

Metal Roof Panels – (07 41 13)

1. All applicable parts of the General Roofing Specification (section 07 30 00) shall be included in this section.
2. Assessment of Standing Seam Metal Roof Panels.
 - 2.1. A metal roofing system shall be determined as a failed roof when any of the following conditions exist:
 - 2.1.1. When the underlayment is failed and / or baked out from UV.
 - 2.1.2. When there is existing moisture and leaks within the system.
 - 2.1.3. When there is damage to the existing roof deck – rust, rot, spalling, etc.
3. Roof Slope Use as defined in Part 7, General Roofing Specification (07 30 00)
 - 3.1. A standing seam metal roof can be used on the following roof slopes:
 - 3.1.1. Low Slope – not recommended but allowed based on design professional and manufactures recommendations.
 - 3.1.2. Transitional Slope with proper underlayment and fasteners.
 - 3.1.3. High Slope with proper underlayment and fasteners.
 - 3.2. All roof cricket slopes shall be twice that of the main roof slope, if possible.
 - 3.3. Special conditions for slope of system
 - 3.3.1. The minimum slope for new building construction is 2.0 unit vertical in 12 units horizontal. Can be 0.5 unit vertical in 12 units horizontal with mechanical seamed panel.
 - 3.3.2. The recommended minimum slope for new roofing on existing buildings is 2 units vertical in 12 units horizontal, when possible.
 - 3.3.3. The absolute minimum slope for new roofing on existing buildings is 0.5 unit vertical in 12 units horizontal with mechanical seamed panel.
4. Repair or replacement of roof, not to contradict Part 6, General Roofing Specification (07 30 00)
 - 4.1. If a roof does not meet condition(s) for repair / restore / rejuvenation, then roof replacement is the only required and allowed action.
 - 4.2. If the metal roof system must be replaced, the existing metal roofing and underlayment shall be removed before any new roofing system is installed.
 - 4.3. Additional information regarding what constitutes a failed metal roofing system can be found in Part 2 of this section.

5. Demolition requirements
 - 5.1. Metal roof panels, fasteners, underlayment and insulation to be removed to the structural deck unless it is determined that the rigid insulation can be reused per section 8 below.
 - 5.2. Protection of interior surfaces is required.
 - 5.3. Verification of conduit or through deck fasteners for other systems is required.
 - 5.4. Verification of exposed interior structures is required to determine possible aesthetic issues form roof demolition and replacement.
6. Parapet/head wall at metal to wall and low slope transition
 - 6.1. flashing system at wall shall be sawcut or inlet when possible. Surface mounted design of flashing is acceptable if determined necessary by design professional.
 - 6.2. Transition from metal to low slope shall be detailed to allow for low slope roof replacement in the future if required and to prevent the removal of metal panels.
7. Components of a Standing Seam Metal Roofing System
 - 7.1. Rigid board insulation
 - 7.1.1. Acceptable types are polyisocyanurate foam board, polystyrene board insulation and composite board insulation, thickness as determined by the Professional Registrant. R value will be determined based on the applicable building code.
 - 7.2. Coverboard
 - 7.2.1. A coverboard shall be used if required for fire rating or by manufacturer recommendations.
 - 7.2.2. Coverboards are required to provide the following functions:
 - 7.2.2.1. To separate incompatible material.
 - 7.2.2.2. To minimize thermal drift.
 - 7.2.2.3. To protect rigid board insulation and provide rigid support.
 - 7.2.2.4. For fire ratings.
 - 7.2.3. Acceptable types of coverboards will be:
 - 7.2.3.1. Gypsum Deck or high density polyisocyanurate board.

7.2.3.2. Composite 4-inch iso with plywood laminated to the insulation.

7.2.4. The metal roofing system is acceptable as an overlay over an existing rigid insulation, as determined by the Professional Registrant and allowed per the local building code.

7.3. Underlayment

7.3.1. No felt underlayment allowed.

7.3.2. Self-adhered and self-healing, high temp underlayment – 40 mil min thickness

7.3.3. Installed per manufactures requirements and shop drawings.

7.4. Metal Roof Panels

7.4.1. Metal panels minimum 24 gauge with striations, pencil lines or mesas.

7.4.2. Flashing, trim, metal closure, strips, caps, gutter, roof curbs, and similar components shall be the same gauge (min.) and finish minimum as the metal roof panels.

7.4.3. No end laps or splicing of panels.

7.4.4. Radius panels must be mechanical curved with no cutting or bending.

7.4.5. Installed per manufacturers shop drawings based on specific project design.

7.4.6. No private labeling of major components.

7.4.7. Metal panel maximum width of 18”.

7.5. Fasteners

7.5.1. Thermal fasteners shall be multipiece for expansion and contraction.

7.5.2. Fixed may be used when the manufacturer can substantiate the system can accommodate the thermal cyclic movement under live loads and thermal conditions.

7.5.3. Manufacturer to provide wind uplift and fastener patterns with shop drawings that are project specific based on pressures provided by the project design professional.

7.6. Sealants

7.6.1. Tape sealant need to provide 100% closure.

7.6.2. Joint sealant per manufacturers requirements.

7.6.3. Seam sealant required on slopes less than 2:12.

7.7. Roof mounted equipment / accessories

7.7.1. All materials to be compatible with the metal roofing system material.

7.8. Performance Requirements

7.8.1. Air infiltration – ASTM E 283 and E 1680

7.8.2. Water infiltration – ASTM E 331 and E 1646

7.8.3. Roof uplift testing - ASTM E 1592

7.8.4. Static water head – ASTM E2140

7.8.5. Roof uplift testing - UL 580

7.8.6. Underlayment – ASTM D1970

8. Closeout Documents

8.1. All items as found in Part 16, General Roofing Specification (07 30 00).

9. Preventative Maintenance Criteria

9.1. All items as found in Part 17, General Roofing Specification (07 30 00).

10. Budgeting cost ranges

10.1. This part shall apply only to SFB budgeting and economic projections and analysis. Not to be used for anything else.

10.2. Budget costing for the metal roofing system is as follows:

10.2.1. Low-range: \$10.00 - \$12.00 per square foot.

10.2.2. Mid-range: \$14.00 – \$16.00 per square foot.

10.2.3. High-range: \$16.00 - \$18.00 per square foot.

10.2.4. Mid-Range System assumption – metal deck with 4/12 slope, 3.5" iso, with hi-temperature ice and water shield. Minimal equipment 45,000SF roof area gutters and downspouts. Includes eave soffits. Does not include tear off. New construction prices are based on complexity of the roof. Assumes minimum under deck insulation.

10.3. Life cycle costing estimate for a metal shingle roof is \$1.00 per square foot per year.

11. Expected End of Life (EOL) for the specified metal roofing system should be no less than 20-years if properly maintained and inspected regularly.