Eco-Rain Tank Systems
GRAVEL PAVERS

Technical Specification – Eco-Rain Gravel Pavers Porous Paving

Reinforced, Stabilized and Porous Gravel Surfaces

PART 1 – GENERAL

1.01 General Provisions

A. The conditions of the Contract and all sections of related drawings are hereby made a part of this section.

1.02 Description of Work

A. Work Included:

1. Provide and install sandy gravel base course as per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide adequate support for project designs loads. See 2.02 Materials.
2. Provide EcoRain Gravel Pavers units and associated products as specified, anchors and the manufacturer's installation instructions furnished under this section.
3. Provide and install fine (decorative) gravel to fill the Eco-Rain Gravel Pavers.

B. Related Work:

1. Sub-grade preparation as specified by the engineer or designer.
2. Sub-surface drainage materials as specified by the engineer or designer.

1.03 Quality Assurance

A. Follow Engineer or other professional drawings and details.

B. Installation: Performed only by skilled work people with satisfactory record of performance on landscaping or paving projects of comparable size and quality.

1.04 Submittals

A. Submit manufacturer's product data and installation instructions.

B. Submit one full piece (12” X 19.6”) of Eco-Rain Gravel Pavers product for review.

C. Submit small piece and specifications for non-woven geotextile material if specified.

D. Submit material certificates for base course, sand, and gravel fill materials.

1.05 Delivery, Storage, and Handling

A. Protect Eco-Rain Gravel Pavers units from damage during delivery and sunlight; store under dark tarp when time from delivery to installation exceeds one week.

1.06 Project Conditions

A. Review installation procedures and coordinate Eco-Rain Gravel Pavers work with other affected work.

B. All hard surface paving adjacent to Eco-Rain Gravel Pavers areas, including concrete walks and asphalt paving must be completed prior to installation of the Pavers.

C. Cold weather:

1. Do not use frozen materials or materials mixed or coated with ice or frost.
2. Do not build on frozen, wet, saturated, or muddy sub-grade.

D. Protect partially completed paving against damage from other construction traffic when work is in progress.

E. Protect adjacent work from damage during Eco-Rain Gravel Pavers installation.

PART 2 - PRODUCTS

2.01 Availability:

Manufacturer:
Eco-Rain Tank Systems of America, Inc.
12400 Ventura Blvd # 167
Studio City, CA 91604
Phone: +1.818.501.0424

Email: contact@ecoraintank.com
Web: www.ecoraintank.com

2.02 Materials

A. Base Course: Use common road-base construction sandy gravel material from local sources, passing the following sieve analysis or as specified by the Engineer or designer:

% Passing	Sieve Size
100	3/4"
85	3/8"
60	# 4
30	# 40
< 3	#200

1. Note: review the requirements of this project. Sources of the material can include either "pit run" or "crusher run". Crusher run material will generally require sharp sand to be added to mixture (25 to 35% by volume) to ensure long- term porosity.

2. Note: review the requirements of this project. Alternative materials such as crushed shell, lime rock, and/or crushed lava may be considered for base course use, provided they are mixed with sharp sand (25 - 35%) to ensure long-term porosity, and are brought to proper compaction.
(Crushed shell and lime rock alone can set up like concrete unless sand is added.)

B. Eco-Rain Gravel Pavers Paving Units: Interlockable, Lightweight injection molded plastic unit's 2"x 12"x 19.6" (50x300x500mm) with hollow open spaces and octagonal pattern rising from a strong open grid; also supplied in 48" x 45" panels. AASHTO H-20 loading capability. Compressive strength test filled with sand is +-7,395 PSI, 510,000 LBS. Standard color is black. Volume = 11% solid. The units must be interlocked using the clipping system to create a grid-like uniform structure for proper long-term structural performance; peg-like clipping is not acceptable for long-term structural integrity. The plastic shall be 100% post-consumer recycled plastic resins, predominately PP, with a minimum of 3% carbon black concentrate added for UV protection.

C. Gravel Fill: Obtain clean, washed, fine (decorative if desired) gravel. It must be sharp and angular (not rounded) stone with granite hardness to fill the 2" (50 mm) high open spaces of the Eco-Rain Gravel Pavers, with the following sieve analysis:

% Passing	Sieve Size
100	# 4 Screen
80	# 8 Screen
50	# 16 Screen
30	# 30 Screen
15	# 50 Screen
5	#100 Screen

The infiltration rate of the fill, decorative or not, must equal or exceed the infiltration rate of the base course material.

PART 3 - EXECUTION

3.01 Inspection

A. Examine sub-grade and base course installed conditions. Do not start Eco-Rain Gravel Pavers installation until unsatisfactory conditions are corrected. Check for poor drainage, improperly compacted trenches, debris, and improper gradients.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Project Manager for resolution.

3.02 Preparation

A. Ensure that sub-base materials are structurally adequate to receive designed base course, wearing course, and designed loads. Generally, excavation into undisturbed normal strength soils will require no additional modification. Fill soils and otherwise structurally weak soils may require modifications, such as geotextile or geogrid material. Compaction to over 90% is not required for Eco-Rain Gravel Pavers. Compaction above 90% will slow infiltration, but may be required by the geotechnical engineer for structural purposes.

B. To ensure grading and soil porosity of the sub-base will provide adequate subsurface drainage, fully wrap and lay Eco-Rain 1" (25mm) Drainage Cell with specified non-woven geotextile in a flat layer over sub-base to evacuate excess water to the storm drain system or a cistern without affecting the engineered fall, before install of base course material.

C. Place base course material over prepared sub-base to grades shown on plans per direction of the geotechnical engineer and soil compaction inspector. Leave 2" (50 mm) for Eco-Rain Gravel Pavers and gravel fill to final grade.

3.03 Installation of Eco-Rain Gravel Pavers:

A. Place a layer of 4-ounce non-woven geotextile material in project area **BEFORE** installing the Eco-Rain Gravel Pavers to prevent gravel migrating into the base course material. Install the Pavers on top of the layer of geotextile material, interlocking all units, and cutting both the material and Pavers to fit the project area. Cutting of the Pavers can be performed with pruning shears and knife, or a portable power saw. Anchor the Pavers as specified by the engineer or designer.

B. Install gravel into open spaces of the Eco-Rain Gravel Pavers after the units are laid and interlocked by "back-dumping" directly from a dump truck, or from a front-loader tractor, with a minimum depth of 6"; exit the site by driving forward over filled spaces of the Pavers. Do not drive or make sharp vehicle turns on bare open spaces of the Pavers. Spread the gravel laterally from the pile using power brooms, blades, flat bottomed shovels and/or wide "asphalt rakes" to fill the open spaces of the Eco-Rain Gravel Pavers. Use a stiff-bristled broom for final "finishing". If necessary, compact the gravel by using a vibrating plate or small roller, with the finish grade no less than the top of open spaces of the Pavers and no more than ¼" (6 mm) above the top of the Pavers open spaces.

C. If a binder for fill stone is desired (due to traffic speed, concentrated water flow, or other reason) use Portland cement, mixed dry at 10% by weight with fill stone. Place into open spaces of the Eco-Rain Gravel Paver after thoroughly wetting the base, then lightly mist the surface after fill and compaction. Then, cover with a water resistant tarp, or

plastic sheeting material for a minimum period of three days or until the mixture has bonded.

3.04 Cleaning

A. Perform cleaning during installation, and upon completion of the project. Remove all excess materials, debris, and equipment from site. Repair any damage to adjacent materials and surfaces resulting from installation of the Pavers.

END OF SECTION

If you have any questions regarding this specification, please call or email:

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