

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

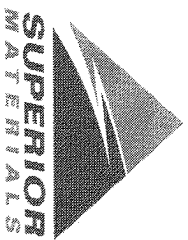
Sample Date: **9/18/23**

Dates Test Represents: **9/19/2023** through **9/25/2023**

Concrete Grade: **DM, 450HP**

Contractor: _____

MDOT No.: _____



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

<----- Verify this number is 100%

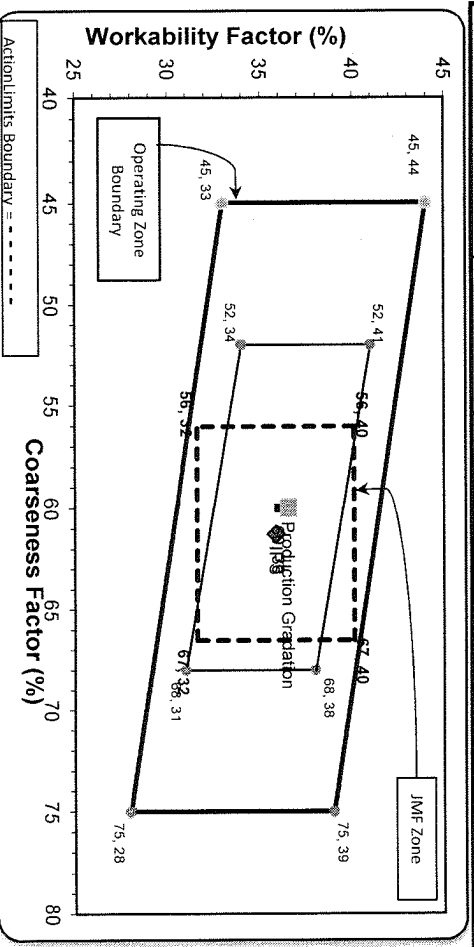
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1500	8.94	2.69	50.8	
26A	58-003	Stoneco	300	1.79	2.69	10.2	
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0	
Total Wt						2950	100.0

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"	85.2	100.0	100.0	92.5	7.5	7.5
1/2"	45.5	99.7	100.0	72.3	20.2	27.7
3/8"	23.7	92.5	100.0	60.4	11.8	39.6
#4	3.0	19.2	98.2	41.8	18.7	58.2
#8	1.8	5.2	83.6	34.0	7.7	66.0
#16	1.5	3.6	66.0	26.9	7.2	73.1
#30	1.4	3.2	48.1	19.8	7.1	80.2
#50	1.3	3.0	23.7	10.2	9.6	89.8
#100	1.3	2.9	6.1	3.3	6.9	96.7
LBW	1.1	2.8	1.5	1.4	1.9	98.6

*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 4% for the 3/4" sieve when
a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **60** Workability Factor: **34** Adjusted WF: **36.5**



Sieve	% 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 S102-Superior Novi

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

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)	85.2	%	
	1/2" (12.5mm)	45.5	%	30-60
	3/8" (9.5mm)	23.7	%	
	#4 (4.75mm)	3.0	%	0-8
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.3	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.15	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	2.88	%	



Plant S102-Superior Novi
 Product 1067-26A Mod LS
 Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician
 Report Date 09/23/2023

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)	99.7	%	95-100
	3/8" (9.5mm)	92.5	%	60-95
	#4 (4.75mm)	19.2	%	5-30
	#8 (2.36mm)	5.2	%	0-12
	#16 (1.18mm)	3.6	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	3.0	%	
	#100 (.15mm)	2.9	%	
	#200 (75µm)	2.8	%	
	Wash Loss (#200/75um)	2.8	%	0-3



Plant S102-Superior Novi
Product 1022-2NS GR
Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician
Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.2	%	95-100
	#8 (2.36mm)	83.6	%	65-95
	#16 (1.18mm)	66.0	%	35-75
	#30 (.6mm)	48.1	%	20-55
	#50 (.3mm)	23.7	%	10-30
	#100 (.15mm)	6.1	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.15	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-103**

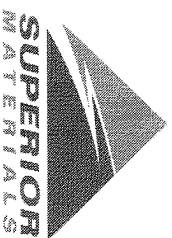
Sample Date: **9/18/23**

Dates Test Represents: **9/19/2023** through **9/25/2023**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____



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

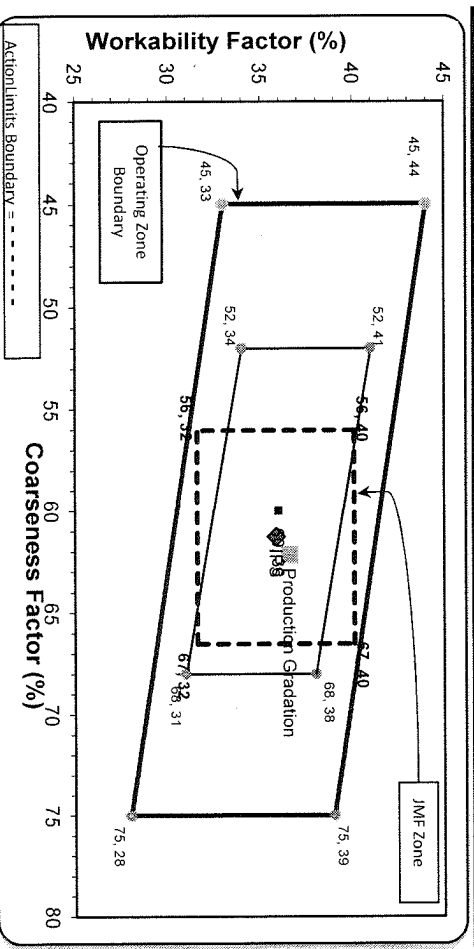
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1500	8.94	2.69	50.8	
26A	58-003	Stoneco	300	1.79	2.69	10.2	
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0	
Total Wt						2950	100.0

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"	76.3	100.0	100.0	87.9	12.1	12.1
1/2"	40.0	99.1	100.0	69.4	18.5	30.6
3/8"	22.5	84.7	100.0	59.0	10.4	41.0
#4	3.8	8.3	98.6	41.2	17.8	58.8
#8	2.1	2.7	84.0	34.1	7.1	65.9
#16	1.7	2.0	66.0	26.8	7.3	73.2
#30	1.6	1.8	47.7	19.6	7.2	80.4
#50	1.5	1.7	22.6	9.7	9.8	90.3
#100	1.4	1.6	6.2	3.3	6.5	96.7
LBW	1.2	1.5	1.4	1.3	2.0	98.7

*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 4% for the 3/4" sieve when
 a 1.5" max. size (nom. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **62** Workability Factor: **34** Adjusted WF: **36.6**



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:	Adjusted WF
2"	100.0	61	36	36.6
1.5"	100.0			
1"	99.3			
3/4"	89.2			
1/2"	70.7			
3/8"	60.7			
#4	44.4			
#8	35.9			
#16	27.3			
#30	19.1			
#50	7.4			
#100	1.9			
LBW	0.7			

PREPARED BY:
SM, LLC Technical Service

Approved BY: _____



Plant S103-Superior Brighton

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

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)	76.3	%	
	1/2" (12.5mm)	40.0	%	30-60
	3/8" (9.5mm)	22.5	%	
	#4 (4.75mm)	3.8	%	0-8
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.7	%	
	#30 (.6mm)	1.6	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.28	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	3.40	%	



Plant S103-Superior Brighton

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

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)	99.1	%	95-100
	3/8" (9.5mm)	84.7	%	60-95
	#4 (4.75mm)	8.3	%	5-30
	#8 (2.36mm)	2.7	%	0-12
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.18	%	



Plant S103-Superior Brighton

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.6	%	95-100
	#8 (2.36mm)	84.0	%	65-95
	#16 (1.18mm)	66.0	%	35-75
	#30 (.6mm)	47.7	%	20-55
	#50 (.3mm)	22.6	%	10-30
	#100 (.15mm)	6.2	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	2.74	%	