

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

Sample Date: 8/21/23

Dates Test Represents: 8/22/2023 through 8/28/2023

Concrete Grade: DM-4500HP

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	71-47	Presque Isle	1550	9.48	2.62	53.4	
26A	71-47	Presque Isle	205	1.25	2.62	7.1	
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6	
Total Wt						2905	100.0

Verify this number is 100%

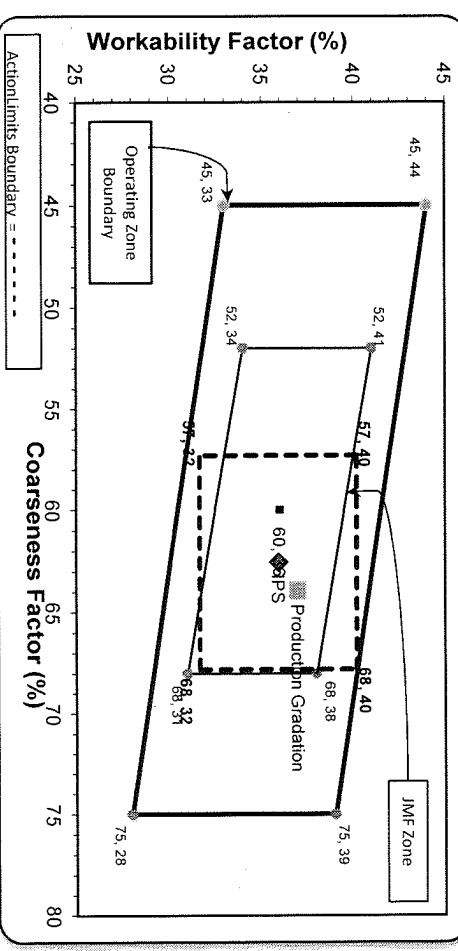
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.5	100.0	100.0	98.7	1.3	1.3
3/4"	82.6	100.0	100.0	90.7	8.0	9.3
1/2"	39.5	96.4	100.0	67.5	23.3	32.5
3/8"	23.1	87.8	100.0	58.1	9.4	41.9
#4	4.0	26.2	96.3	42.1	16.0	57.9
#8	2.2	7.4	82.8	34.5	7.6	65.5
#16	1.9	4.0	67.8	28.1	6.3	71.9
#30	1.9	3.3	50.7	21.3	6.8	78.7
#50	1.8	2.9	23.7	10.5	10.8	89.5
#100	1.7	2.6	3.7	2.6	8.0	97.4
LBW	1.4	2.3	0.4	1.1	1.5	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

Coarseness Factor: **64** Workability Factor: **34** Adjusted WF: **37.0**

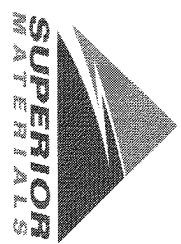
Initial Production Sample (IPS)
 Coarseness Factor: **63** Workability Factor: **36**



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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



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



Plant S12-Onsite Southfield

Product 1051-6AA LS

Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician

Report Date 08/27/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.5	%	95-100
	3/4" (19mm)	82.6	%	
	1/2" (12.5mm)	39.5	%	30-60
	3/8" (9.5mm)	23.1	%	
	#4 (4.75mm)	4.0	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.52	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	3.50	%	



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician

Report Date 08/27/2023

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)	96.4	%	95-100
	3/8" (9.5mm)	87.8	%	60-95
	#4 (4.75mm)	26.2	%	5-30
	#8 (2.36mm)	7.4	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.3	%	
	#50 (.3mm)	2.9	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75µm)	2.3	%	0-3
	Total Moisture	3.31	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician

Report Date 08/27/2023

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)	82.8	%	65-95
	#16 (1.18mm)	67.8	%	35-75
	#30 (.6mm)	50.7	%	20-55
	#50 (.3mm)	23.7	%	10-30
	#100 (.15mm)	3.7	%	0-10
	#200 (75µm)	0.6	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	4.63	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

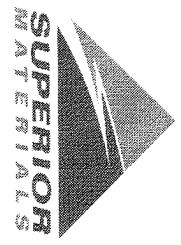
Sample Date: 8/21/23

Dates Test Represents: 8/22/2023 through 8/28/2023

Concrete Grade: DM 4500HP

Contractor: _____

MIDOT 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 %
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	95-013	Smelter Bay	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"	97.6	100.0	100.0	98.8	1.2	1.2
3/4"	81.8	100.0	100.0	90.9	7.9	9.1
1/2"	42.2	96.4	100.0	70.7	20.2	29.3
3/8"	24.5	85.7	100.0	60.7	10.0	39.3
#4	4.3	19.9	96.4	42.4	18.3	57.6
#8	2.0	5.3	85.0	35.2	7.2	64.8
#16	1.8	2.9	70.0	28.9	6.3	71.1
#30	1.7	2.5	50.3	21.0	7.9	79.0
#50	1.6	2.2	24.1	10.6	10.5	89.4
#100	1.5	2.1	7.1	3.8	6.8	96.2
LBW	1.3	1.7	1.5	1.4	2.4	98.6

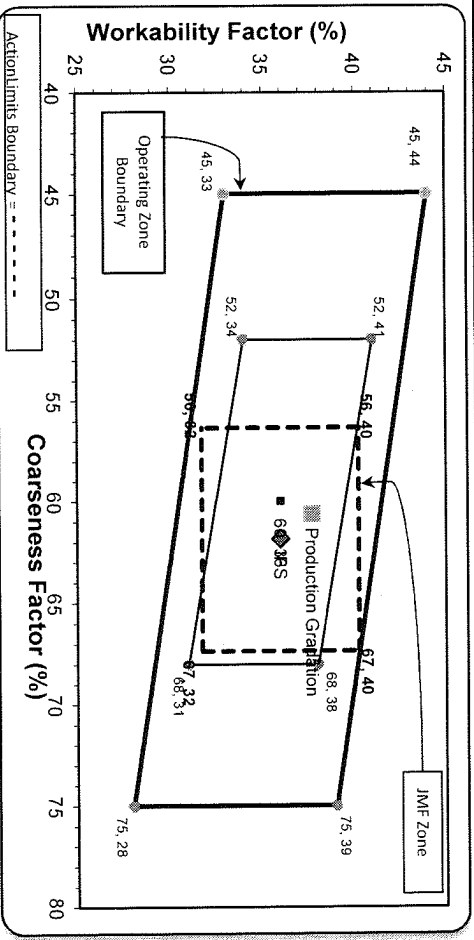
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when
 a 1.5" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 61 **Workability Factor:** 35 **Adjusted WF:** 37.7

Initial Production Sample (IPS)

Coarseness Factor: 62 **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"	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.

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

Plant 958-JMT

Product 1054-6AA LS PI

Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician

Report Date 08/27/2023

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.6	%	95-100
	3/4" (19mm)	81.8	%	
	1/2" (12.5mm)	42.2	%	30-60
	3/8" (9.5mm)	24.5	%	
	#4 (4.75mm)	4.3	%	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)	1.3	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	4.2	%	

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2023

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)	96.4	%	95-100
	3/8" (9.5mm)	85.7	%	60-95
	#4 (4.75mm)	19.9	%	5-30
	#8 (2.36mm)	5.3	%	0-12
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75µm)	1.7	%	0-3
	Total Moisture	2.8	%	

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 08/20/2023 - 08/26/2023

Report Date 08/27/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.4	%	95-100
	#8 (2.36mm)	85.0	%	65-95
	#16 (1.18mm)	70.0	%	35-75
	#30 (.6mm)	50.3	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	7.1	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	4.1	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

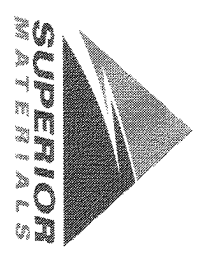
Sample Date: 8/21/23

Dates Test Represents: 8/22/2023 through 8/28/2023

Concrete Grade: DM 4500HP

Contractor: _____

MIDOT 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 %	
6AA	58-003	Stoneco	1525	9.09	2.69	51.7	
26A	58-003	Stoneco	275	1.64	2.69	9.3	
2NS	81-019	Pleasant Lake	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	83.0	100.0	100.0	91.2	8.8	8.8
1/2"	31.3	99.3	100.0	64.4	26.8	35.6
3/8"	12.6	87.8	100.0	53.7	10.7	46.3
#4	2.1	12.2	97.8	40.3	13.3	59.7
#8	1.5	4.4	82.0	33.2	7.2	66.8
#16	1.3	3.1	63.5	25.7	7.4	74.3
#30	1.2	2.7	45.3	18.5	7.2	81.5
#50	1.2	2.5	21.9	9.4	9.1	90.6
#100	1.1	2.4	6.8	3.4	5.9	96.6
LBW	0.9	2.3	1.1	1.1	2.3	98.9

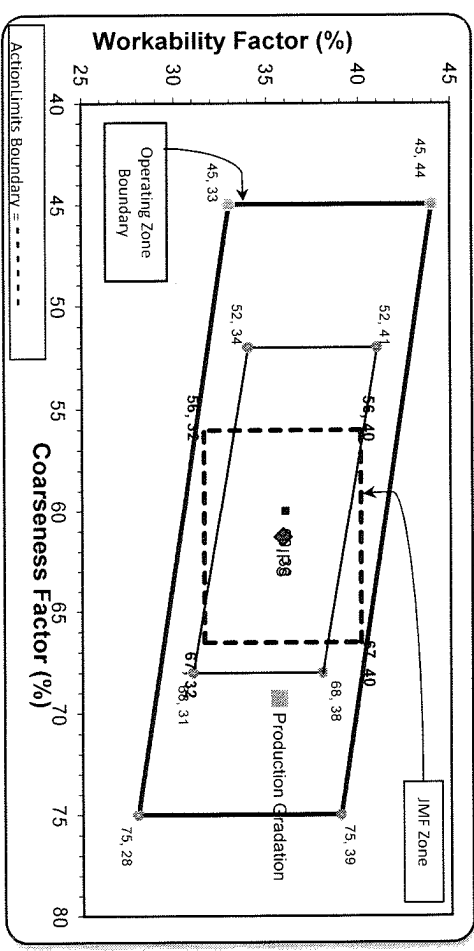
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when
 a 1.5" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **69** Workability Factor: **33** Adjusted WF: **35.7**

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: _____



Plant S102-Superior Novi

Product 1051-6AA LS

Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician

Report Date 08/27/2023

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)	83.0	%	
	1/2" (12.5mm)	31.3	%	30-60
	3/8" (9.5mm)	12.6	%	
	#4 (4.75mm)	2.1	%	0-8
	#8 (2.36mm)	1.5	%	
	#16 (1.18mm)	1.3	%	
	#30 (.6mm)	1.2	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.1	%	
	#200 (75µm)	0.96	%	
	Wash Loss (#200/75um)	0.9	%	0-2
	Total Moisture	3.27	%	



Plant S102-Superior Novi
 Product 1067-26A Mod LS
 Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2023

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)	99.3	%	95-100
	3/8" (9.5mm)	87.8	%	60-95
	#4 (4.75mm)	12.2	%	5-30
	#8 (2.36mm)	4.4	%	0-12
	#16 (1.18mm)	3.1	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.5	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.3	%	
	Wash Loss (#200/75um)	2.3	%	0-3
	Total Moisture	2.78	%	



Plant S102-Superior Novi
Product 1022-2NS GR
Period: 08/20/2023 - 08/26/2023

Name/Title Doug Storey / QC Technician
Report Date 08/27/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.8	%	95-100
	#8 (2.36mm)	82.0	%	65-95
	#16 (1.18mm)	63.5	%	35-75
	#30 (.6mm)	45.3	%	20-55
	#50 (.3mm)	21.9	%	10-30
	#100 (.15mm)	6.8	%	0-10
	#200 (75µm)	2.0	%	
	FM	2.83		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	2.95	%	