

**SECTION 07500 - ROOFING SYSTEMS**  
**CONSTRUCTION STANDARD**

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**PART 1: GENERAL**

1.01 Scope Of Standard

- A. This standard provides general guidance concerning the specific preferences of the University of Texas at Austin for roofing systems.
- B. UT recognizes that project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification, it is expected that these guidelines will govern the design and specifications for UT projects.

1.02 Related Standards

- A. Structural Systems (currently The University of Texas Office of Facilities Planning and Construction *Owner's Design Guidelines*, Section K, Structural Criteria).
- B. Plazas and Decks. Section 07050
- C. Jointing of Exterior Vertical Surfaces. Section 07940
- D. The Secretary of the US Department of the Interior's Standards for Rehabilitation.

1.03 Reference Standards

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) Architectural Sheet Metal

1.04 Quality Control

- A. Roofing contractors shall be certified by the roofing system manufacturer as qualified to install the specified system and to receive the specified warranty.
- B. A minimum of one-half day, on-site inspection by an independent quality control observer shall be provided for each day of roofing installation. Once a week, Observer shall submit to UT project representative, copies of his daily reports. Weekly reports shall also include photographs to document the relative completion of project and any specific details or items of concern.

1.05 General Requirements

- A. Roof shall be historically accurate and shall be coordinated with Master Plan.

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- B. Always provide slope.
- C. Provide minimum 6 inch diameter roof drains. Always provide cast iron, domed strainers at drains.
- D. Entire assembly shall resist UL Wind Uplift I90.
- E. Minimum insulation value equal to wall insulation, but never less than  $R = 30$ .
- F. At vertical projections through roof, provide minimum 8" clearance between top of flashing and roof surface. Always provide cricket on uphill side of any projection that interferes with drainage.
- G. It is desirable to avoid pitch pans. If a pitch pan cannot be avoided, provide gooseneck or hood over pan and fill pan completely with urethane pourable sealant.
- H. At areas where frequent foot traffic will occur (mechanical units, particularly), provide walk pads. Path of pads shall follow most convenient route between roof access and destination.
- I. Provide two-year contractor's warranty in addition to manufacturer's warranty.

**PART 2: PRODUCTS**

2.01 Built-Up

- A. General
  - 1. Provide 20-year manufacturer's no dollar limit warranty on labor and materials.
  - 2. All base flashing shall be granular surfaced modified bitumen.
- B. Substrate: No lightweight fill shall be allowed.
- C. Insulation: Provide minimum two layers of near equal thickness. Tapered layer shall not count as layer.
- D. Systems
  - 1. Four-ply Asphalt with Aggregate.
    - a. Mop four plies Type VI fiber glass felts.
    - b. Type III asphalt.

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- c. ASTM D 1863 aggregate.
- 2. Three-ply Asphalt and Rubber/SEBS (Styrene Ethylene Butadiene Styrene) Modified Cap Sheet.
  - a. Mop two Type IV fiberglass felts.
  - b. Mop one reinforced modified cap sheet (Stress-Ply by The Garland Co., or approved equal) with granular surface or cover with ASTM D 1863 aggregate in asphalt flood coat.
  - c. Use Type III asphalt for all moppings and flood coat.

2.02 Tile

A. Substrate

- 1. Shall be able to receive screw and withstand specified wind loading (see above). Specified in paragraph 1.05(c) of this section.

B. Underlayment

- 1. “Peel and stick” Ice and Water Shield by W.R. Grace Co., or approved equal.
- 2. Minimize ultraviolet exposure (maximum allowable shall be 30 days).

C. Nailers (if required)

- 1. 2 X 4 No. 1 Southern Yellow Pine, CCA 40 treated “Wolmanized”®. Use 10’ lengths to minimize warping.
- 2. Use galvanized or copper nails.

D. Tile

- 1. Use full corner Spanish tile in blend to be sympathetic with other existing University of Texas roofs as manufactured by Ludiwici Roof Tile Co., or approved equal. Specifications shall include a proposed tile blend with a requirement for a mock-up and approval prior to ordering.
- 2. Prior to ordering tile, install field sample at roof height of proposed blend for Owner’s approval.

- E. Accessories: Use preformed accessories, i.e. bird stops, hip and ridge corners, etc. Always use bird stops.

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2.03      Shingles

NOTE: Shingles are not a standard roof on a University of Texas building. Special permission from the Owner is required prior to specifying shingles.

- A. Provide minimum 3/4" plywood substrate.
- B. Elk "Prestige" line shingles, or approved equal.
- C. No wood shingles shall be allowed, except where historically required, i.e. Winedale.

2.04.      Metal Roofing

NOTE: Metal roofs are infrequently used on a University of Texas building. Special permission from the Owner is required prior to specifying metal roofing.

- A. Copper is first choice. If steel is used, provide 24 gage minimum with Kynar 500 finish, or approved equal, from manufacturer's standard colors (exemption possible by special permission of University).
- B. Provide standing seam, double-lock connections.

2.05      Urethane Foam

NOTE: Foam roofs are not used on University of Texas buildings except on odd shaped structures or in the very dry climate of west Texas. Special permission from the University is required prior to specifying foam roofing.

2.06      Sheet Metal

- A. Counter flashing
  - 1. Copper is first choice. If steel is used, provide 22 gage minimum. For exposed steel, provide Kynar 500 finish, or approved equal, from manufacturer's standard colors (exemption possible by special permission of UT project representative). Metal not visible from ground or windows, may be galvanized.
  - 2. No surface mounted counter flashing shall be allowed. Always provide reglet.
- B. Scuppers/Gutters/Down spouts
  - 1. General
    - a. All detailing shall conform to SMACNA standards. (Refer to item 1.03.)
    - b. Where architecturally acceptable, 16 oz. copper is preferred. If

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steel (22 gauge minimum) is used, provide Kynar 500 finish, or approved equal, from the manufacturer's standard colors, and galvanized if not visible. Match existing, where historical demands require.

2. Overflow Scuppers: Make exterior perimeter high and place overflow scuppers such that bottom of scupper is 1/2" above top of finished roof.
3. Scuppers and gutters as part of roof drainage system.
  - a. Place crickets between scuppers.
  - b. Provide conductor head with down spout at scupper or top of down spout.
  - c. Where possible, connect all down spouts to underground storm drainage systems. If not, configure down spout so that it, and its discharge, drain away from base of building. Provide cleanout at base of down spout.
  - d. Provide expansion joints in gutters.
  - e. Avoid internal gutters.

**PART 3: EXECUTION**

3.01 General

A. Built-up

1. Minimum 1/4" per foot slope.
2. Install per manufacturer's requirements.
3. No torches nor kettles allowed on roof without special permission of UT project representative (a fire protection plan shall also be submitted with the request).
4. When determining set-up location, keep well away from fresh air intakes on adjacent buildings (and existing buildings on re-roofs).

B. Tile

1. Minimum 5" per foot slope.
2. Minimize ultraviolet exposure of underlayment (maximum allowable should be 30 days).

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3. Attach nailers to substrate with sheet metal strap. Screw strap to substrate.
4. Cover nailer (and straps) with continuous strip of underlayment.
5. Use chalk lines in three directions; vertical, horizontal, and diagonal.
6. Lay tile in diagonal patterns.
7. Provide two nails per tile. Nail into holes preformed into the tile.

C. Shingles: Minimum 5" per foot slope.

D. Metal Roofing: Minimum 5" per foot slope.

3.02 Re-roofing

A. Inspect existing roof:

1. Core existing roof to verify conditions.
2. Determine whether pull-out testing is required.
3. If existing roof is mechanically fastened, determine how to remove roof and methods to repair substrate.

B. Test for asbestos, lead, and asphaltic substances whose removal may require abatement or special environmental considerations.

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- C. Inspect existing skylights and report to UT project representative whether it would be prudent to include skylight re-work with roof repairs. Likewise, for roof scuttle and other rooftop accessories.
- D. Remove existing roof to substrate. Never remove more roof than can be dried-in prior to completion of day's work or in the event of rain.
- E. Provide for substrate repair/replacement in Base Bid (by assumed quantities or percentages, and unit prices, if necessary).
- F. Replace all nailers. Provide unit prices with bid to allow existing nailers to remain if determined to be satisfactory.
- G. Re-use of existing counter flashing is permissible if UT project representative agrees. Verify height of finished roof and include repairs to counter flashing in Base Bid. Re-caulk top of existing counter flashing where caulking exists.
- H. Re-oakum all existing drains.

END OF STANDARD 07500