

07500 FLEXIBLE (EPDM) SHEET ROOFING SYSTEMS

1 GENERAL

1.1 Description

- A. Extent of flexible sheet roofing is shown on drawings and is hereby defined to include non-traffic-bearing sheet membrane system intended for weather exposure as primary roofing.
- B. Contractor shall provide and install all nailers, wood grounds, insulation, membrane, flashings, sealants, adhesives, solvents, cleaning materials, protection boards, vapor barriers, etc., as required to make a complete system.
- C. Types of flexible sheet roofing specified in this section include a fully adhered EPDM elastomeric sheet colored black.
- D. Roof insulation below flexible sheet roofing is specified in this section.
- E. Roof slopes are: toll booths 1/2" per foot, and at the canopy 1/4" per foot.

1.2 Quality Assurance

- A. Manufacturer: Obtain primary flexible sheet roofing from a single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.
- B. Installer: A firm with not less than 3 years of successful experience in installation of roofing systems similar to those required for this project and which is acceptable to or licensed by manufacturer of primary roofing materials.
- C. FM Listing: Provide labeled materials which have been tested and listed by FM for a Class I-90 wind uplift resistance rating.
- D. Foam insulations shall be acceptable to the Ohio Department of Industrial Relations, Division of Factory and Building Inspections. Thermal barriers and protection boards shall be provided as required by applicable codes and as recommended by manufacturer of roof system. Foam plastic insulation in roof system shall meet FM 4450 or UL 1256 (each piece shall be labeled).

1.3 Submittals

- A. Product Data: Submit specifications, installation instructions and general recommendations from manufacturers of flexible sheet roofing system materials for types of roofing required. Include data substantiating that materials comply with requirements.
- B. Shop Drawings: Submit complete shop drawings showing roof configuration, sheet layout, insulation layout, details at perimeter, all penetrations, including roof drains and special conditions.
- C. Submittals for this section shall be delivered to the Architect/ Engineer as one complete package including all materials specified under this Section.

1.4 Job Conditions

- A. Weather: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

1.5 Special Project Warranty

- A. A representative of the manufacturer shall inspect the installation of the roofing system. Upon approval a 15 year watertight and material warranty shall be issued by the manufacturer. The warranty period shall commence on the date of occupancy. Warranty shall provide for full repair or replacement, including labor and materials, at no additional cost to the Owner.

2. PRODUCTS

2.1 Materials

A. General:

- 1. Performance: Provide roofing materials recognized to be of type indicated and tested to show compliance with indicated performances, or provide other similar materials certified in writing to be equal or better than specified in every significant respect and acceptable to Architect/Engineer.
- 2. Compatibility: Provide products which are recommended by manufacturers to be fully compatible with indicated substrate or provide separation materials as required to eliminate contact between incompatible materials. Wood nailer, blockings and grounds used in the roof system shall be pressure treated for resistance to rot and insects with treatment system acceptable to roofing and insulation manufacturers.

B. Adhered EPDM Flexible Sheet Roofing System:

- 1. Elastomeric sheet material, manufacturer's standard thickness but not less than 60 mil., Shore A hardness of 60-80, 1300 psi minimum tensile strength, 300 percent elongation, permeability 2.0 maximum, ultraviolet and ozone resistant, low temperature brittleness of -40 degrees F. (-40 degrees C).
- 2. Products offered by manufacturers to comply with requirements include the following:
 - a. Design A fully adhered roofing systems, Carlisle Tire & Rubber Company.
 - b. Fully Adhered System, Versico Company.
 - c. Rubbergard Fully Adhered Roofing System, Firestone Building Products Company.
- 3. Sheet Seaming System: Manufacturer's standard materials for adhering of lapped joints to create seams of strength equal to sheet strength, and including splicing tape, edge sealer to cover exposed sheet edges and eliminate loose edges and fish mouths.

4. Flashing and Accessories: Types supplied or recommended by manufacturer of flexible sheet roofing material, provide at locations indicated and at locations recommended by manufacturer, and including adhesive tapes, membrane flashings, flashing cements and sealants.

C. Insulation:

1. General: Thicknesses shown are for thermal conductivity (k-value at 75 degrees F.) specified for each material, provide adjusted thicknesses as directed for equivalent use of material having different thermal conductivity; provide appropriate thickness of material when thermal resistance ("R" values) are shown.
2. Isocyanurate Board Insulation. Rigid insulation boards complying with F.S. HH-I- 530 or HH-I-1972, 20 psi minimum compressive strength, 1.0 percent maximum water absorption. Thermal conductivity (k-value at 75 degrees F.) of 0.14, manufacturers standard sheet size. Insulation shall be part of roof system with fiberglass or other facing material approved by roof membrane manufacturer for adhered installation complying with FM I-90 rating. Insulation shall be minimum 2 inches thick with tapered units to construct slopes as shown on the drawings.
3. Crickets shall be formed with isocyanurate, wood fiber or other insulation acceptable to the roof membrane manufacturer to the slopes shown on the drawings. Roof slopes are: Utility Building - 1/4-inch per foot; Toll Booths - 1/2-inch per foot; and Canopy - 1/4-inch per foot.

D. Fasteners:

1. Fasteners for insulation, blocking, nailers, etc. shall be of type, size, quantity and frequency as recommended by the roofing manufacturer for each application. Fasteners shall be used in decks to install insulation. Mechanical fasteners for insulation shall have a cap and length required to give sufficient holding power, all in accordance with requirements and spacing pattern of Factory Mutual requirements. Fasteners shall be the shortest length required to give sufficient holding power. Extra long fasteners will not be acceptable.

E. Adhesive:

1. As required and in compliance with the primary roofing system manufacturer.

F. Flashings:

1. Penetrations through roof membrane shall be in accordance with roofing manufacturers standard details for the type of penetration involved.

3. EXECUTION

3.1 inspection

- A. Installer of flexible sheet roofing system must examine substrate and conditions under which roofing work is to be performed and must notify Contractor in writing of

unsatisfactory conditions. Do not proceed with roofing work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 Preparation

- A. General: Comply with manufacturer's instructions for preparation of substrate to receive flexible sheet roofing system.
- B. Clean substrate of dust, debris, and other substances detrimental to flexible sheet roofing system work. Remove any sharp projections.
- C. Install nailers, blocking, cant strips, flashings, and similar accessory items as shown, and as recommended by manufacturer even though not shown.
- D. Prime substrate where recommended by manufacturer of materials being installed.
- E. Prevent compounds from entering and clogging drains and conductors, and from spilling or migrating onto surfaces of other work.

3.3 Installation

- A. General: Comply with manufacturers' instructions, except where more stringent requirements are indicated.
- B. Insulation Installation: Extend insulation over entire surface to be insulated, cutting and fitting tightly around obstructions. Form cant strips, crickets, saddles, and tapered areas with additional material as shown and as required for proper drainage of membrane. The insulation shall be mechanically fastened to the steel roof deck, as per manufacturer's requirements. Insulate sump pans, drain plates, horizontal and vertical piping, etc. to prevent condensation occurrence.
 - 1. Do not install more insulation each day than can be covered with membrane before end of day and/or before start of inclement weather.
 - 2. Set insulation units on substrate and fasten immediately. Limit joints between adjacent units to 1/4" maximum.
- C. Flexible Sheet Roofing Membrane Installation: Cut sheets to maximum size possible, in order to minimize seams and to accommodate contours of roof deck and proper drainage across shingled laps of sheets. Install membrane by unrolling over prepared substrate and allow to relax for a minimum of 30 minutes. Lap adjoining sheets at a minimum of 3". Bond to roof deck or insulation with adhesive as recommended by manufacturer. Install flashings and counterflashings as shown and as recommended by manufacturer.
- D. Flashing/Gravel Stops:
 - 1. Deck membrane shall be installed over a perimeter wood nailer to the outside face of the building. Membrane must extend below and be secured to the wood nailer.
 - 2. Gravel stop shall be installed and secured through the membrane as recommended by the gravel stop manufacturer and according to installation

detail. Securement provided shall prevent buckling and prohibit the metal gravel stop from pulling free.

- E. Flashing - Walls, Parapets, Mechanical Equipment Curbs, Roof Penetrations, Skylights, etc.: Use the longest pieces of material which are practicable. All flashings and terminations shall be done in accordance with the applicable membrane manufacturer's details and the details on the drawings.
- F. At all exhaust fans, fuel tank vent pipes, and similar installations provide additional protection to prevent deterioration of membrane by fumes or discharges. Submit details of protective devices which are acceptable to manufacturer of membrane system.
- G. Areas of roof membrane, insulation, or other material damaged by adhesives, solvents, sealants, or other materials used in the roof assembly should be replaced by the Contractor to the satisfaction of the Architect/Engineer at no cost to the Owner.
- H. At completion, all scraps, foreign objects, "left over" fasteners, etc. shall be removed and the membrane cleaned of soil from construction traffic.

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