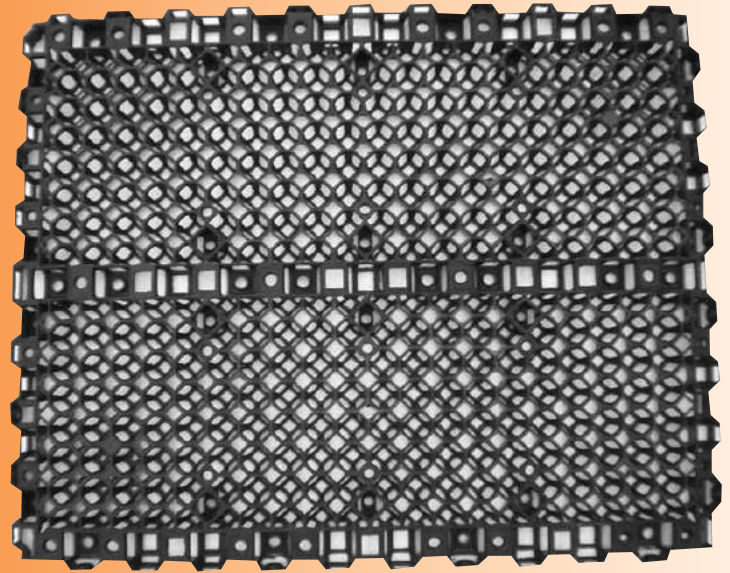
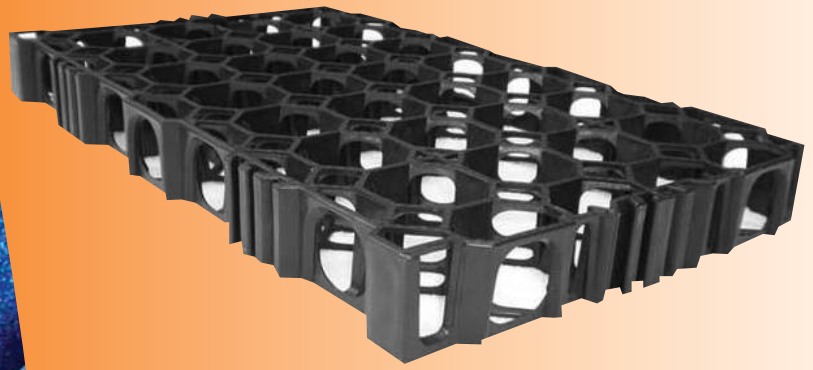




EcoRain
systems



**AASHTO
H-25**

Contact: sales@EcoRainSystems.in

Phones: 9822845245 or

9821036215 Office: 022 26875179

www.EcoRainSystems.in

ECORAIN® SYSTEMS CUSTOMER SUPPORT

"Simple Solutions that Really Work"

- Free EcoRain® Systems design assistance.
- Free installation assistance via phone or on-site (when possible).
- Free engineer approval assistance to switch-out other designed storm water systems.
- EcoRain® Tanks qualify as an "or equal" to most other designs.

CONTACT INFORMATION

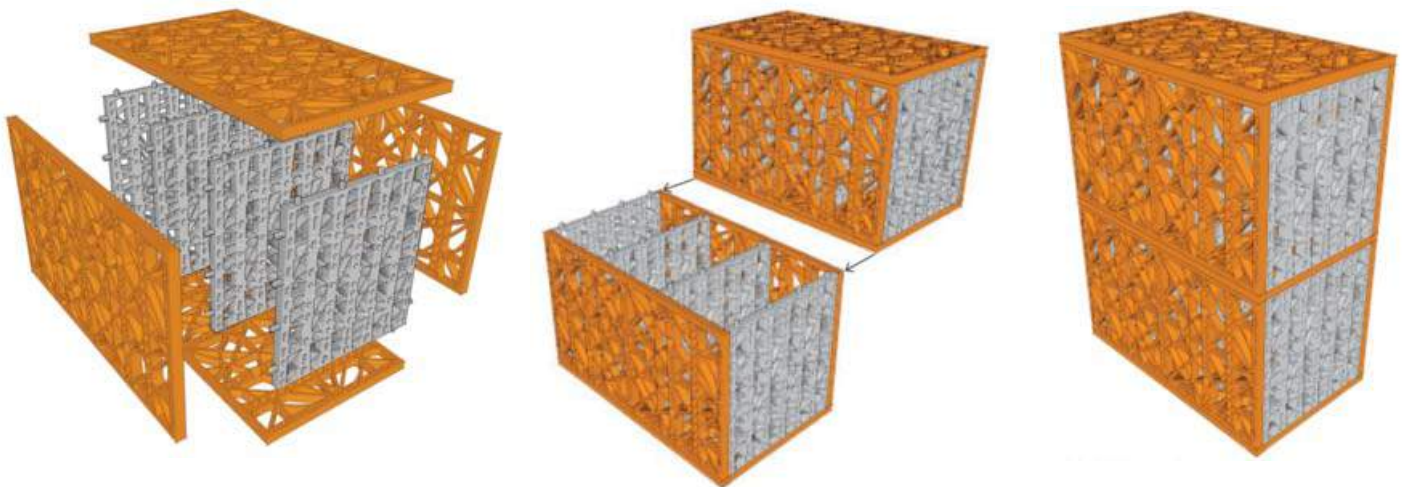
Contact: sales@EcoRainSystems.in Phones: 9822845245 or 9821036215 Office: 022 26875179 www.EcoRainSystems.in

EcoRain® Systems manufactures 100% recycled - 60% post consumer & 40% post industrial – polypropylene underground water detention structures and drainage cells. Engineers have designed and contractors have installed patent pending and trademarked EcoRain® products since 2006.

Los Angeles International Airport now has the largest bioswale detention structure of this type in the world - built with EcoRain® Tanks it is over 450,000 cubic feet.

EcoRain® Systems has manufacturing plants in several countries – we make all products to USA standards, continually monitor the manufacturing process, and use USA laboratory tests for strength and flow capabilities. Laboratory, field tests, and approvals are available upon request.

FAST ECORAIN® TANK ASSEMBLY!



Single Tank Assembly

**Multiple Tank Assembly-
May Be Stacked Five-High**

Contact: sales@EcoRainSystems.in
Phones: 9822845245 or 9821036215

**Always Install Tanks Upright for Maximum Strength and for Warranty:
Half Tank - .79' High • Single Tank - 1.48' High**

ECORAIN® TANKS

Assemble In Ten Sizes –

- ER-500 Half Tank**
- ER-501 Single Tank**
- ER-502 Double Tank**
- ER-503 Triple Tank**
- ER-504 Quad Tank**
- ER-505 Pent Tank**



ICC Plumbing Report - PMG 1092-2014
ICC Structural Report - ESR 3356-2014
City of Los Angeles Approved Research Report #5654

T E S T	Standard Used	Imperial	Metric
Ultimate Load - H 25 Load Rated	AASHTO LRFD		
Displacement		.433"	11 mm
Temperature Parameter		46.4° - 57.2° F	8° - 14° C
Void Storage Area		97%	
Material		100% Recycled Polypropylene	
Biological & Chemical Resistance		Unaffected by moulds, algae, soil - borne chemicals, bacteria & bitumen.	
Temperature Tolerance		- 22° to 248° F	- 30° to 120° C
Flow Rate	ASTM D4716	.671 f³/second	.019 m³/second

LEED® CREDITS For ECORAIN® SYSTEMS Products

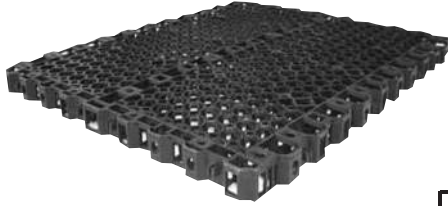
In accordance with the U.S. Green Building Council Leadership in Energy and Environmental Design - LEED® for New Construction & Major Renovations, Version 2.2, October 2005, a total of 18 points are possible with use of EcoRain® Systems products in the following categories:

Innovation & Design Process

Sustainable Sites
Materials & Resources

Water Efficiency
Indoor Environmental Quality

ER-301 ECORAIN® 1" (25mm) DRAINAGE CELLS

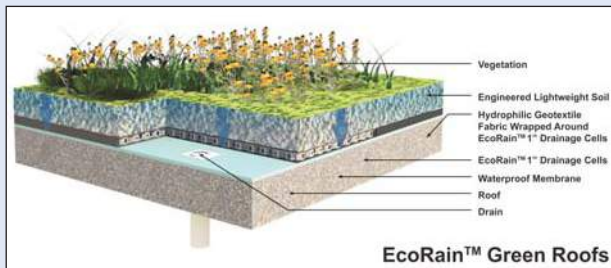


	Standard Used	Imperial	Metric
Size of One Piece		3.23 ft ²	0.300 m ²
Width		1.64 ft	500 mm
Length		1.97 ft	600 mm
Height		1 in	25 mm
Void Storage Area		80% .23 cubic feet	80%
Material		100% Recycled Polypropylene	
Biological & Chemical Resistance		Unaffected by molds, algae, soil-borne chemicals, bacteria, & bitumen	
Compressive Strength/Ultimate Load	ASTM D1621	306.80 psi	±205.56 t/m ²
Flow Rate per Unit Width	ASTM D4716	>31.70 gal/min	>120 lt/min
Service Temperature		-22°F to 248 °F	-30 °C to 120 °C

APPLICATIONS

Green Roofs

The EcoRain® 1" Drainage Cell provides a flat, strong, 80% surface void and interior void space for water collection and discharge under the soil layer. It is easy to install, lightweight, and has a strong clipping system to create one large layer. Cut with snips or a saw. Use of the Cell allows reduction of soil depth, thereby reducing weight on the roof.



Planter Boxes

In addition to providing excellent drainage and humidity to the soil, the lightweight EcoRain 1" Drainage Cell is easy to cut to size and install. Because it is a fully supported 1" void space between the soil, sides & bottom of the planter box, it prevents transfer of moisture from the soil through the walls of the box-protecting building surfaces.

Retaining Walls

Use of the EcoRain® 1" Drainage Cells creates a strong and true void space between the wall and backfill that relieves hydrostatic pressure and allows for easy purveyance and collection of water away from the bottom of the wall. The Cell also acts as a vapor barrier that protects the wall's waterproof membrane.



Sport Fields

EcoRain® Systems Inc. products are a perfect match for proper drainage of Sport Fields. The Drainage Cells prevent ponding and allow for recycle of rain and irrigation when used with EcoRain® Tanks as cisterns with irrigation pumps. Please ask for a copy of the EcoRain® Systems Inc. Natural Sport Field Drainage Design Manual for detailed information.

ER-401 ECORAIN® 2" (50mm) DRAINAGE CELLS



		Standard Used		Imperial		Metric	
Size of One Piece				1.64 ft²		0.150 m²	
Height				2 in		50 mm	
Width				12 in		300 mm	
Length				1.64 ft		500 mm	
Void Storage Area				85% .27 cubic feet		85%	
Material				100% Recycled Polypropylene			
Biological & Chemical Resistance				Unaffected by molds, algae, soil-borne chemicals, bacteria & bitumen			
Compressive Strength-Maximum Load		ASTM D1621		±405.3 psi		±283.90 t/m²	
Flow Rate per Unit Width		ASTM D4716		>56 gal/min		>212 lt/min	
Service Temperature				-22 °F to 248 °F		-30°C to 120°C	
Compressive Strength Filled with Sand <i>[Product must have maximum deformation of <25%]</i>	Area		Load		Compressive Strength		
	84.56 in²	54,554.73 mm²	510,000 lbs	231,332.1 kg	±7,395 psi	±5,201.1 t/m²	

APPLICATIONS

Gravel Pavers, Turf Pavers-Parking Lots

EcoRain® 2" Drainage Cells allow load vehicle use with no compaction or reduction of infiltrative capacity. Layer EcoRain 1" (25mm) Drainage Cells 12" beneath the surface to eliminate surface buckling/ponding, & provide full drainage of excess water to the drain, or EcoRain® Tanks for infiltration or irrigation reuse. Eliminates need for 12" gravel sub-base.



Under Drains

EcoRain® 2" Drainage Cells relieve hydrostatic pressure when a high water table is present. The Cells are so strong that contractors install them directly under building slabs. The Cells, which have a true void space of 2", divert water to EcoRain Tanks for infiltration or irrigation reuse.

French Drains

Situate the EcoRain® 2" Drainage Cells vertically, clip them together to form a linear pipeline that has 80% void surface area for infiltration. Wrap the Cells in Geotextile material and set them in a 6" wide x 18" deep trench, surrounded by sand or gravel. Use of the Cells reduces use of gravel & size of the trench.

Other Uses

Landfills, Vapor Barriers, Temperature Barriers, Retaining Walls, Sport Fields, Roof Gardens, Roadways, Underground Detention Basins

ECONOMICAL ECORAIN® TANK APPLICATIONS

Bioswale Detention / Infiltration

EcoRain® Tanks provide underground void space to detain large storm water events for aquifer infiltration, filtered through sandy soil. Installed in 2007-08, LAX International Airport Runway 25L now has 11,095 linear feet of EcoRain® Tanks in a bioswale that has 455,000 cubic feet capacity. Tank design has an efficient 97% void space designed to mimic nature – it provides an aerobic environment that does not require cleaning.



Piped Detention / Infiltration

Water collected from many surfaces transported via pipe to an EcoRain® Tank, allows for detention &/or aquifer infiltration. The Los Angeles Unified School District efficiently meets TMDL requirements with large EcoRain® Tank reservoirs at schools. Large filters provide pretreatment – where all maintenance occurs. Because the tanks have a 97% void space, they require minimum excavation when installed to specification.

EcoRain® Tanks are rated AASHTO H-25 load capacity.



Water Harvesting Tanks

Commercial, government and private commerce understand the need to conserve and reuse water. The U.S. Naval Base in Jacksonville Florida installed EcoRain® Tanks to lower their consumption of water for landscape irrigation. To install, compact bottom of trench, line trench with Geotextile fabric, lay out a flexible liner, layer clean sand in Tank footprint, lay second layer of Geotextile fabric - fully wrap and seal Tank, either fold liner and exterior Geotextile fabric over the Tank top or leave open. Install pump(s) and piping, backfill and either landscape or pave.



Contact: sales@EcoRainSystems.in Phones: 9822845245 or 9821036215 Office: 022 26875179
www.EcoRainSystems.in

ECONOMICAL ECORAIN® TANK APPLICATIONS

Parking Lots, Roads & Driveways

EcoRain® Tanks are AASHTO H-25 load rated for use under driving surfaces. The CVS Pharmacy in Del Rey Beach Florida now has a 15,516 cubic feet Tank for water infiltration below the new parking lot. Designing water detention Tanks below driving surfaces allows for multiple uses of valuable land surfaces. Tanks are ideally suited for use beneath permeable driving surfaces too.



Street Median Bioswales

Bio-filtration, with over 12,000 cubic feet of water storage in buried EcoRain® tanks, fits snugly between lanes of traffic and the industrial runoff from a major highway, sanitation processing plant, residential communities & the ocean. This urban street median storm water project is located on Imperial Highway between Pershing Drive and Main Street in El Segundo, CA. It is in a highly traveled street that divides LAX Airport and the residential neighborhoods of El Segundo. It also leads directly to Santa Monica Bay and the Pacific Ocean... just down the street. Keep that pollution out of our oceans!



Residential Water Reuse

Homeowners increasingly install EcoRain® Tanks to recycle grey water and capture storm water for irrigation use.

Sea Ranch in Mendocino now hosts an environment friendly home with a 2,000 gallon water recycle tank. Home downspouts are fitted with boot filters and piped to a small central filter leading into the Tank that assists with purification of the water. Maintenance is contained within the filter. EcoRain® Tanks are an efficient and economical way to conserve water.



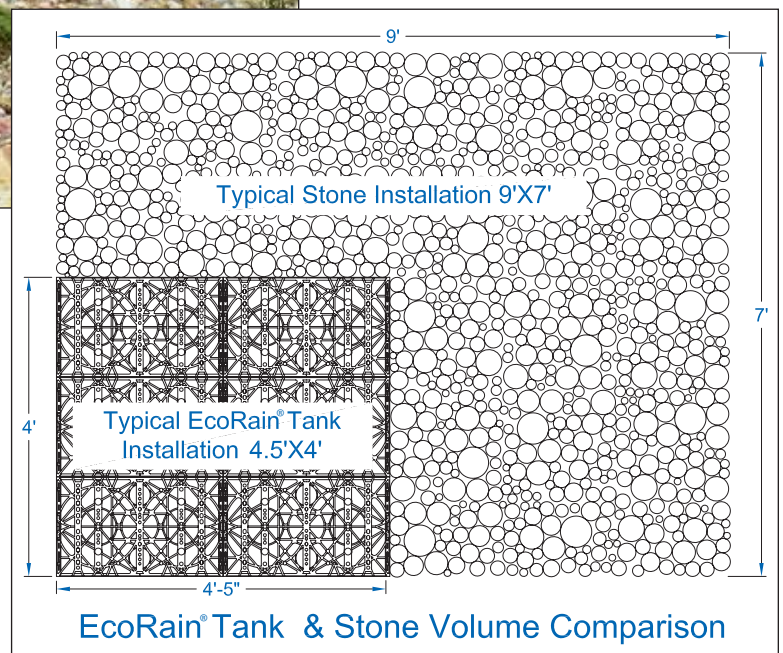
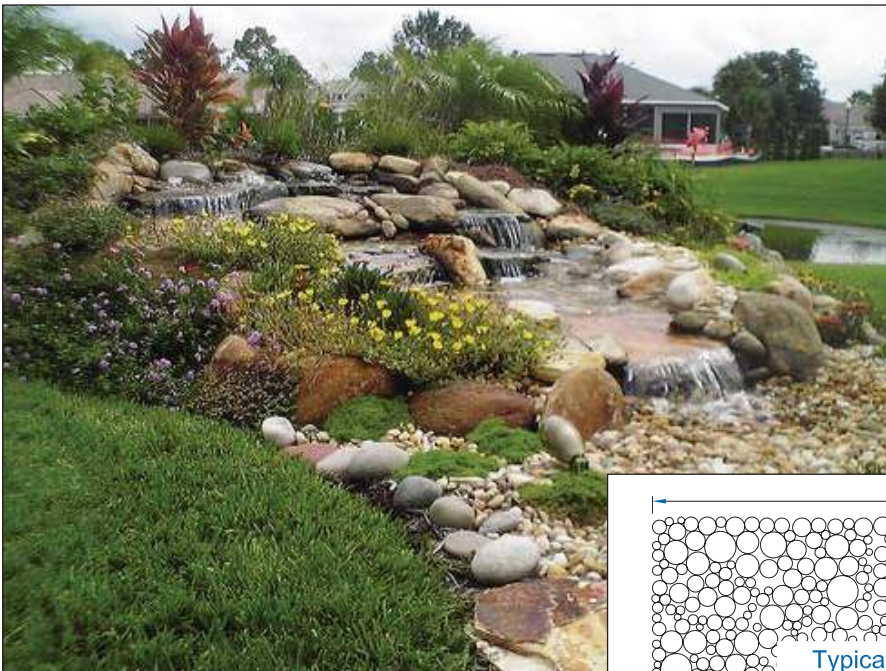
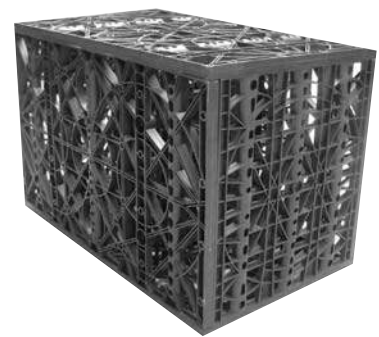
Contact: sales@EcoRainSystems.in Phones: 9822845245 or 9821036215 Office: 022 26875179
www.EcoRainSystems.in

POND INSTALLATIONS USING ECORAIN® TANKS

Advantages include saving money, installation time, and hard labor when you replace gravel and boulder layers with EcoRain® Tanks.

- EcoRain® Tanks provide over twice as much water storage capacity than gravel.
- Tanks are much lighter and easier to move around than gravel & boulders.
- Made from 100% recycled material – reduce the use of quarried native rock.
- Easy to clean – less clogging than gravel layers.
- Smaller basins! Less excavation, less labor, less liner – more water storage in less space.
- Special discounts for Pond Contractors & Distributors.

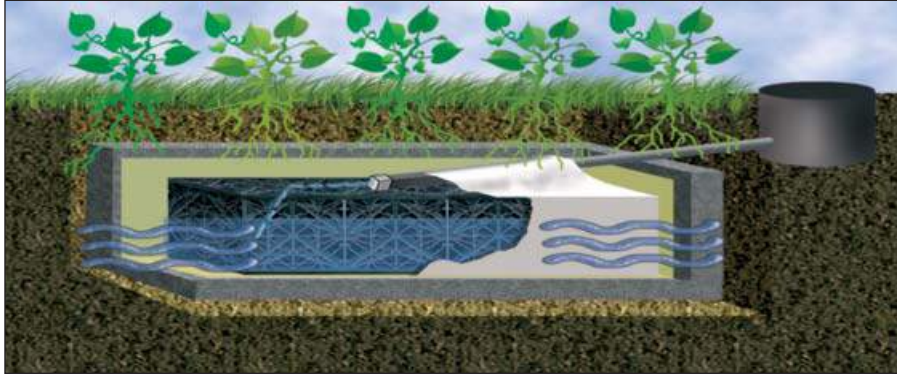
ER-501 Single Tank



Contact: sales@EcoRainSystems.in Phones:
9822845245 or 9821036215 Office: 022 26875179
www.EcoRainSystems.in

SEPTIC LEACH LINES

Strong H-25
Load Capacity



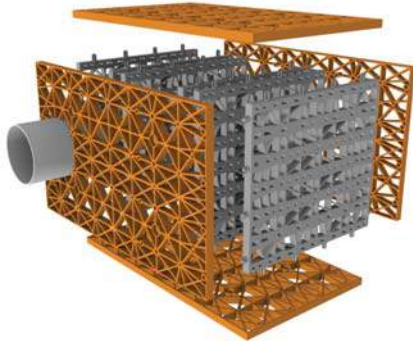
97% Void Space =
Less Digging

EASY & INEXPENSIVE PIPE CONNECTIONS FOR ECORAIN® TANKS

As Detention, Exfiltration and Water Harvesting Structures

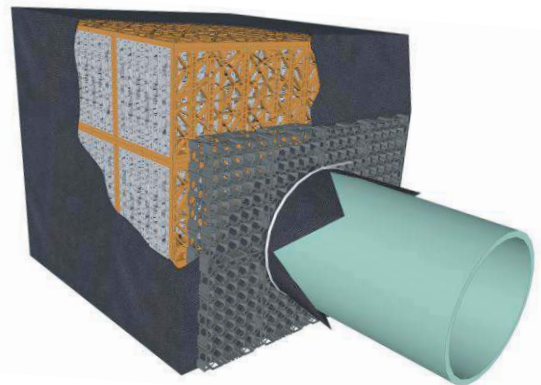
Pipes under 6" Diameter –

Use snips to cut hole in EcoRain® Tank
Large Plate only - in between the
Small Plates top or side.

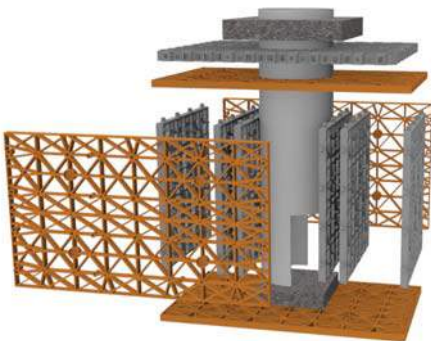


Pipes over 6" Diameter –

Do not cut hole in Tanks.



Vertical 12" Inspection/Cleanout Portal



EcoRain® recommends locating Inspection ports outside the EcoRain® Tank structure. If an Inspection Port must be inside the structure, reinforce the pipe as shown above and place it in a Tank along the perimeter of the structure.

Abut a layer of EcoRain® 2" Drainage Cells against Large EcoRain® Tank Plates; cut pipe size hole in second layer of EcoRain® 2" Drainage Cells & abut it against first layer; wrap Geotextile fabric around inside layer and Tank; cut 'X' slightly larger than pipe; insert pipe end; Pull the flaps up and around the pipe creating a 'boot'. Secure with non - corrosive clamp &/or tape.

IMPORTANT – Any water entering the EcoRain® Tank System must be filtered either through top soil or through a filter. DO NOT connect pipes with un-filtered water directly into an EcoRain® Tank system.

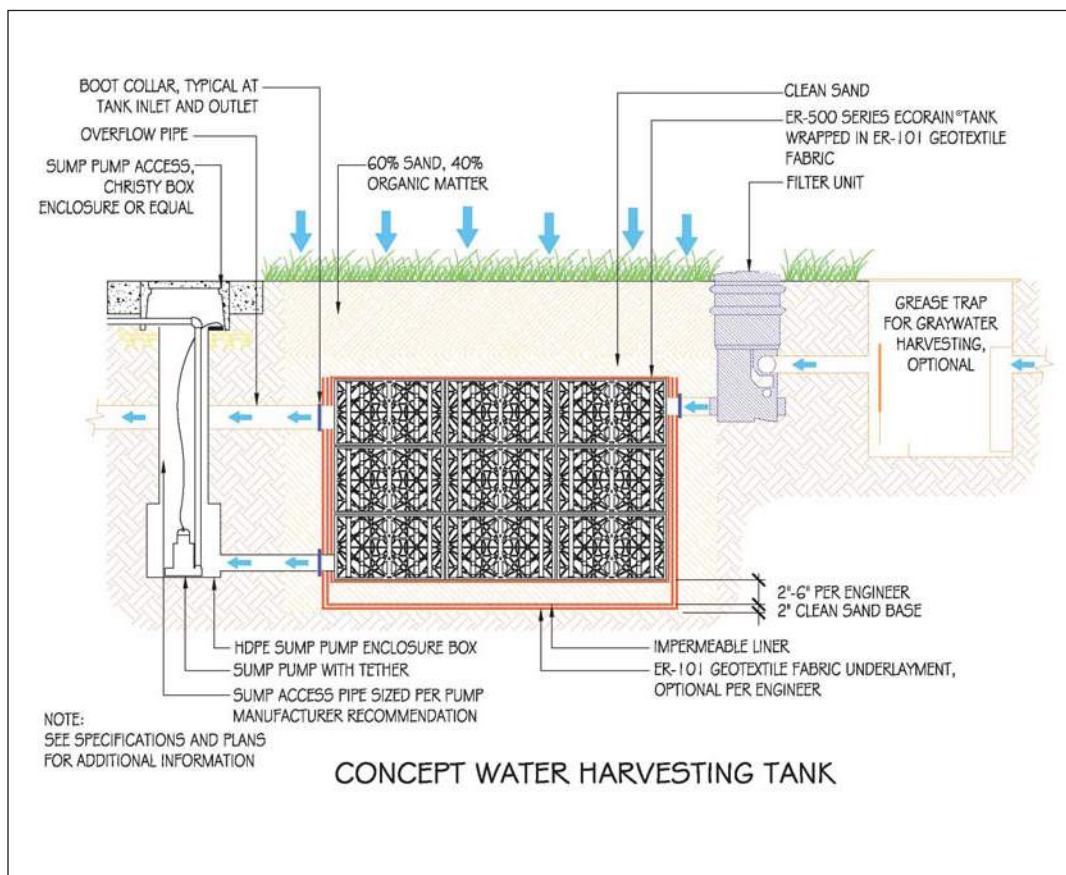
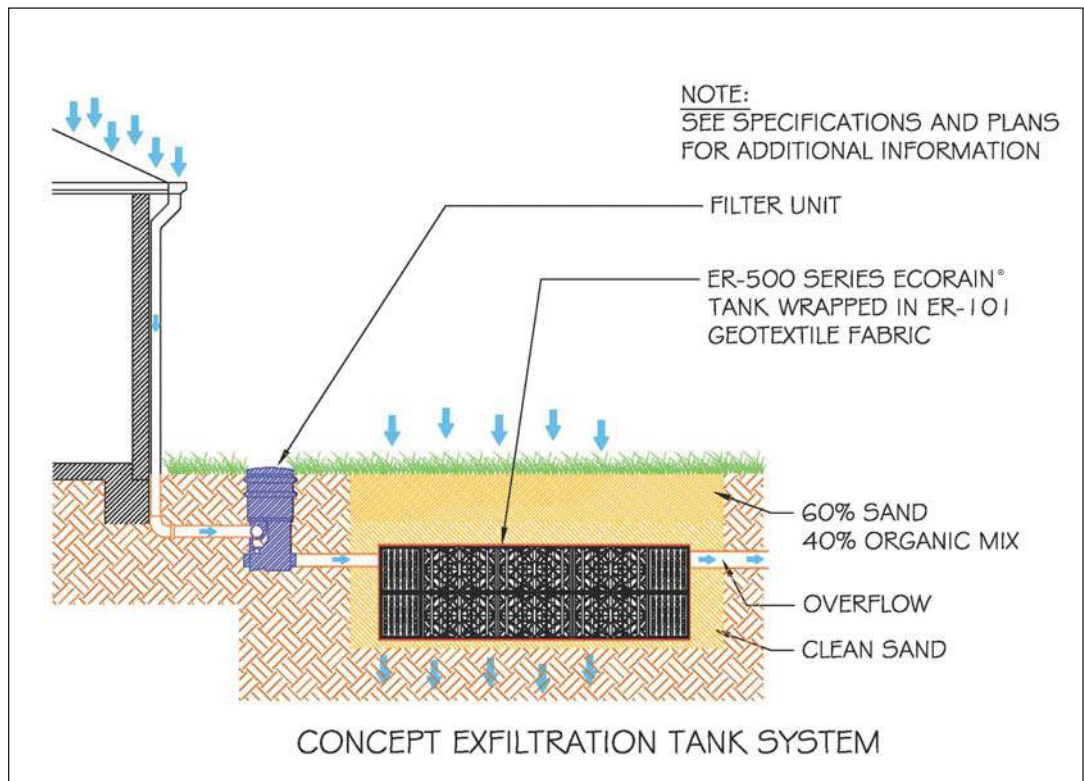
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**CAD's & PDF's
Available**

Versatile Design Options

Simple & Economical Design Solutions

**"Keep water
on site simply."**

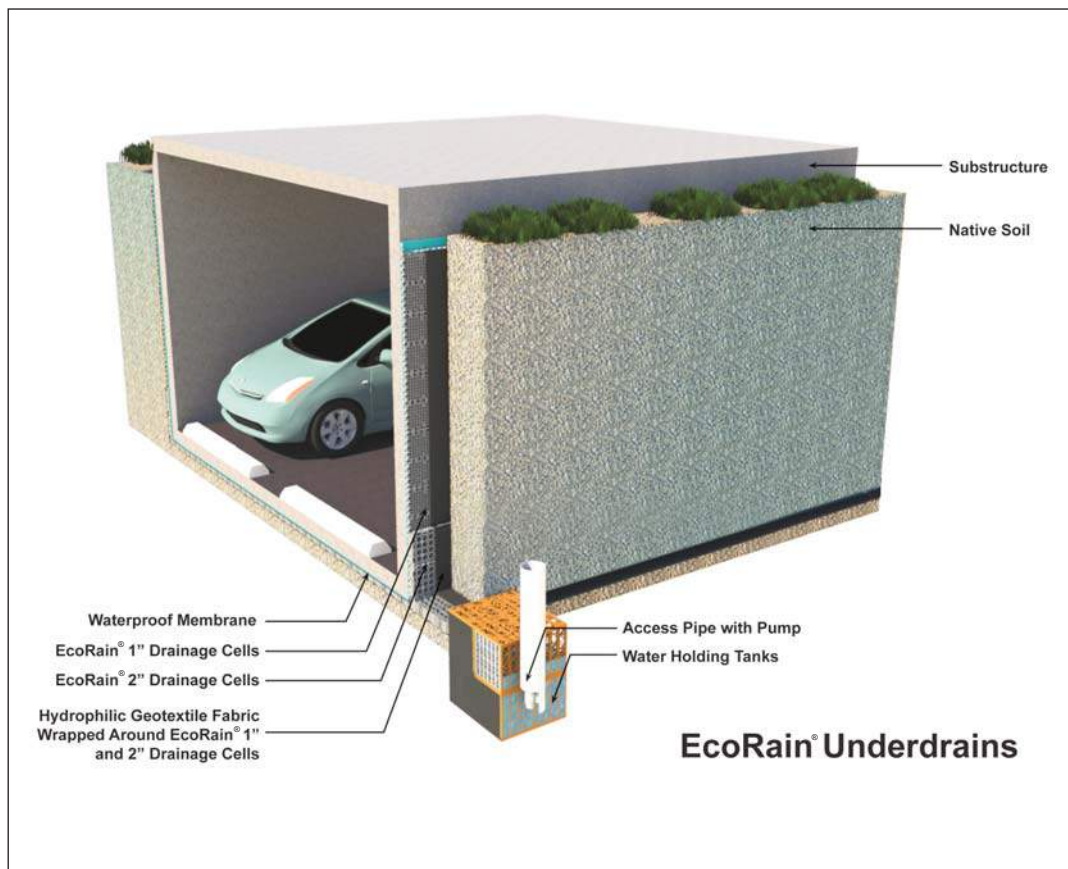
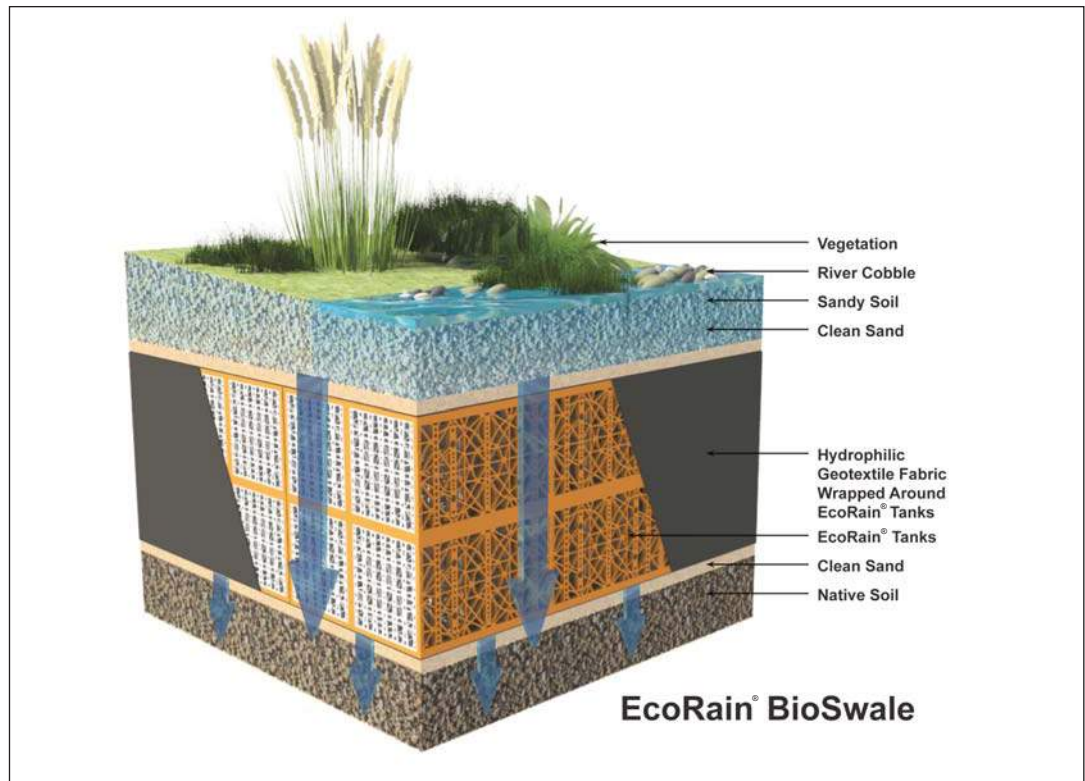


**"Water Harvesting EcoRain®
Tanks have 97% void space to
hold more water. Make a water
harvesting tank of any size using
an economical liner. Unique
design promotes aerobic activity
with virtually no maintenance."**

with EcoRain® Products!

for Water Detention, Exfiltration, & Reuse

“Water quickly moves into Tanks for underground storage while it percolates into the aquifer.”



“The solution to high water table construction.”

ECORAIN® TANKS DIMENSION CHART

Tank Units	Size in Feet	Size in Inches	Size in Millimeters
ER-500 Half	.79' x 1.34' x 2.25'	9.50" x 16.06" x 26.97"	241.3 mm x 408mm x 685mm
ER-501 Single	1.48' x 1.34' x 2.25'	17.72" x 16.06" x 26.97"	450.0 mm x 408mm x 685mm
ER-502 Double	2.89' x 1.34' x 2.25'	34.65" x 16.06" x 26.97"	880.0 mm x 408mm x 685mm
ER-503 Triple	4.30' x 1.34' x 2.25'	51.57" x 16.06" x 26.97"	1,310.0 mm x 408mm x 685mm
ER-504 Quad	5.71' x 1.34' x 2.25'	68.50" x 16.06" x 26.97"	1,740.0 mm x 408mm x 685mm
ER-505 Pent	7.12' x 1.34' x 2.25'	85.40" x 16.06" x 26.97"	2,170.0 mm x 408mm x 685mm

Tank Units	Tank Volume Cubic Feet	Tank Volume Gallons	97% Water Storage Volume Cubic Feet	97% Water Storage Volume Gallons
ER-500 Half	2.38	17.82	2.31	17.26
ER-501 Single	4.44	33.22	4.31	32.21
ER-502 Double	8.69	64.97	8.43	63.05
ER-503 Triple	12.93	96.72	12.54	93.81
ER-504 Quad	17.17	128.47	16.65	124.58
ER-505 Pent	21.42	160.21	20.78	155.41

Sand and gravel that surrounds the Tank structure has a void capacity of approximately 40%. To calculate this void space, multiply the cubic feet area occupied by sand or gravel by 40%.

EcoRain Tank Sizing Calculation Example:

- Step 1 - Determine the volume of Water Storage 10,000 gallons
- Step 2 - Convert gallons to cubic feet $10,000 \div 7.48 \text{ gal/f}^3 = 1,336.90 \text{ cubic feet}$
- Step 3 - Determine depth of detention trench [Allow 2' soil cover] Five feet deep
- Step 4 - Possible Tank size: Each ER-502 Double Tank is 2.89' deep & holds 8.43 f³ Water Storage $1,336.90 \text{ f}^3 \div 8.43 \text{ f}^3 = 158 \text{ ER-502 Double Tanks}$
- Step 5 - $[22 \text{ Tanks} \times 1.34' \text{ wide}] \times [6 \text{ Tanks} \times 2.25' \text{ long}] + [13 \text{ Tanks lengthwise on each end } (13.5' + 2.68')] = 29.48' \text{ wide} \& \text{ } 16.18' \text{ long}$
- Step 6 - $158 \text{ Double Tanks} \times 8.69 \text{ f}^3 \text{ Double Tank Volume} = 1,373.02 \text{ cu ft Tank size}$

MAINTENANCE PARAMETERS

*EcoRain® Systems philosophy recommends **Point Source** filtration of water before it enters EcoRain® Tanks or Drainage Cells.*

POINT SOURCE WATER FILTRATION

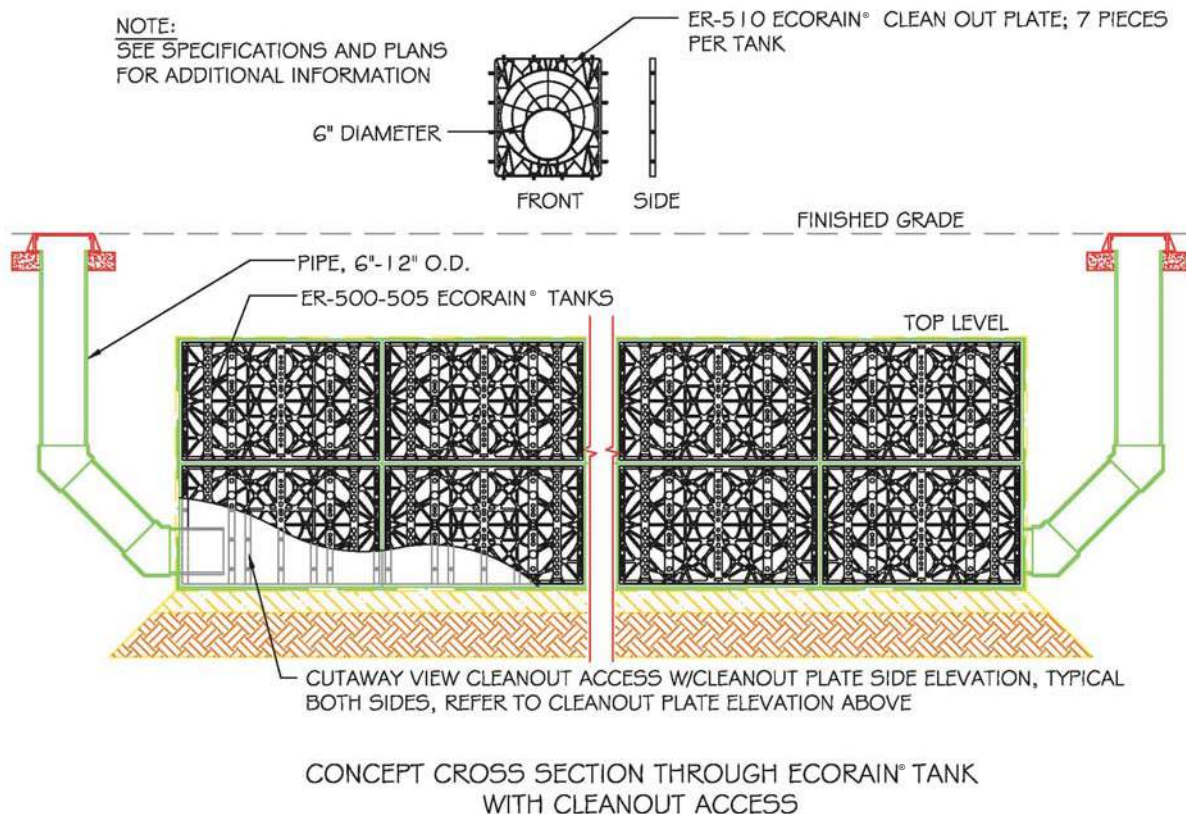
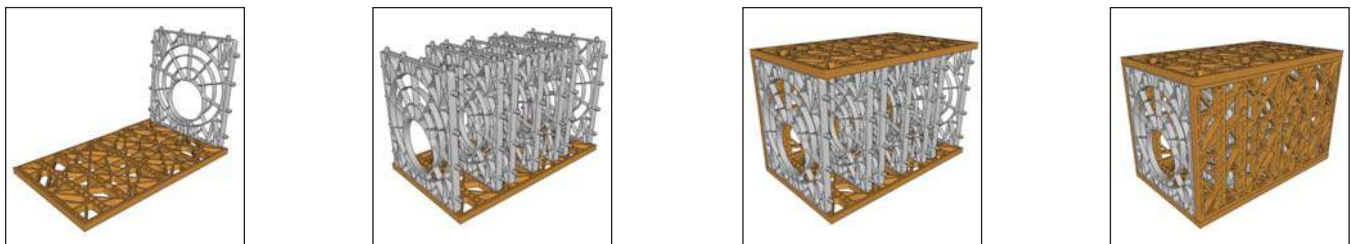
Water filtration occurs through a permeable surface above the EcoRain® Tank. Suspended sediments such as silt and trash remain on surface, filtered out before water enters the system; there is nothing to clean out of the Tank.

CATCHMENT BASIN

When a catchment basin is used, maintenance is relegated to removal of gross pollutants from the catch basin. A catch basin designed to handle the appropriate volume of water will not allow trash or large sediments to enter the EcoRain® Tank.

UNIQUE ER-510 ECORAIN® CLEAN-OUT PLATES FOR EASY MAINTENANCE

If required by an Engineer, EcoRain® Tanks can be designed with clean out/ flushing points to remove any possible accumulation of sediment. The Clean-out portal has a round six-inch hole at the center base of the plate to accommodate a camera and high-pressure hose. Flush water through the tank by inserting a high-pressure hose through the portal on one end and vacuum it out the opposite end. When using a Clean-out Portal, we recommend annual inspection of the tank. If necessary, perform a flush at that time.



**EcoRain® Systems parameters for maintenance needs are void if unfiltered water is directed into the tanks.*

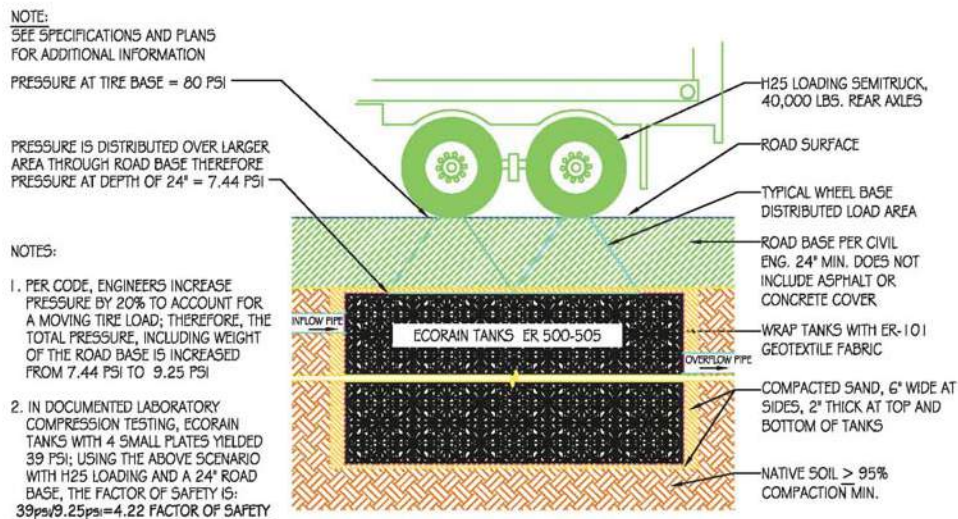
NON-WOVEN GEOTEXTILE MATERIAL SPECIFICATIONS

Wrap the EcoRain® Tanks and Drainage Cells with a polypropylene, staple fibre, needle-punched nonwoven Geotextile. Fibers are needed to form a stable network that retains dimensional stability relative to each other. The Geotextile needs to be resistant to ultraviolet degradation and to biological and chemical environments normally found in soils. It is manufactured to meet or exceed the following minimum average roll values:

PROPERTY	TEST METHOD	Minimum Average ROLL VALUE	
Mechanical		Metric	English
Grab Tensile Strength	ASTM D4632	4 oz. 0.445 kN 6 oz. 0.711 kN 8 oz. 0.911 kN	4 oz. 100 lbs 6 oz. 160 lbs 8 oz. 205 lbs
(Elongation @ Break)	ASTM D4632	50%	50%
Trapezoidal Tear	ASTM D4533	4 oz. 0.222 kN 6 oz. 0.289 kN 8 oz. 0.378 kN	4 oz. 50 lbs 6 oz. 65 lbs 8 oz. 85 lbs
Mullen Burst	ASTM D3786	4 oz. 1481 kPa 6 oz. 2170 kPa 8 oz. 2756 kPa	4 oz. 215 psi 6 oz. 315 psi 8 oz. 400 psi
Puncture Strength	ASTM D4833	4 oz. 0.285 kN 6 oz. 0.400 kN 8 oz. 0.578 kN	4 oz. 65 lbs 6 oz. 90 lbs 8 oz. 130 lbs
Hydraulic			
Pore Size (O_{95})	ASTM D4751 (Dry)	4 oz. 0.212 mm 6 oz. ----- mm 8 oz. 0.18 mm	4 oz. 70 US Sieve 6 oz. 75 US Sieve 8 oz. 80 US Sieve
Permittivity	ASTM D4491	4 & 6 oz. 1.6 s^{-1}	8 oz. 1.4 s^{-1}
Water flow rate	ASTM D4491	4 oz. 5689 l/min/m ² 6 oz. 4480 l/min/m ² 8 oz. 3657 l/min/m ²	4 oz. 140 gal/min/ft ² 6 oz. 110 gal/min/ft ² 8 oz. 90 gal/min/ft ²
Endurance			
UV Resistance (% retained @ 500 hours)	ASTM D4355	70% at 500 hours	

*For Road Applications that require AASHTO H-25 Load Capacity, please refer to specifications in AASHTO Designation M 288-00 publication.

H-25 LOADING FOR ECORAIN® TANK UNDER PARKING LOTS & ROADWAYS



CONCEPT H-25 LOAD CAPACITY DIAGRAM

The Factor of Safety when using EcoRain® Tanks in a load bearing installation needs to be at least 2: two times greater than the actual load. When would you need four times the calculated strength: possibly when a pressure overlap from multiple tires/axles existed.

EcoRain® recommends using a layer of Biaxial Geogrid in parking lot and road applications. If extra strength is needed, laboratory compression testing done with 5 Small Plates yielded 47 psi, and with 7 Small Plates 55 psi. In-ground testing with a 51,000-pound live load (H-25 Load) yielded no damage to the EcoRain® Tanks buried at a depth of 24". Test documentation and full formula to calculate the Factor of Safety per ASTM C857 is available upon request.

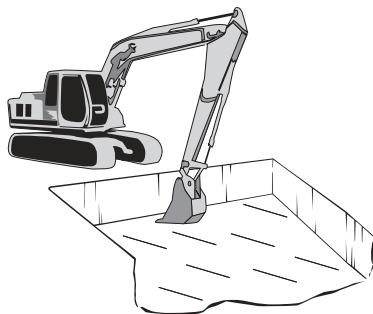


OUR FLEET IS GROWING!

ECORAIN® DETENTION & EXFILTRATION TANK INSTALLATION GUIDE*

Step 1

Excavate Trench
Larger than Specified
Tank Size, per Engi-
neered Detail



Step 2

Compact Base to 35 psi



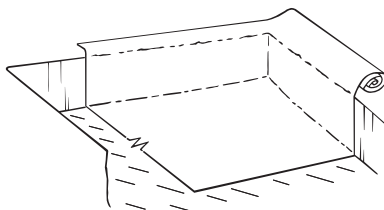
Step 3

Add **Sand** or Free
Drainage Material* to
Base, Compact and Level
with a Straight Edge



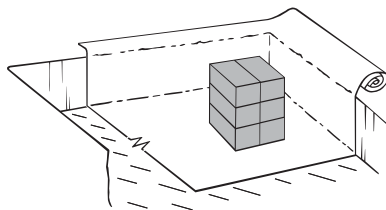
Step 4

Lay Geotextile Material
in Bottom and on Sides of
Trench, Enough to
Fully Wrap Tank, with
12" Seam Overlaps



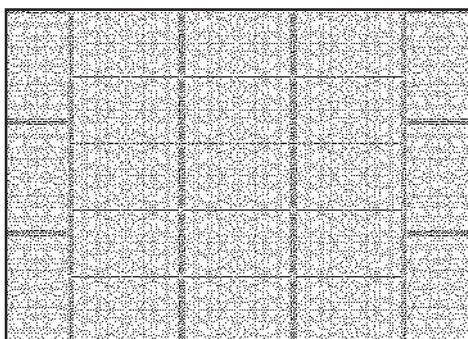
Step 5

Install Tanks upright for
Maximum Strength and
per the Warranty:
Half Tank - .79' High
Single Tank - 1.48' High



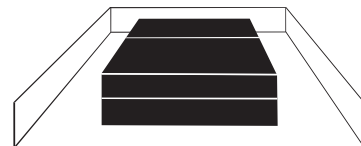
Step 6

Orient Tanks
Lengthwise
along Perimeter



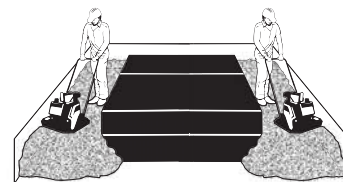
Step 7

Cover EcoRain® Tanks
with Geotextile Material -
Wrap Tight, Cut Away Ex-
cess Folds, Overlap
and/or Seal Joints
with Tape



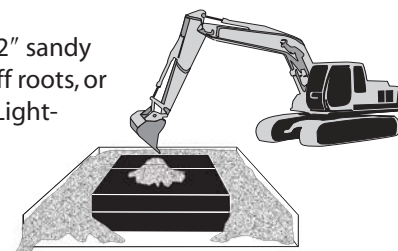
Step 8

Backfill Sides with Sandy Fill
in maximum 12" Layers -
Compacting Each Layer
at least 95%



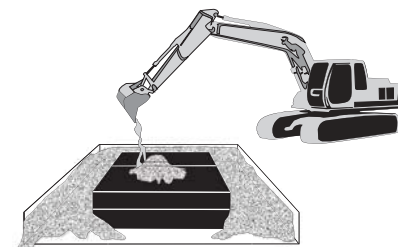
Step 9

Backfill over Top with 12" sandy
backfill free of rocks, stiff roots, or
debris - Compact with Light-
weight Equipment



Correct

Do Not Drop Fill from
High Up



Incorrect

Step 10

Finish Backfill per Engineered Detail

Minimum 12" Top Cover for Pedestrian Use

Minimum 24" Top Cover for Vehicle Use – Layer Biaxial Ge-
ogrid 12" Above EcoRain® Tanks & Extending 3' Beyond
Edges of EcoRain® Tank or as per Engineer Detail.

Email to: sales@EcoRainSystems.in to request full specifications
and submittal installation instructions



Contact: sales@EcoRainSystems.in Phones:

9822845245 or 9821036215 Office: 022

26875179 www.EcoRainSystems.in

Warranty

EcoRain® Systems (EcoRain) warrants for a period of 20 years that EcoRain® products will meet specifications at the time of delivery, without manufacturing defects, and will perform as stated in this document provided the applications, handling, storage and installation methods follow recommendations stated in the Submittal.

EcoRain® is not a project designer or installer. While EcoRain® provides general guidelines for design and installation of its products, all subsequent design and installation is the responsibility of the users. EcoRain® recommends review of designs by a Geotechnical Engineer.

If manufacturing defects exist, EcoRain® will replace the product free of charge. Product replacement or refund is the buyer's sole remedy and EcoRain® will not be liable for any indirect, consequential, special or resultant damages.

EcoRain® makes no representation or warranty to purchaser as to the suitability of the product for purchaser's intended use. It shall be the responsibility of the user to determine the suitability of the subject product.

EcoRain Pvt Ltd

**EcoRain® Systems Pvt Ltd, B-1 Girikunj Ind Estate,
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