

# Aggregate Optimization Chart

## Production Gradation Report

PLANT #: **12**

Sample Date: **8/14/23**

Dates Test Represents: **8/15/2023**

through **8/21/2023**

Concrete Grade: **DM 4500HP**

Contractor: \_\_\_\_\_

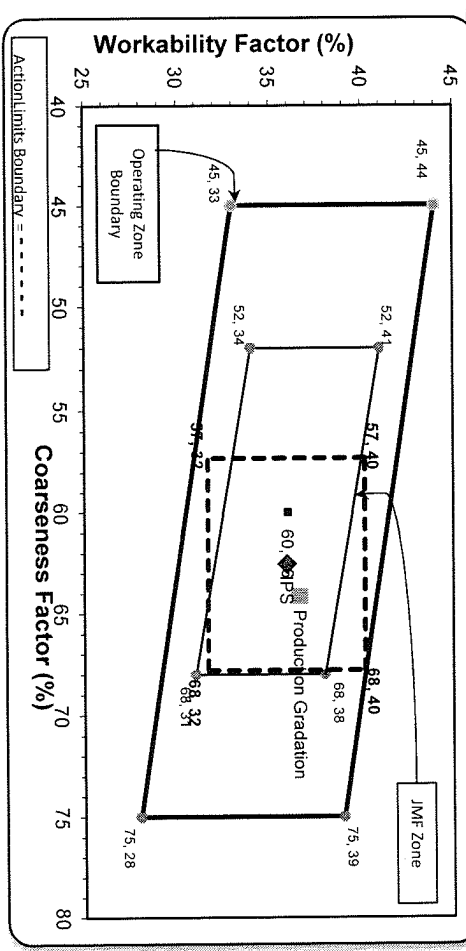
MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
ZNS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt:</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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"	97.8	100.0	100.0	98.8	1.2	1.2
3/4"	87.1	99.6	100.0	93.1	6.9	6.9
1/2"	46.4	94.6	100.0	71.0	29.0	29.0
3/8"	22.8	84.9	100.0	57.7	42.3	42.3
#4	2.3	22.2	96.6	41.0	59.0	59.0
#8	1.8	6.9	82.6	34.1	65.9	65.9
#16	1.6	4.0	67.9	28.0	72.0	72.0
#30	1.5	3.2	52.3	21.7	78.3	78.3
#50	1.4	2.8	27.7	11.9	88.1	88.1
#100	1.4	2.4	5.8	3.2	96.8	96.8
LBW	1.1	2.1	0.6	1.0	99.0	99.0

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **64** Workability Factor: **34** Adjusted WF: **36.6**



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:	Adjusted WF:
2"	100.0	63	36	36.6
1.5"	100.0			
1"	99.3			
3/4"	89.0			
1/2"	70.3			
3/8"	59.9			
#4	41.9			
#8	35.9			
#16	27.8			
#30	18.9			
#50	6.3			
#100	1.7			
LBW	1.0			



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.

PREPARED BY:  
SM, LLC Technical Service

Approved By: \_\_\_\_\_



Plant S12-Onsite Southfield

Product 1051-6AA LS

Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician

Report Date 08/19/2023

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.8	%	95-100
	3/4" (19mm)	87.1	%	
	1/2" (12.5mm)	46.4	%	30-60
	3/8" (9.5mm)	22.8	%	
	#4 (4.75mm)	2.3	%	0-8
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.20	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	3.96	%	



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician

Report Date 08/19/2023

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)	99.6	%	100-100
	1/2" (12.5mm)	94.6	%	95-100
	3/8" (9.5mm)	84.9	%	60-95
	#4 (4.75mm)	22.2	%	5-30
	#8 (2.36mm)	6.9	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	2.1	%	0-3
	Total Moisture	3.64	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician

Report Date 08/19/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.6	%	95-100
	#8 (2.36mm)	82.6	%	65-95
	#16 (1.18mm)	67.9	%	35-75
	#30 (.6mm)	52.3	%	20-55
	#50 (.3mm)	27.7	%	10-30
	#100 (.15mm)	5.8	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	5.19	%	

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-102**

Sample Date: **8/14/23**

Dates Test Represents: **8/15/2023** through **8/21/2023**

Concrete Grade: **DM, 4500HP**

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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	100.0

Verify this number is 100%

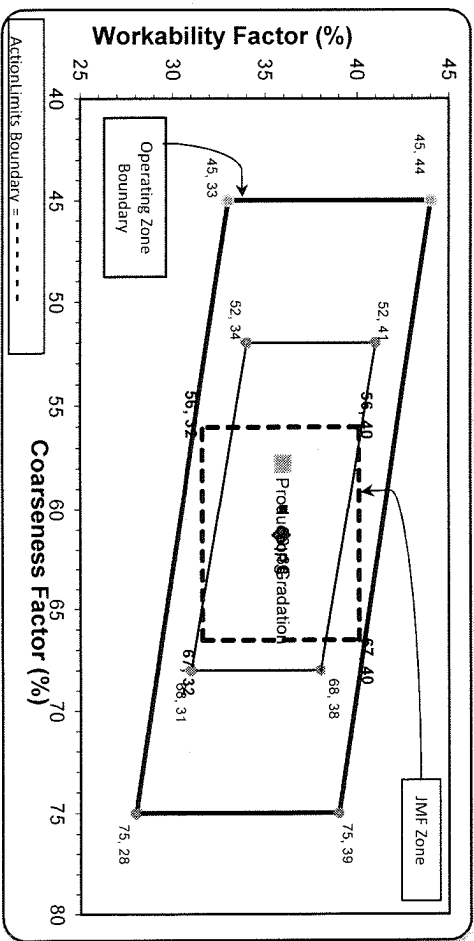
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.3	7.7	7.7
1/2"	47.8	100.0	100.0	73.0	19.3	27.0
3/8"	28.0	87.1	100.0	61.6	11.4	38.4
#4	6.5	10.3	97.7	42.4	19.2	57.6
#8	3.0	3.3	81.1	33.5	8.9	66.5
#16	2.4	2.4	63.4	26.2	7.3	73.8
#30	2.2	2.1	45.5	19.1	7.1	80.9
#50	2.1	1.9	21.7	9.7	9.3	90.3
#100	1.9	1.8	6.5	3.7	6.0	96.3
LBW	1.7	1.6	1.1	1.5	2.2	98.5

\*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: **58** Workability Factor: **33** 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: \_\_\_\_\_



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



**Plant** S102-Superior Novi  
**Product** 1051-6AA LS  
**Period:** 08/13/2023 - 08/19/2023

**Name/Title** Doug Storey / QC Technician  
**Report Date** 08/19/2023

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)	85.1	%	
	1/2" (12.5mm)	47.8	%	30-60
	3/8" (9.5mm)	28.0	%	
	#4 (4.75mm)	6.5	%	0-8
	#8 (2.36mm)	3.0	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.79	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	3.08	%	



Plant S102-Superior Novi  
 Product 1067-26A Mod LS  
 Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/19/2023

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)	87.1	%	60-95
	#4 (4.75mm)	10.3	%	5-30
	#8 (2.36mm)	3.3	%	0-12
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	1.82	%	



Plant S102-Superior Novi  
Product 1022-2NS GR  
Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
Report Date 08/19/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.7	%	95-100
	#8 (2.36mm)	81.1	%	65-95
	#16 (1.18mm)	63.4	%	35-75
	#30 (.6mm)	45.5	%	20-55
	#50 (.3mm)	21.7	%	10-30
	#100 (.15mm)	6.5	%	0-10
	#200 (75µm)	1.9	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75µm)	1.1	%	0-3
	Total Moisture	3.24	%	