

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

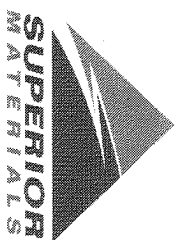
Sample Date: 7/20/20

Dates Test Represents: 7/21/2020 through 7/27/2020

Concrete Grade: **DM**

Contractor: _____

MDOT No.: _____



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

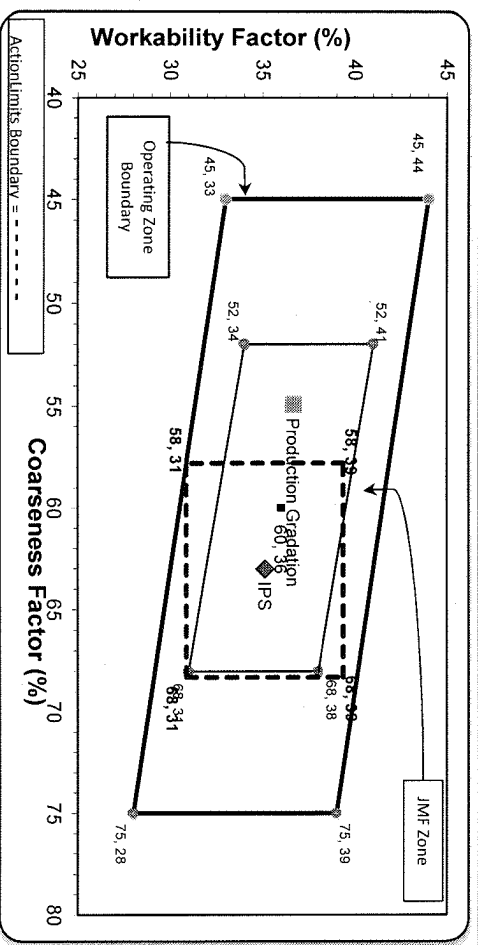
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
GAA	71-47	Presque Isle	1505	9.21	2.62	51.8
26A	71-47	Presque Isle	300	1.83	2.62	10.3
NNS	63-92	Grange Hall	1100	6.65	2.65	37.9
			Total Wt	2905	17.69	100.0

Sieve	6AA	26A	NNS	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"	98.8	100.0	100.0	99.4	0.6	0.6
3/4"	85.6	100.0	100.0	92.5	6.8	7.5
1/2"	50.2	97.0	100.0	73.9	18.6	26.1
3/8"	33.0	86.0	100.0	63.8	10.0	36.2
#4	7.1	25.9	97.0	43.1	20.8	56.9
#8	2.9	8.9	83.8	34.2	8.9	65.8
#16	2.4	4.6	67.7	27.4	6.8	72.6
#30	2.3	3.8	49.4	20.3	7.1	79.7
#50	2.3	3.5	21.3	9.6	10.7	90.4
#100	2.1	3.3	2.7	2.5	7.2	97.5
LBW	1.9	3.0	0.5	1.5	1.0	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: **55** Workability Factor: **34** Adjusted WF: **36.7**



Sieve	Coarseness Factor:	Workability Factor:	Adjusted WF:
2"	63	35	36.7
1.5"	63	35	36.7
1"	63	35	36.7
3/4"	63	35	36.7
1/2"	63	35	36.7
3/8"	63	35	36.7
#4	63	35	36.7
#8	63	35	36.7
#16	63	35	36.7
#30	63	35	36.7
#50	63	35	36.7
#100	63	35	36.7
LBW	63	35	36.7

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 07/19/2020 - 07/25/2020

Report Date 07/24/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.8	%	95-100
	3/4" (19mm)	85.6	%	
	1/2" (12.5mm)	50.2	%	30-60
	3/8" (9.5mm)	33.0	%	
	#4 (4.75mm)	7.1	%	0-8
	#8 (2.36mm)	2.9	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.8	%	0-2
	Total Moisture	3.78	%	
AASHTO T11	-#200 (75um)	1.89	%	



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 07/19/2020 - 07/25/2020

Report Date 07/24/2020

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)	97.0	%	95-100
	3/8" (9.5mm)	86.0	%	60-95
	#4 (4.75mm)	25.9	%	5-30
	#8 (2.36mm)	8.9	%	0-12
	#16 (1.18mm)	4.6	%	
	#30 (.6mm)	3.8	%	
	#50 (.3mm)	3.5	%	
	#100 (.15mm)	3.3	%	
	#200 (75µm)	3.0	%	
	Wash Loss (#200/75um)	2.9	%	0-3
	Total Moisture	2.67	%	



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 07/19/2020 - 07/25/2020

Report Date 07/24/2020

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)	83.8	%	65-95
	#16 (1.18mm)	67.7	%	35-75
	#30 (.6mm)	49.4	%	20-55
	#50 (.3mm)	21.3	%	10-30
	#100 (.15mm)	2.7	%	0-10
	#200 (75µm)	0.5	%	
	FM	2.78		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	3.55	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

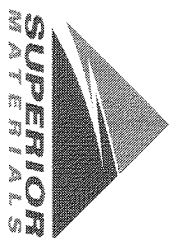
Sample Date: **7/20/20**

Dates Test Represents: **7/21/2020** through **7/27/2020**

Concrete Grade: **DM**

Contractor: _____

MDOT No.: _____



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

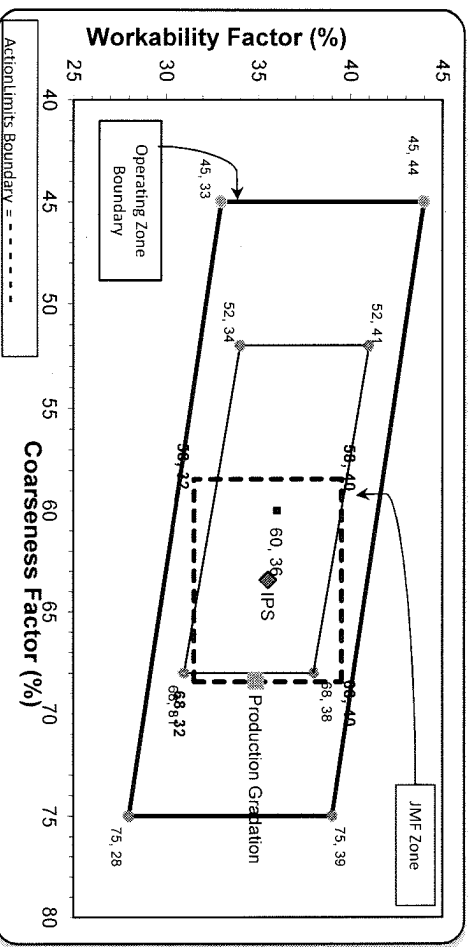
Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1605	9.82	2.62	55.2
26A	71-47	Presque Isle	150	0.92	2.62	5.2
2NS	44-051	Krake Willis Rd	1150	6.95	2.65	39.6
			Total Wt	2905		100.0

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"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	78.4	100.0	100.0	88.1	10.9	11.9
1/2"	36.9	98.2	100.0	65.0	23.0	35.0
3/8"	17.4	88.0	100.0	53.7	11.3	46.3
#4	3.1	26.7	95.9	41.1	12.7	58.9
#8	2.4	7.6	77.4	32.4	8.7	67.6
#16	2.2	3.8	62.5	26.2	6.2	73.8
#30	2.1	3.0	47.2	20.0	6.2	80.0
#50	2.0	2.8	24.8	11.1	8.9	88.9
#100	1.9	2.7	6.4	3.7	7.3	96.3
LBW	1.6	2.4	1.9	1.8	2.0	98.2

*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. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **68** Workability Factor: **32** Adjusted WF: **34.9**



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:	Adjusted WF
2"	100.0	63	36	34.9
1.5"	100.0			
1"	100.0			
3/4"	89.7			
1/2"	70.3			
3/8"	59.1			
#4	42.8			
#8	35.5			
#16	29.0			
#30	21.2			
#50	9.8			
#100	3.7			
LBW	1.2			

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S39-Superior Sterling Heights

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 07/19/2020 - 07/25/2020

Report Date 07/24/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.2	%	95-100
	3/4" (19mm)	78.4	%	
	1/2" (12.5mm)	36.9	%	30-60
	3/8" (9.5mm)	17.4	%	
	#4 (4.75mm)	3.1	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.55	%	
	Wash Loss (#200/75µm)	1.4	%	0-2
	Total Moisture	3.10	%	



Plant S39-Superior Sterling Heights

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 07/19/2020 - 07/25/2020

Report Date 07/24/2020

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)	98.2	%	95-100
	3/8" (9.5mm)	88.0	%	60-95
	#4 (4.75mm)	26.7	%	5-30
	#8 (2.36mm)	7.6	%	0-12
	#16 (1.18mm)	3.8	%	
	#30 (.6mm)	3.0	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.7	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75um)	2.2	%	0-3
	Total Moisture	3.54	%	



Plant S39-Superior Sterling Heights

Product 1022-2NS GR

Period: 07/19/2020 - 07/25/2020

Name/Title Doug Storey / QC Technician

Report Date 07/24/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.9	%	95-100
	#8 (2.36mm)	77.4	%	65-95
	#16 (1.18mm)	62.5	%	35-75
	#30 (.6mm)	47.2	%	20-55
	#50 (.3mm)	24.8	%	10-30
	#100 (.15mm)	6.4	%	0-10
	#200 (75µm)	1.9	%	
	FM	2.86		2.6-3
	Wash Loss (#200/75µm)	1.9	%	0-3
	Total Moisture	4.27	%	