Modular Tray
Roof Garden Roofing Systems

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Modular Tray

Roof Garden Roofing System

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The information contained in this generic specification represents a part of Versico's requirements for obtaining a roofing systems warranty. Construction materials and practices, building siting and operation, climatic conditions, and other site-specific factors will have an impact on the performance of the roofing system. Versico recommends that the building owner retain a design professional to determine appropriate design measures to be taken in order to address these factors.

This section is to serve as criteria for Specifiers and Authorized Applicators regarding the design and installation of Versico's Modular Tray Roof Garden Roofing System. Additional information essential for the design and installation of the roof system mentioned herein are also included in the Design Reference Section and also listed in the form of a Specification Supplement at the end of the Technical Manual. Specifiers and Authorized Applicators are advised to reference all applicable sections.

A Warranty Table has been included in Paragraph 1.05 citing various requirements by which specific warranty coverage can be obtained.

PART I – GENERAL

1.01 Description

A. The **Versico Modular Tray Roof Garden System** incorporates pre-planted GreenGrid G4 and Hydropack "modules" in lieu of traditional components (i.e. drainage boards, root barriers, moisture mats, and growth media) used above an adhered roofing membrane (VersiGard®, VersiWeld®, VersiFlex (PVC/KEE HP), VersiFleece® (TPO and PVC/KEE HP) and VersiFleece AC) installed in accordance with the appropriate Versico Roof Membrane Specification.

   The modules are installed over a slip sheet of CCW 300HV protection fabric, which is installed directly over the Versico Membrane. The "module trays" are lightweight, composed of recycled plastics, and arrive at the building site ready for installation. Tray size for GreenGrid G5® is 24" x 24" x 4" (or 2.75" or 6" or 8") deep; Hydropack is 24" x 15.6" x 4" deep.

   Trays are typically Extensive (Shallow) Garden Systems with a nominal growth media depth of 4" (6" and 8" deep depths also available) and generally come pre-planted with sedum type plants which are chosen for the specific climate zone and the anticipated weight above the membrane. Nominal 4" deep trays are approximately 30 pounds per square foot for GreenGrid G5 and 22 pounds per square foot for Hydropack in a fully saturated state.

   For specific information about the modules, weights, planting types, and growth media, refer to Part 2 "Products".

B. The **Adhered Membrane Waterproofing Assemblies** incorporate a minimum 60-mil thick VersiGard EPDM, VersiFlex PVC/KEE HP or VersiWeld TPO membrane, 115-mil VersiFleece (TPO or PVC/KEE HP) membrane, or 135-mil VersiFleece AC TPO membranes. Membrane will be adhered with appropriate adhesive to either a sloped structural concrete deck (VersiFleece Only) or tapered insulation with an acceptable cover board. To facilitate drainage a minimum roof slope of 1/4" in 12" must be provided at the waterproofing membrane level. Refer to Modular Roof Garden (MRG) Details included at the end of this specification for the various assembly options available.

1.02 General Design Considerations

A. For 10, 15 or 20-year warranties, the assembly requires the use of 60-mil VersiGard EPDM, 60-mil VersiWeld TPO, 60-mil VersiFlex PVC, 50-mil VersiFlex KEE HP, 115-mil VersiFleece (TPO or PVC), 105-mil VersiFleece KEE HP or 135-mil VersiFleece AC TPO membrane installed as an adhered system. 75 or 80 mil membranes are recommended for longer duration warranties**.**

B. CCW 300HV Protection Fabric required as a slip sheet directly above the membrane and before placing the trays.

C. An EPDM, TPO, PVC or KEE HP membrane shall be fully adhered, typically to polyisocyanurate insulation, with layers of insulation set in adhesive. As an option, bottom layers of insulation can be mechanically fastened to the roof deck with the top layer set in adhesive. Coverboards may also be used over approved Polyisocyanurate or Expanded Polystyrene Insulation but shall be set in adhesive. Section 3.04.A.4 for coverboard requirements.

D. Refer to Versico's Individual Roof Membrane Specifications for specific requirements concerning membrane adhesion and splicing criteria, insulation type and securement methods, product delivery, storage and handling guidelines, and applicable installation of all materials and details.

E. To facilitate drainage, a minimum roof slope of 1/4" in 12" shall be provided at the waterproofing membrane level. Roof slope must not exceed 1" in 12".

F. Proper decking shall be provided by the building owner. The building owner or its designated representative must ensure the building structure is investigated by a registered engineer to endure its ability to withstand the total weight of the specified roofing system, as well as construction loads and live loads, in accordance with all applicable codes. The specifier must also designate the maximum allowable weight and location for material loading and storage on the roof.

G. Coordination between various trades is essential to avoid unnecessary rooftop traffic over completed sections of the roof and to prevent subsequent damage to the membrane roofing system.

H. Unless otherwise accepted by Versico, modules shall be installed between April 1st and October 15th. Installation must be after the last day of frost in the spring or before the first frost day in the fall.

I. Prior to installing the modules, a slip sheet of Versico CCW 300HV Protection Fabric shall be installed over the roofing membrane at all areas where the modules will be placed.

J. When trays are to be installed in high wind areas, a design professional should be contacted regarding appropriate methods to prevent tray movement and/or growth media wind erosion until there is complete plant coverage of the tray. The trays may be locked, secured or strapped together to increase stability.

1.03 Quality Assurance

Building Codes are above and beyond the intended purpose of this specification. The respective **owner** or **specifier** should consult local codes for applicable requirements and limitations. It is the responsibility of the specifier to review local, state and regional codes to determine their impact on the specified Versico Roofing System.

A. Versico recommends the use of Versico supplied products for use with these Versico Roofing Systems. The performance or integrity of products by others, **when selected by the specifier and accepted as compatible by Versico**, is not the responsibility of Versico and is **disclaimed** by the Versico Warranty.

B. The specified roofing system must be installed by a Versico Authorized Roofing Applicator in compliance with drawings and specifications as approved by Versico.

D. A **pre-installation** meeting should be coordinated by the specifier and attended by the roofing applicator, membrane manufacturer's representative and other trades working on the roof system both before and after membrane installation. The purpose of this meeting is to discuss the necessity of ensuring proper membrane protection during all phases of installation and to review other applicable requirements or unusual field conditions.

E. After completion of the membrane installation, upon request, an **initial inspection** shall be conducted by a Field Service Representative (FSR) of Versico to ascertain that the membrane roofing system has been installed according to Versico's published specifications and details applicable at the time of bid. This inspection shall be coordinated prior to installing the GreenGrid G5 or Hydropack modules and protection fabric, so that access to the membrane is not impaired.

F. Flood Testing, electronic testing or other leak detection means is required to check the waterproof integrity of the membrane prior to installing the GreenGrid G5 or Hydropack modules and protection fabric.

G. An **"In-Progress" inspection** may be scheduled after the initial inspection (after the membrane installation is completed) to ensure proper protection procedures are being followed to prevent possible damage to the membrane during the installation of GreenGrid or Hydropack modules and protection fabric.

NOTE: The roofing applicator must notify Versico at least 3 weeks in advance of the applicable inspection dates for coordination purposes.

1.04 Submittals

A. To ensure compliance with Versico's minimum warranty requirements, **all projects should be forwarded to Versico for review** prior to installation, preferably prior to bid.

B. Along with the project submittals (shop drawings and Request for Warranty), the roofing contractor must include a **dimensional layout of GreenGrid G5 or Hydropack modules and all membrane field splices**.

C. Shop drawings must be submitted to Versico by the Versico Authorized Roofing Applicator along with a completely executed Notice of Award (Page 1 of Versico's Request for Warranty form) for approval. Approved shop drawings are required for inspection of the roof and on projects where on-site technical assistance is requested.

Shop drawings must include:

1. Outline of roof and size
2. Deck type (for multiple deck types)
3. Location and type of **all** penetrations
4. Perimeter and penetration details
5. Key plan (for multiple roof areas) with roof heights indicated

When field conditions necessitate modifications to originally approved shop drawings, a copy of the shop drawing outlining all modifications must be submitted to Versico for revision and approval prior to inspection and warranty issuance.

D. **As-Built Projects** (roofing systems installed prior to project approval by Versico)

NOTE: As-Built projects are not recommended for those projects referenced in Paragraph 1.04A in order to ensure Versico warranty requirements have been met.

E. **Notice of Completion** (Page 2 of the Versico Request for Warranty form)

After project completion, a Notice of Completion must be submitted to Versico to schedule the necessary inspection of the project prior to issuance of the Versico Warranty.

1.05 Warranty

A. **10, 15 or 20-year** System Warranty is available for a charge on commercial buildings and applies only to **products manufactured or marketed by Versico Incorporated.** The membrane system is defined as membrane, flashings, adhesives, sealants and other Versico brand products utilized in this installation. For a complete description of these products, refer to the "Products Section" or the applicable "Attachment" in the Versico Specifications.

When Versico's Modular Tray Roof Garden System is installed and a membrane warranty is obtained, an Overburden Warranty with the same duration as the membrane warranty is included for no additional charge. The overburden is defined as the components above the membrane, including protection fabric, trays and growth media. In the event of a leak, Versico is responsible for overburden removal, roof repair and replacement of the overburden.

The standard warranty for vegetation is 30 days, contact Versico for additional coverage.

If a 20-year **Total System Warranty including overburden** is desired, it is recommended to include a **Sustainable Roofing and Waterproofing Alliance (SRWA) Consultant** on the project during the design and construction phases, to monitor the installation.

B. **See Table I for information regarding Warranted Systems and Design Criteria:**

Table I **Modular Tray Roof Garden System Warranty Options**

Roof Garden Assembly	Membrane Options for 10, 15 or 20 Year Warranty
GreenGrid G4 Or Hydropack	60-mil VersiGard EPDM (1)(2)
	60-mil VersiWeld TPO or 60-mil VersiFlex PVC or 50-mil VersiFlex KEE HP (1)(3)(4)
	115-mil VersiFleece TPO or PVC or 105-mil VersiFleece KEE HP (3)(4)
	135-mil VersiFleece AC TPO (1)(3) hot mopped directly to structural concrete

(1) When positive slope is incorporated by tapered insulation, non-VersiFleece or VersiFleece AC membranes may be adhered to a coverboard (HD Polyiso, DensDeck Prime or Securock) which has been adhered to the insulation with Versico Insulation Adhesive.
(2) VersiGard and VersiGard Reinforced EPDM Membranes shall be seamed with 3" QAT and overlaid with 6" Quick Applied Cured Cover Strip.
(3) VersiWeld TPO Membrane seams shall be heat-welded and overlaid with 6" TPO Quick Applied Cover Strip.
(4) VersiFlex PVC and KEE HP Membrane seams shall be heat-welded and overlaid with a 6" PVC Pressure Sensitive Cover Strip and utilize the PVC 2-step priming process.

C. **Access for warranty service**

If a 10, 15 or 20-year Overburden Warranty is not obtained or if the owner chooses to use overburden by others, it shall be the owner's responsibility to expose the waterproofing membrane assembly in the event warranty service or investigation is necessary.

D. The formation or presence of mold or fungi in a building is dependent upon a broad range of factors including, but not limited to, the presence of spores and nutrient sources, moisture, temperatures, climatic conditions, relative

humidity, and heating/ventilating systems and their maintenance and operating capabilities. These factors are beyond the control of Versico and Versico shall not be responsible for any claims, repairs, restoration or damages relating to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in any building or in the air, land, or water serving the building.

1.06 Job Conditions

A. On phased roofing, temporary closures should be provided to prevent moisture infiltration. When a temporary roof is specified, VapAir Seal 725TR in conjunction with CCW-702 or CCW CAV-GRIP 3V Primer may be used. Refer to Product Section Part II for additional product information and Specification Supplement G-08-20.

B. When possible on multiple level roofs, begin the installation on the highest level to avoid or minimize construction traffic on completed roof sections.

C. Vapor Retarders

1. Versico does not require a vapor retarder for the protection of the membrane; however, the following criteria should be considered by the specifier:

a. Use of a vapor retarder to protect insulation and reduce moisture accumulation within an insulated roofing assembly, should be investigated. Consult latest publications by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) and NRCA (National Roofing Contractors Association) for specific information.

b. In the generally temperate climate of the United States, during the winter months, water vapor flows upward from a heated, more humid interior toward a colder, drier exterior. Vapor retarders are more commonly required in northern climates than in southern regions, where downward vapor pressure may be expected and the roofing membrane itself becomes the vapor retarder.

D. Wood nailers are required for the securement of metal edgings, scuppers, and insulated pipes. Wood Nailer shall be secured per specifier recommendation or in accordance with Factory Mutual's property Loss Prevention Data Sheet 1-49. Refer to Design Reference DR-08-11 "Wood Nailers Securement Criteria" in Versico Technical Manual shall be referenced.

E. When any of the Roofing Systems are specified on a portion of a roof, tie-ins to existing roofing membranes will be required. Depending on the type of the existing roofing system, the tie-in method will vary. Total isolation between two roofing systems or weep holes may be required to address moisture migration from one roofing system to the other. Prior to the selection of any tie-in detail, ensure the selected detail will not restrict drainage.

F. On new construction projects, located in colder climates, special consideration should be given to construction practices and the possible migration of hot, humid air and moisture generated during construction. Refer to Spec Supplement G-01-18 "Construction Generated Moisture".

G. For Additional Job Condition information, consult the appropriate roofing membrane specification.

1.07 Product Delivery, Storage and Handling

A. Deliver materials to the job site in the original, unopened containers.

B. When loading materials onto the roof, the Versico Authorized Roofing Applicator must comply with the requirements of the specifier/owner to prevent overloading and possible disturbance to the building structure.

C. Job site storage temperatures in excess of 90°F (32°C) may affect shelf life of curable materials (i.e. adhesives and sealants).

D. **When the temperature is expected to fall below 40ºF (5ºC)**, outside storage boxes should be provided on the roof for temporary storage of liquid adhesives and sealants. Adhesives and sealant containers should be rotated to maintain their temperature above 40ºF (5ºC).

E. Versico Roof Garden Modular Trays should be installed promptly after delivery to the jobsite. Trays which are not installed the day of delivery should be removed from shipping crates, placed in lighted area and watered.

F. Consult the appropriate membrane specification for additional delivery, storage and handling information.

PART II – PRODUCTS

2.01 General

The components of this roofing system are to be products of Versico or supplied by Versico. The installation, performance or integrity of products by others, **when selected by the specifier and accepted by Versico,** is not the responsibility of Versico and is expressly disclaimed by the Versico warranty.

2.02 Membrane/Related Products

A. **Membranes**

VersiGard EPDM (black), VersiGard White EPDM (white), VersiWeld TPO, VersiFlex PVC, VersiFlex KEE HP, VersiFleece (TPO/PVC/KEE HP), and VersiFleece AC TPO can be used with this system. Refer to Paragraph 1.05, Design Guidelines for required membrane thickness that is dependent upon the type of Roof Garden and warranty selected. For membrane physical properties, refer to the appropriate Versico Technical Data Bulletins or Product Data Sheets.

B. **Related Products**

1. **VersiGard Products:** VersiGard Bonding Adhesive, Low VOC Bonding Adhesive, Flexible DASH Adhesive, Cold Applied Adhesive, Aqua Base 120 Adhesive, QA Seam Tape, EPDM Primer, Low VOC EPDM Primer, Lap Sealant, Universal Single-Ply Sealant, Weathered Membrane Cleaner, Cured EPDM Flashing, Cured Cover Strip, Quick Applied Overlayment Strip, Uncured EPDM Flashing, Termination Bars, Fasteners/Plates, Water Cut-Off Mastic, Pourable Sealer, Walkway Pads/Rolls, Pre-molded Pipe Seals, and Pressure Sensitive Inside/Outside Corners are used depending on the waterproofing assembly.

2. **VersiWeld Products:** VersiWeld Flashing, VersiWeld Bonding Adhesive, Low VOC Bonding Adhesive, Flexible DASH Adhesive, Cold Applied Adhesive, Aqua Base 120 Adhesive, Cut-Edge Sealant, Water Cut-Off Mastic, Universal Single-Ply Sealant, TPO Molded Pocket Sealant, Weathered Membrane Cleaner, Pressure-Sensitive Cover Strip, Coated Metal, Heat Weldable Walkway Rolls, Pre-Molded Accessories, TPO Primer, Low VOC TPO Primer, Termination Bars, and Fasteners/Plates are used depending on the waterproofing assembly.

3. **VersiFlex (PVC/KEE HP) Products:** VersiFlex Low VOC PVC Bonding Adhesive, Aqua Base 120 Bonding Adhesive, VersiFlex PVC Hydrobond Water Based Adhesive, VersiFlex PVC non-reinforced Flashing, VersiFlex PVC “T” Joint Cover, VersiFlex PVC Cut Edge Sealant, Water Cut-Off Mastic, Universal Single-Ply Sealant, White One-Part Pourable Sealer, PVC and KEE HP Membrane Cleaner, VersiFlex Low-VOC PVC Step 1 Activator. VersiFlex Low-VOC PVC Step 2 Primer, VersiFlex PVC Step 2 Primer, VersiFlex PVC Coated Metal, VersiFlex PVC Heat Weldable Walkway Rolls, VersiFlex PVC Inside/Outside Corners and VersiFlex Pre-Molded accessories are used depending on the waterproofing assembly.

4. **Other Versico Products:** Insulation, Edgings and copings are also required when such components are to be included as part of the System Warranty.

2.03 Versico Modular Tray Roof Garden Components

A. **Modular Trays - General**

1. **GreenGrid G5** modules are black in color and made from 100% pre-consumer recycled low or medium density polyethylene that is protected with UV inhibitors and stabilizers. GreenGrid modules are self-contained and feature water holding reservoirs and drainage holes for maximum water retention and drainage. Modules are pre-planted with growth media and plant species of the color and type standard for most USDA plant hardiness zones. Custom plants may be available upon request, contact Versico. Physical properties are as follows:

	GreenGrid G5 Modular Tray Roof Garden			
Element	**Description**			
Depth of Modules	2.75”	4”	6”	8”
Module Size	24” x 24”			
Weight of planted modules (fully saturated weights)	15 pounds per square foot	30 pounds per square foot	45 pounds per square foot	60 pounds per square foot
Module Material	100-mil low and medium density, pre-consumer recycled polyethylene		110-mil low and medium density, pre-consumer recycled polyethylene	
Module Clearance above Roofing Surface	0.75”			
Color of Modules	Black			
Growth Media	FLL-compliant extensive, semi-intensive, and intensive regional blends. Custom blends are available to meet specific project specifications.			
Plants	Varies by module depth and project location. Succulents and groundcovers are typical in all module depths. Ornamental grasses and perennials for 6-in and 8-in applications. Native and other custom plantings are also available.			

2. **Hydropack** modules are black in color, made from 100% recycled material and contain a filter fabric and drainage layer already placed in the module. Modules are pre-planted with growth media and plant species of the color and type standard for most USDA plant hardiness zones. Custom plants may be available upon request, contact Versico. Physical properties are as follows:

Hydropack Modular Tray Roof Garden	
Element	**Description**
Depth of Modules	4”
Module Size	24” x 15.6”
Weight of planted modules (fully saturated weights)	22 pounds per square foot
Module Material	150-mil HDPE (100% of material derived from recycled post-industrial HDPE)
Module Clearance above Roofing Surface	1.2”
Color of Modules	Black
Drainage/Root Resistance Layer	3 oz. non-woven polypropylene geotextile
Growth Media	Proprietary rooftop blend consisting of organic and inorganic components
Plants	Sedums or perennial/annual species specifically selected for climate, hardiness zone, color, and size

B. **Modular Tray Plants**

1. **GreenGrid G5** recommended design mix of groundcovers and perennials that can thrive in a non-irrigated, Extensive/Shallow environment based on the project location. Plants to be selected according to the USDA hardiness zone classification.

    a. The standard GreenGrid G5 system comes with a mixture of sedums which are chosen for the specific climate zone of the project. Contact Versico for a specific list of plants contained in the mix for your specific location.

    b. Planting coverage: Pre-grown to achieve a minimum of 75-90% vegetative coverage.

    c. Special Order: Specific plantings that meet the climate zone and the desired look the roof garden is to achieve. This is accomplished by coordinating a specific design with the owner/architect. Special plants can be pre-grown in the trays, with increased lead-time and additional cost.

    d. For Intensive/Deep trays, plant selection may include varieties of ornamental and native ground covers, grasses, perennials, and in some instances, trees and shrubs. Contact Versico for vegetation suggestions and assistance.

2. **Hydropack** recommended design mix of groundcovers and perennials that can thrive in a non-irrigated, Extensive/Shallow environment based on the project location. Plants to be selected according to the USDA hardiness zone classification.

    a. The standard Hydropack system comes with a mixture of plants which are compatible for use in the majority of USDA hardiness zones. Refer to Versico's Hydropack product data sheet for complete list of plant species present.

    b. Planting density: All Hydropack modules are pre-grown to achieve a minimum 80% vegetative coverage.

    c. Custom planting schedules can be ordered. However, a minimum 12-week lead time is required for pre-growing the modules to 80-90% vegetative coverage. This is classified under Special Order. Non-custom Hydropack orders generally have a lead time of 3 weeks. Special patterns may be accomplished with various plant species to give a pattern look for color, plant height, etc.

C. **Modular Tray Growth Media (Proprietary Blend to meet FLL Standards) -** Growth media blends are proprietary to the individual supplier. Growth media provides stable soil structure, high porosity, and high moisture holding properties. The growth media also provides excellent drainage while remaining lightweight. Growth media is blended to meet the German FLL (The Landscaping and Landscape Development Research Society), "Guidelines for the Planning, Execution and Upkeep of Green-Roof Sites." Components of the growth media may vary due to biological factors and/or geographic region. Contact Versico for specific growth media specifications based on tray supplier and geographic region

D. **Protection Fabric – Versico CCW 300HV –** (16 oz/yd^2) is a polypropylene non-woven needle-punched fabric that is stabilized to resist soil chemicals, mildew, and insects and is non-biodegradable. Designed to prevent abrasion to the membrane when used in conjunction Roof Garden assemblies. Available in 12.5' x 300' and 40" x 200' rolls.

E. **Versico Roof Garden Edge –** a 0.080" thick extruded aluminum edge used to separate roof garden assemblies from adjacent walkways or perimeter stone ballast. The edging is available in 10' lengths and 4", 6" and 8" high (growth media heights). Custom heights are available upon request from Versico.

F. **Versico Easy Bend Roof Garden Edge –** a 0.080" thick extruded aluminum edge used to separate roof garden assemblies from adjacent walkways or perimeter stone ballast. The edging is pre-notched to easily from curved

shapes. The edging is available in 10’ lengths and 4”, 6”, and 8” high (growth media heights). Custom heights are available upon request from Versico.

G. **Versico Aluminum Roof Garden Drain Box –** a 0.125” thick extruded aluminum drain box that is 12” x 12” with a welded 4-1/2” flange to keep the drain areas clear of stone ballast or growth media. The drain box is available in 4” or 8” heights. Drainage holes are pre-punched around the sides. Access to the drain is provided by a removable lid. Custom sized Drain Boxes are available upon request from Versico.

H. **Hanover Architectural Products (available through Versico)**

1. **Hanover Prest Pavers –** 2’ x 2’ x 2” thick precast concrete pavers weighing 25 psf with compressive strength of 8500 psi. Absorption is less than 5% and Flexural is 1,100 psi. Available in eight (8) standard colors. Custom colors and custom made sizes available.

2. **Hanover Pedestal Paver –** 2’ x 2’ x 2.25” thick precast concrete pavers weighing 22 psf and an elevated clearance of 1/2” from incorporated footing.

3. **Hanover Guardian Paver –** Developed for high wind and special conditions, this paver utilizes a three-piece pedestal system and shaped paver. The paver is 2’ x 2’ and available in 2” or 3” thicknesses and weighs 25 psf to 38 psf.

4. **Hanover RockCurb –** Transition component between paver system/hardscaped areas and adjoining roof garden assembly. RockCurb is 6” thick and 36” long, and is available in 12” height with a battered profile or in an 18” height with a battered profile or bull nose profile. Radius sections are also available.

5. **Hanover Paver Accessories –** High Tab Pedestal with shims, EPDM Pedestal with shims, Compensator, Elevator Couples, and Elevator Pedestal.

I. **Sunny Brook Pavers (available through Versico) -** Pre-cast concrete pavers used in conjunction with roof garden applications or for ballasted roof applications. 23-1/2” x 23-1/2” x 2” thick precast concrete pavers weighing 24 psf. Available in 17 standard colors, with special order colors available. The pedestal paver can either be installed in conjunction with a separation layer of HP Protective Mat or using MRP Pedestal and shims.

J. **Versico Stained Glass Stone –** Stained Glass Stone is 100% post-consumer recycled & tumbled glass in a 1-2” particle size used as a special effects accessory for Roof Gardens and Plazas. Available in 12 different colors, Stained Glass Stone can be utilized around perimeters, penetrations or even to create colorful logos in any size or shape. Stained Glass Stone is applied at a minimum rate of 10 pounds per square foot over a minimum 1” thick drainage composite such as Versico’s MiraDRAIN G4.

2.04 Other Non- Versico Products (Not covered by the Versico Warranty)

A. **“Hardscaped” Items:**

1. **Stone Ballast –** Nominal 1-1/2” diameter rounded water worn gravel which conforms to ASTM D448, gradation size #4, applied at a minimum of 10 pounds per square foot.

2. **Other –** Products such as concrete curbs, landscape lumber (wood timbers, etc.) or other desired landscape products suitable for this application. Used to transition between roof garden and hardscaped areas to act as a “growth media stop”.

B. Refer to specific roofing membrane specification for additional product information.

PART III – EXECUTION

3.01 General

Refer to Paragraph 1.05 for Specific Membrane Assembly requirements beyond those listed in the Roofing System Specification.

When feasible, begin the application at the highest point of the highest roof level and work to the lowest point to prevent moisture infiltration and to minimize construction traffic on completed sections. This will include completion of all flashings and terminations.

3.02 Roof Deck Criteria

Proper decking shall be provided by the building owner. The building owner or its designated representative must ensure that the building structure is investigated by a registered engineer to assure its ability to withstand the total weight of the specified roofing system, as well as construction loads and live loads, in accordance with all applicable codes. The specifier must also designate the maximum allowable weight and location for material loading and storage on the roof.

A. For **Modular Tray Roof Garden Systems**, any roof deck capable of withstanding the roof loading may be accepted.

B. Defects in the roof deck must be reported and documented to the specifier, general contractor and building owner for

3.03 Substrate Preparation

The substrate must be dry, relatively smooth and free of protrusions, debris, sharp edges or foreign materials and must be free of accumulated water, ice and snow. Cracks or voids in the substrate greater than 1/4” (6mm) must be filled with a suitable material.

3.04 Waterproofing Installation

Before beginning installation, refer to the applicable Safety Data Sheets, OSHA safety requirements, and Technical Data Bulletins for cautions and warnings.

A. **Insulation Attachment**

1. Base layer of insulation can be mechanically attached with acceptable Versico Fasteners and Insulation Plates. Refer to appropriate Roofing Membrane Specification for acceptable decks and the specific Versico Fasteners to be used.

2. Fastening Density is determined by insulation type and thickness, as well as possible required enhanced fastening as prescribed by Factory Mutual Global, ANSI/SPRI WD-1 or Miami-Dade County. Refer to Spec Supplement G-09-20 “Insulation Attachment and Details” for standard fastening and Design Reference DR-05-19 “Insulation Fastening Patterns” for enhanced fastening.

3. As an alternate to mechanically attaching the base layer of insulation, Versico Flexible DASH Adhesive can be used. Refer to appropriate Roofing Membrane Specification for installation using Flexible DASH Adhesive.

4. Top layer of insulation must be an acceptable (min. 1/2”) cover board adhered with Flexible DASH Adhesive. Refer to appropriate Roofing Membrane Specification for installation procedures.

B. **Membrane Installation**

1. VersiGard, VersiGard Reinforced, VersiWeld, VersiFlex PVC, VersiFlex KEE HP, VersiFleece (TPO or PVC or KEE HP) or VersiFleece AC TPO Adhered Roofing Systems may be adhered with appropriate adhesive to either sloped structural concrete deck, tapered insulation with an acceptable cover board or wood decks. Direct application over cellular or perlite insulating concrete may also be specified (Contact Versico for acceptable lightweight insulating concretes). See Roof Deck Criteria in Section 3.02 of this Specification for restrictions.

2. For installation procedures on Adhered Roofing Systems, refer to appropriate “Installation” Section of individual membrane Specifications.

C. **Membrane Splicing**

1. Refer to appropriate splicing procedures published in the individual membrane Specifications as well as Spec Supplement E-02-20 “EPDM Membrane Splicing and Splice Repairs” for EPDM specifically.

2. In addition to the standard splice procedure all field splices shall be overlaid with the appropriate 6” EPDM or TPO Quick Applied Cover Strip. For PVC/KEE HP membrane use a 6” PVC Pressure Sensitive Cover Strip and utilize the PVC 2-step primer process.

3. Prior to Quick Applied Cover Strip application, the splice area must be primed with EPDM or TPO Primer, depending on membrane used. For PVC/KEE HP membrane utilize the PVC 2-step primer process.

D. **Flashing**

1. Walls, curbs, skylights and all other penetrations through the membrane must be flashed in accordance with Versico’s published specifications and details for the applicable membrane specified.

2. Flashing heights shall be greater in height than the specified depth of the Roof Garden assembly (Drainage composite, growth media, etc.).

3. Vertical field splices at walls, curbs, etc., must be overlaid in the same fashion as the field splices.

E. **Roof Drains**

1. Roof garden drains should be covered with a Versico Aluminum Drain Box or a perforated drain box by others with removable lid (at growth media surface height) for inspection purposes. 1-1/2” nominal diameter rounded river washed gravel is applied around the drain box a minimum of 18” (horizontally) to promote drainage.

2. In Modular Tray Roof Garden Waterproofing assemblies, standard, cast iron, compression ring clamping drains may be used with 1-1/2” nominal diameter rounded river washed gravel applied around the drain sump area (minimum 18” in width) for drainage.

3. When using protection fabric, end fabric at base of drain to avoid clogging of roof drain with growth media, especially if growth media by others is used.

3.05 Modular Tray Roof Garden Installation

A. **Prior to installation of Roof Garden Components**

1. Limit floor traffic over completed waterproofing system. Heavily traveled areas (staging areas, corridors used to transport roof garden components) must be protected.

2. If a Flood Test is to be performed:

1. Perform a Flood Test or Electronic Test (TPO, PVC or EPDM (white) Membrane only) to ensure the watertight integrity of the waterproofing system. Testing should take place after the membrane and flashings have been in place a minimum of 24 hours. Plug drains and provide necessary barriers to contain water.

2. "Flood Test" the membrane surface with water for 48 hours at a minimum depth of 2". Inspect for leaks and repair membrane if damage to waterproofing assembly is found. Retest after repairs have been made.

Note: On VersiWeld (TPO), VersiFlex (PVC) or VersiGard White (EPDM) Systems electronic testing such as Electric Field Vector Mapping (EVFM) may be used to test membrane for defects. Contact Versico for the appropriate testing agency and procedures.

3. Documentation of the Flood Test should be completed by the designer or roof consultant and signed by the building owner. This documentation should be sent to Versico as part of the Notice of Completion for warranty inclusion.

3. Roofs with Slopes 2:12 or greater are not recommended for modular tray systems.

4. Calculation of "Vegetation-Free" Zone shall comply with one of the following methods:

   a. Use distance calculated with ANSI/SPRI RP-14 "Wind Design Standard for Vegetative Roofing Systems" for the entire roof design.

   b. Use a minimum of two (2) feet from all corners and perimeters where a parapet wall is not present with the addition of an erosion control blanket extending the remainder of the required "vegetation-free" distance calculated using the ANSI/SPRI RP-14 "Wind Design Standard for Vegetative Roofing Systems".

   c. Designer or Roof Consultant may select their own distance for the "vegetation-free" zone for all perimeters and corners where a parapet wall is not present. Designer or Roof Consultant will then be liable for any damage that may occur due to wind erosion at the specified distance.

   d. Contact Versico for design recommendations.

B. **Versico CCW 300HV Protection Fabric Installation**

Installed prior to installation of the GreenGrid and Hydropack modules. Installed after Versico's inspection of the membrane system.

1. **Sweep** all debris, foreign material, etc. from the membrane surface.

2. **Unroll CCW 300HV Protection Fabric** directly over the membrane and provide a minimum 6" side and end overlap.

3. **Extend** protection fabric up walls, curbs, etc. to the height of the top of the growth media layer.

4. Under windy conditions, provide temporary ballast to prevent wind disturbance. Trays may be used as temporary ballast, consult designer/consultant for recommendations for your specific project and location.

C. **Modular Roof Garden Trays Installation**

Unless otherwise accepted by Versico, GreenGrid and Hydropack modules shall be installed between April 1st and October 15th, but not when the temperature is below 50°F.

1. **Remove** all debris from the slip sheet surface.

2. **Place** modules over the slip sheet in the desired location as indicated on the shop drawings. Butt trays together so the edges are touching.

Note: Care must be exercised when placing modules to avoid damaging the slip sheet or underlying membrane. **Do not drag** modules into position. Modules must be lifted and gently positioned.

3. For **Hydropack Modules** have interlocking 'male' and 'female' tabs on all sides. Simply line up the tabs and allow the module to vertically slide into place adjacent to modules already on the roof. This allows all modules to be connected, aiding in wind uplift resistance.

4. After installing modules in designated locations, all modules shall be sufficiently watered with a fine spray to ensure growth. Water must be free of contaminants or substances harmful to plant growth. Hoses or other methods of transporting water to the roof shall be furnished by the applicator. **Do not install** modules over saturated roof surfaces or under freezing conditions without prior approval from Versico.

5. Modules must be fully saturated on the day of installation. Visual confirmation of full saturation, with Hydropack Trays only, can be established by lifting one corner of the filter fabric in the modules to see that the water reservoirs are filled.

6. If planted during a time of the year when maximum daytime temperatures exceed 80°F, modules should be irrigated once per day for 30 minutes during the first 14 days following installation. This will ensure that the plants are properly established.

7. Do not install modules over saturated roof surfaces or under freezing conditions without prior approval from Carlisle.

8. Water trays, after installation, to the point of runoff.

D. **Vegetative Free Zone (Ballast) Installation**

1. Install ballast between Modular Tray and horizontal surfaces, as required for offset. See Roof Garden Details for additional information.

    a. Minimum 24" offset for Parapets, Vertical walls, HVAC Unit Curbs, standard Skylights and Drains.

    b. Minimum 12" offset for Pipe Penetrations, Expansion Joints and Tubular Skylights.

2. Install ballast at all exposed roof edge conditions, where vertical surfaces do not occur. See Roof Garden Details for additional information.

    4. Use distance determined by method of calculation of "vegetation-free" zone as described in Paragraph 3.05-A4.

3. When using concrete pavers as ballast, follow local Building Code and Occupational Safety and Health Administration (OSHA) Guidelines for Fall Protection.

Caution: Provide measures at walkways and roof access points for snow and ice removal.

E. **Maintenance of Roof Garden Components**

Maintenance is the responsibility of the building owner. Contacts for maintenance services can be provided by Versico, or the owner may choose to use an outside firm or their own staff. In all cases, the requirements outlined below must be followed. Additionally, Owner must meet or exceed maintenance requirements for plant warranty from individual tray/module supplier.

1. General Maintenance

    a. After installation, keep traffic over the modules to a minimum. If a high traffic area develops that was not expected, replace trays in this area with pavers to offer a sturdy walking surface.

    b. Check drains at each visit for debris, root, and plant intrusion to assure there are no obstructions to prevent water flow to the drain.

    c. Maintenance recommendations for a 14-day period after completion of module installation.

        a. Utilize nursery-recommended maintenance procedures depending on plant type.

        b. Each Module should be watered for 30 to 60 seconds, 2 to 3 times a week after initial installation to establish a good root system.

        c. Care should be used in watering and weeding to avoid washing growth media out of the modules or the removal of significant amounts of media during weeding activities. If care is not taken, supplemental growth media may need to be added to fill in all areas that have been washed out or disturbed during weeding activities. This procedure shall also be followed during long-term maintenance activities.

2. Refer to Attachment I - “Modular Tray Roof Garden Maintenance Recommendations” for maintenance schedule.

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Hydropack is a registered trademark of Vegetal I.D. Inc.

Super Sack is a trademark of B.A.G. Corporation

Versico Roofing Systems
P.O. Box 1289
Carlisle, PA 17013
800-992-7663

Modular Tray

"Attachment I"

Modular Tray Roof Garden Maintenance Recommendations

July 2025

Introduction

Versico Modular Tray Roof Garden Systems can be a low maintenance feature of a building. Budget and time allowances for Modular Tray Roof Gardens vary dependent on design, e.g., growth media and plant selection. As with any biological system, Versico Modular Tray Roof Gardens require proper care and maintenance to thrive and perform as designed.

This attachment outlines Versico's recommendations for maintenance on Modular Tray Roof Garden systems in American Horticultural Society (AHS) Plant Heat–Zones 3-8. Modular Tray Roof Garden systems installed outside of Zones 3-8 will be addressed on a case-by-case basis. Failure to perform and document maintenance as outlined in this attachment can and will hinder the performance of the system.

Care and Maintenance procedures of non-standard Versico planting options are project specific and will be the sole responsibility of the building owner to develop and perform.

Immediately After Installation

1. Fully saturate the entire Roof Garden system to the point of runoff by soaking with conventional overhead sprinklers that are supplied by a 3/4" hose.

2. Inspect drains for any foreign debris that may hinder their performance and clear the drains of any such debris.

Irrigation Requirements

1. Permanent irrigation may not be needed dependent upon the Roof Garden design, geographic region and microclimate where the Roof Garden is to be installed, but it is strongly recommended. **However, access to water via hose bibs at the roof level is always a requirement**.

2. Recommended water pressure is 35 psi at a volume flow of 9 gpm. Duration of irrigation events should be 30-45 minutes. Actual water pressure and volume flow will determine irrigation duration during the establishment period. Once runoff is observed, the Roof Garden system is considered to be thoroughly saturated.

3. Commercial overhead sprinklers such as spider stands (PICTURE 1) should be used to provide temporary overhead irrigation.

PICTURE 1: Spider Sprinkler Stand

4. Irrigation should be performed early to mid-morning or late afternoon. Never irrigate during evening hours.

5. Temporary overhead irrigation of Versico Modular Tray Sedums during the establishment period to follow recommendations listed in Table 1.

TABLE 1. Frequency of temporary irrigation for Modular Tray Sedums*

	Spring Install	**Early Summer Install**	**Late Summer Install**	**Fall Install**	**Winter Install**
Number of Weeks after installation	April-May	June-July 15th	July 15th-Sept 15th	Sept 15th-Oct	Nov-Dec
	Number of 30-45 minute irrigation events per week				
1-2	1-2	2	1-2	1	1
3-4	1	1	1	1	1
5-6	0-1	0-1	0-1	0-1	0-1

*Frequency and duration of irrigation events should be adjusted to account for precipitation

6. It is imperative to closely monitor your Roof Garden system for signs of stress during drought conditions. Drought is defined as prolonged periods of extreme ambient temperatures (>90°F) with no precipitation (2-3 weeks). *Sedum album* (PICTURE 2) is a great indicator plant. If it shows signs of shrinkage, die back, or red/brown discoloration, you must irrigate the system to the point of runoff. Frequency of irrigation will depend on the depth of growth media. Ultra-Extensive systems (≤4") will most likely need to be supplemented twice (2X's) as much during drought conditions.

PICTURE 2. *Sedum album* 'Coral Carpet'

7. For Modular Tray Roof Garden systems installed in climates receiving less than 35 inches of annual rainfall, permanent irrigation is strongly recommended. This decision will be heavily influenced by the system design and microclimate conditions.

8. The decision of whether or not to install a permanent irrigation system is highly dependent upon the geographic region, microclimate, growth media depth, water retention layer and plant selection. All Modular Tray Roof Gardens will require temporary irrigation during the establishment period and during drought conditions. If the project budget

allows, a permanent irrigation system can be set to easily facilitate watering during these periods through the use of timers and rain/soil moisture sensors.

a. If a permanent irrigation system is installed, the system must be flushed prior to the first freeze to prevent the lines from bursting.

b. Prior to re-commissioning the irrigation system in the spring, check the system for leaks and perform any repairs as needed. This is also the appropriate time to verify the functionality of timers and soil moisture sensors.

Sedum Remediation and Propagation

It is natural for bare spots to develop in a Roof Garden because plants have evolved to compete for space and resources. Should a bare spot develop and the Owner feels that action is required; remediation of these areas can be easily facilitated by harvesting your own cuttings. Cuttings are the top growth of a sedum plant and may be harvested one month after the spring growth flush. Cuttings should not be taken from plants under stress and should never be more than 50% of the existing growth.

1. Cut 35-50% off the top of the existing sedum growth (PICTURES 3 & 4)
2. Generously broadcast the cuttings across bare spots (PICTURE 5)
3. Cuttings must remain moist, water cuttings thoroughly for one month

PICTURE 3.

PICTURE 4.

PICTURE 5.

1st Year Maintenance

1. One month after planting, all weeds and non-specified plant material must be pulled from the growth media and removed from the rooftop before weeds flower and develop seed heads.

2. Versico does not allow the use of herbicides on its Modular Tray Roof Garden systems. Potential interactions between roofing membranes and herbicides, organic or nonorganic, have not been determined. The use of herbicides on a Modular Tray Roof Garden will void your warranty. **Weed removal and prevention is to be accomplished through hand weeding only**.

3. A minimum of one weeding event should be performed every month after installation.

4. During weeding events roof drains must be inspected and cleared of any debris.

5. After the growing season and prior to the winter months, spent vegetation may be trimmed down. Cuttings and trimmings should not be removed from the roof as they will act as mulch and return nutrients to the system in preparation for the next growing season.

6. If the Modular Tray Roof Garden is accessed during the winter months, de-icing products must not be used in the vicinity of the vegetation. Salts or de-icing chemicals will harm the vegetation.

7. Any snow removed from pavers or walkways should be distributed evenly across the Modular Tray Roof Garden System to prevent potential damage to the vegetation.

8. Should it be necessary to remove snow from the Roof Garden, care will need to be exercised to ensure that the modular tray does not become damaged or that vegetation layer is not damaged or inadvertently removed.

2nd Year and Onward Maintenance

1. The spring growth flush is the period during which plants wake up from their winter dormancy. The occurrence of this period varies by geographic location and seasonal weather conditions, but typically coincides with the appearance of bulbs such as Daffodils and Tulips. After the 12 month anniversary date of the Roof Garden installation, and annually thereafter, a soil test should be performed approximately 2-3 weeks prior to the spring growth flush. For example; if the Roof Garden was installed in October of 2012, the first annual soil test would need to be performed 2-3 weeks prior the spring growth flush of 2014. Small individual samples should be collected from across the Roof Garden to provide a broad spectrum of the media condition. 1-2 cup samples should be collected from 5-15 separate locations, depending on the area of the Roof Garden. These individual samples should be labeled and sealed in plastic bags or test kits. Versico recommends that the samples be sent to Pennsylvania State University's Agricultural Analytical Services Laboratory for the following tests:

    a. Saturated paste pH
    b. Salts
    c. Nutrients
    d. Percent Solids
    e. Organic content

    For more information on growth media testing see the link below:

    https://agsci.psu.edu/aasl/green-roof-media-testing

    Contact information and mailing address:

    Agricultural Analytical Services Laboratory
    Penn State University
    University Park, PA 16802
    814.863.0841
    www.aasi.psu.edu
    http://www.aasl.psu.edu/Greenroof.html

2. Sedums thrive in poor soils with low nutrient levels and do not require excessive fertilization. However, should the soil test indicate that the Modular Tray Roof Garden's growth media requires amendment; Versico recommends the use of granular slow release **organic** fertilizer. Fertilizer should be applied as necessary to return the growth media to original organic content. A single fertilization event should occur in the spring depending on the results of the annual soil test.

3. The Modular Tray Roof Garden system should receive a minimum of one weeding event every three months.

4. During weeding events roof drains must be inspected and cleared of any debris.

5. After the local trees have dropped their leaves, a final weeding event and general inspection must be performed. All debris must be removed from the Modular Tray Roof Garden and drains must be given a final inspection for the season.

6. If the Modular Tray Roof Garden is accessed during the winter months, de-icing products must not be used in the vicinity of the vegetation. Salts or de-icing chemicals will harm the vegetation.

7. Any snow removed from pavers or walkways should be distributed evenly across the Modular Tray Roof Garden system to prevent potential damage to the vegetation.

8. Should it be necessary to remove snow from the Roof Garden, care will need to be exercised to ensure that the vegetation layer is not damaged or inadvertently removed.

Modular Tray

Roof Garden Roofing System

Installation Details

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July 2025

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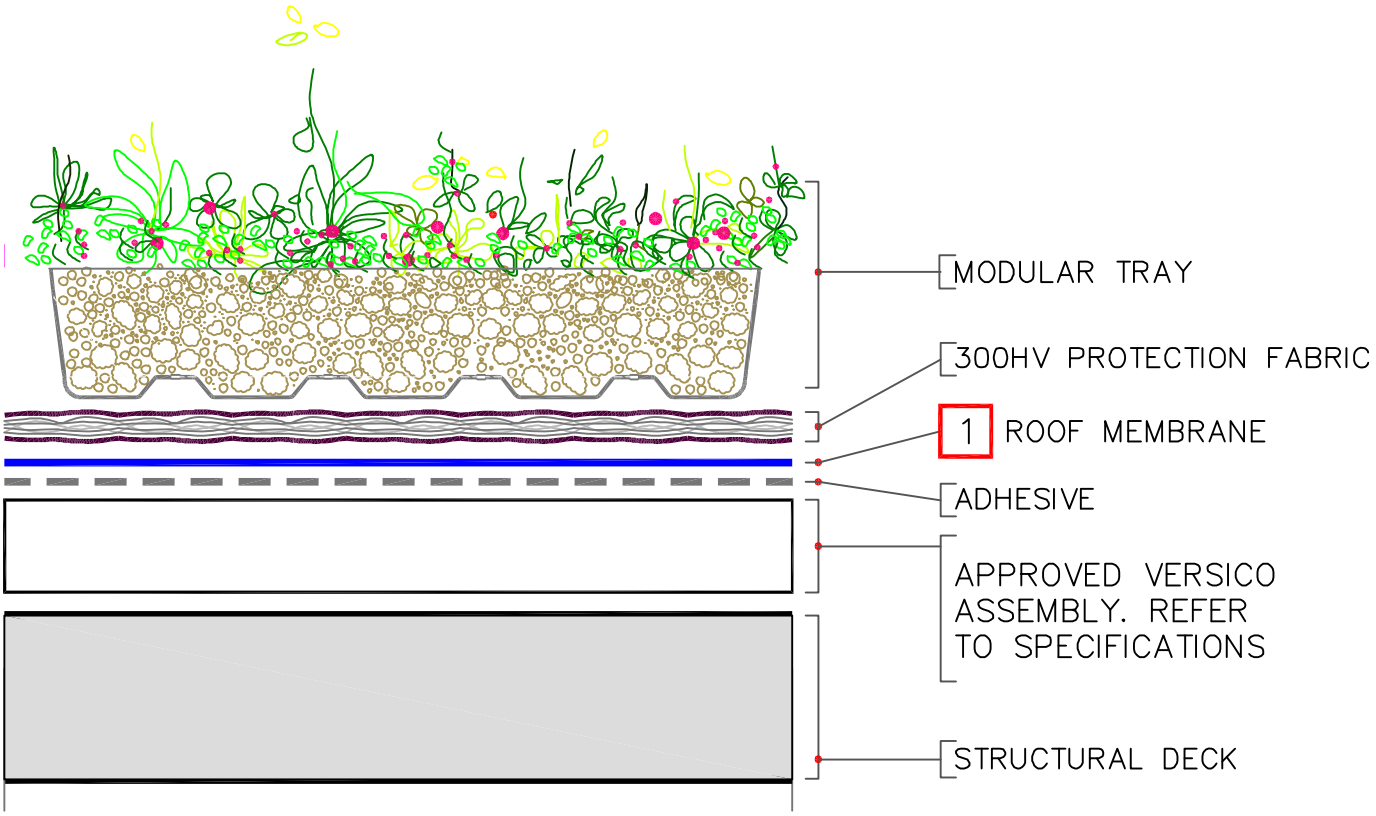

NOTES:

1. ROOF MEMBRANE (EPDM, TPO, PVC, KEE HP), THICKNESS IS DEPENDENT UPON WARRANTY LENGTH. REFER TO MODULAR ROOF GARDEN SPECIFICATION FOR COMPLETE SYSTEM INFORMATION.

2. POSITIVE SLOPE (MIN 1/4" PER 12") MUST BE PROVIDED AT MEMBRANE SURFACE LEVEL, EITHER BY SLOPING THE STRUCTURAL DECK OR BY ADDING TAPERED INSULATION BOARD ON FLAT STRUCTURAL DECK.

3. ACCEPTABLE MEMBRANE ON CONCRETE: WHEN WATERPROOFING MEMBRANE TO BE APPLIED DIRECTLY TO STRUCTURAL OR LIGHTWEIGHT CONCRETE SUBSTRATE, VERSIFLEECE OR VERSIFLEECE AC MEMBRANE MUST BE USED.

4. SEAMS: REFER TO SPECIFICATIONS.

EPDM/TPO/PVC/KEE HP
BONDING ADHESIVE
FOAM ADHESIVE
300HV PROTECTION FABRIC
GROWTH MEDIA
ROOF INSULATION, VARYING COMPRESSIVE STRENGTH
0 SEE NOTE(S)

ON EXISTING / NEW LOW SLOPE ROOFS

TYPICAL MRG ASSEMBLY

ROOF GARDEN DETAILS

DETAIL NO.
MRG1 A
MODULAR ROOF GARDEN

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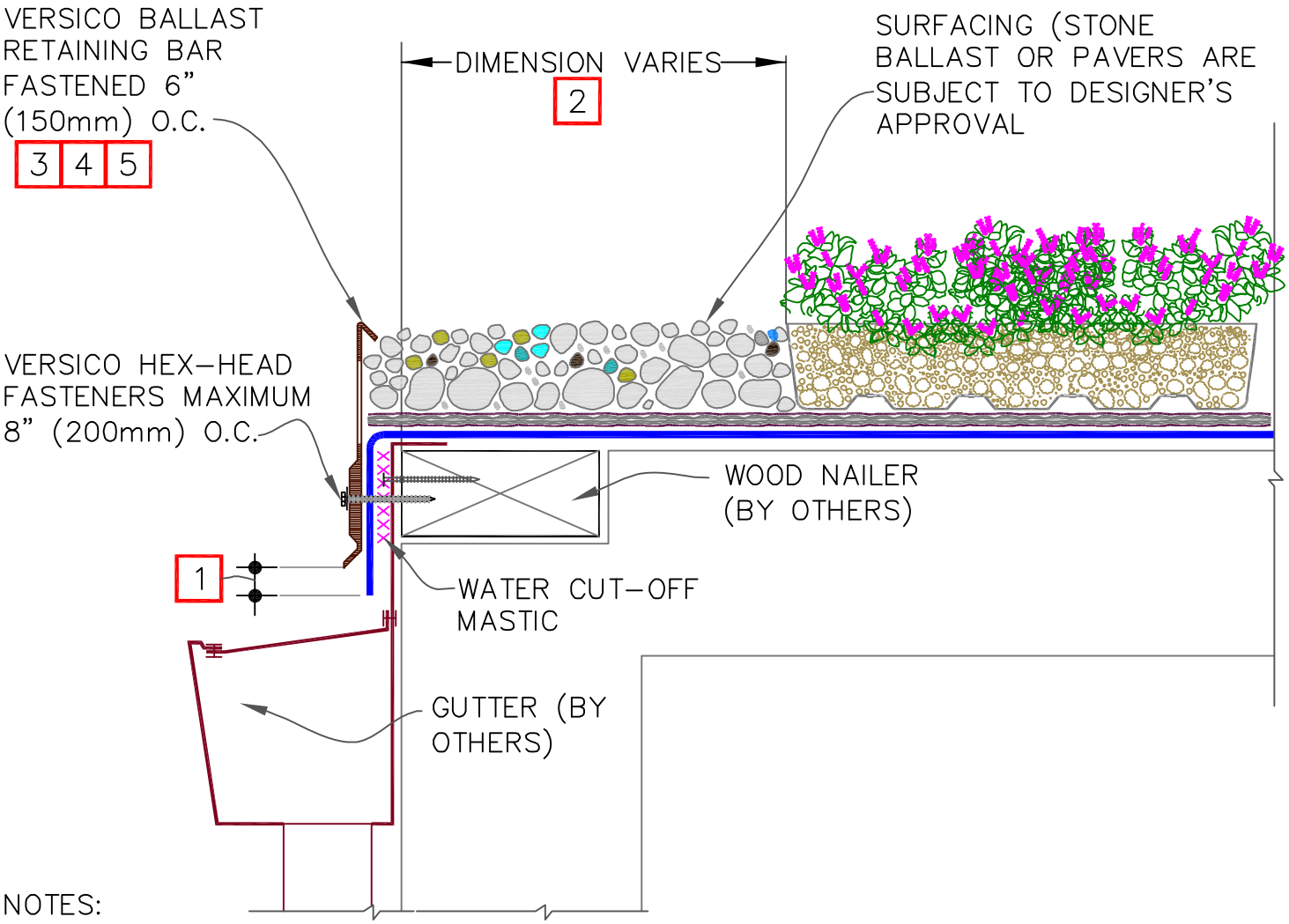

NOTES:

1. MEMBRANE SHEET TO EXTEND 1/2" (15mm) MINIMUM BELOW THE METAL TERMINATION BAR.

2. COMPLY WITH ANSI/SPRI RP-14 WIND DESIGN STANDARD FOR VEGETATIVE ROOFING SYSTEMS, WWW.GREENROOFS.ORG, OR REFER TO CARLISLE ROOF GARDEN SPECIFICATIONS FOR RECOMMENDATIONS.

3. BALLAST RETAINING BAR MUST PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.

4. BALLAST RETAINING BAR MUST EXTEND ABOVE GRAVEL SURFACE SUFFICIENTLY TO RETAIN GRAVEL AND PREVENT GRAVEL MIGRATION.

5. SLOTS IN BALLAST RETAINING BAR MUST BE FLUSH OR BELOW MEMBRANE LEVEL

EPDM/TPO/PVC/KEE HP
BONDING ADHESIVE
FOAM ADHESIVE
300HV PROTECTION FABRIC
GROWTH MEDIA
ROOF INSULATION, VARYING COMPRESSIVE STRENGTH
0 SEE NOTE(S)

ON EXISTING / NEW LOW SLOPE ROOFS

GUTTER EDGE

ROOF GARDEN DETAILS

DETAIL NO.
MRGI 1
MODULAR ROOF GARDEN

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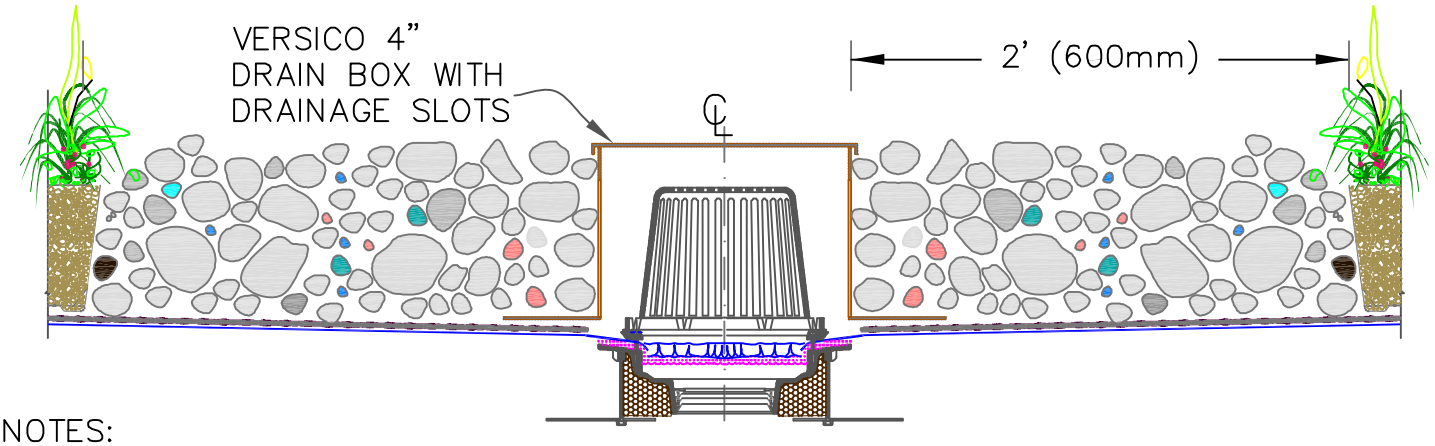
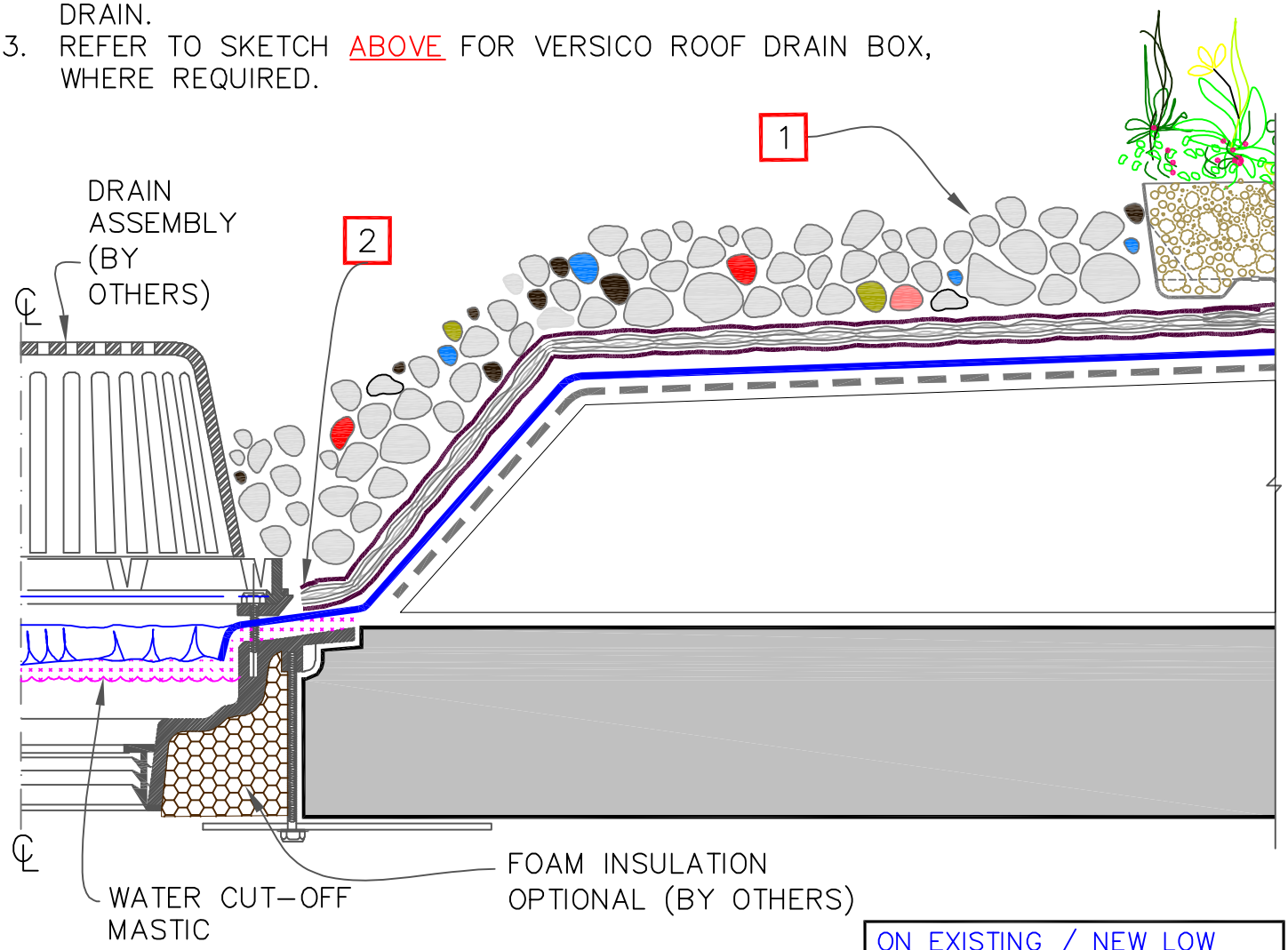


NOTES:

1. NOMINAL 1–1/2" (40mm) DIAMETER STONE BALLAST, 10–15 LBS PER SQUARE FOOT (50–70 KILOGRAMS PER SQUARE METER).
2. STOP 300HV PROTECTION FABRIC MAT AT BASE OF DRAIN.
3. REFER TO SKETCH ABOVE FOR VERSICO ROOF DRAIN BOX, WHERE REQUIRED.



EPDM/TPO/PVC/KEE HP
BONDING ADHESIVE
FOAM ADHESIVE
300HV PROTECTION FABRIC
GROWTH MEDIA
ROOF INSULATION, VARYING COMPRESSIVE STRENGTH
0 — SEE NOTE(S)

ON EXISTING / NEW LOW SLOPE ROOFS

ROOF DRAIN

ROOF GARDEN DETAILS

DETAIL NO.
MRGI 6
MODULAR ROOF GARDEN

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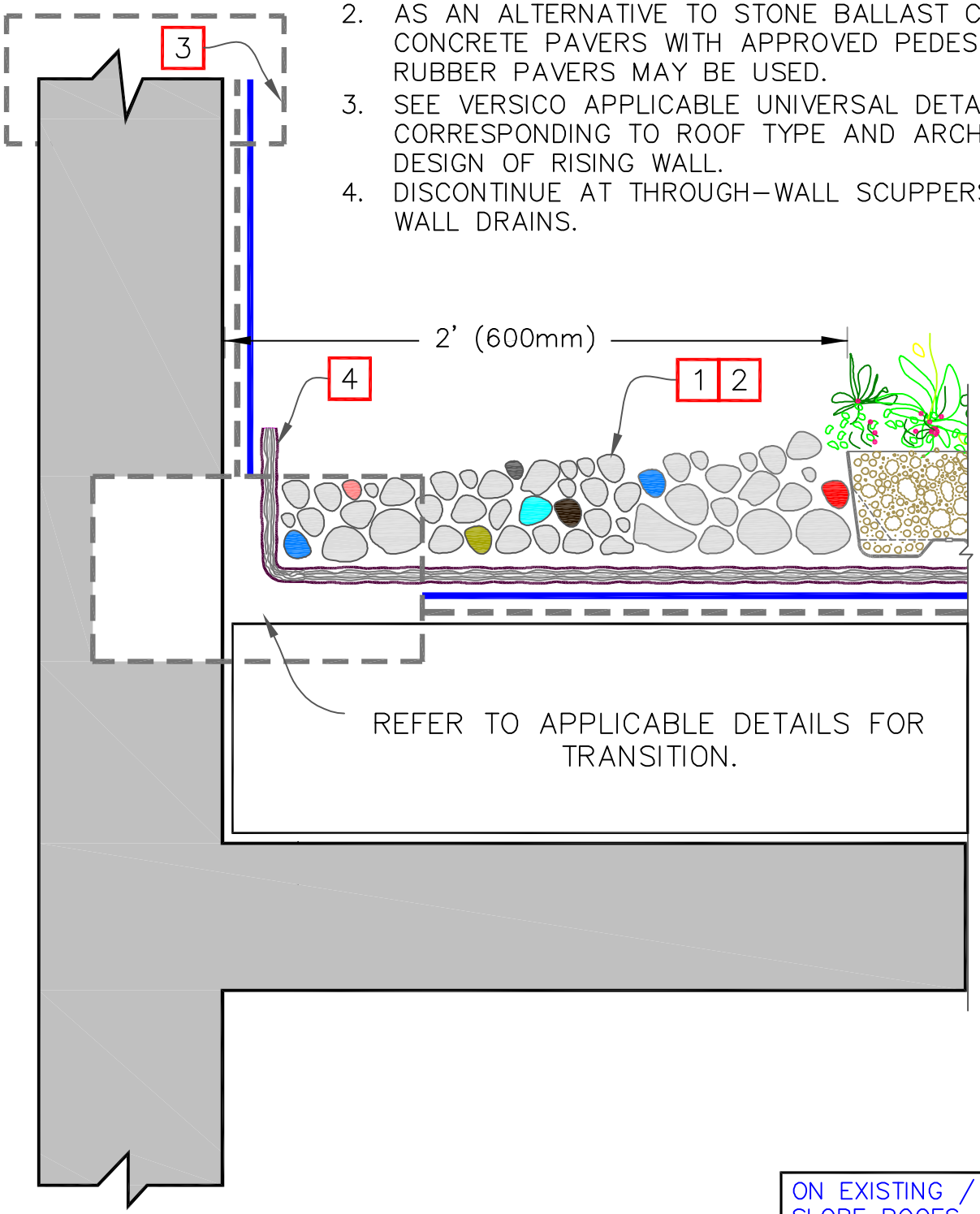
NOTES:

1. NOMINAL 1–1/2" (40mm) DIAMETER STONE BALLAST, 10–15 LBS PER SQUARE FOOT (50–70 KILOGRAMS PER SQUARE METER).
2. AS AN ALTERNATIVE TO STONE BALLAST CARLISLE CONCRETE PAVERS WITH APPROVED PEDESTALS OR RUBBER PAVERS MAY BE USED.
3. SEE VERSICO APPLICABLE UNIVERSAL DETAIL(S) U–9 CORRESPONDING TO ROOF TYPE AND ARCHITECTURAL DESIGN OF RISING WALL.
4. DISCONTINUE AT THROUGH–WALL SCUPPERS OR WALL DRAINS.



EPDM/TPO/PVC/KEE HP
BONDING ADHESIVE
FOAM ADHESIVE
300HV PROTECTION FABRIC
GROWTH MEDIA
ROOF INSULATION, VARYING COMPRESSIVE STRENGTH
0 — SEE NOTE(S)

ON EXISTING / NEW LOW SLOPE ROOFS

VERTICAL TRANSITION

ROOF GARDEN DETAILS

DETAIL NO.
MRGI 12
MODULAR ROOF GARDEN

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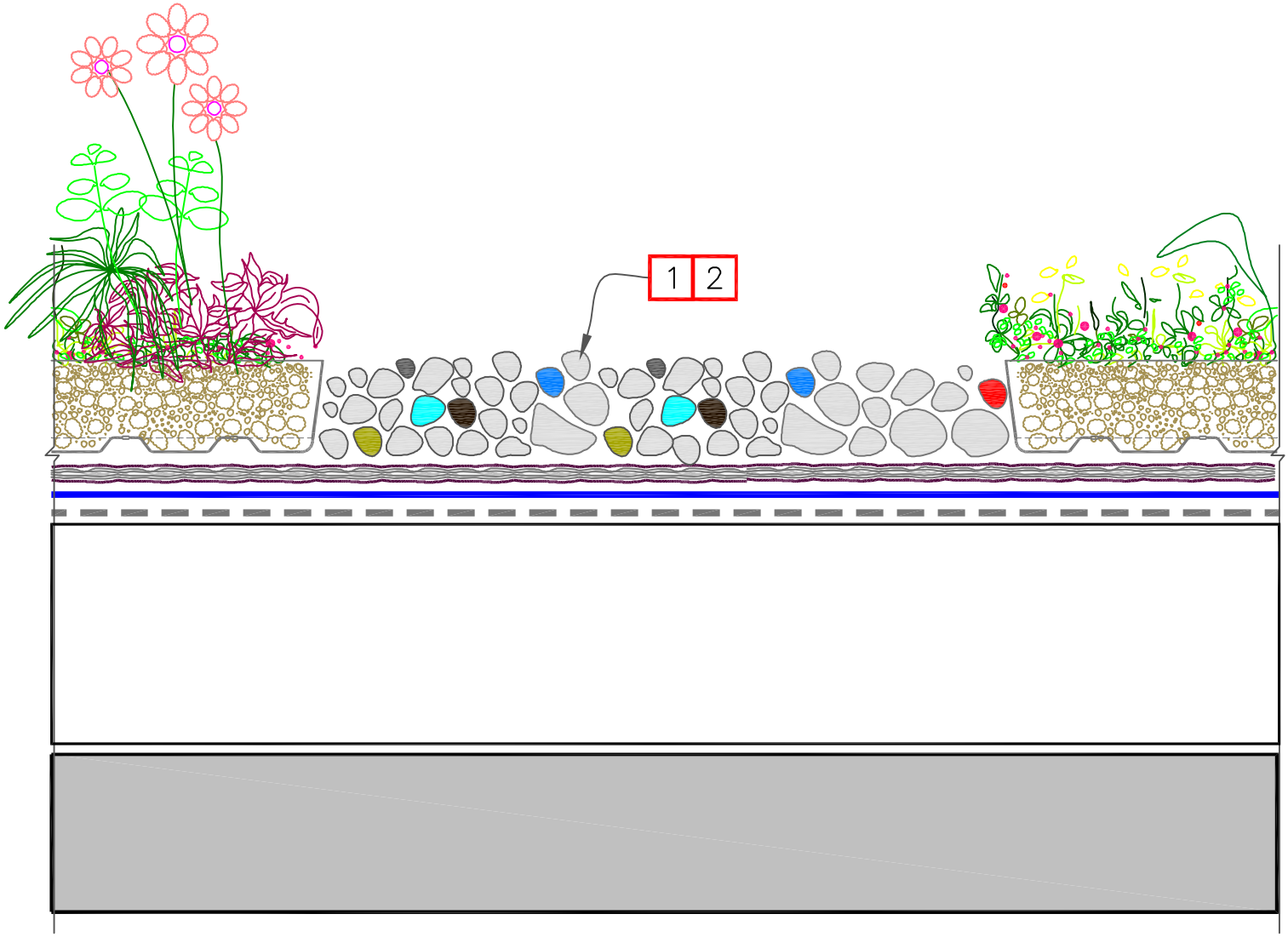

NOTES:

1. NOMINAL 1–1/2" (40mm) DIAMETER STONE BALLAST, 10–15 LBS PER SQUARE FOOT (50–70 KILOGRAMS PER SQUARE METER).

2. AS AN ALTERNATIVE TO STONE BALLAST VERSICO CONCRETE PAVERS WITH APPROVED PEDESTALS OR RUBBER PAVERS MAY BE USED.

EPDM/TPO/PVC/KEE HP
BONDING ADHESIVE
FOAM ADHESIVE
300HV PROTECTION FABRIC
GROWTH MEDIA
ROOF INSULATION, VARYING COMPRESSIVE STRENGTH
0 SEE NOTE(S)

ON EXISTING / NEW LOW SLOPE ROOFS

HORIZONTAL TRANSITION

ROOF GARDEN DETAILS

DETAIL NO.
MRGI 25
MODULAR ROOF GARDEN

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