

## ABOUT ENVIROLOK

Envirolok started as a manufacturer of geobag systems, utilizing the industry standard. Over the last 20 years, we have continued to perfect and lead these standards through proactive testing and collaboration with our clients and engineering industry partners. We have a strong connection to our collaborators, including our sister company, Agrecol Native Plant Nursery. We continue to work with experts in soils and horticulture to ensure vegetative success without compromising strength and durability. Envirolok is a family owned company, built on the principals of small business, and manufactures all components in North America.



## PRODUCT CAPABILITIES

Envirolok is a fully-engineered geo-bag system and is designed for structural reinforcement applications where permanent vegetative solutions are desired. Envirolok can be applied in a slope application, as a means of permanent erosion control and stabilization or in mattress application where encapsulation and vegetative growth is desired.

**PROJECT FLEXIBILITY** Envirolok is flexible for a variety of project scales, ranging from small vegetated walls to large scale riverbank restorations and roadway embankments, including **Lake Wisconsin (50' HT)** and **Glenorchy Trail, ON** (2016 Public Works Award Winner).

## ENVIROLOK APPLICATIONS

Envirolok has been successfully integrated on structural projects for a variety of private and regulatory projects throughout North America and Europe, including;

**ROADWAY EMBANKMENTS | SLOPE STABILIZATION | SHORELINE PROTECTION  
STREAM/STORMWATER CHANNELS | VEGETATED RETAINING WALLS  
STREAMS/RIVERBANK RESTORATION | CULVERT ENDWALLS | AND MORE!**

Check out Envirolok's Case Study Library for more details on our project history.

## RECOMMENDED SLOPE ANGLES

- 2V:1H or Less for Best Vegetation Results (without additional inputs)
- **Note:** For Slopes greater than 2V:1H
  1. Use dry loving plant species under 2' tall – such as sedum, sedges, and grasses.
  2. Alter Bag fill mix for higher moisture retention or consider irrigation.
  3. Typically requires more reinforcement.

### Slope Applications:

2H:1V up to Near Vertical (85°)

### Mattress Applications

<3H:1V

## ENVIROLOK COMPONENTS

(1) Tan Bag (2) Connection Spikes (1) UV-Resistant Closure Tie

### TAN IS THE NEW GREEN

#### BAGS



- Non biodegradable & UV resistant
- Bags have a proven track record of vegetation success with various vegetation applications methods.
- The tan color helps the bags stay cooler and retain moisture, creating ideal conditions for plant growth.
- Envirolok does not use recycled material content, as they include fillers that breakdown and result in leaching.

#### Envirolok Bag Specs

<b>Height</b>	5.5in	14cm
<b>Length</b>	26in	66cm
<b>Width</b>	15in	38cm
<b>Face Area</b>	1 SF / Bag	0.092 m <sup>2</sup>
<b>Mattress Area</b>	2.7 SF / Bag	0.25 m <sup>2</sup>
<b>Max Velocity</b>	6m per second	

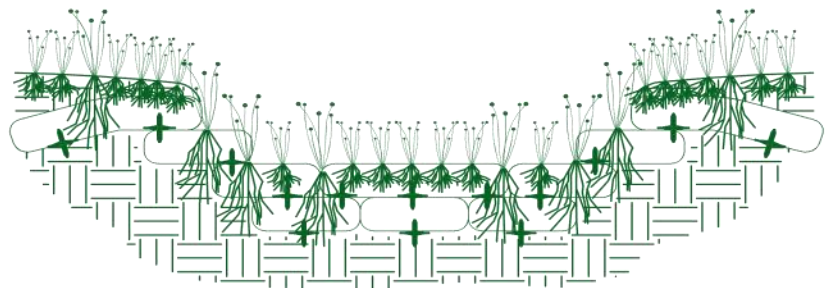
#### CONNECTION SPIKES

- Envirolok started with plate connectors, the industry standard.
- Through testing, project follow-up and client communication, we evolved to the open washer spike system (2/Bag). Here's why...
  1. Plates connect at the edges of the bags. This area is harder for contractors to keep level and even, resulting in incomplete bag connection.
  2. Plates impede root growth. As roots grow and make contact with the plates, the roots can shift the plate causing them to lose full connection.
  3. Testing and onsite experience have shown that connection spikes with an open washer design provide strong stability while not impeding root growth.
  4. Quick and easy to install. Spikes offer superior connection between bags and with reinforcement systems, such as geogrid and anchors.



#### Envirolok Spikes (2)

<b>Height</b>	4in	10cm
<b>Width</b>	4in	10cm
<b>Shear Strength</b>	336 lbs per sf	



## BAG FILL

- Envirolok has a tested and proven soil specification.
- The recommended bag-fill material allows:
  1. Flexibility based on site conditions and locally available soils.
  2. Better vegetative results for higher walls, more vertical applications, dry/hot sites and adjustments based on nutrients in the soils.

See [Bag-Fill Specifications](#) for more details.

Bag-Fill	1.25cf	0.30m <sup>3</sup>
Filled Weight	80-90lbs	36-40kg

**SOIL = VEGETATION**  
**SAND = STRENGTH**



## DESIGN & SUPPORT

We work collaboratively with our clients every step of the way to ensure you have the right tools and training. Our design / engineering team offers a full suite of tools & resources for every project stage, from project budget & engineering, to installation and maintenance. All at no cost.

- Feasibility & Cost Projections
- Project Design Software
- Preliminary and Final Engineering
- Install (Virtual & Onsite) Support
- Maintenance Guidance

- Testing range begins at 60% granular sand and 40% topsoil.
- The use of compost must be approved by an engineer and is typically no more than 10% max on slopes less than 48" tall or applications of 1:1 or less.
- The bag size and fill were specifically chosen so there is less wear and tear on laborers, installation is quicker, and it's easier to consistently shape the bags.
- Bag size is similar to competitor systems, however, Envirolok recommends filling with 1.25 cf to keep bags at a manageable weight and it makes it easy to work with and shape.
- While not ALL project specifications require bag-fill testing, Envirolok recommends that engineers and contractors complete random bag medium analysis for each project.

## INSTALLATION TIPS

### BAG ORIENTATION

- We recommend turning the bags perpendicular in the first course. This will result in 1.5x the number of bags in the first course, however, you make up for those extra bags quickly by...
  1. Creating an easier base to build from, reducing the installation time of the remaining bag courses.
  2. Creating a stronger tie-in, resulting in reduced need or elimination of geogrid or anchors, which is critical with limited excavation and reduces additional site work.
- Bags should be installed seam out for hydroseed applications. The seam or lip works great for catching and holding seed, allowing better germination along the vertical surface of the bag. Based on stitching, thread strength and UV-Resistance, there is no compromise in bag strength or durability concern.



**INSTALLATION TIPS**  
**BACKFILL & REINFORCEMENT**

**Backfill:**

- Backfill behind the bags should be a minimum of 15% fines (sand).
- Using open graded gravel reduces water flow to plant roots and creates air pockets that will root prune and kill plant roots.

**Reinforcement Techniques:** Envirolok is designed for compatibility with a variety of reinforcement systems techniques to meet any project needs:

- **Gravity Walls** (Ideal for slopes <48")
- **Tie Back** (Ideal for slopes <72")
- **Cinch & Twine** (Ideal reinforcement for >48" where excavation is not permitted)
- **Geogrid Layering** (Waterway reinforcement, placement on stone toes, walls, etc.)
- **Geogrid Wrap** (Ideal for excavated sites)
- **Earth & Rock Anchors** (Ideal for site where excavation is limited or trees/structures need to remain)



## VEGETATION RECOMMENDATIONS

With vegetation experts on staff, we help provide application recommendations for ease and success.

Here are just a few quick tips:

### LIVE PLANTINGS

- 2-3 plants per bag.
- Can be installed during or after installation.
- Plants are placed **between** the bags not inserted into the bags. Here's why we no longer recommend cutting bags to inserting plants...
  1. Cutting the bag creates opportunity for water to wash away or siphon away bag-fill.
  2. Improper cuts can result in continued ripping or tears.
  3. If a plant dies it results in a permanent hole in the bag.

### HYDROSEEDING

- Very cost-effective.
- Maximizes species diversity.
- Proper seed count, species and tackifier should be considered.

### SOD | SEDUM MATS

- Perfect for dry locations.
- Low profiles, perfect for more vertical walls.
- Low to no maintenance.
- Easy installation.
- Full vegetation upon installation.