

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-102**

Sample Date: **4/1/24**

Dates Test Represents: **4/2/2024** through **4/8/2024**

Concrete Grade: **DM, 4500HP**

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

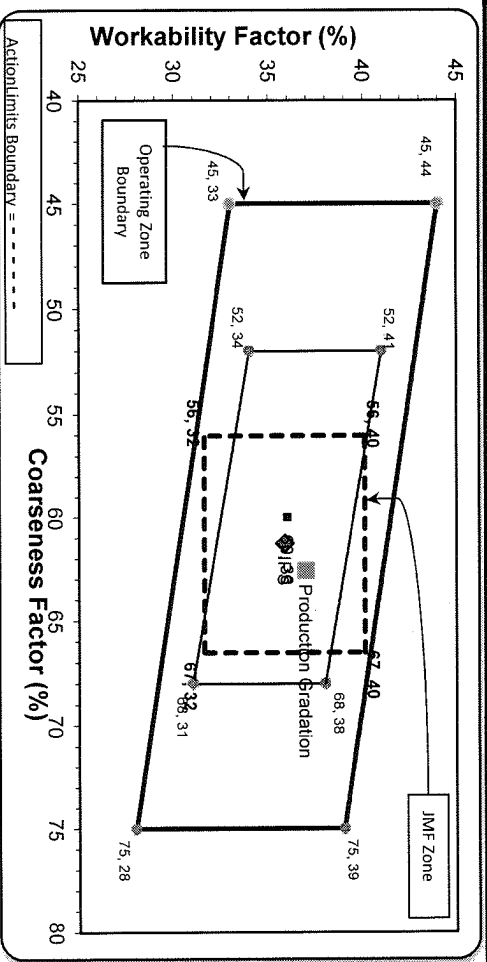
MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (ssn)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	63-114	Highland	1150	6.95	2.65	39.0
<b>Total Wt</b>			<b>2950</b>	<b>17.68</b>		<b>100.0</b>

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"	81.4	100.0	100.0	91.5	8.5	8.5
1/2"	36.7	96.8	100.0	70.5	20.9	29.5
3/8"	16.8	80.8	100.0	59.0	11.5	41.0
#4	2.9	17.2	98.7	42.4	16.6	57.6
#8	1.6	6.8	83.9	34.5	8.0	65.5
#16	1.3	4.3	65.6	26.8	7.7	73.2
#30	1.2	3.6	46.8	19.3	7.5	80.7
#50	1.2	3.2	19.6	8.7	10.7	91.3
#100	1.1	3.1	4.1	2.6	6.1	97.4
LBW	1.0	2.9	0.7	1.2	1.4	98.8

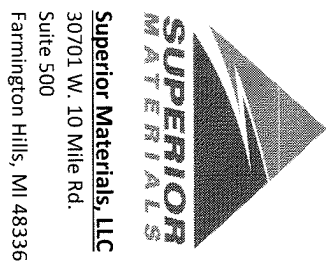
Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor:	63	Workability Factor:	34	Adjusted WF	37.0
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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

Initial Production Sample (IPS) Coarseness Factor: **61** 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: 03/31/2024 - 04/06/2024

Report Date 04/05/2024

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)	81.4	%	
	1/2" (12.5mm)	36.7	%	30-60
	3/8" (9.5mm)	16.8	%	
	#4 (4.75mm)	2.9	%	0-8
	#8 (2.36mm)	1.6	%	
	#16 (1.18mm)	1.3	%	
	#30 (.6mm)	1.2	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.1	%	
	#200 (75µm)	1.10	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	3.10	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 03/31/2024 - 04/06/2024

Report Date 04/05/2024

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)	96.8	%	95-100
	3/8" (9.5mm)	80.8	%	60-95
	#4 (4.75mm)	17.2	%	5-30
	#8 (2.36mm)	6.8	%	0-12
	#16 (1.18mm)	4.3	%	
	#30 (.6mm)	3.6	%	
	#50 (.3mm)	3.2	%	
	#100 (.15mm)	3.1	%	
	#200 (75µm)	2.9	%	
	Wash Loss (#200/75um)	2.9	%	0-3
	Total Moisture	4.36	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 03/31/2024 - 04/06/2024

Report Date 04/05/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.7	%	95-100
	#8 (2.36mm)	83.9	%	65-95
	#16 (1.18mm)	65.6	%	35-75
	#30 (.6mm)	46.8	%	20-55
	#50 (.3mm)	19.6	%	10-30
	#100 (.15mm)	4.1	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.81		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	2.03	%	

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: 12

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

Sample Date: 4/1/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 4/2/2024 through 4/8/2024

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



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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %
GAA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt:						17.69
						100.0

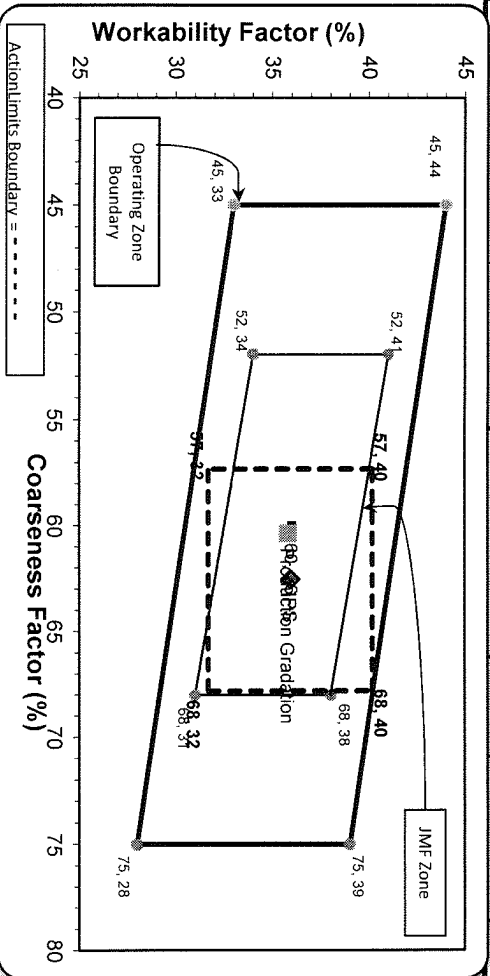
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.9	100.0	100.0	99.0	1.0	1.0
3/4"	83.8	100.0	100.0	91.9	7.0	8.1
1/2"	35.4	95.4	100.0	67.3	24.6	32.7
3/8"	22.5	84.9	100.0	59.7	7.5	40.3
#4	4.8	16.8	96.6	42.4	17.3	57.6
#8	2.3	3.9	80.2	33.3	9.1	66.7
#16	2.0	2.3	64.7	26.9	6.5	73.1
#30	1.9	1.9	49.0	20.5	6.3	79.5
#50	1.8	1.8	23.8	10.5	10.0	89.5
#100	1.8	1.7	4.5	2.9	7.7	97.1
LBW	1.6	1.6	0.9	1.3	1.5	98.7

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Adjusted W/F Initial Production Sample (IPS)

Coarseness Factor: **60** Workability Factor: **33** **35.8**

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

\*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

Name/Title Doug Storey / QC Technician

Period: 03/31/2024 - 04/06/2024

Report Date 04/05/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.9	%	95-100
	3/4" (19mm)	83.8	%	
	1/2" (12.5mm)	35.4	%	30-60
	3/8" (9.5mm)	22.5	%	
	#4 (4.75mm)	4.8	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.70	%	
	Wash Loss (#200/75um)	1.6	%	0-2
	Total Moisture	2.60	%	



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 03/31/2024 - 04/06/2024

Report Date 04/05/2024

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)	95.4	%	95-100
	3/8" (9.5mm)	84.9	%	60-95
	#4 (4.75mm)	16.8	%	5-30
	#8 (2.36mm)	3.9	%	0-12
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	2.56	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Period: 03/31/2024 - 04/06/2024

Name/Title Doug Storey / QC Technician

Report Date 04/05/2024

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)	80.2	%	65-95
	#16 (1.18mm)	64.7	%	35-75
	#30 (.6mm)	49.0	%	20-55
	#50 (.3mm)	23.8	%	10-30
	#100 (.15mm)	4.5	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.81		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	3.10	%	