

## **DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

### **07 50 00 – MEMBRANE ROOFING**

#### **Introduction**

Systems described under this Section are not intended to receive regular foot traffic. Occasional traffic for maintenance of equipment is acceptable.

Specify a complete roofing system, making the materials manufacturer responsible for the roofing and flashing system. Require the materials manufacturer to make periodic inspections of the work in progress to ensure that the completed work will qualify for the required warranties.

CNM requires thermoplastic-polyolefin (TPO) roofing. Use of other roofing systems must receive specific permission from the CNM Project Manager.

This is a section where the designer should use a "performance specification" or a "basis-of-design specification." Restrict manufacturers to Carlisle SynTec Incorporated, Firestone Building Products, GAF, or Johns Manville; a Berkshire Hathaway company. Companies subsidiary to, or wholly owned by, the named manufacturers are not allowed.

Coordinate specification requirements with roofing, flashing, and parapet wall details.

#### **Part 1 - General**

- A. Require that materials manufacturer(s) and installer(s) demonstrate 5 years of successful installations of similar systems.
- B. Require submittal of manufacturer's literature describing the system, and samples of proposed membrane materials.
- C. Require a pre-installation conference, scheduled after the substrates are complete, and including the Contractor, Architect, Owner, materials manufacturer, and installing subcontractor(s).
- D. Take care in the selection of tapered rooftop insulation and cover board to insure a durable roof surface that will hold up to maintenance activities for the life of the roof and will not compress over time under various loads. Lightweight insulating concrete can also be considered if project conditions and budget dictate.
- E. Membrane roofing is a finish material, not a staging platform for further construction work. Include the following provisions:
  - 1. Require the Contractor to install a "temporary roof" if he desires to "dry-in" the building to allow interior construction to begin or to provide a platform for further exterior construction.
  - 2. Describe this requirement as a "Contractor's Option", that is, if he wants to dry-in, he must do so only with a temporary roof.
  - 3. Reference the National Roofing Contractor's Association (NRCA) requirements for temporary roofs, including "sacrificial" insulation on metal decks.
  - 4. Specifically prohibit "phased roofing".
  - 5. Require that finished roofs be protected with plywood sheets for any and all construction traffic, and that all equipment moving be accomplished with rollers.

G. Specify expanded warranties as follows:

1. 5-year warranty from the installer covering defects in installation.
2. 20-year warranty from the materials manufacturer including defects in materials and installation, and guaranteeing to maintain the system in a waterproof condition for the life of the warranty.
3. Full replacement value without proration, no dollar limit.
4. Include all components of the roof assembly, from the deck up, total system.
5. Include insulation.
6. Include sealing of all perimeters, joints, and penetrations.
7. Both warranties shall be furnished on the CNM Special Warranty Form. Any reference to maximum wind speed on the warranty shall not supersede the requirement to provide a UL Class 90 uplift rating.

H. Provide Roof Maintenance Program for the duration of the specified Complete System Roof Warranty. Maintenance Program to include the following services:

1. Contractor will perform visual roof inspections during the warranty period
  - a. A detailed inspection every spring and every fall and after any severe weather event or other observed issue.
2. Contractor will provide photographic and written documentation of the roof conditions after completion of installation and after every inspection.
3. Contractor will provide quotes for recommended work if warranty period is over.
4. Contractor will repair all issues that are due to faulty installation and other deficient conditions if under the warranty period.
5. During the warranty period, the contractor will provide routine maintenance as needed.

I. Energy efficient roof design using ENERGY STAR Rated products should be used on roofs.

J. Minimum flashing height requirements are 8" for all mechanical, skylights, wall flashings or any other item that extends above the roof line. This is a minimum flashing height, windows or other such items should be well above 8" above the roof line.

K. All metal associated with the roof should be 24-gauge minimum, color clad, using standing seam joints where possible. Follow SMACNA guidelines for all metal work. All cap and edge metal should utilize a continuous clip on the outside edge.

L. Only Fully Adhered Systems should be used. No ballasted systems will be allowed on single ply roof systems.

M. Pre-manufactured accessories are required for all pipe flashings, inside and outside corners and any other location pre-manufactured accessories are available.

N. Where manufacturer's standards show one or more possible approach for compliance to the standard, provide the most stringent approach.

O. Eliminate conflict between roof penetrations. Provide 18" separation for access in installing roofing components.

P. Minimize penetrations (i.e. pipe penetrations) as much as possible.

Q. Single membrane roofs shall be fully adhered to a coverboard such as glass-mat, waterproof gypsum board. Direct adhesive attachment to faced or un-faced rigid insulation is prohibited.

- R. Provide roofs with flexible walkway rolls for access to equipment.
  - 1. Walkways shall be compatible with the roof system.
  - 2. No concrete walkway pads are allowed on roof system

**Part 2- Products**

- A. Require that all primary and secondary materials be supplied by a single manufacturer, or approved by the primary materials manufacturer, to ensure single-point responsibility for the installation and warranty.
- B. Thermoplastic-Polyolefin (TPO) Roofing
  - 1. 10-year minimum performance history on membrane.
  - 2. Membrane must be manufactured with low-wicking scrim.
  - 3. Only balanced sheets will be acceptable. Scrim must be in center of membrane with no less than 20 mils polymer above scrim.
  - 4. 60 mil (57mil minimum) polymer thickness not over all thickness.
  - 5. Membrane must be Energy Star Rated, meet or exceed current LEED required Solar Reflective Index (SRI) requirements..
- C. Other System Requirements
  - 1. The CNM Project Manager should review and approve any hybrid, non-typical roofing system.
  - 2. Metal sign with vinyl lettering to be provided on all Roofing Systems containing the following information and similar format:

<b>CAUTION</b>	
<p>This roof is under warranty until (insert year) with (insert manufacturer). All access is to be restricted without facilities manager's permission &amp; log entry. Repair work if necessary should be performed only by an authorized applicator. For leak repairs, contact (insert manufacturer) @ (insert manufacturer warranty claim department phone number) and provide them with warranty number. Questions regarding this roof or any potential work pertaining to this roof, please contact CNM @ xxx-xxx-xxxx.</p>	
Warranty #:	Roofing Contractor:
Warranty Type:	Contractor Telephone #:
Installation Date:	Contractor Address:
Manufacturer's Address:	Roof Membrane Type:

These signs are to be installed next to all roof access points inside a building as permit able, preferably next to the roof hatch ladder. Signs are to have rounded corners and with no sharp protrusions or edges. Signs are to be a minimum thickness of 20 gauge or greater, and no larger than 10" X 14" landscape setting.

**Part 3- Execution**

- A. Specifically require the roof to be installed in accordance with the manufacturer's recommendations.
- B. Polyisocyanurate board insulation: Mechanically attached, installed in minimum 2 layers with joints staggered in both directions.
- C. Refer to and describe the appropriate SMCNA details for each edge and penetration condition.

- D. Require the roofing installer to receive, accept, and install, all sheet metal flashings.
- E. Specifically prohibit:
  - 1. Pitch pans and sealant pockets.
  - 2. Guy wires fastened directly to the deck
- F. Specify (or detail) 3/4" plywood nailers at all parapet walls.
- G. Require a flood test after completion of the roofing system, to be witnessed by the Contractor, Architect, Owner, materials manufacturer, and installing contractor(s).

**End of Section 07 50 00**