

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: **7/31/23**

Dates Test Represents: **8/1/2023** through **8/7/2023**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____



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

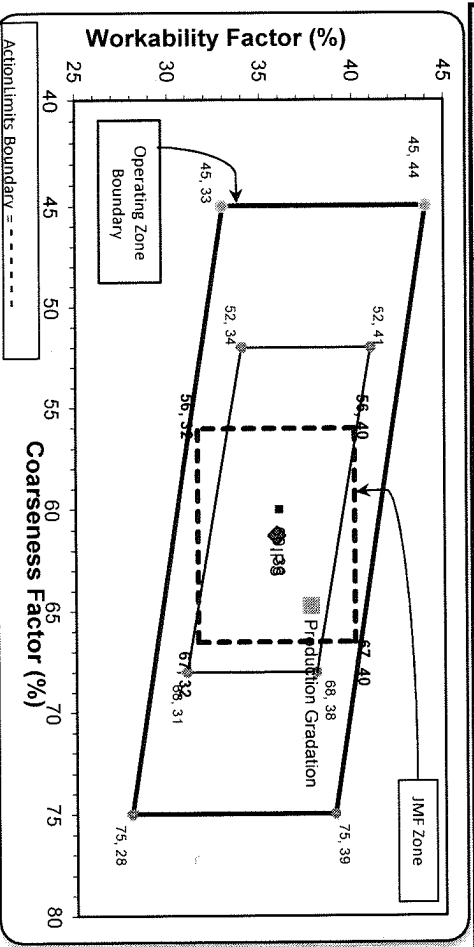
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1575	9.38	2.69	53.4
26A	58-003	Stoneco	225	1.34	2.69	7.6
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
			Total Wt	2950		100.0

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"	99.0	100.0	100.0	99.5	0.5	0.5
3/4"	87.1	100.0	100.0	93.1	6.4	6.9
1/2"	48.1	99.3	100.0	72.2	20.9	27.8
3/8"	22.9	89.7	100.0	58.1	14.2	41.9
#4	3.3	13.7	99.6	41.6	16.4	58.4
#8	1.6	5.2	87.1	35.2	6.4	64.8
#16	1.4	3.8	70.2	28.4	6.8	71.6
#30	1.3	3.3	52.5	21.4	7.0	78.6
#50	1.2	3.0	26.7	11.3	10.1	88.7
#100	1.2	2.8	6.9	3.5	7.7	96.5
LBW	1.0	2.7	0.9	1.1	2.5	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 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: **65** Workability Factor: **35** Adjusted WF: **37.7**



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:	Adjusted WF
2"	100.0	61	36	37.7
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 S102-Superior Novi

Product 1051-6AA LS

Period: 07/30/2023 - 08/05/2023

Name/Title Doug Storey / QC Technician

Report Date 08/05/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.0	%	95-100
	3/4" (19mm)	87.1	%	
	1/2" (12.5mm)	48.1	%	30-60
	3/8" (9.5mm)	22.9	%	
	#4 (4.75mm)	3.3	%	0-8
	#8 (2.36mm)	1.6	%	
	#16 (1.18mm)	1.4	%	
	#30 (.6mm)	1.3	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.2	%	
	#200 (75µm)	1.07	%	
	Wash Loss (#200/75µm)	1.0	%	0-2
	Total Moisture	3.54	%	



Plant S102-Superior Novi
 Product 1067-26A Mod LS
 Period: 07/30/2023 - 08/05/2023

Name/Title Doug Storey / QC Technician
 Report Date 08/05/2023

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)	99.3	%	95-100
	3/8" (9.5mm)	89.7	%	60-95
	#4 (4.75mm)	13.7	%	5-30
	#8 (2.36mm)	5.2	%	0-12
	#16 (1.18mm)	3.8	%	
	#30 (.6mm)	3.3	%	
	#50 (.3mm)	3.0	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75µm)	2.7	%	0-3
	Total Moisture	3.37	%	



Plant S102-Superior Novi
 Product 1022-2NS GR
 Period: 07/30/2023 - 08/05/2023

Name/Title Doug Storey / QC Technician
 Report Date 08/05/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.6	%	95-100
	#8 (2.36mm)	87.1	%	65-95
	#16 (1.18mm)	70.2	%	35-75
	#30 (.6mm)	52.5	%	20-55
	#50 (.3mm)	26.7	%	10-30
	#100 (.15mm)	6.9	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.57		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	4.72	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

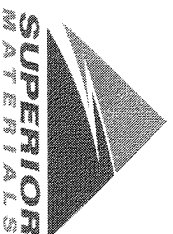
Sample Date: 7/31/23

Dates Test Represents: 8/1/2023 through 8/7/2023

Concrete Grade: DM, 4500HP

Contractor: _____

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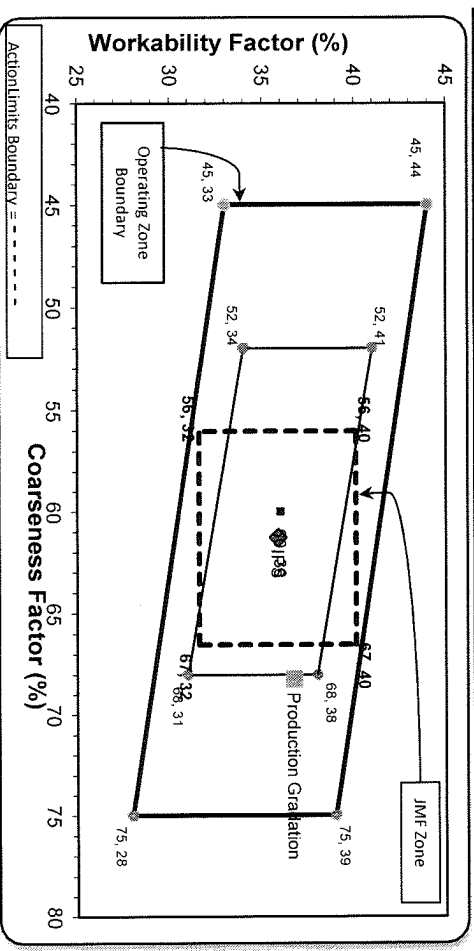
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1575	9.38	2.69	53.4
26A	58-003	Stoneco	225	1.34	2.69	7.6
ZNS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
			Total Wt	2950		100.0

Sieve	6AA	26A	ZNS	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"	97.5	100.0	100.0	98.7	1.3	1.3
3/4"	75.2	100.0	100.0	86.8	11.9	13.2
1/2"	36.7	99.5	100.0	66.2	20.6	33.8
3/8"	17.9	86.3	100.0	55.1	11.0	44.9
#4	3.5	9.8	98.1	40.9	14.3	59.1
#8	2.1	3.0	84.3	34.2	6.6	65.8
#16	1.8	2.1	67.4	27.4	6.8	72.6
#30	1.7	1.8	49.7	20.4	7.0	79.6
#50	1.7	1.7	24.5	10.6	9.8	89.4
#100	1.6	1.6	5.9	3.3	7.3	96.7
LBW	1.4	1.4	0.7	1.1	2.1	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 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: 68 **Workability Factor:** 34 **Adjusted WF:** 36.7



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 S103-Superior Brighton

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 07/30/2023 - 08/05/2023

Report Date 08/05/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.5	%	95-100
	3/4" (19mm)	75.2	%	
	1/2" (12.5mm)	36.7	%	30-60
	3/8" (9.5mm)	17.9	%	
	#4 (4.75mm)	3.5	%	0-8
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.49	%	
	Wash Loss (#200/75µm)	1.4	%	0-2
	Total Moisture	3.23	%	



Plant S103-Superior Brighton

Product 1067-26A Mod LS

Period: 07/30/2023 - 08/05/2023

Name/Title Doug Storey / QC Technician

Report Date 08/05/2023

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)	99.5	%	95-100
	3/8" (9.5mm)	86.3	%	60-95
	#4 (4.75mm)	9.8	%	5-30
	#8 (2.36mm)	3.0	%	0-12
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	3.64	%	



Plant S103-Superior Brighton

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 07/30/2023 - 08/05/2023

Report Date 08/05/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.1	%	95-100
	#8 (2.36mm)	84.3	%	65-95
	#16 (1.18mm)	67.4	%	35-75
	#30 (.6mm)	49.7	%	20-55
	#50 (.3mm)	24.5	%	10-30
	#100 (.15mm)	5.9	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.70		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	3.63	%	