

## Metal Shingle Roofing (07 31 16)

1. All applicable parts of the General Roofing Specification (section 07 30 00) shall be included in this section.
2. Assessment of metal shingle / panel roofs
  - 2.1. A metal shingle / panel roofing system shall be determined as a failed roof when any of the following conditions exist:
    - 2.1.1. Valleys, hips, and ridges leaking beyond repair.
    - 2.1.2. Note all soft or springy deck areas of the existing roof.
    - 2.1.3. Failed underlayment constitutes a failed metal shingle / panel roofing system.
  - 2.2. A metal shingle / panel roofing system shall not be deemed failed when any of the following conditions exists:
    - 2.2.1. Damaged or missing drip edge on an otherwise good metal shingle / panel roof shall be repaired / replaced.
    - 2.2.2. Damaged or missing fascia / barge boards on an otherwise good metal shingle / panel roof shall be repaired / replaced.
    - 2.2.3. Damaged or missing gutters / rain diverters / snow (ice) guards on an otherwise good metal shingle / panel roof shall be repaired / replaced.
    - 2.2.4. Leaking valleys / hips / ridges that can be repaired.
3. Roof Slope Use as defined in Part 7, General Roofing Specification (07 30 00)
  - 3.1. A metal shingle / panel roof can be used on the following roof slopes:
    - 3.1.1. High Slope
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. Failed underlayment constitutes a failed metal shingle / panel roofing system.
5. Demolition requirements
  - 5.1. All items as found in Part 10, General Roofing Specification (07 30 00).
  - 5.2. No special demolition requirements for metal shingle / panel roofing systems.
6. Metal Shingle / Panel Roofing
  - 6.1. Materials shall meet the following standards and specifications:

6.1.1. Metal shingle / panel shall meet:

6.1.1.1. ASTM A792 – Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

6.1.1.2. UL 1897 and UL 580 – Wind Uplift Resistance of Roof Assemblies.

6.1.1.3. ASTM E108 – Standard Test Methods for Fire Tests of Roof Coverings.

6.1.1.4. Metal shingle / panel roofing shall have at least the following characteristics: ASTM Class A fire rating, ASTM wind resistance of 90 MPH minimum and meet the IECC solar reflectance index (SRI) for the roof pitch and material.

6.1.2. Underlayment shall meet:

6.1.2.1. ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

6.1.2.2. Metal shingle / panel underlayment shall be at least, as determined by the Professional Registrant and manufacturer's specifications and recommendations:

6.1.2.2.1. Self-adhered underlayment meeting ASTM D1970.

6.1.2.2.1.1. This underlayment shall have a minimum vapor permeance of 15. All bituminous membranes shall be of High Temperature type.

6.2. All fasteners shall be compatible with all other metal materials used on the roof.

6.3. All fascia / barge boards to be protected from the environment in a manner that will provide a minimum 20-year performance and shall be sealed to prevent moisture penetration into any enclosed space at the eaves and soffits.

6.4. The edges of all metal shingle / panel roofs shall have a metal drip that extends under the shingles not less than three (3) inches, at least two (2) inches in height, with a minimum 45° toe to prevent water from running down the face of the fascia / barge board.

- 6.5. Gutters/ rain diverters / snow (ice) guards shall be provided to prevent water / snow / ice from falling on people as they enter the building and shall not let anything falling into any walking surface below the roof line.
  - 6.5.1. Gutters shall be installed below the level of the roofing to allow water to flow directly into the gutter and shall be sized in conformance to the code.
  - 6.5.2. Downspouts shall be sized in accordance to the code.
- 6.6. All enclosed attic spaces below metal shingle / panel roofs shall be vented to a net free area of a minimum of  $1/150^{\text{th}}$  of the space ventilated, unless a code compliant cross-ventilation system is provided.
- 6.7. All valleys shall be a metal flashing underlayment of a minimum 24" width centered on the valley.
- 6.8. All roof penetrations shall have weather sealing boots, integral curbs, saddles, etc. to ensure that water is not trapped anywhere on the metal shingle / panel roof or allowed to penetrate below the roof into the building.
- 6.9. Crickets at curbs, and other locations, wider than 24" shall be sheet metal. Curb heights shall be at least 8" above roof surface and at least 6" above the high point of the adjacent cricket.
7. Closeout Documents
  - 7.1. All items as found in Part 16, General Roofing Specification (07 30 00).
8. Preventative Maintenance Criteria
  - 8.1. All items as found in Part 17, General Roofing Specification (07 30 00).
9. Budgeting cost ranges
  - 9.1. Installation costs
    - 9.1.1. Installation of specified shingle system will be \$13.00 per square foot.
    - 9.1.2. Demolition costs would be \$1.50 per square foot.
  - 9.2. Life cycle costing estimate for a metal shingle roof is \$1.00 per square foot per year.
10. Expected End of Life (EOL) for system
  - 10.1. The minimum expectant life for a metal shingle / panel roof is 30 years.