

703-02 COARSE AGGREGATE

Total Deleterious Materials	5.0	5.0	5.0
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1. Coarse aggregates containing more than the specified maximum amounts of deleterious materials may be washed or otherwise processed until such specifications are satisfied.
2. Shale, slate, phyllite, argillite, schist, and similar shale-like fissile rocks that have been identified by performance or by test to be unsound and deleterious. Such shale-like fissile rocks may be tested separately from the rest of the aggregate by freezing and thawing according to Test Method NY 703-08P,G. If the loss is 20% or greater, that material will be designated as deleterious shale or shale-like material.
3. Pyrite, marcasite, pyrrhotite, bog iron, and similar material.
4. Magnetite, ilmenite, etc. Percentages above 3.0% may be accepted by the Director, Materials Bureau, when appropriate adjustments to yield have been made.
5. Cemented clusters, weathered particles, and similar material.

Coarse aggregate meeting the physical requirements of Tables 703-2, and 703-3 may be accepted unless service records indicate that it is unsound or that the material is otherwise determined to be unsatisfactory by the Director, Materials Bureau. Coarse aggregate not meeting the requirements of these tables may be further evaluated by additional testing, petrographic examination, geologic studies, review of Plant Flow Information and performance history. If the results of the evaluation indicate that the aggregate should perform satisfactorily, the source may be accepted by the Director, Materials Bureau.

A. Crushed Bedrock. Crushed bedrock will be Material Designation 703-0201 and shall consist of clean, durable, sharp-angled fragments of rock of uniform quality.

B. Crushed Gravel. Crushed Gravel will be Material Designation 703-0202 and shall consist of clean, durable, sharp-angled fragments of gravel that are free from coatings. A crushed particle is defined as one in which the total area of face fracture exceeds 25% of the maximum cross-sectional area of the particle. When two fractured faces are designated, the total area of each fractured face shall exceed 25% of the maximum cross-sectional area of the particle. A naturally fractured face will be acceptable providing that the sharp angular portion of the particle consists of sound material and is free from unsound or injurious coatings.

C. Crushed Slag. Crushed slag particles will be Material Designation 703-0204 and shall consist of hard, durable, angular fragments which are reasonably uniform in density and quality; free from injurious amounts of sulfur; and reasonably free from thin, elongated pieces, dirt, or other objectional matter.

Size	Screen Sizes (% Passing by Weight)										
	4 in	3 in	2 ½ in	2 in	1 ½ in	1 in	½ in	¼ in	1/8 in	#80	#200 ⁽²⁾
Screenings ⁽¹⁾	-	-	-	-	-	-	100	90-100	-	-	0-1.0
1B	-	-	-	-	-	-	-	100	90-100	0-15	0-1.0
1A	-	-	-	-	-	-	100	90-100	0-15	-	0-1.0
1ST	-	-	-	-	-	-	100	0-15	-	-	0-1.0
1	-	-	-	-	-	100	90-100	0-15	-	-	0-1.0
2	-	-	-	-	100	90-100	0-15	-	-	-	0-1.0
3A	-	-	-	100	90-100	0-15	-	-	-	-	0-0.7
3	-	-	100	90-100	35-70	0-15	-	-	-	-	0-0.7
4A	-	100	90-100	-	0-20	-	-	-	-	-	0-0.7
4	100	90-100	-	0-15	-	-	-	-	-	-	0-0.7

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the basis of the stockpile approval.

§733-21 B STONE FILLING

SCOPE. This specification covers the material requirements and methods of testing stone filling generally used in stream bank channel protection. The following stone filling types are evaluated in this specification:

- 733.2101 – Stone Filling, Fine
- 733.2102 – Stone Filling, Light
- 733.2103 – Stone Filling, Medium
- 733.2104 – Stone Filling, Heavy

Stone filling types are based on the gradation of the material as outlined in Table 733-21A *Stone Filling Gradation* and Table 733-21B *Stone Filling Approximate Shape*.

SAMPLING. Perform material tests and assurance methods pertaining to stone filling requirements in conformance with the procedures contained in the geotechnical control procedure “*Procedure for the Control of Stone Filling and Rip-Rap Items*”.

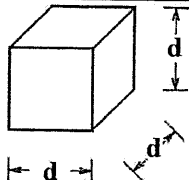
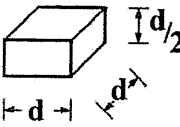
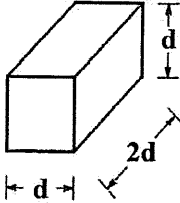

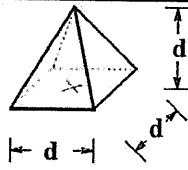
MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile stone filling in accordance with the geotechnical control procedure “*Procedure for the Control of Stone Filling and Rip-Rap Items*” except as noted herein.

B. GRADATION. Provide material having a gradation in accordance with TABLE 733-21A *Stone Filling Gradation* and Table 733-21B *Stone Filling Approximate Shape*.

TABLE 733-21A STONE FILLING GRADATION			
Stone Filling Item	See Notes	Stone Size	Percent of Total by Weight
Fine	2, 3, 4	Smaller than 200 mm	90-100
		Larger than 75 mm	50-100
		Smaller than 2.0 mm	0-10
Light	2, 3, 4	Lighter than 50 kg	90-100
		Larger than 150 mm	50-100
		Smaller than 12 mm	0-10
Medium	2, 4	Heavier than 50 kg	50-100
		Smaller than 100 mm	0-10
Heavy	2, 4, 5	Heavier than 300 kg	50-100
		Smaller than 150 mm	0-10

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TABLE 733-21B STONE FILLING APPROXIMATE SHAPE					
Specified Weights and Sizes				 sphere	
300 kg	d=475 mm	d=600 mm	d=400 mm	d=600 mm	d=700 mm
150 kg	d=400 mm	d=475 mm	d=300 mm	d=475 mm	d=550 mm
75 kg	d=300 mm	d=400 mm	d=240 mm	d=400 mm	d=440 mm
50 kg	d=260 mm	d=340 mm	d=200 mm	d=340 mm	d=400 mm
d=200 mm	23 kg	11 kg	45 kg	11 kg	7 kg
d=150 mm	9 kg	5 kg	18 kg	5 kg	3 kg

Notes:

1. Stone sizes, other than weights, refer to the average of the maximum and minimum dimensions of a stone particle as estimated by the Engineer.
2. Materials shall contain less than 20% of stones with a ratio of maximum to minimum dimension greater than three.
3. Air-cooled blast furnace slag, cobbles or gravel having at least one fractured face per particle are acceptable substitutes for stone under these items, provided that the soundness and gradation requirements are met.
4. Materials shall contain a sufficient amount of stones smaller than the average stone size to fill in the spaces between the larger stones.
5. Heavier gradings of this item may be required on some projects, in which case the requirements will be stated in the contract documents.

C. DURABILITY. The soundness of all material used for stone filling shall be approved on the basis of a geologic evaluation in accordance with the geotechnical control procedure “*Procedure for the Control of Stone Filling and Rip-Rap Items*”.

Where the State elects to conduct soundness tests, stone filling shall have a Magnesium Sulfate Soundness loss less than 10%, by weight, after 10 cycles.

BASIS OF APPROVAL. Stockpiles of stone filling will be approved in accordance with the geotechnical control procedure “*Procedure for the Control of Stone Filling and Rip-Rap Items*”.

BASIS OF ACCEPTANCE. Stone filling from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, stone filling will be accepted upon the basis of the stockpile approval.

§733-22 B RIP-RAP

SCOPE. This specification covers the material requirements and methods of testing rip-rap generally used in stream bank channel protection. The following rip-rap types are evaluated in this specification:

- 733.2201 – Dry Rip-Rap
- 733.2202 – Grouted Rip-Rap

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§733-04 B SUBBASE COURSE

SCOPE. This specification covers the material requirements and methods of testing subbase material generally used in the construction of a pavement structure. The following subbase types are evaluated in this specification:

- 733.0401 – Subbase Course, Type 1
- 733.0402 – Subbase Course, Type 2
- 733.0403 – Subbase Course, Type 3
- 733.0404 – Subbase Course, Type 4

Subbase course types are based on the gradation of the material as outlined in Table 733-04A *Subbase Gradation*.

SAMPLING. Perform material tests and assurance methods pertaining to subbase requirements in conformance with the procedures contained in the geotechnical control procedure “*Procedure for the Control and Quality Assurance of Granular Materials*”.

GENERAL. Provide suitable material conforming to the requirements of Section 203 *Excavation and Embankment* and to the requirements contained herein.

MATERIAL REQUIREMENTS. For Types 1, 3 and 4 furnish materials consisting of approved Blast Furnace Slag, Stone, Sand, and Gravel, or blends of these materials.

For Type 2, furnish materials consisting of approved Blast Furnace Slag or of Stone which is the product of crushing or blasting ledge rock, or a blend of Blast Furnace Slag and of Stone.

A. STOCKPILE. Stockpile subbase material in accordance with the geotechnical control procedure “*Procedure for the Control and Quality Assurance of Granular Materials*” except as noted herein.

1. **Type 3.** Material furnished under Type 3 will not be required to be stockpiled unless it contains RCA, glass, or Corian®.

2. **Recycled Materials, Alternate C.** Stockpiling of the Reclaimed Asphalt Pavement (RAP) for Alternate C is not required.

B. GRADATION. Provide subbase material having a gradation in accordance with TABLE 733-04A *Subbase Gradation*.

TABLE 733-04A SUBBASE GRADATION				
Sieve Size Designation	Percentage Passing by Weight			
	Type 1	Type 2	Type 3	Type 4
100 mm	-	-	100	-
75 mm	100	-	-	-
50 mm	90-100	100	-	100
6.3 mm	30-65	25-60	30-75	30-65
425 µm	5-40	5-40	5-40	5-40
75 µm	0-10	0-10	0-10	0-10

C. PLASTICITY INDEX. Provide material having a Plasticity Index based on the material passing the 425 µm mesh sieve equal to or less than 5.0.