



INSTALLATION GUIDELINE

# PROPEX Scourlok



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# 1. INTRODUCTION

Thank you for purchasing **PROPEX**® Scourlok® by Solmax. This document provides installation and maintenance guidelines for **PROPEX** Scourlok used as an engineered bank stabilization system. **PROPEX** Scourlok provides a durable, geotechnically stable structure that provides immediate erosion protection and long-term performance. It is constructed of rigid cells armored with **PROPEX** Pyramat® 75 High Performance Turf Reinforcement Mat (HPTRM) and internally lined with **MIRAFI**® nonwoven geotextile. The HPTRM is fastened to the rigid cells to provide a flexible exterior, control erosion, and improve system durability. It forms pockets that can be filled with mulch or other media to promote and sustain vegetation. The durable geotextile lining allows the rigid cell to be filled with earth, sand, gravel, crushed rock and other granular material.


**PROPEX** Scourlok is an engineered solution with a unique design for each specific project. While Solmax has made every effort to ensure general validity, this information should not be used for a specific application without independent professional examination and verification of its suitability, applicability, and accuracy. The information provided herein is for general information only and is intended to present installation guidance. Project specific contract documents take precedence when details are different than what is represented in this document. Depending upon the critical nature of the structure to be armored, work restrictions may be in place such as limiting work based on growing seasons, weather patterns, etc. Work should be performed under the provisions set forth for the specific project. Solmax engineering services is available for support during installation to consult for solving constructability issues encountered in specific applications. Please feel free to contact our engineering services team at [smatch@solmax.com](mailto:smatch@solmax.com).

# 2. BEFORE INSTALLATION

## 1. Coordinate with a Solmax representative:

A pre-construction meeting is suggested with the construction team and a representative from Solmax. This meeting can be in person or virtual and should be scheduled with the contractor at least two weeks prior to installation when possible.

Scan the QR code to watch the installation videos for **PROPEX** Scourlok.



**2. PROPEX Scourlok Description:** **PROPEX** Scourlok is composed of rigid galvanized steel welded wire panels that are connected into 4 sided baskets with helical coils, allowing the individual cells to articulate. Each cell is internally lined with nonwoven geotextile panels fit to size that are fastened in place with stainless steel staples. One unit consists of 5 cells that are 4 ft high x 3 ft wide x 3 ft deep (1.2 m x 0.9 m x 0.9 m). These cells each share an internal cell wall, creating a 15 ft (4.6 m) long collapsible and flexible unit.

The 15 ft (4.6 m) long unit is externally lined with a woven **PROPEX** Pyramat 75 HPTRM, fastened to the basket with stainless steel staples and hog rings along each cell face's side and bottom perimeter. This creates a pocket between the basket and the HPTRM that can be filled from the top with organic media to promote vegetation. Once filled, the upper section of HPTRM can be pulled over the top of the **PROPEX** Scourlok unit, covering and containing the infill material.



- 1 Wire basket
- 2 MIRAFI nonwoven geotextile
- 3 PROPEX Pyramat 75 HPTRM

3. Gather the tools needed: tools that you may need to install **PROPEX** Scourlok include the following:

- A pair of industrial shears to cut **PROPEX** Pyramat 75 and nonwoven geotextile
- Tape measure and level
- Hand operated or pneumatic hog ring gun
- 1.5 in, 11 gauge stainless steel hog rings
- Percussion hammer sized appropriately for the anchors
- JackJaw® setting tool to set and load-lock the anchor
- Wire cutters to cut the anchor cable tendon
- Bolt cutters to modify the **PROPEX** Scourlok unit if needed
- Equipment for soil placement and compaction
- Equipment for vegetation establishment

Available for purchase from Solmax are drive steel, JackJaw setting tools, wire cutters, and a gas powered anchor driver.



**4. Delivery of materials: PROPEX Scourlok** is palletized and shipped efficiently, with each pallet including twelve units and required joining pins. Joining pins are placed within the coils of each unit, inserted from the bottom and should be removed prior to use.

#### **5. Determine how to establish vegetation**

For vegetated applications, the method of vegetation establishment should be determined prior to the start of installation. Different vegetation establishment methods may require different installation timing and schedules.

### **3. INSTALLATION: GRADING AND SITE PREPARATION**

It is recommended during all stages of site preparation that disturbed soil remain unprotected for not more than a single day. Depending on project size this may require progressive site preparation during installation.

1. Excavate a level trench about 4 ft (1.2 m) wide below finished grade using an excavator with smooth bucket to reduce disturbance at the defined subgrade elevation. While the **PROPEX** Scourlok units are only 3 ft (0.9 m) wide, the additional 1 ft (0.3 m) of excavation will allow for ease of placement and alignment.
2. The depth of the excavation will depend on project specific embedment requirements, but a minimum **PROPEX** Scourlok embedment of 6 in. (15 cm) is suggested for most applications. However, for applications adjacent to flowing water, an increased embedment of 1-2 ft (0.3-0.6 m) may be needed to prevent undermining of the units.
3. The cut-slope excavation width shall not exceed the lines and grades shown on the plans, and care shall be taken to avoid encroachment near bordering properties.
4. If specified by the engineer, a perforated drainage pipe shall be installed at the back of the trench and connected to a prescribed outlet for draining groundwater.
5. Deleterious material (overly wet soil, uncontrolled loose fill, construction debris, organics, etc.) encountered during this excavation shall be over-excavated, removed, and replaced with compacted granular soil or approved backfill soil. Compact the subgrade as specified by the engineer.
6. Granular soil is defined as:
  - A. Classified as GM, GW, SM, SW, GW-GM, SW-SM referencing the Unified Soil Classification System (USCS).
  - B. Contains maximum particle size of 1.5 in (3.8 cm) and less than 12 percent fines passing no. 200 sieve (0.074 mm).

- C. Inert earth material with less than 3 percent organics or other deleterious substances (wood, metal, plastic, waste, etc.); or,
- D. Meets the untreated base grading requirements for 1.5 in (3.8 cm) maximum nominal size crushed aggregate per typical state construction standards.

7. Rounded gravel (e.g. pea gravel) is not acceptable as the base/leveling course.



- 8. For projects that require foundation improvement prior to placement of **PROPEX** Scourlok, line the excavated trench with **MIRAFI** nonwoven geotextile. Place and compact a 6 in (15 cm) thick foundation of granular soil on top of the nonwoven geotextile as specified by the engineer. Smooth the surface of the compacted soil to provide a level pad needed for the first unit.

## 4. PROPEX SCOURLOK ALIGNMENT AND CONNECTIONS

1. Install **PROPEX** Scourlok at elevation and alignment indicated. To follow the alignment needed, multiple units will likely need to be connected at the end of the units and curves incorporated throughout the project.
2. To connect **PROPEX** Scourlok units together, place the unit ends adjacent to each other and overlap the corner coils on each corner. Insert the joining pin through the overlapped coils on each corner, making sure that it is fully inserted.
3. When joining facing units, the HPTRM is to be spliced together. Shingle the exterior 75 HPTRM in the direction of flow and trim excess material in order to maintain a 6 in (15 cm) overlap. Using 1.5 in, 11 gauge stainless steel hog rings, secure the overlap to the rigid cell, leaving a minimum of 3 in (7.5 cm) beyond the hog rings.
4. If a second base **PROPEX** Scourlok unit is required, make sure to connect the front face unit to the back base unit by inserting a joining pin through the overlapped coils of at least 2 interior connections per unit.



5. Note that the joining and alignment of units must be completed prior to the placement of any fill within or behind the cells.
6. Starting with the lowest portion of the alignment, place the first unit onto the foundation layer and expand into place. At the end of this lowest section of the alignment, terminate the **PROPEX** Scourlok by turning the unit into the slope so that at minimum one cell is fully embedded.

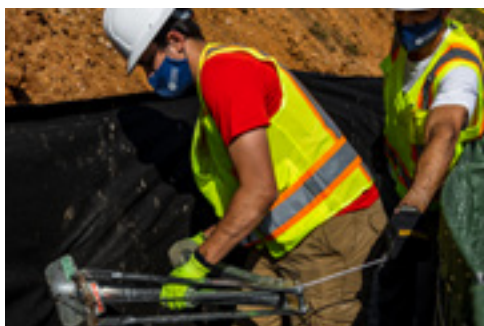
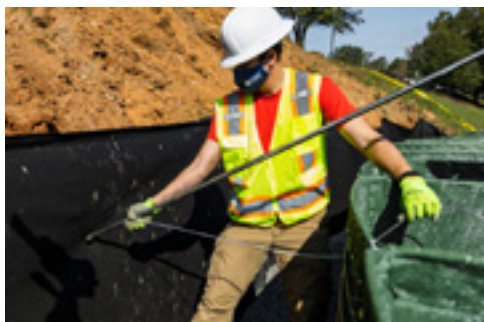
7. Gradual curves can be created due to the flexibility of **PROPEX** Scourlok. Curving is done during setup and all curved units must be set out and joined before filling. With the natural flexibility of **PROPEX** Scourlok, a curve with a 30 ft (9.1 m) radius can be created without physically modifying the units. Care should be taken to ensure the units remain square when working around curves. Tighter concave or convex curves can be achieved.
8. Convex curves are formed by removing a single rear facing panels and creating a triangular unit.
  - A. Begin the process by removing the spirals on each side of the panel and cut along the geotextile inside the unit, just under the row of staples.
  - B. Remove the rigid cell panel and reapply the spirals at each corner to secure the internal panels.
  - C. Overlap the corner spirals and insert the joining pins in order to complete the triangular cell.

9. Concave curves are formed by removing a single front facing panel and creating a triangular unit.
  - A. Begin the process by cutting the exterior HPTRM down the middle of the cell to expose the rigid cell panel and geotextile lining.
  - B. Remove the spirals on each side of the panel and cut along the geotextile inside the unit, just under the row of staples.
  - C. Remove the rigid cell panel and reapply the spirals at each corner to secure the internal panels.
  - D. Overlap the corner spirals and insert the joining pins in order to complete the triangular cell.
  - E. Shingle the exterior HPTRM in the direction of flow and trim excess material in order to maintain a 6 in (15 cm) overlap.
  - F. Using 1.5 in, 11 gauge stainless steel hog rings, secure the overlap to the rigid cell, leaving a minimum of 3 in (7.5 cm) beyond the hog rings.



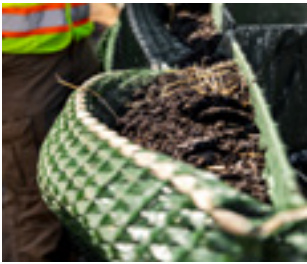
10. **PROPEX** Scourlok may be modified to conform to obstructions, such as pipe penetrations, by using 14 in bolt cutters to cut the rigid wire cells as needed to field fit to the obstruction. The nonwoven geotextile inside of **PROPEX** Scourlok may need to be altered with a pair of industrial shears to conform to the obstruction as well.

## 5. ANCHORING



1. If required, Engineered Earth Anchors™ can be utilized with the **PROPEX** Scourlok system to provide additional resistance to lateral movement.
2. With the unit set in place and expanded, prior to filling of the cells mark the location of anchors on the slope behind the units.
3. Anchor locations should align with the intermediate dividing walls of the unit. Do not place anchors in the middle of rear facing panels.
4. With units aligned per design, cut a hole in the interior geotextile liner near the intermediate dividing wall to insert the anchor head from the within the unit, through the geotextile, and towards the backside of the unit.
5. Drive anchor near horizontal into rear excavation at the marked locations. Remove anchor drive rod and set anchor with the JackJaw Setting Tool. Place the anchor tendon into the grips of the JackJaw and load lock anchor.
6. Once the anchor is set, slide the anchor load bearing plate tight against the inside of the **PROPEX** Scourlok unit.

## 6. FILLING AND VEGETATION ESTABLISHMENT



1. To fill the **PROPEX** Scourlok units, place a 6 in (15 cm) lift of fill material approved by the engineer within the units. Check and adjust the alignment of the units and ensure a level placement. If joining the units together in series, do not fill the end cell prior to joining units.
2. Place the remaining fill within the **PROPEX** Scourlok in lifts no more than 1 ft (0.3 m) thick. Filling should progress one lift at a time and continue down the length of the installation, ensuring that no cell ever contains more than 1 ft (0.3 m) of material more than its neighboring cell.
3. When normal water levels are present, face units should be filled with granular, self-consolidating material.
4. Fill the units, the vegetated pockets, and backfill behind the units simultaneously, in sequence to balance the earth pressures. For vegetation establishment on the face of the units, fill the pocket between the HPTRM and the cell with seed and topsoil.
5. Compact fill within the **PROPEX** Scourlok units with hand tamp or other equipment. Fill behind the unit should be compacted per the engineer of record.
6. To vegetate the top of the **PROPEX** Scourlok unit, place a minimum of 1 in (2 cm) of topsoil/seed mix on the top of the filled unit. If the unit is filled with granular material, a nonwoven geotextile may be needed to separate the topsoil from the granular fill.
7. Pull the remaining portion of the HPTRM tightly across the top of the filled unit. Fasten the HPTRM top cover to the back of the unit walls as well as the intermediate walls with stainless steel hog rings. Turn down excess HPTRM along the back side of the unit prior to placing fill behind unit.
8. If desired, additional seeding can be achieved post-construction by hydroseeding the completed **PROPEX** Scourlok.
9. Seed application rate, seed type, and irrigation rate should follow the landscape designer's recommendations based on local or site specific knowledge and time of year. For best results, consider having a site specific soil test performed to help determine what soil amendments, such as lime and fertilizer, need to be incorporated into the soil to promote healthy vegetation.
10. Irrigate as necessary to establish and maintain vegetation. Frequent, light irrigation may be needed if natural rain events have not occurred within two weeks of seeding.

## 7. STACKING AND OFFSETS

Various configurations of **PROPEX** Scourlok can be used to achieve various wall heights. When installing multiple layers, the alignment of each unit and the offset between layers should follow the project specific design considerations. In general, offsets between **PROPEX** Scourlok layers can range from 6 in. (15 cm) to 18 in (45 cm) but may vary depending on site specific constraints. When stacking units, be sure to complete backfilling and compaction behind the previous **PROPEX** Scourlok unit to ensure a level grade for placement of the following units.

## 8. TRANSITIONS



A critical component of the long-term performance of **PROPEX** Scourlok is how the material is terminated or transitioned to the adjacent structures or existing grade. When used along a stream or creek bank for toe erosion protection, **PROPEX** Scourlok should be sufficiently embedded into the channel bottom to resist bottom scour. Additionally, the system should be terminated at both the upstream and downstream end of the installation by turning the units into the bank. Typically, **PROPEX** Scourlok is turned into the bank and embedded 1 to 2 cells, or 3 to 6 ft (0.9 to 1.8 m), depending on the erosion potential of the adjacent unprotected areas.

It is also common to utilize alternative erosion control solutions on the slopes above the **PROPEX** Scourlok units. When using **PROPEX** Pyramat or **PROPEX** Armormax®, make sure to overlap the HPTRM onto the **PROPEX** Scourlok unit. The overlap of material should follow the standard end of roll overlap for **PROPEX** Pyramat or **PROPEX** Armormax, with a 6 in (15 cm) minimum overlap, 2 rows of securing pins on 1 ft (30 cm) centers, and Engineered Earth Anchors as specified by the engineer of record.



**PROPEX** Scourlok can be easily modified in the field to accommodate other adjacent structures, such as pipes, culverts, and foundations. By using bolt cutters and shears, the wire, nonwoven, and HPTRM can be cut or trimmed around smaller drainage pipes. Be sure to remove as little material as possible when modifying the units and to keep the cuts simple to avoid exposing the infill material to erosion.



When transitioning to concrete structures, place the **PROPEX** Scourlok unit as close to the concrete as possible prior to filling. If voids occur between **PROPEX** Scourlok and the structure after filling of the unit, consider filling the gap with concrete or flowable fill as needed.

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The company was founded in 1981, and has grown through the acquisition of GSE, TenCate Geosynthetics and Propex. It is now the largest geosynthetics company in the world, empowered by more than 2,000 talented people. Solmax is headquartered in the province of Quebec, Canada, with subsidiaries and operations across the globe.

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