

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-36**

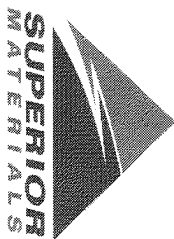
Sample Date: 5/11/20

Dates Test Represents: 5/12/2020 through 5/18/2020

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	1600	9.79	2.62	55.1	
26A	71-47	Presque Isle	205	1.25	2.62	7.1	
NNS	63-92	Grange Hall	1100	6.65	2.65	37.9	
Total Wt						2905	100.0

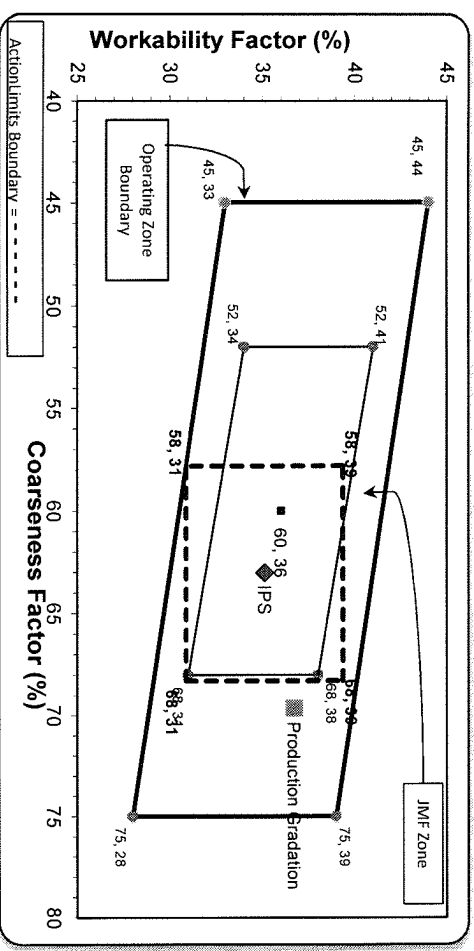
  

Sieve	6AA	26A	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.1	100.0	100.0	97.9	2.1	2.1
3/4"	74.0	100.0	100.0	85.7	14.3	14.3
1/2"	33.3	96.8	100.0	63.0	37.0	37.0
3/8"	19.1	82.2	100.0	54.2	45.8	45.8
#4	5.1	25.6	97.3	41.5	58.5	58.5
#8	2.7	8.2	84.9	34.2	65.8	65.8
#16	2.0	4.4	70.3	28.0	72.0	72.0
#30	1.9	3.8	51.3	20.7	79.3	79.3
#50	1.7	3.6	22.6	9.7	90.3	90.3
#100	1.5	3.2	4.1	2.6	97.4	97.4
LBW	1.2	2.9	1.0	1.2	98.8	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.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **70** Workability Factor: **34** Adjusted WF: **36.7**



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:
2"	100.0	63	35
1.5"	100.0		
1"	99.1		
3/4"	90.3		
1/2"	69.2		
3/8"	59.1		
#4	41.8		
#8	35.1		
#16	28.5		
#30	21.2		
#50	8.7		
#100	1.8		
LBW	0.7		

PREPARED BY:  
SM, LLC Technical Service

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



2470 Auburn Road  
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills  
Product 1051-6AA LS  
Period: 05/10/2020 - 05/16/2020

Name/Title Doug Storey / QC Technician  
Report Date 05/15/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.1	%	95-100
	3/4" (19mm)	74.0	%	
	1/2" (12.5mm)	33.3	%	30-60
	3/8" (9.5mm)	19.1	%	
	#4 (4.75mm)	5.1	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.20	%	
	Wash Loss (#200/75µm)	1.2	%	0-2
	Total Moisture	3.15	%	



Plant S36-Superior Auburn Hills  
Product 1067-26A Mod LS  
Period: 05/10/2020 - 05/16/2020

Name/Title Doug Storey / QC Technician  
Report Date 05/15/2020

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)	96.8	%	95-100
	3/8" (9.5mm)	82.2	%	60-95
	#4 (4.75mm)	25.6	%	5-30
	#8 (2.36mm)	8.2	%	0-12
	#16 (1.18mm)	4.4	%	
	#30 (.6mm)	3.8	%	
	#50 (.3mm)	3.6	%	
	#100 (.15mm)	3.2	%	
	#200 (75µm)	2.9	%	
	Wash Loss (#200/75um)	2.8	%	0-3
	Total Moisture	4.00	%	



**Plant** S36-Superior Auburn Hills  
**Product** 1022-2NS GR  
**Period:** 05/10/2020 - 05/16/2020

**Name/Title** Doug Storey / QC Technician  
**Report Date** 05/15/2020

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)	84.9	%	65-95
	#16 (1.18mm)	70.3	%	35-75
	#30 (.6mm)	51.3	%	20-55
	#50 (.3mm)	22.6	%	10-30
	#100 (.15mm)	4.1	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.70		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	2.56	%	

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-102**

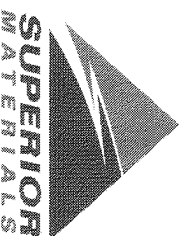
Sample Date: **5/11/20**

Dates Test Represents: **5/12/2020** through **5/18/2020**

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	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	305	1.82	2.69	10.3
2NS	63-114	Highland	1150	6.95	2.65	38.9
<b>Total Wt:</b>						<b>17.71</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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	83.7	100.0	100.0	91.7	8.3	8.3
1/2"	39.8	100.0	100.0	69.4	22.3	30.6
3/8"	17.0	88.9	100.0	56.7	12.7	43.3
#4	3.1	13.7	98.6	41.4	15.4	58.6
#8	1.8	2.6	81.6	32.9	8.4	67.1
#16	1.6	1.6	62.7	25.4	7.6	74.6
#30	1.5	1.4	44.8	18.3	7.0	81.7
#50	1.4	1.2	19.5	8.4	9.9	91.6
#100	1.4	1.2	4.2	2.5	6.0	97.5
LBW	1.2	1.1	0.9	1.1	1.4	98.9

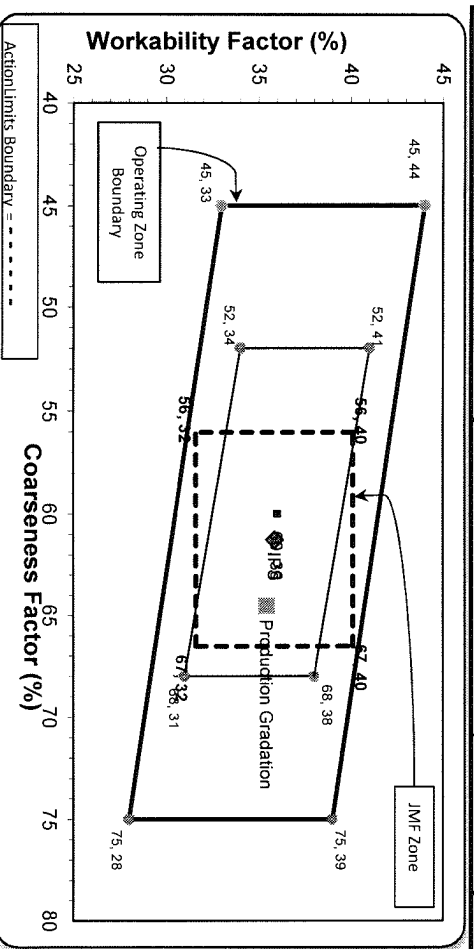
\*Maximum % Retained must be above the 3/8" sieve.  
\*Any two adjacent sieves must equal 10% except max.  
nom. max. #100 and #200 sieves.  
\*\*Retained must be at least 4% for each sieve except max.  
nom. max. #100 and #200 sieves.  
\*Retained must be at least 8% for the 1" sieve when a 2" max.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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **65** Workability Factor: **33** Adjusted WF: **35.4**

Initial Production Sample (IPS)

Coarseness Factor: **61** 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"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:  
SM, LLC Technical Service

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



Plant S102-Superior Novi

Product 1051-6AA LS

Period: 05/10/2020 - 05/16/2020

Name/Title Doug Storey / QC Technician

Report Date 05/15/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	83.7	%	
	1/2" (12.5mm)	39.8	%	30-60
	3/8" (9.5mm)	17.0	%	
	#4 (4.75mm)	3.1	%	0-8
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.21	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	4.15	%	



Plant S102-Superior Novi  
 Product 1067-26A Mod LS  
 Period: 05/10/2020 - 05/16/2020

Name/Title Doug Storey / QC Technician  
 Report Date 05/15/2020

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)	100.0	%	95-100
	3/8" (9.5mm)	88.9	%	60-95
	#4 (4.75mm)	13.7	%	5-30
	#8 (2.36mm)	2.6	%	0-12
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.2	%	
	#200 (75µm)	1.1	%	
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	4.36	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 05/10/2020 - 05/16/2020

Report Date 05/15/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.6	%	95-100
	#8 (2.36mm)	81.6	%	65-95
	#16 (1.18mm)	62.7	%	35-75
	#30 (.6mm)	44.8	%	20-55
	#50 (.3mm)	19.5	%	10-30
	#100 (.15mm)	4.2	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.89		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	5.06	%	