

## Section 4117. Class V Aggregate for Portland Cement Concrete

### 4117.01 DESCRIPTION.

A mixture of fine and coarse particles of feldspathic rocks from an approved source as described in [Materials I.M. 409](#).

### 4117.02 GRADATION.

Meet the gradation requirements for gradation No. 7 of the [Aggregate Gradation Table](#), Article 4109.02.

### 4117.03 QUALITY.

- A. For the portion retained on the No. 4 (4.75 mm) sieve, meet the requirements of Table 4117.03-1 for ~~fine~~ coarse aggregate for concrete.

**Table 4117.03-1: Aggregate Quality**

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
A Freeze	6	Office of Materials Test Method No. Iowa 211, Method A
Clay Lumps	0.5	<a href="#">Materials I.M. 368</a>

- B. For the portion of Class V aggregate passing the No. 4 (4.75 mm) sieve, meet the requirements of Table 4117.03-2 for fine aggregate for concrete:

**Table 4117.03-2: Fine Aggregate Quality**

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0 % (maximum)	<a href="#">Materials I.M. 344</a>
Mortar Strength	6000 psi (41.4 MPa) (minimum)	Office of Materials Test Method No. Iowa 212

### 4117.04 COMBINATIONS.

Use Class V aggregate for PC concrete only in combination with limestone as specified in [Materials I.M. 529](#). Acquire limestone from sources meeting the specified coarse aggregate durability for PC concrete.

#### A. Fine Limestone.

Meet the gradation requirements for gradation No. 8 of the [Aggregate Gradation Table](#), Article 4109.02.

#### B. Coarse Limestone.

Meet the requirements of [Section 4115](#).

### 4117.05 CEMENT REQUIREMENTS.

For Interstate and Primary projects, use the cement types and substitutions of Table 4117.05-1 when Class V aggregate is used.

**Table 4117.05-1: Cement Types and Substitutions**

Cement Type	Min. Required Substitution	Max. Allowable Substitution
Type I, Type II	20% Class F Fly Ash	25% Class F Fly Ash
Type I, Type II	25% GGBFS	35% GGBFS
Type IS, IP	---	20% Class C Fly Ash