

07 40 00 Roofing and Siding Panels

Revision 01/04/19

Purpose:

The Architect and/or Engineer shall incorporate the Rice specific requirements indicated in this standard's section into their design. The Architect and/or Engineer shall further produce project specifications in line with industry standards that are updated to reflect these Rice specific requirements.

1. General Requirements

- a. Architect to coordinate with Rice Project Manager to determine if roofing or siding mock-ups are required. See section 01 45 00 Field Constructed Mock-Ups for more information.
- b. Wood siding or wood shakes are not permitted.
- c. Clay Roof Tiles:
 1. All clay roof tiles must be either Spanish (1-Piece, S-design) or Straight-Barrel Mission tiles. All clay roof tiles must be manufactured by Ludowici, or otherwise approved by Rice.
 - a. Tile shall be vitrified, with less than 3 percent moisture absorption when tested in accordance with ASTM C 67.
 - b. Tile must meet Grade 1 freeze/thaw requirements when tested in accordance with ASTM C 1167.
 2. Installer must have a minimum of 5 years of experience in the installation of tile roofs.
 3. Every individual clay roof tile must be secured to the underlying roof deck, or to wood stringers (Spanish tile: minimum of 2 nails per tile; Mission tile: 1 nail per tile). Drive fastener into each hole that is provided in the pan portion of each tile.
 - a. All tile fasteners must be minimum 11 gauge, 5/16-inch diameter head, stainless steel, ring shank nails, 1-inch minimum length. Minimum pull-out strength shall be 40 pounds per nail. Do not over-drive nails.
 - b. Treated wood sleeper supports shall be placed under tile in areas where roof mounted equipment will be placed that require periodic access.
 4. Hurricane clips must be used on all tile roofing systems.
 - a. Each individual Spanish tile must be secured with a stainless steel "Wind Lock Nose Clip" and a "Storm Lock Side Clip".
 - i. Fasten the butt edge of the cover portion of the tile with 1 Wind Lock Nose Clip.
 - ii. Fasten the side edge of the pan portion of the tile with 1 Storm Lock Side Clip. Fasten side clip to plywood deck with specified ring shank nails.

- b. Every individual Mission tile must be secured with a stainless steel “Wind Lock Nose Clip”. Fasten the butt edge of each Mission tile to the underlying wood stringer with 1 Wind Lock Nose Clip.
- 5. All hip roll and ridge tiles must be set in continuous mortar setting bed.
 - a. Provide Type M Portland Cement mortar complying with ASTM C 270 proportion specifications.
 - b. Use potable mixing water, latex mortar additive, and pigmented mortar to match the tile color. Pre-packaged mortar is not acceptable.
 - i. Latex Mortar Additive: latex mortar admixture and bonding agent.
 - c. All ridge and hip tiles must also be secured to underlying wood stringers with stainless steel ring shank nails.
- 6. At all roof eave conditions, adhere the first (bottom) 5 rows of tile to the roofing underlayment with expanding polyurethane foam roof tile adhesive.
 - a. Back-bed the pan portion of each tile into the roof tile adhesive.
 - b. In addition, nail the tiles through the roof membrane underlayment, directly to the underlying structural roof deck.
 - c. Also adhere ridge and hip tile head laps with roof tile adhesive.
- 7. Roofing Underlayment for Clay Tile Roofs:
 - a. Roofing underlayment shall consist of a mechanically fastened fiberglass base sheet and 2-ply modified bitumen membrane roof system.
 - i. Torch-Application: 160 mil thick, Granule-Surfaced APP Cap Sheet installed over 146 mil thick, Smooth-Surfaced Base Ply
 - or
 - ii. Self-Adhered Membrane: 150 mil thick, Granule-Surfaced, SBS, Fiber Glass-Reinforced Cap Sheet installed over 70 mil thick, Smooth-Surfaced, SBS, Fiber Glass-Reinforced Base Sheet
 - b. Install wood stringers after the roofing underlayment is installed. Enwrap all wood stringers with smooth-surfaced, self-adhered modified bitumen membrane.
- 8. Provide sheet metal flashings fabricated from the following materials and installed per Section 07 60 00; the latest edition of the SMACNA “Architectural Sheet Metal Manual”; CDA A4050 “Copper In Architecture – Handbook”; and Revere Copper Products “Copper and Common Sense, 8th Edition”.
 - a. Copper Sheet: ASTM B370, cold rolled (temper H00) unless temper 060 is required for forming; 2402/SF unless otherwise required.
 - b. Eaves closures: clay (not metal) bird stops.
 - c. Mortar: Use Portland cement mortar and natural or synthetic iron oxides and chroming oxides to color match selected roof tiles.

d. Metal Roofing:

1. Preformed Copper Metal Roof Panels: 99.9% pure copper, CDA 110, ASTM B370 cold-rolled Temper Standard Designation H00, weighing not less than 20 oz. per square foot.
 - a. Panels to be roll formed in continuous lengths to the greatest extent possible to handle expansion and minimize transverse seams.
 - b. Standing-seams to be minimum 1-inch high double-lock seams.
 - c. Provisions of Thermal Movement: Fabricate and install metal roofing systems to provide for expansion and contraction of component materials without buckling, oil-canning, hole elongation, fastener failure, or excess stress loading situations developing at any time during temperature cycle.
 - d. Concealed Clips/Cleats: minimum 20 oz. copper or 0.018 stainless steel, expansion type, floating clips, as required. Cleats shall be designed to prevent hook unwind.
 - i. Fasteners for concealed clips must be stainless steel screws – nails are not acceptable.
 - ii. All other fasteners in contact with copper shall be copper, brass, or series 300 stainless steel.
 - iii. Design and install concealed clips to resist rotation and to avoid shear stress when roofing material expands and contracts.
2. Prefinished Galvanized Metal Roof Panels:
 - a. Minimum 24 gauge galvanized metal standing seam roof panels with high floating clips.
 - i. Panel Finish: "Galvalume" with fluorocarbon coating.
 - ii. Fasteners for concealed clips must be stainless steel screws – nails are not acceptable.
 - b. Manufacturer's Warranty: "No Dollar Limit" guarantee against defective materials and labor for a period of 20 years. Include roofing manufacturer's guarantee that the roof will withstand code-required wind speed.
3. Roofing Underlayment for Metal Roofs:
 - a. Roofing underlayment shall consist of a mechanically fastened fiberglass base sheet, 2-ply modified bitumen roof membrane (cap sheet and base ply), and a "slip-sheet" consisting of No. 6 red rosin paper.
 - b. Acceptable 2-Ply Modified Bitumen Membrane Roof Systems:
 - i. Torch-Application: 160 mil thick, Granule-Surfaced APP Cap Sheet installed over 146 mil thick, Smooth-Surfaced Base Ply
or
 - ii. Self-Adhered Membrane: 150 mil thick, Granule-Surfaced, SBS, Fiber Glass-Reinforced Cap Sheet installed over 70 mil thick, Smooth-Surfaced, SBS, Fiber Glass-Reinforced Base Sheet