



Wetland Sod Anchoring and Staking Guidelines

We are frequently asked by project engineers, landscape architects and installers about best practices for securing *Wetland Sod Mats* during installation. It is important to consider several factors or site conditions that could dislodge mats prior to plant establishment. Soils and hydrology are the primary considerations, and we outline here some factors to consider in determining installation techniques to increase chances of successful establishment.

- **Soils:** sandy or silty soils can be highly erosive compared to loams and clays with more cohesion; gravels generally provide more natural armoring
- **Hydrology:** sheer stress, hydrograph timing, watershed attributes (e.g. flashiness), and climate can all affect establishment
- **Shorelines:** in addition to the hydrology factors, fetch (as it relates to wave energy) is an important consideration
- **Unique circumstances:** tidally influenced systems, for example, require special attention, and care must be given so that mats are not lifted off the surface with each tide.

Ultimately, the plants contained in the *Wetland Sod Mats* will bind soils to create bank cohesion, prevent erosion, and stabilize the site. In most cases, it will take an entire growing season to achieve that level of root establishment; although gradual levels of stability are achieved as rooting progresses. The first 4 – 6 weeks are critical for maintaining root-to-soil contact. Effective installation will increase chances of success and reduce time for establishment. North Fork Native Plants has developed the following typical anchoring guidelines for installing *Wetland Sod Mats*. Please realize that every application is unique, however, and some may require additional design details.

Low Potential Energy Sites

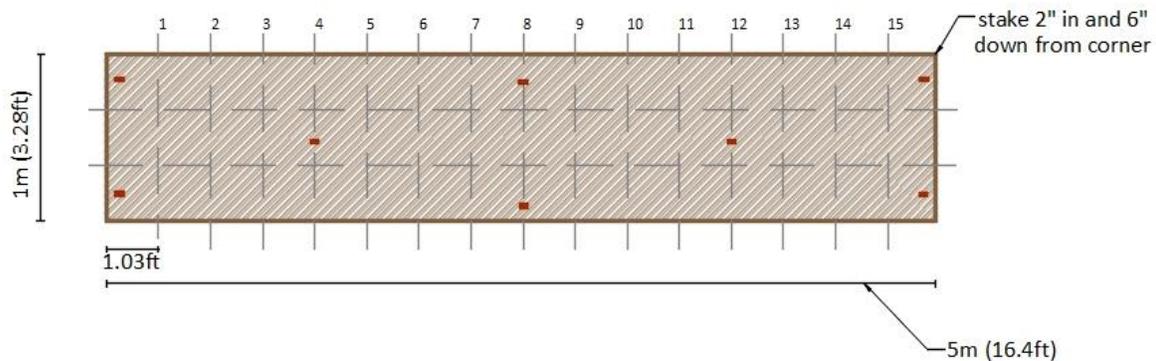
Option 1 – *Natural Rock Materials, No Stakes*

Potential Application:	Lined or Unlined Pond Edge, Floating or Earthen Islands, Low Lying Wetlands, Low Gradient Spring Creeks or Streams
Material Size:	4-9+”diam. rock (stones) depending on weight
Pieces Per Mat:	6 to 10+ depending on size and weight
Comments:	When staking is not an option (in lined ponds or for aesthetic reasons), rocks can provide a temporary anchor during initial mat establishment where erosive energy is low. Use enough rock to keep the mat firmly on the soil surface. Do not remove rocks until mats are integrated into the soil usually at least 4-6 weeks depending on timing and location.

Option 2 - Low Density Staking, Small Stature Stakes

Potential Application:	Unlined Pond Edge, Shallow Wetlands, Low Gradient Spring Creeks or Streams
Stake Size:	1" x 2" x 12" wooden survey stakes
Stakes per mat:	8 to 10
Comments:	Overlap ends of two mats (~ 2-4") if installing in a linear fashion Overlap sides of mats if installing multiple rows

Low Density Staking Pattern



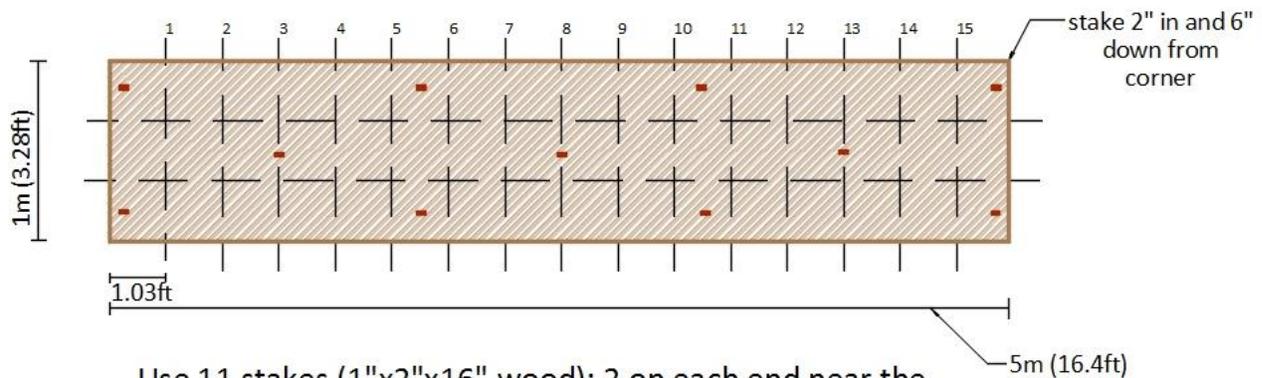
Use 8 stakes (1"x2"x12" wood); 2 on each end near the corners, 2 in the middle near top and bottom, and 2 more spaced evenly between the middle and the ends. If overlapping sod mats, move stakes closer to the edges (~2" from edge) to catch overlap of adjacent mats.

Medium Potential Energy Sites

Medium to High Density Staking, Medium Stature Stakes

Potential Application:	Medium gradient spring creeks, leeward shorelines or streams with cohesive soils
Stake Size:	1" x 2" x 16" wooden survey stakes
Stakes per mat:	10 to 12
Comments:	Overlap ends of two mats (~ 2-4") if installing in a linear fashion Overlap sides of mats if installing multiple rows

Medium Density Staking Pattern



Use 11 stakes (1"x2"x16" wood); 2 on each end near the corners, 2 sets of 2 near top and bottom evenly spaced between the ends, and 3 more in the middle spaced evenly between the ends. If overlapping sod mats, move stakes closer to the edges (~2" from edge) to catch overlap of adjacent mats.

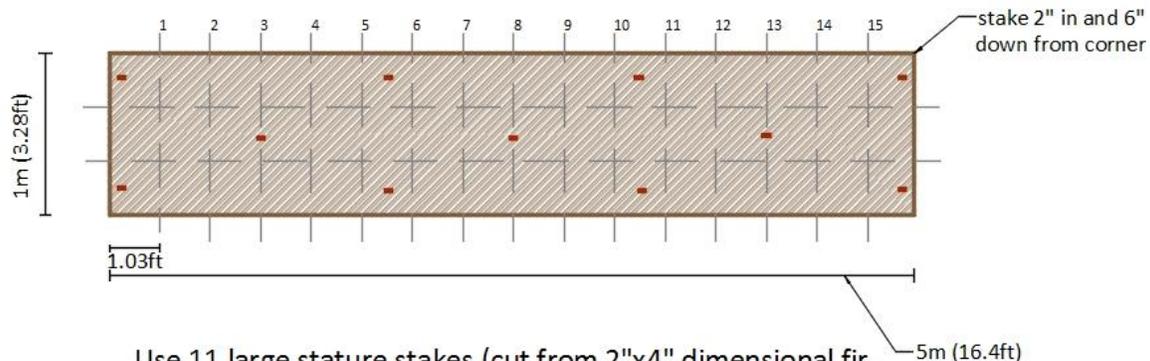
High Potential Energy Sites

High Density Staking – Large Stature Stakes

Potential Application:	Streams with high energy and/or non-cohesive soils composed of loose cobble, sand or silt
Stake Size:	2" x 4" x 24" (or larger) custom fabricated
Stakes per mat:	8 to 12
Comments:	Overlap ends of two mats (~ 2-4") if installing in a linear fashion Overlap sides of mats if installing multiple rows

High Density Staking Pattern

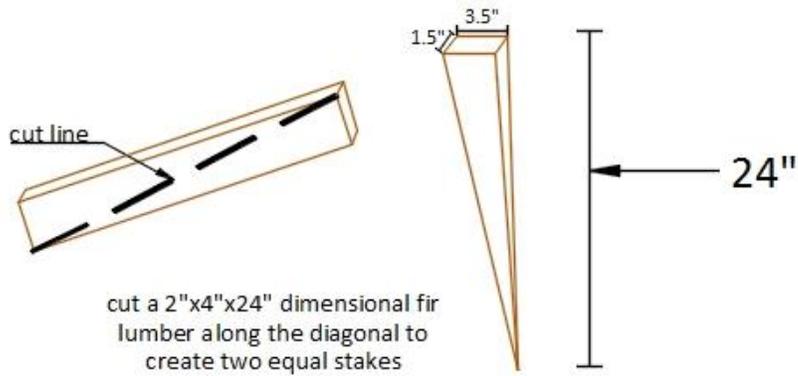
***Use Large Stature Stakes**



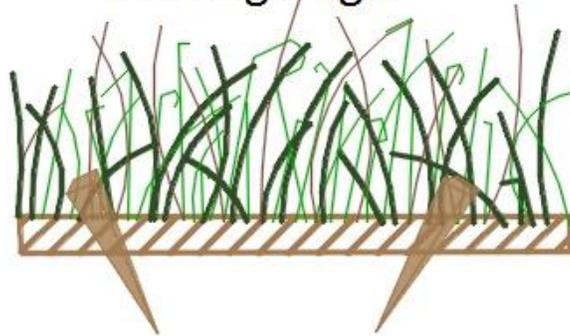
Use 11 large stature stakes (cut from 2"x4" dimensional fir lumber - see inset); 2 on each end near the corners, 2 sets of 2 near top and bottom evenly spaced between the ends, and 3 more in the middle spaced evenly between the ends. If overlapping adjacent sod mats, move stakes closer to the edges (~2" from edge) to catch overlap of mats.

Staking Angles and Large Stature Stakes

Large Stature Stakes



Staking Angle



Stakes should be inserted at an angle to pin coir fabric tightly to the ground until plants can root. Angles can be adjusted depending on substrate.

*drawing not to scale