DIVISION 07 - THERMAL AND MOISTURE PROTECTION

2006 Edition, Published January 1, 2006; Division Revision Date: January 1, 2006

07 00 00. THERMAL AND MOISTURE PROTECTION

07 10 00. DAMPPROOFING AND WATERPROOFING

.1 Calculations shall be provided to demonstrate that the dew point of all foundations/roofs/walls with waterproofing falls on the outside of the building.

07 11 00. DAMPROOFING

.1 FOUNDATION WATERPROOFING: Shall be provided at all below grade vertical and horizontal surfaces.

.2 EXPOSED BITUMINOUS TYPE: Shall not be allowed on surfaces of exterior walls and walls below grade.

.3 WATER REPELLENT COATING: Exposed surfaces of exterior brick, concrete block, and precast concrete shall be coated with a penetrating colorless, non-staining, mildew-resistant water repellent applied by an applicator experienced with the material applied. The product shall include a ten (10)-year warrantee and will be vapor permeable to allow moisture to escape from inside the wall.

07 12 00. WATERPROOFING: The following are minimum requirements to assure adequately designed waterproof floors for machine and equipment rooms and other areas subject to flooding from equipment failure or seepage from exterior sources:

.1 DRAWINGS shall fully detail the installation of the membrane. Continuous membrane risers shall be provided above the finished floor surface at vertical walls, pads, curbs, pipes, and ducts through the slab. All floor penetrations must be sleeved to a height of 4" above the finished floor. Risers shall be at least as high as the lowest curb and shall be bonded to the vertical surface. Concrete foundation walls around elevator pits and around basements, from grade to footings, shall be treated with membrane waterproofing. When elevators open into mechanical rooms and other areas subject to flooding, opening sills must be 4" above the finished floor to keep flood water out of elevator shaft. A concrete ramp shall be constructed from the elevator door sill to the floor level.

.2 SPECIFICATIONS shall provide for a heavy duty, permanent waterproofing type of membrane capable of adjusting to building movements without breaking the membrane seal. When rubber or plastic membranes are specified, a five (5)-year experience clause with written documentation by the installer shall be required in the specification.

.3 TIMING OF INSTALLATIONS: When surface applied membrane waterproofing is specified, the specification must prohibit scheduling of installation until after the major work of all other trades has been completed. Inaccessible surfaces under equipment and housing foundations, pads, and curbs shall be waterproofed in advance of floor areas. Surface membrane must be protected until acceptance of the space by the University. Surface applied membrane, except under equipment, must be accessible for repair.

.4 TESTING: Specifications shall provide for the testing of waterproofed membrane floors by flooding. Floors shall be filled with water to within 1/4 in. of top of lowest curb for a period of 6 hours and closely inspected for leaks; tests shall be witnessed by designated representatives of the University. The test shall not relieve the contractor of maintaining a leak free floor until the end of the warranty period.

07 10 00. DAMPPROOFING AND WATERPROOFING (Cont'd)

.5 MAINTENANCE GUARANTEE: The General Contractor, manufacturer and installing subcontractor shall furnish a written three (3) year guarantee on the complete membrane waterproofing installation. Submit the guarantee in triplicate. The guarantee shall begin when the space is completed and accepted for use by the University.

The guarantee shall cover, at no cost to the University, all labor and materials required for repair or replacement to correct leaks, faulty materials or workmanship.

07 20 00. THERMAL PROTECTION

07 22 00. ROOF DECK INSULATION: All insulating materials, including cant strips and tapered edge strips, shall be non-hygroscopic. Wood fiber composite insulation is prohibited. A suitable cover board as recommended by the National Roofing Contractors Association (NRCA) shall be installed over all polyisocyanurate type insulation board. Compatibility with roofing materials or separation is mandatory for wood, treated wood, fibrous materials, insulation, etc. See 07 50 10.5. and 07 50 10.6.

07 24 00. EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS): These materials are not allowed for use on University projects without the express written consent of the University Architect.

07 31 00. SHINGLES AND ROOFING TILES

07 31 13. ASPHALT ROOF SHINGLES

.1 ASPHALT ROOF SHINGLES: Specify only wind resistant type 280# or greater. Fire-resistant rating shall be UL Class A. Install shingles and roofing tiles per requirements of the OBC and manufacturer's maximum recommended quality standards for the deck to be roofed. The shingle installation shall conform to the National Roofing Contractors (NRCA) Steep Roofing Manual recommendations. Sheet metal shingle flashing installations for asphalt roof shingle projects shall conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACCNA) Architectural Sheet Metal Manual recommendations.

.2 Use of ***pneumatic*** powered nails or staples is **prohibited**.

.3 Use of staples is prohibited.

.4 Warranty of shingles shall be a minimum of 30 years and applicator's warranty shall be for Five (5) years.

.5 Shingle underlayment shall be an Ice/Water Guard type self–adhering underlayment. 15# and 30# felt are prohibited.

07 31 26. SLATE SHINGLES

.1 Slate shall be natural slate; artificial slate is **prohibited**. Underlayment shall be an Ice/Water Guard-type self-adhering underlayment. The shingle installation shall conform to the National Roofing Contractors (NRCA) Steep Roofing Manual recommendations. Sheet metal shingle flashing installation for slate shingles shall conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACCNA) Architectural Sheet Metal Manual recommendations.

07 31 00. SHINGLES AND ROOFING TILES (Cont'd)

07 32 00. ROOFING TILES

.1 Tiles shall be clay only. Underlayment shall be an Ice/Water Guard-type self-adhering underlayment. The roofing tile installation shall conform to the National Roofing Contractors Association (NRCA) Steep Roofing Manual recommendations. Sheet metal shingle flashing installation for a clay tile installation shall conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACCNA) Architectural Sheet Metal Manual recommendations.

07 40 00. PREFORMED ROOFING AND SIDING PANELS

.1 Preformed roofing underlayment shall be an Ice/Water Guard type self-adhering underlayment. 15# and 30# are prohibited. Acceptable types of preformed roofing and siding materials and finishes are metal materials with a natural finish (copper), anodized finish (aluminum) or painted finish (aluminum or steel).

.2 PREFORMED WALL AND ROOF PANELS: Finish materials and colors for roof structures and rooftop equipment screens are subject to the approval of the University Architect.

07 50 00. MEMBRANE ROOFING

07 50 10. GENERAL REQUIREMENTS:

.1 DESIGN REQUIREMENTS FOR MEMBRANE ROOFING: Roof decks must be built with a slope of at least 1/4 in. per ft. toward drains. Dead level roofs are prohibited. Use of Emergency relief drains is prohibited. Scupper openings shall be provided through parapet walls complying with all applicable requirements of the OBC in lieu of relief drains. Ensure that drains are truly at low points of roofed area. Install "crickets or saddles" to divert water flow around curbs so as to avoid interference with designed drainage system. “Crickets and saddles” shall be installed behind curbs with a dimension of 24 inches or greater measured perpendicular to the slope of the roof. Reroofing projects will require individual assessment for design to provide adequate drainage slope.

.2 OBSERVATION OF INSTALLATION BY UNIVERSITY PERSONNEL: The University shall be given 2 weeks advance notice of intent to start installation of roofing materials. Designated University personnel must be permitted to perform a pre-installation inspection of roofing materials and equipment, to be present throughout roofing installation to observe installation techniques for compliance with specifications and to participate in final inspection. Questionable installations will be brought to the attention of the Associate who shall take immediate action to correct any deficiencies in materials or installation. Failure of OSU personnel to call attention to deficiencies shall not relieve the contractor of responsibilities stipulated in the Maintenance Guarantee.

.2.1 CUTTING OF TEST PANELS: The University reserves the right to cut test panels from the finished roof in order to determine that minimum requirements have been met. The roofer shall repair, at his own expense, the roof where test panels were taken.

.3 COORDINATION OF INSTALLATIONS: The roofer shall install all flashings and insulation required to make a complete waterproof installation. For this reason, it is preferred that specifications for roofing, insulation, flashing, and sheet metal work be combined into one section. Although certain counter flashings or similar materials may be provided by other

07 50 00. MEMBRANE ROOFING (Cont'd)

.3 COORDINATION OF INSTALLATIONS: (Cont'd)

contractors, the roofer shall be made responsible for their proper installation. Also see Facility Services-3.16 (15/16-3.16) (Roof Mounted Equipment, Flashing and Roof Penetrations).

.4 GUARANTEE: Insert the following paragraphs in the specifications:

ROOFING AND FLASHING GUARANTEE: The manufacturer(s) of materials used shall furnish a written twenty (20) year guarantee on the complete roof installation. Submit the guarantee in triplicate. The guarantee shall begin when the project is completed and accepted by the University.

The general contractor and the roofing subcontractor shall furnish a five (5) year maintenance warrantee on the total roofing system. The guarantee shall cover, at no cost to the University, all labor and materials required to repair or replace roofing, flashings, sheet metal and copings as necessary to fully correct leaks, faulty workmanship or defective materials.

.5 STORAGE OF MATERIALS: Roofing felts, membranes and insulation are to be stored in a dry trailer or inside a dry building. Exterior storage on skids or tarpaulin coverage is unacceptable. Asphalt or coal tar pitch may be stored outside if kept under a tarpaulin or plastic film.

.6 WET MATERIALS: Roofing felts or insulation which became wet before or after installation must be removed and replaced. Wet materials shall not be dried and reused. Wetted membrane materials must be thoroughly evaluated to determine the effect on adhesion, lap seals or blister potential. Remove any such material if there is any possibility of failure.

07 51 00. BUILT-UP BITUMINOUS ROOFING: No less than four (4) ply construction may be specified. Conform strictly with the manufacturer's recommendations for installation. A fume control system approved by the University architect/engineer project representative is required.

07 53 00. ELASTOMERIC MEMBRANE ROOFING: Thermoplastic (TPO) roofing with heat welded seams is recommended. Other types allowed with written approval. No ballasted roof systems permitted.

.1 MODIFIED BITUMEN SHEET ROOFING: Systems composed of at least two plies, one of which can be a heavy base sheet, are preferred. Mineral (granule) surface weathering is preferred.

.2 FLUID APPLIED ROOFING: Not permitted.

.3 CLEAN UP: Emphasize that debris not be allowed to accumulate on roof during construction. All debris to be totally removed at completion of project.

07 60 00. FLASHING AND SHEET METAL

07 60 10. GENERAL REQUIREMENTS:

.1 FLASHING GUARANTEE requirements apply to this work. Note that curb heights must comply with manufacturer's requirements for warranty of roofing systems. Refer to paragraph 07 50 10.4.

07 60 00. FLASHING AND SHEET METAL (Cont'd)

07 60 10. GENERAL REQUIREMENTS: (Cont'd)

.2 PLUG ANCHORAGE by use of wood, or plastic is prohibited.

.3 METAL FLASHING: Copper, soft temper stainless steel, terne coated or stainless steel. No aluminum or galvanized steel.

.4 PITCH PAN OR POCKETS: Use of pitch pans or pockets only if approved by the University Architect's Office. Items penetrating roofing must be flashed with sheet metal secured with clamps or with box curbs welded, or otherwise secured, to the penetrating items. See flashing materials above for acceptable metals.

.5 FLASHING AND SHEET METAL: Fabrication and installation conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) Architectural Sheet Metal Manual recommendations. Copper, when used, to conform to SMACNA and Revere Copper Products Copper & Common Sense recommendations.

.6 No power or powder driven tools to be used unless approved for use by the University Architect's Office. See Division 01.

07 70 00. ROOF AND WALL SPECIALTIES AND ACCESSORIES:

.1 GUTTERS AND DOWNSPOUTS: Copper, stainless steel, or baked enamel steel. No aluminum or galvanized steel.

.2 FASCIAS AND GRAVEL STOPS: Aluminum, copper, stainless steel, or baked enamel coated steel.

07 72 46. ROOFING SPECIALITIES:

.1 WALKWAYS: Provide per roof system manufacturer's specifications.

07 90 00. JOINT PROTECTION

07 90 10. GENERAL REQUIREMENTS: The following conditions shall be included in the specifications:

.1 GUARANTEE: Provide written guarantee that the General Contractor and sealant installer jointly guarantee to replace, at no cost to the University, any or all joints which fail to establish and maintain airtight and watertight continuous sealed joints without staining or deteriorating joint substrates within 5 years after acceptance.

.2 QUALIFICATIONS OF APPLICATOR: Sealants shall be applied by specialists in the application of sealants; minimum 5 years experience required. Applicator is subject to the Associate's approval.

.3 RESPONSIBILITY FOR SATISFACTORY APPLICATION: Inspect work of other trades prior to application of sealing material. If any joint or space cannot be put into proper condition to receive the material by specified methods, immediately notify the Associate in writing, or assume responsibility for and rectify unsatisfactory results from improper application.

07 90 00. JOINT PROTECTION (Cont'd)

07 90 10. GENERAL REQUIREMENTS: (Cont'd)

.4 TIME AND TEMPERATURE REQUIREMENTS: Apply sealants as late as possible in the construction, preceding painting, and following cleaning operations. Do not apply sealants when air temperature is below 40 degrees F.

.5 DO NOT SAY CAULK OR CAULKING NOR USE THOSE MATERIALS.

07 92 00. JOINT SEALANTS

.1 INTERIOR: Use acrylic type suitable for application of paint.

.2 EXTERIOR: Use two-part polyurethane. Prior to construction, require manufacturer's compatibility and adhesion test results for exterior elastomeric joint sealants on building materials which are subject to significant movement.

END OF DIVISION 7 - THERMAL AND MOISTURE PROTECTION