Asphalt Shingle Roofing (07 31 13)

1. All applicable parts of the General Roofing Specification (section 07 30 00) shall be included in this section.
2. Assessment of asphalt shingle roofs
    2.1. An asphalt shingle roofing system shall be determined as a failed roof when any of the following conditions exist:
        2.1.1. Significant loss of surface granules.
        2.1.2. Visible fibers / felts from within the shingles.
        2.1.3. Curling edges on significant area of the roof.
        2.1.4. Splitting shingles.
        2.1.5. Valleys, hips, and ridges leaking beyond repair.
        2.1.6. Note all soft or springy deck areas of the existing roof.
        2.1.7. Failed underlayment constitutes a failed asphalt shingle roofing system.
    2.2. An asphalt shingle 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 asphalt shingle roof shall be repaired / replaced.
        2.2.2. Damaged or missing fascia / barge boards on an otherwise good asphalt shingle roof shall be repaired / replaced.
        2.2.3. Damaged or missing gutters / rain diverters / snow (ice) guards on an otherwise good asphalt shingle 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. An asphalt shingle 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 / then roof replacement is the only required and allowed action.
    4.2. If the asphalt shingle system must be replaced, the existing asphalt shingle roofing shall be removed before any new roofing system is installed.
    4.3. Failed underlayment constitutes a failed asphalt shingle 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 asphalt shingle roofing systems.
6. Asphalt Shingle Roofing
    6.1. Materials shall meet the following standards and specifications:
        6.1.1. Asphalt shingles shall meet:
            6.1.1.1. ASTM D3018 – Standard Specification for Class A Asphalt Shingles Surface with Mineral Granules.
            6.1.1.2. ASTM D3462 – Standard Specification for Asphalt Shingles Made from Glass felt and Surfaced with Mineral Granules.
            6.1.1.3. ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
            6.1.1.4. ASTM D3161 – Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
            6.1.1.5. ASTM E108 – Standard Test Methods for Fire Tests of Roof Coverings.
            6.1.1.6. Asphalt shingles may be either organic or fiberglass reinforced, having at least the following characteristics: dimensional shingle, weighing 200 – 300 pounds per roofing square (100 square feet) for a 20-year minimum performance, 36 – 40 inches in length, 12 – 13¼” in width, 5 – 5 5/8” exposure, ASTM wind resistance complying with the local codes (90 MPH minimum), and meet the IECC solar reflectance index (SRI) for the roof pitch and material.
            6.1.1.7. Asphalt shingles shall be attached per the Manufacturer’s requirements in order to issue the required warranty.
        6.1.2. Underlayment shall meet:
            6.1.2.1. ASTM D226 – Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing, Type I or Type II

6.1.2.2. ASTM D4869 – Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing, Type II or Type IV

6.1.2.3. Asphalt shingle underlayment shall be at least, as determined by the Designer and manufacturer's specifications and recommendations:

6.1.2.3.1. Single layer of ASTM D226 Type I, single layer of ASTM D4869 Type II, or

6.1.2.3.2. Double layer of ASTM D226 Type I, double layer of ASTM D4869 Type II, or

6.1.2.3.3. Single layer of ASTM D226 Type II, single layer of ASTM D4869 Type IV, (only use in hot climates and slopes less than 4:12) or

6.1.2.3.4. Self-adhered underlayment meeting ASTM D1970.

6.1.2.3.4.1. This underlayment shall be used in specific areas, not as an entire underlayment and have a minimum vapor permeance of 15. All bituminous membranes shall be of High Temperature type.

6.2. All fascia / barge boards to be protected from the environment by drip edge metal flashing 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.

6.3. The edges of all asphalt shingle roofs shall have a metal drip the 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.

6.4. 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.

6.4.1. 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.

6.4.2. Downspouts shall be sized in accordance to the code.

6.5. All enclosed attic spaces below asphalt shingle roofs shall be vented to a net free area of a minimum of $^{1}/_{150}^{th}$ of the space ventilated, unless a code compliant cross-ventilation system is provided.

6.6. All valleys shall be a metal flashing underlayment of a minimum 24” width centered on the valley with a 2 inch clearance on the center rib.

6.7. All roof penetrations shall have weather sealing metal flashing, integral curbs, saddles, etc. to insure that water is not trapped anywhere on the asphalt shingle roof or allowed to penetrate below the roof into the building.

6.8. Crickets at curbs, and other locations, wider than 24” shall be sheet metal or plywood. Curb heights shall be at least 8” above roof surface and at least 6” above the high point of the adjacent cricket. High Altitude Country with snow climates will have 12 inch minimum (or comply with the local codes) for the snowfall allowance.

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

9.2. Installation costs

9.2.1. Installation of specified shingle system will be $4.50 per square foot.

9.2.2. In higher elevations where freeze / thaw cycles impact design and installation the cost would be $5.00 per square foot.

9.2.3. Demolition costs would be $1.50 per square foot.

9.3. Life cycle costing estimate for an asphalt shingle roof is $1.50 per square foot per year.

10. Expected End of Life (EOL) for system
    10.1. The minimum expectant life for an asphalt shingle roof is 30 years.