

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-32**

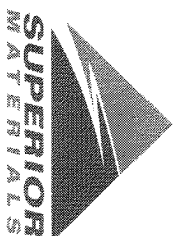
Sample Date: **5/18/20**

Dates Test Represents: **5/19/2020** through **5/25/2020**

Concrete Grade: **S2M**

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

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
6AA	71-47	Presque Isle	1420	8.69	2.62	46.6
26A	71-47	Presque Isle	400	2.45	2.62	13.1
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
			<b>Total Wt</b>	<b>3050</b>		<b>100.0</b>

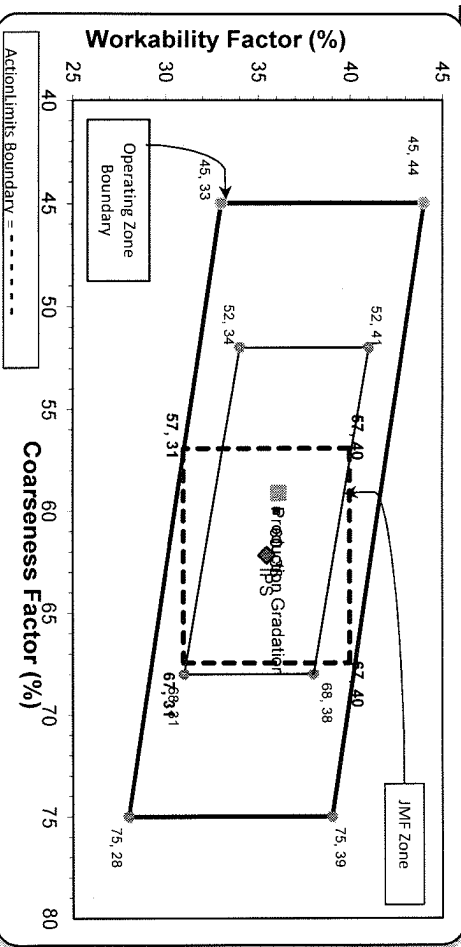
  

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.5	100.0	100.0	99.8	0.2	0.2
3/4"	77.8	100.0	100.0	89.7	10.1	10.3
1/2"	42.6	97.2	100.0	72.9	16.8	27.1
3/8"	22.6	86.6	100.0	62.2	10.7	37.8
#4	5.3	28.3	96.7	45.2	17.0	54.8
#8	2.6	7.3	84.1	36.1	9.1	63.9
#16	2.1	3.0	66.2	28.1	8.0	71.9
#30	2.0	2.3	42.6	18.4	9.7	81.6
#50	1.8	2.0	16.7	7.8	10.6	92.2
#100	1.6	1.7	3.6	2.4	5.4	97.6
LBW	1.3	1.2	0.9	1.1	1.3	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: **59** Workability Factor: **36**



Initial Production Sample (IPS)

Sieve	% 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

PREPARED BY:  
SM, LLC Technical Service

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

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 05/17/2020 - 05/23/2020

Report Date 05/22/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.5	%	95-100
	3/4" (19mm)	77.8	%	
	1/2" (12.5mm)	42.6	%	30-60
	3/8" (9.5mm)	22.6	%	
	#4 (4.75mm)	5.3	%	0-8
	#8 (2.36mm)	2.6	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75µm)	1.2	%	0-2
	Total Moisture	3.6	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 05/17/2020 - 05/23/2020

Report Date 05/22/2020

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)	97.2	%	95-100
	3/8" (9.5mm)	86.6	%	60-95
	#4 (4.75mm)	28.3	%	5-30
	#8 (2.36mm)	7.3	%	0-12
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75µm)	1.1	%	0-3
	Total Moisture	4.7	%	

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 05/17/2020 - 05/23/2020

Report Date 05/22/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.7	%	95-100
	#8 (2.36mm)	84.1	%	65-95
	#16 (1.18mm)	66.2	%	35-75
	#30 (.6mm)	42.6	%	20-55
	#50 (.3mm)	16.7	%	10-30
	#100 (.15mm)	3.6	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.90		2.6-3
	Wash Loss (#200/75µm)	0.7	%	0-3
	Total Moisture	5.5	%	

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-36**

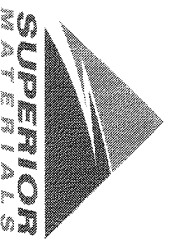
Sample Date: 5/18/20

Dates Test Represents: 5/19/2020 through 5/25/2020

Concrete Grade: **S2M**

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

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 %
6AA	71-47	Presque Isle	1600	9.79	2.62	52.5
26A	71-47	Presque Isle	250	1.53	2.62	8.2
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
			<b>Total Wt</b>	<b>3050</b>	<b>18.57</b>	<b>100.0</b>

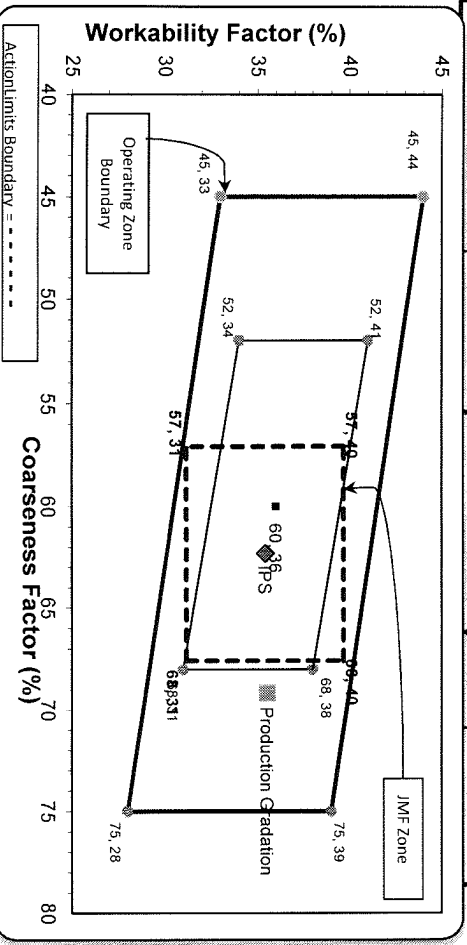
  

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.9	100.0	100.0	98.4	1.6	1.6
3/4"	83.2	100.0	100.0	91.2	7.2	8.8
1/2"	38.0	96.3	100.0	67.2	24.0	32.8
3/8"	17.3	85.3	100.0	55.4	11.8	44.6
#4	3.0	28.0	98.0	42.4	13.0	57.6
#8	2.0	8.4	85.9	35.5	6.9	64.5
#16	1.7	4.4	71.7	29.5	6.1	70.5
#30	1.6	3.7	50.8	21.1	8.3	78.9
#50	1.5	3.4	21.2	9.4	11.7	90.6
#100	1.3	3.0	3.8	2.4	7.0	97.6
LBW	1.1	2.6	1.0	1.2	1.2	98.8

\*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: **69** Workability Factor: **36**



Initial Production Sample (IPS)

Sieve	% Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.1	0.9	0.9
3/4"	90.5	8.6	9.5
1/2"	69.8	20.7	30.2
3/8"	59.8	10.0	40.2
#4	42.2	17.6	57.8
#8	35.4	6.7	64.6
#16	28.8	6.7	71.2
#30	21.4	7.4	78.6
#50	8.8	12.6	91.2
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

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

PREPARED BY:  
SM, LLC Technical Service

Approved By:



Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 05/17/2020 - 05/23/2020

Report Date 05/22/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.9	%	95-100
	3/4" (19mm)	83.2	%	
	1/2" (12.5mm)	38.0	%	30-60
	3/8" (9.5mm)	17.3	%	
	#4 (4.75mm)	3.0	%	0-8
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.7	%	
	#30 (.6mm)	1.6	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.11	%	
	Wash Loss (#200/75µm)	1.1	%	0-2
	Total Moisture	3.48	%	



Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 05/17/2020 - 05/23/2020

Report Date 05/22/2020

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)	96.3	%	95-100
	3/8" (9.5mm)	85.3	%	60-95
	#4 (4.75mm)	28.0	%	5-30
	#8 (2.36mm)	8.4	%	0-12
	#16 (1.18mm)	4.4	%	
	#30 (.6mm)	3.7	%	
	#50 (.3mm)	3.4	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75µm)	2.6	%	0-3
	Total Moisture	5.65	%	



Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 05/17/2020 - 05/23/2020

Report Date 05/22/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.0	%	95-100
	#8 (2.36mm)	85.9	%	65-95
	#16 (1.18mm)	71.7	%	35-75
	#30 (.6mm)	50.8	%	20-55
	#50 (.3mm)	21.2	%	10-30
	#100 (.15mm)	3.8	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.68		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	6.21	%	