

SECTION 070000 - THERMAL AND MOISTURE PROTECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS:

Refer to Section 030000 for the requirements relating to concrete; including concrete exposed to the exterior.

Refer to Section 040000 for the requirements relating to masonry; including the preferences and prohibitions relating to exterior wall materials.

Refer to Section 050000 for the requirements relating to metals; including non-roof related sheet metal fabrications.

Refer to Section 115300 for the requirements relating to fume hood exhausts.

Refer to Appendix F for the State University System Policy on roofing systems for university facilities.

1.2 SCOPE OF SECTION:

This section contains the requirements relating to thermal and moisture protection; including waterproofing, damp-proofing, water repellants, vapor retarders, air barriers, insulation, exterior insulation and finish systems, fireproofing, fire-stopping, and roofing.

1.3 GENERAL:

1.4 WATERPROOFING:

1.5 DAMPPROOFING:

1.6 WATER REPELLANTS:

1.7 VAPOR RETARDERS:

1.8 AIR BARRIERS:

1.9 BUILDING INSULATION:

A. MATERIALS:

D. PROHIBITED MATERIALS:

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C. INSTALLATION:

Single faced batt or blanket insulation must be installed with the vapor barrier (paper or foil) facing the inside (environmentally controlled side) of the building.

1.10 ROOF AND DECK INSULATION:

Spray foam roofing systems shall not be used without approval of Owner. Roofing assembly shall be designed to meet or exceed R-20 effective thermal rating.

1.11 EXTERIOR INSULATION AND FINISH SYSTEMS:

The use of either metal studs or Exterior Insulated Finish Systems (EIFS) as components of exterior wall systems is not recommended and requires approval of University Architect.

1.12 FIREPROOFING MATERIAL:

1.13 FIRESTOPPING:

Expandable polyurethane foam is not acceptable for sealing penetrations through rated assemblies. Comply with ASTM E-814, "Standard Method of Fire Tests of Through Penetration Fire Stops".

1.14 ROOFING:

A. GENERAL:

1. Designers shall provide a complete roof plan of each roof area and provide large-scale details clearly showing relationships between membranes, flashings, counter flashings, expansion joints, perimeter metal work, roof accessories, roof-top equipment, any interruptions of the membrane, and all penetrations.
2. Applicable Standards: All roofing installations shall comply with NRCA and SMACNA standards.
3. Fume Hood: All work on roof tops containing fume hood exhausts shall comply with Section 11600-Laboratory Equipment and the ECU Chemical Hygiene Plan regarding installation and shutdown requirements.
4. Asbestos: Removal of old roofing material shall not proceed until its asbestos content is known.

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5. Tie-off points shall be installed in all sloped roofs.

B. ACCEPTABLE TYPES:

1. Flat Roofs:

Flat roofs shall be hybrid (three base plys) built-up with modified bitumen, granular surfaced, cap sheet or EPDM fully adhered and mechanically fastened. Designer shall coordinate with Owner regarding roof type before on-set of project.

2. Shingle Roofs:

a. Three-tab 40-year shingles over 30-lb. felt shall be used on shingle roofs. Coordinate color and type with Project Manager.

b. Acceptable manufacturers: Timberline, CertainTeed, Elks.

3. Metal Roofs:

Unless part of a pre-engineered building, metal roofs shall be 16 oz copper with standing seams. Low slope roofs (3/12 slope or less) requires soldered flat seams. Rosin paper shall be installed under all copper roofs. Clip fasteners shall conform with industry standard.

4. Clay Tile Roofs:

Clay tile roofs shall be Ludowici clay tile to match existing tile roofs. Clay tile shall be installed per manufacturer's instructions.

C. MISCELLANEOUS:

1. Access: Provide stairwell access to roofs in buildings of two stories or more. Provide Roof Hatches with ladders located in separate closets or mechanical rooms, where possible; do not install in hallways, stairwells, offices, classrooms or other normally occupied spaces.

2. Walk Pads: Provide walk pads from roof access to all roof-mounted equipment. Pads shall extend around each piece of equipment. Pads shall be 1/2" thick rubber, a modified bitumen cap pad, or approved substitute.

3. Roof Drains: Test and inspect roof drains and leaders prior to re-roofing design. Cast iron domes are required for roof drains.

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4. Lightning Protectors: May not be attached to, or penetrate base flashing.
5. Guttering and Downspouts:
 - a. Follow NRCA and SMACNA standards.
 - b. Material shall be copper.
 - c. Downspouts shall be mounted at least 1" out from the building wall.
 - d. Provide brass hardware cloth strainers.
 - e. Gutters shall be tied into existing storm drain system. Designer shall verify with owner that there are no existing storm drain problems that will affect performance of gutters and downspouts.
 - f. Any deteriorated or missing fascia edged metal shall be brought to the attention of the Designer and Project Manager in the form of a written proposal for corrective action.
 - g. The connection between downspout and rain leader shall be designed to be readily removed for maintenance purposes.
6. Parapet Walls:
 - a. Cap all parapet walls.
 - b. Material used shall match existing or adjacent architecture.
 - c. Surface-mounted counterflashing is not acceptable.
 - d. All interior surfaces of parapet walls shall be treated as an integral part of the roofing system. No exposed block.
7. Overflow Scuppers: On roofs with parapet walls, overflow scuppers shall be provided.
8. Roof-Mounted Equipment: All roof-mounted equipment, including skylights, shall be set on curbs, and attached to resist area wind loads. Flat skylights are not allowed.

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9. Existing Clay Roof Tile: Salvage any unneeded and unbroken clay roofing tile and have it neatly stored on pallets to be delivered to Owner. Coordinate with Project Manager for storage.
10. Existing Roof Warranties: Any new work on or through a warranted roof must be done with the knowledge and permission of the warranty holder in such a manner to maintain existing warranty.

D. WARRANTIES:

1. Roofing system shall be guaranteed by Contractor against defects in materials and/or workmanship for a period of two (2) years from the date of the Certificate of Substantial Completion. During this period, the Contractor will pay all costs of repairs to the roof system necessary to correct roof leaks resulting from any one of the following causes:
 - a. Improper workmanship in application of roofing systems, flashings, and substrate components.
 - b. Blisters, buckles, ridges, wrinkles, fishmouths, slips, and holidays that do not meet with Manufacturer's specifications and warranty requirements.
 - c. Damage to roofing system and substrate due to thermal shock (extreme temperature fluctuations).
 - d. Slippage of roofing system components. Breaks in roofing system or substrate components.
2. Roofing system shall be guaranteed by Manufacturer against defects in materials and/or workmanship for a period of twenty (20) years from the date of the Certificate of Substantial Completion. During this period, the Manufacturer will pay all costs of repairs to the roof system necessary to correct roof leaks resulting from any one of the following causes:
 - a. Deterioration of roof membrane or flashing caused by ordinary weathering and/or exposure to ultra-violet light.
 - b. Damage to roofing system and substrate due to thermal shock (extreme temperature fluctuations).
 - c. Slippage of roofing system components. Breaks in roofing system or substrate components.
3. During this period, the Manufacturers and the Contractor agree that, within 24 hours of receipt of notice from the Owner, they will inspect and make immediate emergency repairs to defects or to leaks in the roofing system installed under this contract.

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- a. They further agree that, within a reasonable time, they will restore the affected items to the standard of the original specifications.
 - b. All emergency work and permanent work done during the life of the agreement shall be done without cost to the Owner, except in the event it is determine that such leaks were caused by Owner abuse, vandalism, lightning, hurricane, tornado, hail storm or unusual climatic phenomena of the elements.
4. Guarantee shall be in written form acceptable to the Owner and shall be made by the manufacturer of the roofing membrane system used and shall be for the full period of time as specified herein. All warranties shall be submitted to Owner as part of final closeout documentation.
 5. Two months prior to expiration of each warranty, the appropriate warranty representatives shall schedule roof inspection with the Owner.

E. TRAINING:

The Contractor shall provide one 2 hour minimum of training to instruct University maintenance personnel in proper care and maintenance of the roofing system. Training shall be scheduled through Project Manager.

F. SPECIAL CONTRACTOR RESPONSIBILITIES:

1. In the absence of active reported roof leaks, any leakage from the roof area into the building will be assumed to be the responsibility of the Contractor.
2. Prior to starting work of the project, the Contractor will verify that all roof drains are working. Report any stoppages to the Project Manager prior to beginning work.
3. Do not allow water build-up on roof due to changed drainage patterns. Provide for roof drainage during re-roofing, either by direct drainage to roof drains or pumps. Do not discharge water from roof directly to grade without specific authorization from the Project Manager.
4. Provide protection for interior spaces, furnishings, and equipment.
5. Bitumen kettles shall incorporate mechanisms to eliminate fumes and/or vapor retardant during construction. Do not locate kettles near building air intakes or allow hot mopping near building air

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intakes. Contractor shall coordinate with Project Manager to close applicable fresh air intakes in vicinity of work area if necessary. Contractor shall take care not to allow fumes into the building.

6. Provide presence on job site during and immediately after heavy rains in order to identify and repair leaks, clean up water and repair water damage. It is especially important to immediately remove water from interior spaces and to wet-vac and clean areas in order for the occupants to proceed with their daily duties without interruption or inconvenience. Storage areas, mechanical rooms and unoccupied areas will be cleaned and repaired same as occupied areas. Proceed immediately with clean up as soon as discovered, do not wait for the next day to do this work.
7. The Contractor should be aware that any expenditures by the University to repair or stop leaks, or provide custodial services will be charged to the Contractor.
8. The Contractor must have adequate equipment on site or immediately available to cope with emergency leakage situations.
9. Promptly repair all damage to University property, including vegetation and irrigation systems. Any lawn areas damaged or used during construction shall be resodded. It is the Contractor's responsibility to identify and protect areas with subsurface irrigation and utility systems.

END OF SECTION

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