



## **Division 07 Thermal and Moisture Protection**

### **07 05 00 Common Work Results for Thermal and Moisture Protection**

#### ***07 05 10 General Requirements for Thermal and Moisture Protection***

1. The roofing system design for all UW-Madison facilities shall comply with all the provisions of the latest version of the Division of Facilities Development & Management (DFD) *Minimum Design Guidelines for Roofing and Waterproofing Systems*, which is available from the DFD website.
2. References within the DFD Guidelines regarding the DFD Project Manager shall apply to the UW-Madison Project Manager on UW-Madison Managed Projects.
3. Project Specifications shall use as their basis all appropriate sections of the latest edition of the DFD Master Specifications.
4. Deviations from DFD's Minimum Design Guidelines or the DFD Master Specification sections shall be made only upon approval from the UW-Madison Project Manager.
5. The *Guidelines for Planning and Design of UW-Madison Facilities* shall take precedence over DFD Guidelines, but the A/E shall discuss all conflicts within the guidelines and specifications with the UW-Madison Project Manager.

#### ***07 05 12 Inspections and Testing***

1. On projects replacing or adding a total 2,000 sq. feet of roofing/waterproofing or more, the AE shall hire a subconsultant for inspection and testing of the installation of the new roofing system (unless directed otherwise by the UW Project Manager). The subconsultant shall provide qualifications showing their knowledge of the installation of the proposed roofing installation.
2. AE shall coordinate the level and frequency of testing and inspections with the UW project manager.

### **07 10 00 Dampproofing and Waterproofing**

#### **07 10 90 Waterproofing and Insulation for Utilities**

1. This is a DFD Standard Specification although it may not be available on their website. Use this specification section for all applicable utility work. It can be obtained from DFD or UW-Madison Facilities Planning & Management.

#### **07 18 00 Traffic Coatings**

1. All parking ramp driving or parking surfaces above grade and of poured-in-place type construction shall have a traffic membrane applied to the top surface to protect the structure underneath. The membrane shall be thicker at the corners and driving lanes than in the parking stalls.

### **07 33 63 Vegetated Roof (Green Roofs)**

1. Consider green roofs during preplanning phase. Make decision as early as possible in the design process whether there will be a green roof or not. Ensure proper budget is provided and structural considerations of the building/structure are considered as early as possible.



## 2. Design

- a. Landscape Architect and Architect shall coordinate type of windows to be specified adjacent to green roof.
  - i. Ensure glare from windows is minimized and does not burn or kill nearby plants.
  - ii. Specify windows that are bird friendly and minimize bird fatalities. Green roofs will become wildlife habitat (birds and pollinators).
    1. Consider UV patterned glass, translucent glass, opaque glass, fritted glass patterns, and other best practices
  - iii. See Division 08 80 00
- b. Use transparent guardrails to maximized views from green roof.
  - i. Raised planters integrated into the building parapet is an alternate to guardrails along the building edge. (Example: School of Human Ecology).
- c. Intensive green roofs with a monolithic growing media volume have provided the best results for green roof and plant success on campus. Do not use tray systems.
- d. Install green roofs in locations that maximize their benefits and functionality:
  - i. Accessible by students and staff as outdoor gathering places, outdoor classrooms, and/or outdoor seating.
  - ii. Visible from either the ground level and/or from windows around and above the building to maximize mental wellbeing benefits and views to vegetated “natural” spaces.
  - iii. One or two large green roofs on a building is easier to maintain and more functional than numerous smaller green roof sections.
    1. Avoid narrow green roof “slivers” along building edges where the maintenance person has to “hug” the edge of the roof.
  - iv. Locate green roofs on building sides that affords the best views when possible and appropriate. Views of the lake, Wisconsin State Capitol, Lakeshore Nature Preserve, sweeping views of campus, etc.
  - v. Consider solar access patterns on green roof throughout the year.
- e. Consider how the green roof will be used in the winter, if at all. Are there opportunities for winter use?

## 3. Green Roof Access

- 1.1. Architect and Landscape Architect shall coordinate ADA compliant access to the green roof whether it is occupiable space or not. Maintenance staff always need to access the roof.
- 1.2. For green roofs not designated as occupiable space, maintenance staff access to the green roof shall be clear of obstructions, not have overhead hazards, provide flexibility for maintenance equipment to get through, and be easily accessible.
- 1.3. Consider elevator locations and how the public and maintenance staff access the building and the green roof. Minimize travel through secured areas to access green roof.



- 1.4. Maintenance access to green roof shall not be through a window(s).
- 1.5. Access through HVAC rooms has proven problematic. Think through room design and access points carefully. Ensure there is enough room for maintenance staff to move through with small equipment (ex: push mower). Consider storage place for maintenance equipment.

#### 4. Green Roof Plants

- a. Plant selection, especially with sedum mixes, shall be diverse to account for the high microclimate variability on a green roof and ensure there are plant species that can fill gaps where others did not survive.
- b. Plant species selected shall support native pollinators, birds, and endangered species.
- c. Do not use plants from the Regulated and Non-Regulated Wisconsin DNR Invasive species lists.
- d. Do not use cultivars or varieties of plants found on the Regulated and Non-Regulated Wisconsin DNR Invasive Species List.
- e. Do not use aggressive natives that may take over the green roof or escape onto the ground plane.
- f. Priority is for Wisconsin native perennials and plants when appropriate.
- g. Sedum plugs take a long time to fill in, if at all. Instead use sedum sod rolls.
  - i. Sedum rolls with native perennial plugs worked well at the DeJope Hall. The sedums held the growing media, suppressed weeds, while the natives established.

#### 5. Green Roof Amenities

- a. Site furnishings shall be surface anchored or heavy enough such that they will not be lifted off the roof by wind.
- b. A mix of material types can make a green roof more hospitable, more comfortable, and more desirable to occupy.
- c. Consider shade structures on roof (excluding umbrellas affixed to tables) to provide comfortable seating during the summer months.
- d. On occupiable green roofs, provide electrical outlets and Wi-Fi for outdoor events and for students/staff to plug in electrical devices.
- e. Ensure outlets for maintenance equipment are provided.

#### 6. Maintenance

- a. Understand the ability and resources of the maintenance staff and client before the green roof design process begins. A well taken care of green roof will maximize its benefits, longevity, and resiliency.
- b. Green roofs with public access also benefit maintenance staff. Harness hook ups are not needed, and maintenance staff do not have to go up in pairs for safety protocol.



- c. Place hose bibs along building to ensure good coverage if temporary irrigation is needed for maintenance or the establishment of new plants.
- d. Multi-tier green roofs shall have built in ladders to facilitate maintenance staff safety accessing the different levels (Example: Gordon Dining & Event Center).
- e. Water does not move in 90-degree angles. Plan water movement to scuppers and down spouts accordingly.
- f. Ensure vents and other roof utilities have stone mulch areas surrounding them to keep plants away and ensure easier maintenance access.
- g. The Landscape Architect and Architect shall collaborate and design a way for maintenance staff to get plant debris and duff off the green roof.
  - i. Can a “snow chute” type system, or the ability to attach a temporary chute system to the building, be included?
  - ii. Is there a way for a lift or other equipment to pull up alongside the green roof on the ground level to facilitate maintenance?
  - iii. How do maintenance staff move through the building? How do they carry the debris and equipment in and out?
  - iv. For perennial heavy green roofs on campus, plant debris is typically removed every other year because of the time and labor needed.

## **07 50 00 Membrane Roofing**

### ***07 50 00 General Requirements for Membrane Roofing***

1. The top of roof drain shall be at the level of the roof membrane and not the level of the ballast so water can enter the drain.

### ***07 53 00 Elastomeric Membrane Roofing***

1. Pavers shall be utilized and installed per DFD Master Specification.

## **07 55 63 Vegetated Protected Membrane Roofing**

1. See 07 33 63 Vegetated Roof

## **07 70 00 Roof Specialties and Accessories**

### ***07 72 00 Roof Accessories***

1. Pavers shall be utilized to access all roof top equipment.
2. All roof top equipment shall be set on a curb, pad, or stand; sleepers are not permitted.