

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pre-vegetated mat system for roof covering.
2. Accessories and components as necessary for a complete installation of the vegetated roof covering.

B. Related Sections:

1. Section 075400 – Membrane Roofing.

1.3 DEFINITIONS

- A. Definitions pertaining to sustainable development: As defined in ASTM E2114.
- B. Adhered System: System to physically attach the pre-vegetated mat to the membrane roofing to prevent wind disturbance of the system.
- C. Bryophyte: moss or liverwort.
- D. Epiphyte: A plant that grows upon another plant without taking nourishment from its host.
- E. Lichen: A class of plant composed of fungi and algae in symbiotic union.
- F. Pre-Vegetated Mat: Mat that is fully covered with a growth of bryophytes, lichen, and vascular epiphytes and delivered to the installation site pre-vegetated.
- G. System Installer: Entity approved by System Provider to install vegetated roof covering system.
- H. System Provider: Entity that provides all materials required for installation of the vegetated roof covering system.
- I. Roofing Membrane Provider: Entity that provides all materials required for installation of the waterproofing/roofing system below the vegetated roof covering. Refer to Section 075400.

1.4 SYSTEM DESCRIPTION

A. Design Requirements:

1. The vegetated cover shall be a pre-vegetated mat system, adhered to the roof membrane below. Drainage is provided over and through the mat.
2. The weight of this system at Maximum Water Capacity and with rain runoff occurring, shall be less than or equal to 5 pounds per square foot.
3. The system dead load, when added to the weight of the roofing membrane system, shall not exceed the maximum allowable dead load for the roof.
4. Water must be available to the installation area for temporary watering during the establishment period.

- B. Performance Requirements: Vegetated roof covering system shall:
1. Support an evergreen vegetated cover;
 2. Provide drainage of moisture that is in excess of that required for the growth of the supported vegetation;
 3. Protect roof waterproofing materials from damage caused by exposure to ultraviolet radiation, physical abuse, and rapid temperature fluctuations;
 4. Retain ¼ inch of moisture.

1.5 SUBMITTALS

- A. Product Data: Unless otherwise indicated, submit the following for each type of product provided under work of this Section:
1. Product data for material and components of vegetated roof covering indicating compliance with specified requirements.
- B. Shop Drawings: Submit Shop Drawings showing:
1. Details of installation with conditions at terminations, transitions, and penetrations.
 2. A profile schematic, in ½ scale, showing thickness of all materials.
- C. Samples: Submit samples as follows:
1. 6 inch square sample of pre-cultivated support mat for initial approval.
 2. 6 inch square sample of protection mat for initial approval.
- D. Plant list: identify species, size, and source for each type of plant. Indicate planting method, plant density, and quantity conditions for care during the establishment period. Where selected species are not indigenous, describe reasons for preference.
- E. Certifications:
1. System Provider's statement indicating that:
 - a. Proposed use is appropriate for each product, material and component.
 - b. System Provider has reviewed and approved the details for the associated Roofing Membrane system, including deck drains, flashings, penetrations, and coping.
 - c. System installer is approved by System Provider.
 - d. Proposed system is eligible for the specified warranty required of the System Provider.
- F. Closeout Submittals:
1. Warranty.
 2. Maintenance Agreement.

1.6 QUALITY ASSURANCE

- A. Roofing Inspection: As specified in Section 075400 and as follows:
1. An inspection will be conducted by the Roofing Membrane Provider to ascertain that the membrane roofing system has been installed according to the manufacturer's specifications and details. This inspection shall be conducted prior to the installation of the vegetated roof covering.

2. The roof is to be flood tested for water tightness for 24 hours. Water testing shall be witnessed and confirmed in writing by Owner's Representative, Architect, Waterproofing Contractor, Membrane Manufacturer, and Installation Contractor.
 3. The roof is to be inspected and determined ready to accept the vegetated roof covering by a Technical representative of the System installer.
- B. Pre-Construction Meeting: After award of Contract and prior to the commencement of the Work of this Section, schedule and conduct meeting to discuss the Work of this Section and to coordinate with related Work. Coordinate with pre-construction meeting specified in Section 07 55 63. Convene pre-construction meeting to comply with requirements of Division 01 and as follows:
1. Notify all attendees at least two weeks prior to the conference.
 2. Require attendance of parties directly affecting Work of this Section, including, but not limited to:
 - a. Owner,
 - b. Contractor,
 - c. Architect,
 - d. System Provider,
 - e. System Installer,
 - f. Roofing Membrane Provider,
 - g. Roofing Membrane Installer, and
 - h. Mechanical and Plumbing Installers.
 3. Review methods and procedures related to installation and operation of Work of this Section, including coordination with related Work.
 4. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.

1.7 SEQUENCING AND SCHEDULING

- A. Coordinate the Work with installation of associated roofing, waterproofing, flashings, and roof accessories specified under other sections as the Work of this Section proceeds.
- B. Sequence the Work with attention to preventing deterioration of installed roofing by minimizing the use of newly constructed roof deck for storage, walking surface, and equipment.

1.8 WARRANTY

- A. Green Roof System Components: Provide a warranty signed by System Provider against failure of components in vegetated roof covering system, except vegetation. Warranty shall include repair of flaws which impair the functioning of the green roof system, provided the flaws originate from errors in design, material defects, improper assembly, incompatibility between components, or deterioration. Failure of components shall include:
 1. Loss or dislocation of support mat due to wind loads (during the establishment period).
 2. Persistent ponding of water after rainfalls.
- B. Green Roof System Vegetation: Provide a warranty signed by the System Installer against failure of vegetation in vegetated roof covering system. Warranty shall provide for the following:
 1. Overseeding of plant cover after 12 months if the surface coverage rate is less than 60 percent. Cover rates shall be estimated separately for each 400 square-foot grid of the vegetated surface.

2. Overseeding of plant cover after the 24-month establishment period as necessary to provide a minimum plant cover of 80 percent. Cover rates shall be estimated separately for each 400 square-foot grid of the vegetated surface.

C. Warranty Period:

1. Green Roof System Components: 10 years.
2. Green Roof System Vegetation: 2 years.

1.9 MAINTENANCE

- A. System Installer shall execute with Owner a 2-year establishment period maintenance contract for plantings.

- B. Maintenance shall include cultivation, weeding, disease and insect pest control. Procedures shall be consistent with good horticulture practice necessary to ensure vigorous, healthy growth of plant material.

1. Provide hand weeding and organic fertilization as required to maintain the health and vigor of the plants.
2. Clean up: During the course of maintenance, excess and waste materials shall be promptly removed at end of each workday.

C. Maintenance schedule of activities:

1. Schedule: Include minimum of six maintenance visits to project in 24 month period.
2. Provide schedule to Owner that details planned maintenance activities including names of subcontractor's

D. Maintenance Reports:

1. Provide reports to Owner summarizing activities, observations, necessary corrections and recommended changes to maintenance routine, if any.

PART 2 – PRODUCTS

2.1 ACCEPTABLE SYSTEM INSTALLER/PROVIDERS

- A. Archiphyte, LLC; 1734 Lost Mountain Road, Sequim, WA 98382; Tel: (360) 582-1094.
- B. Approved Equal.

2.2 GREEN ROOFING SYSTEM COMPONENTS

- A. Pre-vegetated Mat with vegetation ¼ inch minimum height, species and distribution as shown on submittals.

1. Manufacturers:
 - a. Archiphyte or approved equal.

- B. Protection Mat: 12 oz/sq yd needle punched, non-biodegradable, non-woven polypropylene fabric stabilized to resist soil chemicals, mildew or insects.

1. Manufacturers:
 - a. Carlisle CCW 200 V, or approved equal.

C. Paths and Walkways: Concrete Pavers with rubber paver pedestals; textured finish; with minimum performance characteristics as follows:

- | | |
|-------------------------|-----------------------|
| 1. Thickness: | 2.0 in minimum |
| 2. Size: | 2 ft X 2 ft (nominal) |
| 3. Weight | 18 lb/sq ft minimum |
| 4. Compressive Strength | 6,500 psi minimum |
| 5. Flexural Strength | 2,000 lb minimum |
| 6. Water Absorbtion | 5% maximum |

- a. Manufacturers:
1) Carlisle or approved equal.

D. Rock Borders: ½ inch to 1 inch thick rounded river rock, 1 inch minimum length or width.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which roofing will be applied, with System Installer and Roofing Membrane Installer present, for compliance with requirements.

1. Correct any deficiencies to the satisfaction of the System Installer.
2. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare Surface:

1. Clean surface of the Roofing Membrane as recommended by Roofing Membrane Provider/Installer and by System Provider.

B. Protect Roofing Membrane:

1. Until the Pre-Cultivated Support Mats are installed, traffic over the working area shall be strictly controlled and limited to essential personnel only.
2. Protect heavily traveled areas, including but not limited to corridors for transporting materials to the working areas, as recommended by the Roofing Membrane Provider.
3. Protect laydown areas using 1/2-inch plywood or particle board over 1-inch sheets of expanded polystyrene (EPS), or similar sheathing material.

C. Prevent materials from entering and clogging roof drains.

3.3 INSTALLATION

A. Install vegetated roof covering system according to System Provider's written instructions, applicable regulations, approved shop drawings, and as specified. If no irrigation is provided, the installation shall occur between October 1 and November 30 unless otherwise approved by the System Provider.

B. Position mats to provide plant species layout as shown on approved planting plan.

C. Adhere mats to roofing membrane as determined by Roofing Membrane Provider.

D. Thoroughly water the vegetation after installation to assist in establishment of the system.

3.4 ACCEPTANCE

- A. Conduct post installation inspection to determine acceptance of vegetated roof covering.

End of Section