Campus Design Standards
Division 7 – Roofing

University of San Diego

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07000 – Roofing

Introduction

These standards apply to new and replacement roofs for academic, administrative, athletic and residential buildings on the University of San Diego campus. All new roofs are to be designed for solar support.

Occasionally the use of new or non-standard products or techniques is found to be in the best interest of the University. The Designer is to provide documentation to the Project Manager for review and consideration based on the following characteristics: flexibility, durability, wears under traffic, repair ability, quality control in manufacture and application, and warranty.

Contacts

1. The Project Manager (Planning, Design and Construction)

Index of References

1. USD Master Plan Design Guidelines

Code/Sustainability References

1. California Building Code
2. LEED Silver (Pursuit of certification on a project by project basis)
3. Building Energy Efficiency Standards
4. California Fire Code
5. OSHA

Review Guidelines

The design approach for the exterior envelope is to be reviewed during the schematic design with the Project Manager. Proposed techniques for roofing systems are to be presented for review and discussion.

Roof plans are to be reviewed with the Project Manager for Building Envelope early in the project in order to locate areas of particular concern and agree upon the best approach to address them.

Guidelines for Roofing types and Performance

Quality is of prime importance in the initial roof installation to minimize maintenance and the provision of a long life warranty. Standards for roofing include the following:

a. Vinyl roofing products are preferred for new construction, Tan color is campus standard.
b. Hot System: While Hot-applied systems can be found on existing buildings, it is not preferred and may not be suitable for use on existing buildings where fumes during installation may disturb adjacent occupants.

c. Solid System: Old Spanish Tile Roofing and Asphalt Shingles are University standards in some locations. Installation to match existing.

d. Surfacing: White aggregate surfacing meeting the manufacturer specifications is to be applied per the requirements of reflectivity. Exposed surfaces are to be covered with a reflective coating.

2. Green Roofs: Vegetation-covered roofs, whether employing loose growth medium or trays, are recommended to be treated with loose-laid single-ply PVC membrane. Ensure waterproofing requirements are met.

3. Below-grade Structures: Ensure waterproofing needs are reviewed and addressed. When applying a horizontal membrane over below-grade structure, a 4” concrete protection slab should be applied over filter fabric and drainage mat, which is installed over waterproofing system.

4. Pitched Roofs: The majority of buildings on campus are pitched roofs finished in tile. If a tile roof is proposed, 10% attic stock for replacement tiles should be specified.

5. Drainage: Proper drainage, to be considered and designed for all new and renovated roof designs, including crickets and sloping to achieve positive drainage to avoid ponding and issues with leaks.

6. Penetrations: Flashing and sealing of penetrations shall be addressed according to plumbing and HVAC standards.

No fluid applied systems on new construction.

Products currently installed on USD Campus

Current installations include, but are not limited to:

1. General Purpose All Acrylic Elastomeric Roof Coating – Evercoat EC by Everest Systems
2. High Tensile Acrylic Elastomeric Roof Coating – Evercoat HT by Everest Systems
3. Reinforcing Polyester Fabric – Evercoat 272 by Everest Systems
5. Bonding Sealer – Everseal by Everest Systems
6. Seamless Roofing Membranes by Aquafast
7. Standing Seam Metal
8. Built-up Mineral Surface Cap-Sheet
9. Built-up Gravel Surfaced/BUR Modified Gravel Surfaced
10. Built-up Smooth Surfaced (uncoated)
11. Modified Bitumen Fluid Applied Elastomeric White Coating Surfaced, with and without granules
12. Elastomeric Tan Coating Surfaced over existing BUR Capsheet, with and without granules
13. Polyurethane Foam with Elastomeric Coating Surfacing with and without granules
14. APP Torch-applied Mineral Surfaced
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15. PVC Single Ply Tan (Thermoplastic Polyvinyl Chloride), prefer Carlisle Syntec Sure-Flex System
16. TPO Single Ply Tan (Thermoplastic Polyolefin), prefer Carlisle Syntec Sure-Weld System
17. Tile, cement, clay or composite
18. Asphalt Shingles

**Design Guidelines for Safety in Roofing Maintenance**

The Designer is to consider requirements for safety and maintenance of the building in designing the roof for the building. Early consideration is to be given to providing parapet walls for flat-roofed areas so that OSHA recommendations for roof work can be met. Fall protection systems, where needed in the absence of parapets or other structural components, are to be installed in new construction projects and in major renovation/alteration projects. An alternative may be a built-up system of permanent mounting points for safety railing. The Designer is encouraged to review proposed solutions with the Project Manager. Safety-line tie-offs are insufficient and not acceptable as means for promoting roofing safety.

**Maintenance and Repair Materials**

1. APP or SBS Torch-Applied Membranes
2. SBS Self-Adhering Membranes
3. Elastomeric Fluid Applied
   a. Acrylic, urethane, and silicone coatings and asphalt emulsions with polyester felts
4. Elastomeric Acrylic Mastics
5. Wet Patch Black Mastics during rains for emergency repairs
6. No solar panels to be installed unless roof has 20 year warranty.

**Re-roofing System Types**

1. Vinyl membrane systems recommended are Carlisle Syntec Systems, GAF or Firestone

**Requirements for As-Built Drawings**

Prior to the completion of construction and occupancy, the contractor is required to provide the Project Manager a detailed schedule of materials used in each space of the project, including the manufacturer, supplier, color name and number, pattern and size applied. An electronic version of the final room schedule is to be provided as part of the “as-built” documentation for the project. See Appendix 1.2 for Documentation and Archiving.
Photos of Vinyl Roof Belanich Engineering Center