

GUIDELINES FOR MATERIALS FOR STREAMBANK STABILIZATION

The following guidelines represent the efforts of a work group composed of Conservation District representatives, natural resource consultants, environmental interests, and state and federal regulatory agencies. They are suggested by the Montana Department of Environmental Quality and not necessarily endorsed by all the work group members. These guidelines are only for use in areas where the use of high-density, angular rock is not practicable. (The term “practicable” means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes [40 CFR 230.3(q)]). Sandstone or broken concrete may be acceptable alternatives to high-density, angular rock in certain situations, although local regulation may prohibit their use. The use of any river training device/structure may directly or cumulatively alter the ecology of Montana rivers and streams. Cumulative impact considerations may preclude the use of any river training device.

Bank stabilization projects are sometimes authorized under the following jurisdictions: Local Conservation District – Natural Streambed & Land Conservation Act (310); Montana Department of Fish Wildlife and Parks – Stream Protection Act (SPA124); County Floodplain Administrator – Floodplain Permit; U.S. Army Corps of Engineers – Section 404/10 Permit; Montana Department of Environmental Quality – 75-5-318, MCA Authorization; Montana Department of Natural Resources and Conservation – Navigable Rivers Land Use License/Easement.

The following optional design concepts should be considered in conjunction with the guidelines to minimize environmental/aesthetic concerns:

- Utilize rock only in the lower* portion or toe of the riprap with woody structures/features, biodegradable fabric, etc. in the upper* portions.
* The elevation at which the mean annual flow occurs is the division between “upper” and “lower.”
- Incorporate soil in the upper portions of the project with appropriate woody (usually willow) plantings as near average water elevations as possible and herbaceous plantings elsewhere.
- Provide a temporary or permanent buffer strip (streamside area where protection promotes growth and sustenance of woody vegetation) along the project length to provide for vegetation stability where grazing or recreational use may impact plant growth.
- Preferably, plantings should be on slopes of 3:1 or flatter and irrigated, if possible.

(*Note:* Numerous documents with more detailed information are available. Contact the Natural Resource Conservation Service or the Department of Natural Resources and Conservation for their “Stream Project Manual.”)

SPECIFIC GUIDELINES

In consideration of landowner preferences to utilize materials that are not cost prohibitive in areas of the state where high-density, angular rock is not readily available, the following is offered.

Applicants proposing the use of alternative materials must adhere to the following specifications:

- a) Materials must be free of grease, oils, paint, and other pollutants.
- b) Materials must be free of rebar – internal and external [ARM 17.50.503 (6)] – iron, or other foreign material.
- c) Materials must meet gradation guidelines. (The lower range of these guidelines is generally more appropriate for lower-energy, smaller streams versus the higher range for larger streams/streams. The actual size needed will depend on site-specific conditions, the type of structure, and the degree of protection desired).
 - All materials must have a longest dimension not more than three times the length of the shortest dimension and should approximate the following gradations:
 - 70 percent of the material by volume between 15 to 30 inches in length.
 - 15 percent of the material by volume less than 15 inches in length.
 - 15 percent by volume 30 to 40 inches in length.
 - The thickness of the placed material should be two to three times the mean fragment diameter.
- d) Sandstone is favored over concrete. If concrete is utilized, the material must be stockpiled before placement to allow for an inspection, if requested by the authorizing agency. A statement signed by the provider and recipient of the concrete, noting the source, type of concrete, and compliance with these specifications must be provided (see attached form).
- e) The streambank must be adequately sloped prior to application of riprap material. (Slopes steeper than 2:1 are discouraged and flatter slopes recommended.)
- f) Riprap material must be placed on the bank – not dumped.
- g) The largest material must be keyed into the toe and also used in the base of the riprap.
- h) Unless naturally occurring material is present at the site, appropriate measures must be taken to ensure retention of fine soil particles beneath the riprap material. Protective measures can include coarse sand and fine gravel or the use of a suitable geotextile material.
- i) The sandstone or concrete material must be keyed into the river/stream bank to provide adequate protection against flanking.
- j) Any structure that protrudes into the river must be designed by a professional engineer/hydrologist experienced in the design of such structures.

Depending on site conditions and the composition (size/density/hardness) of the alternative materials, there can be a higher risk of failure with the use of these materials. Sandstone is favored over broken concrete. Applicants preparing to apply these guidelines to their projects will be responsible for complying with local, state, and federal permitting requirements and for providing documentation, if requested, that these guidelines have been adhered to.

COMPLIANCE CERTIFICATION

Project: (Please attach copy of the completed “Joint Application for Proposed Work in Montana’s Streams, Wetlands, Floodplains, and Other Water Bodies.”)

Upon completion of project activity, sign this certificate and return it to the following address:

Montana Department of Environmental Quality
Permitting & Compliance Division/Water Protection Bureau
Box 200901
Helena, MT 59620-0901

Please answer the following questions:

1. What is the source of the concrete rubble?
2. What is the type of concrete rubble (curb/gutter, foundation, etc.)?
3. What was the cost of the rubble?
(The recipient of the rubble cannot be compensated for accepting the rubble without a landfill license.)

I hereby certify that the project work performed is in compliance with all applicable permits and in compliance with the “Guidelines for Materials for Streambank Stabilization.”

Signature of Project Owner

Date

I hereby certify that I provided the concrete rubble used in the project and that I did not compensate the owner for accepting the rubble.

Signature of Concrete Rubble Provider

Date
