

# Aggregate Optimization Chart

## Production Gradation Report

**PLANT #:** P-36

Sample Date: 5/4/20

Dates Test Represents: 5/5/2020 through 5/11/2020

Concrete Grade: S2M

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (ssd)	ft <sup>3</sup>	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
		<b>Total Wt</b>	<b>3050</b>	<b>18.57</b>		<b>100.0</b>

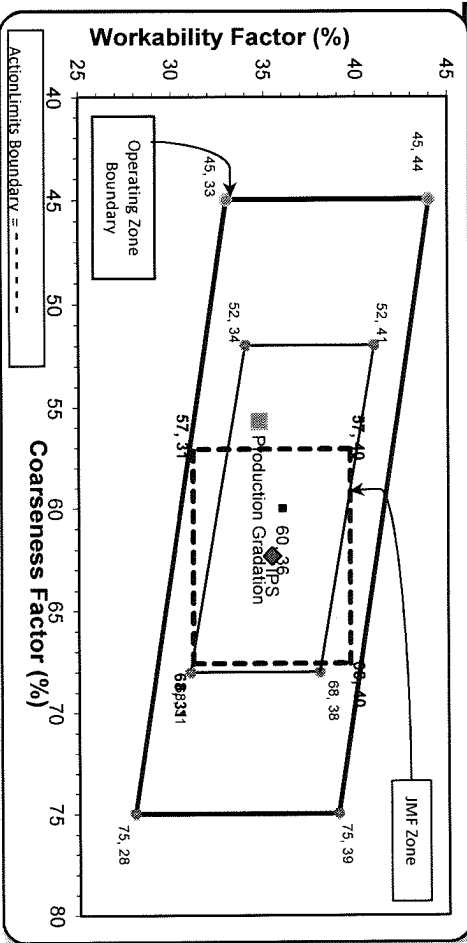
Verify this number is 100%

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"	97.9	100.0	100.0	98.9	1.1	1.1
3/4"	81.7	100.0	100.0	90.4	8.5	9.6
1/2"	49.8	96.7	100.0	73.4	17.0	26.6
3/8"	33.0	85.3	100.0	63.6	9.7	36.4
#4	6.7	22.1	97.3	43.6	20.0	56.4
#8	2.0	6.4	84.3	34.7	8.9	65.3
#16	1.6	3.4	69.2	28.3	6.4	71.7
#30	1.4	2.9	50.8	21.0	7.4	79.0
#50	1.2	2.7	21.8	9.4	11.5	90.6
#100	1.0	2.5	3.7	2.2	7.2	97.8
LBW	0.8	2.1	0.8	0.9	1.3	99.1

\*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: 56 Workability Factor: 35

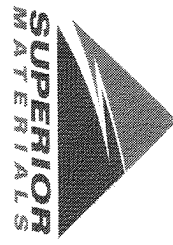


Initial Production Sample (IPS)

Sieve	% 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"	90.5	8.6	9.5
1/2"	69.8	20.7	30.2
3/8"	59.8	10.0	40.2
#4	42.2	17.6	57.8
#8	35.4	6.7	64.6
#16	28.8	6.7	71.2
#30	21.4	7.4	78.6
#50	8.8	12.6	91.2
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

PREPARED BY: SM, LLC Technical Service

Approved By: \_\_\_\_\_



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



Plant S36-Superior Auburn Hills  
Product 1051-6AA LS  
Period: 05/03/2020 - 05/09/2020

Name/Title Doug Storey / QC Technician  
Report Date 05/08/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.9	%	95-100
	3/4" (19mm)	81.7	%	
	1/2" (12.5mm)	49.8	%	30-60
	3/8" (9.5mm)	33.0	%	
	#4 (4.75mm)	6.7	%	0-8
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.0	%	
	#200 (75µm)	0.91	%	
	Wash Loss (#200/75µm)	0.8	%	0-2
	Total Moisture	3.85	%	



Plant S36-Superior Auburn Hills  
Product 1067-26A Mod LS  
Period: 05/03/2020 - 05/09/2020

Name/Title Doug Storey / QC Technician  
Report Date 05/08/2020

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)	96.7	%	95-100
	3/8" (9.5mm)	85.3	%	60-95
	#4 (4.75mm)	22.1	%	5-30
	#8 (2.36mm)	6.4	%	0-12
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.2	%	
	Wash Loss (#200/75um)	2.1	%	0-3
	Total Moisture	3.29	%	



**Plant** S36-Superior Auburn Hills  
**Product** 1022-2NS GR  
**Period:** 05/03/2020 - 05/09/2020

**Name/Title** Doug Storey / QC Technician  
**Report Date** 05/08/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.3	%	95-100
	#8 (2.36mm)	84.3	%	65-95
	#16 (1.18mm)	69.2	%	35-75
	#30 (.6mm)	50.8	%	20-55
	#50 (.3mm)	21.8	%	10-30
	#100 (.15mm)	3.7	%	0-10
	#200 (75µm)	1.1	%	
	FM	2.73		2.6-3
	Wash Loss (#200/75um)	0.8	%	0-3
	Total Moisture	2.72	%	

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** P-39

Sample Date: 5/4/20

Dates Test Represents: 5/5/2020

through 5/11/2020

Concrete Grade: S2M

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1700	10.40	2.62	55.7
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
<b>Total Wt</b>			<b>3050</b>	<b>18.57</b>		<b>100.0</b>

<----- 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"	98.3	100.0	100.0	99.1	0.9	0.9
3/4"	86.2	100.0	100.0	92.3	6.7	7.7
1/2"	46.6	97.1	100.0	70.1	22.2	29.9
3/8"	28.6	87.7	100.0	59.6	10.5	40.4
#4	7.6	25.0	97.8	43.9	15.7	56.1
#8	3.6	7.1	85.3	35.9	8.0	64.1
#16	3.0	3.5	70.3	29.5	6.4	70.5
#30	2.7	2.9	51.9	22.1	7.4	77.9
#50	2.6	2.7	22.9	10.6	11.5	89.4
#100	2.4	2.5	3.2	2.7	7.9	97.3
LBW	1.9	2.2	0.7	1.4	1.3	98.6

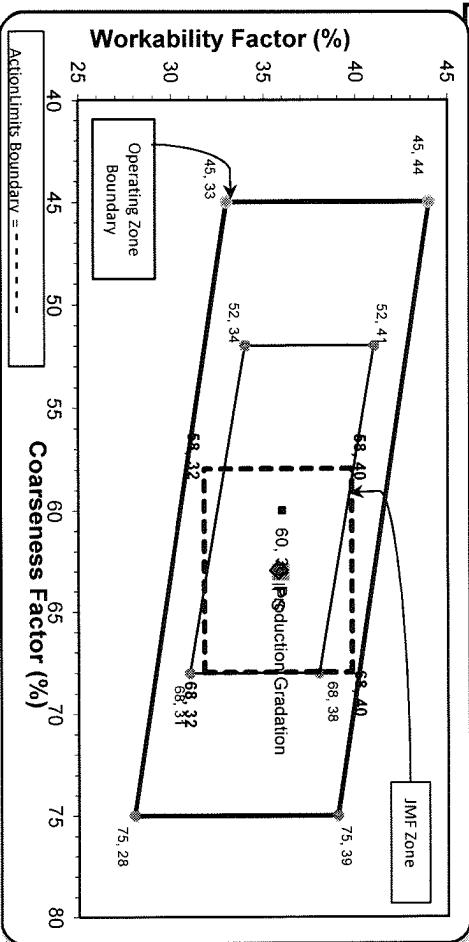
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max.  
 nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max.  
 nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when 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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

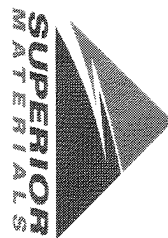
Initial Production Sample (IPS)

Coarseness Factor: 63 Workability Factor: 36

Coarseness Factor: 63 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"	89.8	10.2	10.2
1/2"	70.7	19.1	29.3
3/8"	59.6	11.1	40.4
#4	43.2	16.4	56.8
#8	35.8	7.4	64.2
#16	29.2	6.6	70.8
#30	21.4	7.8	78.6
#50	9.8	11.6	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8



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PREPARED BY:  
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Approved By: \_\_\_\_\_



Plant S39-Superior Sterling Heights  
 Product 1051-6AA LS  
 Period: 05/03/2020 - 05/09/2020

Name/Title Doug Storey / QC Technician  
 Report Date 05/08/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.3	%	95-100
	3/4" (19mm)	86.2	%	
	1/2" (12.5mm)	46.6	%	30-60
	3/8" (9.5mm)	28.6	%	
	#4 (4.75mm)	7.6	%	0-8
	#8 (2.36mm)	3.6	%	
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.08	%	
	Wash Loss (#200/75um)	1.9	%	0-2
	Total Moisture	3.18	%	



Plant S39-Superior Sterling Heights

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 05/03/2020 - 05/09/2020

Report Date 05/08/2020

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)	97.1	%	95-100
	3/8" (9.5mm)	87.7	%	60-95
	#4 (4.75mm)	25.0	%	5-30
	#8 (2.36mm)	7.1	%	0-12
	#16 (1.18mm)	3.5	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.3	%	
	Wash Loss (#200/75µm)	2.2	%	0-3
	Total Moisture	2.85	%	



Plant S39-Superior Sterling Heights

Product 1022-2NS GR

Period: 05/03/2020 - 05/09/2020

Name/Title Doug Storey / QC Technician

Report Date 05/08/2020

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)	85.3	%	65-95
	#16 (1.18mm)	70.3	%	35-75
	#30 (.6mm)	51.9	%	20-55
	#50 (.3mm)	22.9	%	10-30
	#100 (.15mm)	3.2	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.69		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	3.07	%	