

**DIVISION 07 - THERMAL & MOISTURE PROTECTION**

**DESIGN CRITERIA**

When designing roof access, ladders and stairways to roof shall not be alternating tread type. Provide 18 gage flashing at roof locations accessible to students or building occupants to prevent damage and vandalism. All rooftop mounted equipment shall be mounted on platforms. All platforms (curbs) shall be a minimum of 8 inches in height from the finished roof surface. Walk-pads shall be provided from roof access points to and around all rooftop equipment. All conduits and piping shall have a 4 inch minimum height and all conduit and piping supports shall be made from DURA-BLOK as supplied by Cooper B-Line, Inc. or equal.

**DAMPPROOFING AND WATERPROOFING**

**07 10 00**

All exterior exposed masonry and concrete (to receive no other finish) shall be treated with a clear penetrating waterproofing.

On all below grade applications: Prior to installation of any product all areas shall be clean and have an approved primer applied per manufacturer’s specification. All non-exposed areas shall be a minimum of 40mil self-adhering sheet, composed of butyl rubber based adhesive, backed by a layer of protection board separating it from contact with soil or other damaging properties. Grace Ice & Water Shield self-adhered underlayment; or equal. For special applications only, consult University’s Representative before applying.

**MEMBRANE ROOFING**

**07 50 00**

All roofing systems shall meet ASTM standards per their systems.

Roofing materials shall meet ASTM D4434, minimum 60 mil thickness and have a Solar Reflectance Index (SRI) as required below for a minimum of 75% of the roof surface. (Must meet current CA Title 24 Requirements for reflectivity.)

| Roof Type         | Slope  | SRI |
|-------------------|--------|-----|
| Low-Sloped Roof   | ≤ 2:12 | 78  |
| Steep-Sloped Roof | > 2:12 | 29  |

**SINGLE-PLY MEMBRANE ROOFING**

PVC Single-Ply Membrane (Thermoplastic) Roofing System (SMR) is the standard roofing system for low sloped applications. TPO membranes are not approved for campus installations. SMR systems shall be fully adhered or mechanically fastened qualifying for a UL Class A Roof Covering with Factory Mutual I-60 Windstorm Classification for Class 1 Construction. The SMR system shall be covered by the material manufacturer’s 20-Year Total System Warranty covering all roofing components installed above the roof deck upon completion and acceptance of Work.

For special applications, consult University's Representative before applying. All installations shall be in accordance with manufacturer recommendations.

Products: The following SMR systems are listed to establish a standard of quality:

1. Plasticized Polyvinyl Chloride (PVC): Sarnafil S327, manufactured by Sarnafil, Inc.; EGSR-60 Roofing Membrane distributed by Everguard/GAF; or equal.

Emissions: The following maximum emissions are listed in grams per liter.

1. Trowelable Mastic and Pitch Pocket Sealant: 450
2. Sealant: 300
3. Adhesive: 250

#### COMPOSITION ROOFING SYSTEM

Composition roofing shall be installed in accordance with current NCRA guidelines for installation and shall have a minimum 40 year warranty. Composition roofing Systems shall meet the following standards:

- UL 997
- ASTM D3018 TYPE 1
- ASTM D3161 TYPE 1, CLASS F
- ASTM D3462

Fasteners shall be in accordance with the manufacturer's specifications for application.

Type 30 felt underlayment or better shall be used. For special applications consult University's Representative before applying.

#### METAL ROOFING SYSTEMS

All metals used shall be prefinished Zinalume/Galvalume sheetmetal or G-90 galvanized steel in minimum 24 gauge as described in ASTM A792.

Standing seam roofing system shall consist of integral self-locking seams with a minimum seam height of 1-3/4 inches. Standing seam roofing system shall have no exposed fasteners. Panels shall have clips designed to allow for thermal expansion and contraction.

Type 30 felt underlayment or better. For special applications, consult University's Representative before applying. Sealants shall be Gunnable Grade single component polyurethane caulk or gunnable grade butyl. Tape Sealant shall be Butyl.

Manufacturer must provide a standard 35 year coating performance warranty. All installations shall be in accordance with specified manufacturer guidelines.

**CLAY AND CONCRETE TILE**

All roofing tile shall be installed in accordance with the manufacturer specifications. A minimum of two layers Type 30 Felt underlayment or better shall be installed. For special applications, consult University's Representative before applying.

Tiles shall be installed on an elevated battened system. For special applications, consult University's Representative before installing.

Fasteners must be in accordance with the manufacturer specifications for the application used.

|                       |                 |
|-----------------------|-----------------|
| <b>JOINT SEALANTS</b> | <b>07 92 00</b> |
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Detail all special conditions. All materials used shall be top-of-the line available suited for the conditions being sealed and in compliance with the following VOC requirements.

| <b>Sealants</b>   | <b>Max g/L</b> |
|---|----------------|
| Architectural   | 250            |
| Non-membrane Roof   | 300            |
| Single Ply Roof Membrane  | 450            |
| Other   | 420            |
| <b>Sealant Primers</b>  |                |
| Architectural – nonporous   | 250            |
| Architectural – porous  | 775            |
| Modified Bituminous   | 500            |
| Other   | 750            |
| Requirements from South Coast Air Quality District Rule 1168 (10/3/03) except for aerosol adhesive requirements which come from Green Seal Standard GS 36 (10/19/00). Applicable definitions apply. |                |