SECTION 075200 - LOW-SLOPE ROOFING

- 1. GENERAL
 - A. Owner Project Requirements: see the *Roof Systems and Roof-related Systems* section of *Part 5: Owner's Building Construction Requirements* of this *College Design Standards* document for additional information related to low-slope roofing.
 - B. The roofing installation includes the following materials:
 - 1. Two-ply, modified bituminous roofing.
 - 2. Roofing insulation.
 - 3. SBS Base Sheet.
 - 4. SBS Cap Sheet.
 - 5. Walkways.
 - C. Performance Requirements
 - General: Install a watertight, modified bituminous membrane roofing and base flashing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement, and exposure to weather without failure. On low slope roofs of slopes greater than 2 inches per foot, all felt plies shall be back nailed. The system shall consist of four plies of roofing felts alternately placed, overlapped and saturated with hot asphalt bitumen. Gravel surfacing to be set in hot asphalt. Steep roofing asphalt shall conform to ASTM D-312.
 - 2. FM Listing: Provide modified bituminous membrane, base flashings, and component materials that meet requirements of FM-4450 and FM-4470 as part of a roofing system and that are listed in FM's "Approval Guide" for Class-1 or noncombustible construction, as applicable. Identify materials with FM markings.
 - 3. Roofing system shall comply with the following:
 - a. Fire/Windstorm Classification: Class-1A-690
 - b. Hail Resistance Rating: MH
 - 4. Roofing System Design: Provide a roofing system that complies with roofing system manufacturer's written design instructions.
 - D. Warranty
 - 1. The roofing system shall be covered by a 20 year Total System, No Dollar Limit (NDL) Warranty and must include all flashings and sheet-metal work. All materials and workmanship are to be fully guaranteed by the roofing manufacturer issuing the warranty. All materials must be manufactured by the manufacturer who is to supply the warranty. Any materials that are not made by the Roofing Materials Manufacturer but submitted for approval must be accompanied by a letter from the Roofing Materials Manufacturer issuing the 20 year NDL warranty, stating that this material is suitable for use with their system and fully covered under their 20 year NDL warranty.
 - 2. Insulation materials shall be considered an integral component of the roofing system, shall be furnished or approved by the roofing system manufacturer and shall be covered fully by the roofing system warranty.
- 2. PRODUCTS
 - A. Basis-of-Design Product: Subject to compliance with requirements, provide Firestone Building Products or comparable product by one of the following manufacturers. Products by Johns Mannville are excluded.(Revised 10/18/18)
 - 1. SBS-Modified Bituminous Roofing System:
 - a. Siplast Roofing Systems



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- b. Tremco Incorporated
- 2. Polyisocyanurate Board Insulation:
 - a. CertainTeed Corp.
 - b. Atlas Insulation Co.
- 3. Rubber Walkpad Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Roof Gard Pads by Humane Equipment Company.
 - b. Permagard Rubber Roof Protection Pads by Evans Product Company.
- B. SBS-Modified Bitumen Sheets
 - 1. SBS-Modified Bituminous Sheet, Base Surfaced: SBS-modified asphalt sheet, smooth surfaced, dusted with fine parting agent on both sides; suitable for application method specified; manufacturer's standard thickness and weight; for use and of reinforcing type as follows:
 - a. Use: Base ply of 2-ply, modified bituminous membrane roofing.
 - b. Reinforcing: Glass-fiber mesh or non-woven glass-fiber mat.
 - 2. SBS FR-Modified Bituminous Sheet, Mineral Surfaced: SBS-modified asphalt sheet, with continuous layer of mineral granules factory applied to top exposed surface; suitable for application method specified; with physical properties and for use with reinforcing type and granule color as follows:
 - a. Use: Finish ply of 2-ply, modified bituminous membrane roofing and base flashing.
 - b. Reinforcing: Non-woven polyester with glass fiber reinforcing in machine direction.
 - c. Granule Color: White, high albedo.
- C. Auxiliary Membrane Materials
 - 1. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with SBS-modified bituminous roofing.
 - a. Furnish liquid-type auxiliary materials that meet VOC limits of authorities having jurisdiction.
 - 2. Asphalt Primer: ASTM-D-41.
 - 3. Roofing Asphalt: ASTM-D-312, Type-IV.
 - 4. Roofing Asphalt: ASTM-D-312, Type-IV, as recommended by modified bituminous membrane manufacturer.
 - 5. Asphalt Roofing Cement: ASTM-D-4586, SBS modified asbestos free, of consistency required by roofing system manufacturer for application.
 - 6. Mastic Sealant: Polyisobutylene, plain or modified bituminous, non-hardening, nonmigrating, non-skinning, and non-drying.
 - 7. Fasteners: Factory-coated steel fasteners complying with corrosion-resistance provisions of FM-4470; designed for fastening base flashings and acceptable to roofing system manufacturer.
 - Roofing Granules: Ceramic-coated roofing granules, No.-11 screen size with 100 percent passing No.-8 (2.36-mm) sieve and 98 percent of mass retained on No.- 40 (0.425-mm) sieve.
 - a. Color: White.
 - 9. Glass-Fiber Fabric: Woven glass cloth, treated with asphalt; complying with ASTM-D-1668, Type-1.



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- 10. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer for intended use.
- D. Walkways
 - 1. Walkway Pads: Reinforced asphaltic composition pads with slip-resisting mineral-granule surface, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 3/4 inch thick, minimum.
 - a. Pad Size: 36x48 inches
 - 2. Adjustable Pedestal Pavers
 - a. Description: Concrete pavers mounted on adjustable supports.
 - b. Basis-of-design: Hanover Glacier White Precast Paver.
 - Size: Nominal 12 x 12 x 1-1/2.
 - c. Basis-of-design: Hanover Elevator System of adjustable supports
- E. Insulation Materials
 - 1. General: Provide preformed, roofing insulation boards that comply with requirements, selected from manufacturer's standard sizes.
 - a. Provide preformed, tapered insulation boards as needed for sloping to drain. Fabricate with the following taper:
 - 1/4 inch per 12 inches (1:48),
 - As indicated on Drawings.
 - b. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
 - Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation with core formed by using HCFCs as blowing agents complying with ASTM-C-1289-02 with an LTTR R-Value of: 30 and a thickness of 5": classified by facer type as follows:
 a. Facer Type: Type-II, felt or glass-fiber mat on both major surfaces.
- F. Insulation Accessories
 - 1. General: Furnish roofing insulation accessories recommended by roof system manufacturer for intended use and compatible with roofing material.
 - 2. Cover Board: Factory primed, glass-fiber faced gypsum sheathing (Dens-Deck by Georgia-Pacific or approved equal) complying with ASTM-E-136, & E 84, ½ inch thick.
- G. Exclusions (reserved)

3. EXECUTION

- A. Install modified bituminous membrane roofing system according to roofing system manufacturer's written instructions and applicable recommendations of NRCA/ARMA's "Quality Control Recommendations for Polymer Modified Bitumen Roofing."
- B. Install roofing system according to applicable specification plates of NRCA's "The NRCA Roofing and Waterproofing Manual."
- C. All low slope roofing systems shall include insulation. The majority of the insulating value shall be accomplished with the necessary thickness of flat poly-isocyanurate boards. Where necessary, roof slope shall be developed with tapered perlite board. Insulation material installed between the roof deck and the roof ply shall be compatible with the roof ply material and asphalt bitumen binder or other adhesive used in the roofing system. Organic insulation material shall not be used under built-up roofs. In all cases a minimum 1/2" cover board **must** be installed over the Isocyanurate insulation. Perlite and wood fiber are acceptable cover board materials. For new buildings the insulation value of the roof area envelope is to be a



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minimum of R-30 for low-slope roofs. Coordinate with College to determine the actual target R-value. For roof replacements/renovations on older buildings, a lower "R" value will be considered. The first ply of insulation systems over metal decks and wood decks shall be mechanically fastened using steel fasteners acceptable to the manufacturer furnishing guarantee of roofing system. Insulation shall be applied in several layers, with the joints staggered, in accordance with the manufacturer's recommendations. Insulation shall also be installed in accordance with Factory MutualSystem Class 120 wind uplift guidelines.

- D. Flashing is part of the roofing system and shall meet requirements of manufacturer furnishing roofing system. Where roof meets a parapet or adjacent building wall, the base flashing shall extend up the wall at least 8 inches, but generally not more than 14 inches unless necessary to be consistent with existing conditions or design requirements. If flashing height is greater than 14 inches, a 2 piece flashing system may be required. Other than base flashing metal flashing, including expansion joint flashing, shall be in accordance with SMACNA Standards and the NRCA Roofing and Waterproofing Manual and fully covered under the 20 year 'NDL' warranty.
- E. Pitch pockets shall be avoided. Where that is not possible, pitch pockets shall be filled with a pourable urethane sealer. Roof penetrations will be flashed with preformed flexible flashing, using clamps and tents, unless the penetration is such a complex shape that
- F. a pitch pocket is required.
- G. All parapet walls must be covered with a metal coping cap over a "peel and stick" type modified bitumen membrane and any necessary wood blocking/nailers, etc.
- H. Roof drains shall be provided with shallow sumps, gravel stops, and minimum 4.0 pound lead flashing in accordance with the NRCA Roofing and Waterproofing Manual and the International Plumbing Code. Roof drains shall be located at the low points, and crickets must be provided between drains in structurally formed valleys and around any structure impeding the flow of water in the drain field to assure positive water flow to the drains.
- I. Roof drainage patterns should be designed to locate roof drains at the mid-points between columns and beams. Overflow scuppers should be provided through perimeter parapet walls, or overflow relief drains should be provided at roof drain locations, to relieve storm water build-up caused by clogged roof drains.
- J. Splash blocks shall be provided at all ground discharge points from exterior downspouts, or downspouts may discharge directly into a storm drainage systems.

