Missouri Standard Specifications

As of May 1, 2020

Aggregate Gradation Requirements

Section 1003 – Aggregate for Seal Coats

Sieve	Percent Passing by Weight				
	Grade A1	Grade A2	Grade B1	Grade B2	Grade C
1/2 inch	100	100	100	100	100
3/8 inch	97 – 100	100	95 – 100	100	95 – 100
1/4 inch	---	97 – 100	---	95 – 100	---
No. 4	0 – 25	---	0 – 30	---	0 – 35
No. 8	---	0 – 30	---	0 – 30	---
No. 200[a,b]	0 – 1.0	0 – 1.5	0 - 2	0 – 2.5	0 – 2

[a]The percent passing the No. 200 sieve may be increased by 1.0 percent if aggregate is pre-coated with bituminous material.

[b]The percent passing the No. 200 sieve may be raised by 0.5 percent at the destination to account for breakdown due to handling

Section 1005 - Aggregate for Concrete (Crushed Stone & Gravel)

Sieve	Percent Passing by Weight	
	Gradation D	Gradation E
1 inch	100	100
3/4 inch	85 – 100	100
1/2 inch	---	70 – 100
3/8 inch	15 – 55	30 – 70
No. 4	0 – 10	0 – 20
No. 8	---	0 – 6
No. 200[a]	0 – 2.5	0 – 2.5

[a]The percent passing the No. 20 sieve may be raised to 3.0 percent provided the material passing the No. 200 sieve in the fine aggregate is less than or equal to 1.0 percent

Section 1005 - Aggregate for Concrete (Natural Sand & Manufactured Sand)

Sieve	Percent Passing by Weight
	PCCM
3/8 inch	100
No. 4	95 – 100
No. 8	70 – 100
No. 16	45 – 90
No. 30	15 – 65
No. 50	5 – 30
No. 100	0 – 10
No. 200	0 – 2.0[a]
	0 – 4.0[b]

[a]Natural Sand

[b]Manufactured Sand

Section 1005 - Aggregate for Concrete (Lightweight Aggregate)

Sieve	Percent Passing by Weight				
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
1 1/2 inch	100	100	100	100	100
1 inch	90 – 100	95 – 100	100	100	100
3/4 inch	20 – 55	---	90 – 100	100	100
1/2 inch	0 – 10	25 – 60	---	90 – 100	100
3/8 inch	0 – 5	---	20 – 55	40 – 70	85 – 100
No. 4	---	0 – 10	0 – 10	0 – 15	10 – 30
No. 8	---	0 – 5	0 – 5	0 – 5	0 – 10
No. 16	---	---	---	---	0 – 5
No. 200	---	---	---	---	---

Section 1006 – Aggregate for Surfacing

Sieve	Percent Passing by Weight		
	Gravel	Crushed Stone or Reclaimed Concrete	Chat
	Grade A[a]	Grade B[a]	Grade C
1 inch	100	100	100
3/4 inch	80 – 100	---	---
3/8 inch	---	Max. 65	---
No. 4	Max. 60	---	Max. 80
No. 10	10 – 35	5 – 25	Max. 45
No. 200	0 – 10	---	---

[a]Type I Aggregate for Base may be used, except all material shall be in accordance with Section 1007

Section 1007 – Aggregate for Base (Crushed Stone, Sand, Gravel or Reclaimed Asphalt or Concrete)

Sieve	Percent Passing by Weight		
	Type 1	Type 5	Type 7
1 1/2 inch	100	100	100
1 inch	100	100	70 – 100
1/2 inch	60 – 90	60 – 90	---
No. 4	35 – 60	35 – 60	---
No. 8	---	---	15 – 50
No. 30	10 – 35	10 – 35	---
No. 200	---	0 – 15	0 - 12

Section 1009 – Aggregate for Drainage

Grade 1: Aggregate shall be sand and shall be in accordance with Section 1005.3

Grade 2: Aggregate shall be a washed sand-gravel mixture

Sieve	Percent Passing by Weight
1 inch	100
1/2 inch	55 – 90
No. 10	25 – 50
No. 40	10 – 30
No. 100	0 – 10
No. 200	0 – 3

Grade 3: Aggregate shall be a gravel, crushed stone, reclaimed concrete, or other approved material meeting on the gradation requirements for Section 1005.2

Grade 4: Aggregate shall be crushed limestone or dolomite or reclaimed concrete

Sieve	Percent Passing by Weight	
	Gradation A	Gradation B
1 1/2 inch	100	100
1 inch	95 – 100	100
3/4 inch	---	90 – 100
1/2 inch	25 – 60	---
3/8 inch	---	20 – 55
No. 4	0 – 10	0 – 10
No. 8	0 – 5	0 – 5
No. 200	---	---

Grade 5: Aggregate shall be crushed limestone or dolomite or reclaimed concrete

Sieve	Percent Passing by Weight
1 1/2 inch	100
1 inch	95 – 100
1/2 inch	60 – 80
No. 4	40 – 55
No. 8	5 – 25
No. 16	0 – 8
No. 50	0 – 5

Specifications – D-Cracking

1005.2.3 Grade F Aggregate. Coarse aggregate for Portland cement concrete pavement, base and approach slabs for bridges that is not produced from the Burlington, Keokuk, Cedar Valley (formerly Callaway) or Warsaw limestone formations, which is obtained from sources in the following areas shall have a maximum top size of ¾ inch:

(a) State of Kansas, Iowa and Nebraska.

(b) Counties of Missouri – Adair, Andrew, Atchison, Bates, Benton, Buchanan, Caldwell, Carroll, Cass, Cedar, Chariton, Clay, Clinton, Daviess, DeKalb, Gentry, Grundy, Harrison, Henry, Holt, Jackson, Johnson, Lafayette, Linn, Livingston, Mercer, Macon, Nodaway, Pettis, Platte, Putnam, Randolph, Ray, St. Clair, Saline, Schuyler, Sullivan, Vernon and Worth.

Gradation Specifications – PCCP and PCCM

501.3.2 Paving Concrete. For PCCP mixes, the gradation requirements of Sec 1005 will not apply. For all fractions, 100 percent of each fraction shall pass the 2-inch sieve. When Grade F is required, 100 percent of each fraction shall pass the 3/4-inch sieve.

501.3.3 Optimized Masonry Concrete. For optimized PCCM mixes, the gradation requirements of Sec 1005.2 and Sec 1005.3 will not apply. For coarse aggregate, 100 percent of each fraction shall pass the one-inch sieve and no more that 2.5 percent shall pass the No. 200 sieve. This value may be increased to 3.0 percent passing, provided there is no more than 1.0 percent of the material passing the No. 200 sieve in the fine aggregate. For fine aggregate, no more than 2.0 percent shall pass the No. 200 sieve for natural sand, and no more than 4.0 percent shall pass the No. 200 sieve for manufactured sand.

501.3.4 Non-Optimized Masonry Concrete. When optimized aggregate gradations are not selected by the contractor, all provisions, including gradations requirements of Sec 1005 shall apply