

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Contractor: _____

Sample Date: 11/1/21

Concrete Grade: **DM**

Dates Test Represents: 11/2/2021 through 11/8/2021

MDOT No.: _____

Aggr. 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	1500	6.95	2.65	39.6
Total Wt.						17.69
						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"	98.5	100.0	100.0	99.2	0.8	0.8
3/4"	77.7	100.0	100.0	88.8	10.4	11.2
1/2"	36.5	95.6	100.0	67.7	21.1	32.3
3/8"	23.4	81.6	100.0	59.7	8.0	40.3
#4	4.7	16.1	95.0	41.6	18.1	58.4
#8	2.2	5.2	81.4	33.9	7.8	66.1
#16	1.8	3.0	65.3	27.1	6.8	72.9
#30	1.7	2.4	48.0	20.1	7.0	79.9
#50	1.6	2.2	23.3	10.3	9.8	89.7
#100	1.5	1.9	6.6	3.6	6.7	96.4
LBW	1.0	1.4	0.3	0.8	2.8	99.2

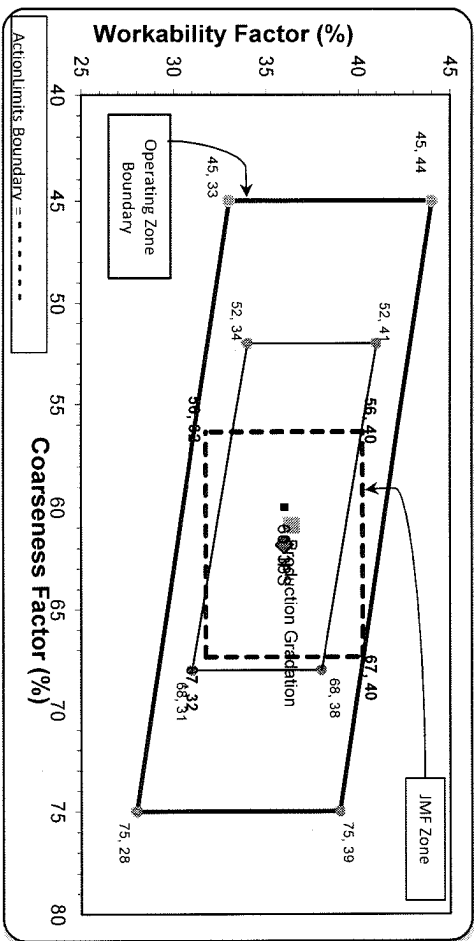
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size (nom.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

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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **61** Workability Factor: **34** Adjusted WF: **36.4**

Initial Production Sample (IPS)
 Coarseness Factor: **62** 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"	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 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 10/31/2021 - 11/06/2021

Report Date 11/02/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.0	%	95-100
	#8 (2.36mm)	81.4	%	65-95
	#16 (1.18mm)	65.3	%	35-75
	#30 (.6mm)	48.0	%	20-55
	#50 (.3mm)	23.3	%	10-30
	#100 (.15mm)	6.6	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.80		2.6-3
	Wash Loss (#200/75um)	0.3	%	0-3
	Total Moisture	5.0	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 10/31/2021 - 11/06/2021

Report Date 11/05/2021

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)	95.6	%	95-100
	3/8" (9.5mm)	81.6	%	60-95
	#4 (4.75mm)	16.1	%	5-30
	#8 (2.36mm)	5.2	%	0-12
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.4	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	3.3	%	

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 10/31/2021 - 11/06/2021

Report Date 11/05/2021

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.5	%	95-100
	3/4" (19mm)	77.7	%	
	1/2" (12.5mm)	36.5	%	30-60
	3/8" (9.5mm)	23.4	%	
	#4 (4.75mm)	4.7	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.6	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	2.8	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

Sample Date: 11/1/21

Dates Test Represents: 11/2/2021 through 11/8/2021

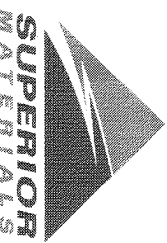
Concrete Grade: **DM**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1555	9.26	2.69	52.6
26A	58-003	Stoneco	300	1.79	2.69	10.2
2NS	81-093	Burnmeister	1100	6.65	2.65	37.2
Total Wt						100.0
Total Wt						17.70

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"	98.3	100.0	100.0	99.1	0.9	0.9
3/4"	66.2	100.0	100.0	82.2	16.9	17.8
1/2"	30.0	100.0	100.0	63.2	19.0	36.8
3/8"	11.5	92.2	100.0	52.6	10.5	47.4
#4	2.4	15.1	98.6	39.5	13.1	60.5
#8	1.2	4.7	86.6	33.3	6.2	66.7
#16	1.0	3.2	71.9	27.6	5.7	72.4
#30	0.9	2.6	49.6	19.2	8.4	80.8
#50	0.8	2.1	21.6	8.7	10.5	91.3
#100	0.8	1.9	4.4	2.3	6.4	97.7
LBW	0.7	1.6	0.9	0.9	1.4	99.1



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

Production Gradation	Coarseness Factor:	Workability Factor:	Adjusted WF
<input checked="" type="radio"/> Batch Plant Gradations	71	33	35.8
<input type="radio"/> Aggregate Supplier Gradations			

Initial Production Sample (IPS)

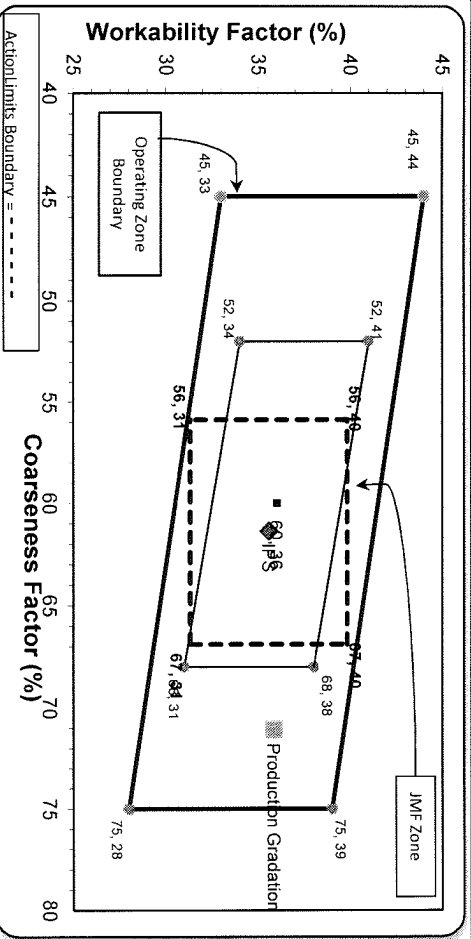
Coarseness Factor: **61**

Workability Factor: **36**

Adjusted WF: **35.8**

Verify this number is 100%

*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 1" sieve when a 2" max. size (nom. 1.5") aggregate is used.



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"	89.1	10.2	10.9
1/2"	70.5	18.6	29.5
3/8"	60.5	10.0	39.5
#4	44.1	16.4	55.9
#8	35.6	8.5	64.4
#16	27.7	7.9	72.3
#30	20.6	7.1	79.4
#50	8.7	11.8	91.3
#100	1.6	7.1	98.4
LBW	1.1	0.6	98.9

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S35-Superior Romulus

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 10/31/2021 - 11/06/2021

Report Date 11/05/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.6	%	95-100
	#8 (2.36mm)	86.6	%	65-95
	#16 (1.18mm)	71.9	%	35-75
	#30 (.6mm)	49.6	%	20-55
	#50 (.3mm)	21.6	%	10-30
	#100 (.15mm)	4.4	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.67		2.6-3
AASHTO T11	-#200 (75µm)	1.24	%	
	Wash Loss (#200/75µm)	0.9	%	0-3
ASTM C566	Total Moisture	6.22	%	



Plant S35-Superior Romulus

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 10/31/2021 - 11/06/2021

Report Date 11/06/2021

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)	100.0	%	95-100
	3/8" (9.5mm)	92.2	%	60-95
	#4 (4.75mm)	15.1	%	5-30
	#8 (2.36mm)	4.7	%	0-12
	#16 (1.18mm)	3.2	%	
	#30 (.6mm)	2.6	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.6	%	0-3



Plant S35-Superior Romulus

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 10/31/2021 - 11/06/2021

Report Date 11/06/2021

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.3	%	95-100
	3/4" (19mm)	66.2	%	
	1/2" (12.5mm)	30.0	%	30-60
	3/8" (9.5mm)	11.5	%	
	#4 (4.75mm)	2.4	%	0-8
	#8 (2.36mm)	1.2	%	
	#16 (1.18mm)	1.0	%	
	#30 (.6mm)	0.9	%	
	#50 (.3mm)	0.8	%	
	#100 (.15mm)	0.8	%	
	#200 (75µm)	0.74	%	
AASHTO T11	-#200 (75um)	0.74	%	
	Wash Loss (#200/75um)	0.7	%	0-2