

SECTION 105

FINE AGGREGATE FOR USE IN PORTLAND CEMENT CONCRETE

105.1 GENERAL REQUIREMENTS

A. General

Fine aggregate shall consist of natural sand, or, subject to approval, other inert materials with similar characteristics, or combinations thereof, having hard, strong, durable particles.

Fine aggregate from different sources shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix, without permission from the Engineer.

B. Related Work

Section 40 Portland Cement Concrete Pavement
 Section 55 Concrete Masonry
 Section 56 Concrete for Incidental Construction (Class M)
 Section 60 Concrete Curb and Gutter
 Section 61 Concrete Sidewalk and Handicapped Ramps
 Section 62 Drop Inlets
 Section 67 Fabric Formed Concrete Mat
 Section 107 Course Aggregate for use in Portland Cement Concrete

105.2 SPECIFIC REQUIREMENTS

A. Deleterious Substances

The amount of deleterious substances shall not exceed the following limits by dry weight:

Clay lumps	0.50%
Coal and lignite	0.25%
Shale and other materials having a specific gravity less than 1.95.....	1.00%
Other deleterious substances (such as alkali, mica, coated grains, soft and flaky particles	1.00%

The maximum amount of all deleterious substances listed above shall not exceed two percent (2.00%) by dry weight.

B. Soundness

When the fine aggregate is subjected to five alternations of the sodium sulfate soundness test, the weighted loss shall not exceed ten percent by weight.

When subject to five alternations of the sodium sulfate soundness test, the weighted loss of Class M concrete fine aggregate shall not exceed 12 percent by weight.

A satisfactory soundness record for deposits from which material has been used in concrete for five years or more may be considered as a substitute for performing the sodium sulfate soundness test.

C. Organic Impurities

Fine aggregate shall be free from injurious amounts of organic impurities. Aggregates subjected to the colorimetric test for organic impurities and producing a color darker than the standard shall be rejected unless they pass the mortar strength test specified in Paragraph D.

Should the aggregate show a darker color than samples originally approved for the work, it shall not be used until tests have been made to determine whether the increased color is indicative of an injurious amount of deleterious substances.

D. Mortar-Making Properties

When subjected to the test for mortar-making properties, the fine aggregate shall develop a compressive strength at the age of three days when using Type III cement or at seven days when using Types I or II cement, of not less than 90 percent of the strength developed by a mortar prepared in the same manner with the same cement and graded Ottawa sand having a fineness modulus of 2.40 ± 0.10 .

E. Grading

Fine aggregate shall be well graded from coarse to fine and shall conform to the following requirements:

Passing 3/4 inch sieve.....	100%
Passing No. 4 sieve.....	95-100%
Passing No.16 sieve.....	45-85%
Passing No. 50 sieve.....	10-30%
Passing No.100 sieve.....	2-10%

Class M concrete fine aggregate shall conform to the requirements, except the percent passing No. 100 sieve shall be 0-10%.

The percentage of material passing the No. 200 sieve shall be such that the composite mixture of fine and coarse aggregate will conform to the provisions of Section 107.

Fine aggregate failing to pass the minimum requirement for material passing the No. 50 or the No. 100 sieve may be used provided a satisfactory inorganic fine material is added during production to correct for the deficiency in gradation.

F. Uniformity of Grading

The gradation requirements given in Section 105.2.E. represent the extreme limits, which shall determine suitability for the use from all sources of supply. The gradation from any source shall be reasonably uniform and shall not exceed the extreme percentages of gradation specified above. For determining the degree of uniformity, a fineness modulus shall be made upon representative samples from source proposed for use. Fine aggregate from any source having a variation in fineness modulus greater than plus or minus two-tenths (0.2) from a representative sample may be rejected.

The uniformity of grading requirements does not apply to fine aggregate for Class M concrete.

G. Sampling and Testing

Sampling.....	SD 201
Gradation.....	SD 202
Shale	SD 208
Soundness.....	AASHTO T 104
Organic Impurities	AASHTO T 21
Clay Lumps.....	AASHTO T 112
Uniformity of Grading (Fineness Modulus)	AASHTO M 6

105.3 METHOD OF MEASUREMENT &

105.4 BASIS OF PAYMENT

Fine aggregate for use in Portland Cement Concrete or similar uses will not be measured or paid separately, but shall be incidental to the various bid items.

END OF SECTION