

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

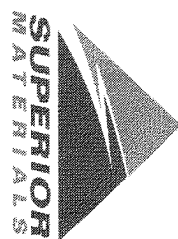
Sample Date: 9/4/23

Dates Test Represents: 9/5/2023 through 9/11/2023

Concrete Grade: S2M, 3500HP

Contractor: _____

MDOT No.: _____



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

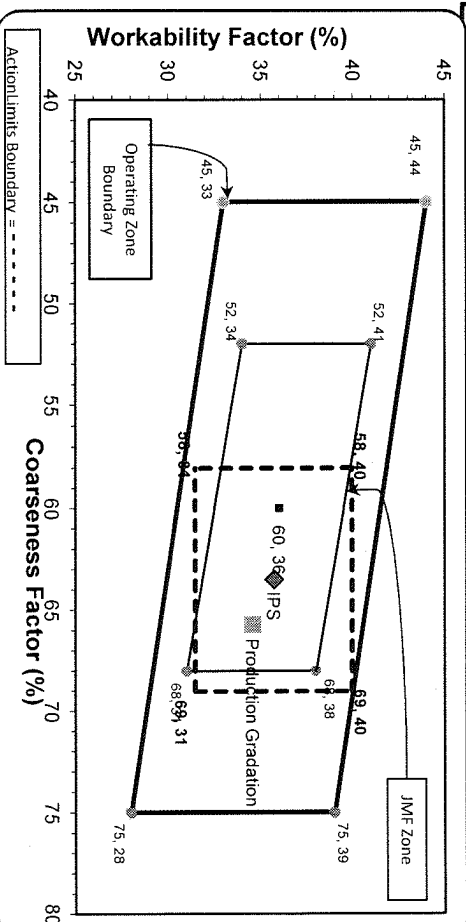
Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	270	1.65	2.62	8.9
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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"	95.9	100.0	100.0	97.9	2.1	2.1
3/4"	74.3	100.0	100.0	86.9	13.1	13.1
1/2"	33.7	95.7	100.0	65.9	34.1	34.1
3/8"	17.8	85.9	100.0	57.0	43.0	43.0
#4	2.8	26.5	96.5	42.7	57.3	57.3
#8	1.9	7.3	81.7	34.6	65.4	65.4
#16	1.7	3.5	67.1	28.2	71.8	71.8
#30	1.6	2.8	50.9	21.6	78.4	78.4
#50	1.6	2.5	25.5	11.3	88.7	88.7
#100	1.5	2.3	5.3	3.1	96.9	96.9
LBW	1.1	2.1	1.0	1.1	98.9	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 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

Initial Production Sample (IPS) Batch Plant Gradations



Coarseness Factor:	64	36	
Workability Factor:	64	36	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.2	12.1	40.8
#4	41.5	17.7	58.5
#8	35.7	5.8	64.3
#16	27.9	7.9	72.1
#30	18.3	9.5	81.7
#50	7.3	11.0	92.7
#100	2.0	5.3	98.0
LBW	0.9	1.1	99.1

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Period: 09/03/2023 - 09/09/2023

Name/Title Doug Storey / QC Technician

Report Date 09/09/2023

Procedure	Sieve/Test	Result	Unit	26A 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)	95.7	%	95-100
	3/8" (9.5mm)	85.9	%	60-95
	#4 (4.75mm)	26.5	%	5-30
	#8 (2.36mm)	7.3	%	0-12
	#16 (1.18mm)	3.5	%	
	#30 (.6mm)	2.8	%	
	#50 (.3mm)	2.5	%	
	#100 (.15mm)	2.3	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	2.1	%	0-3
	Total Moisture	2.80	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Period: 09/03/2023 - 09/09/2023

Name/Title Doug Storey / QC Technician

Report Date 09/09/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.5	%	95-100
	#8 (2.36mm)	81.7	%	65-95
	#16 (1.18mm)	67.1	%	35-75
	#30 (.6mm)	50.9	%	20-55
	#50 (.3mm)	25.5	%	10-30
	#100 (.15mm)	5.3	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.73		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	3.31	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Sample Date: **9/4/23**

Dates Test Represents: **9/5/2023** through **9/11/2023**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

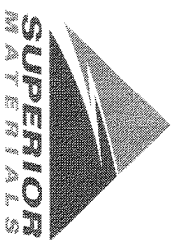
MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1500	9.17	2.62	49.2
26A	71-47	Presque Isle	320	1.96	2.62	10.5
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
			Total Wt	3050		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"	97.4	100.0	100.0	98.7	1.3	1.3
3/4"	76.2	100.0	100.0	88.3	10.4	11.7
1/2"	31.0	95.2	100.0	65.6	22.7	34.4
3/8"	18.7	86.4	100.0	58.6	7.0	41.4
#4	3.6	24.9	96.5	43.3	15.3	56.7
#8	2.0	6.6	85.6	36.2	7.1	63.8
#16	1.8	3.3	70.5	29.7	6.5	70.3
#30	1.7	2.6	50.5	21.5	8.2	78.5
#50	1.6	2.4	24.1	10.8	10.7	89.2
#100	1.5	2.2	7.4	4.0	6.8	96.0
LBW	1.2	2.0	1.5	1.4	2.5	98.6

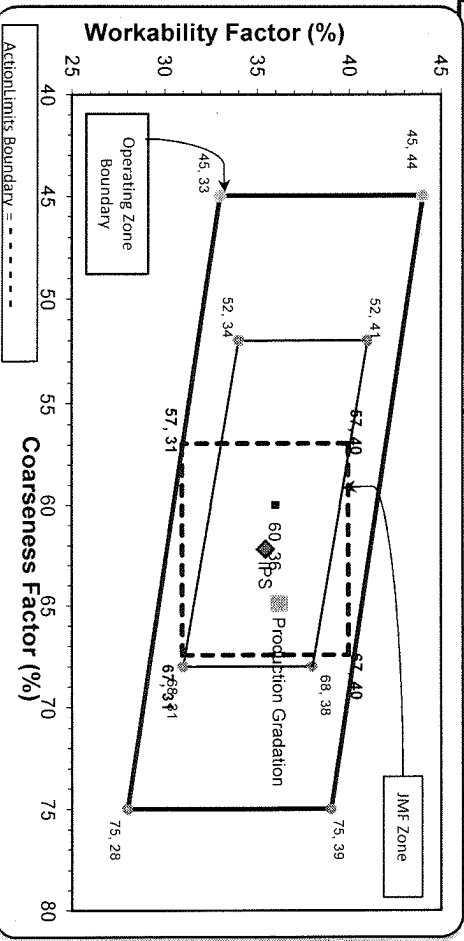
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when
 a 1.5" max. size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



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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **65** Workability Factor: **36**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	62	35	0.0	0.0
1.5"			0.0	0.0
1"			0.0	0.0
3/4"			6.0	6.0
1/2"			23.7	29.8
3/8"			10.4	40.1
#4			17.2	57.3
#8			7.2	64.5
#16			7.0	71.6
#30			9.2	80.8
#50			10.3	91.1
#100			5.9	96.9
LBW			1.7	98.6

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____

Edw. C. Levy Co.

JMT
8911 W. Jefferson
Detroit, 48209
(313) 429-2429

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 09/03/2023 - 09/09/2023

Report Date 09/09/2023

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.4	%	95-100
	3/4" (19mm)	76.2	%	
	1/2" (12.5mm)	31.0	%	30-60
	3/8" (9.5mm)	18.7	%	
	#4 (4.75mm)	3.6	%	0-8
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.6	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	1.9	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 09/03/2023 - 09/09/2023

Report Date 09/09/2023

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)	95.2	%	95-100
	3/8" (9.5mm)	86.4	%	60-95
	#4 (4.75mm)	24.9	%	5-30
	#8 (2.36mm)	6.6	%	0-12
	#16 (1.18mm)	3.3	%	
	#30 (.6mm)	2.6	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75µm)	2.0	%	0-3
	Total Moisture	2.3	%	

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 09/03/2023 - 09/09/2023

Report Date 09/09/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.5	%	95-100
	#8 (2.36mm)	85.6	%	65-95
	#16 (1.18mm)	70.5	%	35-75
	#30 (.6mm)	50.5	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	7.4	%	0-10
	#200 (75µm)	2.0	%	
	FM	2.65		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.3	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

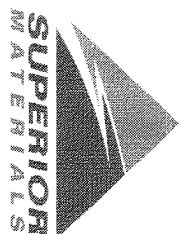
Sample Date: **9/4/23**

Dates Test Represents: **9/5/2023** through **9/11/2023**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



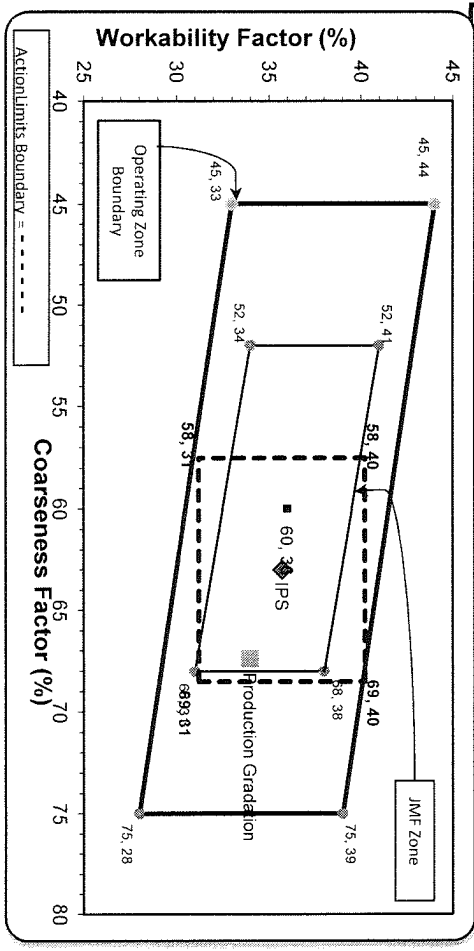
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1650	9.83	2.69	53.2	
26A	58-003	Stoneco	250	1.49	2.69	8.1	
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7	
Total Wt						3100	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"	99.6	100.0	100.0	99.8	0.2	0.2
3/4"	72.2	100.0	100.0	85.2	14.6	14.8
1/2"	36.2	100.0	100.0	66.0	19.2	34.0
3/8"	17.8	90.8	100.0	55.5	10.5	44.5
#4	3.8	15.1	98.0	41.2	14.3	58.8
#8	1.9	6.6	83.8	34.0	7.2	66.0
#16	1.6	4.6	67.4	27.3	6.7	72.7
#30	1.5	3.7	48.9	20.0	7.3	80.0
#50	1.4	3.2	23.7	10.2	9.8	89.8
#100	1.4	3.0	5.0	2.9	7.3	97.1
LBW	1.2	2.7	0.5	1.1	1.9	99.0

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **67** Workability Factor: **34**



Initial Production Sample (IPS)

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

Coarseness Factor: **63** Workability Factor: **36**

*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 S102-Superior Novi

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 09/03/2023 - 09/09/2023

Report Date 09/09/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.6	%	95-100
	3/4" (19mm)	72.2	%	
	1/2" (12.5mm)	36.2	%	30-60
	3/8" (9.5mm)	17.8	%	
	#4 (4.75mm)	3.8	%	0-8
	#8 (2.36mm)	1.9	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.24	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	2.95	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 09/03/2023 - 09/09/2023

Report Date 09/09/2023

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)	100.0	%	95-100
	3/8" (9.5mm)	90.8	%	60-95
	#4 (4.75mm)	15.1	%	5-30
	#8 (2.36mm)	6.6	%	0-12
	#16 (1.18mm)	4.6	%	
	#30 (.6mm)	3.7	%	
	#50 (.3mm)	3.2	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.8	%	
	Wash Loss (#200/75um)	2.7	%	0-3
	Total Moisture	1.55	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 09/03/2023 - 09/09/2023

Report Date 09/09/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.0	%	95-100
	#8 (2.36mm)	83.8	%	65-95
	#16 (1.18mm)	67.4	%	35-75
	#30 (.6mm)	48.9	%	20-55
	#50 (.3mm)	23.7	%	10-30
	#100 (.15mm)	5.0	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.73		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	2.34	%	