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14.01.1 Modular Vegetated Roof Systems

- A.** The purpose of a modular vegetated roof system is to provide environmental benefits to the building and surrounding area by providing stormwater management, reduced solar heat gain, biodiversity and aesthetics as well as providing physical protection to the roofing system.
- B.** The landscape architect, prime consultant, engineer, or building owner is responsible for the selection of the modular vegetated roofing system plantings and growing medium thickness.
- C.** The vegetated roof manufacturer must notify IKO, in writing, that their vegetated roof system meets all of the requirements outlined in this section.
- D.** IKO reserves the right to accept or reject any modular vegetated roofing system as an acceptable vegetated roof covering over an IKO roofing system.
- E.** The plantings in the vegetated roofing system must be suitable for the environmental conditions in which they are to be installed.
- F.** The growing medium depth and density of the vegetated roofing system must be uniform throughout and suitable for the selected plantings.
- G.** The vegetated roofing system's modules and growing medium must be able to withstand normal maintenance foot traffic without crushing or breaking.
- H.** The modular vegetated roofing system manufacturer must accept responsibility for any manufacturing defects that occur in the system.
- I.** The modular vegetated roofing system manufacturer must warrant the performance of the plantings for a minimum of two years to the building owner, provided that the plant maintenance is performed according to a published maintenance protocol.
- J.** Vegetated roofing system growing medium thickness and plantings will vary with the stated purposes of the system and the environmental conditions it is installed in. Consult the regional vegetated roofing system provider for the current commendations.
- K.** All the modular vegetated roofing systems must be able to be installed on the roofing system without penetrations for wind uplift restraint devices. The systems must show adequate wind uplift resistance and wind flow performance to be installed loosely laid on top of an IKO roofing system.

14.01.2 Vegetated Roofing Systems Approvals, Restrictions, Minimum Thickness, and Assemblies

- A.** The modular vegetated roofing system shall have a wind uplift resistance rating and a wind flow resistance rating as tested under the test standard CAN/CSA A123.24-15 “Standard test method for wind resistance of modular vegetated roof assembly.”
- B.** The modular vegetated roofing system shall be approved by FM under Approval Standard for Vegetative Roof Systems Class Number 4477 when installed on an IKO FM-approved roofing assembly. (Note: This limits applications to 4" and 6" modules with no more than 5% taller vegetation).
- C.** The modular green roof system’s saturated weight and dry weight shall be declared to the structural engineering consultant designing the roof to ensure that it has the sufficient structural strength to support the loads in accordance with the local building codes. The statement shall be supported by a current green roof growing medium test report, of a representative sample of the engineered growing medium contained in the green roof system modules, as conducted by the Agricultural Analytical Services Laboratory at Penn State College of Agricultural Sciences or an equivalent laboratory. The weight of all the other green roof system components shall be stated as well.
- D.** The modular vegetated roofing system shall not have exposed plastic edges that protrude above the growing medium.
- E.** The growing medium in the modular vegetated roof system shall be formulated and tested in accordance with the “Guidelines for the Planning, Execution and Maintenance of Green Roofing, 2008” as published by the FLL (German Landscape Research, Development and Construction Society).
- F.** The plantings in the modular vegetated roofing system shall be established at the time of installation with a minimum foliar coverage of 95% and minimum root penetration of 75% of the depth of the growing medium.

14.02.1 Modular Vegetated Roof System Installation

- A.** The vegetated modules shall be handled, stored, and installed according to the written instructions of the vegetated system manufacturer.
- B.** The modular vegetated roof system assembly consists of the following components starting upward from the membrane in a conventional roofing system:
 - 1. Electronic Field Vector Mapping Leak Detection System (optional);
 - 2. Root barrier of polyethylene, polypropylene, or other root penetration tested material approved by IKO (mandatory);
 - 3. Vegetated roofing modules inclusive of the engineered growing medium and plants incorporating drainage channels in the base of the modules (mandatory);
 - 4. Perimeter edging restraint system containing sufficient drainage slots to provide rapid drainage of excess water once the growing media is saturated (mandatory);
 - 5. Boxed perimeter edge restraint around drains, roof anchors, and roof penetrations;
 - 6. Irrigation system (optional); and
 - 7. Ballast or pavers in the vegetation-free zone (optional).
- C.** The modular vegetated roof system consists of the following components starting upward from the membrane in a protected roofing system:
 - 1. Electronic Field Vector Mapping Leak Detection System (recommended);
 - 2. Root barrier of polyethylene, polypropylene, or other root penetration tested material approved by IKO (mandatory);
 - 3. Drainage layer approved by IKO (optional);
 - 4. Rigid foam insulation approved by IKO (mandatory);
 - 5. Scrim sheet approved by IKO (mandatory);
 - 6. Vegetated roofing modules inclusive of the engineered growing medium and plants incorporating the drainage channels in the base of the modules (mandatory);
 - 7. Perimeter edging restraint system containing sufficient drainage slots to provide rapid drainage of excess water once the growing media is saturated (mandatory);
 - 8. Boxed perimeter edge restraint around drains, roof anchors, and roof penetrations;
 - 9. Irrigation system (optional); and
 - 10. Ballast or pavers in the vegetation-free zone in accordance with the ballasting requirements set by IKO (or rigid foam insulation provider).

- D.** Before the installation of the modular vegetated roof system, the roofing system shall be confirmed to be free of leaks to the satisfaction of IKO and the vegetated roof system manufacturer.
- E.** A vegetation free border shall be left around all roof penetrations, intersecting walls, parapets, upturns, or mechanical equipment clad with combustible materials, which are equal in width to the height of the vegetation but in no case less than twenty inches (20") (500 mm) in width. The vegetation-free zone is to be finished with the ballast or pavers according to the IKO roofing system requirements.
- F.** All the perimeter edge restraints shall be at least as high as the top of the growing medium in the vegetated modules and shall be made of extruded aluminum. All the edging restraints will be penetrated near the base with the drainage slots large enough to allow the unrestricted flow of water towards the drains.
- G.** Any installed irrigation system shall be professionally designed by a Certified Irrigation Designer (CID). The system will be installed with all the piping covered by the ballast, pavers, modules, or growing medium. The piping shall be installed so as not to interfere with the free flow of water towards the roof drains.
- H.** The vegetated roofing system cannot be installed under overhanging roofs unless an irrigation system is present.
- I.** A minimum twenty-four inch (24") (600 mm) wide vegetation-free zone shall be left around all the rooftop appliances.
- J.** Vegetation-free zones around fans should be sized according to the spread and intensity of the exiting air stream with a minimum vegetation-free zone of twenty-four inches (24") (600 mm) recommended.

14.02.2 Modular Vegetated Roof System Maintenance

- A.** After installation, all the vegetated roof systems shall be maintained in accordance with the written instructions of the vegetated roof system manufacturer.

End of Section