# MARINO CELL® TECHNICAL AND LOADING DATA

The DeepRoot Marino Cell is a high strength, shallow storage module for stormwater detention, infiltration, and water reuse. It features a shallow profile (15 cm in height) and a stackable, modular design for customizable chamber sizes to fit nearly any project specification. Designed for use at shallow depths with minimal cover, the system can meet heavy truck loading requirements, offering the maximum combination of utility, sustainability, strength and cost effectiveness.

The highly engineered system incorporates a single deck (lid) atop a modular frame that can be stacked as high as 60 cm. The Marino Cell features two sizes of utility pipe inlets for easy pass-through access ensuring maximum field utility and maintenance options. Easy installation, versatility and the shallow profile combine to make the Marino Cell a powerful tool for multiple Green Infrastructure (GI) applications.

BENEFITS

❶ Deck
❷ Frame
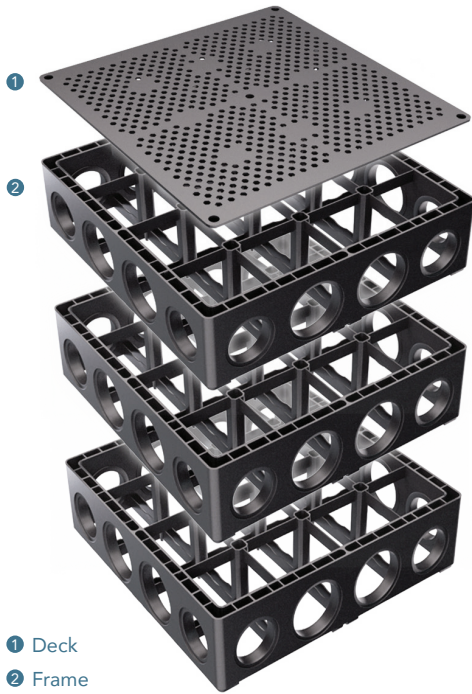
DESIGN

- 150 mm depth modules, stackable
- Unlimited design flexibility using multiple modules to achieve stormwater management goals

STRENGTH

- Minimal cover to meet CSA-S6, 87.5 loading
- Supports vehicular loading with as little as 100 mm of cover and paving
- Single ultra high strength deck for multiple frames - cost efficient

SUSTAINABILITY

- 100% recycled polypropylene
- Replaces large volume of aggregate (rock)
- Green infrastructure application

MAINTENANCE FLEXIBILITY

- Two-part deck and base allow for removal of the deck for observation and maintenance
- Large 75 mm openings on all four sides allow for vac and jetting maintenance
- Independent structures allow for the removal of a stack to access utilities and other infrastructure

WATER

- 93% void space ratio
- Easy access for collection and distribution pipes on all four sides
- Flexibility to run utilities through the system in both directions up to 75 mm diameter
- Connect to perimeter of cell with 100 mm diameter pipe

INSTALLATION

- Lightweight and easy to handle – no assembly required
- No connecting pins required

APPLICATIONS + DIMENSIONS

- Permeable paving - replaces rock and provides high efficiency storage
- Bioretention/biodetention systems to maximize capacity
- Green infrastructure for climate change mitigation, storage and conveyance
- Water reuse on podium or green roof & street tree applications
- Urban forestry to support the planting and irrigation of street trees

STRUCTURALLY INDEPENDENT

- The Marino Cell frames are structurally independent from one another, making installation and future maintenance/repair a simple process
- No connecting pins required

UTILITIES

The Marino Cell has four utility ports on each side, able to accommodate up to a 75 mm pipe

DIMENSIONS

Frames	Length	Width	Height
One	600mm	600mm	150mm
Two	600mm	600mm	300mm
Three	600mm	600mm	450mm
Four	600mm	600mm	600mm

WATER CAPACITY

Frames	m³
One	0.05
Two	0.10
Three	0.15
Four	0.20

DESIGN FEATURES	IMPERIAL UNITS	SI UNITS
Volumetric Void Ratio	93%	93%
Length per unit	23.62"	600 mm
Width per unit	23.62"	600 mm
Void volume per unit	1.790 cf	0.0506 m³
Weight per unit	13.31 lbs	6.03 kg
Vertical compressive yield	120 psi	827 kpa
Lateral compressive yield	60.9 psi	420 kpa
Vertical deflection strength	540 psi/inch	3723 kpa/cm
Lateral deflection strength	121.8 psi/inch	840 kpa/cm

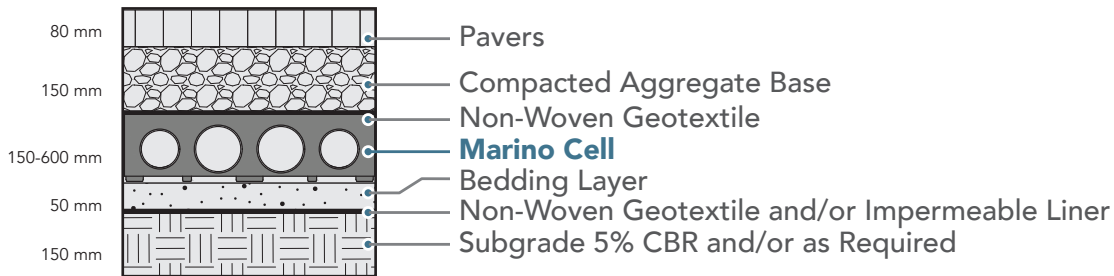deeproot®

MARINO CELL LOADING

CSA-S6, 87.5 Heavy Truck and Commercial Vehicle

Engineered to meet the CSA-S6, 87.5 to support vehicle loading, including those used for emergency, delivery, and maintenance when used with standard paving profiles below.
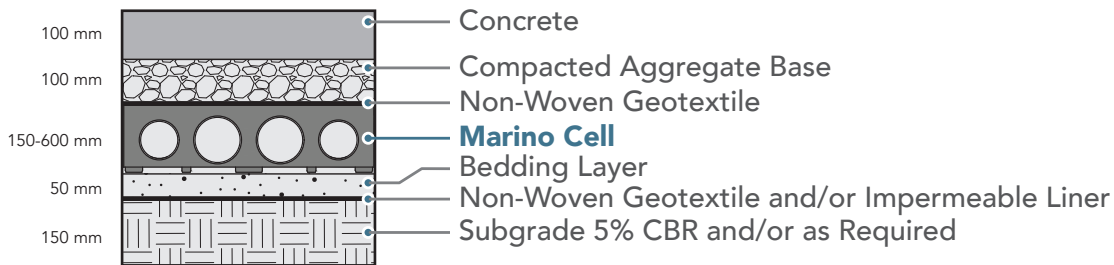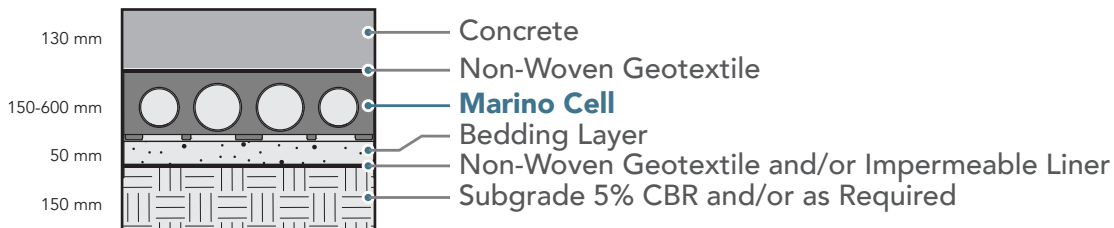
ASPHALT

100 mm	Asphalt
150 mm	Compacted Aggregate Base
	Non-Woven Geotextile
150-600 mm	**Marino Cell**
50 mm	Bedding Layer
	Non-Woven Geotextile and/or Impermeable Liner
150 mm	Subgrade 5% CBR and/or as Required

PAVERS

80 mm	Pavers
150 mm	Compacted Aggregate Base
	Non-Woven Geotextile
150-600 mm	**Marino Cell**
50 mm	Bedding Layer
	Non-Woven Geotextile and/or Impermeable Liner
150 mm	Subgrade 5% CBR and/or as Required

CONCRETE

100 mm	Concrete
100 mm	Compacted Aggregate Base
	Non-Woven Geotextile
150-600 mm	**Marino Cell**
50 mm	Bedding Layer
	Non-Woven Geotextile and/or Impermeable Liner
150 mm	Subgrade 5% CBR and/or as Required

CONCRETE NO COVER

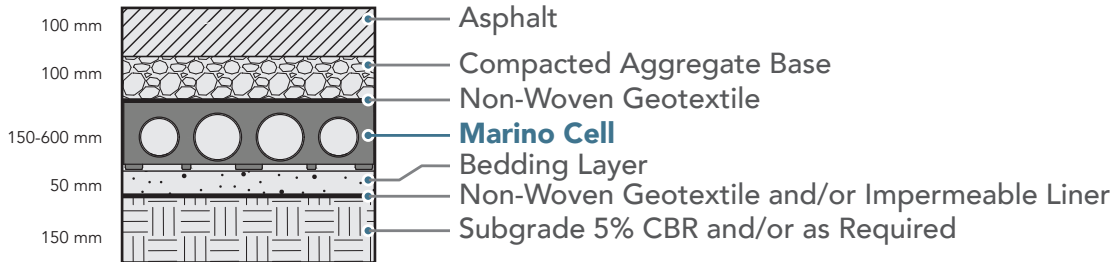|	
130 mm	Concrete
	Non-Woven Geotextile
150-600 mm	**Marino Cell**
50 mm	Bedding Layer
	Non-Woven Geotextile and/or Impermeable Liner
150 mm	Subgrade 5% CBR and/or as Required

*for other applications contact DeepRoot for more details

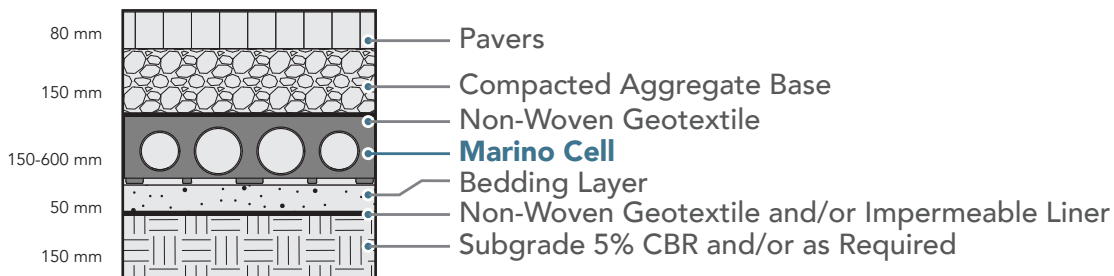deeproot®

MARINO CELL LOADING
Pedestrian/Light Truck Usage

Loading standard for supporting lighter vehicle weights and lower traffic volumes typical of driveways, small parking lots, plazas and other areas with no heavy truck access.
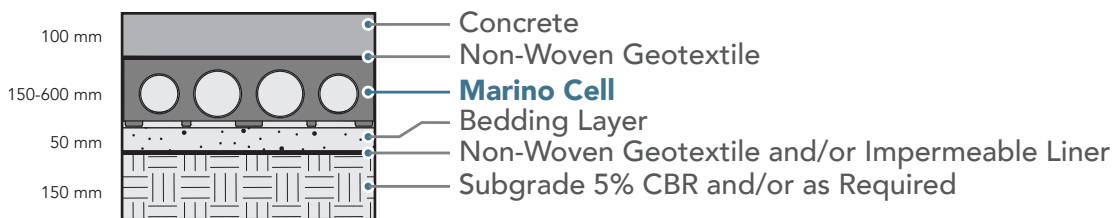
ASPHALT

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DECOMPOSED GRANITE (DG)

200 mm	Decomposed Concrete (DG)
	Non-Woven Geotextile
150-600 mm	**Marino Cell**
50 mm	Bedding Layer
	Non-Woven Geotextile and/or Impermeable Liner
150 mm	Subgrade 5% CBR and/or as Required

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