

SECTION 07500

MODIFIED BITUMINOUS MEMBRANE 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. This Section includes the following:
 - 1. SBS-modified bituminous membrane roofing.
 - 2. Base sheet.
- B. Related Sections include the following:
 - 1. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
- C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Terminology Relating to Roofing and Waterproofing"; glossary of NRCA's "The NRCA Roofing and Waterproofing Manual"; and the Roof Consultants Institute "Glossary of Roofing Terms" for definition of terms related to roofing work in this Section.
- B. Sheet Metal Terminology and Techniques: SMACNA Architectural Sheet Metal Manual.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Jobsite Safety: Execute all operations and provide a safe work environment in accordance to OSHA standards and regulations. This requirement applies to all contractor personnel, associated subcontractors, workers in other trades, and jobsite visitors.
 - 1. Follow all industry fire prevention guidelines for storage of materials, staging areas, roof access, and application means and methods.

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, cants, and membrane terminations.
- C. Samples for Verification: For the following products:
 - 1. Manufacturer's standard sample size of smooth-surfaced roofing membrane sheet & flashing backer sheet.
 - 2. Manufacturer's standard sample size of mineral-granule-surfaced roofing membrane cap sheet and flashing sheet.
 - 3. Manufacturer's standard sample size of base-sheet.
 - 4. Manufacturer's standard sample size of walkway pad or cap sheet walkway.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.
- F. Qualification Data: For Installer and manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- H. Research/Evaluation Reports: For components of roofing system.
- I. Maintenance Data: Refer to Johns Manville's latest published bituminous binder.
- J. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer that has [**UL listing**] [**FMG approval**] for roofing system identical to that used for this Project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain all components from single source roofing manufacturer.
- E. Preinstallation Conference: Conduct conference at Project site. Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with Owner, Architect, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing Review methods and procedures related to roofing installation, including manufacturer's written instructions.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
4. Review structural loading limitations of roof deck during and after roofing.
5. Review base flashings, special roofing details, roof drainage, roof penetrations, and condition of other construction that will affect roofing system.
6. Review temporary protection requirements for roofing system during and after installation.
7. 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, and directions for storage.
- 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 PROJECT CONDITIONS

- A. 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.

1.9 GUARANTEE

- A. Provide manufacturer's system guarantee equal to Johns Manville's Peak Advantage No Dollar Limit Roofing System Guarantee.

1. Single-Source special warranty includes roofing membrane, base flashings, liquid applied flashing, roofing membrane accessories, fasteners, base-sheet, and other single-source components of roofing system marketed by the manufacturer.
 2. Warranty Period: 10 years from date of Substantial Completion.
- B. Installer's Guarantee: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section for the following warranty period:
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Johns Manville Roofing Systems

2.2 APP-MODIFIED ASPHALT-SHEET MATERIALS

- A. Roofing Membrane Sheet: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, APP-modified asphalt sheet; smooth surfaced; suitable for application method specified. Product: App Base sheet
- B. Roofing Membrane Cap Sheet: ASTM D 6163, Grade G, Type I, glass-fiber-reinforced], SBS-modified asphalt sheet; granular surfaced; suitable for application method specified. Product: Appex 4.5m

2.3 BASE FLASHING SHEET MATERIALS

- A. Backer Sheet: ASTM D 4601, Type II, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides. Product: PermaPly 28
- B. Backer Sheet: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, APP-modified asphalt sheet; smooth surfaced; suitable for application method specified. Product: App base sheet
- C. Flashing Sheet: [ASTM D 6164, Grade G, Type II, polyester-reinforced] [ASTM D 6163, Grade G, Type I, glass-fiber-reinforced] [ASTM D 6298, embossed aluminum foil surfaced, glass-fiber-reinforced], SBS-modified asphalt sheet; granular surfaced; suitable for application method specified. Product: Appex 4.5m
- D. Liquid Applied Flashing: A liquid and fabric reinforced flashing system created with a stitchbonded polyester scrim and a two-component, moisture cured, elastomeric, liquid applied flashing material, consisting of an asphalt extended urethane base material and an activator. Product: PermaFlash System

2.4 AUXILIARY ROOFING MEMBRANE MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
- B. Mastic Sealant: As required by Johns Manville.

- C. Fasteners: Factory-coated steel fasteners, designed for fastening roofing membrane components to substrate, Retain subparagraph below if expansion joints are required.
- D. Metal Flashing Sheet: Metal flashing sheet is specified in Division 07 Section "Sheet Metal Flashing and Trim."
- E. Roofing Granules: Ceramic-coated roofing granules matching specified cap sheet, provided by roofing system manufacturer.
- F. Miscellaneous Accessories: Provide all miscellaneous accessories recommended by roofing system manufacturer.

2.5 BASE-SHEET MATERIALS

- A. Base-Sheet: ASTM D 4601, Type II, UL Class G2 rated, nonperforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides. Product: PermaPly 28
- B. Base-Sheet Fasteners: As recommended by roofing Manufacture for wood decks.

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 set and braced and that roof drains are securely clamped in place.
 2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 3. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
 4. Verify that concrete substrate is visibly dry and free of moisture according to manufacturer's approved method.
 5. Verify that lightweight concrete has ability to provide minimum base sheet fastener pull-out resistance.
 - a Provide documentation of pull out resistance values using manufacturer's approved procedures.
 6. Ensure general rigidity and proper slope for drainage.
- 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. Retain paragraph below if priming concrete deck before installing overlying roofing system.

3.3 BASE-SHEET INSTALLATION

- A. Install one lapped base sheet course and mechanically fasten to substrate according to roofing system manufacturer's written instructions.
 - 1. Enhance fastening rate in perimeter and corner zones according to code or manufacturer, whichever is more stringent.

3.4 ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing system specification 3CNN-W according to roofing system manufacturer's written instructions, applicable recommendations of Johns Manville "Bituminous Roofing Binder", and requirements in this Section.
- B. Where roof slope exceeds 1/2 inch per 12 inches (1:24, contact the membrane manufacturer for installation instructions regarding installation direction and backnailing
- C. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.5 APP-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 - 1. Torch apply to base sheet.
 - 2. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
 - 2. Apply roofing granules to cover exuded bead at laps while bead is hot.
- C. Install roofing membrane sheets so side and end laps shed water.

3.6 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:
 - 1. Backer Sheet Application: Mechanically fasten backer sheet to walls or parapets. Adhere backer sheet over roofing membrane at cants in cold-applied adhesive.
 - 2. Backer Sheet Application: Install backer sheet and adhere to substrate using torch application.
 - 3. Flashing Sheet Application: Torch apply flashing sheet to substrate.
- B. Extend base flashing up walls or parapets a minimum of 8 inches (200 mm) above roofing membrane and 4 inches (100 mm) onto field of roofing membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1. Seal top termination of base flashing with a strip of glass-fiber fabric set in MBR Flashing cement.
 - 2. Install stripping according to roofing system manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 - 1. Notify Architect or Owner 24 hours in advance of date and time of inspection.
- B. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

END OF SECTION 07500