

07 00 00. THERMAL AND MOISTURE PROTECTION

- .1 TEST REPORT: Submit documentation that materials are an acceptable component of an NFPA 285 approved system. Work shall be coordinated with the sections the comprise the exterior wall assembly to ensure a complete NFPA 285 approved system. (List each section as applicable to the project).
- .2 NFPA 285 COMPLIANCE: Include the following as part of “Quality Assurance” in each specification section affected by NFPA 285 assembly systems: The basis of design products specified in each section that includes exterior wall assembly materials shall be selected because they constitute an approved NFPA 285 tested assembly, which requires coordination with other sections affected by NFPA 285 testing. Using products other than the basis of design requires documentation by the Contractor that the installed system is a tested and approved NFPA 285 design.

07 00 01. SUSTAINABILITY

- .1 AE shall reference Division 18 “Sustainability” where some of the requirements are related to this division and adopt applicable requirements into the design.

07 10 00. DAMPPROOFING AND WATERPROOFING

- .1 Calculations and diagrams shall be provided to demonstrate that the dew point of all foundations/roofs/walls with waterproofing falls on the outside of the building’s waterproofing membrane. The A/E shall be responsible for demonstrating where the condensation will occur and substantiate that the wall is able to dry when the condensation vaporizes and will not become entrapped in the building cavity / assembly.

07 11 00. DAMPPROOFING

- .1 EXPOSED BITUMINOUS TYPE: Shall not be allowed on surfaces of exterior walls and walls below grade.
- .2 Allowed at exterior site walls retaining earth higher than the adjacent walking surface. Exterior surfaces of interior wythe in cavity walls. Interior masonry surfaces at wet locations.

07 12 00. WATERPROOFING

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



- .2 HORIZONTAL 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.
3. 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.
- .4 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. The Contractor's submittal shall be required to be provided to the A/E during the construction phase.
- .5 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.
- .6 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.
- .7 MAINTENANCE GUARANTY: The General Contractor, manufacturer and installing subcontractor shall furnish a written three (3) year guaranty on the complete membrane waterproofing installation. Submit the guaranty in triplicate. The guaranty shall begin when the space is completed and accepted for use by the University.

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

- .8 TYPES: Sheet or Fluid-Applied Membrane Waterproofing at exterior decks, concrete slabs on grade, and foundation walls and footings; and Bentonite Waterproofing at exterior decks, and foundation walls and footings

07 19 00 WATER REPELLENTS:

Water repellent coatings on exposed surfaces of exterior – concrete block, and precast concrete shall be coated with a penetrating clear, colorless, non-gloss, non-yellowing, non-staining, mildew-resistant, breathing type, non-vapor barrier, water-based water repellent applied by an applicator experienced with the material applied. The product shall include a ten (10)-year warranty and will be vapor permeable to allow moisture to escape from inside of the wall.

Water repellent coatings on brick, limestone and sandstone are prohibited for all buildings where the wall system is a mass masonry system.

07 20 00. THERMAL PROTECTION.

- 1 Types: Board type under slabs-on-grade, on foundation walls, and in exterior cavity walls. Insulation boards shall be free of the following ozone-depleting blowing agents: hydrofluorocarbons (HFCs), hydrochlorofluorocarbons (HCFCs), and chlorofluorocarbons (CFCs); Acoustical blanket type in interior partitions.

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.

- .1 Fire resistance rated polyisocyanurate roofing board insulation shall use non-halogenated flame retardants.
- .2 Provide thermal insulation to meet current applicable energy codes. If physical limitations inhibit providing insulation thickness to meet code, provide the university with a variance report stating the limitations and the A/E's opinion of cost to overcome them.



3. Insulation shall be provided in a minimum of 2 layers. Board joints shall be staggered between layers.
- .4 Provide insulation materials and insulation fastening in accordance with the primary membrane material manufacturer's latest printed instructions and recommendations and in accordance with FM Approval Standards.
- .5 Insulation boards shall be free of the following ozone-depleting blowing agents: hydrofluorocarbons (HFCs), hydrochlorofluorocarbons (HCFCs), and chlorofluorocarbons (CFCs)

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 26 00 VAPOR RETARDERS

- .1 Roofing systems shall consider including Class I vapor retarders (0.1 perms or less) based on a careful and comprehensive analysis of the roofing assembly. Completely seal all penetrations, tears, openings, and punctures that may occur during construction. Provide transition material to bridge and seal adjacent air barrier materials.

07 27 00 AIR BARRIERS

The airtight components of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the airtightness of the building enclosure is called "the air barrier system". Services include coordination between the trades, the proper scheduling and sequencing of the work, preconstruction meetings, inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and enclosure commission agents.

- .1 Connections to Adjacent Materials: Provide transition material to bridge and seal the following air leakage pathways and gaps:
 - a. Connections of the walls to the roof air barrier.
 - b. Connections of the walls to the foundation air barrier.
 - c. Seismic and expansion joints.
 - d. Openings and penetrations of window frames, storefront, curtain wall, louvers and doors.



- e. Barrier precast concrete and other envelope systems.
 - f. Floors over unconditioned space.
 - g. Piping, conduit, duct and similar penetrations.
 - h. Masonry ties, screws, bolts and similar penetrations.
 - i. All other air leakage pathways in the building envelope.
- .2 Performance Requirements
- A. Compliance Alternatives:
- a. Materials: materials used for the air barrier system in the opaque envelope shall have an air permeance not to exceed 0.004 cfm/ft² under a pressure differential of 0.3 in. water (1.57 psf) (0.02 L/s.m² @ 75 Pa) when tested in accordance with ASTM E 2178. Or,
 - b. Assemblies of materials and components: shall have an air permeance not to exceed 0.04 cfm/ft² under a pressure differential of 0.3 in. water (1.57psf) (0.2 L/s.m² @ 75 Pa) when tested in accordance with ASTM E 2357. Or:
 - c. The entire building: The air leakage of the entire building shall not exceed 0.4 cfm/ft² under a pressure differential of 0.3 in. water (1.57psf) (2.0 L/s.m² @ 75 Pa) when tested according to ASTM E 779.
- .3 Require letter from primary air barrier material manufacture indicating approval of transition materials and accessories that are proposed to be used for that manufacturer's material. The contractor is required to submit to A/E during the construction phase.
- .4 Require statement from the primary air barrier material manufacturer that the materials used in their air barrier assembly which will be used to adhere to the underlying substrate are chemically compatible to the substrate material. The contractor is required to submit to A/E during the construction phase.
- .5 Preconstruction Meeting: Convene a minimum of two weeks prior to commencing Air Barrier Work. Agenda shall include, at a minimum, construction and testing of mock-up, sequence of construction, coordination with substrate preparation, air barrier materials approval for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction and chemical/fire safety plans. Attendance is required by representatives of related trades including covering materials, substrate materials and adjacent materials.
- .6 Field Quality Assurance: Do not cover the air barrier assembly until it has been inspected, tested and accepted. Air barrier assembly shall not be covered up until it has been thoroughly observed for general conformance with the project construction documents and authorization is granted by the A/E to proceed with

covering up the work completed. If appropriate, university to engage an air barrier inspection and testing service agencies, including independent testing laboratories, that specialize in the type of air barrier system inspections and tests to be performed.

- .7 Material Warranty: Provide primary material manufacturer’s standard product warranty, for a minimum of three (3) years from date of Substantial Completion.
- .8 Subcontractor (certified by Manufacturer) Installation Warranty: Provide a two (2) year installation warranty from date of Substantial Completion, including all accessories and materials of the air barrier assembly, against failures including loss of airtight seal, loss of watertight seal, loss of attachment, loss of cohesion/adhesion and failure to cure properly.

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.

OARDC: The use of 240# asphalt singles that meet ASTM D3161 and ASTM D7158, Class F (110 MPH) or higher wind speed ratings is permitted.

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

OARDC: The use of staples is prohibited but pneumatic roofing nailing per the project specifications and the requirements of Appendix V- Safety health and Environment is permitted.

- .3 Warranty of shingles shall be a minimum of 30 years and applicator’s warranty shall be for Two (2) years.
- .4 Shingle underlayment shall be an Ice/Water Guard type self–adhering underlayment, with coverage based on roofing assembly permeability requirements. 15# and 30# felt are prohibited.

07 31 26. SLATE SHINGLES

- .1 Slates shall be natural slate; artificial slate is **prohibited**. Underlayment shall be an Ice/Water Guard-type self-adhering underlayment, with coverage based on roofing assembly permeability requirements. 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 32 13 CLAY ROOFING TILES

- .1 Tiles shall be clay only. Underlayment shall be an Ice/Water Guard-type self-adhering underlayment, with coverage based on structural assembly permeability requirements. 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 panels underlayment shall be an Ice/Water Shield type self-adhering underlayment, 30 mils thick Butyl self-adhering underlayment, and shall be temperature rated to 300 degree F, with coverage based on roofing assembly permeability requirements. 15# and 30# are prohibited. Acceptable types of preformed roofing and siding materials and finishes are metal materials with a natural finish (copper) or (stainless steel), 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.
- .3 Shop Drawings for detailed connections, anchorage, connections, joint sealants, joint gasketing, flashing and mounting substrate to be submitted to Facility Operations Envelope Engineer for review.
- .4 Manufacturer's Field Inspection Report: Within 48 hours, state what was observed and what changes, if any, were requested or required.

- .5 Prefer 'open' systems versus 'closed' gasketed systems for composite metal panel wall systems.

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 the 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. "Crickets and saddles" shall have a slope of at least 1/2 in. per ft. Reroofing projects will require individual assessment for design to provide adequate drainage slope. Ballasted roofs are not preferred.
- .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 Architect/Engineer (A/E) who shall take immediate action to document corrections of any deficiencies in materials or installation. Failure of Ohio State personnel to call attention to deficiencies shall not relieve the contractor of responsibilities stipulated in the Maintenance Guaranty.
- .2.1 CUTTING OF TEST PANELS: The University reserves the right to cut test panels from the finished roof in order to determine that the minimum requirements have been met. The roofer shall repair, at his own expense, the roof where test panels were taken.
- .2.2 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 contractors, the roofer shall be made responsible for their proper installation. _

- .2.3 Observation of Installation by University Personnel: Representatives from Facility Operations Roofing and Envelope Engineering shall be notified of roofing schedule and perform periodic installation inspections.
- .4 GUARANTY: Insert the following paragraphs in the specifications:
- .4.1 ROOFING AND FLASHING GUARANTY: 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.
- .4.2 GREEN ROOF WARRANTY: Manufacturer's single-source written twenty (20) year warranty on the full green roof assembly. Submit the warranty in triplicate. The warranty shall begin when the project is completed and accepted by the University.
- .4.3 The general contractor and the roofing subcontractor shall furnish a two (2) year maintenance warranty 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.
- .7 CLEAN UP: Emphasize that debris are not allowed to accumulate on roof during construction. All debris shall be totally removed at completion of the project. The contractor shall provide final cleaning of roof membrane to sufficiently remove traffic marks and unsightly blemishes from the surface of the roof to the satisfaction of the A/E and University. The contractor shall provide adequate protection for the new roof surface to prevent excessive traffic marks and unsightly blemishes during the course of construction.
- .8 VAPOR RETARDER: Review the structure's winter interior relative humidity and the relative humidity of the structural roof deck with roof manufacturer to determine if a vapor retarder is required as part of the total roof system.

- .9 Roofing systems shall consider including Class I vapor retarders (0.1 perms or less) based on a careful and comprehensive analysis of the roofing assembly. Completely seal all penetrations, tears, openings, and punctures that may occur during construction. Provide transition material to bridge and seal adjacent air barrier materials.

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.

- .1 REQUIREMENT: No less than UL Class A external fire exposure, and Class 90 wind uplift. FM Class I construction.

07 52 00 MODIFIED BITUMENINOUS MEMBRANE 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.

07 53 00 ELASTOMERIC MEMBRANE ROOFING:

See 07 54 00 for recommended membrane roofing systems. Other types allowed with written approval are Ethylene Propylene Diene Monomer (EPDM). No ballasted roof systems permitted.

07 54 00 THERMOPLASTIC MEMBRANE ROOFING:

Thermoplastic Polyolefin (TPO), DuPont Elvaloy Ketone Ethylene Ester (KEE), Polyvinyl Chloride (PVC) roofing systems with heat welded seams are recommended. No ballasted roof systems permitted.

07 55 63 VEGETATED PROTECTED MEMBRANE ROOFING

- .1 Provide permanent roof access by passage door, ladder, or roof hatch for the maintenance of the vegetated green roof.
- .2 Drainage: Provide proposed drainage system for review prior to finalizing plan. The use of single or multiple scuppers can be problematic without close attention

to the effect wind will have on blowing the water stream toward the building and pedestrians. Also, consider the effects of ice dams and icicles.

- .3 Electronic Leak Detection: ELECTRIC FIELD VECTOR MAPPING (EFVM): Specify an EFVM system for all approved green roof assemblies.
- .4 Irrigation: Provide appropriate irrigation water source at roof level and review with the University Landscape Architect and University Landscape Services representative per Division 32 80 00.
- .5 Fall Protection: Refer to 11 01 92 of these Standards
- .6 Vegetated tray systems are prohibited.
- .7 Maintenance: Provide type of plant material maintenance requirements and monthly/annual estimate of cost.
- .8 Vegetated green roofs require written approval from the University Landscape Architect.

07 56 00 FLUID-APPLIED ROOFING:

Not permitted. However, liquid-applied reinforced polymeric membranes may be approved on a case-by-case basis.

07 60 00. FLASHING AND SHEET METAL

07 60 10. GENERAL REQUIREMENTS:

- .1 FLASHING GUARANTY 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.
 - .1.1 Minimal height for flashing not less than 8", prefer 12".
 - .1.2 The building facade materials, penthouse door sills, etc. shall not obstruct access to roofing terminations or flashing termination. Access shall be maintained for future maintenance and replacement of the roofing system.
- .2 PLUG ANCHORAGE: Use of wood or plastic is prohibited.
- .3 FASTENERS: For preservative-treated and fire retardant-treated lumber, and High Humidity Area fasteners shall be stainless-steel connectors and fasteners (Type 304 or 316 stainless steel), copper or silicone bronze fasteners.



Mechanically galvanized fasteners and connectors are prohibited. Fastener metal type for flashings shall match the flashing metal type. Expansion type fasteners are prohibited for use in stone and brick. Fasteners in masonry shall be installed in the mortar joints, or where required to be in the masonry unit, shall be drilled and set in epoxy.

- 3.1 Provide a single layer of Ice/Water Guard type self-adhering underlayment preformed underlayment between treated wood products and metal surfaces.
- .4 METAL FLASHING: Copper, soft temper stainless steel, terne coated type 304 or 316 stainless steel, T-Z Alloy coated copper, and stainless steel. Lead-coated copper is approved for use where it replaces historic lead-coated copper materials. Minimum weight per square foot for copper flashing systems shall be per Revere Copper Products, Inc. Copper and Common Sense - Current Edition recommendations. Factory fabricated flashings of these materials are acceptable. No aluminum or galvanized steel shall be used.
- .5 PITCH PAN OR POCKETS: Use of pitch pans or pockets only if approved by the University Architect. Items penetrating roofing must be flashed with sheet metal secured with stainless steel clamps or with box curbs welded, or otherwise secured, to the penetrating items. See flashing materials above for acceptable metals.
- .6 FLASHING AND SHEET METAL: Fabrication and installation conform to the latest edition of Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) Architectural Sheet Metal Manual recommendations. Copper, when used, to conform to SMACNA and to the latest edition of Revere Copper Products, Inc. Copper & Common Sense recommendations. Compatible fasteners shall be matched with the flashing material. No fastener shall be approved that will promote staining or galvanic action.
- .7 No power or powder driven tools to be used unless approved for use by the Office of Environmental Health and Safety -. See Appendix V: 01 35 23 – 1.6.
- .8 ROOF PROTECTION: See 01 71 33.1 ROOF PROTECTION

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 shall be used. All gutters and downspouts shall be of seamless construction with the exception of expansion joints where required. Where available manufacture performed shapes, parts and fittings shall be required in lieu of field fabricated.



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

07 72 00. ROOF ACCESSORIES:

- .1 ROOF WALKWAYS: Provide per roof system manufacturer's specifications.
- .2 ROOF HATCHES: Roof hatches shall have guardrails with spring loaded swing gates. Where the roof edge does not provide passive fall protection hatches shall be minimum 10'-0" from the edge of the roof and shall open towards the interior of the roof.
- .3 CURBS AND EQUIPMENT SUPPORTS UNITS: Curbs are to match footprint of mechanical equipment and be flashed into roofing on all sides.
- .4 ELECTRIC FIELD VECTOR MAPPING (EFVM): Specify an EFVM system for all approved green roof assemblies.
- .5 SNOW GUARD PROTECTION: The A/E shall provide design layouts and types of snow and ice protection devices to be located around building perimeters where pedestrian and vehicle travel occur below sloped roofs and façade projections. The following building design elements shall be evaluated for installation of snow and ice protection devices.
 - .5.1 Roof projection slopes, snow loads, roof material color and solar orientation.
 - .5.2 Pedestrian and vehicular traffic locations in snow and ice fall zones such as egress/ingress locations, walkways and parking along the side of buildings
 - .5.3 Façade ledge projections (window head/sills, sun shading devices, roof scuppers, cornices, façade banding and entablature).
 - .5.4 Device mounting details for specific roofing systems and material substrates for snow and ice retention device installations.
 - .5.5 Roofing and Cladding manufacturers snow and ice device recommendations and mounting details.

Commentary:

The intent of this standard is to ensure the safety and protection of all pedestrian traffic locations around building perimeters that have potential snow and ice fall zones.

07 75 00 LIGHTNING PROTECTION

- .1 Refer to Division 26 for Lightning Protection requirements.

07 81 00 APPLIED FIREPROOFING**.1 QUALITY ASSURANCE:**

- A. Installer Qualifications: Engage an experienced installer certified, licensed, or otherwise qualified by the sprayed fire-resistive materials manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its sprayed fire-resistive material products to the Contractor or to an installer engaged by the Contractor does not in itself confer qualification on the buyer.
 - 1. Industry standard installation requirements such as NFCA – 100, "Standard Practice For The Application of Spray-Applied Fire Resistive Materials (SFRMs)
- B. Single-Source Responsibility: Obtain spray-applied fire resistive materials from a single manufacturer for each different product required.
- C. Provide fireproofing products containing no detectable asbestos as determined according to the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.
 - 1. Spray-applied fire resistive materials shall be free of all forms of asbestos and asbestos contamination, including actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite.
 - 2. Manufacturer shall provide Certification that products supplied are 100% asbestos-free.
- D. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
 - 1. Test and inspect as required by the Ohio Building Code, 1704.12.
- E. Surfaces to be protected shall meet applicable requirements for application and adhesion characteristics.
- F. Protect all architectural finishes from over spray.
- G. Sealer for Spray Applied Fire Resistive Materials: Transparent-drying, water-dispersible, tinted protective coating recommended in writing by manufacturer of spray applied fire resistive materials.

.2 INFORMATION SUBMITTALS

- A. Product certificates.
- B. Evaluation / special inspection reports.
- C. Field quality-control reports.

- D. Include the above A., B., & C. items in the Operations & Maintenance Manuals in electronic format. Also, provide copies to the Office of Environmental Health and Safety (EHS).
- .3 REPLACEMENT OF EXISTING ASBESTOS CONTAINING SPRAY APPLIED FIRE RESISTIVE MATERIALS:
- A. Replacement fireproofing materials to be a light blue color to easily be identified and differentiated from the remaining spray applied fire resistive materials.
- B. Replacement spray applied fire resistive materials are required to be compatible with existing conditions.
- C. Following abatement use a lock down agent that is UL Classified for use with the replacement fireproofing.
- D. Identification Labeling:
- a. Label the remaining asbestos containing fireproofing “ACM.”
- b. Label the new non-asbestos containing fireproofing “Non-ACM”
- .4 Existing Areas Scheduled for Renovation: Contractor shall confirm existing fireproofing type and provide new fireproofing to match, unless the existing fireproofing contains asbestos.

Commentary:

There is no UL assembly that uses two types of fireproofing as an acceptable assembly (i.e., GCP Monokote and Cafco). Existing fireproofing in buildings which need repair due to renovation work or new construction must be tested by the contractor and new fireproofing matching existing installed.

07 90 00. JOINT PROTECTION

07 90 10. GENERAL REQUIREMENTS:

The following conditions shall be included in the specifications:

- .1 GUARANTY: Provide written guaranty that the sealant manufacturer, 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:
- a. 20 - years after acceptance for silicone building sealants.



Commentary: *A 5- year guarantee is acceptable when the 20 – year guarantee would add additional project costs. In either case require that adhesion pull tests be performed.*

- b. 5 years after acceptance for polyurethane sealants.
- .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 A/E'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 A/E in writing, or assume responsibility for and rectify unsatisfactory results from improper application.
- .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 MOCK-UPS: Provide field-construct, onsite and in-place mock-ups for each joint type.
- .6 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 of silicone sealant is preferred, where applicable based on material types over polyurethane sealants. 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.
- .3 Below Grade: Use swellable or polyurethane sealants around all below grade, thru-wall piping penetrations and/or penetration waterstops for penetrations and foundation construction joints.

Commentary:

It is recommended that the A/E review SMACNA ARCHITECTURAL SHEET METAL MANUAL (CURRENT EDITION) Appendix M GENERAL GUIDE TO JOINT SEALANTS FOR ARCHITECTS, Appendix A Sample Specification Information, Appendix B Relevant Standards and Appendix C Additional Resources.



END OF DIVISION 7 - THERMAL AND MOISTURE PROTECTION