

Riprap

Innovative Standards

Part of a series highlighting innovative local government standards intended to encourage adoption of more protective shoreland standards.



Benefits

- Prevents sedimentation and flow of nutrients into surface waters.
- Reduces risk of bank, slope, and bluff failure.
- Protects natural shoreline habitat and vegetation and their benefits including slowing, storing and filtering runoff, and providing animal habitat and visual screening.
- Reduces risk of algal blooms by reducing thermal loading of surface waters.

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The ordinance language in these examples has been summarized. While not mentioned, all ordinances cited include the minimum riprap standards found in shoreland rules ((Minn. R. 6120.3300 Subp. 4 B. (11)). Please contact the local planning and zoning staff with the relevant community if you have questions about the specific ordinance provisions.

All examples provided are specific to riprap located above the Ordinary High-Water Level. All riprap, or portions of them, located below the OHWL will require a DNR public waters work permit, under [Minn. R. 6115](#), and meet floodplain regulations limiting increases in flood elevations. Contact your [DNR Area Hydrologist](#) for more information.

1. Erosion Intensity Evaluation Determine Allowable Practices

Riley Purgatory Bluff Creek Watershed District

A permit is required to install or maintain an improvement to stabilize a shoreline or streambank. Property owners must use stabilization methods commensurate with the erosion intensity. Shoreline erosion is assessed using an erosion intensity scoresheet. Streambank erosion is assessed using a shear stress calculation consistent with technical publications including those prepared by the NRCS and USACOE. The results of the assessment determine what practices can be used for shoreline or streambank stabilization. Riprap can only be used on sites with high erosive energy based on the assessment. Sites with lower erosive energy may use bioengineering stabilization practices or a combination of bioengineering and vegetated riprap practices. Other stabilization practices may be approved based on an analysis prepared by a registered engineer that demonstrates that the practice is the minimal-impact solution compared to other practices.

Ordinance Citation: Rule F

Communities with similar standards: Minnehaha Creek Watershed District (MCWD). Also requires financial assurance to ensure the project is completed according to the permit. (Shoreline & Streambank Stabilization Rule)

2. Bioengineering and Natural Stabilization Methods Prioritized

Carlton County

Riprap requires a permit and is only allowed to correct an active and established erosion problem that cannot be controlled first through use of suitable vegetation, slope stabilization using coir logs, willow wattle or similar bioengineering means. Permits require a plan for establishing a vegetative buffer with a depth determined by the County for the entire width of the lot except for access areas. Riprap used for ornamental purposes or for terracing natural slopes are prohibited within the shore impact and bluff impact zones. Violations require restoration that mitigates the violation or noncompliance to the pre-noncompliance or pre-violation condition of the property.

Ordinance Citation: Article 4. Section 5. Subd. H. 10. c. and d.

Communities with similar standards: Cass County (Section 1120.7 H.). Aitkin County (Section 5.32 D. (6)).

Carnelian-Marine-St. Croix Watershed District

Bioengineering methods must be used for shoreline and streambank restoration unless the District determines that it is not feasible to repair the erosion problem using bioengineering methods. If riprap is needed to address the problem, the project must include native vegetation equal to at least 5% of the overall project cost.

Ordinance Citation: Rule 5.4

Communities with similar standards: Brown's Creek Watershed District (Rule 5.4).

3. Limitations on Riprap and Required Vegetative Buffers

Benton County

Riprap is allowed only to correct areas with active erosion, not for aesthetic purposes. Riprap is limited to 25% of the shoreline and must include a 10-foot native vegetation buffer for the entire length of the riprapped area. Riprap, designed by a licensed engineer, may be placed within the floodway or flood fringes, or exceed the 25% limit with a conditional use permit.

Ordinance Citation: Section 7.14.5 (G)(2)(e)(i)

LeSueur County

Riprap is allowed only where there is a demonstrated need to correct an existing erosion problem or to restore an eroded shoreline as verified by staff through a site visit or photos. Riprapped area must be no more than 200 linear feet of shoreline along lakes and less than five times the average width of the watercourse. Native plants must be installed in conjunction with the riprap either within the riprap or as a continuous buffer adjacent to the riprap.

Citation: Section 13, Subdivision 5. B. 5.

Beltrami County

Riprap is only allowed where erosion problems exist (not for aesthetic reasons). Installation of riprap also requires establishing a 10 ft. native vegetation buffer parallel to the shoreline for the entire length of the riprap, except for an approved shoreland recreation area. Buffer plans must be approved by the SWCD.

Ordinance Citation: Section 1104.3. F.

Communities with similar standards: Cass County (Section 1106.4. D.)

Aitkin County

Riprap requires a permit and is only allowed in areas with established erosion problems that cannot be corrected through bioengineering measures. Installation of riprap requires a vegetative buffer to a depth determined by the county for the entire width of the lot, except for access areas. Riprap/walls for ornamental or terracing purposes are prohibited in the BIZ/SIZ.

Ordinance Citation: Section 5.32 D. (6)

Douglas County

Riprap may be allowed in areas with active erosion if at least 30% of the shore impact zone is maintained in natural shoreline vegetation or is restored to native vegetation with an approved buffer plan meeting specific shrub and grass specifications. Riprap may be placed in lakeshore use areas (dock, beach, deck, patio, or other amenity locations) comprising no more than 25 linear feet or 25% of the shoreline, without meeting these standards.

Citation: Section V. L. 2. (5) (e).

4. Limitations on Riprap

Pine County

Riprap is only allowed, by permit, where there is a demonstrated need to stop existing erosion or to restore an eroded shoreline. Riprapped area must be no more than 200 linear feet of shoreline along lakes and less than five times the average width of the watercourse. Only natural rock (no concrete) with a diameter averaging 6 to 30 inches is allowed.

Citation: Section 5.3.3.D. 11.