

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: **7/17/23**

Dates Test Represents: **7/18/2023** through **7/24/2023**

Concrete Grade: **DM 4500HP**

Contractor: _____

MDOT No.: _____

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

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

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"	79.7	100.0	100.0	89.2	10.8	10.8
1/2"	42.2	99.3	100.0	69.1	20.1	30.9
3/8"	23.6	88.6	100.0	58.3	10.7	41.7
#4	4.9	9.7	99.1	42.0	16.4	58.0
#8	2.2	3.3	85.4	34.7	7.3	65.3
#16	1.8	2.4	67.5	27.5	7.3	72.5
#30	1.6	2.0	48.9	20.1	7.4	79.9
#50	1.5	1.8	23.4	10.1	10.0	89.9
#100	1.4	1.8	6.5	3.4	6.6	96.6
LBW	1.2	1.7	0.9	1.1	2.3	98.9

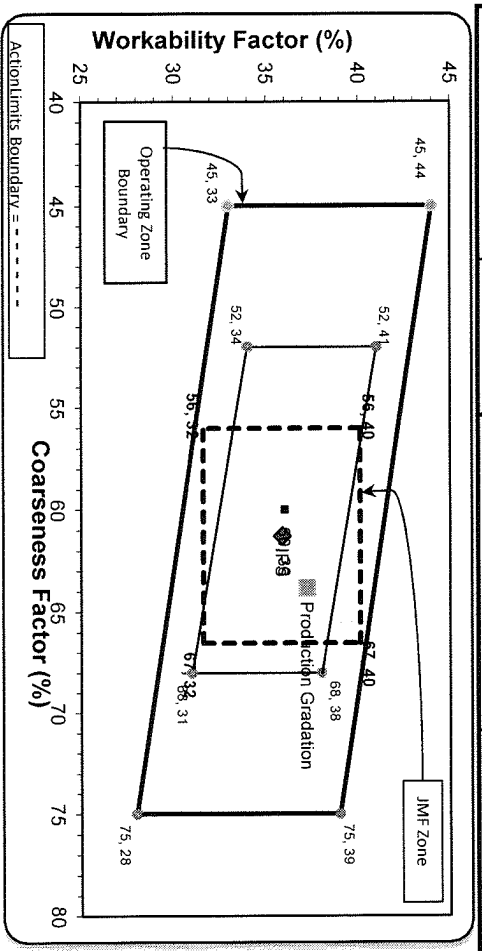
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max. nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max. nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **64** Workability Factor: **35** Adjusted WF: **37.2**

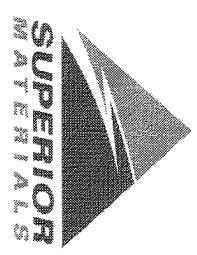
Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	61	36	0.0	0.0
1.5"			0.0	0.0
1"			0.7	0.7
3/4"			10.1	10.8
1/2"			18.5	29.3
3/8"			10.0	39.3
#4			16.3	55.6
#8			8.5	64.1
#16			8.6	72.7
#30			8.2	80.9
#50			11.7	92.6
#100			5.6	98.1
LBW			1.2	99.3



PREPARED BY:
SM, LLC Technical Service

Approved By: _____



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



Plant S102-Superior Novi

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 07/16/2023 - 07/22/2023

Report Date 07/22/2023

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)	79.7	%	
	1/2" (12.5mm)	42.2	%	30-60
	3/8" (9.5mm)	23.6	%	
	#4 (4.75mm)	4.9	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.6	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.29	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	3.02	%	



Plant S102-Superior Novi
 Product 1067-26A Mod LS
 Period: 07/16/2023 - 07/22/2023

Name/Title Doug Storey / QC Technician
 Report Date 07/22/2023

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)	88.6	%	60-95
	#4 (4.75mm)	9.7	%	5-30
	#8 (2.36mm)	3.3	%	0-12
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	1.85	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 07/16/2023 - 07/22/2023

Report Date 07/22/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.1	%	95-100
	#8 (2.36mm)	85.4	%	65-95
	#16 (1.18mm)	67.5	%	35-75
	#30 (.6mm)	48.9	%	20-55
	#50 (.3mm)	23.4	%	10-30
	#100 (.15mm)	6.5	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.69		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	4.39	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

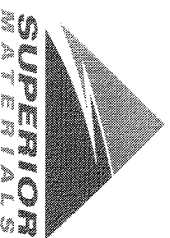
Sample Date: 7/17/23

Dates Test Represents: 7/18/2023 through 7/24/2023

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
NNS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
			Total Wt	2950	17.68	100.0

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	0.6	0.6
3/4"	8.0	8.6
1/2"	19.6	28.2
3/8"	12.6	40.9
#4	16.2	57.1
#8	8.1	65.2
#16	7.4	72.6
#30	7.3	80.0
#50	9.8	89.8
#100	6.4	96.1
LBW	2.4	98.5

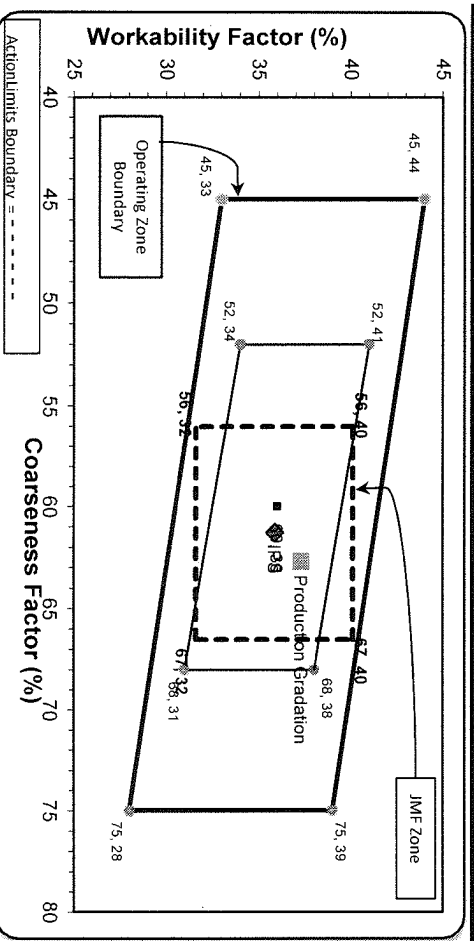
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size (nom.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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 63 Workability Factor: 35 Adjusted WF: 37.3

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: 07/16/2023 - 07/22/2023

Name/Title Doug Storey / QC Technician

Report Date 07/22/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.8	%	95-100
	3/4" (19mm)	83.9	%	
	1/2" (12.5mm)	47.2	%	30-60
	3/8" (9.5mm)	25.5	%	
	#4 (4.75mm)	6.6	%	0-8
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.57	%	
	Wash Loss (#200/75µm)	1.5	%	0-2
	Total Moisture	2.73	%	



Plant S103-Superior Brighton

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 07/16/2023 - 07/22/2023

Report Date 07/22/2023

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)	85.6	%	60-95
	#4 (4.75mm)	9.0	%	5-30
	#8 (2.36mm)	3.2	%	0-12
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75µm)	1.8	%	0-3
	Total Moisture	1.96	%	



Plant S103-Superior Brighton

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 07/16/2023 - 07/22/2023

Report Date 07/22/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.3	%	95-100
	#8 (2.36mm)	84.4	%	65-95
	#16 (1.18mm)	66.7	%	35-75
	#30 (.6mm)	48.2	%	20-55
	#50 (.3mm)	23.4	%	10-30
	#100 (.15mm)	7.1	%	0-10
	#200 (75µm)	2.2	%	
	FM	2.71		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.66	%	