

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

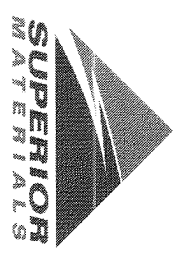
Sample Date: 11/9/20

Dates Test Represents: 11/10/2020 through 11/16/2020

Concrete Grade: DM

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	1605	9.82	2.62	55.2
26A	71-47	Presque Isle	150	0.92	2.62	5.2
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	2905	17.69		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"	97.8	100.0	100.0	98.8	1.2	1.2
3/4"	80.8	100.0	100.0	89.4	9.4	10.6
1/2"	42.6	95.3	100.0	68.0	21.3	32.0
3/8"	26.8	81.4	100.0	58.6	9.4	41.4
#4	5.6	15.1	97.2	42.4	16.2	57.6
#8	2.6	5.2	89.9	37.3	5.1	62.7
#16	2.4	3.4	60.8	25.6	11.7	74.4
#30	2.2	2.9	39.2	16.9	8.7	83.1
#50	2.1	2.6	24.6	11.0	5.9	89.0
#100	2.0	2.4	8.7	4.7	6.4	95.3
LBW	1.6	1.9	1.2	1.5	3.2	98.5

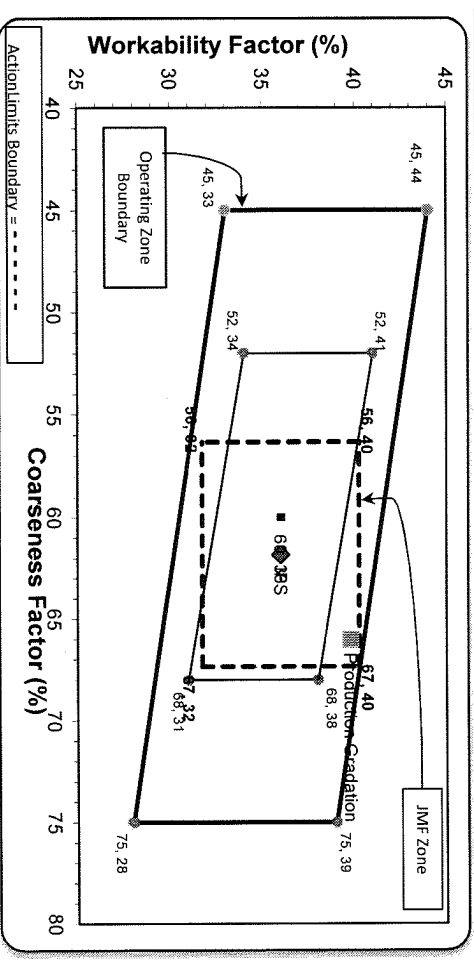
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 66 **Workability Factor:** 37 **Adjusted WF:** 39.8

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 1054-6AA LS PI

Period: 11/08/2020 - 11/14/2020

Name/Title Doug Storey / QC Technician

Report Date 11/13/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.8	%	95-100
	3/4" (19mm)	80.8	%	
	1/2" (12.5mm)	42.6	%	30-60
	3/8" (9.5mm)	26.8	%	
	#4 (4.75mm)	5.6	%	0-8
	#8 (2.36mm)	2.6	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75µm)	1.6	%	0-2
	Total Moisture	2.9	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 11/08/2020 - 11/14/2020

Report Date 11/13/2020

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)	95.3	%	95-100
	3/8" (9.5mm)	81.4	%	60-95
	#4 (4.75mm)	15.1	%	5-30
	#8 (2.36mm)	5.2	%	0-12
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.2	%	
	Wash Loss (#200/75µm)	1.9	%	0-3
	Total Moisture	3.1	%	

Plant 958-JMT
Product 1022-2NS GR - Smelter Bay
Period: 11/08/2020 - 11/14/2020

Name/Title Doug Storey / QC Technician
Report Date 11/13/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.2	%	95-100
	#8 (2.36mm)	89.9	%	65-95
	#16 (1.18mm)	60.8	%	35-75
	#30 (.6mm)	39.2	%	20-55
	#50 (.3mm)	24.6	%	10-30
	#100 (.15mm)	8.7	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.80		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	5.4	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

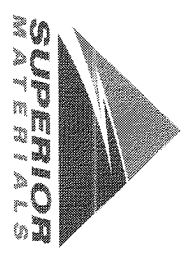
Sample Date: 1/19/20

Dates Test Represents: 11/10/2020 through 11/16/2020

Concrete Grade: DM

Contractor: _____

MDOT No.: _____



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

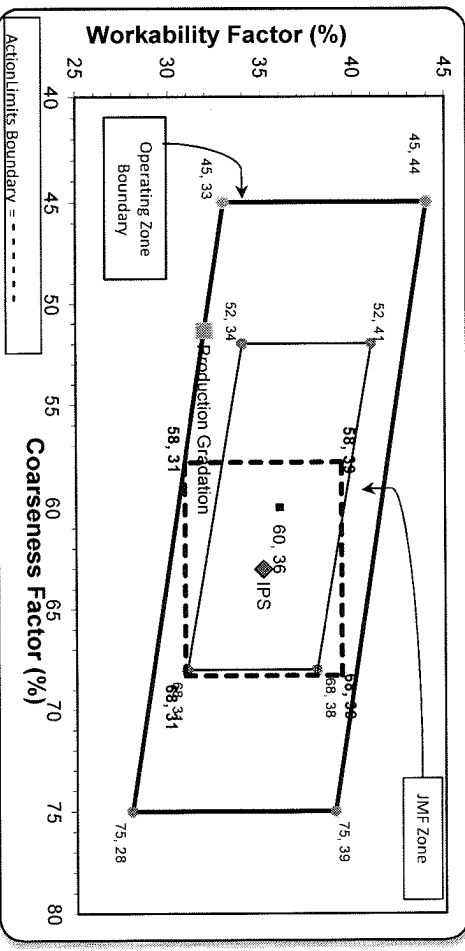
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1605	9.82	2.62	55.2
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

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"	97.4	100.0	100.0	98.6	1.4	1.4
3/4"	88.7	100.0	100.0	93.8	4.8	6.2
1/2"	57.0	95.2	100.0	75.9	17.8	24.1
3/8"	36.3	85.2	100.0	63.8	12.1	36.2
#4	6.8	17.7	96.3	41.4	22.3	58.6
#8	3.3	2.9	72.5	29.5	12.0	70.5
#16	2.6	2.7	51.9	21.3	8.2	78.7
#30	2.2	2.3	48.7	19.8	1.5	80.2
#50	2.2	2.3	27.4	11.7	8.1	88.3
#100	2.2	2.3	8.6	4.6	7.1	95.4
LBW	1.8	1.6	1.2	1.6	3.1	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. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 51 Workability Factor: 29 Adjusted WF: 32.0



Sieve	Cumulative % 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"	90.3	8.8	9.7
1/2"	69.2	21.1	30.8
3/8"	59.1	10.1	40.9
#4	41.8	17.3	58.2
#8	35.1	6.6	64.9
#16	28.5	6.6	71.5
#30	21.2	7.3	78.8
#50	8.7	12.5	91.3
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
Product 1051-6AA LS
Period: 11/08/2020 - 11/14/2020

Name/Title Doug Storey / QC Technician
Report Date 11/13/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.4	%	95-100
	3/4" (19mm)	88.7	%	
	1/2" (12.5mm)	57.0	%	30-60
	3/8" (9.5mm)	36.3	%	
	#4 (4.75mm)	6.8	%	0-8
	#8 (2.36mm)	3.3	%	
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.8	%	0-2
	Total Moisture	3.01	%	
AASHTO T11	-#200 (75um)	1.88	%	



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
Product 1067-26A Mod LS
Period: 11/08/2020 - 11/14/2020

Name/Title Doug Storey / QC Technician
Report Date 11/13/2020

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)	95.2	%	95-100
	3/8" (9.5mm)	85.2	%	60-95
	#4 (4.75mm)	17.7	%	5-30
	#8 (2.36mm)	2.9	%	0-12
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.3	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.25	%	



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
Product 1022-2NS GR
Period: 11/08/2020 - 11/14/2020

Name/Title Doug Storey / QC Technician
Report Date 11/13/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.3	%	95-100
	#8 (2.36mm)	72.5	%	65-95
	#16 (1.18mm)	51.9	%	35-75
	#30 (.6mm)	48.7	%	20-55
	#50 (.3mm)	27.4	%	10-30
	#100 (.15mm)	8.6	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.95		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	2.65	%	