SHINGLES

- A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in ARMA's "Asphalt Roofing Residential Manual - Design and Application Methods" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with self-sealing strip face up at roof edge.
  - 1. Extend asphalt shingles ½ inch over fasciae at eaves and rakes.
  - 2. Install starter strip along rake edge.

- C. Install first and remaining courses of laminated asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt shingle strips with a minimum of six roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.
  - 1. Locate fasteners in accordance with manufacturer's written instructions.
  - 2. Where roof slope is less than 4:12, hand seal self-sealing asphalt shingles to improve the shingles' positive bond by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
  - 3. When ambient temperature during installation is below 50 degrees hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
- E. Open Valleys: Cut and fit asphalt shingles at open valleys, trimming upper concealed corners of shingle strips.
  - 1. Do not nail asphalt shingles to metal open-valley flashings.
- F. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.
  - 1. Fasten with roofing nails of sufficient length to penetrate sheathing.

END OF SECTION 073113

## SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Fully adhered EPDM membrane roofing system.
2. Self-adhered vapor / Air Barrier
3. ~~Mechanically fastened roof insulation and substrate boards-ADD 04~~
4. Adhered cover boards.

- B. Related Sections:

1. Division 07 Section "Preparation for Re-Roofing" for recover board beneath new membrane roofing.
2. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.

#### 1.3 DEFINITIONS

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

#### 1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
- D. Wind Speed Rating: 55 mph

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Base flashings and membrane terminations.
  - 2. Vapor / Air Barrier terminations at parapet walls at perimeter, including termination details.
  - 3. Plan views showing locations, slopes and extent of tapered insulation, drain sumps.
  - 4. Provide sections and details at roof drains, scuppers and drain sumps.
  - 5. Tapered insulation, layout, thicknesses, including slopes.
  - 6. Roof plan showing orientation of steel roof deck and orientation of membrane roofing.
  - 7. Provide drawings showing locations of membrane seams.
- C. Samples for Verification: For the following products, in manufacturer's standard sizes:
  - 1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
  - 2. Vapor / air barrier membrane. 12" x 12" minimum
  - 3. Substrate board 12" x 12"
  - 4. Cover board 12"x 12"
  - 5. Roof insulation. 12" x 12"
  - 6. Termination bars. 12"
  - 7. Provide a staggered mock up of full assembly from substrate board up to and including epdm membrane.
- D. Qualification Data: For qualified Installer and manufacturer.
- E. Manufacturer Certificate: Signed by roofing manufacturer certifying that membrane roofing system complies with requirements specified in "Performance Requirements" Article.
  - 1. Submit evidence of complying with performance requirements.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- G. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.

- H. Maintenance Data: For membrane roofing system to include in maintenance manuals.
- I. Warranties: Sample of special warranties.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Approvals approved for membrane roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- C. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- D. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- E. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
  - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review requirements for deck substrate conditions and finishes, including flatness and fastening.
  - 5. Review coordination issues related to building air barrier system and tying roof vapor / air barrier into perimeter parapet walls.
  - 6. Review structural loading limitations of roof deck during and after roofing.
  - 7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
  - 8. Review governing regulations and requirements for insurance and certificates if applicable.
  - 9. Review temporary protection requirements for roofing system during and after installation.
  - 10. Review roof observation and repair procedures after roofing installation.
- F. Preinstallation Roofing Conference: Conduct conference at Project site.

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

#### 1.7 DELIVERY, STORAGE, AND HANDLING

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

## 1.8 COLD WEATHER HANDLING, STORAGE, PREPARATION AND INSTALLATION

- E. Follow manufacturer's recommendations related to cold weather storage handling and installation of all roofing materials and generally as follows, according to Firestone's Technical Bulletin of December 20, 2010.
1. Cold temperatures change the physical properties of adhesives and sealants, and make roofing membranes stiffer and more difficult to manipulate. All roofing materials must be stored between 60 and 80 °F (15 and 27 °C) just prior to using to ensure proper application. If the properties and application of the materials begin to deteriorate from cold weather exposure, restoring them to recommended temperature is necessary. It may take several days storing cold materials at room temperature (full pallets for example) until the materials are restored to room temperature. Adhesives, sealants and primers stored cold, followed by room temperature storage may cause separation of solvents, requiring re-mixing. Never allow water-based products and two-part urethanes to freeze, resulting in solidification.
  2. Cold Adhesive applied in cold weather shall be as recommended by manufacturer. Ambient and substrate temperatures should be 40 °F (4 °C) and rising at the time of application.
  3. Membrane Size: During cold weather, large folded panels are more difficult to relax and install, especially with adhered systems. Always unfold panels and roll out rolls allowing the membrane to relax prior to installation.
  4. EPDM Flashing Installation: Uncured flashing products are designed to be formable during warmer temperatures. Cold weather requires supplemental warming by using a heat gun during application. Care should be taken to keep the heat gun away from cleaners, primers, adhesives or other flammable materials. Ambient conditions and flashing color determines the need for supplemental heat. Temperatures below 60 °F (15 °C) may require the use of an additional heat source to ensure the formability of the uncured flashing.

## 1.9 SEQUENCING OF WORK

- F. Work shall begin only after opening and penetrations are in place and adjacent work required for complete tie-in are in place. This includes flashing in masonry walls with special attention given to roof to wall transitions.
1. Work shall not begin before the "Preinstallation Conference" and conditions exist necessary for a successful completion of roofing have occurred.
  2. Work shall not begin without the presence of manufacturer's representative, A/E and Testing Laboratory, if required.
- G. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas.

- H. After work on roof is started, no traffic will be permitted on the roof other than necessary for the roofing application and inspection. Materials shall not be piled on the roof to the extent that design live loads are exceeded. Roofing materials shall not be transported over unfinished or finished roofing or existing roofs unless adequate protection is provided.

#### 1.10 PROJECT CONDITIONS

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

#### 1.11 WARRANTY

- J. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
  - 1. Special warranty includes membrane roofing, base flashings, and other components of membrane roofing system.
  - 2. Warranty Period: 20 years from date of Substantial Completion.
- K. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:
  - 1. Warranty Period: Two years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 BLACK EPDM MEMBRANE ROOFING

- A. EPDM: ASTM D 4637, Type I, non-reinforced, uniform, flexible EPDM sheet.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle SynTec Incorporated.
    - b. Elevate RubberGard Roofing Systems (Design Standard)
    - c. GAF Materials Corporation.
    - d. GenFlex Roofing Systems.
    - e. Johns Manville.
    - f. **Mule Hide EPDM – ADD 04**

2. Thickness: 60 mils, nominal.

## 2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
- B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.
- C. Protection Sheet: Epichlorohydrin or neoprene non-reinforced flexible sheet, 55- to 60-mil-thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.
- D. Bonding Adhesive:
  1. Elevate – EPDM Bonding Adhesive BA-2004
- E. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch- wide minimum, butyl splice tape with release film.
- F. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
- G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- H. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- ~~I. Fasteners: Factory coated steel fasteners and metal or plastic plates complying with corrosion resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.~~ **Fully adhere all components of roofing system above the substrate board. – ADD 04**
- J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.
  1. Premoulded pipe flashings as recommended by EPDM manufacturer.

## 2.3 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Georgia-Pacific Corporation; Dens Deck or Dens Deck Prime

- B. Substrate Board: ASTM C 1278/C 1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate, 1/2 inch thick.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. USG Corporation; Securock.
    - b. Other manufacturers acceptable to the EPDM roofing manufacturer.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.

### 2.3 VAPOR / AIR BARRIER MEMBRANE

- A. Membrane: 40 mil, self-adhesive, modified asphalt membrane with a polyethylene layer on the top surface, intended for use as an air and vapor barrier.
  - 1. Water vapor permeance: ASTM E96 – .05 perms maximum.
  - 2. Air permeance – Not to exceed 0.004 cfm x sq. ft. of surface area at 1.57 lbf/sq. ft.; per ASTM E 283.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Carlisle – 725TR membrane
  - 2. Grace – Perma-Barrier
  - 3. Henry – Blueskin SA
  - 4. Other manufacturers acceptable to the EPDM roofing manufacturer.

### 2.4 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
  - 1. Elevated Isogard GL Insulation
  - 2. Provide insulation in at least 2 layers for a total minimum thickness of 4" and R- 25 minimum.
  - 3. Tapered insulation is in addition to the base 4" thickness required.

4. Apply fully adhered to substrate and subsequent layers.
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to develop positive slope to drain or scupper at a minimum slope of 1/4 inch per 12 inches unless otherwise indicated.
1. Provide tapered insulation at all roof drain sump areas and between all roof drains and thru-wall scuppers.
  2. Provide additional tapered insulation as needed to eliminate ponding and create positive slope to drain.
  3. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
  4. Provide 48" x 48" x 1" deep, recessed sump at each roof drain, utilizing tapered insulation to transition between surrounding insulation and sump.
  5. Apply tapered insulation fully adhered to substrate and subsequent layers.

## 2.5 COVER BOARD

- A. Cover Board: ASTM C 1289, high density, polyisocyanurate foam, 1/2 inch minimum thickness or as required to achieve wind uplift rating, with glass facers both sides. Minimum R-Value 2.5. Compressive strength 80 psi minimum. Cover board to be fully adhered to insulation over entire re-roofed areas and new roof areas, immediately below epdm membrane.
1. Products: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. ISOGARD HD polyiso board insulation (Design Standard)
    - b. Carlisle – SecureShield HD

## 2.6 COVER BOARD

- A. As an alternative to the high density polyisocyanurate cover boards listed above the following cover board may be utilized, as may be required or recommended by roofing system manufacturer.
- B. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Georgia-Pacific Corporation; Dens Deck Prime

## 2.7 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- ~~B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.~~
  - ~~1. Utilize special fasteners at cementitious wood fiber decks~~
    - ~~a. Genflex Lite Deck Fasteners and insulation plates~~
    - ~~b. Elevate Polymer Fasteners and insulation plates~~
- C. Fully adhere insulation using manufacturer recommended adhesives. – ADD 04**
- D. Insulation Adhesives:
  - 1. Elevate – ISO Twin Jet; Jet bond Spray Adhesive;

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
  - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
  - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
  - 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
  - 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
  - 5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
  - 6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Where re-roofing of existing built-up roofing provide the following scope of work.
  - 1. Removal and reinstallation of existing metal copings and fascia to allow removal of EPDM and installation of new EPDM.
  - 2. Remove existing EPDM, including terminations.
  - 3. Survey insulation to determine if there is any wet or deteriorated insulation. Remove insulation as required to meet roofing manufacturer's requirements for re-roofing.
  - 4. Install new cover board and EPDM as specified above.
  - 5. Provide areas of new tapered insulation as required at each of the new overflow drains installed in the existing re-roofing area, to create positive slope to drain.

### 3.3 SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
  - 1. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' "RoofNav" and FM Global Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.
  - 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.

### 3.4 VAPOR / AIR BARRIER INSTALLATION

- A. Install self adhering membrane sheet vapor / air barrier as follows:
  - 1. After installation of substrate board on metal deck, or after preparing new wood roof deck sheathing, install self-adhering membrane-sheet vapor / air barrier in a single layer over entire roof area, side and end lapping each sheet a minimum of 2 inches and 6 inches, respectively, or as may be required by vapor / air barrier manufacturer.
  - 2. Turn vapor / air barrier membrane up and all masonry or plywood sheathing, parapet walls and curbs. Return air barrier up wall a minimum of 8 inches or as high as required to lap over building moisture barrier or membrane air barrier a minimum of 6 inches and terminate.
  - 3. Where curbs or other roof penetrations occur, turn air barrier up and over curb and wood blocking.

4. Coordinate installation of vapor / air barrier with fluid applied air barrier installer at cavity walls and back sides of parapet walls.

B. Completely seal vapor / air barrier at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

### 3.5 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

1. 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.

D. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

F. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

~~G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board type roof insulation to deck type.~~

~~1. Fasten insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.~~

~~2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.~~

#### **ADD 04**

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Tightly butt cover boards together.

1. Fully adhere cover boards according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
2. Fully adhere cover boards to resist uplift pressure at corners, perimeter, and field of roof.

### 3.6 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- B. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- ~~D. Hot Roofing Asphalt: Apply a solid mopping of hot roofing asphalt to substrate at temperature and rate required by manufacturer and install fabric-backed membrane roofing. Do not apply to splice area of membrane roofing. **ADD 04**~~
- ~~E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters. **ADD 04**~~
- F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- G. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.
  1. Apply a continuous bead of in-seam sealant before closing splice if required by membrane roofing system manufacturer.
- H. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- I. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.
- J. Install membrane roofing and auxiliary materials to tie in to existing membrane roofing to maintain weather-tightness of transition and to not void warranty for existing membrane roofing system.
- K. Adhere protection sheet over membrane roofing at locations indicated.

### 3.7 BASE FLASHING INSTALLATION

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

### 3.8 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.
- B. Provide walkways around all rooftop HVAC equipment.
  - 1. Minimum 30" x 30" pads continuous around equipment, adhered to membrane roof.

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to conduct post installation testing and analysis of the complete roofing system, and to furnish reports to Architect.
- B. Infrared Testing and Scanning: Within one year of the completed roofing installation, or after completion of individual phases of the roofing work, the Owner will engage a qualified infrared testing / scanning service provider to conduct a thermal and moisture investigation of the completed roof system or area. Areas of suspect insulation or other substrate materials will be identified and then confirmed with other testing methods as recommended by the testing / scanning service. Areas of damp or wet insulation will be marked by the testing / scanning service.
  - 1. The Contractor will be required to remove and replace all damaged, wet or deleterious materials and decking, in the areas identified.
  - 2. The extent of the removal and replacement will be generally defined by the testing / scanning service, but may not be limited to those areas.
  - 3. Upon completion of all roofing repairs, Contractor shall extend the Special Project Warranty by One (1) additional year.

- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
  - 1. If repairs or replacement of portions of the roofing become necessary, the manufacturer's technical personnel shall re-inspect the repaired areas upon completion of the repair.
- D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

### 3.10 PROTECTING AND CLEANING

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

### 3.11 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS **<Insert name>** of **<Insert address>**, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
  - 1. Owner: **<Insert name of Owner.>**
  - 2. Address: **<Insert address.>**
  - 3. Building Name/Type: **<Insert information.>**
  - 4. Address: **<Insert address.>**
  - 5. Area of Work: **<Insert information.>**
  - 6. Acceptance Date: **<Insert date.>**
  - 7. Warranty Period: **<Insert time.>**
  - 8. Expiration Date: **<Insert date.>**
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
    - a. Lightning;
    - b. Peak gust wind speed exceeding <Insert wind speed> mph;
    - c. Fire;
    - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    - e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    - f. Vapor condensation on bottom of roofing; and
    - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
  2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
  3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
  4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
  5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this **<Insert day>** day of **<Insert month>**, **<Insert year>**.

1. Authorized Signature: **<Insert signature>**.
2. Name: **<Insert name>**.
3. Title: **<Insert title>**.

END OF SECTION 075323



June 26, 2024

LWC Inc.  
712 East Main Street  
Richmond, IN 47374

Re: Equal Product Substitution Request  
Test Intermediate School Roof Replacement Project - Richmond, IN  
Project No.: 24105.15

Attn: Greg Drennen

Mule-Hide Products is requesting approval for the use of a Mule-Hide EPDM roof system on behalf of our warranty eligible contractor, Landmark Roofing.

This proposed substitution meets or exceeds current ASTM standards and is equal to or superior in all aspects to the specified product. Mule-Hide EPDM membrane and accessories are identical in both physical properties and performance to Carlisle SynTec, one of the specified manufacturers.

I have included the formal substitution request along with the EPDM membrane product data sheets, ICC-ES Report, and a sample warranty for your review.

Please feel free to contact me if you would like additional information or product samples.

Thank you for your consideration.

Regards,

Jane Carr  
Business Development Project Support Supervisor  
Office Phone (608) 361-6806  
Cell Phone (608) 718-4246  
Jane.carr@mulehide.com  
[www.mulehide.com](http://www.mulehide.com)



# SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: Test Intermediate School Roof Replacement Project - Richmond, IN Substitution Request Number: \_\_\_\_\_  
 From: Jane Carr, Business Development Project Support Supervisor  
 To: Greg Drennen Date: June 26, 2024  
LWC Inc. A/E Project Number: Project No.: 24105.15  
 Re: Equal Product Substitution Request Contract For: \_\_\_\_\_

Specification Title: Ethylene-Propylene-Diene-Monomer (EPDM) Roofing  
 Section: 075323 Page: 6-7 Article/Paragraph: 2.1 & 2.2

Proposed Substitution: Mule-Hide Products' .060 EPDM roof system, including all components and accessories  
 Manufacturer: Mule-Hide Products Address: 1195 Prince Hall Drive, Beloit, WI 53511 Phone: 608-361-6806  
 Trade Name \_\_\_\_\_ Model No. 60 mil EPDM Membrane

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation. **This is a direct substitution with an equal product based on the specified installation and will cause no changes in building design**

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution. **This is a direct substitution with an equal product based on the specified installation. Acceptance of this request will cause no changes in building design or construction costs to owner.**

Submitted by: Jane Carr, Business Development Project Support Supervisor

Signed by: Jane Carr

Firm: Mule-Hide Products Co, Inc.

Address: 1195 Prince Hall Drive  
Beloit, WI 53511

Telephone: 608-361-6806 or 608-718-4246

A/E's REVIEW AND ACTION

**Acceptance is conditional on use of solvent based adhesives in lieu of acrylic, water based adhesives.**

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.  
 Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.  
 Substitution rejected - Use specified materials.  
 Substitution Request received too late - Use specified materials.

Signed by: **Greg Drennen, AIA - LWC Inc.**

Date: **July 8, 2024**

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

\*samples upon request