

7.0 Shoreline and Streambank Improvements

7.1 Policy

It is the policy of the Board of Managers to prevent erosion of shorelines and streambanks, and to foster the use of natural materials and bioengineering for the maintenance and restoration of shorelines.

7.2 Regulation

No person shall install a shoreline improvement, including but not limited to riprap, a bioengineered installation or a retaining wall on a public water without first securing a permit from the District. Planting of vegetation not intended to provide deep soil structure stability does not require a permit under this rule.

7.3 Criteria

7.3.1 An applicant for a shoreline alteration permit must demonstrate a need to prevent shoreline erosion or restore eroded shoreline.

7.3.2 An applicant must first consider maintenance or restoration of shoreline using bioengineering. If bioengineering cannot provide a stable shoreline, a combination of riprap and bioengineering may be used to restore or maintain shoreline. If a combination of riprap and bioengineering cannot provide a stable shoreline within a reasonable period, riprap may be used to restore or maintain shoreline.

a Live plantings incorporated in shoreline bioengineering must be native aquatic vegetation and/or native upland plants.

b Riprap to be used in shoreline erosion protection must be sized appropriately in relation to the erosion potential of the wave or current action of the particular water body, but in no case shall the riprap rock average less than six inches in diameter or more than 30 inches in diameter. Riprap shall be durable, natural stone and of a gradation that will result in a stable shoreline embankment. Stone, granular filter and geotextile material shall conform to standard Minnesota Department of Transportation specifications, except that neither limestone nor dolomite shall be used for shoreline or stream bank riprap, but may be used at stormwater outfalls. All materials used must be

free from organic material, soil, clay, debris, trash or any other material that may cause siltation or pollution.

- c Riprap shall be placed to conform to the natural alignment of the shoreline.
 - d A transitional layer consisting of graded gravel, at least six inches deep, and an appropriate geotextile filter fabric shall be placed between the existing shoreline and any riprap. The thickness of riprap layers should be at least 1.25 times the maximum stone diameter. Toe boulders, if used, must be at least 50 percent buried.
 - e Riprap must not cover emergent vegetation, unless authorized by a Department of Natural Resources permit.
 - f Riprap shall extend no higher than the top of bank or two feet above the 100-year high water elevation, whichever is lower.
- 7.3.3 The finished slope of any shoreline shall not be steeper than 3:1 (horizontal to vertical).
- 7.3.4 Horizontal encroachment from a shoreline shall be the minimal amount necessary to permanently stabilize the shoreline and shall not unduly interfere with water flow or navigation. No riprap or filter material shall be placed more than six feet waterward of the OHW. Streambank riprap shall not reduce the cross-sectional area of the channel or result in a stage increase of more than 0.01 feet at or upstream of the treatment.
- 7.3.5 The design of any shoreline erosion protection shall reflect the engineering properties of the underlying soils and any soil corrections or reinforcements necessary. The design shall conform to engineering principles for dispersion of wave energy and resistance to deformation from ice pressures and movement, considering prevailing winds, fetch and other factors that induce wave energy.
- 7.3.6 For projects on public water basins or wetlands, the total length of shoreline affected must not exceed 200 feet. For projects on Nine Mile Creek, the total length of streambank affected must not exceed five times the width of the creek measured at bankful conditions.
- 7.3.7 Placement of riprap for merely cosmetic purposes is prohibited.
- 7.3.8 Retaining walls extending below the OHW of a water body are prohibited, except where:

- a there is a demonstrable need for a retaining wall in a public improvement project, and
- b the design of the retaining wall has been certified by a registered engineer.

7.4 Required information and exhibits

The following exhibits shall accompany the permit application; one full-size set (22 inches by 34 inches), one set reduced to a maximum of 11 inches by 17 inches, and one set as electronic files in a format acceptable to the District:

7.4.1 A site plan, showing:

- a Conditions establishing, to the satisfaction of the District, existing erosion or the potential for erosion;
- b a survey locating the existing OHW contour, existing shoreline or streambank, floodplain elevation and location of property lines;
- c elevation contours of the upland within 15 feet of the OHW and referenced to accepted datum; and
- d plan view of locations and lineal footage of the proposed riprap.

The plan must show the location of an upland baseline parallel to the shoreline with stationing. The baseline shall be staked in the field by the applicant and maintained in place until project completion. Baseline origin and terminus each must be referenced to three fixed features measured to the closest 0.05 foot, with measurements shown and described on the plan. Perpendicular offsets from the baseline to the OHW must be measured and distances shown on the plan at 20-foot stations. The plan shall be certified by a registered engineer or surveyor.

7.4.2 A construction plan and specifications, showing:

- a A sequencing analysis in compliance with section 7.3.2;
- b materials to be used, including the size(s) of any riprap to be used;
- c cross section detailing the proposed riprap, if any, drawn to scale, with the horizontal and vertical scales noted on the drawing. The detail should show the finished riprap slope, transitional layer design and placement, distance lakeward of

the riprap placement and OWH.

- d Description of the underlying soil materials.
- e Material specifications for stone, filter material and geotextile fabric.

7.4.3 For sites involving aquatic plantings, a separate Aquatic Plant Management permit shall be obtained from the Department of Natural Resources.

- a This provision does not apply to slope protection projects using woody species such as willow and dogwood.

7.4.4 An erosion control and site restoration plan.