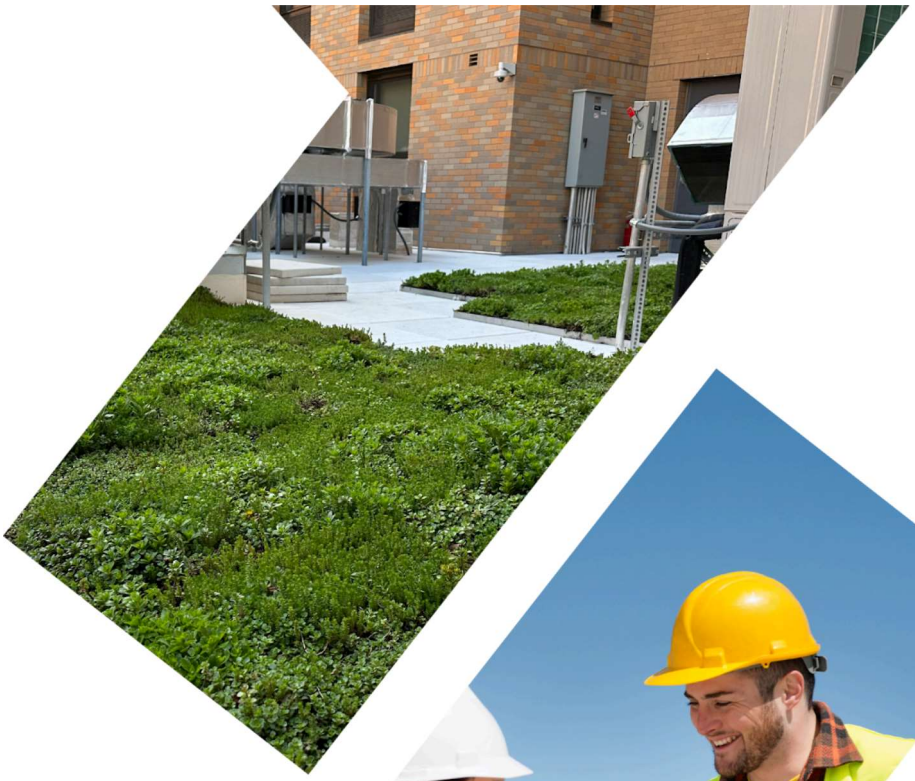
# ParaGREEN

## Vegetated Roof Module

# Installer Guide



siplast®

ParaGREEN™
Vegetated Roof Solutions

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# I. System Overview & Products

The ParaGREEN™ Vegetated Roof Module is a fully vegetated roof module composed of plastic filled with growing media and vegetation that may be tailored to specific project requirements. The module includes reservoirs for stormwater retention, channels to accommodate irrigation lines, and retains wind uplift properties.

**Plant Palette**

ParaGREEN Vegetated Roof Modules are grown with a hardy variety of Sedum species and commonly include 6-8 of the following species in standard production*:

- Phedimus spurius 'Fuldaglut'
- Phedimus spurius 'John Creech'
- Phedimus spurius ' Red Carpet'
- Phedimus Kamtscaticum' Variegatum'
- Phedimus Kamtschaticum
- Phedimus Kamt Var. Floriferum
- 'Weihenstephaner Gold'
- Phedimus Takesimensis 'Golden Carpet'
- Phedimus x Immergrunchen
- Petrosedum subsp. Rupestre 'Angelina'
- Petrosedum subsp. Rupestre 'Blue Spruce'
- Sedum Acre 'Aureum'
- Sedum Acre 'Goldmoss'
- Sedum Album 'Coral Carpet'
- Sedum Album 'Murale'
- Sedum Hispanicum

*ParaGREEN vegetated roof modules may include additional species depending on production method, time of year, and source crop availability.

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## ParaGREEN Fully Vegetated Roof Modules

| Module Type | Module | Saturated Weight | Weight at Installation (approx.) | Stormwater Retention (approx.) |
|---|---|---|---|---|
| **4-inch** |  | Up to 23 lb/sf | 35 lb/module | 1 gal/sf |
| **6-inch** |  | Up to 36 lb/sf | 71 lb/module | 1.98 gal/sf (using extensive soil) |
| **8-inch** |  | Up to 49 lb/sf | 96 lb/module | 2.6 gal/sf (using extensive soil) |

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## II. Delivery, Storage, and Handling

All Siplast ParaGREEN products should be stored horizontally on a clean, flat surface. In order to maximize the opportunity for the plants to flourish, ParaGREEN Vegetated Roof Modules should be delivered to the job site on the day installation is scheduled to begin. Upon arrival at the job site, the temperature of the trays should be cool to the touch and maintained that way during site storage and installation. Should the module not be installed on the day of arrival, the modules must be unpalletized, laid out in the shade, and watered. See product packaging and the Safety Data Sheet for specific information on the safe handling of this product.

Protect the modules from weather extremes. If it is hot, move them to a shady location. If harsh winter conditions exist, set them out of the wind and protect them from wind erosion and frost. Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when optimum results may be obtained

## III. Membrane Protection & Preparation

**Final Inspection**

Prior to the application of any overburden, a final inspection of the Waterproofing System must be completed by a Siplast representative. The punch list will indicate any deficiencies in the waterproofing membrane and flashing membrane system that require remediation before the installation is accepted. Remove any debris, excess waterproofing materials, equipment, and other related items before overburden application

**Membrane Protection**

It is the waterproofing contractor/general contractor's responsibility to ensure that the overburden installer takes all necessary precautions to protect the waterproofing membrane during installation. It is the overburden installer's responsibility to report any damage to the membrane during installation.

**Root Barrier**

Siplast requires the installation of ParaGREEN Root Barrier when installing ParaGREEN Vegetated Roof Modules over asphaltic membranes, including SBS Modified Bitumen and PA 750 Hot Fluid Applied Rubberized Asphalt. ParaGREEN Root Barrier seams may be heat welded OR taped with an 18" overlap using ParaGREEN Root Barrier Tape. ParaGREEN Root Barrier is available in 20, 40, and 60-mil thicknesses. A hot air gun is recommended when welding the 20-mil root barrier, as traditional roof membrane welders can create excessive heat resulting in damage to the root barrier. Contact Siplast for specific thickness recommendations based on application.

**Drain Mat (If Applicable)**

Install the specified drain mat (if applicable) with the filter fabric side up. Lap the selvage edge over the adjacent drain mat. Extend the drain mat to walls, curbs, and other penetrations/junctures.

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**Insulation (If Applicable)**

Place the specified insulation un-adhered directly over the membrane protection layer or drainage mat(if applicable), with the channeled edges down. Install the panels to fit tightly; leaving a maximum opening between panels of 3/8 inch. Closely abut walls, penetrations, and projections leaving a maximum opening between panels and projections of 3/4 inch.

Conform to the following requirements where insulation is installed in multiple-layer configurations.

A. The bottom layer must be the thickest layer in the insulation configuration, and have a minimum thickness of 2 inches.
B. Stagger the panel joints between insulation layers.
C. Install all layers unadhered.

## IV. Installation

1. Measure and mark the area where the modules will be installed and snap chalk lines as guides. Ensure that chalk lines are square with any walls or edging.

   A. If irrigation lines are to be incorporated in the recesses on the underside of the module per the irrigation plan, these can be laid out and installed prior to laying the modules.

2. Align ParaGREEN Modules in rows next to each other abutting the long sides together. For corner areas and along walls it may be necessary to cut the modules.

3. ParaGREEN Modules may be cut to accommodate odd-sized or partial spaces.

   a. For larger areas (greater than ½ module)

      i. Cut modules with media and plants in place using a reciprocating saw.
      ii. Take care to protect adjacent surfaces (horizontal and vertical) from flying debris during cutting.
      iii. Add filter fabric to the cut face of the tray to prevent the remaining media from falling out of the module. Extend filter fabric beneath the module a minimum of six inches.
      iv. Install the altered module into place. Adjust media and plants as necessary.

   b. For smaller areas (less than ½ module)

      i. Create a pouch using filter fabric. The pouch should be large enough to cover the footprint of the area and extend beyond all sides.
      ii. Fill the pouch with growing media from excess modules.
      iii. Install pouch into place. Transfer plant material from excess modules.
      iv. Trim excess filter fabric.

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4. Install irrigation as required by project documents.

5. Install restraint edging around modules per manufacturer's instructions and as required by project documents.

6. Thoroughly water modules when installation is complete. Modules should be watered thoroughly 2-3 times per week during the first few weeks of establishment depending on time of year and natural precipitation volumes, tapering down to less frequent watering as the plants establish. Reference the Siplast Irrigation Guide or contact Siplast at ParaGREEN@siplast.com for further information.

**Maintenance**

It is important to note that a means of supplying water to the roof-top with sufficient pressure is required for irrigation purposes to establish a vegetated roof assembly. Spray or manual overhead irrigation must be employed during the first few months of the establishment period to allow the vegetation to establish a healthy root structure. Permanent Irrigation is strongly recommended for the health of the plant material.

Reference Siplast ParaGREEN Care and Maintenance Guidelines for more information.

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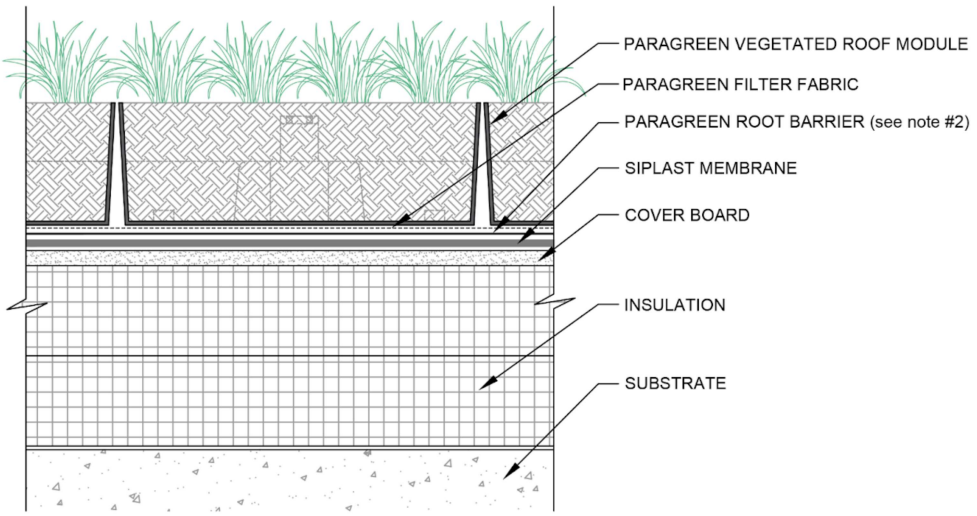
# V. Details

## VEGETATED ROOF MODULE ASSEMBLY

PARAGREEN VEGETATED ROOF MODULE - CONVENTIONAL




NOTES:
1. THE VEGETATED ROOF ASSEMBLY IS SHOWN FOR REFERENCE PURPOSES ONLY. DIMENSIONS OF COMPONENTS WILL VARY ACCORDING TO SPECIFIC BUILDING SIZE INSULATION, GROWING MEDIUM AND PERIMETER COMPONENTS.
2. ROOT BARRIER IS OPTIONAL WITH PARAPRO OR PARAFLEX MEMBRANE SYSTEMS.
3. REQUIREMENTS AND RECOMMENDATIONS DETAILED IN CURRENT SIPLAST SPECIFICATIONS SHALL APPLY IN ADDITION TO THE ABOVE DRAWING.
4. DESIGNER OF RECORD TO VERIFY CAPACITY OF DECK/SUBSTRATE TO ACCOMMODATE LOAD OF THE OVERBURDEN COMPONENTS.

CAUTION: SIPLAST RECOMMENDS THAT ALL PRACTICES PERTAINING TO INDUSTRY STANDARD TORCH SAFETY REQUIREMENTS AND GUIDELINES BE FOLLOWED. THIS INCLUDES PERFORMING A FIRE WATCH FOLLOWING ANY TORCH APPLICATIONS. ALWAYS HAVE APPROVED FIRE EXTINGUISHING EQUIPMENT NEARBY WHEN USING A TORCH.

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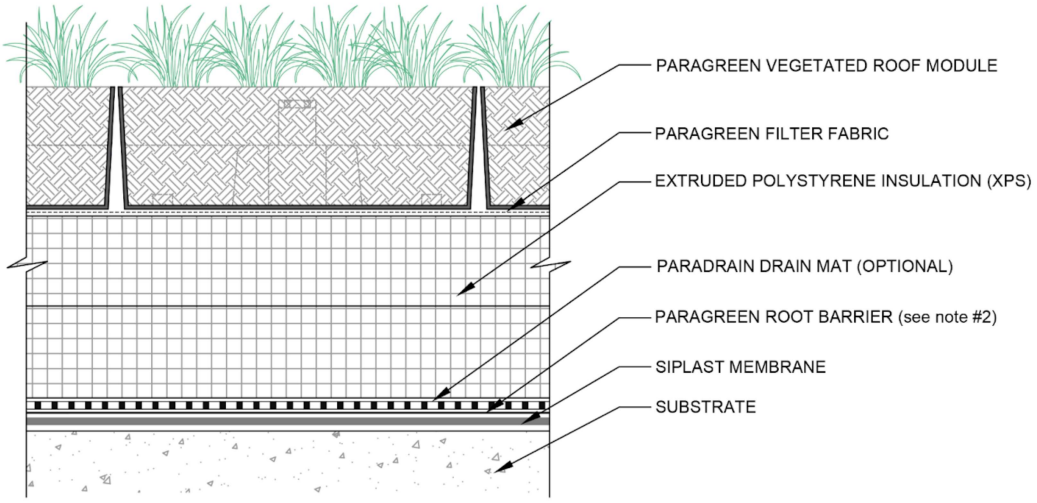


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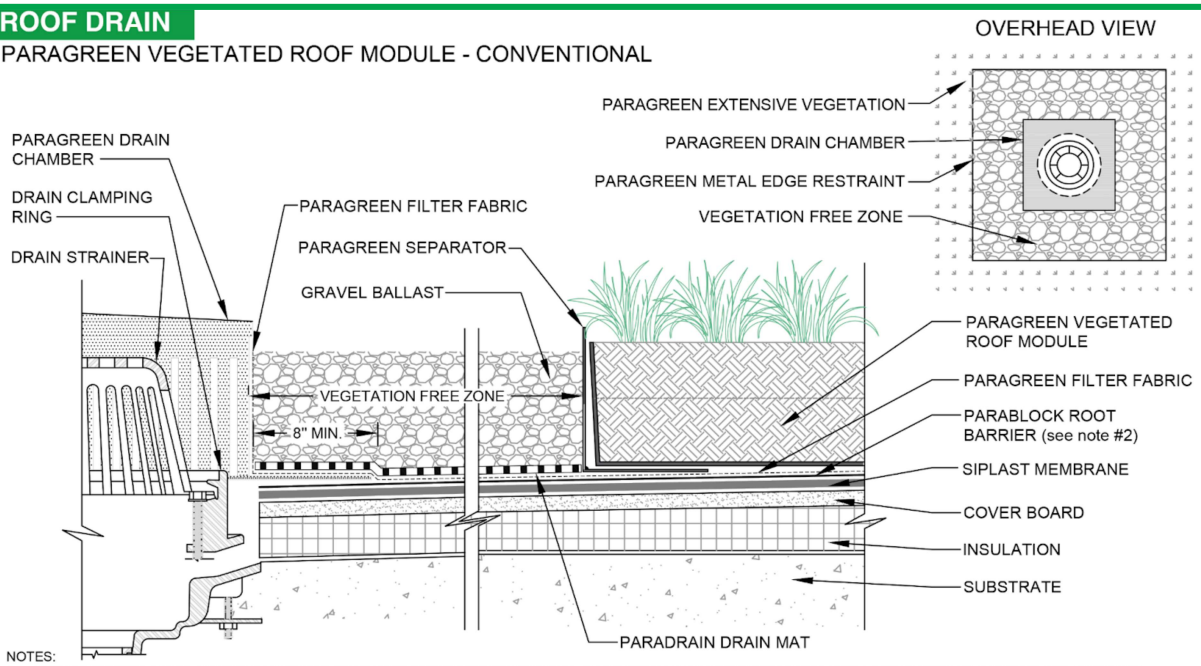


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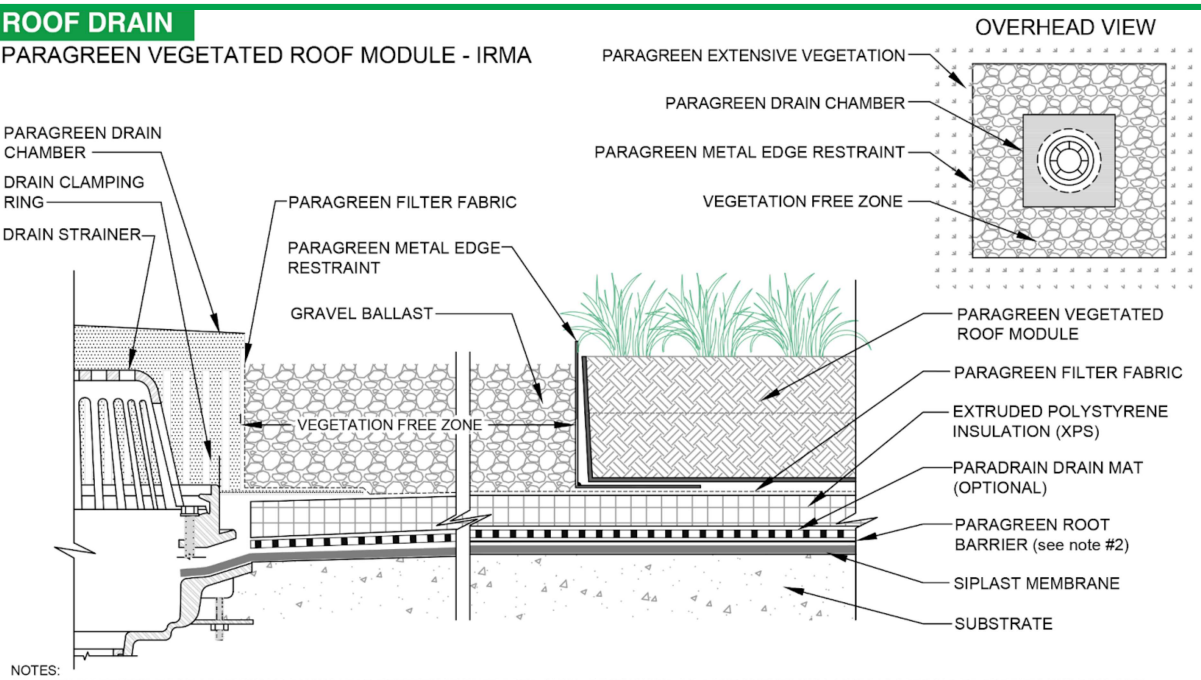


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## VEGETATION FREE ZONE AT WALL (pavers)

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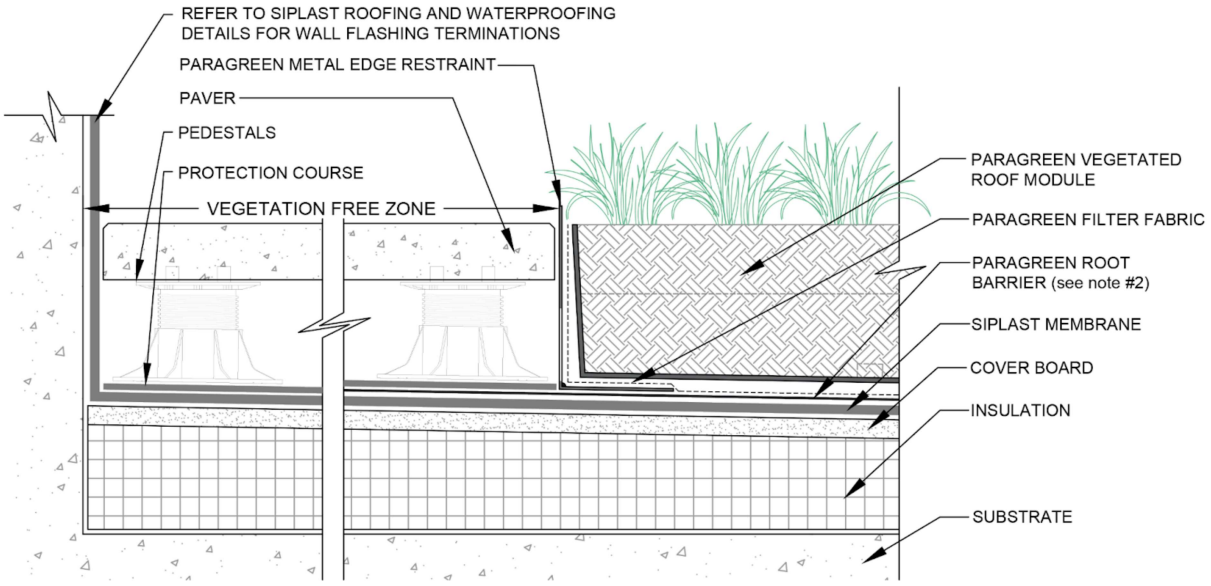


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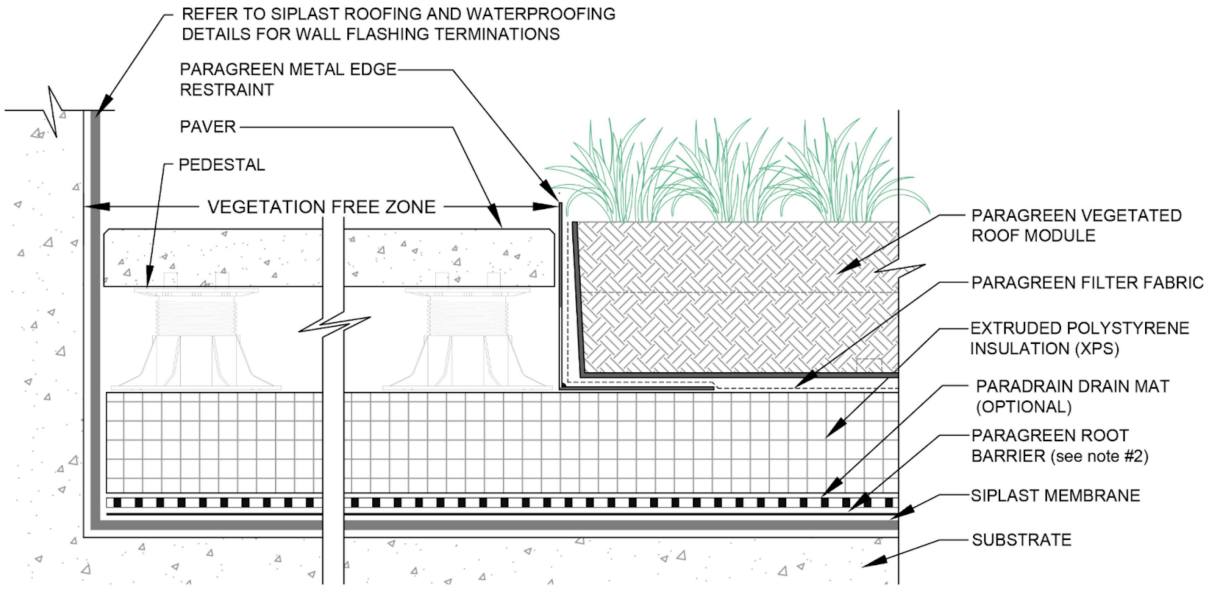


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## TRANSITION TO GRAVEL BALLAST SURFACE

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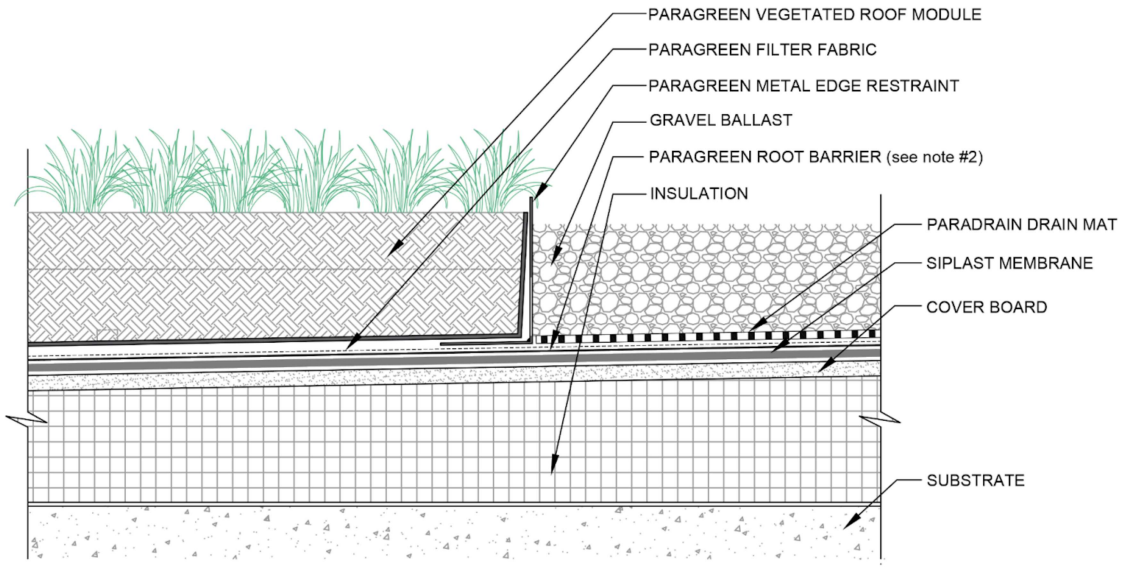


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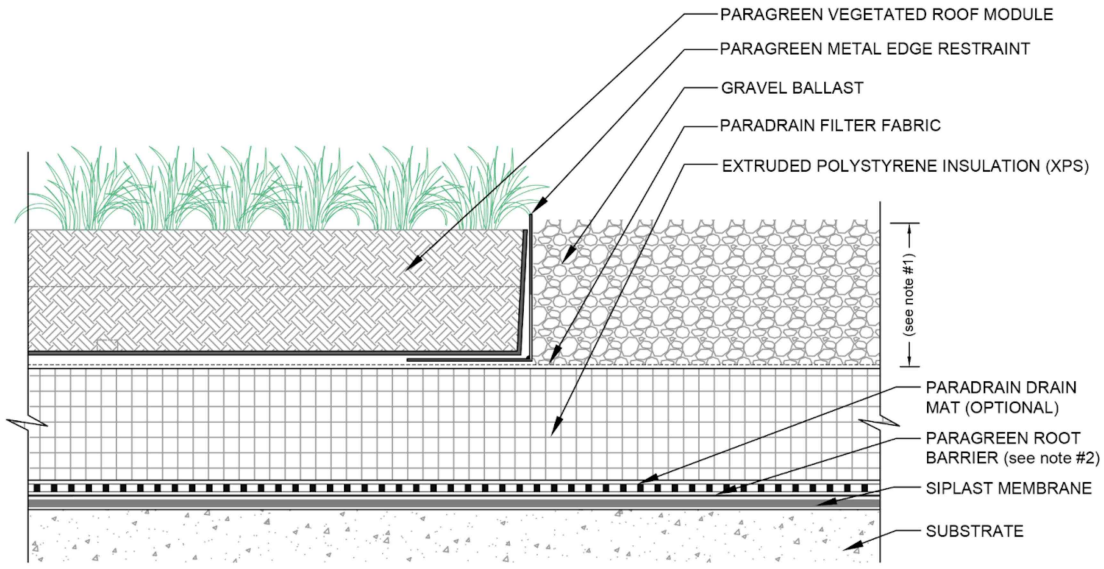


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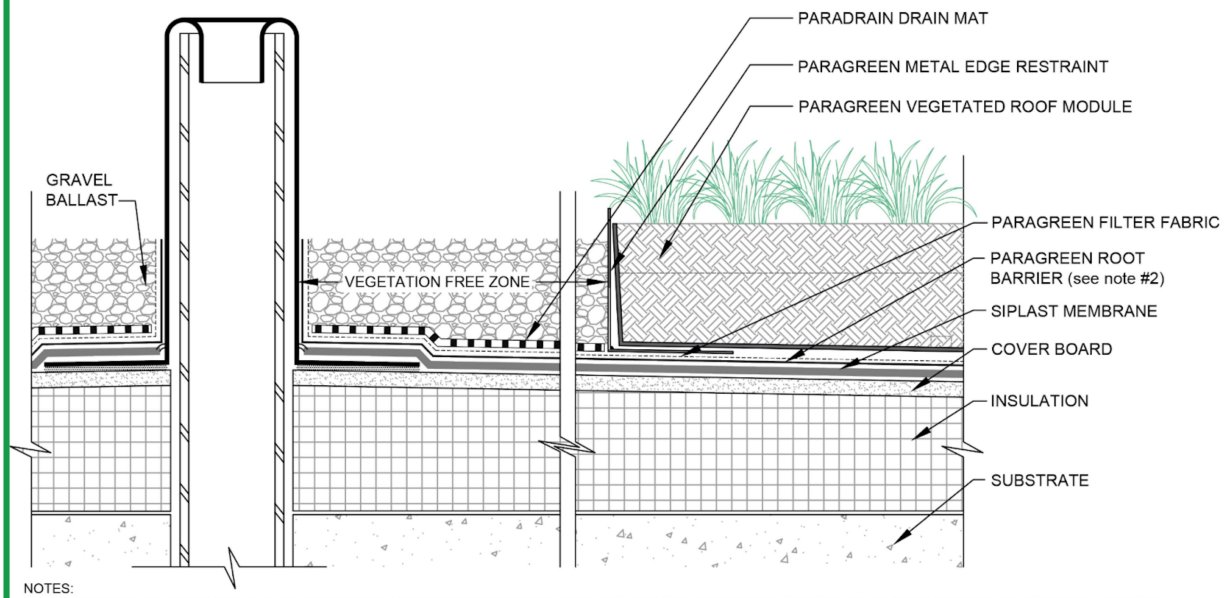


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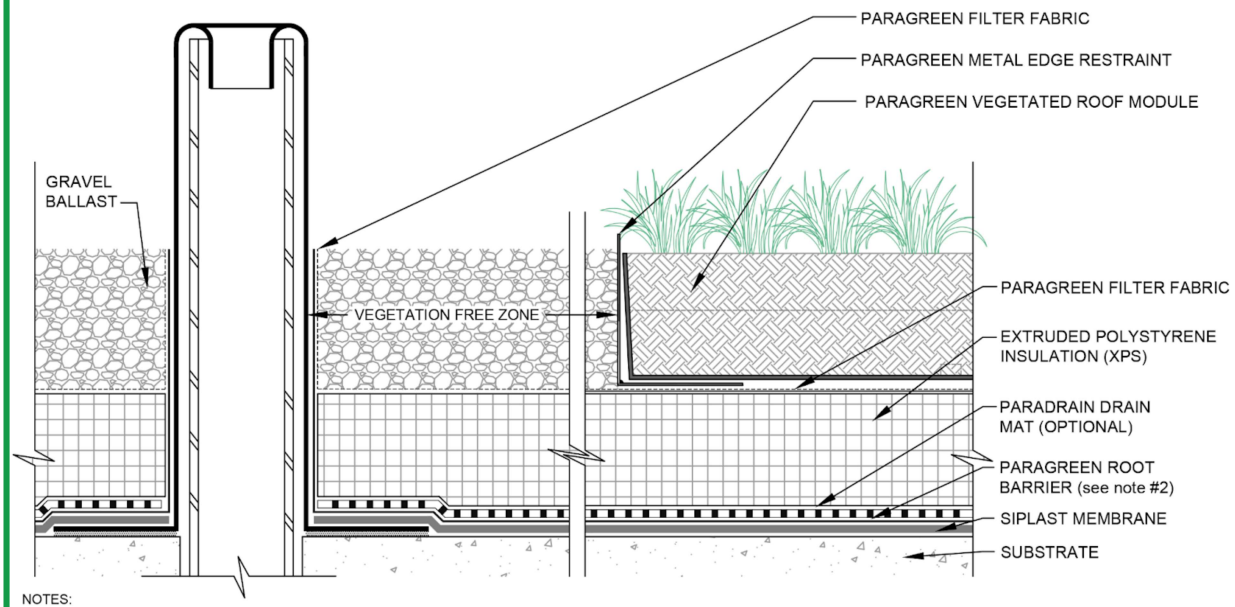


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