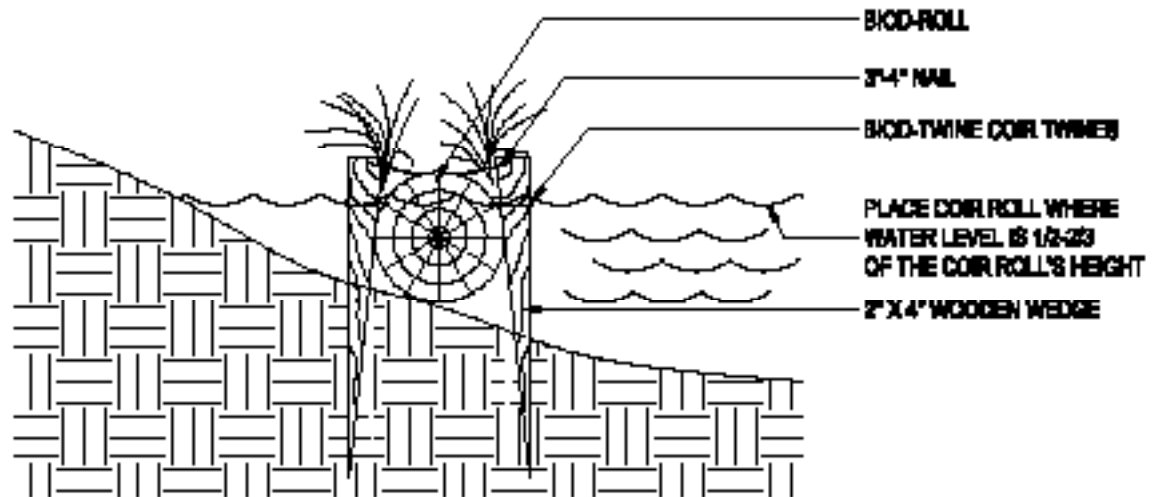


## General Installation Instructions for Coir Logs in Toe Protection

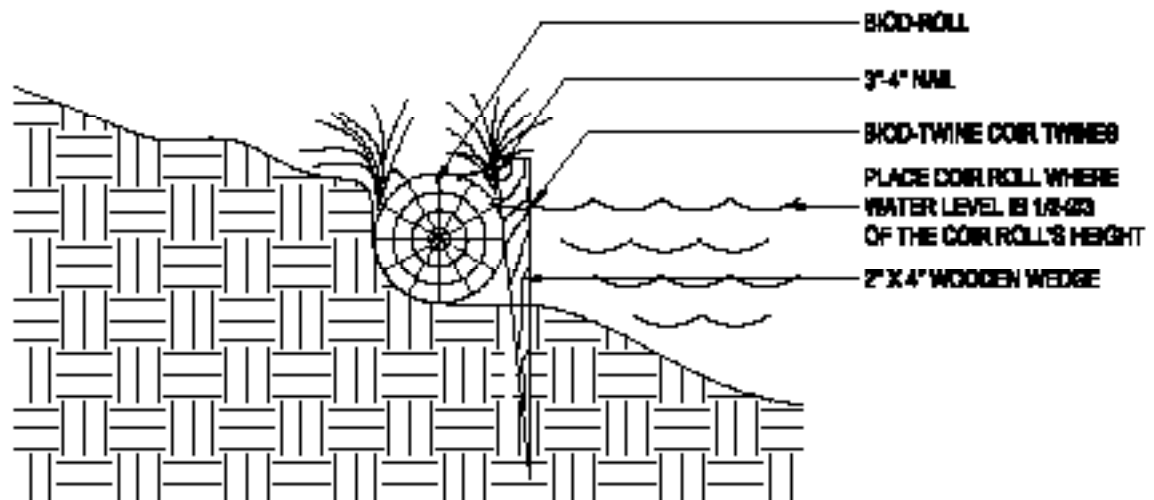
- Densely packed coir rolls (logs) can be used to provide toe support in a stream bank without disturbing the existing soil conditions.
- If the shoreline or streambank is severely eroded, grade the shoreline or streambank according to the natural terrace of the area (2:1 slope is generally recommended). Immediately, place an erosion control blanket along the graded slope (refer to blanket installation guide on streambanks) to prevent erosion.
- Place coir rolls along the toe of the bank where the water level is 1/2 to 2/3 of the coir roll's height (Diagram 1). We recommend using 4 in. x 2 in. wooden wedges with a 3-4 in. long nail at the top to install coir logs. Refer Table 1 for a general guide for selecting coir logs and anchors. Place a suitable length wooden wedge at on the waterside if the bank will support the coir rolls on the landside (Diagram 1, Fig. 1). If the bank does not support the coir rolls, place wooden wedges on the landside as well as on the waterside (Diagram 1, Fig. 2,).
- If necessary, more than one layer of coir logs can be used on the toe as shown in the Diagram 2.
- Pound the wedges down so that the nail is pressing the coir roll at the top. Tying coir rolls to wedges with several loops of 0.25-inch diameter (6mm) coir twine (BioD-Twine) will provide extra support. Tie the ends of adjacent coir rolls together with coir twines to keep them as one unit. Use extra loops of coir twine through the outer netting of adjacent coir logs.
- Bend the ends of the first and the last coir roll towards to the shore and dig them into the bank. This will avoid water getting behind the coir rolls and will prevent possible failures.
- After coir rolls have been installed properly, begin planting around the coir logs where the water is available for the young plants. Proper submersion of coir rolls is important for successful establishment of vegetation. Select plant plugs of the suitable native wetland plants. If sufficient water is available, place plant plugs into the coir roll by pulling the coir roll fibers apart with the fingers and gently pushing the plug deep into coir roll.
- In situations where the coir rolls are away from water, place plants close to the coir rolls where there is sufficient water. If not, need to provide method of irrigation until young plants are well established. The plants will gradually grow into the coir rolls. The recommended spacing for plant plugs is 6 inches.
- This procedure should be altered to specific site conditions at the discretion of the site engineer / architect.

Table 1: General guide for coir log anchoring

| Size of the stream               | Diameter of coir log | Anchor height | Anchor spacing |
|----------------------------------|----------------------|---------------|----------------|
| Large stream with heavy flow     | 20 in                | 4 ft. min.    | every 2 ft.    |
| Large stream with moderate flow  | 16 in                | 3 ft. min     | every 2.5 ft.  |
| Medium stream with moderate flow | 12 in                | 30 in min     | every 3 ft.    |
| Medium stream with low flow      | 12 in                | 30 in min     | every 3.5 ft.  |



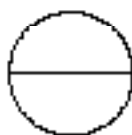
**BIOD-ROLL PLACEMENT WITHOUT BANK SUPPORT**



**BIOD-ROLL PLACEMENT WITH BANK SUPPORT**

**NOTE:**

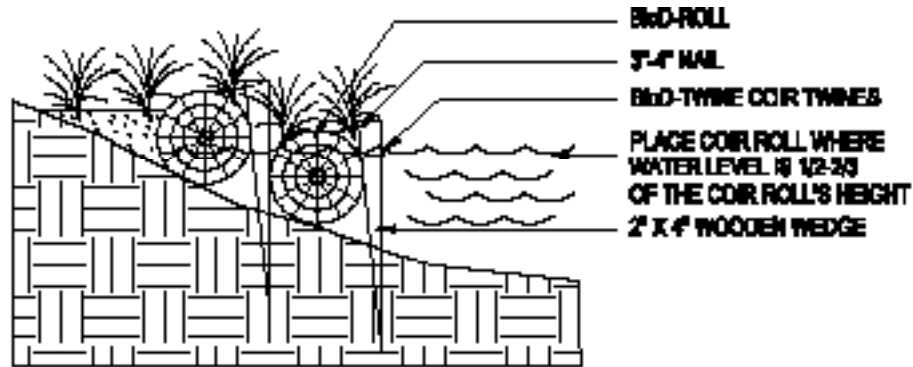
1. DO NOT SCALE DRAWINGS.
2. CONSIDER INDIVIDUAL SITE CONDITIONS. SELECT SUITABLE PLANT / TREE TYPES.
3. NUMBER OF ANCHORS NEEDED DEPENDS ON SOIL TYPE AND WATER FLOW.



**INSTALLATION OF BIOD-ROLL COIR ROLLS**

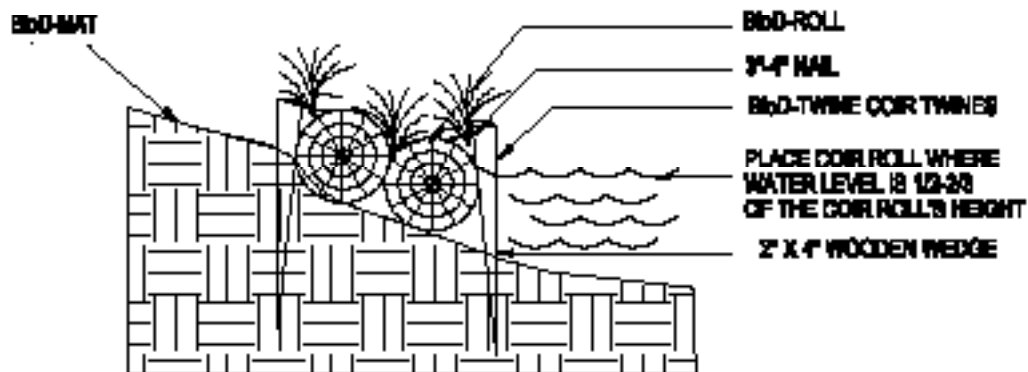
## MULTI LAYER APPLICATION

**FIGURE1**



**COIR ROLL PLACEMENT WITH BANK SUPPORT**

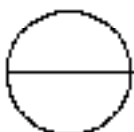
**FIGURE2**



**COIR ROLL PLACEMENT WITHOUT BANK SUPPORT**

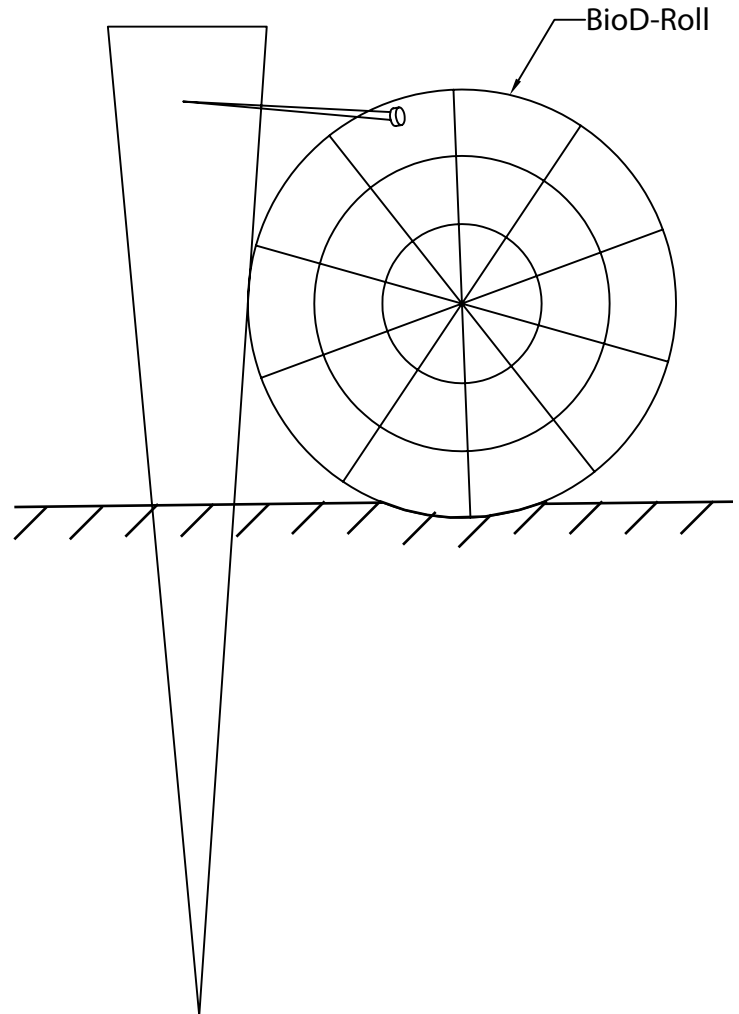
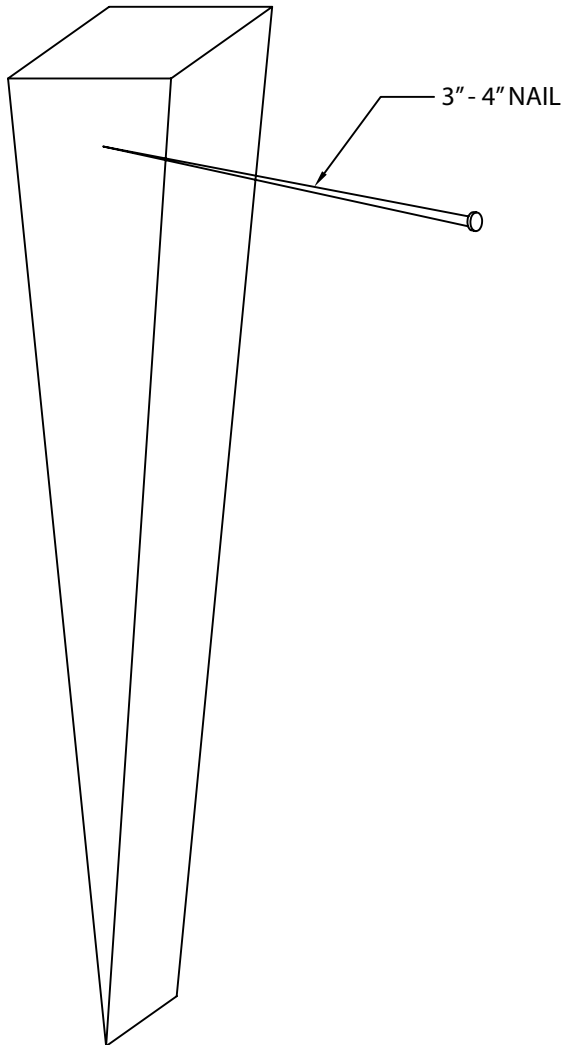
**NOTES:**

1. DO NOT SCALE DRAWINGS.
2. CONSIDER INDIVIDUAL SITE CONDITIONS. SELECT SUITABLE PLANT / TREE TYPES.
3. NUMBER OF ANCHORS NEEDED DEPENDS ON SOIL TYPE AND WATER FLOW.



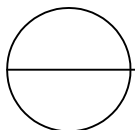


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NOTES:

1. DO NOT SCALE DRAWINGS.



**ANCHORING COIR LOGS WITH WEDGES**