

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

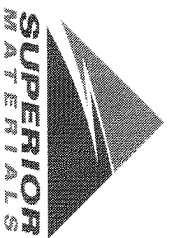
Sample Date: 11/28/22

Dates Test Represents: 11/29/2022 through 12/5/2022

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____



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

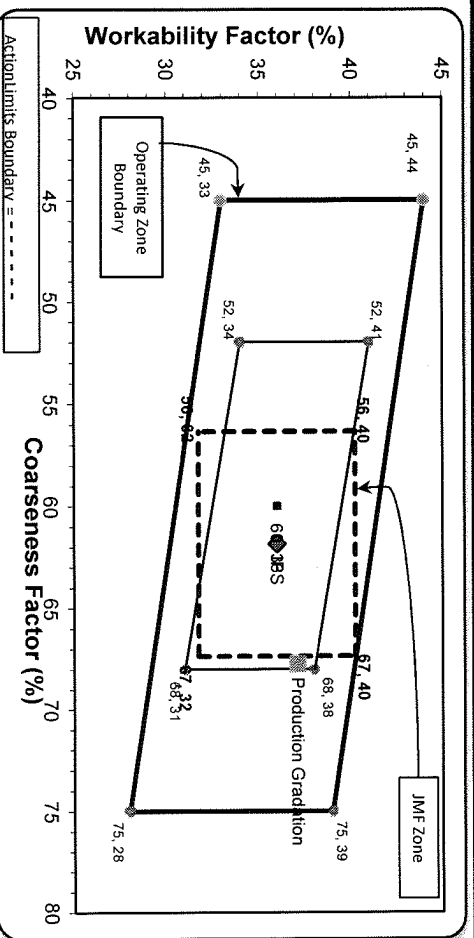
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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"	96.7	100.0	100.0	98.3	1.7	1.7
3/4"	74.4	100.0	100.0	87.2	11.2	12.8
1/2"	31.9	96.0	100.0	65.5	21.7	34.5
3/8"	14.7	84.8	100.0	55.7	9.8	44.3
#4	2.5	20.6	96.0	41.4	14.3	58.6
#8	1.9	5.4	83.6	34.6	6.8	65.4
#16	1.7	2.8	67.9	28.0	6.6	72.0
#30	1.5	2.3	49.2	20.5	7.6	79.5
#50	1.4	2.1	24.0	10.4	10.0	89.6
#100	1.3	2.0	6.6	3.5	6.9	96.5
LBW	0.9	1.7	1.2	1.1	2.4	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 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

Coarseness Factor: **68** Workability Factor: **35** Adjusted WF: **37.1**



Sieve	Coarseness Factor:	Workability Factor:	Adjusted WF:
2"	62	36	37.1
1.5"	62	36	37.1
1"	62	36	37.1
3/4"	62	36	37.1
1/2"	62	36	37.1
3/8"	62	36	37.1
#4	62	36	37.1
#8	62	36	37.1
#16	62	36	37.1
#30	62	36	37.1
#50	62	36	37.1
#100	62	36	37.1
LBW	62	36	37.1

PREPARED BY:
SM, LLC Technical Service

Approved By: _____

Plant 958-JMT
 Product 1022-2NS GR - Smelter Bay
 Period: 11/27/2022 - 12/03/2022

Name/Title Doug Storey / QC Technician
 Report Date 12/02/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.0	%	95-100
	#8 (2.36mm)	83.6	%	65-95
	#16 (1.18mm)	67.9	%	35-75
	#30 (.6mm)	49.2	%	20-55
	#50 (.3mm)	24.0	%	10-30
	#100 (.15mm)	6.6	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.73		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	5.2	%	

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 11/27/2022 - 12/03/2022

Name/Title Doug Storey / QC Technician
 Report Date 12/02/2022

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)	96.0	%	95-100
	3/8" (9.5mm)	84.8	%	60-95
	#4 (4.75mm)	20.6	%	5-30
	#8 (2.36mm)	5.4	%	0-12
	#16 (1.18mm)	2.8	%	
	#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	3.9	%	

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 11/27/2022 - 12/03/2022

Report Date 12/02/2022

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.7	%	95-100
	3/4" (19mm)	74.4	%	
	1/2" (12.5mm)	31.9	%	30-60
	3/8" (9.5mm)	14.7	%	
	#4 (4.75mm)	2.5	%	0-8
	#8 (2.36mm)	1.9	%	
	#16 (1.18mm)	1.7	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.1	%	
	Wash Loss (#200/75um)	0.9	%	0-2
	Total Moisture	3.3	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

Contractor: _____

Sample Date: 11/28/22

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 11/29/2022 through 12/5/2022

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	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
Total Wt						17.68
						100.0

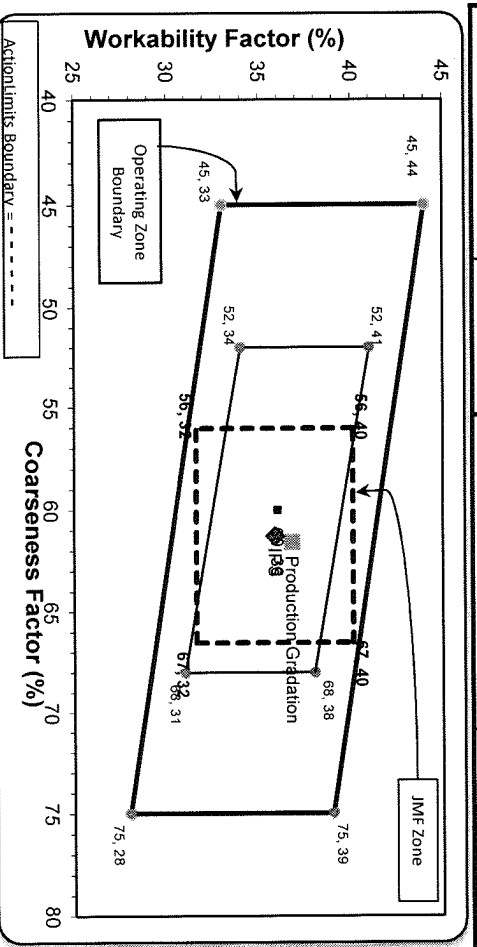
Verify this number is 100%

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"	92.9	100.0	100.0	96.4	3.6	3.6
1/2"	48.8	99.2	100.0	73.9	22.5	26.1
3/8"	22.4	90.1	100.0	59.5	14.3	40.5
#4	4.9	12.9	98.1	42.0	17.5	58.0
#8	2.1	3.9	84.2	34.3	7.8	65.7
#16	1.6	2.7	67.2	27.3	7.0	72.7
#30	1.4	2.3	49.6	20.3	7.0	79.7
#50	1.3	2.1	25.8	10.9	9.3	89.1
#100	1.3	2.0	7.9	3.9	7.0	96.1
LBW	1.1	1.9	1.8	1.5	2.5	98.5

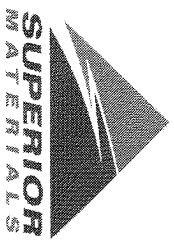
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.,
 nom. max. #100 and #200 sieves.
 *Retained must be at least 4% for each sieve except max.,
 nom. max. #100 and #200 sieves.
 *Retained must be at least 8% for the 1" sieve when
 a 2" max. size (nom. 1.5") aggregate is used.

Production Gradation	Batch Plant Gradations	Aggregate Supplier Gradations	Adjusted WF
<input checked="" type="radio"/> Coarseness Factor: 62	<input type="radio"/> Workability Factor: 34		36.8

Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:
	61	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



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 Farmington Hills, MI 48336

PREPARED BY:
 SM, LLC Technical Service

Approved BY: _____



Plant S103-Superior Brighton
Product 1022-2NS GR
Period: 11/27/2022 - 12/03/2022

Name/Title Doug Storey / QC Technician
Report Date 12/02/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.1	%	95-100
	#8 (2.36mm)	84.2	%	65-95
	#16 (1.18mm)	67.2	%	35-75
	#30 (.6mm)	49.6	%	20-55
	#50 (.3mm)	25.8	%	10-30
	#100 (.15mm)	7.9	%	0-10
	#200 (75µm)	2.1	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	1.8	%	0-3
	Total Moisture	3.81	%	



Plant S103-Superior Brighton
 Product 1067-26A Mod LS
 Period: 11/27/2022 - 12/03/2022

Name/Title Doug Storey / QC Technician
 Report Date 12/02/2022

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)	99.2	%	95-100
	3/8" (9.5mm)	90.1	%	60-95
	#4 (4.75mm)	12.9	%	5-30
	#8 (2.36mm)	3.9	%	0-12
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.9	%	0-3
	Total Moisture	3.67	%	



Plant S103-Superior Brighton
Product 1051-6AA LS
Period: 11/27/2022 - 12/03/2022

Name/Title Doug Storey / QC Technician
Report Date 12/02/2022

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)	92.9	%	
	1/2" (12.5mm)	48.8	%	30-60
	3/8" (9.5mm)	22.4	%	
	#4 (4.75mm)	4.9	%	0-8
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.3	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.18	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	3.57	%	