

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 and Michigan Building Code. All roof systems shall be proven installations in the field with compatible material components.

07 5000 – Roofing System

2.1 Manufacturer

- A. Basis of Design shall be Carlisle Syntec Roof System

2.2 Materials

- A. **Basis of Design:** Sure-Flex KEE HP 60-mil thick white reinforced membrane including roof system flashings and insulation (tapered if required) in accordance with manufacturer's most current specifications and details.
- B. Flashings
- C. 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.
- D. Insulated metal deck systems shall be FM 4450 approved.
- E. Roofing, base flashings, and component materials shall comply with requirements in UL790 and FM Global 4470 as part of the specified roof system.
- F. Wind uplift classification – ASCE 7, UL580 Class 90
- G. Impact resistance rating – Material to meet UL 2218 Class 4.
- H. Fire Classification – UL-1A

2.3 Quality Assurance

- A. Manufacturer shall furnish a trained inspector competent in all aspects of specified roofing to monitor project installation at agreed upon milestones of the project as coordinated by Construction Manager. Daily site inspection by Construction Manager shall consist of a daily report monitoring system installation. Each report requires a written field report with daily digital photos (6-12 minimum) showing roof system installation process.
- B. Project close out manual (hard copy and electronic) from construction management team shall be reviewed by manufacturer's representative prior to sending to Owner and shall include final roof system construction writeup, final specifications including any field changes or addendums, daily reports, manufacturer inspection forms or reports, photos, and include final manufacturer warranty inspection form and final issued roof system project warranty. Electronic format required.
- 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 minimum of 20 year warranty for all new building construction roof sections and minimum of 20 year warranty for existing building roof sections that are replaced or restored.

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- a. Warranty to be supplied for the entire roof system by one sole manufacturer.

2.5 Roof Accessories

- A. Walkway roll – Carlisle Sure-Flex PVC
 - a. 36 inch x 60 foot rolls
 - b. 80 mil minimum
 - c. Field layout locations with CMU FM carpentry shop and project manager prior to installation.
 - d. Color to be grey
- B. All equipment shall be placed on curbing, no wood sleepers. Avoid open ended curbing.
- C. Roof hatches and railing – on existing buildings, to be field reviewed on an individual basis.
 - 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 minimum 20 year warranty for new or replacement 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, minimum height per current code
- 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 new parapet wall coping installations.
- E. All main roof areas shall be accessible thru building via hatch from below or door from penthouse, other secondary roof areas will be accessible from main roof by way of fixed ladder from one elevation to another.
- I.
- J. Avoid shedding water or snow from roofs over entry points or sidewalks that closely parallel the exterior of the building.
- K. Minimize roof penetrations on new building designs.
- 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. Existing roof replacement projects to incorporate the same criteria and add tapered insulation strategies to create positive drainage to drain locations.
- M. Vapor retarder shall be included if new building design dew point calculations warrant and if existing roof replacement projects require it to meet roofing manufacturer's roof system design requirements.
- N. 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.
- O. Require filter fabric over roof drains during daily demolition activity and removed at the end of each day.
- P. All roof work shall be watertight and weatherproof on a daily basis before contractor leaves the project site.
- Q. 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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