

SECTION 820 COARSE AGGREGATE FOR USE IN PORTLAND CEMENT CONCRETE

820.1 GENERAL REQUIREMENTS

- A. Coarse Aggregate for Concrete Pavement:** The coarse aggregate shall consist of crushed ledge rock conforming to the gradation requirements of Size Number 1.
- B. Coarse Aggregate for Class A Concrete:** The coarse aggregate shall consist of gravel, crushed gravel, or crushed rock conforming to the gradation requirement of Size Number 1.
- C. Coarse Aggregate for Bridge Deck Resurfacing:** The coarse aggregate shall be produced from crushed quarry stone from sources approved by the Engineer. The coarse aggregate shall conform to the gradation requirement of Size Number 3.
- D. Coarse Aggregate for Class M (I) Concrete:** Coarse aggregate for Class M (I) Concrete shall meet the gradation requirements for Size Number 1.
- E. Coarse Aggregate for Prestressed and Precast Concrete:** The coarse aggregate shall be the product of crushed limestone or quartzite ledge rock or other ledge rock. Coarse aggregate shall meet the gradation requirements of either Size No. 1 or Size No. 1A. The aggregate size shall be consistent throughout the entire structure. Only one source shall be used to produce each aggregate size.

820.2 SPECIFIC REQUIREMENTS

- A. Deleterious Substances:** The amount of deleterious substances shall not exceed the following limits by dry weight:

Clay lumps.....	0.25%
Coal and lignite.....	0.25%
Shale and other materials having a specific gravity less than 1.95.....	1.00%
Soft fragments.....	2.00%
Other deleterious substances (such as alkali, mica, coated grains, flaky particles, and chocolate rock).....	2.00%

The maximum amount of deleterious substances listed above shall not exceed 2.00 percent by dry weight.

The combined deleterious substances in the total mixture of fine and coarse aggregate for Class M (I) concrete shall not exceed the following limits:

Clay lumps.....	0.50%
Coal Lignite.....	0.25%
Shale & other material of less than 1.95 specific gravity.....	1.00%

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Other deleterious materials (such as
alkali, mica, coated grains, flaky
particles and chocolate rock)..... 3.00%

The maximum amount of all deleterious material shall not exceed 3.00 percent by dry weight.

- B. Percentage of Wear:** The percentage of wear, Los Angeles abrasion test, shall not be more than 40 percent by weight.
- C. Soundness:** When the coarse aggregate is subjected to five cycles of the sodium sulfate soundness test, the weighted loss shall not exceed ten percent by weight.

When Class M (I) coarse aggregate is subjected to five cycles of the sodium sulfate soundness test, the weighted loss 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.

- D. Gradation:** Each size of coarse aggregate shall conform to the gradation requirements specified in the following table:

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**PERCENTAGE BY DRY WEIGHT PASSING SIEVE
ENGLISH UNITS**

Size No.	Nominal Size Square Openings	1½ inch	1 inch	¾ inch	½ inch	ϕ inch	No. 4	No. 8
1	1 inch to No. 8	100	95-100		25-60		0-10	0-5*
1A	¾ inch to No. 8		100	90-100		20-55	0-10	0-5*
3	¾ inch to No. 8			100	97-100	40-90	5-20	0-5*
5	½ inch to No. 8			100	90-100	40-70	0-20	0-5*

* The combined mixture of fine and coarse aggregate shall be such that not more than 1.5 percent passes the No. 200 sieve. This limit shall not be more than 2.5 percent for Class M concrete.

METRIC

Size No.	Nominal Size Square Openings	37.5 mm	25.0 mm	19.0 mm	12.5 mm	9.50 mm	4.75 mm	2.36 mm
1	25.0 to 2.36 mm	00	95-100		25-60		0-10	0-5*
1A	19.0 to 2.36 mm		100	90-100		20-55	0-10	0-5*
3	19.0 to 2.36 mm			100	97-100	40-90	5-20	0-5*
5	12.5 to 2.36 mm			100	90-100	40-70	0-20	0-5*

* The combined mixture of fine and coarse aggregate shall be such that not more than 1.5 percent passes the 75F m sieve. This limit shall not be more than 2.5 percent for Class I concrete.

E. Sampling and Testing:

Sampling.....	SD 201
Gradation.....	SD 202
Clay lumps.....	AASHTO T 112
Shale.....	SD 214
Soft Fragments.....	SD 218
Chocolate Rock.....	SD 216
L A Abrasion.....	AASHTO T 96
Soundness Test (Sodium Sulfate Solution, five cycles).....	SD 220
Material Finer than No. 200 (75F m) Sieve.....	SD 206