

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

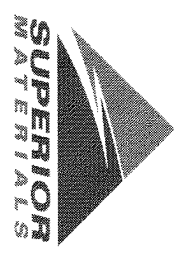
Sample Date: **12/5/22**

Dates Test Represents: **12/6/2022** through **12/12/2022**

Concrete Grade: **DM 4500HP**

Contractor: _____

MDOT No.: _____



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

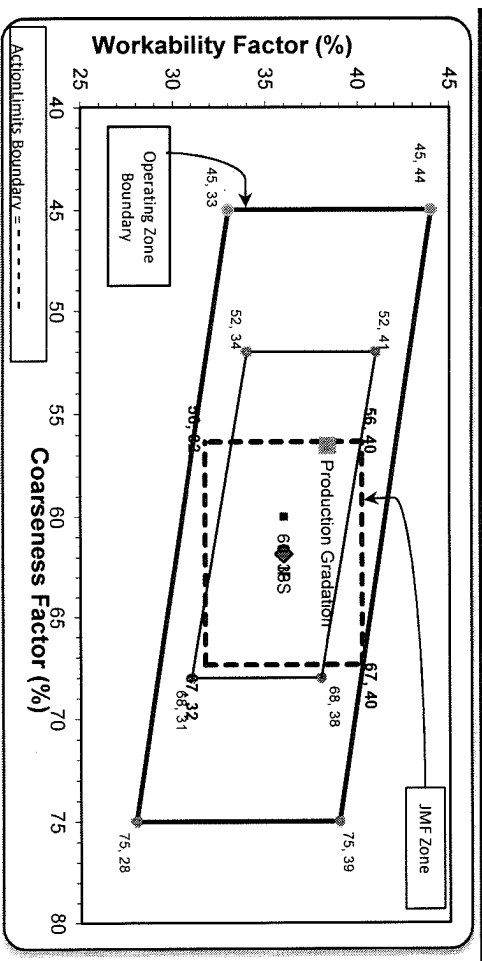
Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4	
26A	71-47	Presque Isle	350	2.14	2.62	12.0	
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6	
Total Wt						2905	100.0

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	1.2	1.2
3/4"	7.3	8.4
1/2"	19.3	27.7
3/8"	8.5	36.3
#4	17.9	54.2
#8	9.9	64.1
#16	7.3	71.4
#30	7.3	78.7
#50	10.1	88.8
#100	7.0	95.8
LBW	2.4	98.1

*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	Coarseness Factor:	Workability Factor:	Adjusted WF
<input checked="" type="radio"/> Batch Plant Gradations	57	36	38.4
<input type="radio"/> Aggregate Supplier Gradations			

Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:
	62	36



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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1022-2NS GR - Smelter Bay
Specification 2NS GR Spec
Period 12/04/2022 - 12/10/2022

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	1	100.0			100-100
#4 (4.75mm)	1	98.4			95-100
#8 (2.36mm)	1	84.2			65-95
#16 (1.18mm)	1	67.9			35-75
#30 (.6mm)	1	49.9			20-55
#50 (.3mm)	1	24.6		18-28	10-30
#100 (.15mm)	1	7.3			0-10
#200 (75µm)	1	2.0			
Pan	1	0.0			
FM	1	2.68		2.7-2.9	2.6-3
Wash Loss (#200/75um)	1	1.8			0-3
Total Moisture	1	4.1			

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1067-26A Mod LS
Specification 26A Mod LS Spec
Period 12/04/2022 - 12/10/2022

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			
1" (25mm)	1	100.0			
3/4" (19mm)	1	100.0			100-100
1/2" (12.5mm)	1	97.1			95-100
3/8" (9.5mm)	1	89.7			60-95
#4 (4.75mm)	1	29.7			5-30
#8 (2.36mm)	1	9.1			0-12
#16 (1.18mm)	1	4.0			
#30 (.6mm)	1	3.0			
#50 (.3mm)	1	2.6			
#100 (.15mm)	1	2.4			
#200 (75µm)	1	2.1			
Pan	1	0.0			
Wash Loss (#200/75um)	1	2.1			0-3
Total Moisture	1	2.6			

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1054-6AA LS PI
Specification 6AA LS PI Spec
Period 12/04/2022 - 12/10/2022

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			100-100
1" (25mm)	1	97.6			95-100
3/4" (19mm)	1	82.6			
1/2" (12.5mm)	1	43.4			30-60
3/8" (9.5mm)	1	27.6			
#4 (4.75mm)	1	6.8			0-8
#8 (2.36mm)	1	3.0			
#16 (1.18mm)	1	2.6			
#30 (.6mm)	1	2.5			
#50 (.3mm)	1	2.4			
#100 (.15mm)	1	2.2			
#200 (75µm)	1	1.9			
Pan	1	0.0			
Wash Loss (#200/75µm)	1	1.8			0-2
Total Moisture	1	2.6			

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-103**

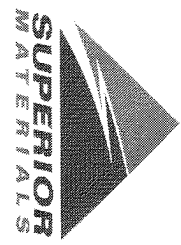
Sample Date: **12/5/22**

Dates Test Represents: **12/6/2022** through **12/21/2022**

Concrete Grade: **DM 4500HP**

Contractor: _____

MDOT No.: _____



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

Verify this number is 100%

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	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"	85.1	100.0	100.0	92.4	7.6	7.6
1/2"	41.4	100.0	100.0	70.2	29.8	29.8
3/8"	15.3	91.1	100.0	56.0	44.0	44.0
#4	2.1	12.9	97.5	40.4	59.6	59.6
#8	1.1	5.8	83.1	33.5	66.5	66.5
#16	0.8	3.8	65.4	26.3	73.7	73.7
#30	0.7	3.0	47.1	19.0	81.0	81.0
#50	0.7	2.6	22.8	9.5	90.5	90.5
#100	0.6	2.4	6.2	3.0	97.0	97.0
LBW	0.5	2.0	1.8	1.2	98.8	98.8

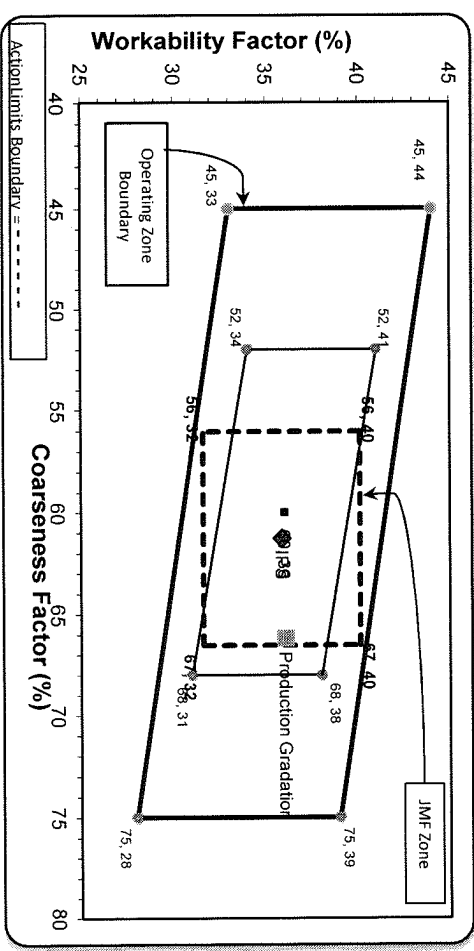
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **66** Workability Factor: **34** Adjusted WF: **36.0**

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: _____



Basic Quality Statistical Summary Report

Plant S103-Superior Brighton
Product 1067-26A Mod LS
Specification 26A Mod LS Spec
Period 12/04/2022 - 12/10/2022

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			
1" (25mm)	1	100.0			
3/4" (19mm)	1	100.0			100-100
1/2" (12.5mm)	1	100.0			95-100
3/8" (9.5mm)	1	91.1			60-95
#4 (4.75mm)	1	12.9			5-30
#8 (2.36mm)	1	5.8			0-12
#16 (1.18mm)	1	3.8			
#30 (.6mm)	1	3.0			
#50 (.3mm)	1	2.6			
#100 (.15mm)	1	2.4			
#200 (75µm)	1	2.2			
Pan	1	0.0			
Wash Loss (#200/75um)	1	2.0			0-3
Total Moisture	1	3.61			



Basic Quality Statistical Summary Report

Plant S103-Superior Brighton
Product 1051-6AA LS
Specification 6AA LS
Period 12/04/2022 - 12/10/2022

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			100-100
1" (25mm)	1	99.3			95-100
3/4" (19mm)	1	85.1			
1/2" (12.5mm)	1	41.4			30-60
3/8" (9.5mm)	1	15.3			
#4 (4.75mm)	1	2.1			0-8
#8 (2.36mm)	1	1.1			
#16 (1.18mm)	1	0.8			
#30 (.6mm)	1	0.7			
#50 (.3mm)	1	0.7			
#100 (.15mm)	1	0.6			
#200 (75µm)	1	0.54			
Pan	1	0.00			
Wash Loss (#200/75um)	1	0.5			0-2
Total Moisture	1	3.35			



Basic Quality Statistical Summary Report

Plant S103-Superior Brighton
Product 1022-2NS GR
Specification 2NS GR Spec
Period 12/04/2022 - 12/10/2022

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	1	100.0			100-100
#4 (4.75mm)	1	97.5			95-100
#8 (2.36mm)	1	83.1			65-95
#16 (1.18mm)	1	65.4			35-75
#30 (.6mm)	1	47.1		40-50	20-55
#50 (.3mm)	1	22.8			10-30
#100 (.15mm)	1	6.2			0-10
#200 (75µm)	1	2.1			
Pan	1	0.0			
FM	1	2.78		2.7-2.9	2.6-3
Wash Loss (#200/75um)	1	1.8			0-3
Total Moisture	1	3.98			