

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Contractor: _____

Sample Date: 10/23/23

Concrete Grade: S2M, 3500HP

Dates Test Represents: 10/24/2023 through 10/30/2023

MDOT No.: _____



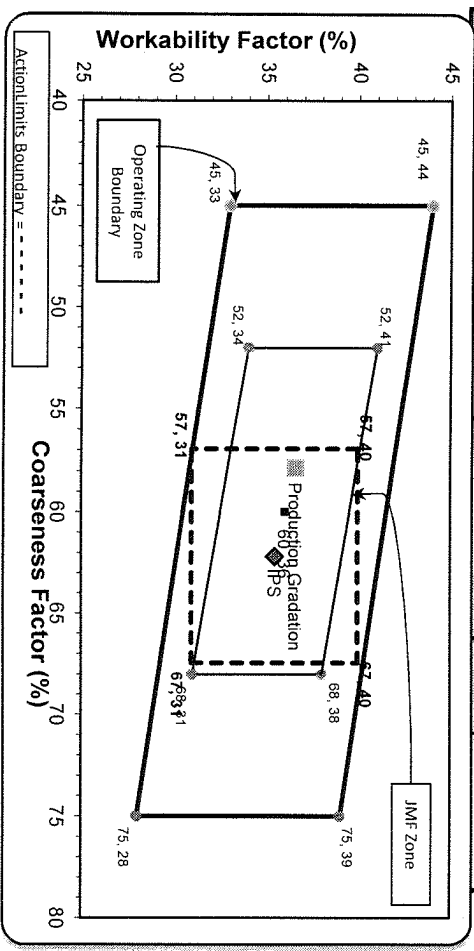
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (ssp)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1400	8.56	2.62	45.9
26A	71-47	Presque Isle	420	2.57	2.62	13.8
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
			Total Wt	3050		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"	83.2	100.0	100.0	92.3	7.7	7.7
1/2"	39.6	95.7	100.0	71.7	20.6	28.3
3/8"	24.5	85.2	100.0	63.3	8.4	36.7
#4	5.6	21.3	96.5	44.4	18.9	55.6
#8	3.1	4.9	85.5	36.6	7.8	63.4
#16	2.6	2.6	70.7	30.1	6.5	69.9
#30	2.5	2.1	50.9	22.0	8.1	78.0
#50	2.4	1.9	25.1	11.5	10.5	88.5
#100	2.2	1.7	7.3	4.2	7.3	95.8
LBW	1.8	1.4	1.3	1.5	2.6	98.5

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **58** Workability Factor: **37**



Initial Production Sample (IPS)

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"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

Coarseness Factor: **62** Workability Factor: **35**

*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: _____

Edw. C. Levy Co.

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

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 10/22/2023 - 10/28/2023

Report Date 10/28/2023

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)	83.2	%	
	1/2" (12.5mm)	39.6	%	30-60
	3/8" (9.5mm)	24.5	%	
	#4 (4.75mm)	5.6	%	0-8
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.8	%	0-2
	Total Moisture	3.7	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 10/22/2023 - 10/28/2023

Report Date 10/28/2023

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)	95.7	%	95-100
	3/8" (9.5mm)	85.2	%	60-95
	#4 (4.75mm)	21.3	%	5-30
	#8 (2.36mm)	4.9	%	0-12
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	3.6	%	

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 10/22/2023 - 10/28/2023

Report Date 10/28/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.5	%	95-100
	#8 (2.36mm)	85.5	%	65-95
	#16 (1.18mm)	70.7	%	35-75
	#30 (.6mm)	50.9	%	20-55
	#50 (.3mm)	25.1	%	10-30
	#100 (.15mm)	7.3	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.64		2.6-3
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	4.2	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

Sample Date: 10/23/23

Dates Test Represents: 10/24/2023 through 10/30/2023

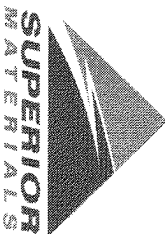
Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		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"	85.4	100.0	100.0	92.7	7.3	7.3
1/2"	36.6	99.6	100.0	68.3	24.4	31.7
3/8"	16.3	88.1	100.0	56.8	11.4	43.2
#4	2.4	13.5	98.8	41.0	15.8	59.0
#8	1.5	5.3	86.2	34.7	6.3	65.3
#16	1.3	4.0	67.3	27.2	7.6	72.8
#30	1.3	3.5	48.5	19.8	7.3	80.2
#50	1.2	3.1	21.3	9.2	10.6	90.8
#100	1.2	2.8	4.1	2.5	6.7	97.5
LBW	1.0	2.6	0.5	1.0	1.5	99.0

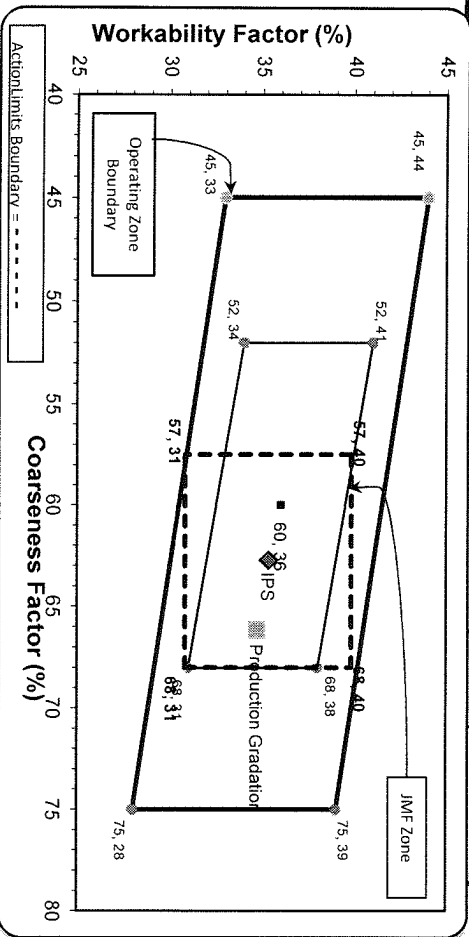


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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

*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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **66** Workability Factor: **35**



Initial Production Sample (IPS)

Coarseness Factor: **63** Workability Factor: **35**

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.4	11.9	40.6
#4	43.0	16.5	57.0
#8	35.3	7.6	64.7
#16	28.2	7.1	71.8
#30	21.6	6.6	78.4
#50	9.1	12.5	90.9
#100	1.7	7.4	98.3
LBW	1.1	0.6	98.9

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S35-Superior Romulus

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 10/22/2023 - 10/28/2023

Report Date 10/28/2023

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)	85.4	%	
	1/2" (12.5mm)	36.6	%	30-60
	3/8" (9.5mm)	16.3	%	
	#4 (4.75mm)	2.4	%	0-8
	#8 (2.36mm)	1.5	%	
	#16 (1.18mm)	1.3	%	
	#30 (.6mm)	1.3	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.2	%	
	#200 (75µm)	1.11	%	
	Wash Loss (#200/75um)	1.0	%	0-2
ASTM C566	Total Moisture	3.60	%	



Plant S35-Superior Romulus

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 10/22/2023 - 10/28/2023

Report Date 10/28/2023

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)	99.6	%	95-100
	3/8" (9.5mm)	88.1	%	60-95
	#4 (4.75mm)	13.5	%	5-30
	#8 (2.36mm)	5.3	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.1	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75um)	2.6	%	0-3
ASTM C566	Total Moisture	3.83	%	



Plant S35-Superior Romulus
 Product 1022-2NS GR
 Period: 10/22/2023 - 10/28/2023

Name/Title Doug Storey / QC Technician
 Report Date 10/28/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.8	%	95-100
	#8 (2.36mm)	86.2	%	65-95
	#16 (1.18mm)	67.3	%	35-75
	#30 (.6mm)	48.5	%	20-55
	#50 (.3mm)	21.3	%	10-30
	#100 (.15mm)	4.1	%	0-10
	#200 (75µm)	0.5	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
ASTM C566	Total Moisture	3.96	%	