

BLU-GARDEN

System 800: Modular / Wind Uplift Applications



SUSTAINABLU

ON STRUCTURE STORMWATER MANAGEMENT SYSTEMS

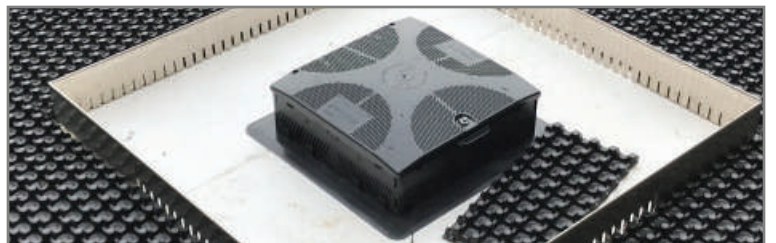
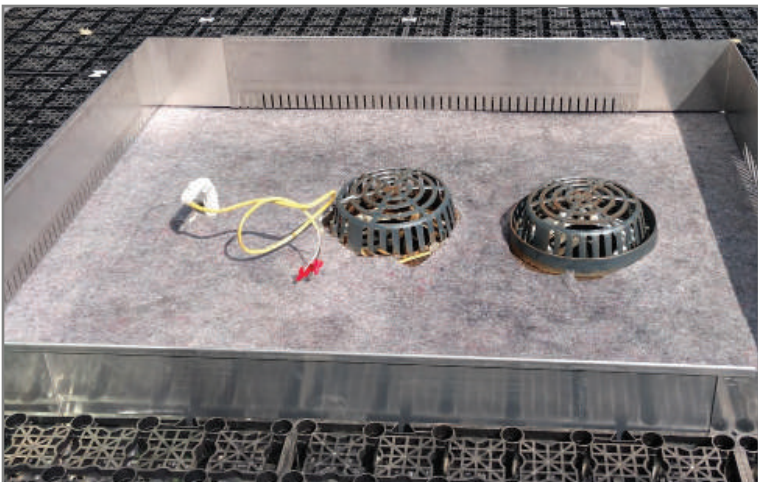
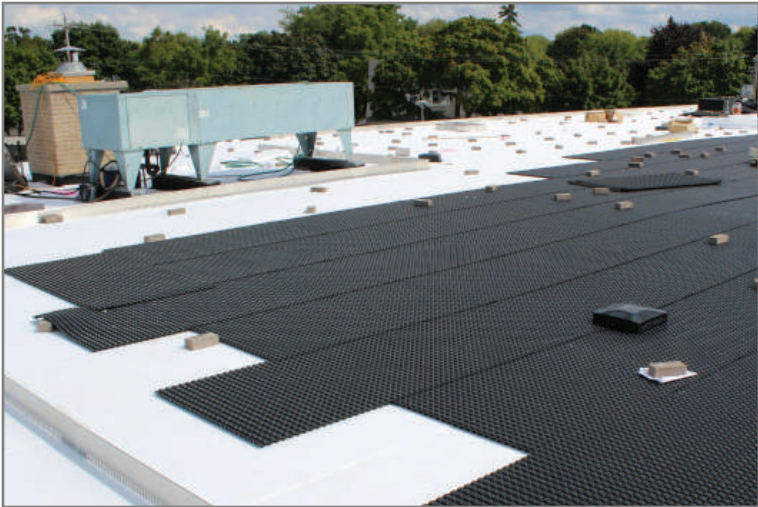


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[07 33 63] 800-Series Blu-Garden Roof System CSI Specification

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Operations & Maintenance (O&M)

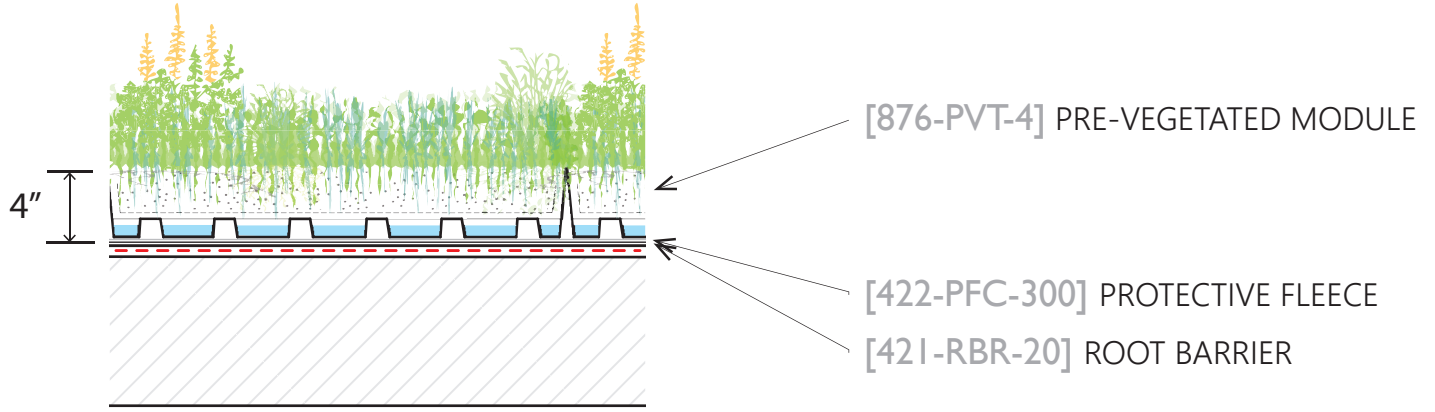
Blu-Garden Maintenance Guidelines

Warranty

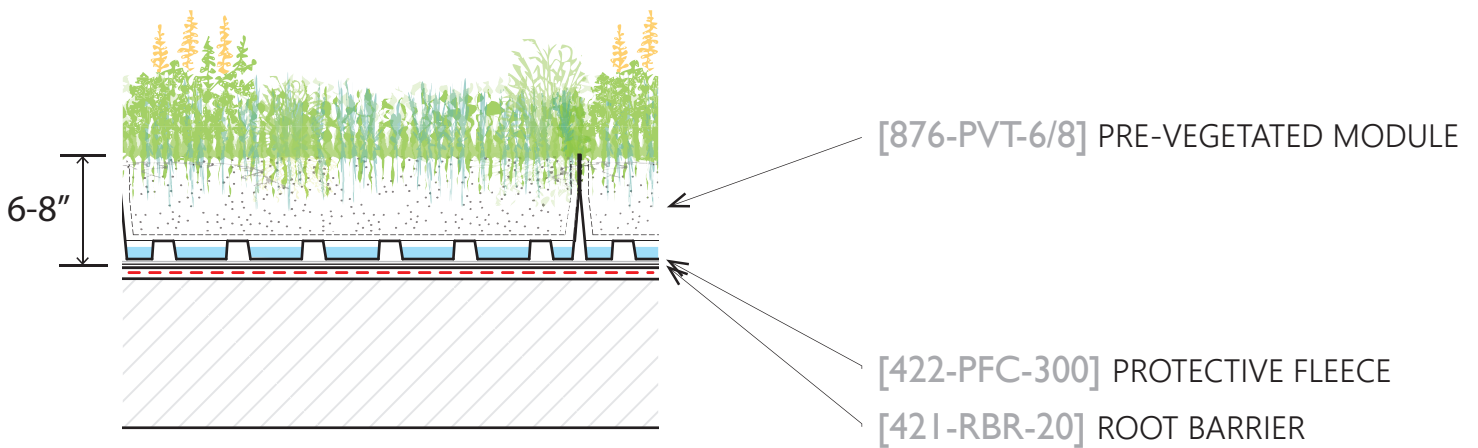
Blu-Garden Materials Limited Warranty

BLU-GARDEN ASSEMBLIES - MODULAR

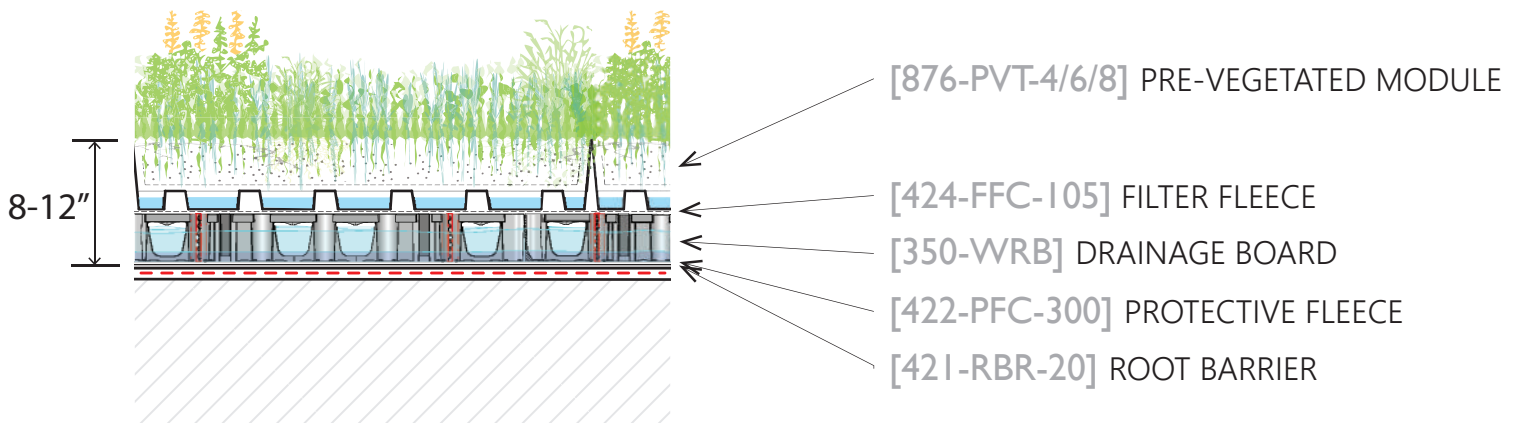
4" STANDARD ASSEMBLY



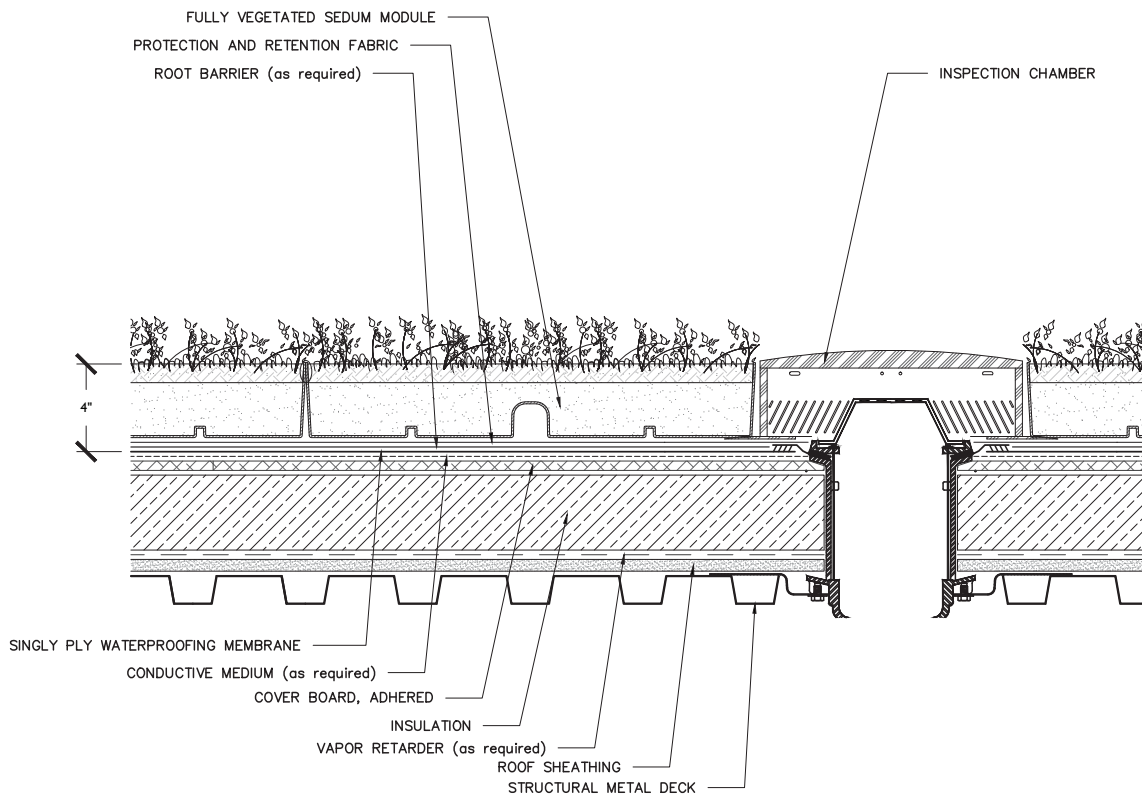
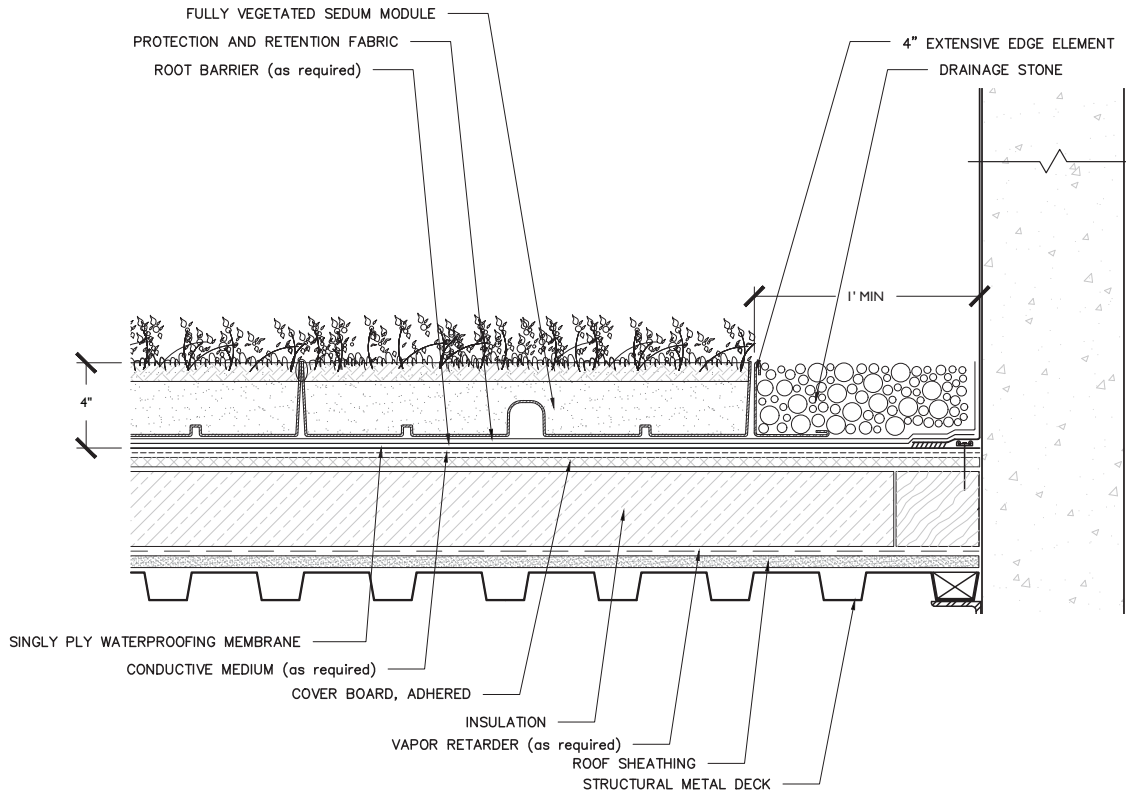
6"/8" STANDARD ASSEMBLY



MAX STORMWATER ASSEMBLY



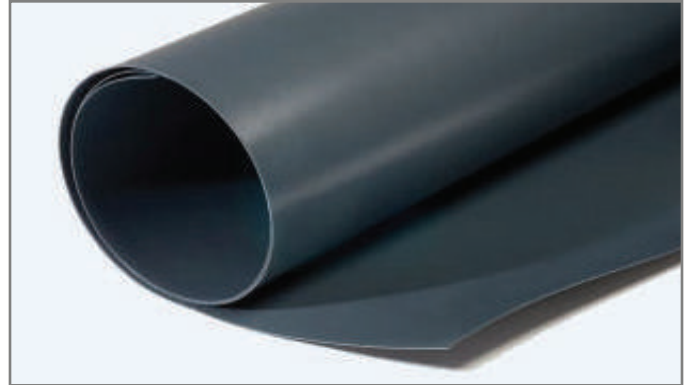
TYPICAL WALL & DRAIN DETAILS





20 MIL LLDPE ROOT BARRIER


Our 20 Mil Root Barrier is a low density polyethylene (LLDPE) sheet which is suggested for use over hot applied asphaltic, modified bitumen, cold tar pitch / built-up roofs, & EPDM Roof Membranes. Specific to this product, it:

- **directs root growth away** from waterproofing membrane, preventing it from root damage
- **withstands moderate construction traffic**
- provides **excellent protection from UV exposure** and harsh weather conditions
- features a **high tensile strength, high puncture and tear resistance**, and excellent chemical resistance
- requires a maintenance plan to prevent tree seedlings from germinating



 • Special order product

 • Individual Roll
• Full Pallet

 • 773 ft² per Roll
• 16 Rolls per Pallet (12,368 ft²)



LEED Credits available for:
• Materials & Resources (MR)

TECHNICAL DATA

Materials:

- Recycled LLDPE

Material Thickness (ASTM D 5119):

- 0.02" (20 mils)

Roll Dimensions (W x L):

- 53" x 175'

Roll Weight:

- 76 lbs. / Roll (0.09 lbs. / ft²)

Tensile Strength at Break (ASTM D 6693):

- 96 ppi

Elongation at Break (ASTM D 6693):

- 900%

Tear Resistance (ASTM D 1004):

- 12 lbf

Puncture Resistance (ASTM D 4833):

- 40 lbf

Vegetated Roofing Use:

- Extensive vegetated roofs with plant materials with fibrous root systems only

Installation Requirements:

- Overlap seams by 6"

EXTENSIVE PROTECTIVE FLEECE - 9 OZ

Our Extensive Protective Fleece is designed specifically for use within Extensive green roofing systems. Specific to this product, it:

- **protects the roof membrane** and/or root barrier against damage from light mechanical demands
- **separates materials** of incompatible substrates from one another
- **stores water** & nutrients, depending on its function
- has a mass/structure and water holding capacity designed with the dead load weight and plant palettes of the Extensive roof system in mind to give the perfect **balance of water holding capacity and protection**



Protection and Storage Fleece RMS 300 by



LEED Credits available for:
• Materials & Resources (MR)



- Individual Roll
- Full Pallet



- 1,076 ft² per Roll
- 6 Rolls per Pallet (6,456 ft²)

TECHNICAL DATA

Materials:

- Polypropylene, Polyester & Recycled Acrylic Thread

Material Thickness:

- 0.14", 9 oz.

Roll Dimensions (W x L):

- 6' 6 3/4" x 164' 1/2"

Roll Diameter:

- 1' 5 3/4"

Roll Weight:

- 66 lbs.

Total Saturated Weight:

- 0.47 lbs. / ft²

Water Holding Capacity:

- 0.08 in³ / in² (0.049 gal / ft²)

Rot & Pathogen Resistant:

- Yes

Puncture Resistant:

- Yes

Vegetated Roofing Use:

- Blu-Garden Extensive systems

Installation Requirements:

- Overlap fabric by 6"

FULLY VEGETATED SEDUM MODULE - 4"

Our Fully Vegetated Sedum Module - 4" comes complete with fully grown vegetation, growing media, filter fabric, mineral drainage and water reservoirs. Each module includes 11-14 of the varieties specified, designed to thrive in varying roof microclimates. Fully Vegetated Modules offer many advantages:

- includes a **built-in channel for air flow** and/or irrigation supply
- **deep reservoirs** help the system maximize stormwater retention and provide moisture for plants
- has optional **interlocking fasteners** to connect adjacent modules together, protecting them from wind uplift
- **eliminates the need for edge restraints** when creating vegetation-free zones since its integrated edges with filter fabric is enough to contain the growing media
- flexibility to be **installed on flat or pitched roofs** with an installation rate of 860 ft² per day per person



• Special order product



• Full Pallet



• 2.08 ft² per Module
• 36 Modules per Pallet (74.88 ft²)



LEED Credits available for:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Materials & Resources (MR)

TECHNICAL DATA

Module Materials:

- Recycled HDPE

Module Dimensions (H x W x L):

- 4.25" x 15" x 20"

Module Area:

- 2.08 ft²

Module Weight (fully saturated):

- 15 - 24 lbs. / ft²

Vegetation Coverage:

- 95% (minimum at installation)

Water Holding Capacity:

- 2.00 in³ / in² (1.25 gal / ft²)

Sedum Varieties:

- Sedum spurium 'Fuldaglut', 'Dragon's Blood', 'Coccineum', 'Red Carpet', 'Summer Glory', & 'Voodoo'
- Sedum stenopetalum
- Sedum hybridum 'Czar's Gold'
- Sedum acre 'Oktoberfest'
- Sedum album
- Sedum ellacombianum
- Sedum floriferum 'Weihenstephaner Gold'
- Sedum reflexum 'Blue Spruce'
- Sedum sediforme
- Sedum sexangulare
- Sedum forsterianum 'Silver Stone'
- Sedum stoloniferum

FULLY VEGETATED SEDUM MODULE - 6"

Our Fully Vegetated Sedum Module - 4" comes complete with fully grown vegetation, growing media, filter fabric, mineral drainage and water reservoirs. Each module includes 11-14 of the varieties specified, designed to thrive in varying roof microclimates. Fully Vegetated Modules offer many advantages:

- includes a **built-in channel for air flow** and/or irrigation supply
- **deep reservoirs** help the system maximize stormwater retention and provide moisture for plants
- has optional **interlocking fasteners** to connect adjacent modules together, protecting them from wind uplift
- **eliminates the need for edge restraints** when creating vegetation-free zones since its integrated edges with filter fabric is enough to contain the growing media
- flexibility to be **installed on flat or pitched roofs** with an installation rate of 860 ft² per day per person



• Special order product



• Full Pallet



• 2.08 ft² per Module
• 30 Modules per Pallet (62.40 ft²)



LEED Credits available for:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Materials & Resources (MR)

TECHNICAL DATA

Module Materials:

- Recycled HDPE

Module Dimensions (H x W x L):

- 5.75" x 15" x 20"

Module Area:

- 2.08 ft²

Module Weight (fully saturated):

- 22 - 36 lbs. / ft²

Vegetation Coverage:

- 95% (minimum at installation)

Water Holding Capacity:

- 2.71 in³ / in² (1.69 gal / ft²)

Sedum Varieties:


- Sedum spurium 'Fuldaglut', 'Dragon's Blood', 'Coccineum', 'Red Carpet', 'Summer Glory', & 'Voodoo'
- Sedum stenopetalum
- Sedum hybridum 'Czar's Gold'
- Sedum acre 'Oktoberfest'
- Sedum album
- Sedum ellacombianum
- Sedum floriferum 'Weihenstephaner Gold'
- Sedum reflexum 'Blue Spruce'
- Sedum sediforme
- Sedum sexangulare
- Sedum forsterianum 'Silver Stone'
- Sedum stoloniferum

FULLY VEGETATED SEDUM MODULE - 8"


Our Fully Vegetated Sedum Module - 4" comes complete with fully grown vegetation, growing media, filter fabric, mineral drainage and water reservoirs. Each module includes 11-14 of the varieties specified, designed to thrive in varying roof microclimates. Fully Vegetated Modules offer many advantages:

- includes a **built-in channel for air flow** and/or irrigation supply
- **deep reservoirs** help the system maximize stormwater retention and provide moisture for plants
- has optional **interlocking fasteners** to connect adjacent modules together, protecting them from wind uplift
- **eliminates the need for edge restraints** when creating vegetation-free zones since its integrated edges with filter fabric is enough to contain the growing media
- flexibility to be **installed on flat or pitched roofs** with an installation rate of 860 ft² per day per person



 • Special order product

 • Full Pallet

 • 2.08 ft² per Module
• 24 Modules per Pallet (49.92 ft²)



LEED Credits available for:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Materials & Resources (MR)

TECHNICAL DATA

Module Materials:

- Recycled HDPE

Module Dimensions (H x W x L):

- 7.75" x 15" x 20"

Module Area:

- 2.08 ft²

Module Weight (fully saturated):

- 32 - 51 lbs. / ft²

Vegetation Coverage:

- 95% (minimum at installation)

Water Holding Capacity:

- 3.58 in³ / in² (2.23 gal / ft²)

Sedum Varieties:

- Sedum spurium 'Fuldaglut', 'Dragon's Blood', 'Coccineum', 'Red Carpet', 'Summer Glory', & 'Voodoo'
- Sedum stenopetalum
- Sedum hybridum 'Czar's Gold'
- Sedum acre 'Oktoberfest'
- Sedum album
- Sedum ellacombianum
- Sedum floriferum 'Weihenstephaner Gold'
- Sedum reflexum 'Blue Spruce'
- Sedum sediforme
- Sedum sexangulare
- Sedum forsterianum 'Silver Stone'
- Sedum stoloniferum

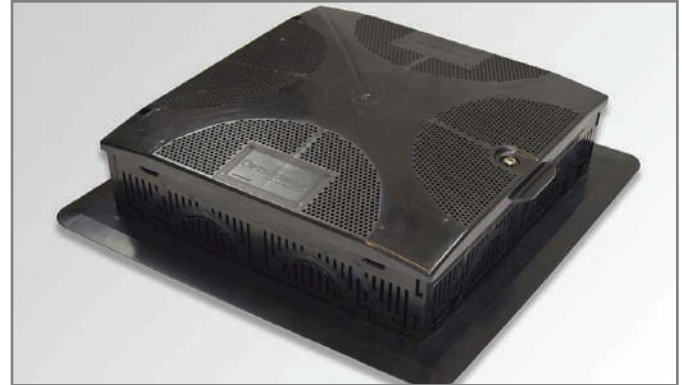
STANDARD INSPECTION CHAMBER

The Triangle Water Conduit System is designed for vegetative roofs requiring rapid water drainage and distribution. The Triangle Water Conduit System consists of:

- **ISC-FUA** - Standard Inspection Chamber
- **TWC-WLP** - Triangle Water Conduit Profile

Specific to this product, it:

- has **connection options** for one Triangle Water Conduit Profile on each side of the Standard Inspection Chamber
- **protects the outlets** from severe external effects
- incorporates **drainage slots on all sides** that retain growth media while allowing water to flow freely through
- is capped by an **easily removable cover** to allow access for inspection and for simple maintenance to remove any excess debris



Combi Inspection Chamber TKS Plus by



LEED Credits available for:
• Materials & Resources (MR)



- Individual Unit
- Full Carton
- Full Pallet



- 6 Units per Carton
- 16 Cartons per Pallet (96 Units)

TECHNICAL DATA

Materials:

- UV Resistant Recycled ABS Plastic

Inspection Chamber Dimensions (W x L):

- 14.5" x 14.5" (shaft)
- 18.5" x 18.5" (base)

Inspection Chamber Height:

- 4.33" minimum
- Height adjustable in 4" segments
- Maximum Height of 32"

Inspection Chamber Weight:

- 5.3 lbs. / unit

Shaft Floor Opening:

- 11 3/4"

Water Discharge Capacity (each system):

- at 0% Slope = 17.91 gallons / minute
 - at 1% Slope = 19.33 gallons / minute
 - at 2% Slope = 19.65 gallons / minute
 - at 3% Slope = 19.81 gallons / minute
- *dependent on media type

Compressive Strength:

- 330 lbs.

Vegetated Roofing Use:

- Ancillary drainage component for use as a roof outlet inspection on vegetated roofs

Installation Requirements (Per 2,000 ft² area):


- (1) ISC-FUA Standard Inspection Chamber
- (30) TWC-WLP Triangle Water Conduit Profiles


PEDESTRIAN PAVING DRAINAGE MAT


Our Pedestrian Paving Drainage Mat is designed for drainage beneath accessible areas that do not need water storage and on vertical building components. Specific to this product, it:

- is a **composite drainage layer** consisting of a three-dimensional drainage core and a filter fabric
- includes a **filter fabric bonded to the core**, preventing intrusion of the overburden into the drainage channels
- **retains soil or sand particles** as well as freshly placed concrete allowing filtered water to pass through to the drainage core
- is typically used in areas necessitating a **moderate compressive strength material for drainage**, specifically for low load pedestrian accessibility for pavers, concrete or asphalt walkways, and patios



 • Special order product

 • Individual Roll
• Full Pallet

 • 200 ft² per Roll
• 7 Rolls per Pallet (1,400 ft²)



LEED Credits available for:
• Materials & Resources (MR)

TECHNICAL DATA

Materials:

- Recycled HDPE, Polypropylene Thread

Material Thickness:

- 0.40"

Roll Dimensions (W x L):

- 4' x 50'

Roll Weight:

- 39 lbs.

Compressive Strength (ASTM D 1621):

- 15,000 lbs. / ft²

Drainage Core Flow (ASTM D 4716):

- 21 gal / min / ft

Filter Fabric Flow Rate (ASTM D 4491):

- 140 gal / min / ft²

CBR Puncture (ASTM D 6241):

- 250 lbs.

Grab Tensile (ASTM D 4632):

- 100 lbs.

Use:

- Drainage below insulation in inverted assemblies
- Pedestrian compressive strength grade drainage used below pathways or vegetated areas that do not need water storage

Installation Requirements:

- Peel fabric back two dimples and overlap two rows of dimples, snap in place.
- Fold fabric back over joint.
- Cover boards with overburden immediately to protect from UV rays & wind uplift

4" EXTENSIVE EDGE ELEMENT

Our 4" Extensive Edge Element is designed as a definite boundary between gravel / paver and growth media that allows the flow of water but not of the substrate. Specific to this product, it:

- utilizes a **"smooth slide" design** to make secure, invisible connections
- has **pre-fabricated corners** for ease of installation
- **prevents overly moist media conditions** around the perimeter or in transition areas of the roof thus preventing anaerobic growing conditions



Edge Trim ZP 100 A by



- Individual Length & Clip
- Full Section
- Full Pallet



- 8'-2" per Length & Clip
- 50 Lengths & Clips per Section (408'-4")
- 4 Sections per Pallet (1,633'-4")

TECHNICAL DATA

System Type:

- Monolithic / Contiguous / Modular

Materials:

- Aluminum

Material Thickness:

- 18 GA

Material Finish:

- Mill (natural aluminum)

Roof / Deck Slope Constraint:

- Up to 5° slope or 1:12 roof pitch

Water Permeability:

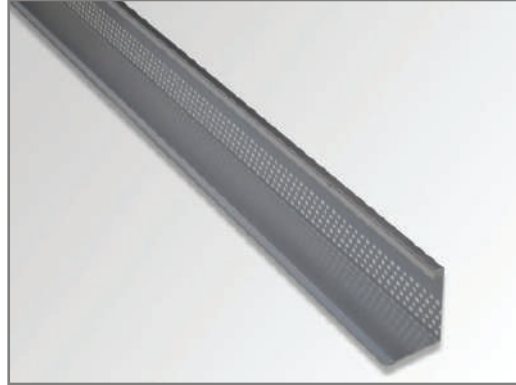
- Dependent on drainage/retention board chosen

Vegetated Roofing Use:

- Extensive vegetated roofs

Installation Requirements:

- Lay edge profile sections end to end on top of protective fleece, with foot of restraint toward vegetative portion of roof
- Slide Male Clips into Female Lengths
- Connect all components as shown on edging plan



Female Length [441-EDG-04F]
Dimensions (H x W x L): 4" x 3" x 8'-2"
Weight: 0.57 lbs. / LF



Male Clip [441-EDG-04M]
Dimensions (H x W x L): 3 3/4" x 2 3/4" x 5"



Corner [441-EDG-90]
Dimensions (H x W x L): 4" x 3" x 7 7/8" (each side)

6" EXTENSIVE EDGE ELEMENT

Our 6" Extensive Edge Element is designed as a definite boundary between gravel / paver and growth media that allows the flow of water but not of the substrate. Specific to this product, it:

- utilizes a **"smooth slide" design** to make secure, invisible connections
- has **pre-fabricated corners** for ease of installation
- **prevents overly moist media conditions** around the perimeter or in transition areas of the roof thus preventing anaerobic growing conditions



Edge Trim ZP 150 A by

OPTIGRÜN®
ROOF GREENING



- Individual Length & Clip
- Full Section
- Full Pallet



- 8'-2" per Length & Clip
- 50 Lengths & Clips per Section (408'-4")
- 4 Sections per Pallet (1,633'-4")

TECHNICAL DATA

System Type:

- Monolithic / Contiguous / Modular

Materials:

- Aluminum

Material Thickness:

- 18 GA

Material Finish:

- Mill (natural aluminum)

Roof / Deck Slope Constraint:

- Up to 5° slope or 1:12 roof pitch

Water Permeability:

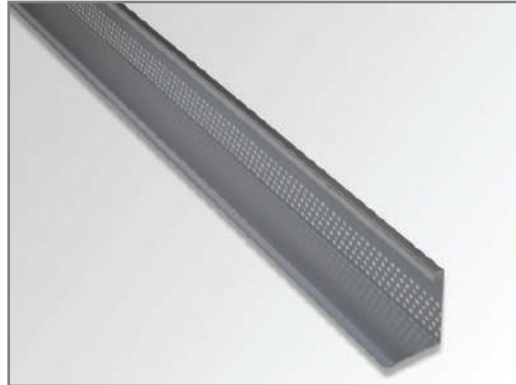
- Dependent on drainage/retention board chosen

Vegetated Roofing Use:

- Extensive vegetated roofs

Installation Requirements:

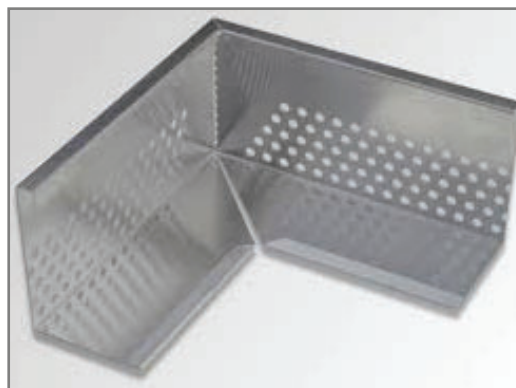
- Lay edge profile sections end to end on top of protective fleece, with foot of restraint toward vegetative portion of roof
- Slide Male Clips into Female Lengths
- Connect all components as shown on edging plan



Female Length [443-EDG-06F]
Dimensions (H x W x L): 6" x 4 1/2" x 8'-2"
Weight: 0.67 lbs. / LF



Male Clip [443-EDG-06M]
Dimensions (H x W x L): 5 3/4" x 4 1/4" x 5"



Corner [443-EDG-90]
Dimensions (H x W x L): 6" x 4 1/2" x 7 7/8" (each side)

8" SEMI-INTENSIVE EDGE ELEMENT

Our 8" Semi-Intensive Edge Element is designed as a definite boundary between gravel / paver and growth media that allows the flow of water but not of the substrate. Specific to this product, it:

- partners with our 1.6" Drainage/Retention Board; the **edging slots align directly with the height of the board** to ensure an unrestricted flow of excess stormwater
- utilizes a **"smooth slide" design** to make secure, invisible connections
- has **pre-fabricated inside and outside corners** for ease of installation
- **prevents overly moist media conditions** around the perimeter or in transition areas of the roof thus preventing anaerobic growing conditions



• Special order product



• 10 Lengths & Clips
• Full Pallet



• 10 Lengths & Clips (80')
• 100 Lengths & Clips per Pallet (800')

TECHNICAL DATA

System Type:

- Monolithic / Contiguous / Modular

Materials:

- 5052-H32 Aluminum

Material Thickness:

- 12 GA

Material Finish:

- Mill (natural aluminum)

Roof / Deck Slope Constraint:

- Up to 5° slope or 1:12 roof pitch

Water Permeability:

- Dependent on drainage/retention board chosen

Vegetated Roofing Use:

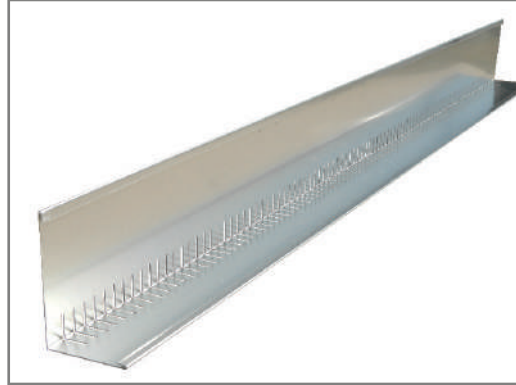
- Semi-Intensive vegetated roofs

Installation Requirements:

- Lay edge profile sections end to end on top of protective fleece, with foot of restraint toward vegetative portion of roof
- Slide Male Clips into Female Lengths
- Connect all components as shown on edging plan

1243

Product #

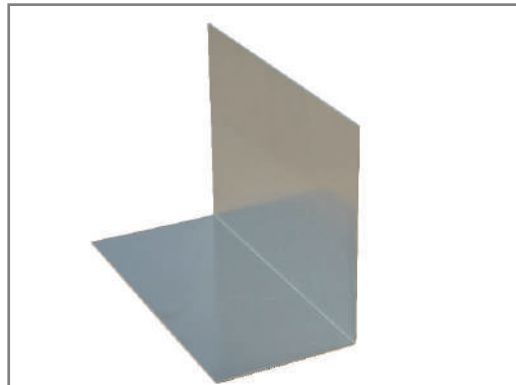


Female Length [1243-EDG-08F]

Dimensions (H x W x L): 8" x 6" x 96"

Weight: 1.31 lbs. / LF

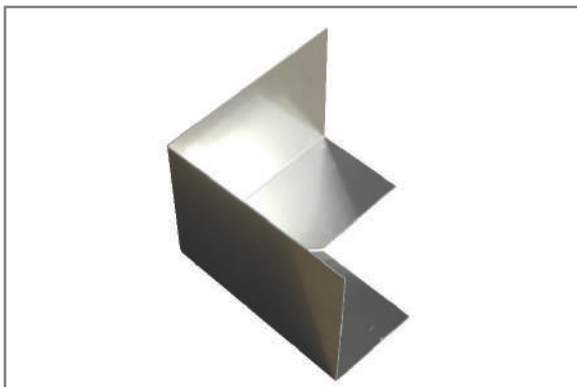
* Un-slotted Female Profile also available



Male Clip [1243-EDG-08M]

Dimensions (H x W x L): 7.675" x 5.675" x 12"

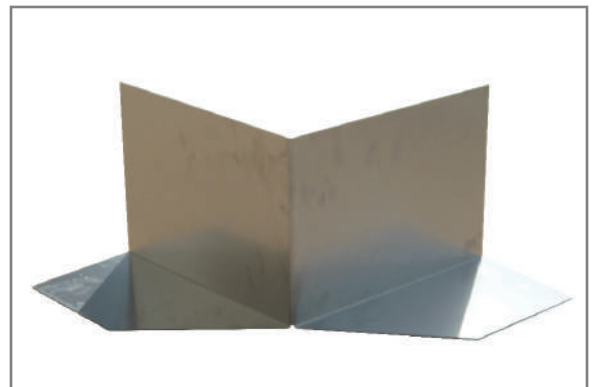
Weight: 1.25 lbs. / LF



Male 90° Corner [1243-EDG-90]

Dimensions (H x W x L): 7.675" x 5.675" x 12" (each side)

Weight: 1.25 lbs. / LF



Male 270° Corner [1243-EDG-270]

Dimensions (H x W x L): 7.675" x 5.675" x 12" (each side)

Weight: 1.25 lbs. / LF

[800] BLU-GARDEN INSTALLATION GUIDELINES

1 PREPARATION

Ensure all roof surfaces are free of dirt, debris and incompatible materials.

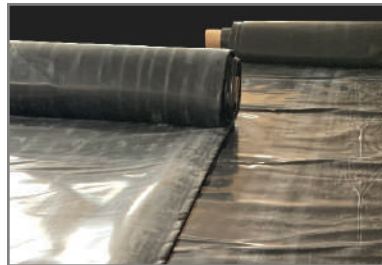
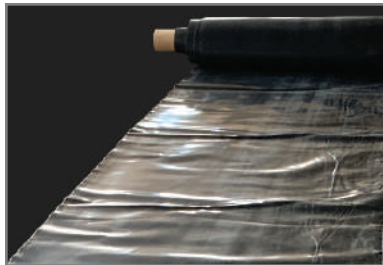


2 ROOT BARRIER

To prevent root damage to the waterproofing membrane, roll out root barrier over the entire green roof area, extending beyond green roof extents a minimum of 12" in all directions.

Install root barrier with a minimum of 12" side and end overlaps.

Turn up root barrier a minimum of 4" above finish elevation line at all vertical perimeters and projections.



3 PROTECTION FLEECE

To protect the waterproofing membrane, roll out protection fleece over the entire roof surface.

Install protection fleece with a minimum of 4" side and 12" end overlaps.

Turn up protection fleece a minimum of 4" above finish elevation line at all vertical perimeters and projections.

Wet fabric as necessary to provide short-term ballast. For long-term ballast, use sandbags or paver slabs. Never cut near the roofing membrane for installation. Only cut fabric using industrial shears, and never with a utility knife.



[800] BLU-GARDEN INSTALLATION GUIDELINES

4 EDGE ELEMENTS

To separate green roof areas from hardscaping/aggregate areas without restricting roof drainage, install edge elements according to drawings.

Place edge element sections, connectors, and corners end to end on top of protection fleece, with foot of edge element toward vegetative portion of roof.

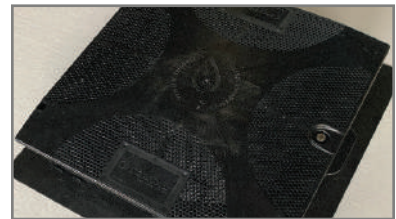
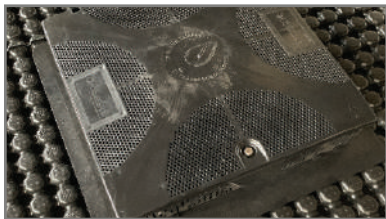
Slide connectors and corner components into edge profiles.



5 INSPECTION CHAMBER

If a drainage/ballast stone is to be installed, inspection chamber should be placed directly on the protection fleece, with the drainage/ballast stone abutting the outside walls.

For inverted roof assemblies, inspection chambers are placed on the thermal insulation. A separation ring is then installed and filled with gravel, thus forming the gravel strip surrounding the inspection chamber.



6 SEDUM MODULES

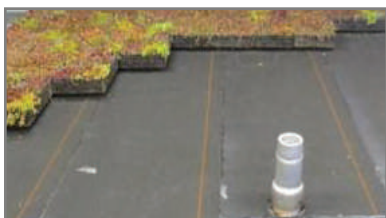
Place modules tight against each other and orient modules so that receiving ends of locking-clips face out to directions of installation.

Attach subsequent modules from left to right, by sliding modules' wall down beside already placed modules. Ensure both locking clips fully engage the receivers in the wall of the previous module before moving to next module.

If placing modules directly against a parapet wall or curb wall, ensure outside wall of modules is sealed with 3M flashing tape 8777 to prevent growth media from eroding through the sidewalls.

For wind uplift applications, modules must be taped with 3M tape 8777 around the entire perimeter.

Once installed, modules shall be uniformly watered to sufficiently saturate the vegetation and growth media.



BLU-GARDEN MAINTENANCE GUIDELINES

BLU-GARDEN DEFINITION AND STANDARD DISCLAIMER:

Sustainablu' Blu-Garden Roofing System collects runoff, on an approved roofing or waterproofing system. It provides a vegetated environment on a rooftop and/or plaza deck that can provide biodiversity, a reduction of the urban heat island effect and is specifically designed to manage stormwater volume and control runoff rate, i.e. stormwater retention and detention.

For Blu-Garden Systems to qualify for specified warranties, the system specifications and design must completely follow Sustainablu's Blu-Garden System design and installation criteria. Warranties from roofing/waterproofing manufacturers may additionally require Blu-Alert Constant Monitoring Leak Detection. Please check with specific Sustainablu partner roofing/waterproofing companies for warranty requirements. There are no exceptions to this disclaimer.

BLU-GARDEN OPERATIONS:

Sustainablu's Blu-Garden Systems on their own without Blu-Smart, passively manage stormwater volume and control runoff rate. As they are vegetated systems, their effectiveness is in direct relation to the health of the ecosystem, including the plantings. That said, it is important to adhere to the following owner responsibilities and maintenance recommendations to ensure best results.

OWNER'S RESPONSIBILITIES:

Controlled access to Blu-Garden Systems, for both approved maintenance and inspection personnel and other personnel is recommended. The monitoring of activities, related and unrelated to maintenance, helps to ensure that those with access do not negatively impact any parts of the Blu-Garden Systems. Such activities may include, but are not limited to the maintenance to rooftop equipment, damage from swing stages, use of any cleaning agents or other chemicals, etc.

No personnel should access the Blu-Garden Systems until they check in with Owner. Prior to access to the Blu-Garden Systems, owner should note in writing, the date and time that personnel access the roof.

MAINTENANCE ACTIVITIES

WEEDING:

Blu-Garden Systems always require weeding. Wind and birds still carry weed seeds to rooftop locations. The roof typically has exposed media during the establishment period, making weeding particularly important until the roof is fully established. Left unattended, weeds will choke out desirable plants and compete with desirable plants for nutrients and water. Because weeds can grow in small cracks, vegetative free zones as well as vegetated areas will require weeding, i.e. ballast stone perimeters.

To protect the waterproof membrane, do not use herbicides, pesticides or any other chemicals, that could negatively affect the roofing membrane or compromise any corresponding warranty. All chemicals must be approved by Sustainablu, LLC and the waterproofing manufacturer prior to application.

Once the vegetation is established, a vegetated roof typically needs to be weeded as infected. The Owner should inspect the roof monthly through the growing season in order to determine the exact number of required weedings. Blu-Garden Systems should be weeded more frequently if tree seedlings or any other species threaten the integrity of the roofing assembly. Pulling weeds when they are small maximizes the effectiveness of maintenance. If frequent observations of the roof condition are not practical, then the Owner should schedule more frequent weeding or hire a maintenance contractor with experience in vegetated roofing maintenance. At request, Sustainablu, LLC will provide contractors who specialize in such maintenance activities.

PLANT REPLACEMENT:

Some plant mortality is normal during the establishment period. Construction documents and warranties will state how much plant mortality is acceptable, the required plant cover and expected plant diversity shall be over the life of the vegetated roof. These documents will also state who is responsible for replacement of plants if a warranty is executed.

Areas with disappointing or sparse plant coverage or diversity can be remedied by harvesting cuttings, seed, or healthy plants from other areas of the roof and transplanting. Micro-climatic factors can have dramatic effects on plant success. Please refer to Warranty for specific plant replacement criteria for your project.

BLU-GARDEN MAINTENANCE GUIDELINES

IRRIGATION:

All vegetated roofs require irrigation during the establishment period. Overhead watering is required immediately after installing trees, shrubs, plugs, seed, or cuttings. Vegetated roofs with underground drip irrigation systems will need overhead watering until the roots have grown enough to reach water from the drip lines.

After the vegetation is well established, irrigation requirements will depend on the plant species chosen, project goals, and the water holding capacity of the vegetated roof growing medium and other components. If growing medium is installed to the proper depth, extensive vegetated roofs with drought tolerant vegetation do not need permanent irrigation.

Estimates of seasonal irrigation demand should be adjusted based on the regular field observation. Each maintenance visit should include a determination of moisture conditions at the bottom of the profile (usually the level of the filter fabric). During dry weather conditions, media on irrigated roofs should be moist and cool to the touch, but not saturated. Fabrics exposed at drains should be wet, but little or no water should be escaping at the drain.

VEGETATED ROOF MEDIA TESTING:

Every five (5) years, vegetated roof media testing is required to ensure vegetative roof media is in a condition to maximum plant vigor, while also minimizing nutrient leaching. Below are the standard nutrient parameters for FLL/ASTM approved vegetated roof medias:

Parameter	Vegetated Roofs
pH	6.5 to 7.8
Nitrate-N (mg/L)	1 to 4
Ammonium-N (mg/L)	0.1 to 0.8
Nitrogen (total) (mg/L)	2 to 8
Phosphorus (total) (mg/L)	2 to 10
Potassium (mg/L)	8 to 32
Calcium (mg/L)	100 to 300
Magnesium	10 to 80
Iron (mg/L)	8 to 32
Manganese	1 to 8
Boron (mg/L)	0.04 to 0.6
Sodium (mg/L)	<20
Zinc (mg/L)	1 to 10
Soluble salts (mmhos/cm)	0.4 to 1.2
Sodium Absorption Ratio (SAR)	<2

A certified soil test is required during the warranty period. It should be performed every 5 years as detailed below:

Every five (5) years a FLL/ASTM testing of a one-gallon sample of rooftop soil per each 10,000 square feet of vegetated roof area is required for extended warranties. The five-year test includes a soil analysis as shown above as well as granular distribution, water and air capacity, porosity and crushing value and cation exchange.

FERTILIZATION:

Vegetated roofs only need periodic fertilization when soil tests or plant health indicate a lack of nutrients. Fertilizing only when needed will also lessen weed growth and maintenance needs. When fertilizing a vegetated roof, use slow-release organic fertilizer in the spring. See soil tests below for guidance on determining whether fertilization is needed.

SPRING CLEANUP:

Remove dried vegetation using a scythe, trimmer, or weed whip prior to spring growth flush.

OTHER FACTORS TO CONSIDER FOR BLU-GARDEN MAINTENANCE PERIODS:

Ensure that activities not directly related to vegetated roof maintenance do not negatively impact vegetated roof vegetation, including but not limited to power washing, rooftop equipment maintenance, or use of cleaning agents and chemicals.

BLU-GARDEN MATERIALS LIMITED WARRANTY

The offer to sell Sustainablu, LLC products is expressly limited to acceptance of the warranty terms set forth in this LIMITED WARRANTY. By purchasing a Sustainablu, LLC product, you accept the LIMITED WARRANTY terms herein. THIS LIMITED WARRANTY AND REMEDIES HEREIN ARE EXCLUSIVE AND INSTEAD OF ALL OTHER WARRANTIES AND REMEDIES, WHETHER ORAL, WRITTEN, STATUTORY, LEGAL OR EQUITABLE, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AS WELL AS WARRANTIES AGAINST HIDDEN OR LATENT DEFECTS. ALL WARRANTIES ARE EXCLUDED EXCEPT THOSE EXPRESS WARRANTIES STATED ON THE FACE OF THIS LIMITED WARRANTY. REMEDIES FOR ANY BREACH OF THIS LIMITED WARRANTY ARE LIMITED TO SUSTAINABLU' ABSOLUTE OPTION TO REPAIR OR REPLACE THE DEFECTIVE PRODUCT AND THERE IS NO OTHER REMEDY AVAILABLE. SUSTAINABLU, LLC SHALL NOT BE LIABLE FOR DAMAGE TO PROPERTY BEYOND SUSTAINABLU' PRODUCT; AND, SUSTAINABLU, LLC IS NOT LIABLE FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES FOR ANY CLAIMS, INCLUDING BUT NOT LIMITED TO TORT, STRICT LIABILITY, STATUTORY, BREACH OF EXPRESS WARRANTY, BREACH OF IMPLIED WARRANTY, AND BREACH OF CONTRACT. NO PERSON IS AUTHORIZED TO MAKE ADDITIONAL STATEMENTS, PROMISES, GUARANTIES, WARRANTIES OR REPRESENTATIONS REGARDING PERFORMANCE OF SUSTAINABLU' PRODUCTS. Terms that are either additional to, conflicting with or different from those herein are excluded unless specifically agreed to in a separate writing and signed by a corporate officer of Sustainablu, LLC. This LIMITED WARRANTY is for the benefit of the original purchaser of the Sustainablu, LLC product who may transfer this LIMITED WARRANTY to the owner of the real estate where the warranted product is originally installed.

Blu-Garden products, aside of growing medias and vegetation, are intended to be in a protected environment from UV degradation. If protected from the harmful exposure of UV, products have the following limited warranties:

- Product Line x21 Root Barriers are warranted for (20) twenty years if properly installed according to project specifications.
- Product Line x22 Protective / Retention Fleeces are warranted for (20) twenty years if properly installed according to project specifications.
- Product Line 7xx Slope Stabilization products are warranted for (20) twenty years if properly installed according to project specifications.
- Product Line x31, x32 & x33 Drainage products are warranted for (20) twenty years if properly installed according to project specifications.
- Product Line xx4x Edge Systems are warranted for (20) twenty years if properly installed according to project specifications.

Blu-Garden growing medias require maintenance. If maintenance is conducted per Sustainablu's maintenance guidelines, growing medias have the following limited warranty:

- Product Line xx6x Growing Medias are warranted for (20) twenty years if properly installed according to project specifications.

Blu-Garden vegetations require maintenance. If maintenance is conducted per Sustainablu's maintenance guidelines, vegetations have the following limited warranty:

- Product Lines 47x & 87x Vegetation Systems are warranted for (20) twenty years if properly installed according to project specifications.

If any Sustainablu, LLC product fails to perform due to a defect in workmanship or materials within the applicable warranty period, then Sustainablu, LLC, at its sole option, will either repair or replace the defective product. The dollar amount of warranty coverage under this LIMITED WARRANTY shall not exceed the invoiced price for the defective product itself, excluding, installation, sales tax and freight. This LIMITED WARRANTY is void if the product is not maintained as recommended by Sustainablu, LLC. Sustainablu, LLC's warranty does not cover cosmetic scratches, dents, normal discoloration or fading. Due to inherent properties of concrete, wood and porcelain products, it is normal for variations in shading or color to be present in a finished product or occur over time due to sunlight exposure or other environmental factors and such variations in shading or color are not covered by this LIMITED WARRANTY. Sustainablu, LLC's LIMITED WARRANTY does not cover cracking, chipping or other damage caused by: (a) settling or other foundation movement or failures regardless whether caused by man-made or natural environmental (such as flood, hurricane, earthquake, lightning, fire, et al) and environmental conditions (such as air pollution, mold, mildew, et al), (b) Improper installation of Sustainablu, LLC's products and/or failure to abide by Sustainablu, LLC's installation guidelines, including but not limited to failure to install the tiles on a solid, flat surface or a surface that is not properly drained, (c) failure of non- Sustainablu, LLC products, (d) Use of Sustainablu, LLC's products in an application not recommended by Sustainablu, LLC's guidelines and local building codes, (e) Improper storage or handling after delivery, (f) Ordinary wear and tear, AND FOR ANY PRODUCT IN WHICH SUSTAINABLU, LLC HAS NOT BEEN PAID IN FULL (This will be based on Sustainablu, LLC's records). There is no warranty for damage caused by impact, neglect, and vandalism; acts of third parties or natural disaster. Alteration of product, floor or tiles voids this LIMITED WARRANTY. Installation of structures, fixtures or utilities on or through the product without prior written approval from Sustainablu voids this LIMITED WARRANTY.

It is not Sustainablu, LLC's responsibility to determine the effectiveness, fitness, suitability and safety of the Sustainablu LLC's products in connection with its use in any particular application. No person or entity is authorized by Sustainablu LLC to make any statement or representation as to the quality or performance of Sustainablu LLC products other than as contained in this warranty and Sustainablu LLC shall not be bound by any such statements or representations. This warranty may not be altered or amended except by means of a written document signed by both Sustainablu LLC and owner of said warranty. As a precondition to validate any warranty claim, purchaser must present written notice of a warranty claim to Sustainablu, LLC within 30 days after a warranty claim accrues or within 30 days after purchaser first notices an alleged defect, whichever is earlier. If purchaser or its installer believes a defect exists, do not install the product; instead, contact Sustainablu, LLC within 24 hours after notice of alleged defect and make a warranty claim to Sustainablu, LLC. While this LIMITED WARRANTY is in effect, Sustainablu, LLC and its agents shall have free access to inspect, test, repair or remedy the warranted product and Sustainablu shall have the first opportunity to remedy any alleged defect.

In any dispute as to the LIMITED WARRANTY or defective product, the purchaser or Owner making a claim (Claimant) has the burden of proving all elements under applicable law plus: (1) the product was installed according to applicable industry and project specifications, (2) the product was maintained according to applicable maintenance recommendations, and (3) the product was defective within the meaning of this LIMITED WARRANTY. In the event a civil action is filed, Sustainablu, LLC and Claimant shall attempt mediation facilitated by a mutually agreed upon neutral mediator before conducting formal discovery. At mediation, Sustainablu, LLC and Claimant shall each have a designated representative attend who has full authority to settle the civil action. Sustainablu, LLC and Claimant shall be responsible for their own attorney fees and any other expense associated with mediation as well as paying for an equal share of the mediator's fee. To obtain installation or maintenance recommendations, request information on extended warranties or make a warranty claim contact: Sustainablu, LLC, c/o Chief Financial Officer, by mail at 531 S. Water Street, Milwaukee, WI 53204.

This warranty shall only be applicable and enforceable in the United States of America and Canada.



SUSTAINABLU FOCUSES ON DESIGN INTEGRATION, PROJECT DELIVERY, AND PRODUCTS FOR ON STRUCTURE STORMWATER MANAGEMENT AND GREEN INFRASTRUCTURE. CAPABILITIES RANGE FROM **AMENITY DECKS, GREEN ROOFS, BLUE ROOFS, SOLAR ROOFS AND SMART LEAK DETECTION SYSTEMS**, PROVIDING THE MOST COMPLETE LINE FOR EFFECTIVE ON STRUCTURE STORMWATER MANAGEMENT SYSTEMS AND PRODUCTS AVAILABLE.

WITH ON-STAFF DESIGNERS AND A NETWORK OF LANDSCAPE ARCHITECTS, CONTRACTORS, ARCHITECTS, ENGINEERS, AND DEVELOPERS, SUSTAINABLU IS THE COMMON THREAD FROM IDEA CONCEPTION TO COMPLETION. THE COMPANY PROVIDES PRODUCTS FROM TOP VENDORS AROUND THE WORLD, TAILORING PRODUCTS TO EACH UNIQUE DESIGN. PRODUCT LINES OFFERED INCLUDE PAVER PEDESTALS, CONCRETE ROOF PAVERS, WOOD DECK TILES, PORCELAIN TILES, GREEN ROOFING SOLUTIONS, SMART DRAINS AND LEAK DETECTION SYSTEMS.

SUSTAINABLU HAS COMPLETED PROJECTS IN CITIES ACROSS NORTH AMERICA AND HAS REPRESENTATION AND WAREHOUSES THROUGHOUT THE UNITED STATES.

SUSTAINABLU

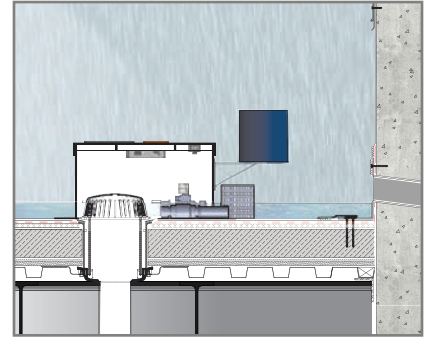
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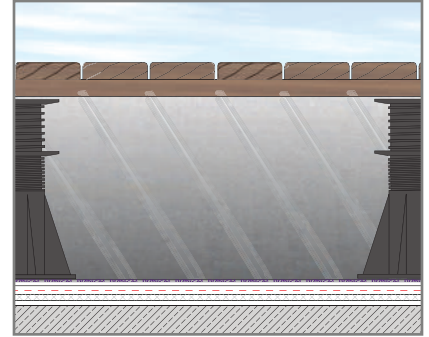
BLU-SMART

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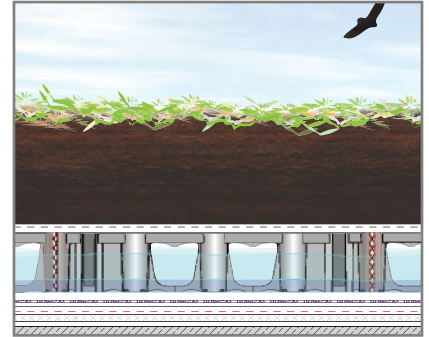
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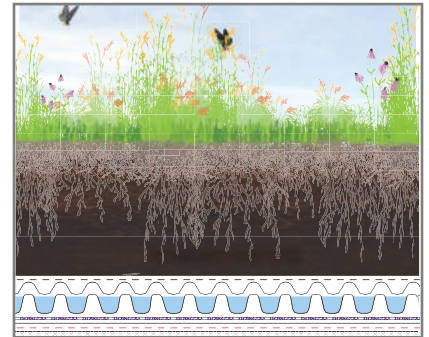
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BLU-GARDEN

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BLU-SOLAR

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