

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 8/26/19

Dates Test Represents: 8/27/2019 through 9/2/2019

Concrete Grade: S2M

Contractor:

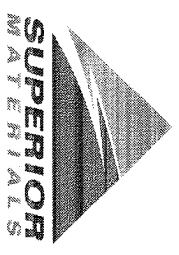
MDOT No.:

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1670	10.21	2.62	54.8
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		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"	95.8	100.0	100.0	97.7	2.3	2.3
3/4"	72.6	100.0	100.0	85.0	15.0	15.0
1/2"	33.8	97.4	100.0	63.6	36.4	36.4
3/8"	18.2	87.3	100.0	54.6	45.4	45.4
#4	3.0	26.5	95.6	41.5	58.5	58.5
#8	2.2	6.8	82.7	34.9	65.1	65.1
#16	2.0	3.2	67.2	28.4	71.6	71.6
#30	2.0	2.6	47.6	20.4	79.6	79.6
#50	1.8	2.4	20.9	9.5	90.5	90.5
#100	1.6	2.2	4.9	3.0	97.0	97.0
LBW	1.0	1.9	1.1	1.1	98.9	98.9

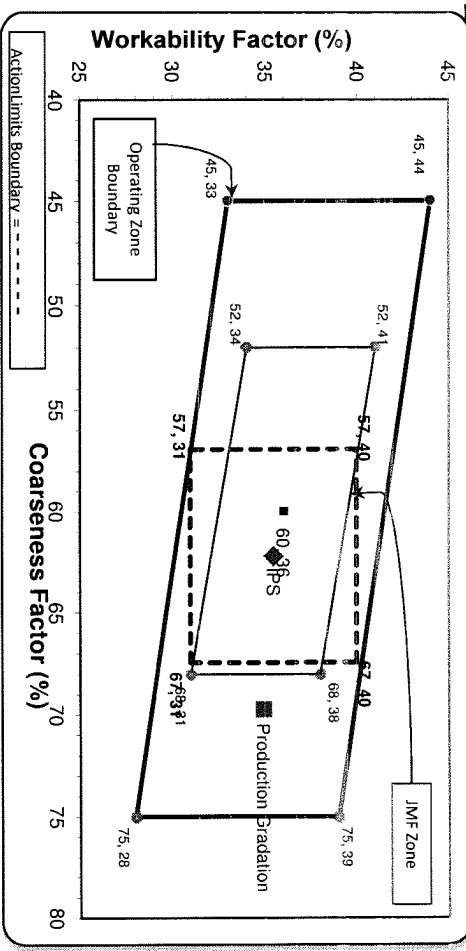
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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



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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 70 **Workability Factor:** 35



Initial Production Sample (IPS)

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: 1054-6AA LS PI

Period: 08/25/2019 - 08/31/2019

Name/Title: Doug Storey / QC Technician

Report Date: 08/29/2019

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	95.8	%	95-100
	3/4" (19mm)	72.6	%	
	1/2" (12.5mm)	33.8	%	30-60
	3/8" (9.5mm)	18.2	%	
	#4 (4.75mm)	3.0	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	2.0	%	
	#30 (0.6mm)	2.0	%	
	#50 (0.3mm)	1.8	%	
	#100 (0.15mm)	1.6	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75µm)	1.0	%	0-2
	Total Moisture	3.4	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 08/25/2019 - 08/31/2019

Report Date 08/29/2019

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)	97.4	%	95-100
	3/8" (9.5mm)	87.3	%	60-95
	#4 (4.75mm)	26.5	%	5-30
	#8 (2.36mm)	6.8	%	0-12
	#16 (1.18mm)	3.2	%	
	#30 (0.6mm)	2.6	%	
	#50 (0.3mm)	2.4	%	
	#100 (0.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75µm)	1.9	%	0-3
	Total Moisture	5.0	%	

Plant 958-JMT
 Product 1022-2NS GR - Smelter Bay
 Period: 08/25/2019 - 08/31/2019

Name/Title Doug Storey / QC Technician
 Report Date 08/29/2019

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)	82.7	%	65-95
	#16 (1.18mm)	67.2	%	35-75
	#30 (0.6mm)	47.6	%	20-55
	#50 (0.3mm)	20.9	%	10-30
	#100 (0.15mm)	4.9	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.81		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	4.9	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 8/26/19

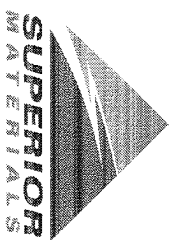
Dates Test Represents: 8/27/2019 through 9/2/2019

Concrete Grade: S2M

MDOT No.:

Contractor:

Verify this number is 100%



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

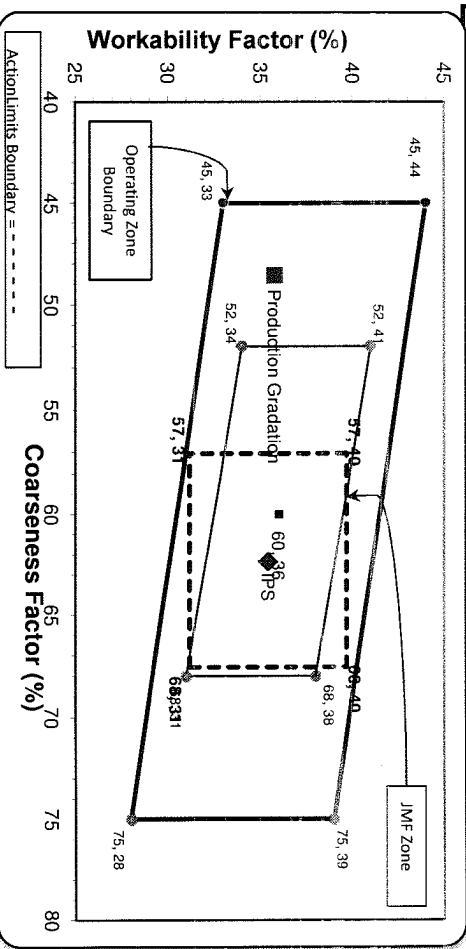
Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1600	9.79	2.62	52.5
26A	71-47	Presque Isle	250	1.53	2.62	8.2
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
Total Wt			3050	18.57		100.0

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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	89.1	100.0	100.0	94.3	4.7	5.7
1/2"	59.8	96.4	100.0	78.6	15.7	21.4
3/8"	42.3	88.6	100.0	68.8	9.8	31.2
#4	5.5	23.4	97.8	43.3	25.5	56.7
#8	3.1	8.1	85.1	35.8	7.5	64.2
#16	2.8	4.7	68.0	28.6	7.2	71.4
#30	2.6	3.8	49.3	21.1	7.5	78.9
#50	2.4	3.5	21.5	10.0	11.1	90.0
#100	2.3	3.2	3.1	2.7	7.3	97.3
LBW	2.0	2.8	0.4	1.4	1.3	98.6

*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

Initial Production Sample (IPS)



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	99.1	0.9	0.9
3/4"	89.1	100.0	100.0	90.5	8.6	9.5
1/2"	59.8	96.4	100.0	69.8	20.7	30.2
3/8"	42.3	88.6	100.0	59.8	10.0	40.2
#4	5.5	23.4	97.8	42.2	17.6	57.8
#8	3.1	8.1	85.1	35.4	6.7	64.6
#16	2.8	4.7	68.0	28.8	6.7	71.2
#30	2.6	3.8	49.3	21.4	7.4	78.6
#50	2.4	3.5	21.5	8.8	12.6	91.2
#100	2.3	3.2	3.1	1.8	7.0	98.2
LBW	2.0	2.8	0.4	0.7	1.0	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 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 08/25/2019 - 08/31/2019

Report Date 08/31/2019

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)	89.1	%	
	1/2" (12.5mm)	59.8	%	30-60
	3/8" (9.5mm)	42.3	%	
	#4 (4.75mm)	5.5	%	0-8
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.8	%	
	#30 (0.6mm)	2.6	%	
	#50 (0.3mm)	2.4	%	
	#100 (0.15mm)	2.3	%	
	#200 (75µm)	2.07	%	
	Wash Loss (#200/75um)	2.0	%	0-2
	Total Moisture	2.27	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
 Product 1067-26A Mod LS
 Period: 08/25/2019 - 08/31/2019

Name/Title Doug Storey / QC Technician
 Report Date 08/29/2019

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)	96.4	%	95-100
	3/8" (9.5mm)	88.6	%	60-95
	#4 (4.75mm)	23.4	%	5-30
	#8 (2.36mm)	8.1	%	0-12
	#16 (1.18mm)	4.7	%	
	#30 (0.6mm)	3.8	%	
	#50 (0.3mm)	3.5	%	
	#100 (0.15mm)	3.2	%	
	#200 (75µm)	2.9	%	
	Wash Loss (#200/75um)	2.8	%	0-3
	Total Moisture	3.80	%	



Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 08/25/2019 - 08/31/2019

Report Date 08/29/2019

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.8	%	95-100
	#8 (2.36mm)	85.1	%	65-95
	#16 (1.18mm)	68.3	%	35-75
	#30 (0.6mm)	49.3	%	20-55
	#50 (0.3mm)	21.5	%	10-30
	#100 (0.15mm)	3.1	%	0-10
	#200 (75µm)	0.6	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	3.28	%	