

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

Sample Date: 9/18/23

Dates Test Represents: 9/19/2023 through 9/25/2023

Concrete Grade: S2M, 3500HP

Contractor: _____

MDOT No.: _____

Agg. 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

<----- 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"	99.1	100.0	100.0	99.5	0.5	0.5
3/4"	79.2	99.4	100.0	89.4	10.2	10.6
1/2"	42.3	95.4	100.0	70.3	19.1	29.7
3/8"	23.5	83.8	100.0	59.7	10.6	40.3
#4	4.1	24.2	96.3	43.1	16.6	56.9
#8	2.4	6.4	81.5	34.7	8.4	65.3
#16	2.1	3.3	67.3	28.5	6.2	71.5
#30	2.0	2.7	50.9	21.8	6.7	78.2
#50	2.0	2.5	25.1	11.4	10.4	88.6
#100	1.9	2.3	5.2	3.3	8.1	96.7
LBW	1.7	2.1	1.1	1.5	1.8	98.5

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



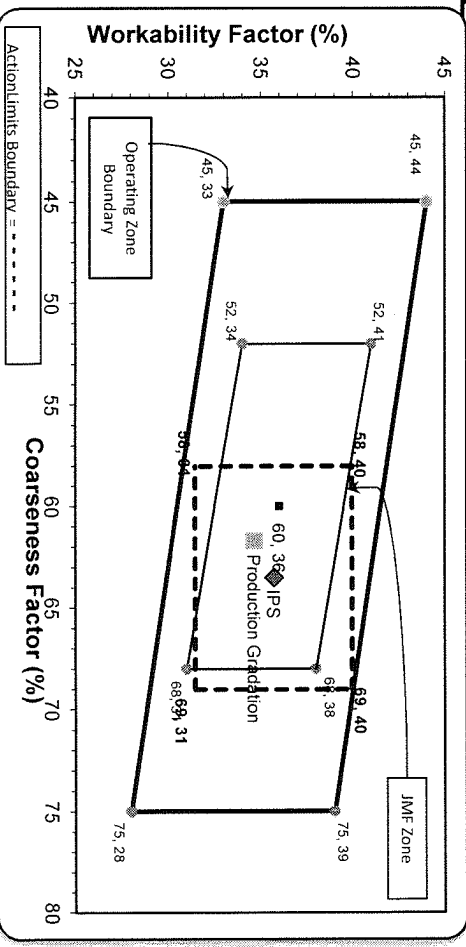
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when
 a 1.5" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Initial Production Sample (IPS)

Coarseness Factor: **62** Workability Factor: **35**

Coarseness Factor: **64** 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"	99.2	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 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.1	%	95-100
	3/4" (19mm)	79.2	%	
	1/2" (12.5mm)	42.3	%	30-60
	3/8" (9.5mm)	23.5	%	
	#4 (4.75mm)	4.1	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.85	%	
	FM	2.74		
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	2.85	%	



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician

Report Date 09/23/2023

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)	99.4	%	100-100
	1/2" (12.5mm)	95.4	%	95-100
	3/8" (9.5mm)	83.8	%	60-95
	#4 (4.75mm)	24.2	%	5-30
	#8 (2.36mm)	6.4	%	0-12
	#16 (1.18mm)	3.3	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.5	%	
	#100 (.15mm)	2.3	%	
	#200 (75µm)	2.2	%	
	FM	2.74		
	Wash Loss (#200/75um)	2.1	%	0-3
	Total Moisture	2.50	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician

Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.3	%	95-100
	#8 (2.36mm)	81.5	%	65-95
	#16 (1.18mm)	67.3	%	35-75
	#30 (.6mm)	50.9	%	20-55
	#50 (.3mm)	25.1	%	10-30
	#100 (.15mm)	5.2	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.06	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

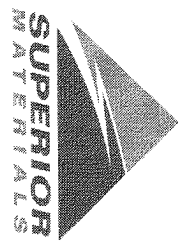
Sample Date: **9/18/23**

Dates Test Represents: **9/19/2023** through **9/25/2023**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
 30701 W. 10 Mile Rd.
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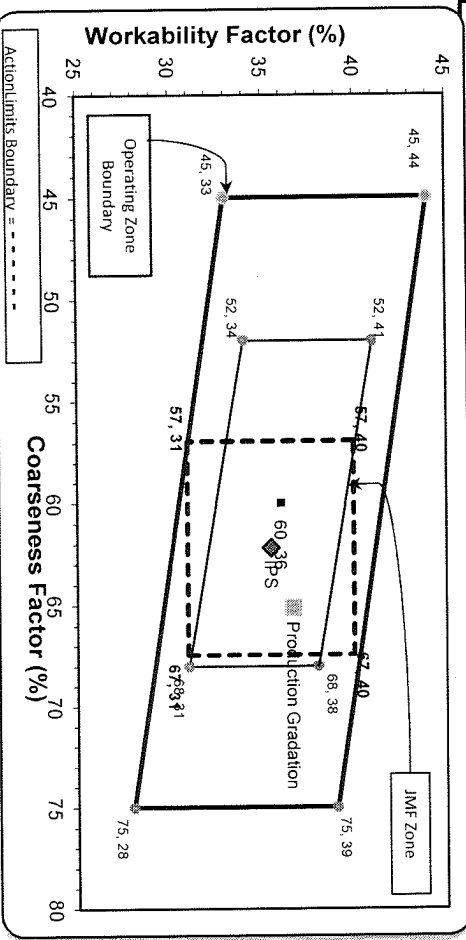
Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1500	9.17	2.62	49.2
26A	71-47	Presque Isle	320	1.96	2.62	10.5
ZNS	95-013	Smelter Bay	1230	7.44	2.65	40.3
			Total Wt.	3050	18.57	100.0

Sieve	6AA	26A	ZNS	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"	95.1	100.0	100.0	97.6	2.4	2.4
3/4"	70.8	100.0	100.0	85.6	12.0	14.4
1/2"	32.7	96.1	100.0	66.5	19.1	33.5
3/8"	18.6	88.1	100.0	58.7	7.8	41.3
#4	3.3	25.7	97.0	43.4	15.3	56.6
#8	2.0	6.1	86.8	36.6	6.8	63.4
#16	1.8	2.9	72.3	30.3	6.3	69.7
#30	1.7	2.3	51.4	21.8	8.5	78.2
#50	1.6	2.1	24.3	10.8	11.0	89.2
#100	1.5	2.0	7.2	3.9	7.0	96.1
LBW	1.1	1.7	1.6	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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **65** Workability Factor: **37**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	62	35	100.0	0.0	0.0
1.5"			100.0	0.0	0.0
1"			100.0	0.0	0.0
3/4"			94.0	6.0	6.0
1/2"			70.2	23.7	29.8
3/8"			59.9	10.4	40.1
#4			42.7	17.2	57.3
#8			35.5	7.2	64.5
#16			28.4	7.0	71.6
#30			19.2	9.2	80.8
#50			8.9	10.3	91.1
#100			3.1	5.9	96.9
LBW			1.4	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: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	95.1	%	95-100
	3/4" (19mm)	70.8	%	
	1/2" (12.5mm)	32.7	%	30-60
	3/8" (9.5mm)	18.6	%	
	#4 (4.75mm)	3.3	%	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)	1.2	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	3.2	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

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)	96.1	%	95-100
	3/8" (9.5mm)	88.1	%	60-95
	#4 (4.75mm)	25.7	%	5-30
	#8 (2.36mm)	6.1	%	0-12
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	2.8	%	

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 09/17/2023 - 09/23/2023

Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.0	%	95-100
	#8 (2.36mm)	86.8	%	65-95
	#16 (1.18mm)	72.3	%	35-75
	#30 (.6mm)	51.4	%	20-55
	#50 (.3mm)	24.3	%	10-30
	#100 (.15mm)	7.2	%	0-10
	#200 (75µm)	1.9	%	
	FM	2.61		2.6-3
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.8	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Sample Date: 9/18/23

Dates Test Represents: 9/19/2023 through 9/25/2023

Concrete Grade: S2M, 3500HP

Contractor: _____

MDOT No.: _____

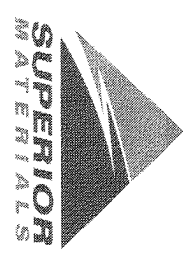
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stonoco	1625	9.68	2.69	52.4
26A	58-003	Stonoco	275	1.64	2.69	8.9
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt						100.0

<----- 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"	85.2	100.0	100.0	92.2	7.8	7.8
1/2"	45.5	100.0	100.0	99.7	20.8	28.6
3/8"	23.7	92.5	100.0	59.3	12.1	40.7
#4	3.0	19.2	98.2	41.3	18.1	58.7
#8	1.8	5.2	83.6	33.8	7.5	66.2
#16	1.5	3.6	66.0	26.7	7.1	73.3
#30	1.4	3.2	48.1	19.6	7.0	80.4
#50	1.3	3.0	23.7	10.1	9.5	89.9
#100	1.3	2.9	6.1	3.3	6.8	96.7
LBW	1.1	2.8	1.5	1.4	1.9	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
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 Farmington Hills, MI 48336

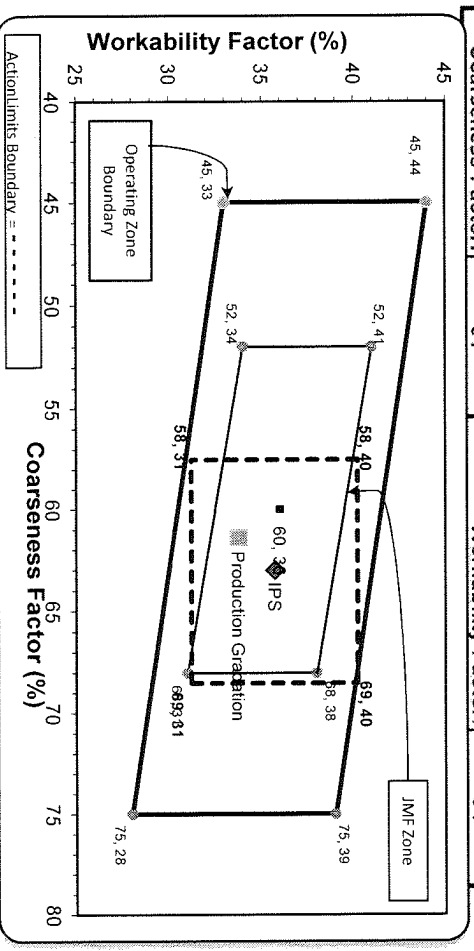


Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 61 **Workability Factor:** 34

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"	99.2	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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S102-Superior Novi
Product 1051-6AA LS
Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician
Report Date 09/23/2023

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)	85.2	%	
	1/2" (12.5mm)	45.5	%	30-60
	3/8" (9.5mm)	23.7	%	
	#4 (4.75mm)	3.0	%	0-8
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.3	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.15	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	2.88	%	



Plant S102-Superior Novi
 Product 1067-26A Mod LS
 Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician
 Report Date 09/23/2023

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)	99.7	%	95-100
	3/8" (9.5mm)	92.5	%	60-95
	#4 (4.75mm)	19.2	%	5-30
	#8 (2.36mm)	5.2	%	0-12
	#16 (1.18mm)	3.6	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	3.0	%	
	#100 (.15mm)	2.9	%	
	#200 (75µm)	2.8	%	
	Wash Loss (#200/75um)	2.8	%	0-3



Plant S102-Superior Novi
Product 1022-2NS GR
Period: 09/17/2023 - 09/23/2023

Name/Title Doug Storey / QC Technician
Report Date 09/23/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.2	%	95-100
	#8 (2.36mm)	83.6	%	65-95
	#16 (1.18mm)	66.0	%	35-75
	#30 (.6mm)	48.1	%	20-55
	#50 (.3mm)	23.7	%	10-30
	#100 (.15mm)	6.1	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.15	%	