

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 8/5/19

Dates Test Represents: 8/6/2019 through 8/12/2019

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	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
Total Wt			2905	17.69		100.0

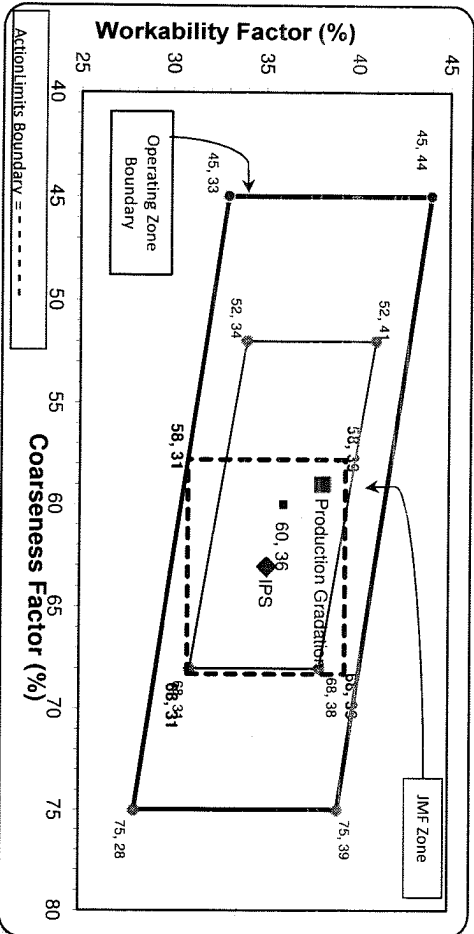
Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	0.9	0.9
3/4"	7.3	8.2
1/2"	18.8	27.0
3/8"	11.0	38.0
#4	19.6	57.6
#8	6.7	64.4
#16	6.2	70.5
#30	7.5	78.0
#50	13.5	91.5
#100	6.4	98.0
LBW	0.7	98.7

Verify this number is 100%

*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	Adjusted WF
Coarseness Factor: 59	Workability Factor: 36	Workability Factor: 38.1	

Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:
	63	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: _____



Basic Statistical Summary Report

Plant S36-Superior Auburn Hills
Product 1051-6AA LS
Specification 6AA LS
Period 08/04/2019 - 08/10/2019

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			100-100
1" (25mm)	1	98.3			95-100
3/4" (19mm)	1	84.7			
1/2" (12.5mm)	1	50.2			30-60
3/8" (9.5mm)	1	31.0			
#4 (4.75mm)	1	6.0			0-8
#8 (2.36mm)	1	3.2			
#16 (1.18mm)	1	2.7			
#30 (0.6mm)	1	2.5			
#50 (0.3mm)	1	2.3			
#100 (0.15mm)	1	2.1			
#200 (75µm)	1	1.93			
Pan	1	0.00			
Wash Loss (#200/75um)	1	1.8			0-2
Total Moisture	1	2.31			



Basic Statistical Summary Report

Plant S36-Superior Auburn Hills
Product 1067-26A Mod LS
Specification 26A LS Spec
Period 08/04/2019 - 08/10/2019

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			
1" (25mm)	1	100.0			
3/4" (19mm)	1	100.0			100-100
1/2" (12.5mm)	1	95.7			95-100
3/8" (9.5mm)	1	87.8			60-95
#4 (4.75mm)	1	23.9			5-30
#8 (2.36mm)	1	9.1			0-12
#16 (1.18mm)	1	5.4			
#30 (0.6mm)	1	4.4			
#50 (0.3mm)	1	3.9			
#100 (0.15mm)	1	3.5			
#200 (75µm)	1	3.1			
Pan	1	0.0			
Wash Loss (#200/75um)	1	3.0			0-3
Total Moisture	1	2.82			



Basic Statistical Summary Report

Plant S36-Superior Auburn Hills
Product 1022-2NS GR
Specification 2NS GR Spec
Period 08/04/2019 - 08/10/2019

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	1	100.0			100-100
#4 (4.75mm)	1	98.0			95-100
#8 (2.36mm)	1	87.5			65-95
#16 (1.18mm)	1	72.8			35-75
#30 (0.6mm)	1	53.5		40-50	20-55
#50 (0.3mm)	1	18.2			10-30
#100 (0.15mm)	1	1.6			0-10
#200 (75µm)	1	0.5			
Pan	1	0.0			
FM	1	2.68		2.7-2.9	2.6-3
Wash Loss (#200/75um)	1	0.3			0-3
Total Moisture	1	2.76			

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-39

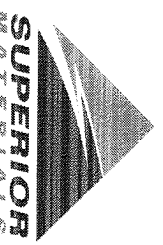
Sample Date: 8/5/19

Dates Test Represents: 8/6/2019 through 8/12/2019

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	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

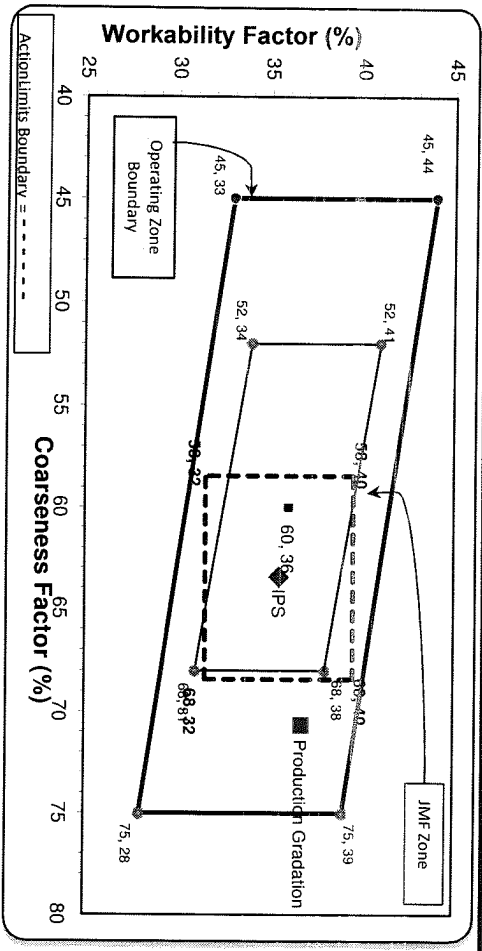
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.0	100.0	100.0	98.9	1.1	1.1
3/4"	73.5	100.0	100.0	85.8	13.1	14.2
1/2"	32.4	98.2	100.0	63.7	22.1	36.3
3/8"	14.6	89.1	100.0	53.5	10.2	46.5
#4	4.0	22.9	98.5	42.7	10.8	57.3
#8	3.2	6.5	81.1	34.3	8.4	65.7
#16	2.7	3.4	64.7	27.3	7.0	72.7
#30	2.5	2.7	47.9	20.5	6.8	79.5
#50	2.2	2.5	21.2	9.7	10.7	90.3
#100	1.8	2.3	6.4	3.7	6.1	96.3
LBW	1.5	2.0	2.1	1.8	1.9	98.2

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 71 Workability Factor: 34 Adjusted WF: 36.8

Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Adjusted WF:
2"	100.0	100.0	0.0
1.5"	100.0	100.0	0.0
1"	100.0	100.0	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



*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: _____



Basic Statistical Summary Report

Plant S39-Superior Sterling Heights
Product 1051-6AA LS
Specification 6AA LS
Period 08/04/2019 - 08/10/2019

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			100-100
1" (25mm)	1	98.0			95-100
3/4" (19mm)	1	73.5			
1/2" (12.5mm)	1	32.4			30-60
3/8" (9.5mm)	1	14.6			
#4 (4.75mm)	1	4.0			0-8
#8 (2.36mm)	1	3.2			
#16 (1.18mm)	1	2.7			
#30 (0.6mm)	1	2.5			
#50 (0.3mm)	1	2.2			
#100 (0.15mm)	1	1.8			
#200 (75µm)	1	1.55			
Pan	1	0.00			
Wash Loss (#200/75um)	1	1.5			0-2
Total Moisture	1	2.31			



Basic Statistical Summary Report

Plant S39-Superior Sterling Heights
Product 1067-26A Mod LS
Specification 26A LS Spec
Period 08/04/2019 - 08/10/2019

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			
1" (25mm)	1	100.0			
3/4" (19mm)	1	100.0			100-100
1/2" (12.5mm)	1	98.2			95-100
3/8" (9.5mm)	1	89.1			60-95
#4 (4.75mm)	1	22.9			5-30
#8 (2.36mm)	1	6.5			0-12
#16 (1.18mm)	1	3.4			
#30 (0.6mm)	1	2.7			
#50 (0.3mm)	1	2.5			
#100 (0.15mm)	1	2.3			
#200 (75µm)	1	2.1			
Pan	1	0.0			
Wash Loss (#200/75µm)	1	2.0			0-3
Total Moisture	1	3.00			

Comments

Query Query Selections
 Date Created 08/09/2019
 Date Range 08/04/2019 - 08/10/2019



Basic Statistical Summary Report

Plant S39-Superior Sterling Heights
Product 1022-2NS GR
Specification 2NS GR Spec
Period 08/04/2019 - 08/10/2019

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	1	100.0			100-100
#4 (4.75mm)	1	98.5			95-100
#8 (2.36mm)	1	81.1			65-95
#16 (1.18mm)	1	64.7			35-75
#30 (0.6mm)	1	47.9		40-50	20-55
#50 (0.3mm)	1	21.2			10-30
#100 (0.15mm)	1	6.4			0-10
#200 (75µm)	1	2.4			
Pan	1	0.0			
FM	1	2.80		2.7-2.9	2.6-3
Wash Loss (#200/75um)	1	2.1			0-3
Total Moisture	1	3.64			