

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

07 00 00 THERMAL AND MOISTURE PROTECTION

07 01 00 Operation and Maintenance of Thermal and Moisture Protection

07 01 10 Maintenance of Dampproofing and Waterproofing

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07 01 20 Maintenance of Thermal Protection

07 01 30 Maintenance of Steep Slope Roofing

07 01 40 Maintenance of Roofing and Siding Panels

07 01 50 Maintenance of Membrane Roofing

07 01 50.13 Roof Moisture Survey

07 01 50.16 Roof Maintenance Program

07 01 50.19 Preparation for Re-Roofing

07 01 50.23 Roof Removal

07 01 50.61 Roof Re-Coating

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07 01 70 Operation and Maintenance of Roof Specialties and Accessories

07 01 80 Maintenance of Fire and Smoke Protection

07 01 90 Maintenance of Joint Protection

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07 06 50 Schedules for Membrane Roofing

07 06 60 Schedules for Flashing and Sheet Metal

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07 06 80.13 Fireproofing Schedule

07 06 80.16 Firestopping Schedule

07 06 90 Schedules for Joint Protection

07 06 90.13 Joint Sealant Schedule

07 08 00 Commissioning of Thermal and Moisture Protection

07 10 00 DAMPPROOFING AND WATERPROOFING

07 11 00 Dampproofing

- 07 11 13 Bituminous Dampproofing
- 07 11 16 Cementitious Dampproofing
- 07 11 19 Sheet Dampproofing

07 12 00 Built-Up Bituminous Waterproofing

- 07 12 13 Built-Up Asphalt Waterproofing
- 07 12 16 Built-Up Coal Tar Waterproofing

07 13 00 Sheet Waterproofing

- 07 13 13 Bituminous Sheet Waterproofing
- 07 13 26 Self-Adhering Sheet Waterproofing
- 07 13 52 Modified Bituminous Sheet Waterproofing
- 07 13 53 Elastomeric Sheet Waterproofing
- 07 13 54 Thermoplastic Sheet Waterproofing

07 14 00 Fluid-Applied Waterproofing

- 07 14 13 Hot Fluid-Applied Rubberized Asphalt Waterproofing
- 07 14 16 Cold Fluid-Applied Waterproofing

07 15 00 Sheet Metal Waterproofing**07 16 00 Cementitious and Reactive Waterproofing**

- 07 16 13 Polymer Modified Cement Waterproofing
- 07 16 16 Crystalline Waterproofing
- 07 16 19 Metal Oxide Waterproofing

07 17 00 Bentonite Waterproofing

- 07 17 13 Bentonite Panel Waterproofing
- 07 17 16 Bentonite Composite Sheet Waterproofing

07 18 00 Traffic Coatings

- 07 18 13 Pedestrian Traffic Coatings
- 07 18 16 Vehicular Traffic Coatings

07 19 00 Water Repellents

- 07 19 13 Acrylic Water Repellents
- 07 19 16 Silane Water Repellents
- 07 19 19 Silicone Water Repellents
- 07 19 23 Siloxane Water Repellents
- 07 19 26 Stearate Water Repellents

07 20 00 THERMAL PROTECTION**07 21 00 Thermal Insulation**

SECTION 07 21 13 BOARD INSULATION

CONSULTANT DESIGN GUIDELINE

Roof slope should be designed for positive drainage for all roof areas. This can be accomplished by sloping the roof deck during construction, the application of lightweight concrete, or by using tapered roof panels. The preferred taper system is composed of polyisocyanurate insulation board panels placed and stacked in such a way that the top panel is tapered to form the desired roof slope shape. The desired slope is ¼ inch per foot. In some cases where existing buildings are being designed for re-roof, the limited uses of 1/8 inch per foot may be allowed if it encroaches on windows or unduly changes the parapet or other structures.

INCLUDE IN CONSTRUCTION DOCUMENTS

EXECUTION

Rigid insulation shall be properly fit, joints sealed and bonded to wall, allowing the insulation to act as a single, uninterrupted layer of insulation. The preferred roofing insulation material is polyisocyanurate. The use of expanded polystyrene is discouraged.

END SECTION

07 21 13.13 Foam Board Insulation
07 21 13.16 Fibrous Board Insulation
07 21 13.19 Mineral Board Insulation

07 21 16 Blanket Insulation
07 21 19 Foamed-in-Place Insulation
07 21 23 Loose-Fill Insulation
07 21 26 Blown Insulation
07 21 29 Sprayed Insulation

07 22 00 Roof and Deck Insulation
07 22 13 Asphaltic Perlite Concrete Deck
07 22 16 Roof Board Insulation

07 24 00 Exterior Insulation and Finish Systems
07 24 13 Polymer-Based Exterior Insulation and Finish System

07 24 16 Polymer-Modified Exterior Insulation and Finish System
07 24 19 Water-Drainage Exterior Insulation and Finish System

07 25 00 WEATHERBARRIERS

INCLUDE IN CONSTRUCTION DOCUMENTS

WARRANTY

Special Warranty

1. Weather barrier manufacturer's warranty for weather barrier for a period of ten years from date of Substantial Completion.
2. Approval by weather barrier manufacturer for warranty is required prior to assembly installation.

End of Section

07 26 00 Vapor Retarders

07 26 13 Above-Grade Vapor Retarders

SECTION 07 26 16

BELOW-GRADE VAPOR RETARDERS

CONSULTANT DESIGN GUIDELINE

Underfloor Vapor Barrier. Provide vapor barrier under all concrete floor slabs on grade.

END SECTION

07 26 23 Below-Grade Gas Retarders

07 27 00 Air Barriers

07 27 13 Modified Bituminous Sheet Air Barriers

07 27 16 Sheet Metal Membrane Air Barriers

07 27 19 Plastic Sheet Air Barriers

07 27 23 Board Product Air Barriers

07 27 26 Fluid-Applied Membrane Air Barriers

07 30 00 Steep Slope Roofing

07 30 91 Canvas Roofing

07 31 00 Shingles and Shakes

07 31 13 Asphalt Shingles

07 31 13.13 Fiberglass-Reinforced Asphalt Shingles

CONSULTANT DESIGN GUIDELINE

It is desired that the minimum specification for shingles be 40 year products.

07 31 16 Metal Shingles

07 31 19 Mineral-Fiber Cement Shingles

07 31 23 Porcelain Enamel Shingles

07 31 26 Slate Shingles

07 31 29 Wood Shingles and Shakes

07 31 29.13 Wood Shingles

07 31 29.16 Wood Shakes

07 31 33 Composite Rubber Shingles

07 31 53 Plastic Shakes

07 32 00 Roof Tiles

07 32 13 Clay Roof Tiles

07 32 16 Concrete Roof Tiles

07 32 19 Metal Roof Tiles

07 32 23 Mineral-Fiber Cement Roof Tiles

07 32 26 Plastic Roof Tiles

07 32 29 Rubber Tiles/Panels

07 33 00 Natural Roof Coverings

07 33 13 Sod Roofing

07 33 16 Thatched Roofing

07 33 63 Vegetated Roofing

07 40 00 ROOFING AND SIDING PANELS

07 41 00 Roof Panels

07 41 13 Metal Roof Panels

07 41 23 Wood Roof Panels

07 41 33 Plastic Roof Panels

07 41 43 Composite Roof Panels

07 41 63 Fabricated Roof Panel Assemblies

07 42 00 Wall Panels

07 42 13 Metal Wall Panels

07 42 23 Wood Wall Panels

07 42 33 Plastic Wall Panels

07 42 43 Composite Wall Panels

07 42 63 Fabricated Wall Panel Assemblies

07 44 00 Faced Panels

- 07 44 13 Aggregate Coated Panels
- 07 44 16 Porcelain Enameled Faced Panels
- 07 44 19 Tile-Faced Panels
- 07 44 23 Ceramic-Tile-Face Panels
- 07 44 53 Glass-Fiber-Reinforced Cementitious Panels
- 07 44 56 Mineral-Fiber-Reinforced Cementitious Panels
- 07 44 63 Fabricated Faced Panel Assemblies

07 46 00 Siding

- 07 46 16 Aluminum Siding
- 07 46 19 Steel Siding
- 07 46 23 Wood Siding
- 07 46 26 Hardboard Siding
- 07 46 29 Plywood Siding
- 07 46 33 Plastic Siding
- 07 46 43 Composite Siding
- 07 46 46 Mineral-Fiber Cement Siding
- 07 46 63 Fabricated Panel Assemblies with Siding

07 50 00 MEMBRANE ROOFING

07 51 00 Built-Up Bituminous Roofing

- 07 51 13 Built-Up Asphalt Roofing
 - 07 51 13.13 Cold-Applied Built-Up Asphalt Roofing
- 07 51 16 Built-Up Coal Tar Roofing
- 07 51 23 Glass-Fiber-Reinforced Asphalt Emulsion Roofing

07 52 00 Modified Bituminous Membrane Roofing

CONSULTANT DESIGN GUIDELINE

This is our preferred roofing system.

SUBMITTALS

LEED Submittals:

1. Product Test Reports for Credit SS 7.2: For roof materials, indicating that roof materials comply with Solar Reflectance Index requirement.
2. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.

CONSULTANT DESIGN GUIDELINE

Membrane Roofing. All membrane roofing shall be mop applied modified bitumen type with a twenty-year manufacturers' warranty. The membrane roofing system shall consist of all materials and methods

as recommended by roofing manufacturer and shall include a designated base sheet and a cap sheet with factory installed roofing granules. Base sheet and cap sheet shall be as determined by roofing manufacturer to achieve the warranty and reflectance indicated above.

The membrane roofing and all associated roofing elements shall be installed by a qualified roofing contractor who has been certified by the manufacture to install the particular roofing system. The finished roof system shall have a two-year installers warranty in addition to the twenty-year manufacturers' warranty.

Torch applied membrane roofing systems may be allowed under special conditions. Check with the Facilities Management Construction Coordinator for approval.

INCLUDE IN CONSTRUCTION DOCUMENTS

Quality assurance. Installers must have completed three projects equal in size and scope and be an approved applicator.

Completion. The roof will not be considered over 90% complete until satisfactory warranty has been received and approved by the architect/engineer.

END SECTION

07 52 13 Atactic-Polypropylene-Modified Bituminous Membrane Roofing

07 52 16 Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing

07 52 19 Self-Adhering Modified Bituminous Membrane Roofing

07 53 00 Elastomeric Membrane Roofing

07 53 13 Chlorinated-Polyethylene Roofing

07 53 16 Chlorosulfonate-Polyethylene Roofing

07 53 23 Ethylene-Propylene-Diene-Monomer Roofing

07 53 29 Polyisobutylene Roofing

07 54 00 Thermoplastic Membrane Roofing

07 54 13 Copolymer-Alloy Roofing

07 54 16 Ethylene-Interpolymer Roofing

07 54 19 Polyvinyl-Chloride Roofing

SECTION 075419 POLYVINYL-CHLORIDE (PVC) ROOFING

CONSULTANT DESIGN GUIDELINE

This system may be used if special consideration is needed:

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. FM Approvals Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.
 - 1. Fire/Windstorm Classification: Class 1A-90.
 - 2. Hail Resistance: SH.
- D. Energy Performance: Provide roofing system with initial Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

INCLUDE IN CONSTRUCTION DOCUMENTS

1.5 SUBMITTALS

- B. LEED Submittals:
 - 1. Product Data for Credit SS 7.2: For roof materials, indicating that roof materials comply with Solar Reflectance Index requirement.
 - 2. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is FM Approvals approved for membrane roofing system identical to that used for this Project. Provide primary products, including each component of the single ply membrane system and related flashings produced by a single manufacturer, which has produced the specified membrane type and roofing system successfully for not less than 15 years. Provide secondary products, including insulation, coated metal flashings, fasteners, and other accessories, which are acceptable to the single ply membrane manufacturer for use with roofing system indicated.
 - 1. Manufacturer's Certification: PVC manufacturer is provide written certification the specified PVC membrane is within 2.0 mil thickness of the specified membrane thickness. ASTM D751 or D638 nominal thickness of +/- 10 percent will not be acceptable for measurement of membrane thickness.

1.9 WARRANTY

- A. Roofing Manufacturer's Warranty: Submit a written warranty, without monetary limitation, signed by roofing system manufacturer agreeing to promptly repair leaks in the roof and base flashings resulting from defects in materials or workmanship, and complying with the following:
1. Specified work shall be guaranteed by the Roofing Materials Manufacturer for a period of twenty (20) years with unlimited per square liability sum available starting from date of Substantial Completion or final acceptance (if later) by the Owner of the completed roofing system.
 2. The warranty shall be issued and approved by the Materials Manufacturer. Surety company bonds are not acceptable. Submit one copy of the roof warranty on Manufacturer's standard printed form to the Owner, via the Architect. Submit another copy to the Architect upon acceptance of the roof.
 3. Specified work shall be inspected by a qualified representative of the Manufacturer during its installation and at final completion, for conformance to Manufacturer's warranty program. A follow-up inspection shall be made by the Manufacturer sixty days (\pm) prior to expiration of Installer's two year warranty.

- C. Installers Warranty: Installer's warranty is for a period of two (2) years, furnished upon completion of all work, as a condition to its acceptance, final payment and project close-out and shall comply with the following:

1. Installer's warranty shall be issued on company's printed letterhead, agreeing to correct all leaks and defects in the roofing system to the satisfaction of the Owner and the manufacturer of the installed roof system.
2. During the two year warranty period, the Roofing Installer shall, upon notice from the Owner or Architect, respond promptly to determine the repair source of leaks or defects at no cost to the Owner.
3. Regardless of the cause of the leak or defect, the Owner and the Roofing Installer shall document and correspond as to the problem, location and corrective action needed or taken to prevent future similar occurrences.
4. For repairs or re-work of existing roofing, provide Installers Two-year Roof Guarantee, printed and signed on contractors letterhead.

2.3 ROOF INSULATION

- A. General: Prefomed roof insulation boards manufactured or approved by PVC membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.

- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

END OF SECTION 075419

07 54 23 Thermoplastic-Polyolefin Roofing

07 54 26 Nitrile-Butadiene-Polymer Roofing

07 55 00 Protected Membrane Roofing

07 55 51 Built-Up Bituminous Protected Membrane Roofing

07 55 52 Modified Bituminous Protected Membrane Roofing

07 55 53 Elastomeric Protected Membrane Roofing

07 55 54 Thermoplastic Protected Membrane Roofing

07 55 56 Fluid-Applied Protected Membrane Roofing

07 55 56.13 Hot-Applied Rubberized Asphalt Protected Membrane Roofing

07 55 63 Vegetated Protected Membrane Roofing

07 56 00 Fluid-Applied Roofing

07 57 00 Coated Foamed Roofing

07 57 13 Sprayed Polyurethane Foam Roofing

07 58 00 Roll Roofing

07 60 00 FLASHING AND SHEET METAL

07 61 00 Sheet Metal Roofing

07 61 13 Standing Seam Sheet Metal Roofing

07 61 16 Batten Seam Sheet Metal Roofing

07 61 19 Flat Seam Sheet Metal Roofing

07 61 91 Tinplate and Ternplate Roofing

07 62 00 Sheet Metal Flashing and Trim

INCLUDE IN CONSTRUCTION DOCUMENTS

WARRANTY

Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within 20 years from date of Substantial Completion.

End of Section

07 63 00 Sheet Metal Roofing Specialties

07 65 00 Flexible Flashing

- 07 65 13 Laminated Sheet Flashing
- 07 65 16 Modified Bituminous Sheet Flashing
- 07 65 19 Plastic Sheet Flashing
- 07 65 23 Rubber Sheet Flashing
- 07 65 26 Self-Adhering Sheet Flashing

07 70 00 ROOF AND WALL SPECIALTIES AND ACCESSORIES

07 71 00 Roof Specialties

- 07 71 13 Manufactured Copings
- 07 71 16 Manufactured Counterflashing Systems
- 07 71 19 Manufactured Gravel Stops and Facias
- 07 71 23 Manufactured Gutters and Downspouts
- 07 71 26 Reglets
- 07 71 29 Manufactured Roof Expansion Joints
- 07 71 33 Manufactured Scuppers

07 72 00 Roof Accessories

- 07 72 13 Manufactured Curbs
- 07 72 23 Relief Vents

SECTION 07 72 33 ROOF HATCHES

CONSULTANT DESIGN GUIDELINE

ROOF HATCH. Design all roof areas to include a roof hatch or stairway with penthouse unless external access is provided. The roof hatch shall have a hold open device. Provide a steel ladder to the roof hatch and furnish hatch with a padlock keyed to a Facilities Management utility #2 master key.

END SECTION

07 72 36 Smoke Vents
07 72 43 Roof Walk Boards
07 72 46 Roof Walkways
07 72 53 Snow Guards
07 72 63 Waste Containments Assemblies

07 76 00 Roof Pavers

07 76 13 Roof Ballast Pavers
07 76 16 Roof Decking Pavers

07 77 00 Wall Specialties

07 80 00 FIRE AND SMOKE PROTECTION

07 81 00 Applied Fireproofing

07 81 13 Cement Aggregate Fireproofing
07 81 16 Cementitious Fireproofing
07 81 19 Foamed Magnesium-Oxychloride Fireproofing
07 81 23 Intumescent Mastic Fireproofing
07 81 26 Magnesium Cement Fireproofing
07 81 29 Mineral-Fiber Cementitious Fireproofing
07 81 33 Mineral-Fiber Fireproofing

07 82 00 Board Fireproofing

07 82 13 Calcium-Silicate Board Fireproofing
07 82 16 Slag-Fiber Board Fireproofing

07 84 00 Firestopping

07 84 13 Penetration Firestopping
 07 84 13.13 Penetration Firestopping Mortars
 07 84 13.16 Penetration Firestopping Devices
07 84 16 Annular Space Protection
07 84 23 Silicone Firestopping Foams
07 84 26 thermal Barriers for Plastics
07 84 43 Fire-Resistant Joint Sealants

All fire caulking on this Campus shall be “red” in color and either be manufactured by Hilti or 3M Corporation. The caulking shall be installed per manufacturer’s directions and shall be inspected by Campus Fire Marshal after installation is complete.

07 84 53 Building Perimeter Firestopping
07 84 56 Fire Safing
 07 84 56.13 Fibrous Fire Safing

07 86 00 Smoke Seals

07 87 00 Smoke Containment Barriers

07 90 00 JOINT PROTECTION

07 91 00 Preformed Joint Seals

07 91 13 Compression Seals

07 91 16 Joint Gaskets

07 91 23 Backer Rods

07 91 26 Joint Fillers

07 92 00 Joint Sealants

INCLUDE IN CONSTRUCTION DOCUMENTS

WARRANTY

Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements within specified warranty period.

Warranty Period: Two years from date of Substantial Completion.

End of Section

07 92 13 Elastomeric Joint Sealants

07 92 16 Rigid Joint Sealants

07 92 19 Acoustical Joint Sealants

07 95 00 Expansion Control

INCLUDE IN CONSTRUCTION DOCUMENTS

WARRANTY

Warranty period shall be a 5 year labor and materials warranty commencing with date of acceptance of work.

End of section

07 95 13 Expansion Joint Cover Assemblies

07 95 53 Joint Slide Bearings

07 95 63 Bridge Expansion Joint Cover Assemblies