

ROOFING STANDARD

In general, follow the guidelines below when designing and specifying roofing systems at Central Michigan University. All systems and materials designed for projects shall be in accordance with manufacturer recommendations and adhere to best practices in the NRCA Roofing and Waterproofing and SMACNA Architectural Sheet Metal Manuals. All roof systems shall be proven installations in the field with compatible material components.

07 5000 – Built-Up Roofing

2.1 Manufacturer

Tremco

2.2 Materials

- A. **Basis of Design:** BURmastic 200 – three (3) ply cold process reinforced built up roof system with aggregate surfacing.
- B. Flashings
 - a. TRA base flashings shall extend a minimum of six inches onto the roof from the edge of the cant strip, eight inches minimum above cant strip and the surface of the roof.
 - b. Exposed flashings shall be surfaced with a high build reflective coating, one uniform application applied at a minimum of 32-wet mils. .
 - c. Leading edges of base flashings sealed with a three course fiberglass reinforcement embedded using uniform courses of elastomeric mastic.
 - d. Vertical end laps shall be overlapped a minimum of four inches and sealed with a three course fiberglass reinforcement embedded using uniform courses of elastomeric mastic.
- C. Termination bars to be 1 x 3/16 aluminum with pre-punched mounting holes.
- D. Counter flashings shall consist of 24-gauge fluoropolymer coated galvanized steel and fabricated so as to extend beyond termination bar a minimum of two (2) inches. Sheet-metal shall be secured 8” on-center. Non-curing water block sealant course shall be used behind all (surface-mount) counter flashings with a separate course of polyurethane sealant course applied to the top edge of the sheet-metal.
- E. Aggregate – 3/8 – 5/8 double washed free of loam, sand and debris.
- F. Insulated metal deck systems shall be FM 4450 approved.
- G. Roofing, base flashings, and component materials shall comply with requirements in UL790 and FM Global 4470 as part of the specified roof system.
- H. Fire/windstorm classification – 1A-90
- I. Hail resistance rating - SH.

2.3 Quality Assurance

- A. Manufacturer shall furnish a trained inspector competent in all aspects of specified roofing to monitor project installation. Site inspection shall consist of full time inspection per day of system installation. Each inspection requires a written field report with daily digital photos (12 minimum) showing roof system installation.
- B. Project close out manual (hard copy and electronic) shall be supplied by manufacturer’s representative complete with final roof system makeup, specifications, addendums, project daily inspection forms, photos, change orders, RFIs, final manufacturer warranty inspection form and final issued roof system project warranty, including one
- C. Manufacturer shall provide compatibility confirmation letter that all proposed roofing products including insulation, sealants and mastics are acceptable as specified for the roof system.

2.4 Warranty

- A. The manufacturer shall provide a 20 year warranty for all new building construction roof sections and 15 year warranty for existing building roof sections that are replaced or restored.

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- a. Manufacturer to provide a proactive maintenance process as part of warranty that includes inspection and repair of systems defects at years 2, 5, 10 and 15 for new construction roof system sections, and at years 2, 5 and 10 for existing roof sections with a 15 year warranty. Repairs to include tears, splits, breaks in membrane or flashings, exposed fasteners or sealant voids at termination bars, counterflashing sealants, metal projections, hoods or clamp sealants and general housekeeping including drain cleaning.
- b. Warranty to be supplied for the entire roof system by one sole manufacturer.

2.5 Roof Accessories

- A. Walkway pads – provide protection with asbestos free reinforced fiberglass walk pads, non-skid surface, set into adhesive applicable to roof system and warranted by manufacturer of roof system. Provide path from roof access points up to and around all roof mounted equipment requiring maintenance.
- B. All equipment shall be placed on curbing, no wood sleepers. Preference is not to use open ended curbing if possible.
- C. Roof hatches and railing
 - a. Bilco Type S or E for ladder access, Type NB for ship stair, Type L for service stair
 - b. Bil-Guard 2.0 roof hatch railing – yellow
 - c. Hatch to be mounted a minimum of 12 inches above roof.
- D. Roof drains, domes and sumps including overflow shall be cast iron, no plastic.

07 6000 – Standing Seam Metal Roofing

2 Products

2.1 Manufacturer

Peterson Aluminum

2.2 Materials

- A. **Basis of Design:** Tite-Loc Plus Panel, Mechanically Seamed System, 24 gauge with 2" rib height, roof panel width shall be 16". Metal roof deck panel assemblies shall be UL 580 Class 90 rated. Panels are to be factory roll-formed in full lengths from ridge to eaves.
- B. Fire/Windstorm classification – Class 1A-90 with hail resistance rating - SH.
- C. Color shall be Sierra Tan (Tan) for all campus buildings exception Residence Halls, color could be maroon.
- D. Panels and Sheet:
 - a. Panels shall be fabricated in full lengths from ridge to eave without end laps. Panels shall be 16" wide with concealed anchors that resist wind uplift yet permit expansion and contraction with temperature changes. Standing ribs shall have a continuous groove capillary break. Ribs shall be securely locked over anchor clips with a field operated roll-forming tool. Individual panels shall be removable for replacement of damaged material.
- E. Flashing and soffits shall be same material type and finish as the roof panel, but the temper may be reduced to facilitate forming.
- F. Finish shall be factory baked-on two-coat Kynar coating with a dry film thickness of 0.8 mil exclusive of the primer.
- G. Gutters to be of industrial type, thickness, finish and color to match roof panels.
- H. **Basis of Design:** Metal-Era, Seal tite industrial gutters. All miters to be factory fabricated.

2.2 Warranty

- A. The manufacturer shall provide a 20 year warranty for new construction
- B. Warranty shall be from a single manufacturer covering the entire roof system.

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2.3 Accessory Items

- A. Snow Retention System:
 - a. **Basis of Design:** S-5 DualGard - Provide one inch diameter, two-pipe snow retention system.
 - b. Material and finish: Stainless steel or factory Kynar to match roof panels.
 - c. Attachment:
 - i. Do not use fasteners that will penetrate metal roofing, or fastening methods that void metal roofing finish warranty.
 - ii. Seam-mounted, Rail-type Snow Guards: Stainless-steel or Kynar clamps attached to vertical ribs of standing-seam metal roof panels.
- B. Roof Ice Melt System:
 - a. Pentair RIM-E (Roof Ice Melt-Eave) Panel System
 - b. Pentair RIM-V (Roof Ice Melt-Valley) Panel System
 - c. Pentair RIM-S (Roof Ice Melt-Snow melt) Panel System
 - d. Pentair RIM-R (Roof Ice Melt-Rake) Panel System
 - e. Pentair Raychem Ice Stop, Gutter De-Icing Heat Trace for gutters and downspout applications. Trace to be installed below grade with a 36 inch length of cable.

2.4 Additional information

- A. Skylights are not acceptable.
- B. Ballasted, IRMA and single ply EPDM roof systems are not acceptable.
- C. Access hatches shall not be located within restrooms, offices or janitor closets.
- D. Determine if maintenance electrical outlet is required to maintain roof top equipment.
- E. Determine if freeze proof hose bib is required to maintain roof top equipment.
- F. All mechanical equipment shall be on roof curbs, no wood sleepers.
- G. Roof fall protection, anchors and tie-off points shall be provided on new construction if roof parapet walls are not 42 inches in height above roof line.
- H. Stainless steel flashing standard is required at all parapet wall coping installations.
- I. Exterior access ladders are required from one roof elevation change to another.
- J. No roofs shall drain or shed snow over entry points if at all possible.
- K. Buildings to be designed to minimize roof penetrations.
- L. New roofing systems to incorporate positive drainage via roof deck or other means to eliminate standing water within 24 hours of event including backside of equipment near walls, provide necessary tapered solutions and crickets between drains and or in valleys. Slope to drain should be unobstructed.
- M. Vapor retarder shall be included if design dew point calculations warrant and if required to meet roofing manufacturer's roof system design requirements.
- N. Insulation shall consist of a multi-course design and shall incorporate a moisture resistant gypsum or gypsum-fiber coverboard adhered in adhesive. Mechanically attached insulation fasteners are not acceptable for placement directly beneath installed roofing/waterproofing membranes.
- O. Require protective measures for areas of existing roof used for construction access or work, minimum $\frac{3}{4}$ inch plywood tied together over 2 inch ISO insulation board.
- P. Require filter fabric over roof drains during daily demolition activity and removed at the end of each day.
- Q. All roof work shall be watertight and weatherproof on a daily basis before contractor leaves the project site.
- R. Maintain minimum of 36 inches clear between mechanical units and adjacent structures for future replacement and or roofing repairs.

DOCUMENT CONTROL PAGE:

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