

**MINNEHAHA CREEK WATERSHED DISTRICT
BOARD OF MANAGERS**

**REVISIONS
PURSUANT TO MINNESOTA STATUTES §103D.341**

Adopted January 13, 2005

RULE F: SHORELINE & STREAMBANK IMPROVEMENTS

1. POLICY. It is the policy of the Board of Managers to:

- (a) Assure that improvement of shoreline and streambank areas to prevent erosion complies with accepted engineering principles in conformity with DNR construction guidelines;
- (b) Preserve the natural appearance of shoreline and streambank areas; and
- (c) Encourage and foster bioengineering, landscaping and preservation of natural vegetation as preferred means of stabilizing shorelines and streambanks.

2. REGULATIONS.

- (a) No person shall install an improvement to prevent erosion of the shoreline of a water basin or public waters wetland or the bank of a watercourse, including but not limited to riprap, a retaining wall, a bioengineered installation, a sand blanket or a boat ramp, without first securing a permit under this Rule and providing a surety pursuant to Rule K. Planting of vegetation not intended to provide deep soil structure stability does not require a permit under this Rule.
- (b) A fast track permit may be issued for routine riprap projects that conform to the requirements set forth in paragraph 3(b) of this rule.
- (c) A fast track permit may be issued for routine sandblanket projects that conform to the requirements set forth in paragraph 6 of this rule.
- (d) Maintenance of an existing shoreline or streambank improvement does not require a permit under this rule unless it involves the addition of new material to the improvement or, for projects other than riprap, structural change in the improvement.
- (e) An improvement within the meaning of the rule shall also include any water control structure affixed to the bed or bank of a waterbody.

3. CRITERIA FOR RIPRAP PLACEMENT. Riprap placement shall comply with the following criteria:

(a) General standards:

(1) Riprap material shall be durable, natural stone and of a gradation that will result in a stable shoreline embankment. Stone, granular filter and geotextile shall conform to Sections 3601.1 and 3601.2, Standard Specifications for Construction, Minnesota Department of Transportation (2000 ed.), as it may be amended. All materials shall be nonpolluting.

(2) The finished slope of the rock fragments, boulders and/or cobbles shall not be steeper than a ratio of 3 feet horizontal to 1 foot vertical (3:1) under normal conditions. Steeper slopes will generally require larger sized riprap. Any rock/boulder stabilization project with a proposed finished slope steeper than 2:1 (horizontal to vertical) shall be evaluated as a retaining walls.

(3) Horizontal encroachment from a shoreline shall be the minimum amount needed and shall not interfere unduly with water flow. Under normal conditions, no riprap or filter materials shall be placed more than 5 feet waterward of a shoreline, measured from the ordinary high water level (OHW) elevation. The maximum shoreline encroachment waterward of the OHW is 10 feet. 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.

(4) A transitional layer consisting of graded gravel, at least 6 inches deep, and an appropriate geotextile filter fabric shall be placed between the soil material of the existing shoreline and the riprap to prevent erosion of the embankment and to prevent settlement.

(5) The design shall reflect the engineering properties of the underlying soils and any soil corrections or reinforcements. For a shoreline, 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. For a streambank, design shall conform to engineering principles for the hydraulic

behavior of open channel flow, considering channel slope, velocity and tractive forces.

(6) Riprap shall conform to MnDOT Class III/IV. The thickness of the riprap layers should be at least 1.25 times the maximum stone diameter. Toe boulders shall be at least 50 percent buried and may be as large as 30 inches in diameter.

(7) Riprap shall extend no higher than the top of bank, or two feet above the 100-year high water elevation, whichever is lower.

(8) A riprap placement design for a streambank or channel shall be certified as structurally sound and in accordance with the requirements of this Rule by a registered professional engineer in the State of Minnesota in the practice of civil engineering.

(b) Routine riprap projects eligible for a fast track permit: Shoreline riprap projects shall qualify for a fast track permit issued and signed by an authorized representative of the District so long as the project meets the following specifications:

(1) Riprap material shall be durable stone meeting the size and gradation requirements of MnDOT Class III or IV riprap;

(2) The finished slope of the stone shall not be steeper than 3 feet horizontal to 1 foot vertical (3H:1V);

(3) Property corners and lines that delineate the lineal feet of shoreline to be treated shall be located and staked prior to beginning work;

(4) Riprap or filter materials shall not be placed more than 5 feet waterward of the staked OHW or NOHW, and shall not be placed on property not owned by the applicant; the encroachment into the water is the minimum amount necessary to provide protection and does not unduly interfere with the flow of the water.

(5) A transitional granular filler meeting the requirements of MnDOT 3601.B, at least 6 inches in depth, shall be placed between the native shoreline and the riprap to prevent erosion of the fine grained soils. A geotextile fabric

meeting the requirements of MnDOT 3733 shall be placed beneath the transitional layer to enhance stability; and

(6) Underlying native soils shall not be classified as organic soils or peat.

(c) Riprap installed pursuant to a District permit shall be maintained within slope and encroachment constraints established in the permit.

4. RIPRAP REQUIRED EXHIBITS. The following exhibits shall accompany the riprap permit application. One full-size; one set-reduced to maximum size of 11" x 17".

(a) Site plan showing:

- Survey locating the existing OHW contour, existing shoreline or streambank, floodplain elevation, and location of property lines;
- Elevation contours of the upland within 15 feet of the OHW and referenced to accepted datum; and
- Plan view of locations and lineal footage of the proposed riprap treatment.

The plan shall 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 shall 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 shall be measured and distances shown on the plan at 20-foot stations. The plan shall be certified by a registered engineer or surveyor.

(b) Cross section detailing the proposed riprap, 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, ordinary high water level elevation and material specifications.

(c) Description of the underlying soil materials that will support the riprap.

(d) Material specifications for stone, filter material and geotextile fabric.

(e) Specification of erosion control and site stabilization practices.

5. GUIDELINES. The engineer shall publish or make available to interested persons a typical cross-sections for shoreline and streambank protection in compliance with this rule.

6. CRITERIA FOR LAYING SANDBLANKETS. All permitted sandblanketing shall comply with the following standards.

(a) The sand or gravel used must be clean prior to being spread. The sand must contain no toxins or heavy metal, as defined by the MDNR, and must contain no weed infestations such as, but not limited to, water hyacinth, alligator weed, and Eurasian watermilfoil, or animal life infestations such as, but not limited to, zebra mussels or their larva. Violators will be prosecuted to the full extent of the law.

(b) The sand layer must not exceed six inches in thickness, 50 feet in width along the shoreline, or one-half the width of the lot, whichever is less, and may not extend more than ten (10) feet waterward of the ordinary high water mark.

(c) Only one installation of sand or gravel to the same location may be made during a four year period. After the four years have passed since the last blanketing, the location may receive another sandblanket. No more than two applications may be made by an individual landowner during their residency at an individual project site.

(d) Exception. Beaches which are operated by governmental entities, and available to the public, shall be exempted from the following restrictions: (i) that sandblankets be no more than 50 feet in width. See subsection (6. b.) of this rule; and (ii) that sandblankets be installed no more frequently than once every four years. See subsection (6.c.) of this rule. Permits shall be required for all public beach sandblankets.

7. SANDBLANKET REQUIRED EXHIBITS. The following exhibits shall accompany the sandblanket permit application.

(a) Site plan showing property lines, delineation of the work area, existing elevation contours of the adjacent upland area, ordinary high water elevation, and regional flood elevation (if available). All elevations must be reduced to NGVD (1929 datum).

(b) Profile, cross sections and/or topographic contours showing existing and proposed elevations and proposed side slopes in the work area. (Topographic contours should be at intervals not greater than 1.0 foot).

(c) A completed Sandblanket Permit Application form, available from the District.

8. CRITERIA FOR RETAINING WALLS.

(a) A new retaining wall, or repair/reconstruction of an existing retaining wall that increases floodplain encroachment beyond that required by technically sound and accepted repair/reconstruction methods, is permitted only pursuant to a variance or an exception under District Rule I. The

applicant must demonstrate that there is no adequate stabilization alternative.

(b) Wooden seawalls and/or steel sheetpiling retaining walls shall comply with accepted engineering principles.

(c) The applicant shall submit a structural analysis prepared by a professional engineer registered in the State of Minnesota, in the practice of civil engineering, showing that the wall will withstand expected ice and wave action and earth pressures.

(d) The applicant shall submit a survey prepared by a registered land surveyor locating the finished wall and shall file a certificate of survey with the District.

9. CRITERIA FOR OTHER SHORELINE IMPROVEMENTS. Other shoreline improvements, such as boat ramps, shall comply with accepted engineering principles.