



Standard Practice for Specifying Standard Sizes of Stone for Erosion Control¹

This standard is issued under the fixed designation D 6092; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers size designations and maximum ranges in mass or gradation for standard sizes for riprap, spalls, or bedding, or both, used for slope protection of dam embankments, streambank erosion control, bridge piers and abutments. Sizes used for outer harbor structures such as breakwalls, revetments, confined diked disposal structures (heretofore described as armor stone, cover stone, or dimension stone) for which stone sizes range between 5 and 25 tons, or that require cut dimensions for laid-up structures are beyond the scope of this practice.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This practice offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

2. Referenced Documents

2.1 ASTM Standards:

D 653 Terminology Relating to Soil, Rock, and Contained Fluids²

¹ This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.17 on Rock for Erosion Control.

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² *Annual Book of ASTM Standards*, Vol 04.08.

D 4992 Practice for Evaluation of Rock to be Used for Erosion Control²

D 5519 Test Method for Particle Size Analysis of Natural and Manmade Riprap Materials²

3. Terminology

3.1 *Definitions:* Definitions of other terms in this guide are listed in Terminology D 653.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *filter/bedding stone*—stone, filter stone consisting of crushed stone ranging in size from ¾ in. (19 mm) to number 40 sieve size, and bedding stone (often referred to as "spalls") consisting of crushed stone ranging in size from 6 in. (152 mm) (maximum) to ½ in. (12.7 mm) minimum. Filter and bedding may be placed in two layers beneath the riprap, that is, a filter layer 8 to 10 in. (203 to 254 mm) thick and a bedding thickness of 6 to 8 in. (152 to 203 mm).

3.2.2 *geotextiles*—suitable geotextile fabrics that meet the design requirements may be used instead of the above bedding and spalls. Suitable cover thickness maybe required.

3.2.3 *gradation*—the proportions by mass of stones distributed within specified ranges between maximum and minimum limits.

3.2.4 *riprap*—stone materials generally less than two tons in weight, specially selected and graded, and when properly placed prevents erosion through minor wave action, or strong currents and thereby preserves the shape of a surface, slope, or the underlying structure.

3.2.5 *standard size designation*—one of a group of stones with specified gradation limits.

4. Summary of Practice

4.1 The design team shall establish the size of the mass of graded quarry stone using acceptable design criteria. If design criteria and economic factors permit, standard gradations shown in the designated tables should be selected. Using standard sizes, the design team shall select the appropriate gradation; this might require the next larger size thereby creating an over-designed structure, but economically, a cheaper structure. Added cost may result due to the increased volume of stone required, and in transporting and placing the additional stone at the project site. The cost effectiveness of