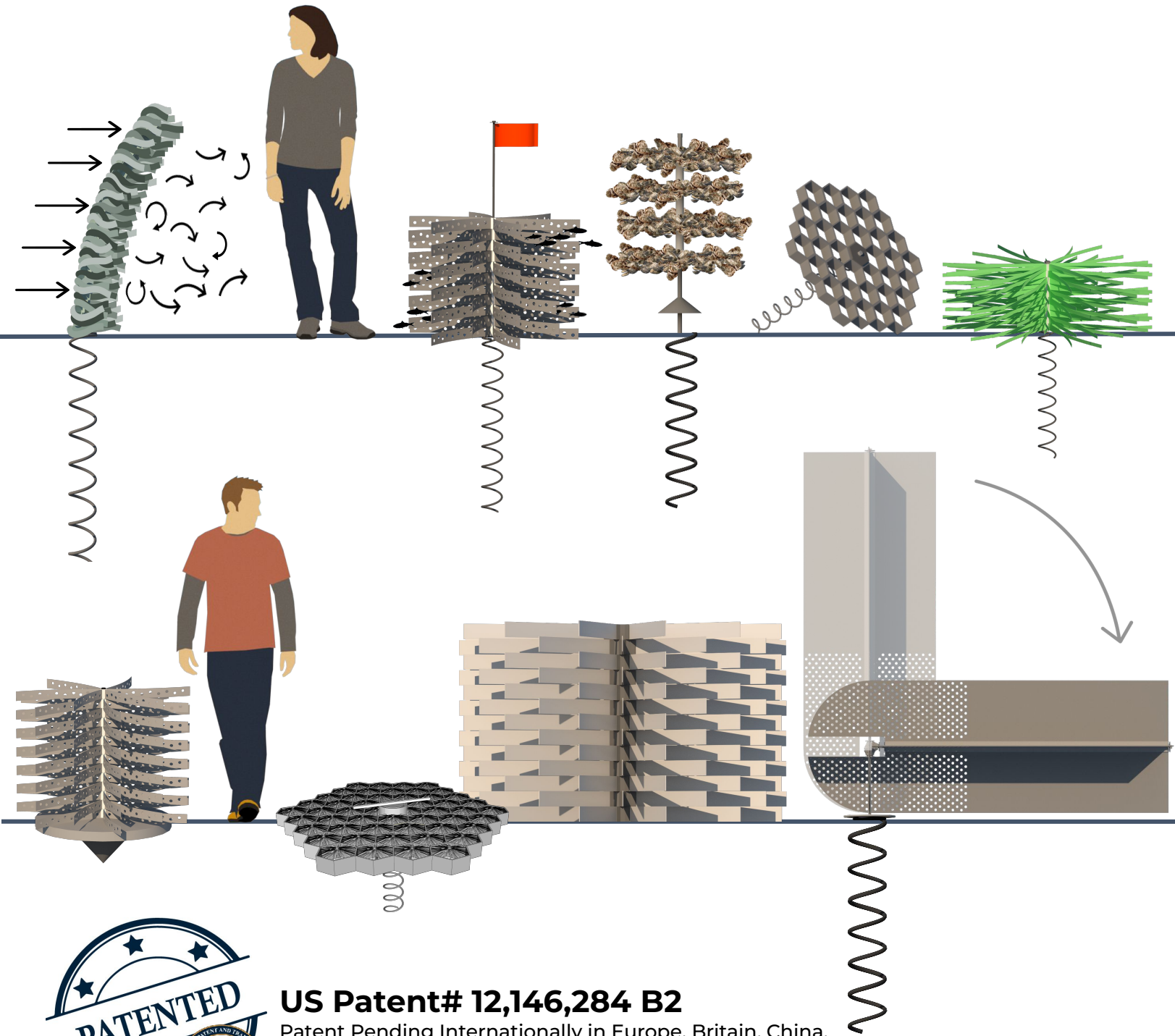


Coastal Protection & Resilience Systems Brochure Specifications/Descriptions/Data Sheets



US Patent# 12,146,284 B2

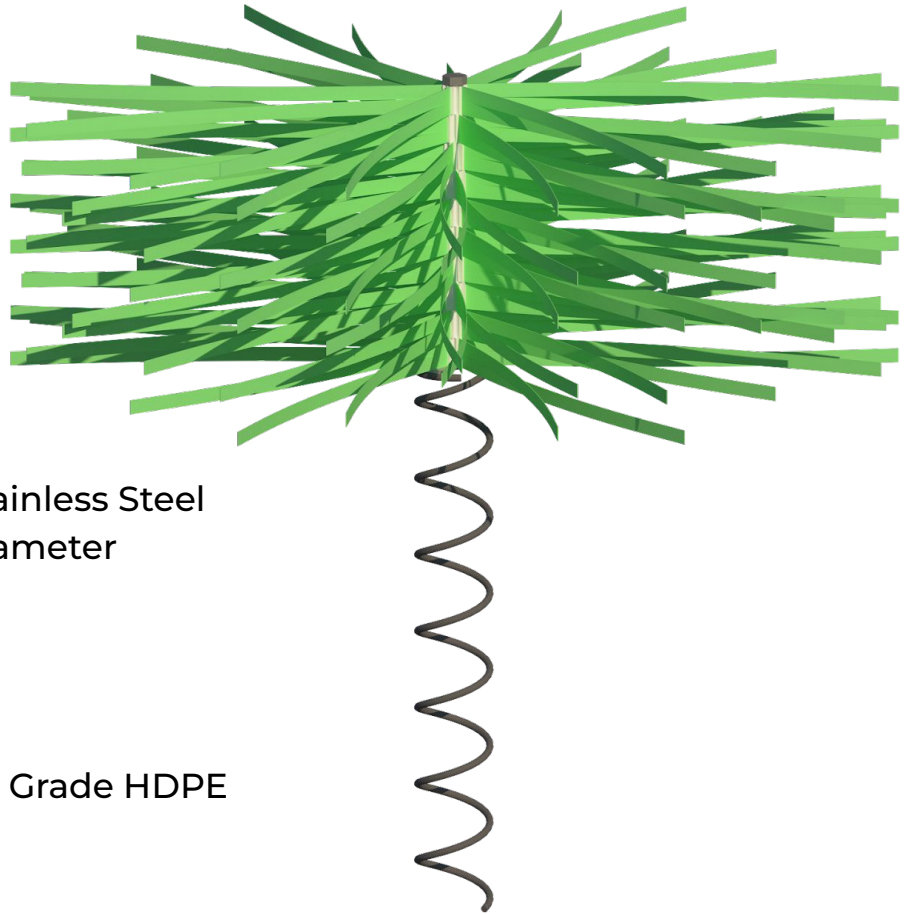
Patent Pending Internationally in Europe, Britain, China,
Japan, Mexico, Australia, Korea, Canada & 192 Countries

DuneGuard™

Specifications & Data Sheet

Details: DuneGuard products are engineered to passively create and sustain dunes and protective berms

- Flexible protrusions dampen wind currents causing aeolian sediments to fall out of suspension.
- Units can be “unscrewed” vertically to control-build dunes and berms to specific heights and shapes.
- Devices are lightweight and reusable. They are easily removed and repositioned in the field
- Can be utilized to shield built berms from erosion and to protect newly applied beach sand nourishment



Data:

Coil & Armature Material: Stainless Steel

Coil Wire Thickness: 5/16" diameter

Coil Length: 24"

Coil Width: 3 3/4"

Overall Diameter: 25"

Overall Height: 44"

Protrusion Materials: Marine Grade HDPE

Protrusion Thickness: .05"

Protrusion Color: Green



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DuneGuard™

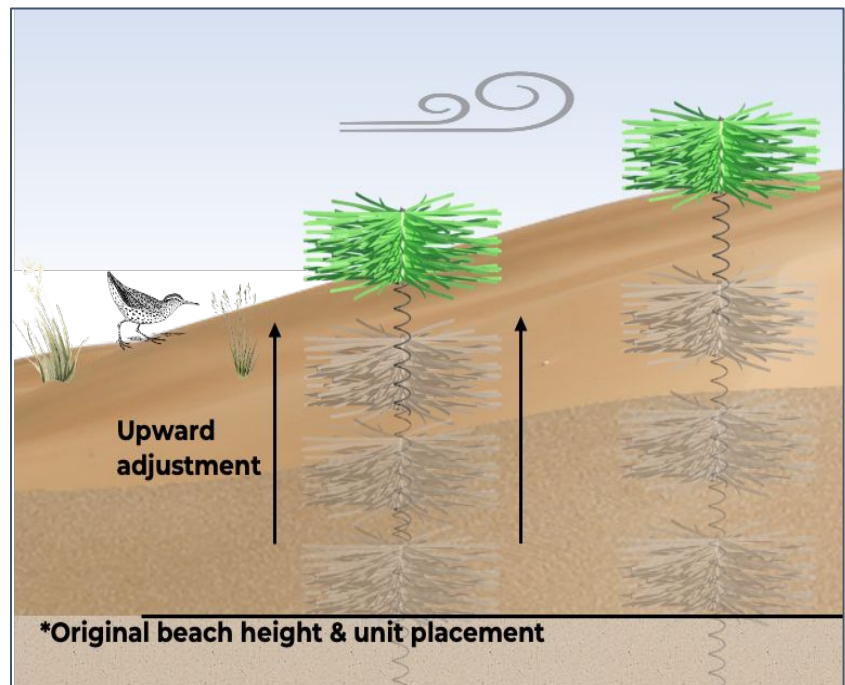
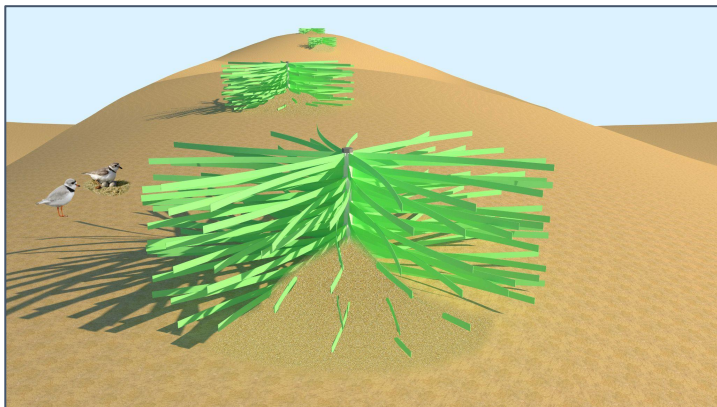
Descriptions

Innovative Dune Control, Building and Protection

- DuneGuard products present new abilities to influence dune and berm formation.
- Devices can safeguard sand that has been applied during beach nourishment.
- Newly applied beach nourishment sand is unstable and is prone to erosion from even a single storm event.
- The ability to naturally create dunes, in a non-disruptive manner, is essential in sensitive areas such as bird or turtle nesting habitat.



Gilgo Beach, NY: Passive accumulation of aeolian borne sand over 2 hours.



Oyster Stacks™

Specifications & Data Sheet

Detail: Instant High Density Oyster Reef

- The stainless steel armature is driven into the sediment and stacked with recruitment plates.
- Installation of a device takes about one minute.
- Slate stone plates function as oyster spat collectors and habitat.
- Copper baffles block predator access, while positioning of the plates high in the water column disrupts the scent trails that oyster drills, crabs etc. use to locate oysters.
- Devices are lightweight and easily installed or removed to be repositioned or reused.

Data:

Coil & Armature Material: Stainless Steel

Coil Wire Thickness: 5/16" diameter

Coil Length: 24"

Coil Width: 3 3/4"

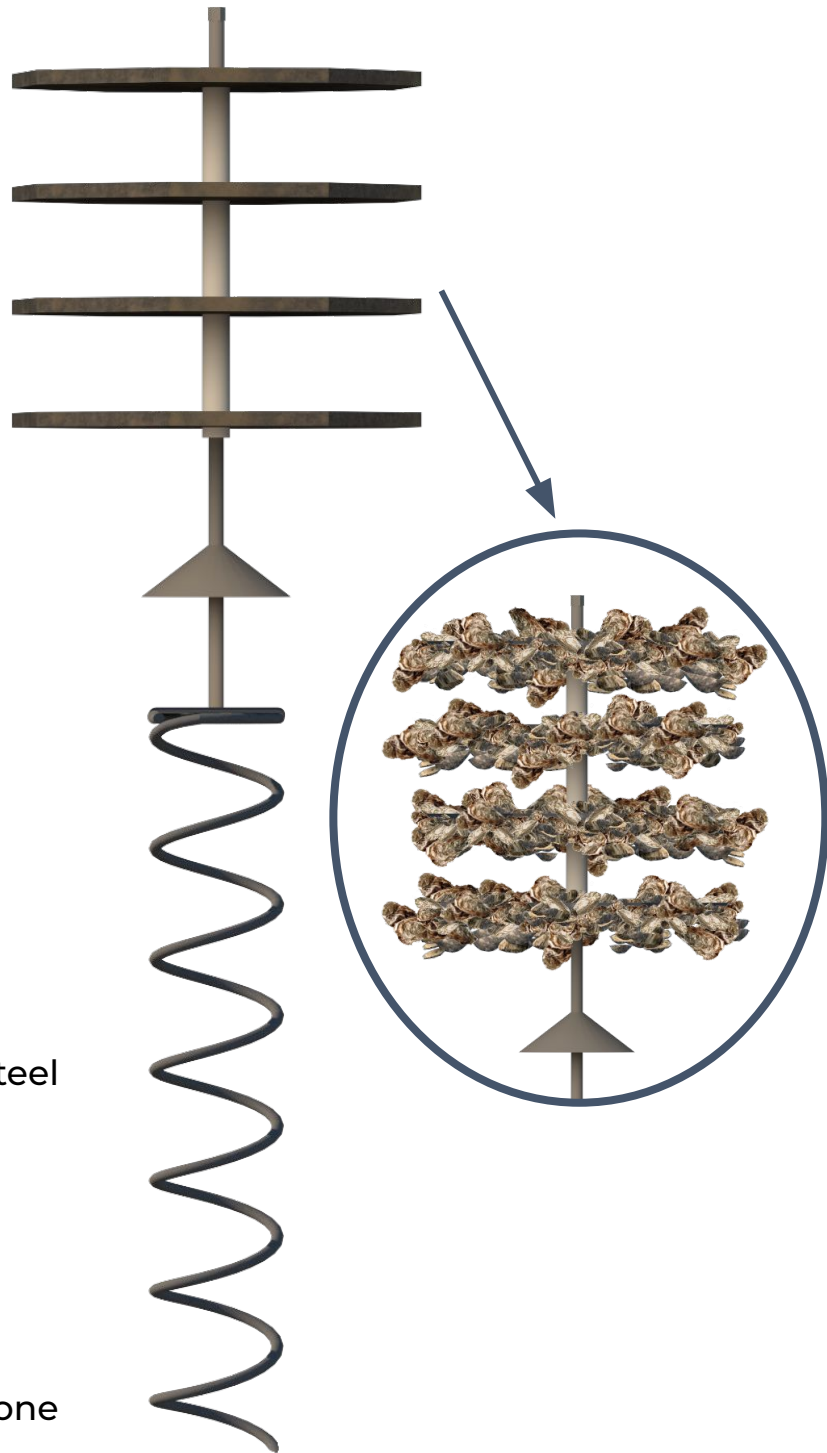
Overall Height: 44"

Plate Dimensions: 12" - 18"

Plate Thickness: 3/8"

Plate Material: Natural Black Slate Stone

Spacer Material: Bamboo



US Patent# 12,146,284 B2

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Oyster Stacks™

Descriptions

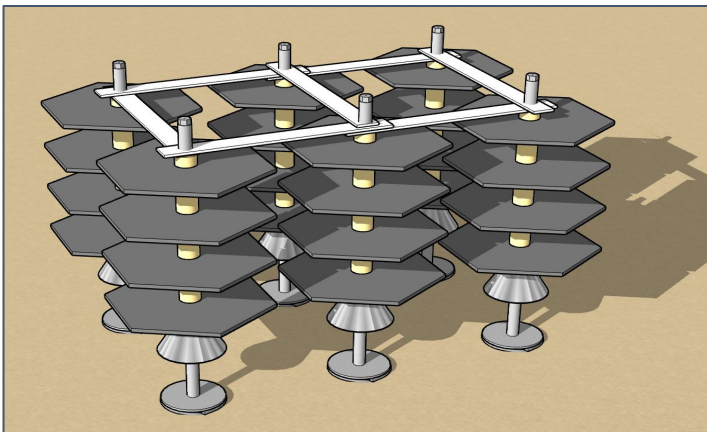
Traditional on-bottom man-made oyster reef methods are difficult and fails at extremely high rates.

Oyster Stacks™ provides an efficient solution with a unique ability to create almost instant high-heterogeneity temporary or permanent reef structures.

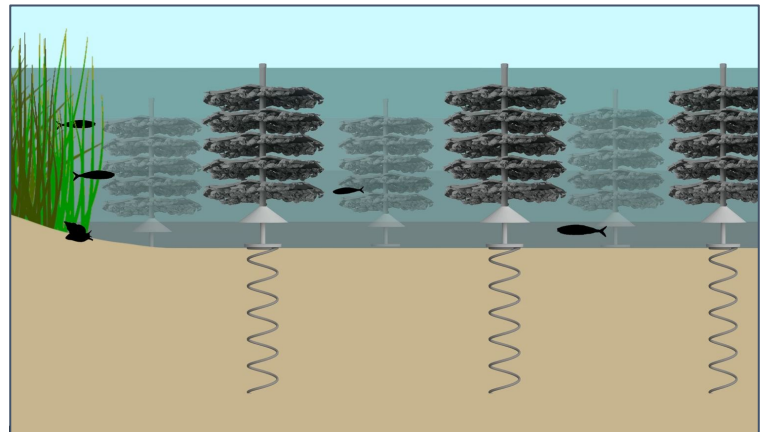
- Oyster Stacks' predation controls and disruption of scent trails mitigates losses that plague tradition on-bottom methods.
- Oyster Stacks positions reef in the water column and does not replace existing seafloor habitat.
- Plates allows oyster projects a way around the bottlenecks of sourcing and processing used-shell clutch.
- The devices can **be easily relocated to new areas** where pollution remediation or reestablishment of oyster spawning populations are desired.
- Artificial selection of desired traits can be fostered by staging devices in steps towards harsh conditions, thus selecting generations for adaptive strains.



Devices tested at Flax Pond Marine Research Lab SoMAS with natural recruitment.



Devices can link to function as seeding armatures. Oysters will colonize on one another, expanding & connecting to recreate permanent historic reef structures.



High density, high heterogenetic oyster reef controls excess nutrients and algae, and provides unequaled biogenic nursery and ecosystem habitat.

Cliff Stabilizer™

Escarpment Paver/Planter Specifications & Data Sheet

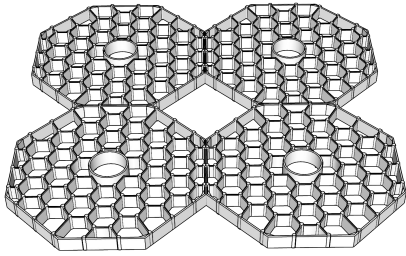
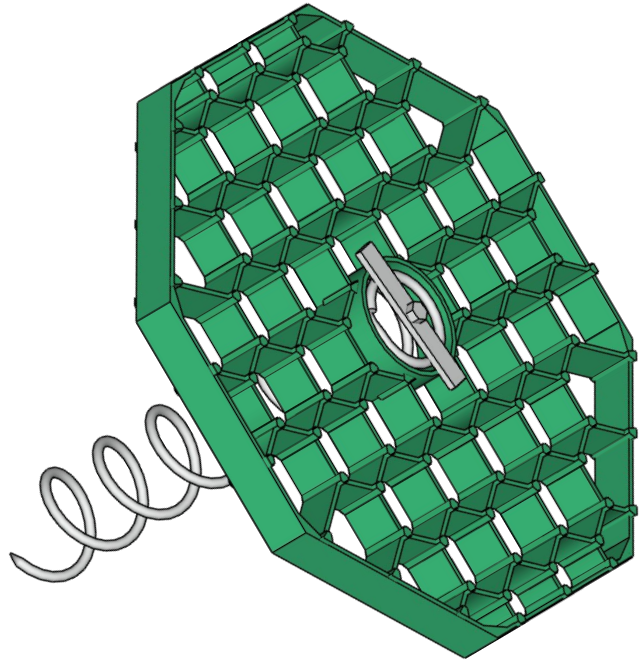


Figure showing square "open space" created for container, root balled or wrapped shrubs or trees



Cost: Pricing provided on request. Devices are reusable.

Details: Coastal Technologies Corp's Cliff Stabilizer frames are attached by the driving of an independant stainless steel coil. The device is secured in this manner onto slope faces, dunes, berms and other types of escarpments, to instantly lock down loose sediment and halt erosion.

The paver-type frame contains cubbies, which shelter plugs, bare root and/or seeds against the escarpment. The vegetation, thus sheltered from erosive forces, is able to grow establishing root systems, thus naturally stabilizing the slope.

Grasses and smaller plants are planted into the cubbies. Shrubs and trees are planted into the open square spaces. The devices are easily removed even after several seasons.

Specifications:

Frame Materials: Marine Grade HDPE

Frame Dimensions: 22" x 22" (559mm)

Frame Color: Green

Frame Wall Thickness: 5/32" (4mm)

Coil Material: Stainless Steel

Coil Wire Thickness: 5/16" diameter (8mm)

Coil Length: 18.5" (470mm)

Coil Width: 3 3/8" (85mm)

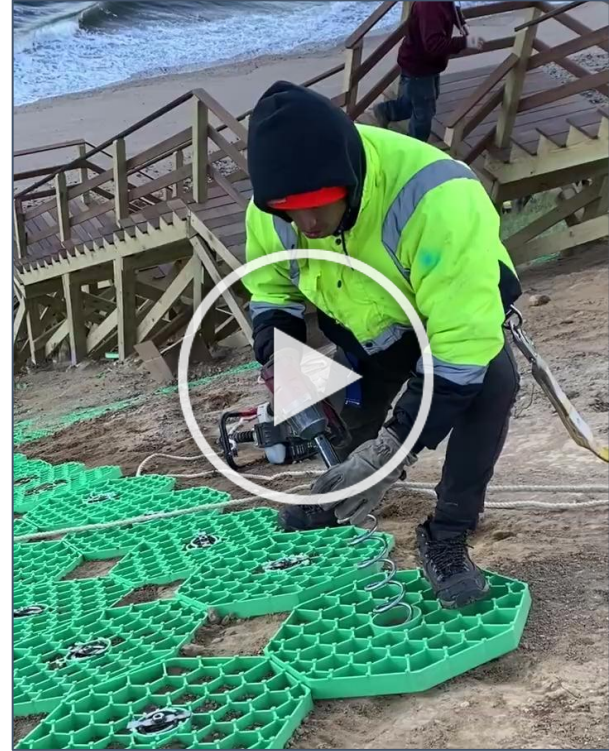


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Cliff & Bluff Stabilizer™

- The **Cliff Stabilizer** system was installed on a 35,500 square foot eroding, steep, loose morphology moraine bluff on the Long Island Sound.
- Over 4 dozen native bluff-evolved plant species were planted into the device cubbies.
- The plantings were securely held against the 1 to 1 pitch escarpment. This allowed the plants time to successfully establish root systems which stabilized the slope and halted erosion.
- The steeper pitch preserved 21 feet of the client's backyard property over other stabilization methods.
- This represents a major breakthrough for coastal, floodplain, river bank and levee stabilization.
- The **Cape May USDA Plant Material Service** curated the plant mix to be used with the **Cliff Stabilizer** system.



Before



After



MarshGuard™

Specifications & Data Sheet

Wave-Edge Erosion Control & Deposition Device

Details: MarshGuard™ devices are installed by use of a top-bolt to torque-drive its stainless steel coil armature into sediment.

- The device, once secured in this manner, acts to attenuate wave-edge erosion, promote deposition and provide artificial habitat.
- Devices are lightweight and easily transported & adjustable in-the-field.
- Devices are reusable, and can be removed for use in new deployments.

Data:

Coil Material: Stainless Steel

Coil Wire Thickness: 5/16" diameter

Coil Length: 24"

Coil Width: 3 3/4"

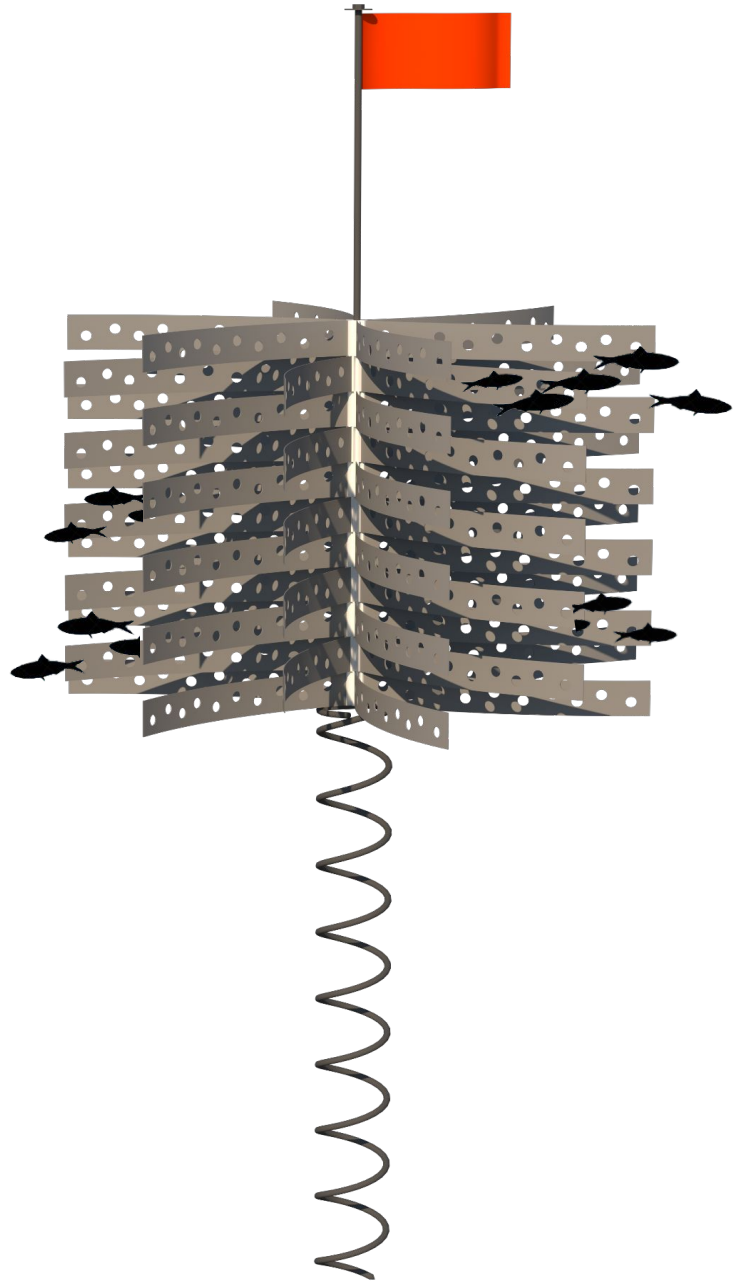
Overall Diameter: 25"

Overall Height: 44"

Specifications Fin Materials: Marine Grade HDPE, or biodegradable PLA

Individual Fin Dimensions: 1" x 12"

Fin Wall Thickness: .05"



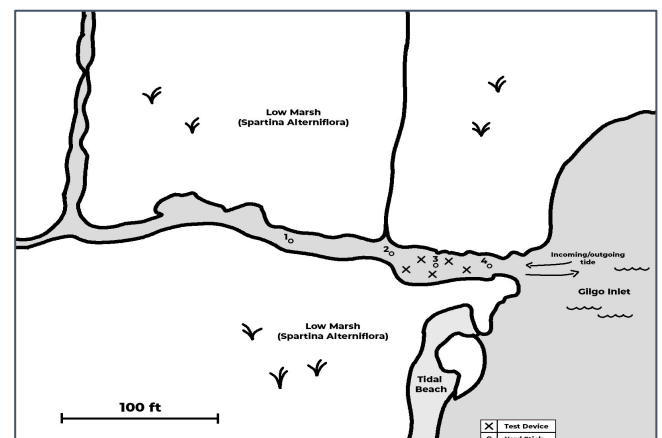
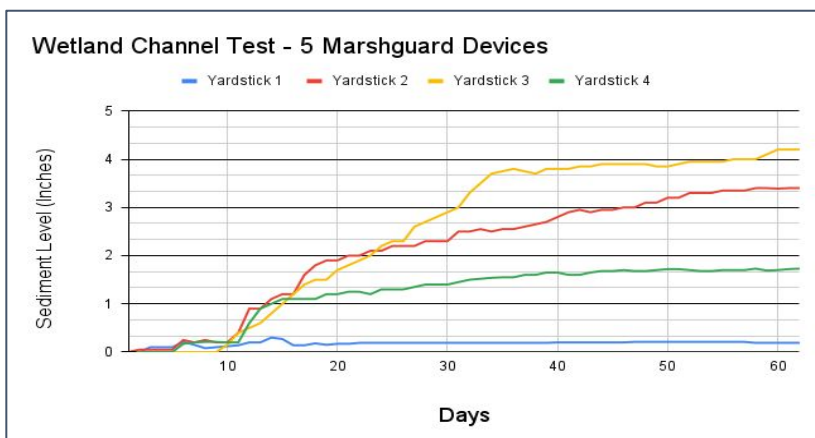
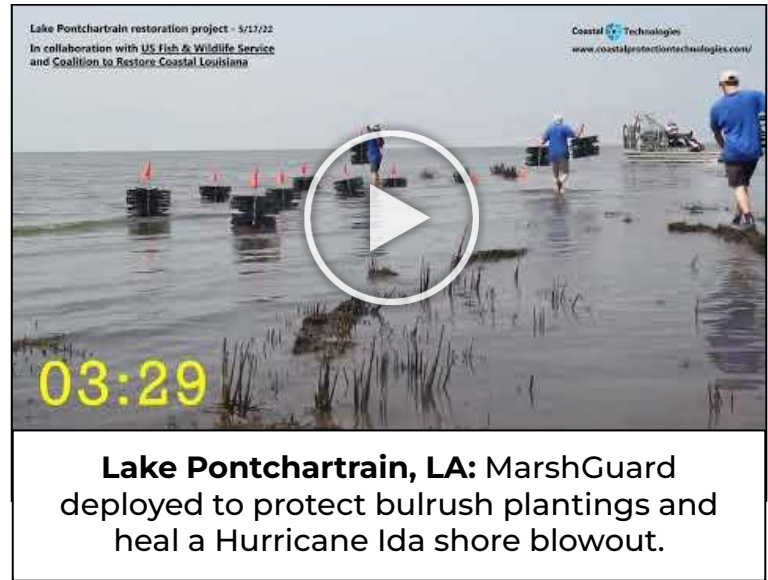
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MarshGuard™

Descriptions

- **MarshGuard™** products are designed to be utilized in restorations of wetland, estuarine, marine and fluvial ecosystems.
- **Planting Protection:** MarshGuard devices function as absorptive breakers mitigating boat wake & wave edge erosion, while protecting plantings until root systems are established.
- **Sediment Deposition:** Devices slow water currents causing deposition, passively building shoreline and filling mosquito ditching.
- **Artificial Reef Habitat :** Each device contains over two hundred “slots” providing extremely high heterogeneous habitat density.



ShoreGuard™

Specifications & Data Sheet

Details: Wave surge control protection for vulnerable coastal assets, communities and infrastructure.

- The ShoreGuard system is rapidly deployed in advance of a predicted storm strike.
- A top-bolt is used to drive the stainless steel coil armature into the shore. This takes about one second.
- A “mop” of fibers, along the shaft, functions to absorb and disrupt wave energy & increase surface texture.
- Devices are lightweight, easy to transport and deploy.
- Easily removed to be stored until needed again, or left installed to help mitigate off-season beach erosion and naturally accrue sediments.

Data:

Coil Material: Stainless Steel

Coil Wire Thickness: 3/8" diameter

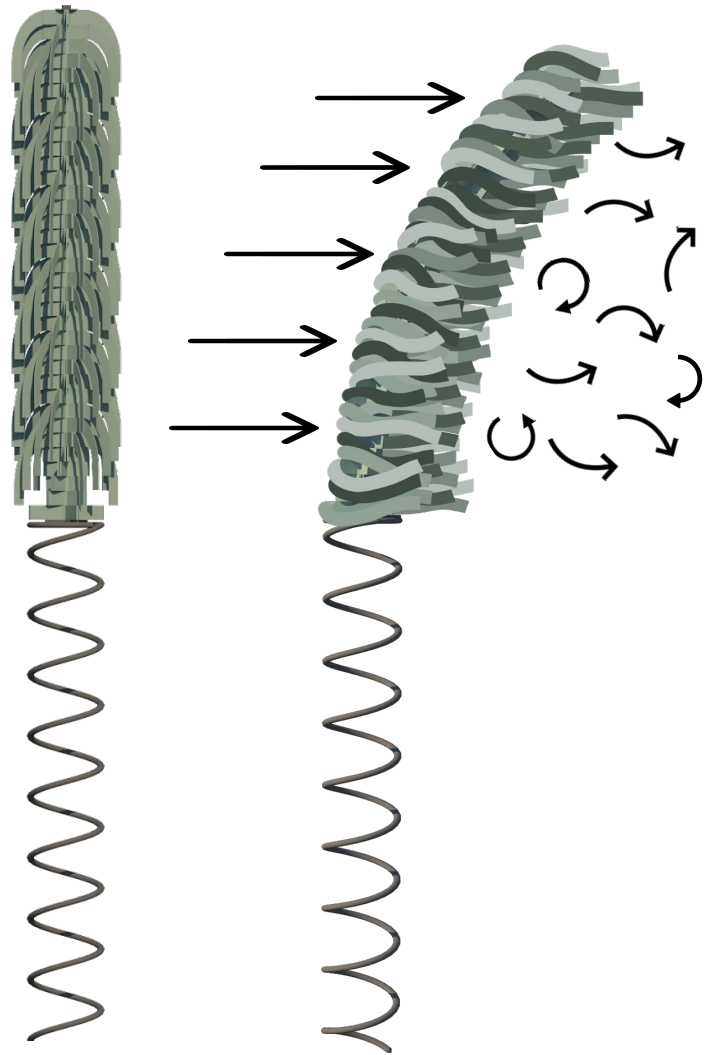
Coil Length: 34"

Coil Width: 4"

Overall Height: 66" + -

Fiber Materials: Natural Manilla Rope or Synthetic Fiber

Fiber Dimension, Color, Diameter: Varies



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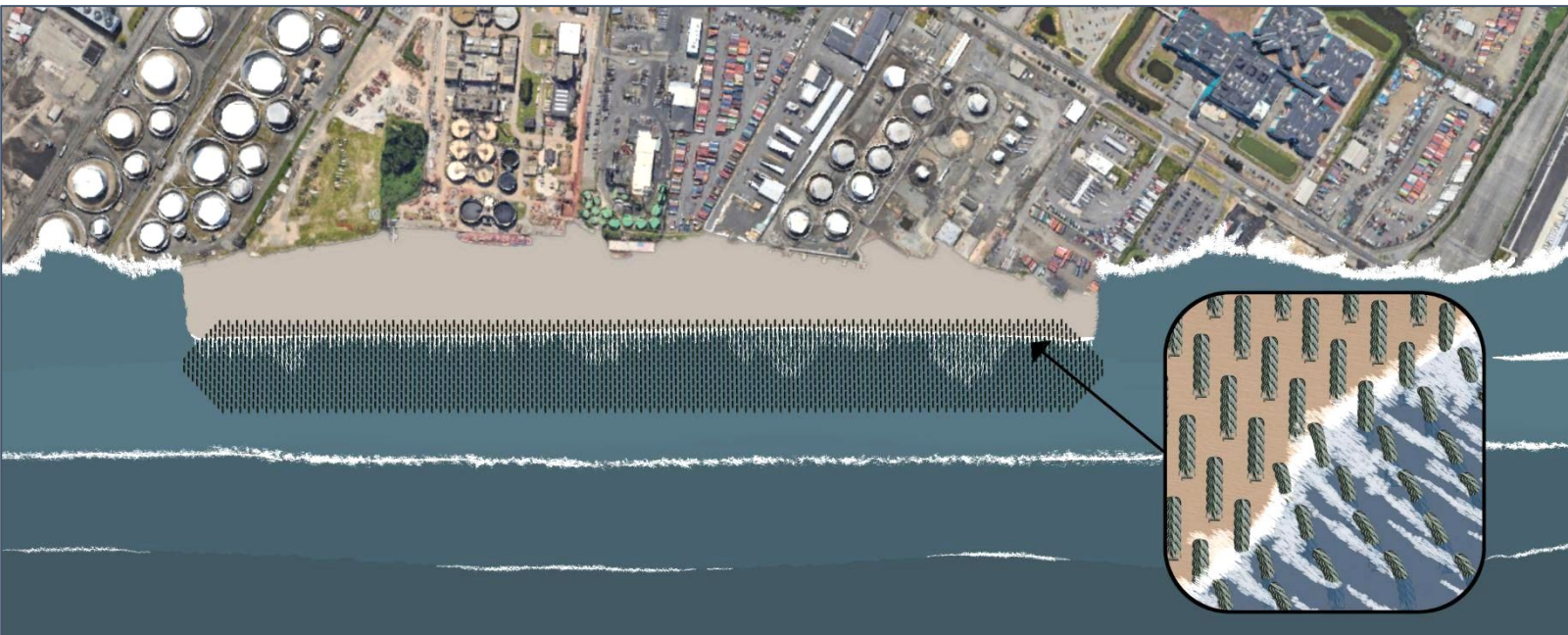
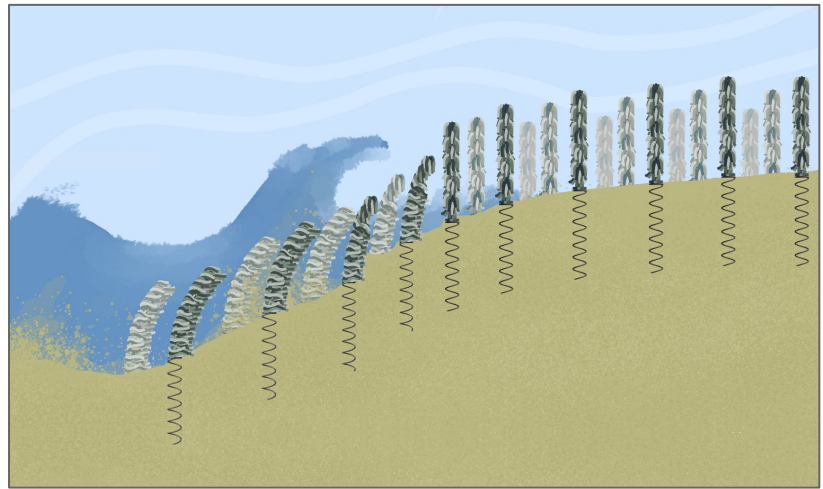
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ShoreGuard™

Descriptions

The unique ability to create an “Artificial Wetland” to protect coastal assets when, where and how long it is necessary is a coastal resilience breakthrough.

- 15 feet of marsh grasses can absorb up to 50% of storm surge.
- ShoreGuard replicates this superpower. Each individual unit absorbs a modest amount of wave energy, but acting together a ShoreGuard field behaves in the same manner as a healthy wetland.
- Devices can be deployed when called for or remain in place to guard sensitive areas.



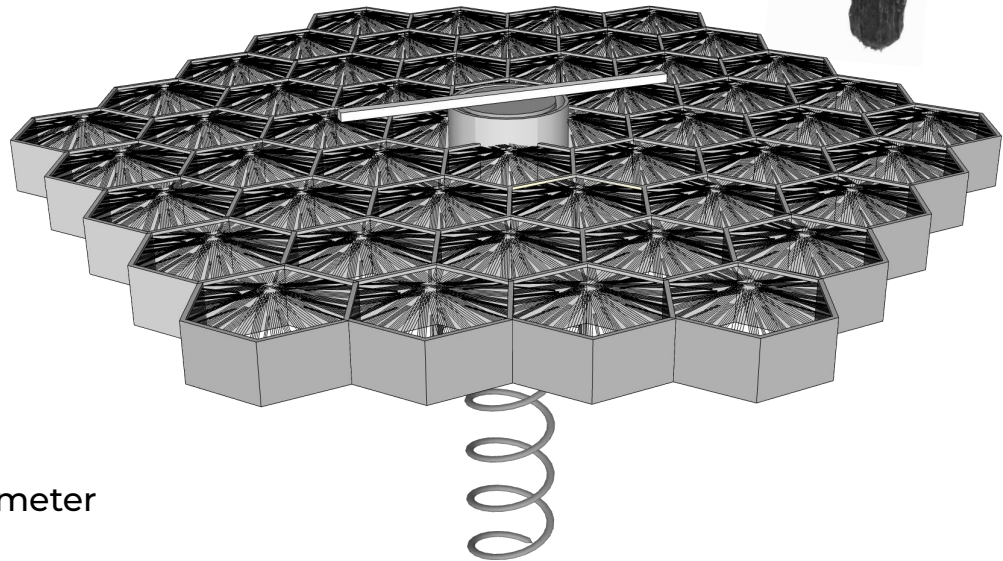
SeagrassGuard™

Specifications/Descriptions/Data Sheets

SeagrassGuard™ is engineered to shelter new seagrass plugs to increase meadow restoration success rates.

Seagrass meadows are being lost at accelerating rates. They form important habitat and contribute to the stability of fisheries and entire coastal systems.

- Hand-turned stainless steel coils easily secure the device frames onto the seafloor. Seagrass plugs are pushed through the cubbies and into the sediment. Brush-like bristles hold the plugs in place, preventing dislodging. Roots are provided the stability and time necessary to take hold.
- The bristles also function as grazer obstacles, preventing overgrazing of the vulnerable plugs.
- Devices are lightweight, easy to transport and deploy. They are designed to be removed after plugs root systems have stabilized, and used again for new projects.



Data:

Frame Materials: Degradable plant starch PLA

Frame Dimensions: 24" x 24"

Frame Color: Clear

Frame Wall Thickness: 1/8"

Coil Material: Stainless Steel

Coil Wire Thickness: 5/16" diameter

Coil Length: 16"

Coil Width: 3"



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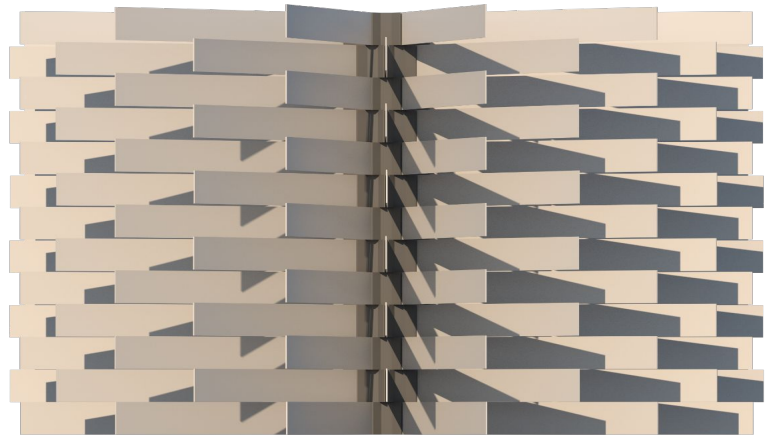
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Structural Scour Mitigation

Specifications/Descriptions/Data Sheet

Flexible Structural Scour Attenuation

- 60% of catastrophic collapse of causeways and bridges is due to hydrodynamic scour erosion undermining footings and support structures.
- Current attenuation products and methods only reduce structural scour by up to 40%.
- CTC Structural Scour Technology is engineered to mitigate scouring of bridge foundations, fluvial or marine structural footings, turbine and drilling platforms, etc. by the application of soft absorption of hydrodynamic energy and chaotic disruption of water flow.



Data:

Diameter: Project specific

Height: Project specific

Specifications Fin Materials:

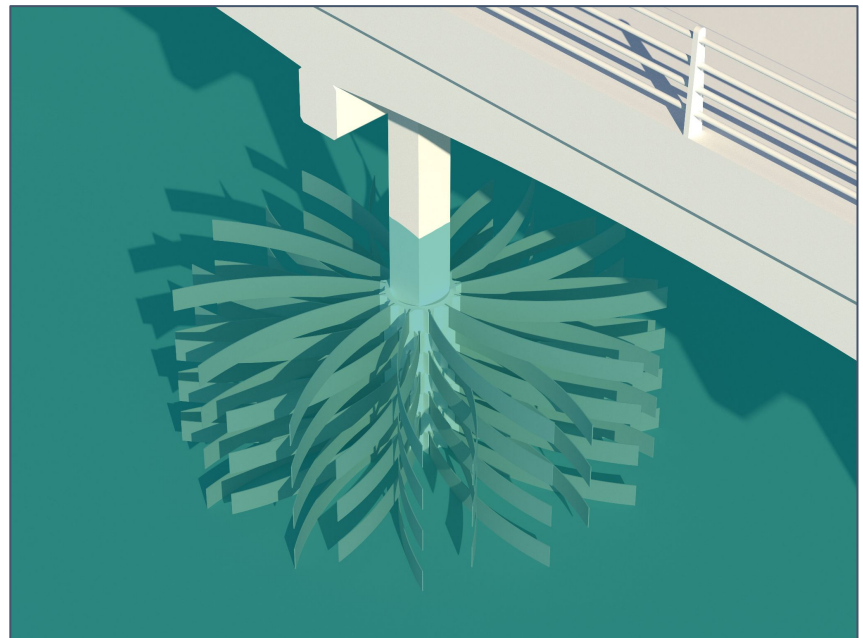
Silicon or similar flexible resin

Fin Dimensions: Variable

Fin Wall Thickness: Variable

Width: Variable

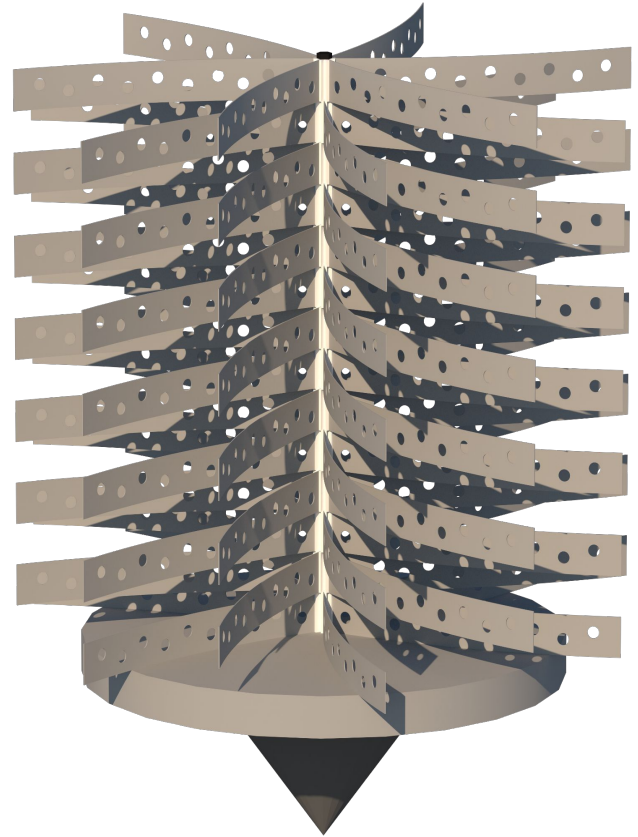
Weight: Variable



Soft, absorbent protrusions flex to absorb and attenuate hydrodynamic scouring forces.

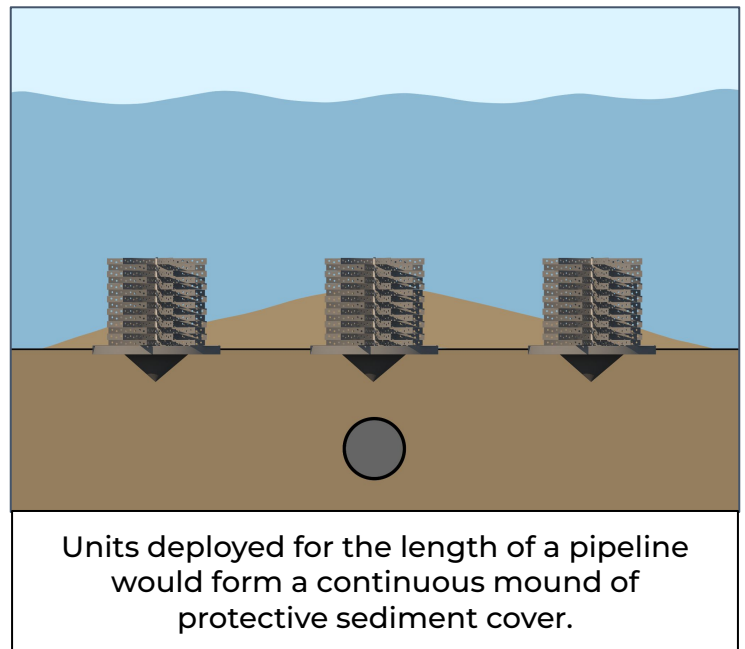
Pipeline & Cable Seabed Scour Control Specifications/Descriptions/Data Sheet

- It is vital that pipelines & cables remain beneath the seabed at set depths.
- **Hydrodynamic Scouring** can uncover and expose cables which leaves them vulnerable to unintentional damage, sabotage and catastrophic failure.
- A single ruptured pipeline can cost hundreds of millions of dollars in repair, remediation and fines, while causing extensive environmental damage.
- These devices passively embed to mitigate scour, unearthing and rupturing of conduits.



Data:

Overall Diameter: 30" (variable)
Overall Height: 24" (variable)
Individual Fin Dimensions: Variable
Fin Wall Thickness: Variable
Base Material: Concrete
Base Width: 36" (variable)
Weight: 500lbs (variable)



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Sediment Transport Control

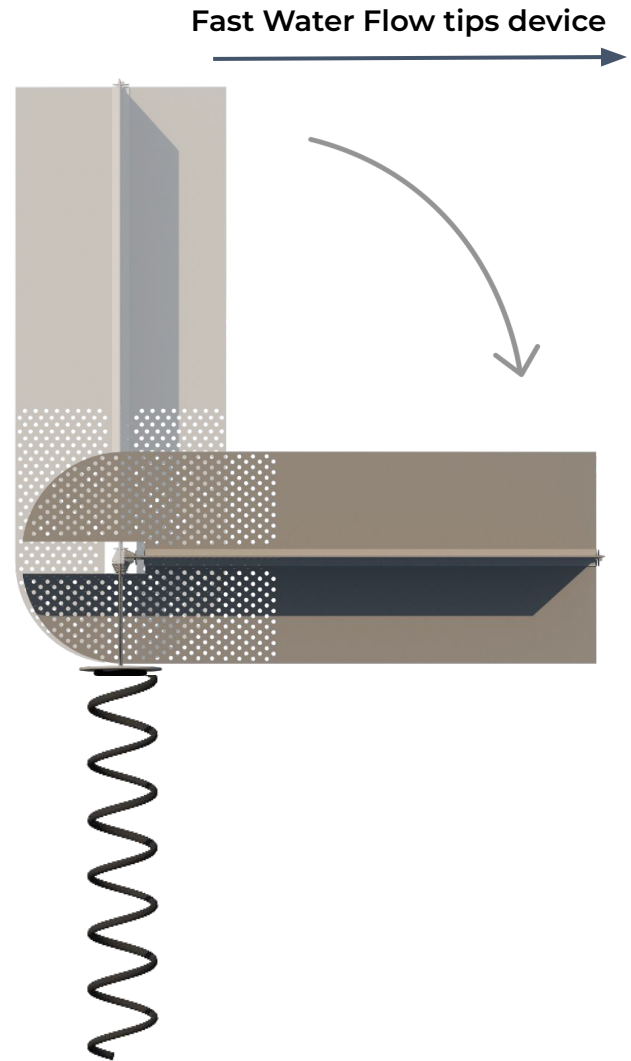
Specifications/Descriptions/Data Sheet

Control of Sediment Transport is a global priority.

- Dredging to keep harbors & shipping lanes clear is expensive and ceaseless.
- Improving efficiency of Sediment Diversion projects would save billions in costs and time.

CTC Sediment Control Technologies are engineered to passively address these needs.

- A field of devices would accumulate sediments during slow-current flow rates, and tip over to release these accumulated sediments during fast-current flow rates.
- This can trap sediment upcurrent from where it is undesired, and released it when currents are fast enough to sweep these sediments past areas desired to remain clear.
- This technology would vastly improve sediment load efficiencies in sediment diversion works, and can be quantified for inclusion into modeling.



Data:

Diameter: Project specific

Height: Project specific

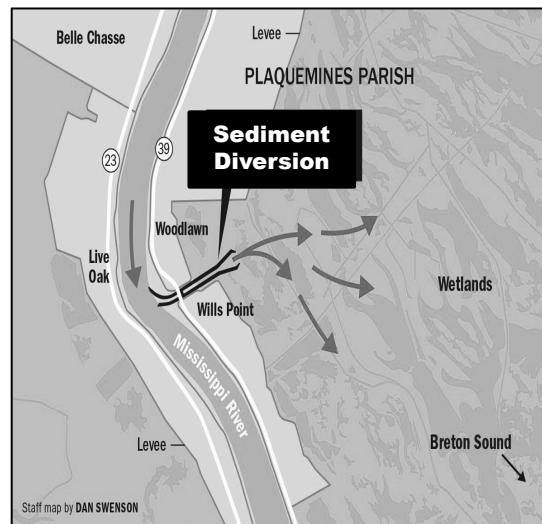
Fin Dimensions: Variable

Fin Wall Thickness: Variable

Coil Material: Stainless Steel

Width: Variable

Weight: Variable



Sediment Diversions direct sediments accrued at natural point bars into floodgates when water flow is high & fast enough to re-suspend these sediments.

CTC's technology would allow point bars to be selectively formed where better suited, or closer to the flood basin saving billions in costs.



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Thank you for your interest in Coastal Technologies Corp's products and technologies.

We are available to discuss research pilots, collaborations, sales and partnerships and to provide additional information regarding the systems proven efficacy and potential applications.

Coastal Technologies Corp.

247 Nassau Ave

Manhasset.NY 11030

Contact: Nicholas Thatos

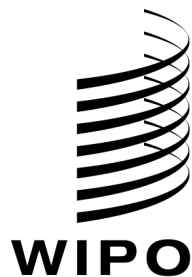
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LinkedIn: <https://www.linkedin.com/company/coastal-technologies-corp/>

Website: <https://coastalprotectiontechnologies.com/>



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