

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

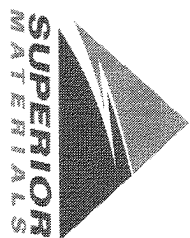
Sample Date: **6/12/23**

Dates Test Represents: **6/13/2023** through **6/19/2023**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stonoco	1600	9.53	2.69	54.2	
26A	58-003	Stonoco	200	1.19	2.69	6.8	
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0	
Total Wt:						2950	17.68
						100.0	

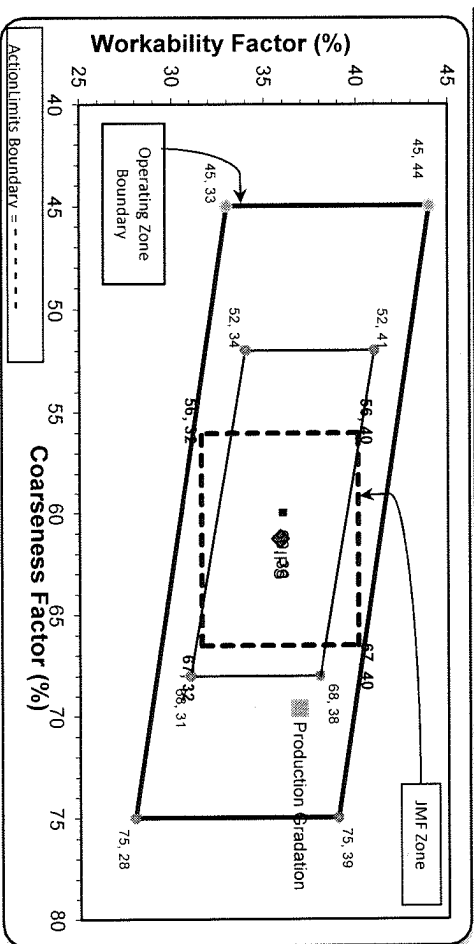
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.4	100.0	100.0	99.7	0.3	0.3
3/4"	74.9	100.0	100.0	86.4	13.3	13.6
1/2"	32.2	99.9	100.0	63.2	23.2	36.8
3/8"	16.8	91.9	100.0	54.3	8.9	45.7
#4	3.4	14.1	98.4	41.2	13.2	58.8
#8	1.8	5.1	84.8	34.4	6.8	65.6
#16	1.5	4.0	68.5	27.8	6.6	72.2
#30	1.4	3.4	50.6	20.7	7.1	79.3
#50	1.2	3.1	25.7	10.9	9.8	89.1
#100	1.2	3.0	7.8	3.9	7.0	96.1
LBW	1.0	2.8	1.6	1.4	2.5	98.6

Verify this number is 100%

*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max., #100 and #200 sieves.
 **Retained must be at least 4% for each sieve except max.
 nom. max., #100 and #200 sieves.
 ***Retained must be at least 8% for the 1" sieve when
 a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **70** Workability Factor: **34** Adjusted WF: **36.9**



Sieve	Coarseness Factor:	Workability Factor:	Adjusted WF:
2"	100.0	100.0	0.0
1.5"	100.0	100.0	0.0
1"	99.3	100.0	0.7
3/4"	89.2	100.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S102-Superior Novi

Product 1051-6AA LS

Period: 06/11/2023 - 06/17/2023

Name/Title Doug Storey / QC Technician

Report Date 06/17/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.4	%	95-100
	3/4" (19mm)	74.9	%	
	1/2" (12.5mm)	32.2	%	30-60
	3/8" (9.5mm)	16.8	%	
	#4 (4.75mm)	3.4	%	0-8
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.2	%	
	#200 (75µm)	1.12	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	3.55	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Period: 06/11/2023 - 06/17/2023

Name/Title Doug Storey / QC Technician

Report Date 06/17/2023

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	99.9	%	95-100
	3/8" (9.5mm)	91.9	%	60-95
	#4 (4.75mm)	14.1	%	5-30
	#8 (2.36mm)	5.1	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.4	%	
	#50 (.3mm)	3.1	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.8	%	
	Wash Loss (#200/75um)	2.8	%	0-3
	Total Moisture	3.09	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Period: 06/11/2023 - 06/17/2023

Name/Title Doug Storey / QC Technician

Report Date 06/17/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.4	%	95-100
	#8 (2.36mm)	84.8	%	65-95
	#16 (1.18mm)	68.5	%	35-75
	#30 (.6mm)	50.6	%	20-55
	#50 (.3mm)	25.7	%	10-30
	#100 (.15mm)	7.8	%	0-10
	#200 (75µm)	2.1	%	
	FM	2.64		2.6-3
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.35	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

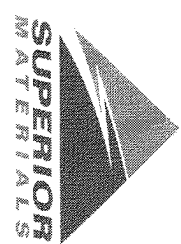
Sample Date: 6/12/23

Dates Test Represents: 6/13/2023 through 6/19/2023

Concrete Grade: DM, 4500HP

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stonoco	1600	9.53	2.69	54.2	
26A	58-003	Stonoco	200	1.19	2.69	6.8	
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0	
Total Wt:						2950	17.68
						100.0	

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	79.8	100.0	100.0	89.0	11.0	11.0
1/2"	42.5	99.6	100.0	68.8	20.3	31.2
3/8"	19.0	88.6	100.0	55.3	13.5	44.7
#4	2.6	10.8	99.2	40.8	14.5	59.2
#8	1.2	3.7	83.6	33.5	7.3	66.5
#16	1.0	2.7	64.7	25.9	7.5	74.1
#30	0.9	2.4	45.1	18.2	7.7	81.8
#50	0.9	2.2	20.7	8.7	9.5	91.3
#100	0.9	2.0	6.0	3.0	5.7	97.0
LBW	0.7	1.9	1.5	1.1	1.9	98.9

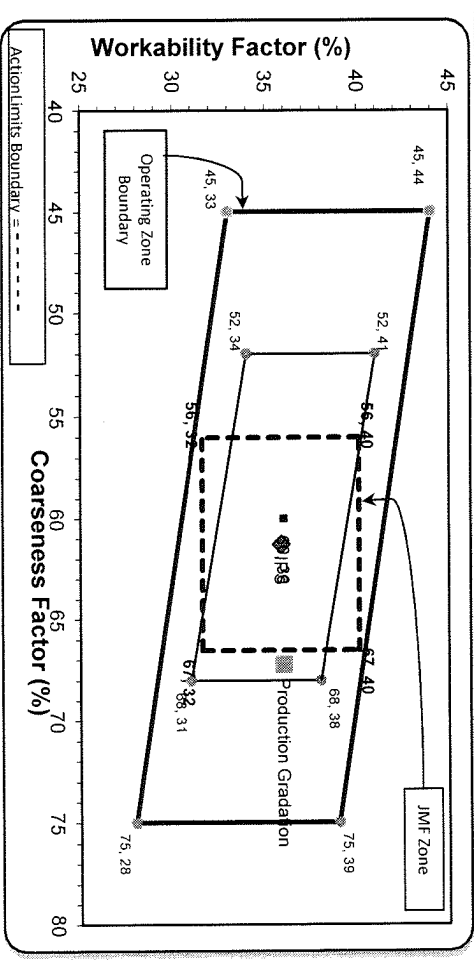
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 **Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 ***Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 67 **Workability Factor:** 33 **Adjusted WF:** 36.0

Initial Production Sample (IPS)

Coarseness Factor: 61 **Workability Factor:** 36



Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:
 SM, LLC Technical Service

Approved BY: _____



Plant S103-Superior Brighton

Product 1051-6AA LS

Period: 06/11/2023 - 06/17/2023

Name/Title Doug Storey / QC Technician

Report Date 06/17/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	79.8	%	
	1/2" (12.5mm)	42.5	%	30-60
	3/8" (9.5mm)	19.0	%	
	#4 (4.75mm)	2.6	%	0-8
	#8 (2.36mm)	1.2	%	
	#16 (1.18mm)	1.0	%	
	#30 (.6mm)	0.9	%	
	#50 (.3mm)	0.9	%	
	#100 (.15mm)	0.9	%	
	#200 (75µm)	0.77	%	
	Wash Loss (#200/75um)	0.7	%	0-2
	Total Moisture	3.82	%	



Plant S103-Superior Brighton
 Product 1067-26A Mod LS
 Period: 06/11/2023 - 06/17/2023

Name/Title Doug Storey / QC Technician
 Report Date 06/17/2023

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	99.6	%	95-100
	3/8" (9.5mm)	88.6	%	60-95
	#4 (4.75mm)	10.8	%	5-30
	#8 (2.36mm)	3.7	%	0-12
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.4	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	2.0	%	
	Wash Loss (#200/75µm)	1.9	%	0-3
	Total Moisture	4.08	%	



Plant S103-Superior Brighton
 Product 1022-2NS GR
 Period: 06/11/2023 - 06/17/2023

Name/Title Doug Storey / QC Technician
 Report Date 06/17/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.2	%	95-100
	#8 (2.36mm)	83.6	%	65-95
	#16 (1.18mm)	64.7	%	35-75
	#30 (.6mm)	45.1	%	20-55
	#50 (.3mm)	20.7	%	10-30
	#100 (.15mm)	6.0	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.81		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.65	%	