

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-32**

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

Sample Date: **4/10/23**

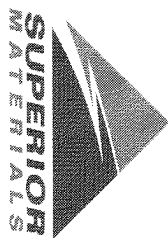
MDOT No.: \_\_\_\_\_

Dates Test Represents: **4/11/2023** through **4/17/2023**

Concrete Grade: **DM 4500HP**

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4
26A	71-47	Presque Isle	350	2.14	2.62	12.0
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
<b>Total Wt.</b>						<b>100.0</b>

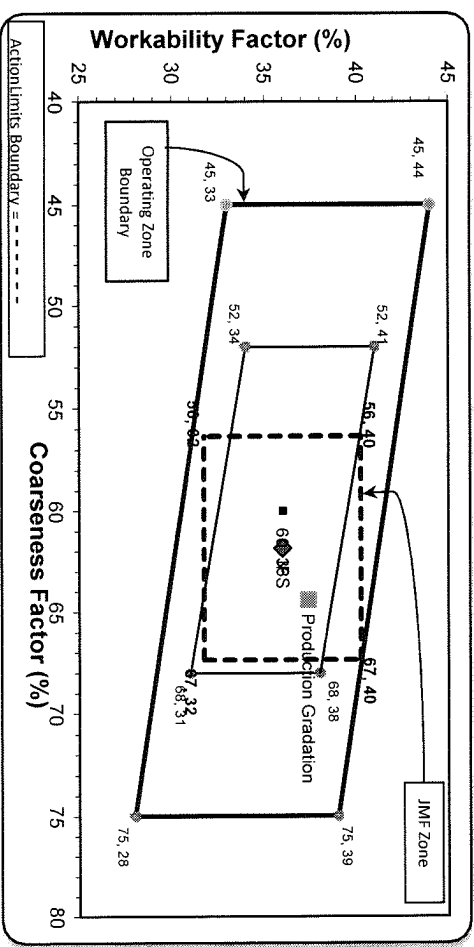
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	83.1	100.0	100.0	91.8	8.2	8.2
1/2"	31.2	96.7	100.0	66.3	25.5	33.7
3/8"	15.9	89.4	100.0	58.0	8.3	42.0
#4	2.9	20.2	96.2	41.9	16.1	58.1
#8	1.9	4.2	84.5	34.9	7.0	65.1
#16	1.5	2.3	69.2	28.4	6.5	71.6
#30	1.4	2.0	50.4	20.9	7.5	79.1
#50	1.4	1.9	24.8	10.7	10.2	89.3
#100	1.4	1.7	6.8	3.6	7.1	96.4
LBW	1.2	1.5	1.1	1.2	2.4	98.8



**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 8% for the 1" sieve when  
 a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation	Batch Plant Gradations	Aggregate Supplier Gradations	Adjusted WF
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Coarseness Factor: <b>64</b>	Workability Factor: <b>35</b>		<b>37.4</b>



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: \_\_\_\_\_

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 04/09/2023 - 04/15/2023

Report Date 04/15/2023

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	83.1	%	
	1/2" (12.5mm)	31.2	%	30-60
	3/8" (9.5mm)	15.9	%	
	#4 (4.75mm)	2.9	%	0-8
	#8 (2.36mm)	1.9	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.2	%	
	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: 04/09/2023 - 04/15/2023

Report Date 04/15/2023

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)	96.7	%	95-100
	3/8" (9.5mm)	89.4	%	60-95
	#4 (4.75mm)	20.2	%	5-30
	#8 (2.36mm)	4.2	%	0-12
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.3	%	

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 04/09/2023 - 04/15/2023

Report Date 04/15/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.2	%	95-100
	#8 (2.36mm)	84.5	%	65-95
	#16 (1.18mm)	69.2	%	35-75
	#30 (.6mm)	50.4	%	20-55
	#50 (.3mm)	24.8	%	10-30
	#100 (.15mm)	6.8	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.68		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.8	%	

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-102**

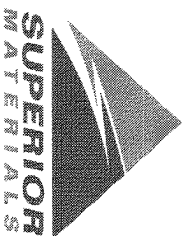
Sample Date: **4/10/23**

Dates Test Represents: **4/11/2023** through **4/17/2023**

Concrete Grade: **DM, 4500HP**

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

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



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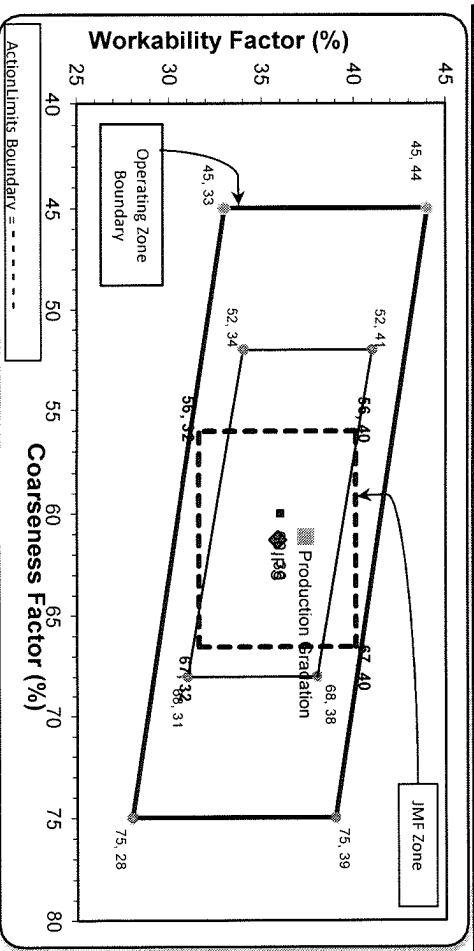
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	300	1.79	2.69	10.2
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
			<b>Total Wt</b>	<b>2950</b>		<b>100.0</b>

Sieve	6AA	26A	2NS	Cumulative % Passing
2"	100.0	100.0	100.0	100.0
1.5"	100.0	100.0	100.0	100.0
1"	100.0	100.0	100.0	100.0
3/4"	88.1	100.0	100.0	93.9
1/2"	49.1	99.8	100.0	74.1
3/8"	24.2	87.5	100.0	60.2
#4	4.6	10.1	98.4	41.7
#8	3.2	4.1	84.2	34.9
#16	2.8	2.9	66.7	27.7
#30	2.4	2.5	48.2	20.3
#50	2.2	2.3	22.3	10.0
#100	2.2	2.2	5.6	3.5
LBW	2.0	2.0	1.1	1.6

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **61** Workability Factor: **35** Adjusted WF: **37.4**



Sieve	Initial Production Sample (IPS)	Coarseness Factor: 61	Workability Factor: 36
2"	0.0	0.0	0.0
1.5"	0.0	0.0	0.0
1"	0.7	0.7	0.7
3/4"	10.1	10.1	10.8
1/2"	18.5	18.5	29.3
3/8"	10.0	10.0	39.3
#4	16.3	16.3	55.6
#8	8.5	8.5	64.1
#16	8.6	8.6	72.7
#30	8.2	8.2	80.9
#50	11.7	11.7	92.6
#100	5.6	5.6	98.1
LBW	1.2	1.2	99.3

\*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 8% for the 1" sieve when  
 a 2" max. size (nom. 1.5") aggregate is used.

PREPARED BY:  
SM, LLC Technical Service

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



Plant S102-Superior Novi

Product 1051-6AA LS

Period: 04/09/2023 - 04/15/2023

Name/Title Doug Storey / QC Technician

Report Date 04/15/2023

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)	88.1	%	
	1/2" (12.5mm)	49.1	%	30-60
	3/8" (9.5mm)	24.2	%	
	#4 (4.75mm)	4.6	%	0-8
	#8 (2.36mm)	3.2	%	
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.4	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.03	%	
	Wash Loss (#200/75um)	2.0	%	0-2
	Total Moisture	2.22	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/09/2023 - 04/15/2023

Report Date 04/15/2023

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)	99.8	%	95-100
	3/8" (9.5mm)	87.5	%	60-95
	#4 (4.75mm)	10.1	%	5-30
	#8 (2.36mm)	4.1	%	0-12
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	2.0	%	0-3
	Total Moisture	1.54	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Period: 04/09/2023 - 04/15/2023

Name/Title Doug Storey / QC Technician

Report Date 04/15/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.4	%	95-100
	#8 (2.36mm)	84.2	%	65-95
	#16 (1.18mm)	66.7	%	35-75
	#30 (.6mm)	48.2	%	20-55
	#50 (.3mm)	22.3	%	10-30
	#100 (.15mm)	5.6	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.26	%	