

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **p11**

Sample Date: **10/21/24**

Dates Test Represents: **10/22/2024** through **10/28/2024**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____

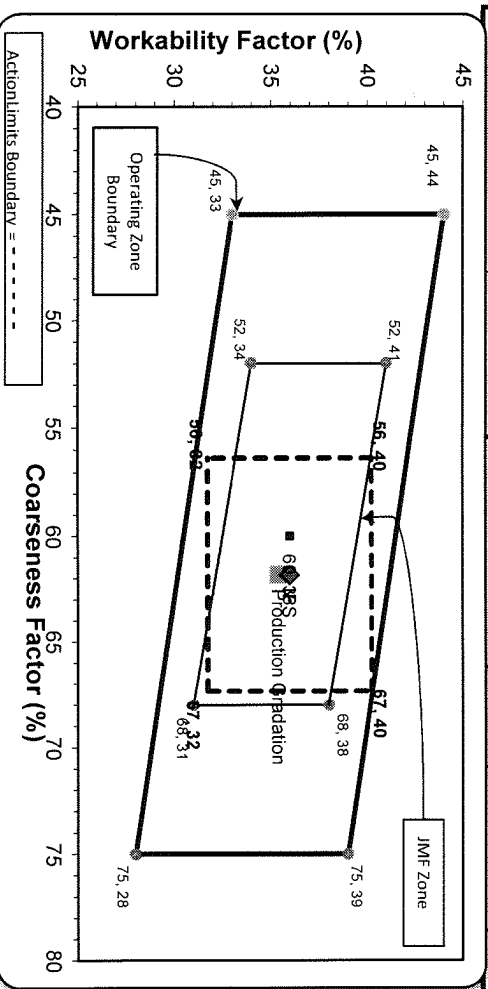
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1355	8.29	2.62	46.6
26A	71-47	Presque Isle	400	2.45	2.62	13.8
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt						17.69
						100.0

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"	95.5	100.0	100.0	97.9	2.1	2.1
3/4"	78.0	100.0	100.0	89.7	8.2	10.3
1/2"	37.5	92.4	100.0	69.8	19.9	30.2
3/8"	17.8	77.4	100.0	58.5	11.3	41.5
#4	2.7	16.5	95.7	41.4	17.1	58.6
#8	1.9	4.8	79.3	32.9	8.5	67.1
#16	1.7	3.2	63.9	26.5	6.4	73.5
#30	1.6	2.9	48.9	20.5	6.0	79.5
#50	1.5	2.7	25.9	11.3	9.2	88.7
#100	1.4	2.5	6.7	3.6	7.7	96.4
LBW	1.1	2.3	1.1	1.3	2.4	98.7

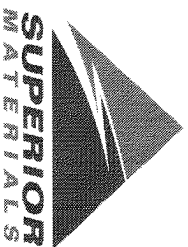
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when
 a 1.5" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	62	Workability Factor:	33	Adjusted W/F	35.4
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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



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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____

Daily Summary Report

Date Wednesday, October 23, 2024

Sample Id	-1988628691	-1988648941	-1988651570	-11778926332	-1988620765
Plant	S000 Superior Onsite	S000 Superior Onsite	S000 Superior Onsite	S000 Superior Onsite	S000 Superior Onsite
Product	7920 INTERMED AGG P1M LS	1067 26A Mod LS	1051 6AA LS	1022 2NS GR	7919 COARSE AGG P1M LS
Specification	Intermed Agg P1M LS Target	26A Mod LS Spec	2NS GR Spec	Coarse Agg P1M LS Target	
Sample Type	QA	QA	QA	QA	QA
Time	14:33	14:38	14:39	14:40	14:41
2" (50mm)	100.0	100.0	100.0	100.0	100.0
1 1/2" (37.5mm)	100.0	100.0	100.0	90.7	90.7
1" (25mm)	100.0	100.0	95.5	25.9	25.9
3/4" (19mm)	99.0	100.0	78.0	5.2	5.2
1/2" (12.5mm)	78.1	92.4	37.5	1.6	1.6
3/8" (9.5mm)	47.6	77.4	17.8	100.0	1.3
#4 (4.75mm)	7.1	16.5	2.7	95.7	1.3
#8 (2.36mm)	3.9	4.8	1.9	79.3	1.3
#16 (1.18mm)	3.4	3.2	1.7	63.9	1.2
#30 (.6mm)	3.3	2.9	1.6	48.9	1.2
#50 (.3mm)	3.2	2.7	1.5	25.9	1.2
#100 (.15mm)	3.1	2.5	1.4	6.7	1.1
#200 (75µm)	3.0	2.4	1.26	1.5	1.0
Pan	0.0	0.0	0.00	0.0	0.0
FM			2.80	1.5	
#200 (75µm)	2.9	2.3	1.1	1.1	0.9
Wash Loss (#200/75µm)		2.2	3.3	4.1	0.1
Total Moisture	2.8				

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

Sample Date: 10/21/24

Dates Test Represents: 10/22/2024 through 10/28/2024

Concrete Grade: DM, 4500HP

Contractor: _____

MDOT No.: _____

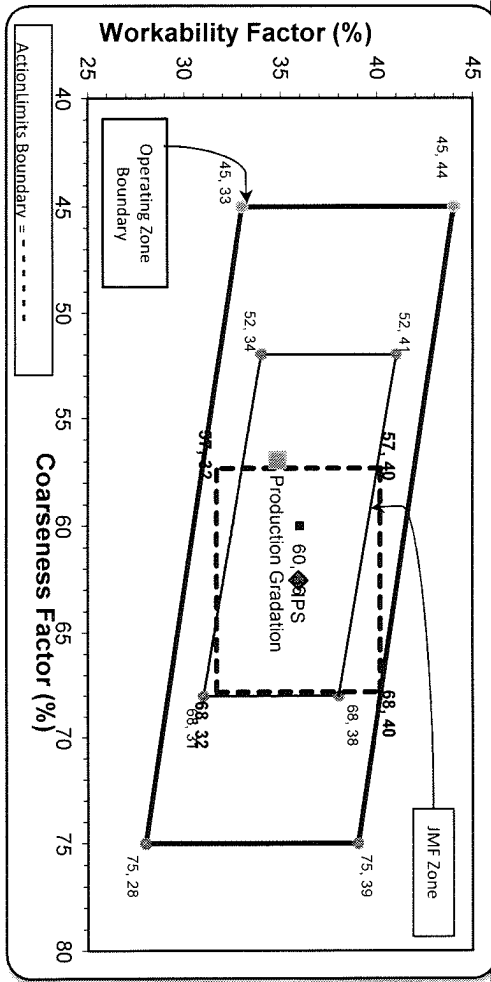


Superior Materials, LLC
30701 W. 10 Mile Rd.
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Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	% Retained	Cumulative % Retained	
6AA	71-47	Presque Isle	1350	8.26	2.62	46.5	0.0	0.0	
26A	71-47	Presque Isle	405	2.48	2.62	13.9	0.0	0.0	
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6	1.7	1.7	
Total Wt						2905	17.69	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"	96.4		100.0		100.0		98.3	1.7	1.7
3/4"	82.7		100.0		100.0		92.0	6.4	8.0
1/2"	39.8		94.4		100.0		71.2	20.7	28.8
3/8"	22.1		83.4		100.0		61.5	9.8	38.5
#4	3.7		17.0		93.7		41.2	20.3	58.8
#8	2.5		4.2		77.3		32.3	8.8	67.7
#16	2.3		2.5		62.2		26.0	6.3	74.0
#30	2.1		2.1		47.7		20.2	5.9	79.8
#50	2.1		2.0		26.3		11.7	8.5	88.3
#100	2.0		1.9		7.4		4.1	7.5	95.9
LBW	1.7		1.6		0.8		1.3	2.8	98.7

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **57** Workability Factor: **32** Adjusted WF: **34.8**



Initial Production Sample (IPS)

Coarseness Factor: **63** 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"	89.0	10.3	11.0
1/2"	70.3	18.7	29.7
3/8"	59.9	10.4	40.1
#4	41.9	18.0	58.1
#8	35.9	6.0	64.1
#16	27.8	8.2	72.2
#30	18.9	8.8	81.1
#50	6.3	12.6	93.7
#100	1.7	4.6	98.3
LBW	1.0	0.7	99.0

*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.

PREPARED BY:
SM, LLC Technical Service

Approved By: _____

Daily Summary Report

Date Monday, October 21, 2024

Sample Id	-674966231	-847326660	-674895983
Plant	S000 Superior Onsite	S000 Superior Onsite	S000 Superior Onsite
Product	1067 26A Mod LS	1051 6AA LS	1022 2NS GR
Specification	26A Mod LS Spec		2NS GR Spec
Sample Type	QA	QA	QA
Time	12:34	13:30	13:31
2" (50mm)	100.0	100.0	100.0
1 1/2" (37.5mm)	100.0	100.0	93.7
1" (25mm)	100.0	96.4	77.3
3/4" (19mm)	100.0	82.7	62.2
1/2" (12.5mm)	94.4	39.8	47.7
3/8" (9.5mm)	83.4	22.1	26.3
#4 (4.75mm)	17.0	3.7	7.4
#8 (2.36mm)	4.2	2.5	1.1
#16 (1.18mm)	2.5	2.3	0.0
#30 (.6mm)	2.1	2.1	2.85
#50 (.3mm)	2.0	2.1	1.1
#100 (.15mm)	1.9	2.0	0.8
#200 (75um)	1.7	1.84	0.8
Pan	0.0	0.00	0.8
FM			1.1
-#200 (75um)			2.85
Wash Loss (#200/75um)	1.6	1.7	0.8
Total Moisture	2.3	2.5	3.5

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

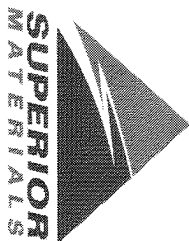
Contractor: _____

Sample Date: 10/21/24

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 10/22/2024 through 10/28/2024

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
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Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stonoco	1500	8.94	2.69	50.8	
26A	58-003	Stonoco	300	1.79	2.69	10.2	
2NS	63-114	Highland	1150	6.95	2.65	39.0	
Total Wt						2950	100.0

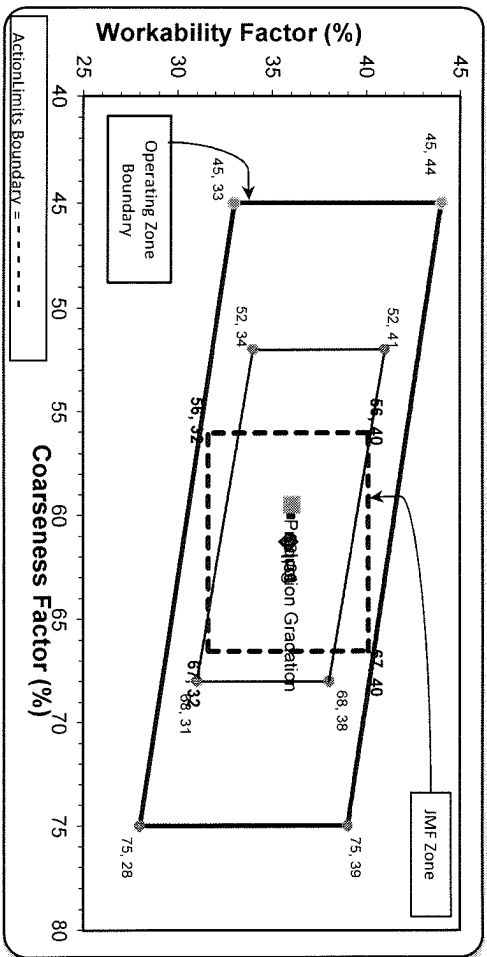
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.4	100.0	100.0	92.6	7.4	7.4
1/2"	48.2	99.8	100.0	73.6	18.9	26.4
3/8"	24.1	90.7	100.0	60.5	13.2	39.5
#4	5.2	10.5	98.6	42.1	18.3	57.9
#8	2.0	3.2	82.6	33.5	8.6	66.5
#16	1.5	2.4	63.8	25.9	7.7	74.1
#30	1.3	2.2	40.8	16.8	9.1	83.2
#50	1.3	2.0	15.7	7.0	9.8	93.0
#100	1.2	1.9	3.2	2.1	4.9	97.9
LBW	1.1	1.7	0.3	0.8	1.2	99.2

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF

Initial Production Sample (IPS)

Coarseness Factor:	59	Workability Factor:	34	Adjusted WF	61
Coarseness Factor:	59	Workability Factor:	34	Adjusted WF	61

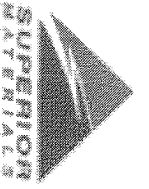


Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

*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: _____



Daily Summary Report

Date Monday, October 21, 2024

Sample Id	-674980632	-1989629418	-674965489
Plant	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi
Product	1051 6AA LS	1067 26A Mod LS	1022 2NS GR

Specification	6AA LS	26A Mod LS Spec	2NS GR Spec
Sample Type	QA	QA	QA
Time	11:06	11:07	11:08
2" (50mm)	100.0	100.0	100.0
1 1/2" (37.5mm)	100.0	100.0	98.6
1" (25mm)	100.0	100.0	82.6
3/4" (19mm)	85.4	100.0	63.8
1/2" (12.5mm)	48.2	99.8	40.8
3/8" (9.5mm)	24.1	90.7	15.7
#4 (4.75mm)	5.2	10.5	3.2
#8 (2.36mm)	2.0	3.2	0.0
#16 (1.18mm)	1.5	2.4	0.0
#30 (.6mm)	1.3	2.2	0.0
#50 (.3mm)	1.3	2.0	0.0
#100 (.15mm)	1.2	1.9	0.0
#200 (75µm)	1.11	1.8	0.0
Pan	0.00	0.0	0.0
FM			2.95
Wash Loss (#200/75um)	1.1	1.7	0.3
Total Moisture	2.80	3.80	3.20

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

Sample Date: 10/21/24

Dates Test Represents: 10/22/2024 through 10/28/2024

Concrete Grade: DM, 4500HP

Contractor: _____

MDOT No.: _____

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	63-114	Highland	1150	6.95	2.65	39.0
Total Wt			2950	17.68		100.0

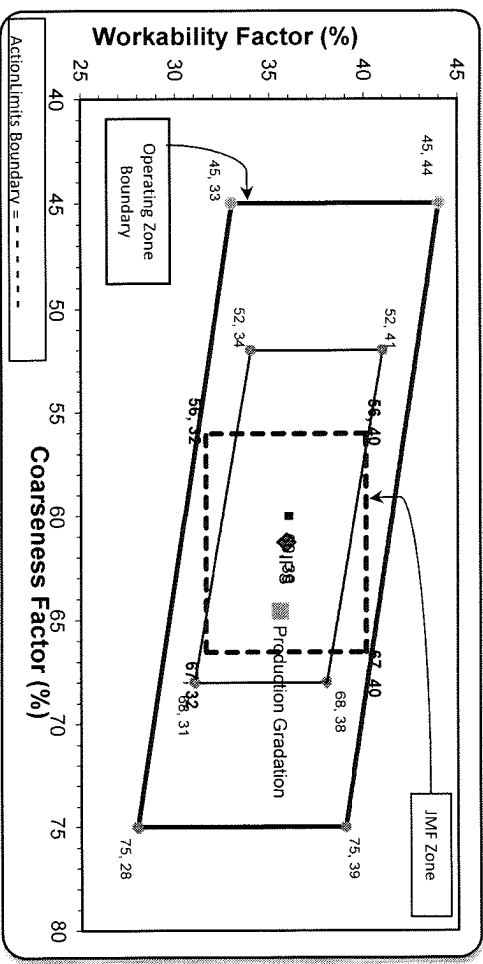
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.4	100.0	100.0	99.7	0.3	0.3
3/4"	84.3	100.0	100.0	92.0	7.7	8.0
1/2"	40.6	100.0	100.0	69.8	22.2	30.2
3/8"	17.1	89.4	100.0	56.8	13.0	43.2
#4	2.6	9.1	99.0	40.8	15.9	59.2
#8	1.2	2.4	82.6	33.1	7.8	66.9
#16	1.1	1.7	63.3	25.4	7.6	74.6
#30	1.0	1.5	40.5	16.4	9.0	83.6
#50	1.0	1.3	15.9	6.8	9.6	93.2
#100	1.0	1.2	3.3	1.9	4.9	98.1
LBW	0.8	1.1	0.5	0.7	1.2	99.3

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 65 Workability Factor: 33 Adjusted WF: 35.6

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



*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: _____



Daily Summary Report

Date Monday, October 21, 2024

Sample Id	Plant	Product	Specification	Sample Type	Time
-1989635065	S103 Superior Brighton	1051 6AALS	6AA LS	QA	10:30
-1989662079	S103 Superior Brighton	1067 26A Mod LS	26A Mod LS Spec	QA	10:31
-674948310	S103 Superior Brighton	1022 2NS GR	2NS GR Spec	QA	10:32
-1018111509	S103 Superior Brighton	7919 COARSE AGG P1M LS	Coarse Agg P1M LS Target	QA	11:34
-674912158	S103 Superior Brighton	7920 INTERMED AGG P1M LS	Intermed Agg P1M LS Target	QA	11:35
100.0					100.0
1 1/2" (37.5mm)					100.0
1" (25mm)					99.4
3/4" (19mm)					84.3
1/2" (12.5mm)					40.6
3/8" (9.5mm)					17.1
#4 (4.75mm)					2.6
#8 (2.36mm)					1.2
#16 (1.18mm)					1.1
#30 (.6mm)					1.0
#50 (.3mm)					1.0
#100 (.15mm)					1.0
#200 (75µm)					0.90
Pan					0.00
FM					2.95
Wash Loss (#200/75µm)					0.5
Total Moisture					1.1
					1.80
					3.00
					3.60
					0.47
					2.48