

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

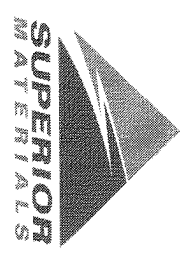
Sample Date: **8/22/22**

Dates Test Represents: **8/23/2022** through **8/29/2022**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MIDOT No.: _____



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

Verify this number is 100%

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1620	9.91	2.62	53.1
26A	71-47	Presque Isle	200	1.22	2.62	6.6
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		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"	98.9	100.0	100.0	99.4	0.6	0.6
3/4"	85.7	100.0	100.0	92.4	7.6	7.6
1/2"	50.9	96.0	100.0	73.7	26.3	26.3
3/8"	27.0	87.6	100.0	60.4	39.6	39.6
#4	4.7	25.3	95.6	42.7	57.3	57.3
#8	2.7	5.4	83.0	35.3	64.7	64.7
#16	2.3	2.4	67.6	28.6	71.4	71.4
#30	2.2	1.9	48.3	20.8	79.2	79.2
#50	2.1	1.7	24.1	10.9	89.1	89.1
#100	2.0	1.6	7.4	4.2	95.8	95.8
LBW	1.8	1.3	1.5	1.6	98.4	98.4

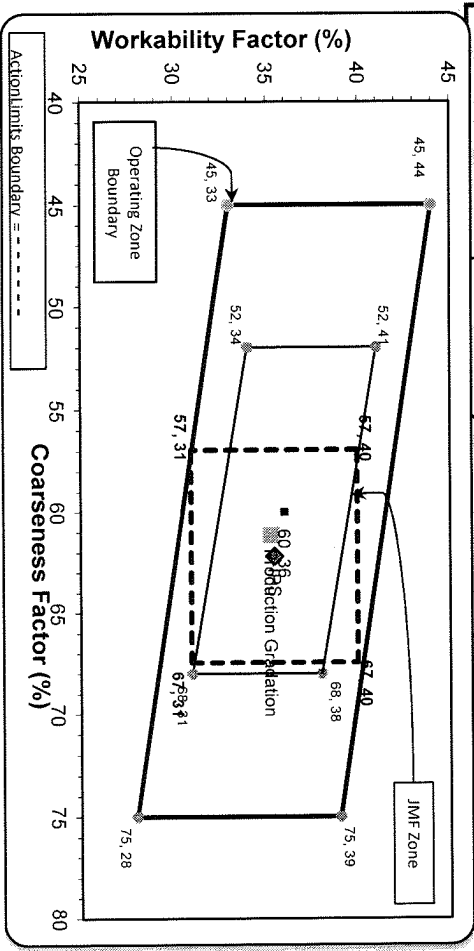
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max.
nom. max. #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max.
nom. max. #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. 1.5")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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Initial Production Sample (IPS)

Coarseness Factor: **61** Workability Factor: **35**

Coarseness Factor: **62** 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"	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 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 08/21/2022 - 08/27/2022

Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.6	%	95-100
	#8 (2.36mm)	83.0	%	65-95
	#16 (1.18mm)	67.6	%	35-75
	#30 (.6mm)	48.3	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	7.4	%	0-10
	#200 (75µm)	2.0	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	4.3	%	

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2022

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)	87.6	%	60-95
	#4 (4.75mm)	25.3	%	5-30
	#8 (2.36mm)	5.4	%	0-12
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	3.8	%	

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 08/21/2022 - 08/27/2022

Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.9	%	95-100
	3/4" (19mm)	85.7	%	
	1/2" (12.5mm)	50.9	%	30-60
	3/8" (9.5mm)	27.0	%	
	#4 (4.75mm)	4.7	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75µm)	1.8	%	0-2
	Total Moisture	2.4	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 8/22/22

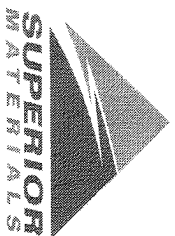
Dates Test Represents: 8/23/2022

through 8/29/2022

Concrete Grade: S2M, 3500HP

Contractor: _____

MDOT No.: _____



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

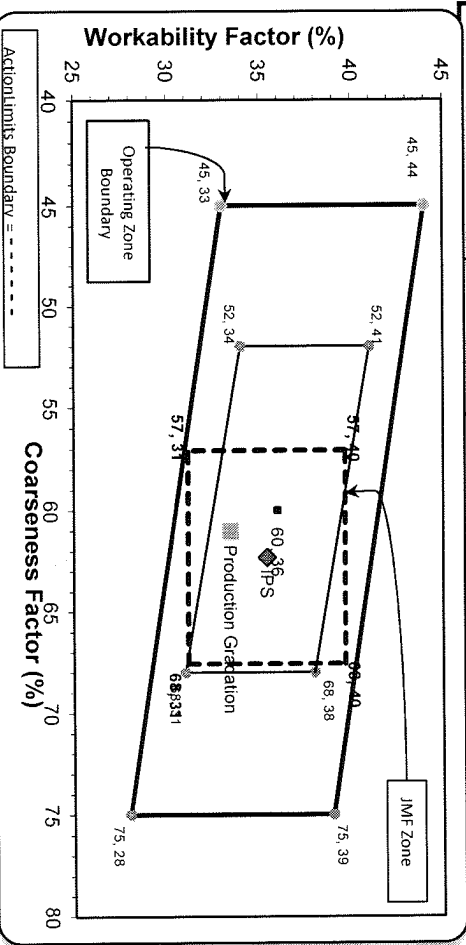
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	63-92	Grange Hill	1200	7.26	2.65	39.3
		Total Wt	3050			100.0

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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	87.8	100.0	100.0	93.8	5.2	6.2
1/2"	48.2	93.6	100.0	73.0	20.8	27.0
3/8"	23.9	80.3	100.0	59.4	13.7	40.6
#4	4.8	19.5	97.0	42.5	16.9	57.5
#8	2.9	4.7	80.1	33.5	9.1	66.5
#16	2.5	2.1	64.1	26.7	6.8	73.3
#30	2.4	1.5	44.7	19.0	7.7	81.0
#50	2.3	1.4	16.4	7.8	11.2	92.2
#100	2.1	1.3	3.5	2.6	5.2	97.4
LBW	1.6	1.1	0.6	1.2	1.4	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: **61** Workability Factor: **33**



Initial Production Sample (IPS)

Sieve	Coarseness Factor: 62		Workability Factor: 35	
	% Passing	% Retained	% Passing	% Retained
2"	100.0	0.0	100.0	0.0
1.5"	100.0	0.0	100.0	0.0
1"	99.1	0.9	99.1	0.9
3/4"	90.5	8.6	90.5	9.5
1/2"	69.8	20.7	69.8	30.2
3/8"	59.8	10.0	59.8	40.2
#4	42.2	17.6	42.2	57.8
#8	35.4	6.7	35.4	64.6
#16	28.8	6.7	28.8	71.2
#30	21.4	7.4	21.4	78.6
#50	8.8	12.6	8.8	91.2
#100	1.8	7.0	1.8	98.2
LBW	0.7	1.0	0.7	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
Product 1022-2NS GR
Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.0	%	95-100
	#8 (2.36mm)	80.1	%	65-95
	#16 (1.18mm)	64.1	%	35-75
	#30 (.6mm)	44.7	%	20-55
	#50 (.3mm)	16.4	%	10-30
	#100 (.15mm)	3.5	%	0-10
	#200 (75µm)	0.7	%	
	FM	2.94		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	4.03	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
 Product 1067-26A Mod LS
 Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2022

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)	93.6	%	95-100
	3/8" (9.5mm)	80.3	%	60-95
	#4 (4.75mm)	19.5	%	5-30
	#8 (2.36mm)	4.7	%	0-12
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.1	%	
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.15	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
 Product 1051-6AA LS
 Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.1	%	95-100
	3/4" (19mm)	87.8	%	
	1/2" (12.5mm)	48.2	%	30-60
	3/8" (9.5mm)	23.9	%	
	#4 (4.75mm)	4.8	%	0-8
	#8 (2.36mm)	2.9	%	
	#16 (1.18mm)	2.5	%	
	#30 (.6mm)	2.4	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.7	%	
AASHTO T11	-#200 (75um)	1.73	%	
	Wash Loss (#200/75um)	1.6	%	0-2
	Total Moisture	2.57	%	