

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P11

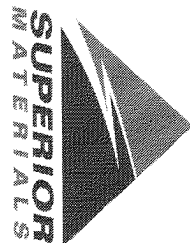
Sample Date: 7/8/24

Dates Test Represents: 7/9/2024 through 7/15/2024

Concrete Grade: DM, 4500HP

Contractor: _____

MDOT No.: _____



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

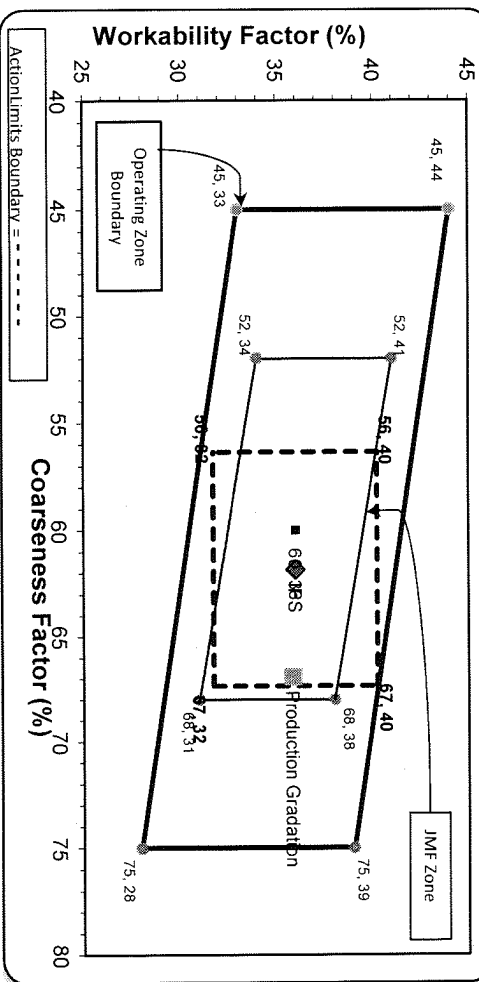
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
GAA	71-47	Presque Isle	1455	8.90	2.62	50.1	
26A	71-47	Presque Isle	300	1.83	2.62	10.3	
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6	
Total Wt						2905	17.69
Total Wt						2905	100.0
Sieve	GAA	26A	2NS	Cumulative % Passing			
2"	100.0	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"	95.5	100.0	100.0	97.7	2.3	2.3	
3/4"	72.6	100.0	100.0	86.3	11.5	13.7	
1/2"	32.9	90.8	100.0	65.4	20.8	34.6	
3/8"	15.6	77.4	100.0	55.4	10.0	44.6	
#4	2.4	11.7	95.9	40.4	15.0	59.6	
#8	2.1	3.3	80.7	33.3	7.0	66.7	
#16	1.9	2.2	66.8	27.6	5.7	72.4	
#30	1.8	1.9	52.5	21.9	5.7	78.1	
#50	1.7	1.8	29.5	12.7	9.2	87.3	
#100	1.6	1.7	7.5	3.9	8.8	96.1	
LBW	1.0	1.6	0.9	1.0	2.9	99.0	

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	67	Workability Factor:	33	Adjusted WF	35.8
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Coarseness Factor:	62
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Sieve	Cumulative % Passing	% 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"	72.3	22.8	27.7
3/8"	60.4	11.8	39.6
#4	42.6	17.8	57.4
#8	36.0	6.6	64.0
#16	29.5	6.5	70.5
#30	20.3	9.2	79.7
#50	9.5	10.8	90.5
#100	3.4	6.1	96.6
LBW	1.3	2.1	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. Max. 1.0") aggregate is used.

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S11-Onsite Jefferson

Product 1051-6AA LS

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	95.5	%	95-100
	3/4" (19mm)	72.6	%	
	1/2" (12.5mm)	32.9	%	30-60
	3/8" (9.5mm)	15.6	%	
	#4 (4.75mm)	2.4	%	0-8
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.25	%	
	Wash Loss (#200/75µm)	1.0	%	0-2
	Total Moisture	2.50	%	



Plant S11-Onsite Jefferson

Product 1067-26A Mod LS

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

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)	90.8	%	95-100
	3/8" (9.5mm)	77.4	%	60-95
	#4 (4.75mm)	11.7	%	5-30
	#8 (2.36mm)	3.3	%	0-12
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	1.73	%	



Plant S11-Onsite Jefferson

Product 1022-2NS GR

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.9	%	95-100
	#8 (2.36mm)	80.7	%	65-95
	#16 (1.18mm)	66.8	%	35-75
	#30 (.6mm)	52.5	%	20-55
	#50 (.3mm)	29.5	%	10-30
	#100 (.15mm)	7.5	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	3.81	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: **7/8/24**

Dates Test Represents: **7/9/2024** through **7/15/2024**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1400	8.34	2.69	47.5
26A	58-003	Stoneco	400	2.38	2.69	13.6
2NS	63-114	Highland	1150	6.95	2.65	39.0
		Total Wt	2950	17.68		100.0

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

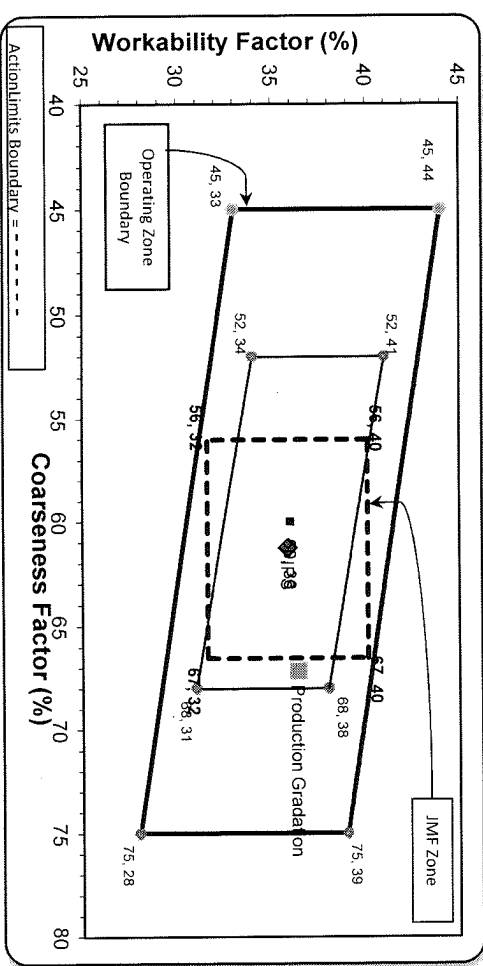
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	79.4	100.0	100.0	90.2	9.8	9.8
1/2"	27.5	99.8	100.0	65.6	34.4	34.4
3/8"	9.4	89.7	100.0	55.6	44.4	44.4
#4	1.5	6.4	98.9	40.1	59.9	59.9
#8	0.9	1.8	85.2	33.9	66.1	66.1
#16	0.7	1.3	68.0	27.0	73.0	73.0
#30	0.7	1.2	48.3	19.3	80.7	80.7
#50	0.6	1.1	18.4	7.6	92.4	92.4
#100	0.6	1.1	3.6	1.8	98.2	98.2
LBW	0.5	0.9	0.6	0.6	99.4	99.4

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	67	Workability Factor:	34	Adjusted WF
				36.4

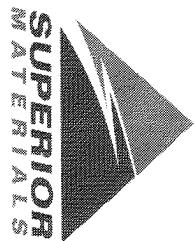
Initial Production Sample (IPS)

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

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



*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max.
norm. max. #100 and #200 sieves.
**Retained must be at least 4% for each sieve except max.
norm. 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.

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S102-Superior Novi
 Product 1051-6AA LS
 Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager
 Report Date 07/14/2024

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)	79.4	%	
	1/2" (12.5mm)	27.5	%	30-60
	3/8" (9.5mm)	9.4	%	
	#4 (4.75mm)	1.5	%	0-8
	#8 (2.36mm)	0.9	%	
	#16 (1.18mm)	0.7	%	
	#30 (.6mm)	0.7	%	
	#50 (.3mm)	0.6	%	
	#100 (.15mm)	0.6	%	
	#200 (75µm)	0.57	%	
	Wash Loss (#200/75um)	0.5	%	0-2
	Total Moisture	4.21	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

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)	99.8	%	95-100
	3/8" (9.5mm)	89.7	%	60-95
	#4 (4.75mm)	6.4	%	5-30
	#8 (2.36mm)	1.8	%	0-12
	#16 (1.18mm)	1.3	%	
	#30 (.6mm)	1.2	%	
	#50 (.3mm)	1.1	%	
	#100 (.15mm)	1.1	%	
	#200 (75µm)	1.0	%	
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	9.68	%	



Plant S102-Superior Novi
 Product 1022-2NS GR
 Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager
 Report Date 07/14/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.9	%	95-100
	#8 (2.36mm)	85.2	%	65-95
	#16 (1.18mm)	68.0	%	35-75
	#30 (.6mm)	48.3	%	20-55
	#50 (.3mm)	18.4	%	10-30
	#100 (.15mm)	3.6	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.78		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	14.84	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

Contractor: _____

Sample Date: 7/8/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 7/9/2024 through 7/15/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1400	8.34	2.69	47.5
26A	58-003	Stoneco	400	2.38	2.69	13.6
2NS	63-114	Highland	1150	6.95	2.65	39.0
Total Wt						2950
						17.68
						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"	76.2	100.0	100.0	88.7	11.3	11.3
1/2"	14.7	99.6	100.0	59.5	29.2	40.5
3/8"	4.2	89.7	100.0	53.1	6.3	46.9
#4	1.2	6.3	98.9	40.0	13.2	60.0
#8	0.9	1.6	84.8	33.7	6.3	66.3
#16	0.7	1.2	68.9	27.4	6.3	72.6
#30	0.6	1.0	50.0	19.9	7.4	80.1
#50	0.6	1.0	20.8	8.5	11.4	91.5
#100	0.6	0.9	4.9	2.3	6.2	97.7
LBW	0.5	0.9	1.3	0.9	1.5	99.1

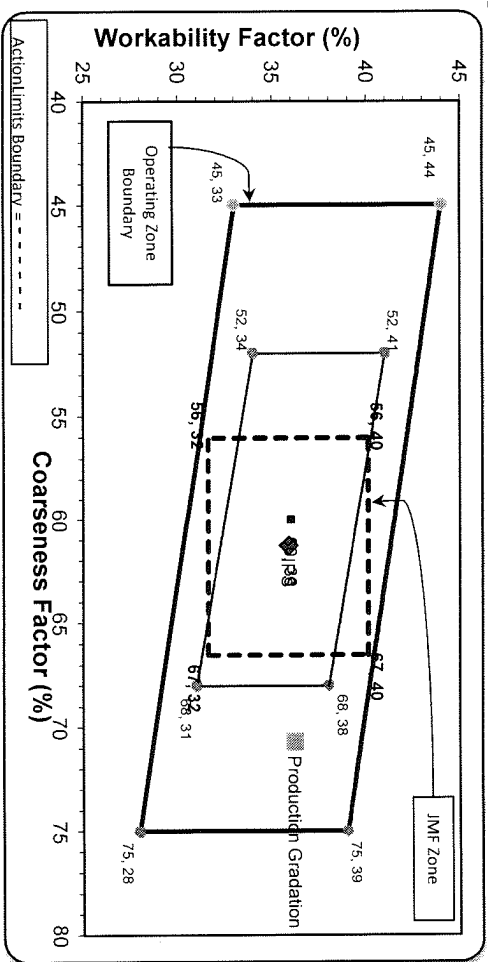
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max. nom. max., #100 and #200 sieves.
 *Retained must be at least 4% for each sieve except max. nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

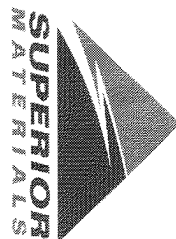
Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	71	Workability Factor:	34	Adjusted WF	36.2
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Coarseness Factor:	61	Workability Factor:	36
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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



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

PREPARED BY:
 SM, LLC Technical Service

Approved BY: _____



Plant S103-Superior Brighton

Product 1051-6AA LS

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

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)	76.2	%	
	1/2" (12.5mm)	14.7	%	30-60
	3/8" (9.5mm)	4.2	%	
	#4 (4.75mm)	1.2	%	0-8
	#8 (2.36mm)	0.9	%	
	#16 (1.18mm)	0.7	%	
	#30 (.6mm)	0.6	%	
	#50 (.3mm)	0.6	%	
	#100 (.15mm)	0.6	%	
	#200 (75µm)	0.56	%	
	Wash Loss (#200/75um)	0.5	%	0-2
	Total Moisture	3.20	%	



Plant S103-Superior Brighton

Product 1067-26A Mod LS

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

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)	89.7	%	60-95
	#4 (4.75mm)	6.3	%	5-30
	#8 (2.36mm)	1.6	%	0-12
	#16 (1.18mm)	1.2	%	
	#30 (.6mm)	1.0	%	
	#50 (.3mm)	1.0	%	
	#100 (.15mm)	0.9	%	
	#200 (75µm)	0.9	%	
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	4.74	%	



Plant S103-Superior Brighton

Product 1022-2NS GR

Period: 07/07/2024 - 07/13/2024

Name/Title Casey Smith / QC Manager

Report Date 07/14/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.9	%	95-100
	#8 (2.36mm)	84.8	%	65-95
	#16 (1.18mm)	68.9	%	35-75
	#30 (.6mm)	50.0	%	20-55
	#50 (.3mm)	20.8	%	10-30
	#100 (.15mm)	4.9	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	4.10	%	