

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-36**

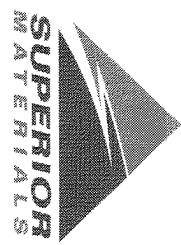
Sample Date: **6/29/20**

Dates Test Represents: **6/30/2020** through **7/6/2020**

Concrete Grade: **DM**

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

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



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

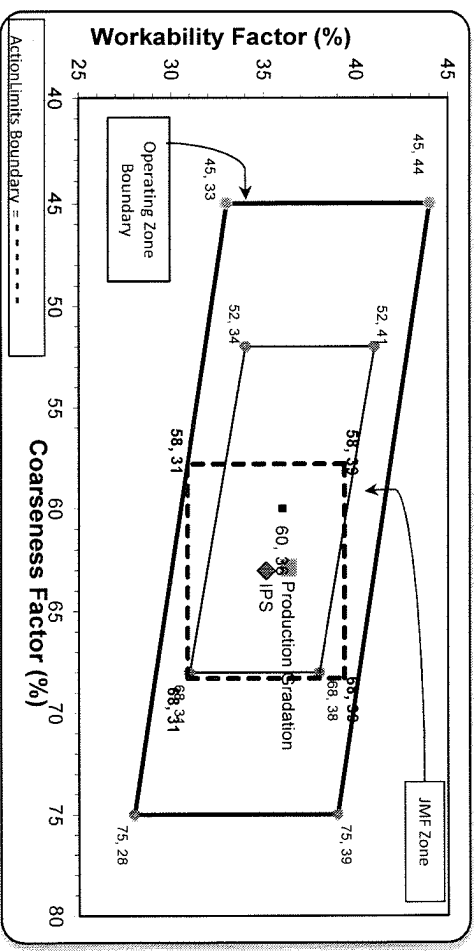
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
<b>Total Wt:</b>						<b>100.0</b>

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"	96.7	100.0	100.0	98.2	1.8	1.8
3/4"	81.9	100.0	100.0	90.3	7.9	9.7
1/2"	43.7	98.2	100.0	69.7	20.6	30.3
3/8"	24.5	86.2	100.0	58.4	11.3	41.6
#4	4.3	26.8	96.6	41.2	17.2	58.8
#8	2.4	8.9	83.9	33.8	7.4	66.2
#16	2.1	4.6	69.0	27.6	6.2	72.4
#30	2.0	3.7	50.3	20.4	7.2	79.6
#50	1.9	3.3	22.7	9.9	10.5	90.1
#100	1.7	3.0	4.4	2.8	7.1	97.2
LBW	1.2	2.5	1.2	1.3	1.5	98.7

\*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: **63** Workability Factor: **34** Adjusted WF: **36.3**



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"	90.3	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: \_\_\_\_\_



Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 06/28/2020 - 07/04/2020

Report Date 07/03/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.7	%	95-100
	3/4" (19mm)	81.9	%	
	1/2" (12.5mm)	43.7	%	30-60
	3/8" (9.5mm)	24.5	%	
	#4 (4.75mm)	4.3	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75µm)	1.2	%	0-2
	Total Moisture	3.28	%	



Plant S36-Superior Auburn Hills  
Product 1067-26A Mod LS  
Period: 06/28/2020 - 07/04/2020

Name/Title Doug Storey / QC Technician  
Report Date 07/03/2020

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)	86.2	%	60-95
	#4 (4.75mm)	26.8	%	5-30
	#8 (2.36mm)	8.9	%	0-12
	#16 (1.18mm)	4.6	%	
	#30 (.6mm)	3.7	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75µm)	2.5	%	0-3
	Total Moisture	3.40	%	



2470 Auburn Road  
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 06/28/2020 - 07/04/2020

Report Date 07/03/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.6	%	95-100
	#8 (2.36mm)	83.9	%	65-95
	#16 (1.18mm)	69.0	%	35-75
	#30 (.6mm)	50.3	%	20-55
	#50 (.3mm)	22.7	%	10-30
	#100 (.15mm)	4.4	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.73		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	2.92	%	

# Aggregate Optimization Chart

## Production Gradation Report

**PLANT #:** P-101

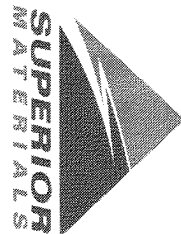
Contractor: \_\_\_\_\_

Sample Date: 6/29/20

Concrete Grade: DM

Dates Test Represents: 6/30/2020 through 7/6/2020

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



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

Aggr. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1560	9.54	2.62	53.6
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	75-051	Mid-Michigan	1150	6.93	2.66	39.5
<b>Total Wt</b>						<b>17.69</b>
						<b>100.0</b>

<----- Verify this number is 100%

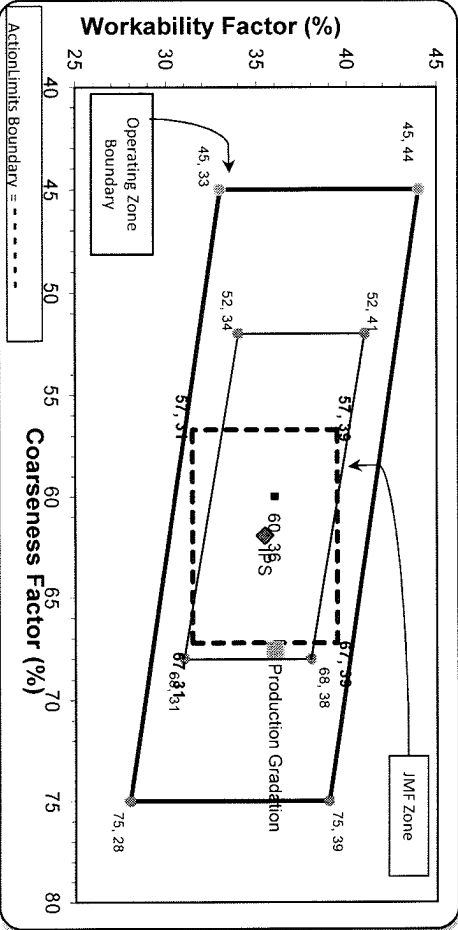
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.8	100.0	100.0	98.3	1.7	1.7
3/4"	73.2	100.0	100.0	85.6	12.7	14.4
1/2"	35.0	96.8	100.0	64.9	20.7	35.1
3/8"	18.1	85.5	100.0	55.1	9.8	44.9
#4	4.5	24.9	96.7	42.3	12.8	57.7
#8	2.3	7.4	80.4	33.5	8.8	66.5
#16	1.9	4.0	65.0	27.0	6.5	73.0
#30	1.8	3.5	50.0	21.0	6.0	79.0
#50	1.7	3.3	26.7	11.7	9.3	88.3
#100	1.6	3.0	8.2	4.3	7.4	95.7
LBW	1.2	2.6	2.6	1.8	2.5	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. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **68** Workability Factor: **34** Adjusted WF: **36.0**

Initial Production Sample (IPS) Coarseness Factor: **62** 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"	100.0	0.0	0.0
3/4"	95.0	5.0	5.0
1/2"	70.5	24.5	29.5
3/8"	60.0	10.5	40.0
#4	44.4	15.6	55.6
#8	35.5	9.0	64.5
#16	28.5	7.0	71.5
#30	21.5	7.0	78.5
#50	10.2	11.3	89.8
#100	3.1	7.1	96.9
LBW	1.3	1.8	98.7

PREPARED BY:  
SM, LLC Technical Service

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



Plant S101-Superior Mount Clemens

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 06/28/2020 - 07/04/2020

Report Date 07/03/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.8	%	95-100
	3/4" (19mm)	73.2	%	
	1/2" (12.5mm)	35.0	%	30-60
	3/8" (9.5mm)	18.1	%	
	#4 (4.75mm)	4.5	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.34	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	3.78	%	



Plant S101-Superior Mount Clemens

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 06/28/2020 - 07/04/2020

Report Date 07/03/2020

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)	96.8	%	95-100
	3/8" (9.5mm)	85.5	%	60-95
	#4 (4.75mm)	24.9	%	5-30
	#8 (2.36mm)	7.4	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.8	%	
	Wash Loss (#200/75um)	2.6	%	0-3
	Total Moisture	2.52	%	



Plant S101-Superior Mount Clemens

Product 1022-2NS GR

Period: 06/28/2020 - 07/04/2020

Name/Title Doug Storey / QC Technician

Report Date 07/03/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.7	%	95-100
	#8 (2.36mm)	80.4	%	65-95
	#16 (1.18mm)	65.0	%	35-75
	#30 (.6mm)	50.0	%	20-55
	#50 (.3mm)	26.7	%	10-30
	#100 (.15mm)	8.2	%	0-10
	#200 (75µm)	2.6	%	
	FM	2.73		2.6-3
	Wash Loss (#200/75um)	2.6	%	0-3
	Total Moisture	5.59	%	