

## SECTION 07 51 13 - BUILT-UP ASPHALT ROOFING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This system may be used only after explicit direction from the University to do so.
- B. This Section includes 3 ply built up roof with cap sheet.
- C. Roofing insulation
- D. Walking pads.

#### 1.2 DEFINITION

- A. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mopping application and 75 centipoise for mechanical application, within a range of plus or minus 25 deg F, measured at the mop cart or mechanical spreader immediately before application.
- B. Systems reference the Seventh Edition of the NRCA manual.

#### 1.3 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
- C. Samples: For each product included in roofing system.
- D. Research/evaluation reports.
- E. Maintenance data.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer, approved by manufacturer to install manufacturer's products. Installer must be a member in good standing with the NRCA.
- B. Source Limitations: Obtain components for roofing system from or approved by roofing system manufacturer.
- C. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by

UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Exterior Fire-Test Exposure: Class B; ASTM E 108, for application and roof slopes indicated.

D. Preinstallation Conference: Conduct conference at Project site or where directed by Owner.

## 1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within 15 years from date of Substantial Completion. Failure includes roof leaks.
- B. Provide two year warranty by the installer for repair work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Built-up Asphalt Roofing:
    - a. Barrett Company.
    - b. CertainTeed Corporation.
    - c. Firestone Building Products Company.
    - d. GAF Materials Corporation.
    - e. Hickman, W. P. Systems Inc.
    - f. Johns Manville International, Inc.
    - g. Malarkey Roofing Company.
    - h. TAMKO Roofing Products, Inc.
    - i. Or approved equal

### 2.2 BASE-SHEET MATERIALS

- A. Sheathing Paper: Red-rosin type, minimum 3 lb/100 sq. ft..
- B. Base Sheet: ASTM D 4601, Type I, nonperforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.
- C. Base Sheet: ASTM D 4601, Type II, SBS-modified, asphalt-impregnated and -coated sheet, with glass-fiber-reinforcing mat, dusted with fine mineral surfacing on both sides.

- D. Base Sheet: ASTM D 4897, Type II, venting, nonperforated, heavyweight, asphalt-impregnated and -coated, glass-fiber base sheet with coarse granular surfacing or embossed venting channels on bottom surface.

## 2.3 ROOFING MEMBRANE PLIES

- A. Ply Sheet: ASTM D 2178, Type IV, asphalt-impregnated, glass-fiber felt.
- B. Cap Sheet: ASTM D 3909, asphalt-impregnated and -coated, glass-fiber cap sheet, with white coarse mineral-granule top surfacing and fine mineral surfacing on bottom surface.

## 2.4 FLASHING MATERIALS

- A. Backer Sheet: ASTM D 2178, Type IV, asphalt-impregnated, glass-fiber felt.
- B. Backer Sheet: ASTM D 4601, Type I, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.
- C. Flashing Sheet: ASTM D 6163, Type I or II, glass-fiber-reinforced, SBS-modified asphalt sheet; granular surfaced; suitable for application method specified and as follows:
  - 1. Granule Color: Gray.

## 2.5 ASPHALT MATERIALS

- A. Roofing Asphalt: ASTM D 312, Type III or IV as recommended by built-up roofing system manufacturer for application.

## 2.6 AUXILIARY ROOFING MEMBRANE MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.
- B. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, one- or two-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with built-up roofing base flashings.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM 4470; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

## 2.7 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick.

- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening substrate panel to roof deck.

## 2.8 ROOF INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces.
- B. Composite Polyisocyanurate Board Insulation: ASTM C 1289, faced with insulation board on one major surface, as indicated below by type, and felt or glass-fiber mat facer on the other.
  - 1. Type III (perlite-insulation-board facer), 1/2 inch thick.
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches, unless otherwise indicated.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

## 2.9 INSULATION ACCESSORIES

- A. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- B. Cold Fluid-Applied Adhesive: Manufacturer's standard cold fluid-applied adhesive formulated to adhere roof insulation to substrate.
- C. Insulation Cant Strips: ASTM C 728, perlite insulation board.
- D. Tapered Edge Strips: ASTM C 728, perlite insulation board.
- E. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick

## 2.10 WALKWAYS

- A. Walkway Pads: Mineral-granule-surfaced, reinforced asphaltic composition, slip-resisting pads, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 3/4 inch thick, minimum.
  - 1. Pad Size: manufacturer's standard size appropriate to layout.
- B. Cap Sheet Strips: ASTM D 6163, Type I or II, glass-fiber-reinforced, SBS-modified, asphalt-impregnated and -coated walkway sheet; with white coarse mineral-granule top surfacing and fine mineral surfacing on bottom surface.

## PART 3 - EXECUTION

### 3.1 SUBSTRATE BOARD INSTALLATION

- 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 roofing system manufacturer's written instructions.

### 3.2 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- C. Nailer Strips: Mechanically fasten 4-inch nominal- width wood nailer strips of same thickness as insulation perpendicular to sloped roof deck at the following spacing:
  - 1. 16 feet apart for roof slopes greater than 1 inch per 12 inches but less than 3 inches per 12 inches.
  - 2. 48 inches apart for roof slopes greater than 3 inches per 12 inches.
- D. Install tapered insulation under area of roofing to conform to slopes indicated.
- E. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 1-1/2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
- F. Mechanically Fastened and Adhered Insulation: Install each layer of insulation and secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
  - 1. Install subsequent layers of insulation in a solid mopping of hot roofing asphalt.
  - 2. Install subsequent layers of insulation in a cold fluid-applied adhesive.
- G. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Loosely butt cover boards together and fasten to roof deck.

### 3.3 ROOFING MEMBRANE INSTALLATION

- A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."

- B. Where roof slope exceeds 1 inch per 12 inches, install sheets of built-up roofing membrane parallel with slope and backnail.
- C. Coordinate installing roofing system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
- D. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- E. Loosely lay one course of sheathing paper, lapping edges and ends a minimum of 2 inches and 6 inches, respectively.
- F. Install one lapped course of base sheet, extending sheet over and terminating beyond cants. Attach base sheet as follows:
  - 1. Adhere to substrate in a solid mopping of hot roofing asphalt.
- G. Install three ply sheets starting at low point of roofing system. Align ply sheets without stretching. Shingle side laps of ply sheets uniformly to achieve required number of plies throughout thickness of roofing membrane. Shingle in direction to shed water. Extend ply sheets over and terminate beyond cants.
  - 1. Embed each ply sheet in a solid mopping of hot roofing asphalt.
- H. Cap Sheet: Install lapped granulated cap sheet starting at low point of roofing system. Offset laps from laps of preceding ply sheets and align cap sheet without stretching. Lap in direction to shed water. Extend cap sheet over and terminate beyond cants.
  - 1. Embed cap sheet in a solid mopping of hot roofing asphalt.

### 3.4 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions.
- B. Extend base flashing up walls or parapets a minimum of 8 inches above roofing membrane and 4 inches onto field of roofing membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
- D. Install stripping, according to roofing system manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

### 3.5 WALKWAY INSTALLATION

- A. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.

1. Sweep away loose aggregate surfacing and set walkway pads in additional flood coat of hot roofing asphalt.
- B. Cap Sheet Strips: Install cap sheet strips, approximately 36 inches wide and in lengths not exceeding 10 feet, leaving a space of 6 inches between strips. Adhere in hot roofing asphalt.

**END OF SECTION 07 51 13**