

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 7/8/19

Dates Test Represents: 7/9/2019 through 7/15/2019

Concrete Grade: DM

Contractor:

MDOT 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	1400	8.56	2.62	48.2
26A	71-47	Presque Isle	405	2.48	2.62	13.9
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
Total Wt			2905	17.69		100.0

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	1.8	1.8
3/4"	5.6	7.4
1/2"	17.1	24.5
3/8"	9.7	34.1
#4	21.6	55.7
#8	8.8	64.5
#16	6.8	71.3
#30	7.9	79.2
#50	12.7	91.9
#100	6.4	98.3
LBW	0.6	98.9

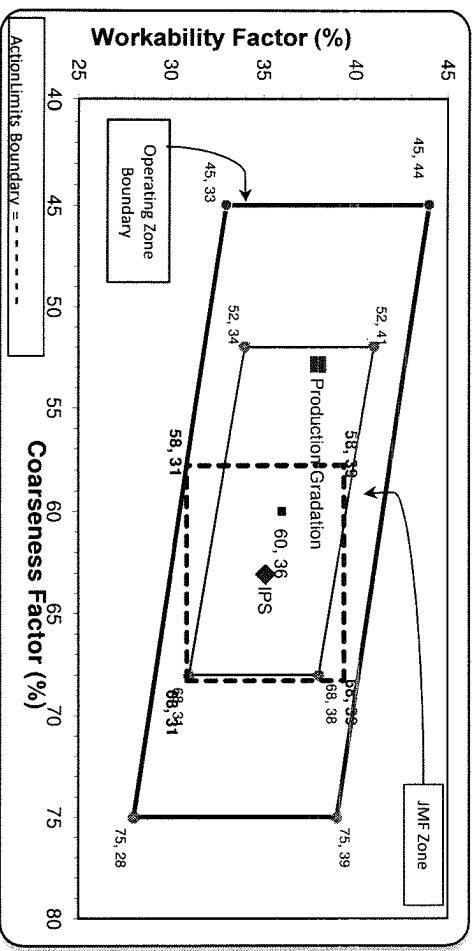
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max. norm. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max. norm. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 53 **Workability Factor:** 35 **Adjusted WF:** 38.0

Initial Production Sample (IPS)

Coarseness Factor: 63 **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"	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:



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: 07/07/2019 - 07/13/2019

Report Date 07/11/2019

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.3	%	95-100
	3/4" (19mm)	84.7	%	
	1/2" (12.5mm)	50.0	%	30-60
	3/8" (9.5mm)	31.6	%	
	#4 (4.75mm)	6.6	%	0-8
	#8 (2.36mm)	3.2	%	
	#16 (1.18mm)	2.4	%	
	#30 (0.6mm)	2.1	%	
	#50 (0.3mm)	1.8	%	
	#100 (0.15mm)	1.6	%	
	#200 (75µm)	1.43	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	0.43	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 07/07/2019 - 07/13/2019

Report Date 07/11/2019

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)	97.4	%	95-100
	3/8" (9.5mm)	91.7	%	60-95
	#4 (4.75mm)	29.0	%	5-30
	#8 (2.36mm)	10.3	%	0-12
	#16 (1.18mm)	5.0	%	
	#30 (0.6mm)	3.6	%	
	#50 (0.3mm)	3.1	%	
	#100 (0.15mm)	2.9	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75um)	2.6	%	0-3
	Total Moisture	1.16	%	



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: 07/07/2019 - 07/13/2019

Report Date 07/11/2019

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.9	%	95-100
	#8 (2.36mm)	85.8	%	65-95
	#16 (1.18mm)	70.9	%	35-75
	#30 (0.6mm)	51.0	%	20-55
	#50 (0.3mm)	18.0	%	10-30
	#100 (0.15mm)	1.3	%	0-10
	#200 (75µm)	0.5	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75um)	0.3	%	0-3
	Total Moisture	2.58	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-39

Sample Date: 7/8/19

Dates Test Represents: 7/9/2019 through 7/15/2019

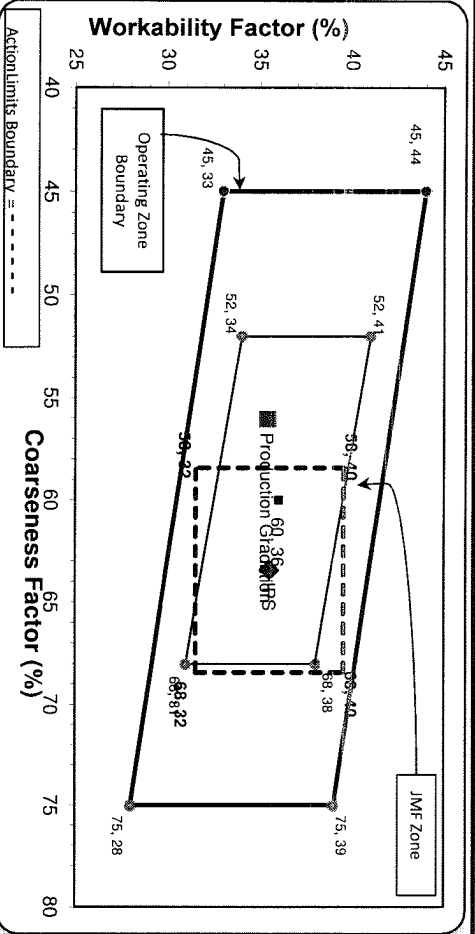
Concrete Grade: DM

Contractor: _____
MDOT No.: _____

Aggr. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	44-051	Krake Willis Rd	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

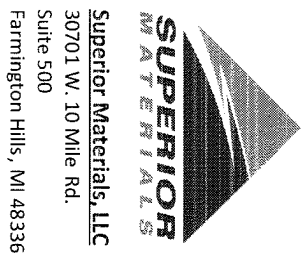
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.6	100.0	100.0	99.8	0.2	0.2
3/4"	91.2	100.0	100.0	95.3	4.5	4.7
1/2"	57.2	98.7	100.0	77.0	18.3	23.0
3/8"	30.8	91.6	100.0	62.4	14.6	37.6
#4	3.6	25.0	95.4	41.4	21.0	58.6
#8	1.8	6.0	79.6	32.9	8.5	67.1
#16	1.6	2.6	64.4	26.5	6.4	73.5
#30	1.4	2.0	48.0	19.9	6.6	80.1
#50	1.4	1.8	24.0	10.4	9.5	89.6
#100	1.4	1.6	6.9	3.6	6.8	96.4
LBW	1.2	1.3	1.6	1.4	2.2	98.6

Production Gradation	<input checked="" type="radio"/> Batch Plant Gradations	<input type="radio"/> Aggregate Supplier Gradations			
Coarseness Factor:	56	Workability Factor:	33	Adjusted WF:	35.4



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"	89.7	10.3	10.3
1/2"	70.3	19.4	29.7
3/8"	59.1	11.2	40.9
#4	42.8	16.3	57.2
#8	35.5	7.3	64.5
#16	29.0	6.5	71.0
#30	21.2	7.7	78.8
#50	9.8	11.5	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

Initial Production Sample (IPS)	Coarseness Factor:	63	Workability Factor:	36
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*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.

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S39-Superior Sterling Heights

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 07/07/2019 - 07/13/2019

Report Date 07/13/2019

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.6	%	95-100
	3/4" (19mm)	91.2	%	
	1/2" (12.5mm)	57.2	%	30-60
	3/8" (9.5mm)	30.8	%	
	#4 (4.75mm)	3.6	%	0-8
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.6	%	
	#30 (0.6mm)	1.4	%	
	#50 (0.3mm)	1.4	%	
	#100 (0.15mm)	1.4	%	
	#200 (75µm)	1.26	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	2.89	%	



Plant S39-Superior Sterling Heights

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 07/07/2019 - 07/13/2019

Report Date 07/13/2019

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)	98.7	%	95-100
	3/8" (9.5mm)	91.6	%	60-95
	#4 (4.75mm)	25.0	%	5-30
	#8 (2.36mm)	6.0	%	0-12
	#16 (1.18mm)	2.6	%	
	#30 (0.6mm)	2.0	%	
	#50 (0.3mm)	1.8	%	
	#100 (0.15mm)	1.6	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75µm)	1.3	%	0-3
	Total Moisture	3.06	%	



Plant S39-Superior Sterling Heights

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 07/07/2019 - 07/13/2019

Report Date 07/13/2019

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.4	%	95-100
	#8 (2.36mm)	79.6	%	65-95
	#16 (1.18mm)	64.4	%	35-75
	#30 (0.6mm)	48.0	%	20-55
	#50 (0.3mm)	24.0	%	10-30
	#100 (0.15mm)	6.9	%	0-10
	#200 (75µm)	2.0	%	
	FM	2.82		2.6-3
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	4.80	%	