

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-101**

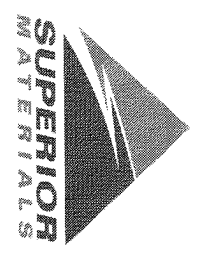
Sample Date: **5/22/23**

Dates Test Represents: **5/23/2023** through **5/29/2023**

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	71-47	Presque Isle	1450	8.87	2.62	50.0
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	75-051	Mid Michigan	1150	6.93	2.66	39.7
Total Wt			2900	17.63		100.0

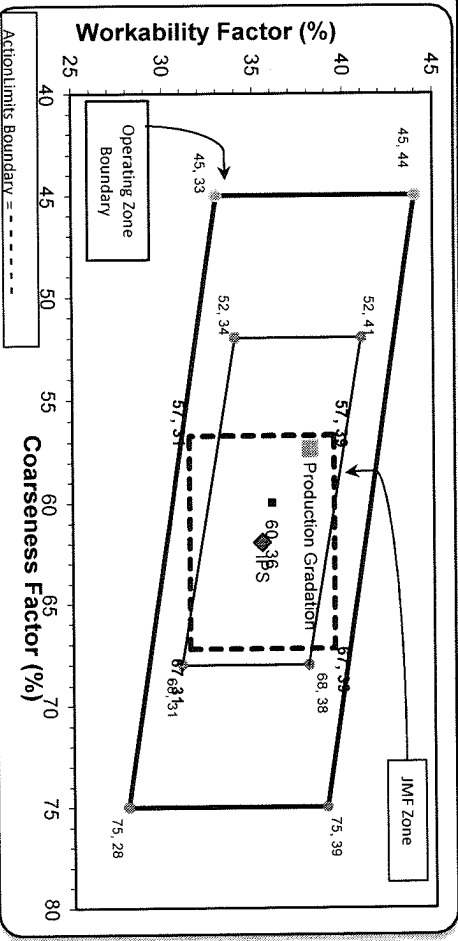
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	83.8	100.0	100.0	100.0	8.1	8.1
1/2"	46.3	100.0	100.0	96.7	19.1	27.2
3/8"	28.5	88.8	100.0	88.8	9.7	36.9
#4	6.4	25.2	97.6	88.8	18.6	55.5
#8	3.6	6.6	83.6	83.6	8.9	64.4
#16	3.0	3.7	69.8	83.6	6.1	70.4
#30	2.8	3.1	54.5	83.6	6.2	76.7
#50	2.6	2.8	28.4	83.6	10.5	87.1
#100	2.5	2.5	8.0	83.6	8.2	95.3
LBW	2.0	2.0	0.8	83.6	3.2	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: **57** Workability Factor: **36** Adjusted WF: **38.1**

Initial Production Sample (IPS) Coarseness Factor: **62** Workability Factor: **35**



Sieve	Initial Production Sample (IPS) % Passing	Initial Production Sample (IPS) % Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	95.0	5.0	5.0
1/2"	70.5	24.5	29.5
3/8"	60.0	10.5	40.0
#4	44.4	15.6	55.6
#8	35.5	9.0	64.5
#16	28.5	7.0	71.5
#30	21.5	7.0	78.5
#50	10.2	11.3	89.8
#100	3.1	7.1	96.9
LBW	1.3	1.8	98.7

PREPARED BY: SM, LLC Technical Service

Approved By: _____



Plant S101-Superior Mount Clemens

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 05/21/2023 - 05/27/2023

Report Date 05/26/2023

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)	83.8	%	
	1/2" (12.5mm)	46.3	%	30-60
	3/8" (9.5mm)	28.5	%	
	#4 (4.75mm)	6.4	%	0-8
	#8 (2.36mm)	3.6	%	
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.8	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.14	%	
	Wash Loss (#200/75um)	2.0	%	0-2
	Total Moisture	2.57	%	



Plant S101-Superior Mount Clemens

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 05/21/2023 - 05/27/2023

Report Date 05/26/2023

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)	96.7	%	95-100
	3/8" (9.5mm)	88.8	%	60-95
	#4 (4.75mm)	25.2	%	5-30
	#8 (2.36mm)	6.6	%	0-12
	#16 (1.18mm)	3.7	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.2	%	
	Wash Loss (#200/75um)	2.0	%	0-3
	Total Moisture	2.47	%	



Plant S101-Superior Mount Clemens

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 05/21/2023 - 05/27/2023

Report Date 05/26/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.6	%	95-100
	#8 (2.36mm)	83.6	%	65-95
	#16 (1.18mm)	69.8	%	35-75
	#30 (.6mm)	54.5	%	20-55
	#50 (.3mm)	28.4	%	10-30
	#100 (.15mm)	8.0	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.58		2.6-3
	Wash Loss (#200/75um)	0.8	%	0-3
	Total Moisture	3.64	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

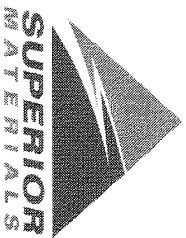
Sample Date: **5/22/23**

Dates Test Represents: **5/23/2023** through **5/29/2023**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____



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

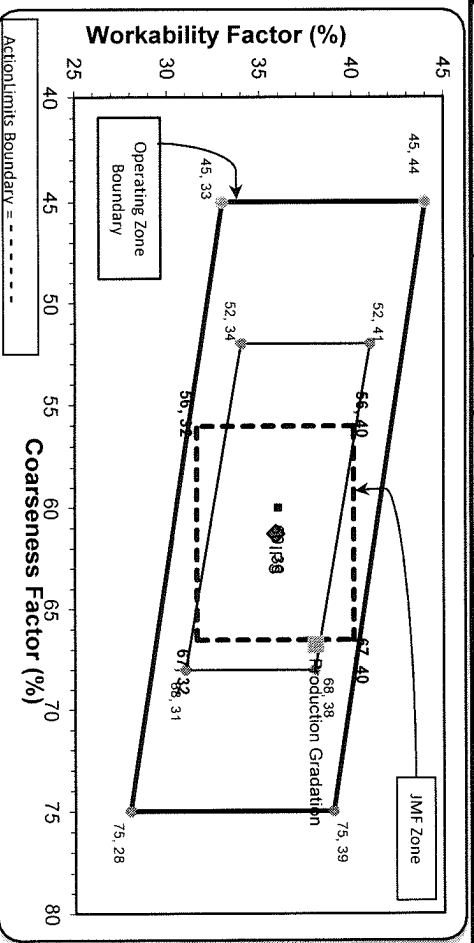
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1600	9.53	2.69	54.2	
26A	58-003	Stoneco	200	1.19	2.69	6.8	
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0	
Total Wt:						2950	100.0

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"	99.3	100.0	100.0	99.6	0.4	0.4
3/4"	82.8	100.0	100.0	90.7	8.9	9.3
1/2"	43.7	99.4	100.0	69.4	21.2	30.6
3/8"	22.4	86.0	100.0	57.0	12.5	43.0
#4	4.7	11.7	98.8	41.9	15.1	58.1
#8	3.1	4.8	86.0	35.5	6.3	64.5
#16	2.5	3.8	70.0	28.9	6.6	71.1
#30	2.1	3.3	51.5	21.4	7.5	78.6
#50	1.6	2.8	24.8	10.7	10.7	89.3
#100	1.2	2.5	6.2	3.2	7.5	96.8
LBW	0.9	2.3	0.6	0.9	2.4	99.1

*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: **36** Adjusted WF: **38.0**



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:	Adjusted WF
2"	100.0	61	36	38.0
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: 05/21/2023 - 05/27/2023

Name/Title Doug Storey / QC Technician

Report Date 05/26/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.3	%	95-100
	3/4" (19mm)	82.8	%	
	1/2" (12.5mm)	43.7	%	30-60
	3/8" (9.5mm)	22.4	%	
	#4 (4.75mm)	4.7	%	0-8
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.5	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.6	%	
	#100 (.15mm)	1.2	%	
	#200 (75µm)	1.02	%	
	Wash Loss (#200/75um)	0.9	%	0-2
	Total Moisture	3.66	%	



Plant S102-Superior Novi
 Product 1067-26A Mod LS
 Period: 05/21/2023 - 05/27/2023

Name/Title Doug Storey / QC Technician
 Report Date 05/26/2023

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)	99.4	%	95-100
	3/8" (9.5mm)	86.0	%	60-95
	#4 (4.75mm)	11.7	%	5-30
	#8 (2.36mm)	4.8	%	0-12
	#16 (1.18mm)	3.8	%	
	#30 (.6mm)	3.3	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75µm)	2.3	%	0-3
	Total Moisture	4.04	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Period: 05/21/2023 - 05/27/2023

Name/Title Doug Storey / QC Technician

Report Date 05/26/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.8	%	95-100
	#8 (2.36mm)	86.0	%	65-95
	#16 (1.18mm)	70.0	%	35-75
	#30 (.6mm)	51.5	%	20-55
	#50 (.3mm)	24.8	%	10-30
	#100 (.15mm)	6.2	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.63		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	4.62	%	