+ Shoreline Protection
+ Slope Stabilization
+ Retaining Walls
+ Erosion Control

Photo Credits: Dixon Shoreline Landscaping
Ecologically engineered, the Envirolok vegetated system provides permanent erosion control.

Envirolok immediately stabilizes erosive soils in both dry land and in-water sites.

Envirolok’s patented soil bag technology provides a permanent vegetated solution by combining the engineered strength of soil, reinforcing materials and ecological principals.
Replacing traditional hard armor methods of shoreland protection, Envirolok provides a vegetated solution that renews itself year after year.

**Patented**

**SEE IT PERFORM**

Pleasing aesthetics in a permanent solution. Envirolok’s soft armor solution with hard armor applicabilities is a revolutionary advancement in shoreland protection.
Envirolok's patented system provides support over soft, saturated streambeds and shoreline environments while allowing construction to follow existing contours.

Envirolok supplies a permanent vegetated solution to persistent shoreline erosion which contributes to the bioaccumulation of sediment in our lakes and rivers.

Envirolok’s weaving technique provides added strength to the modular bioengineered system
Planted with native vegetation, Envirolok provides structural root support that allows establishment of habitat along sensitive environmental corridors.

Envirolok effortlessly conforms to natural contours.
Stormwater management historically focuses on the collection of stormwater in pipes or concrete channels to transport it off site as quickly as possible. This contributes to downstream flooding, streambank erosion, increased turbidity, habitat destruction, sewer overflows, infrastructure damage and contaminated lakes, rivers and coastal waters.

Low Impact Development (LID) and Green Infrastructure utilize methods and technologies to better manage stormwater through the use of vegetation and soil, preferring to keep rainwater where it falls. Envirolok incorporates ecological principles in the construction environment.
+ Emergency repairs are a quick fix with Envirolok's onsite adaptability

+ Fits with any culvert without use of forms or specialized tools

+ Encapsulate soil in washout areas with Envirolok
“Discontent is the first necessity for progress” - Thomas Edison
Envirolok is dedicated to sustainability through the preservation of shorelines, streambanks, stormwater passages, and landscapes.

Don’t settle for the status quo.

- **STORMWATER**
  Decrease stormwater volume through infiltration and increase its quality with native vegetation planted in the Envirolok system. Help keep our lakes, streams and rivers clean for generations to come.

- **SLOPE RETENTION**
  Restore and strengthen slopes damaged in storm events with Envirolok. Absorb rain drop impact and surface run-off velocity to prevent further erosion. For difficult access sites try Envirolok with earth anchors.

- **BRUSH LAYERING**
  Increase vegetative cover and improve resident habitat communities with commonly found woody species such as dogwood and willow. Consult locally for preferred planting times and species selections.
Eroding shorelines are often stabilized with hard armor, such as riprap, concrete bulkheads, treated timber, and seawalls. Ironically, these structures increase the erosion rate by reflecting wave energy to adjacent properties. Hardened structures provide little habitat and keep the shoreline from carrying out its natural processes.

Envirolok’s living shorelines utilize native seed and plants, soil encapsulation and engineering methods when necessary to naturally enhance the shoreline. Envirolok protects the riparian environment, filters runoff and creates habitat.

Envirolok restores your shoreline to its original condition, while stabilizing soil, promoting drainage and providing sustainable erosion control.

Diverse native vegetation grown into the Envirolok system creates a buffer zone, mitigating effects of lakeshore development and increasing water quality in our lakes, rivers and wetlands.

Envirolok protects your property while preserving an attractive natural appearance.

Envirolok’s living shorelines use natural shoreline ecosystems to absorb wave energy reducing erosion on adjacent properties.
+ Use Envirolok for Mechanically Reinforced Slopes (MSE) or Reinforced Soil Slopes (RSS)

+ Native plant roots reinforce soil by growing across failure planes and limiting surface erosion

+ Envirolok allows for soil stabilization in hard to access areas

+ Envirolok minimizes soil disturbance in sensitive areas through various methods of anchoring

+ Create landscape designs with ease
Once established, native plants do not need fertilizers, herbicides, pesticides or watering, thus benefiting the environment and reducing maintenance costs. A diverse mix of sedges, grasses, wildflowers and live stakes creates sustainable vegetation when combined with the Envirolok system. Native species in shoreline transitional zones allow for ecological restoration of habitat for game fish, amphibious life, birds, butterflies, and other animals.

**Preferred Planting Program:**
Envirolok recommends planting three plants per unit. Plants may be herbaceous or woody species. Speak with a professional consultant with intimate knowledge of the local environment regarding appropriate species for your project.

**Envirolok encapsulation of engineered soil is designed to support vegetation**

Hydroseeding or hand seeding over the top of the plantings is recommended. Use a complimentary seed mixture to match plantings, sun exposure and local habitat. A cover crop, erosion control blanket and hydration may also be necessary for successful vegetation establishment.

PermaMatrix, a biotic soil amendment, is recommended when seeding. PermaMatrix is a blend of pure organics and recycled materials for use in all native plant communities to improve plant health without the fear of contaminating waterways.
Standard Construction

You’ll find commonality between Envirolok’s construction methods and traditional retaining wall construction. Envirolok is built in a common or American bond pattern, staggering the units above and below. A unique, open-face connection pin is used to bond the courses together horizontally. This provides shear strength and allows deep root development to occur without disruption.

Envirolok slopes can be built from a 0:1 to 1/5:1 (V:H) slope, meaning Envirolok can accommodate almost any unstable slope. A single Envirolok unit contains 2 connection pins and 1 Envirolok bag. When filled with 1.25 cu. ft. of material a single Envirolok unit will provide 1 sq. ft. of face.

Advanced Construction

For use on unstable slopes Envirolok is constructed using a variety of techniques. Common methods include geogrid stabilization, earth anchoring and a weaving method that is exclusive to the Envirolok vegetated system. Seek assistance from a licensed professional engineer for walls exceeding 4’ in height.

Envirolok’s patented modular system and encapsulated structural soils allows for near vertical construction that can be contoured to the existing non-load bearing soils, unlike hard armor.
1. **Filling and Closing Envirolok Bags**

Fill the Envirolok bags with an engineered soil using an Envirolok Bag Filler. The soil properties should consist of 60% sand, 20% high grade compost and 20% top soil. The engineered soil may change to meet the specific project needs. Excavated material may be used to backfill during construction. Clay and silt are not appropriate fill material. All bags should be filled consistently and will be closed with a UV resistant zip tie. Bags may also be sewn or closed using hog-rings.

2. **Preparation**

Dig a trench no less than 3" deep, 16" wide for the length of the structure. Embedment depth will be specific to the project. Compact bottom of foundation using hand tamper or vibratory plate compactor. This trench serves as toe stabilization and will protect the structure from undermining. Larger structures will require engineering.

3. **Placing Bags**

The foundation course will begin with placing spikes in the excavated trench at the desired location of the first row. Place filled bags next to each other, seam side in, horizontally, the full length of the structure. The “snorkel” of the bag will land on top of the previously placed bag.

4. **Placing Additional Bag Courses**

After laying one entire course of bags, compact the soil ensuring a solid and uniform structure.

Insert two spikes in the top of each bag evenly spaced. The spike placement will vary with the slope of the structure and should be placed in the center of the bag contact area between courses.

These installation steps are for general guidance only. It is the responsibility of the project owner to ensure the application of Envirolok into the overall project through a design specification. The specification should include factors which affect the overall integrity of the retaining wall such as location, interaction with other project components, and engineering aspects including but not limited to global slope stability, site soil bearing capacity, presence of underground or surface water, etc.
5. **Backfilling and Compacting the Structure**

Backfill and compacting after each course ensures strength and stability of the system. Backfill should be compacted to the specifications of the wall design. Backfill must support vegetation and be free draining.

6. **Geogrid Placement**

Structures that require geogrid reinforcement will be specified by an engineer. After compaction, geogrid placement will begin at the front of the bag course and will go towards the existing material. Place spikes on top of the geogrid and continue placing bag course. Geogrid should be pulled tight prior to backfill. Continue with course compaction.

*Some structures may require additional strength using Envirolok’s geo-grid weaving technique; for installation instructions please refer to engineer’s drawings or contact an Envirolok distributor near you.

7. **Top Row**

Install the top row of the structure the same way the other courses have been placed. Tuck the “snorkel” under to give a finished look to the last course. If specified, the top row may need to be anchored into the existing landscape.

8. **Vegetation Establishment**

Once the wall is completed, vegetation is the final step. Native vegetation is recommended because of its adept root structures that will bind the wall together forming a monolithic structure that will renew itself year after year. Using vegetation suitable for your local climate is necessary for a successful project. You may build the wall and place live plants in the courses as you build the structure. Live plant material should always be placed in between the courses. Cutting the bags open and planting into this cavity is NOT recommended. It is recommended that a combination of live plants and seed are used to ensure proper vegetation.

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Envirolok Product Warranty
Envirolok LLC guarantees all materials and workmanship of the individual components to be free of manufacturer defects. The guarantee excludes vandalism, improper use, corrosion caused by chemicals and acts of God. Any claim under this warranty must be filed within the timeframe of original invoice date and must be accompanied by the original invoice or invoice number. Envirolok does not imply or express any other warranties associated with its products.

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Before

After