

1 General

.1 Standards

- .a Membrane Roofing:
 - i. All low slope roof areas shall be accessible by means of a roof hatch, exterior door or exterior roof ladders.
 - ii. Minimum slope to point of discharge shall be 1/4 in. per foot, or as approved by owner.
- .b Sheet Metal Roofing:
 - i. Standing seam roofing is the preferred roof system for medium to high pitched roofs.
 - ii. Provide roof tie-off hooks as required by OSHA. Reference current edition of the North Carolina Occupational Safety and Health Standards for the Construction Industry. Coordinate locations with owner. Finish to match metal roof color.
- .c Roof Warranty:
 - i. Manufacturer's Warranty: 20 years.
 - ii. Installer's Warranty: 2 years.
 - iii. Insulation Warranty: 2 years.

2 Products

.1 Building Insulation & Vapor Barriers

- .a Building Insulation shall follow current N.C. State Energy Code for minimum R values.
- .b Fluid-Applied Air and Vapor Barriers:
 - i. Specify fluid-applied materials. Provide related accessories including primer, seam tape, mastic, fluid and sealant as recommended by manufacturer.
- .c Sheet Air and Vapor Barrier:
 - i. Specify self-adhering membrane composed of flexible facing material coated completely and uniformly on one side with adhesive material, formed into uniform, flexible sheets, interleaved with disposable release liner that is removed prior to application. Provide related accessories including primer, seam tape, mastic, fluid and sealant recommended by manufacturer
- .d Spray Polyurethane Foam:
 - i. Material shall meet requirements of ULC S705.1, Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density. Minimum design R value of R-6 per inch. Density of 1.9 pounds per cubic foot. Smoke development not greater than 450 and flame spread not greater than 25 when tested in accordance with ASTM E 84.
 - ii. Specify spray-applied materials. Provide related accessories including primer, mastic, fluid and sealants as recommended by manufacturer.

.2 Waterproofing

- .a 3-Ply bituminous waterproofing using either coal-tar pitch or asphalt bitumen and felt is recommended for use. Sheet membrane and fluid-applied waterproofing shall be used only with the Owners approval.
- .b Protection Course: Where exposed to earth and crushed stone backfill, provide a protection course over completed waterproofing. For bituminous waterproofing this shall be 1/2 in. asphalt saturated and coated fiber insulation board or 1/8 in. premolded, asphaltic-laminated, semi-rigid composition board.
- .c All below grade wall construction of interior spaces and elevated floor construction at toilet rooms and showers shall be waterproofed.

- .d Below Grade Wall Waterproofing: Drainage tile shall be installed with coarse crushed stone backfill at wall foundation. Connect tile drain lines to grade or storm drain lines.
- .e Elevated Floor Waterproofing: Turn up membrane 4 in. at walls. Prior to installation of finish flooring, flood entire waterproofed area for 24 hours with water at least 2 in. deep at shallowest point. Repair any leaks and retest.
- .f Designer to identify assembly leak testing requirements.

.3 Roof Insulation

- .a Shall follow current N.C. State Energy Code for minimum R values.
- .b All roof insulation shall be CFC free.

.4 Exterior Insulation and Finish System

- .a General: EIFS is not to be used as principal envelope system; primarily accents, subject to Owner approval.
- .b Weather-Resistant Barrier: Asphalt saturated organic felt; No. 15 without perforations.
- .c Molded, Rigid Cellular Polystyrene Board Insulation: ASTM C 578, Type I.
- .d Reinforcing Mesh: Alkali-resistant, open weave mesh. Do not use EIFS within 10 feet of finish grade.

.5 Metal Roofing

- .a Use: Medium to high sloped roofing.
- .b Panels: Smooth, pre-finished. Material as selected by designer and owner approved.
- .c Finish: Designer selected, owner approved.
- .d Dimensions: Designer selected with consideration to prevent oil-canning.
- .e Clips and Fasteners: Stainless steel.
- .f Snow Guards: shall be installed at roof eaves over entrances, walkways, and adjacent metal roof areas. Provide snow guards that attach to the metal roof panel seams. Snow guards shall not penetrate or be adhered to metal roof panels.
- .g Finish and Weather-tightness Warranty: Thirty years from the date of Substantial Completion.

.6 SBS Modified Bituminous Roofing (Owner Preferred)

- .a Torch applied is the preferred systems for modified bitumen roofing. Hot asphalt applied is acceptable with the special consent of the Owner, prior to the start of the Design development Phase.
- .b Modified bitumen roofing shall be a minimum of two plies and shall have factory-applied surfacing. Modifiers and reinforcements shall be as recommended by the Design Consultant; however no organic products shall be specified.
- .c The complete roofing system including membrane, insulation and attachments shall meet the requirements of N.C. State Building Code (including ASCE-7 for wind uplift) and UL Class A.
- .d Roofing Granules: Ceramic-coated roofing granules, designer specified and owner approved.
- .e Walkway Pads: Polymer-modified, reconstituted solid rubber, surface textured, slip-resistant pads, 3/8-inch minimum thickness. Locate walkway pads from roof access to all equipment to be serviced, including roof drains.

.7 Thermoplastic Membrane Roofing

- .a Use: Low slope roofing; Owner 1st preference is SBS Modified bituminous.
- .b Acceptable with the special consent of the Owner, prior to the start of the Design development Phase, shall be either mechanically fastened or fully adhered type.

- .c Minimum thickness of the membrane shall be as required by manufacturer to achieve warranty. The complete roofing system including membrane, insulation and attachments shall meet requirements of N.C. State Building Code (including ASCE-7 for wind uplift) and UL Class A.
- .d Single ply systems is acceptable, with the special consent of the Owner, prior to the start of Design Development phase.

.8 Roof Accessories

- .a Roof Hatches: Single-leaf type, for 40 psf external loading and 20 psf internal loading pressure. Provide double-wall, minimum 9-inches high frame, with 1-1/2-inches insulation. Paint roof hatches with high performance coating system.
- .b Scuppers: Continuous thru-wall aluminum with Kynar 500 finish to match exterior metal color.

.9 Sheet Metal Flashing and Trim

- .a Copper: ASTM B 370 , Temper H00 or H01, cold-rolled copper sheet.
- .b Aluminum: ASTM B 209, Alloy 3003, 3004, 3105 or 5005 with clear or color anodized finish.
- .c Stainless Steel: ASTM A 240, Type 304 with No. 4 finish.
- .d Lead: ASTM B 749, copper-bearing lead sheet.
- .e Owner preference is precast coping for screen wall caps.

.10 Sprayed Fire Resistive Materials

- .a Factory-mixed cementitious sprayed material, dry formulation of gypsum or Portland cement binders and lightweight mineral or synthetic aggregates mixed with water at the jobsite.
- .b Designer shall confirm substrate compatibility on renovations.
- .c Intumescent Fire Resistive Coating/Paint: Limited use, as approved by owner.

.11 Firestopping

- .a Use only firestopping materials that have been UL and ASTM tested for specific fire-rated construction conditions.
- .b Firestop System Assembly Rating and "F: Rating shall be equal to the time rating of the construction being penetrated.