DIVISION 07 50 00  MEMBRANE ROOFING & ROOFING ACCESSORIES

A. Final selection and approval of the roofing system for new construction and reroofing is reserved by the UAO.

These guidelines, in consultation with the UAO project team leader and the UAO Construction Manager for Roof Projects, shall be followed for developing preliminary design development and construction cost estimates.

Note that several of the requirements for reroofing projects will also apply for new construction.

In general follow these rules:

1. Comply with Factory Mutual requirements for “I-90” and hail resistance “SH” unless local conditions require a higher rating.

2. Provide exterior fire-test exposure “Class A” for all roofing materials.

3. Provide No Dollar Limit (NDL) warranties from the manufacturer. Specify roofing membrane manufacturer’s approved insulation, flashings, adhesives, accessories, etc. to comply with warranty requirements.

4. Specify fleece backing on membranes to improve adhesion to substrate. Indicate that membrane flashing shall be the same material as the field membrane.

5. Specify cover board equal to Georgia-Pacific’s “Dens-Deck Prime” as part of the roof system. Boards shall not exceed 48 x 48 inches in size and shall be attached with adhesives to the substrate.

6. Specify 24” x 24” x 2” pre-cast concrete pavers with slip sheets at access hatches, doorways, ladders and walkways to roof-top equipment.

B. Major Capital Projects: Select 30-year warranty, minimum 0.090” EPDM roofing systems or 0.080” TPO to include these approved manufacturers:

1. Firestone – fully adhered, EPDM or TPO

2. GAF – fully adhered, TPO Fleece-Backed
C. Minor Capital Projects (less than $2 million total Project Cost): Select 20-year warranty roofing systems to include any of the following:

1. EPDM – fully adhered, minimum 0.060”
   Manufacturers – Firestone, Genflex

2. TPO Fleece Backed – fully adhered, minimum 0.060”
   Manufacturers – Firestone, GAF

3. PVC – fully adhered, minimum 0.080”
   Manufacturers – Sarnafil, GAF, Fibertite

4. Modified Bitumen
   Manufacturers – Firestone, CertainTeed, GAF

D. Guidelines for New and Reroofing Projects

1. Include total tear off of existing roof systems and insulation down to structural deck for all reroofing projects.
   a. Provide for core samples and testing of existing roof flashings and membrane for presence of asbestos containing materials (ACM). If testing cannot be done, then check with UAO for building records to determine if ACM may be encountered.
   b. Include the core sample results (type of insulation, thickness, type of membrane) and the ACM results in the specifications.
   c. If samples are positive for ACM, then some minor changes to the General Conditions concerning the handling of ACM is required.

2. Provide Polyisocyanurate Board Insulation in sufficient layers to provide an average R-30 insulation.
   a. Provide minimum 1/4” per foot tapered insulation with saddles and crickets unless existing deck is sloped (check structural drawings). 1/8” per foot tapered insulation may be approved by UAO if parapet wall and roof edge conditions dictate a lower slope.
b. Use adhesives (see #3 below) for attaching insulation to roof deck. Mechanical fastening requires approval by UAO before bidding.

c. Insulation shall not exceed 2 inch thickness and 48” x 48” in size with edges and ends staggered a minimum of 6” in each direction. Stagger layers 6 inches in each direction so that joints do not line up vertically.

d. On concrete decks, glue insulation directly to deck. On metal decks, the first layer of insulation may be mechanically attached unless the exposed fasteners are an issue. All other layers of insulation shall be glued.

e. Verify that metal decks are not exposed to view on interior of building and that the fasteners comply with FM Global pull-out requirements.

f. For all warranties, a layer of Dens-Deck Prime is required between the insulation and the membrane. The minimum thickness is 1/4 inch.

3. Specify water-based adhesives, low rise urethane foam, or self-stick when building will be occupied during construction, when adjacent buildings are occupied, or when directed by UAO.

a. Note that water-based adhesives are not the same as “low-VOC” adhesives. Low-VOC adhesives that are labeled “flammable” are not acceptable.

b. Specify that wall flashings shall be installed with water-based adhesives. Tall parapet walls may require intermediate termination bars.

c. Schedule reroofing activities for late spring, summer and early fall to allow the use of water-based adhesives.

d. Low-rise foam works best with fleece backed membranes.

4. Include replacement of existing coping stone flashing and wall counter flashing if any of these conditions occur:

a. Existing flashings are not completely “through wall”.

b. Additional layers of insulation will bring the level of the roof above the counter flashing.
c. Existing counter flashing is in poor condition or missing entirely.
d. Interior water damage to walls or ceilings indicates that existing flashings are not installed properly.

5. Metal copings, gutters and downspouts if existing, shall be completely replaced with new materials. Inspect flashing for reuse or replacement; provide flashing details on drawings.
   a. Local roofing and sheet metal contractors have the capability to fabricate in their shop most of the metal work required for roofing work.

6. Recommendations of SMACNA shall be followed for detailing and expansion joint locations. Depending upon the project, one of the following materials will be recommended by the UAO:
   a. Stainless steel, type 304, fully annealed, 2B mill finish, minimum 24 gauge.
   b. Fluoropolymer PVDF (AAMA 2605) pre-painted steel or aluminum, minimum 24 gauge.
   c. 16 oz. copper. Specify lead-coated copper when exposed to view or when used with stone veneer buildings.
   d. TPO coated metals for use with TPO membranes.

7. Preferred access to all main roof areas is by interior stairs and 3'-0" x 7'-0" door opening. Consider size of roof top equipment and provide oversized or double doors when necessary for easy maintenance.
   a. Provide aluminum frames and fiberglass reinforced polyester (FRP), insulated flush doors (see www.special-lite.com).
   b. Provide continuous gear hinges, mortise lockset, and LCN Closer with hold-open arm.

8. Exterior ladders and roof hatches with interior ladders may be used to access minor roof areas. Roof hatches shall be provided with safety posts for
climbing similar to Bilco’s “LadderUP”. Pre-fabricated aluminum ladders are available from the following suggested vendors:

a. O’Keeffes (www.okeeffes.com)

b. Alco-Lite Industrial Products (www.alcolite.com)

c. Schmidt Structural Products (www.schmidtstructural.com)

9. Roof replacement projects typically include more than just replacing the roof membrane. Check for the following conditions that can contribute to leaking roofs and advise the UAO team leader:

a. Deteriorated, rusty or abandoned roof top equipment

b. Obvious damage to adjacent windows, doors, vents, louvers

c. Low curb heights at parapets and mechanical equipment

d. Damaged or missing lightning protection

e. Tree limbs touching the building or overhanging the roof surface

f. Penthouse roof access door sill flashing and roof flashing details

g. Roof expansion joint details at walls and in the field of the roof

h. Missing fasteners at exhaust fans and mechanical equipment

i. Damaged roof drains or no interior insulation on drain piping

j. Deteriorated or leaking skylights, especially Kalwall products

k. Open or deteriorated mortar joints

l. Deteriorated or no waterproof coatings over concrete or concrete masonry

10. Include in unit prices for all reroofing projects the cost of retrofitting damaged roof drains with a replacement roof drain insert as manufactured by OMG “Hercules” Retrodrain with “High Aluminum Strainer Dome” (www.olyfast.com).
a. If the existing roof does not have overflow scuppers or overflow drains as required by code, then provide new overflow protection.

11. Provide precast concrete roof pavers at access doors, hatches, roof ladders and other locations where periodic maintenance of roof-top equipment is anticipated. Install concrete pavers over a slip sheet that is laid on top of the roof membrane. Provide walkway paver layout on drawings.

a. Size: 24”x24”, color as selected from manufacturer’s standards.

b. Acceptable Manufacturers:

1. Hanover Architectural Products
2. Rapid Building systems
3. Roofblock, Ltd.
4. Sunny Brook Pressed Concrete Co.
5. Wausau Tile, Inc. Terra-Paving Div.
6. Westile Roofing Products

E. Fiberglass Shingles: Generally, provide laminated 30-year warranty shingles with algae resistance for wood-framed building. Contact the UAO for selection of type and color.

F. Fall Protection: The minimum height of parapet walls at roofs shall be 3’-6” unless OSHA-compliant fall protection is provided.

1. Suggested vendors for fall protection who can provide products, engineering, installation, testing and certification:

   a. Peak Fall Protection, Inc. (866-387-9965) www.peak-pf.com

   b. Roottop Anchor, Inc. (800-466-6385) www.rooftopanchor.com

   c. Guardian Fall Protection (800-466-6385) www.guardianfall.com

2. Indicate on roof plans fall protection locations, quantities and details for installation. Installation shall be designed by a professional engineer licensed in the State of Indiana.

G. Lighting Protection systems shall be provided for all new Capital Projects and shall be coordinated with the roof design documents.