

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-32**

Sample Date: **6/6/22**

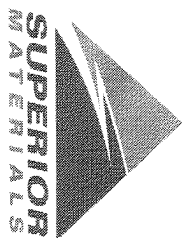
Dates Test Represents: **6/7/2022**

through **6/13/2022**

Concrete Grade: **P1M, 3500HP**

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

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 %
CA	71-47	Presque Isle	750	4.59	2.62	24.4
IA	71-47	Presque Isle	1070	6.54	2.62	34.9
NNS	95-013	Smeller Bay	1250	7.56	2.65	40.7
Total Wt			3070	18.69		100.0

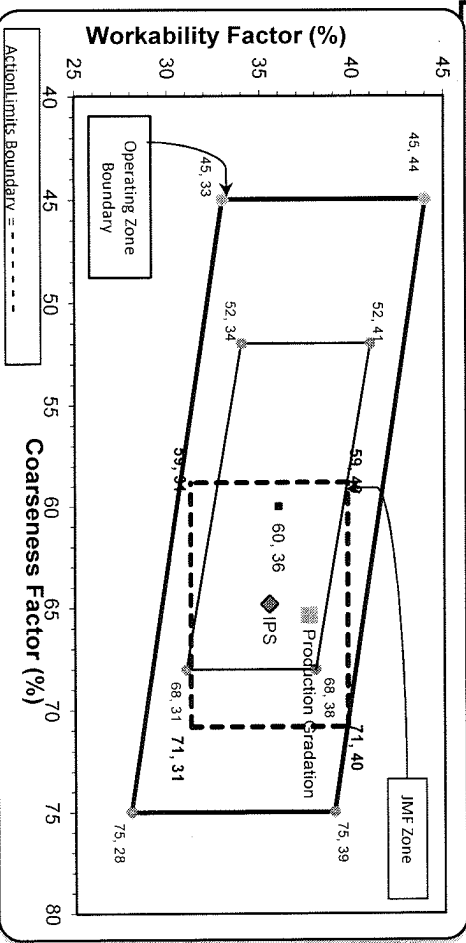
Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	52.0	100.0	100.0	88.3	11.7	11.7
3/4"	16.3	97.2	100.0	78.6	9.7	21.4
1/2"	6.6	73.0	100.0	67.8	10.8	32.2
3/8"	4.9	49.7	100.0	59.2	8.5	40.8
#4	3.7	13.2	97.0	45.0	14.2	55.0
#8	3.3	6.3	85.1	37.7	7.3	62.3
#16	3.1	4.8	70.6	31.2	6.5	68.8
#30	2.9	4.1	51.0	22.9	8.3	77.1
#50	2.7	3.3	24.8	11.9	11.0	88.1
#100	2.4	2.6	7.3	4.5	7.4	95.5
LBW	1.8	1.6	1.4	1.6	2.9	98.4

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

Coarseness Factor: **65** Workability Factor: **38**



Initial Production Sample (IPS)

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.0	0.6	0.6
1"	84.0	15.3	16.0
3/4"	73.5	10.5	26.5
1/2"	65.2	8.2	34.8
3/8"	58.2	7.1	41.8
#4	44.1	14.1	55.9
#8	35.5	8.6	64.5
#16	29.1	6.4	70.9
#30	21.9	7.3	78.1
#50	9.6	12.2	90.4
#100	2.6	7.1	97.4
LBW	1.0	1.6	99.0

PREPARED BY:  
SM, LLC Technical Service

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

Plant 958-JMT  
 Product 1022-2NS GR - Smelter Bay  
 Period: 06/05/2022 - 06/11/2022

Name/Title Doug Storey / QC Technician  
 Report Date 06/10/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.0	%	95-100
	#8 (2.36mm)	85.1	%	65-95
	#16 (1.18mm)	70.6	%	35-75
	#30 (.6mm)	51.0	%	20-55
	#50 (.3mm)	24.8	%	10-30
	#100 (.15mm)	7.3	%	0-10
	#200 (75µm)	2.0	%	
	FM	2.64		2.6-3
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	6.8	%	

Plant 958-JMT

Product 7920-INTERMED AGG P1M LS PI

Name/Title Doug Storey / QC Technician

Period: 06/05/2022 - 06/11/2022

Report Date 06/10/2022

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	97.2	%	
	1/2" (12.5mm)	73.0	%	
	3/8" (9.5mm)	49.7	%	
	#4 (4.75mm)	13.2	%	
	#8 (2.36mm)	6.3	%	
	#16 (1.18mm)	4.8	%	
	#30 (.6mm)	4.1	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.1	%	

# Edw. C. Levy Co.

JMT  
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Plant 958-JMT

Product 7919-COARSE AGG P1M LS PI

Name/Title Doug Storey / QC Technician

Period: 06/05/2022 - 06/11/2022

Report Date 06/10/2022

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	52.0	%	
	3/4" (19mm)	16.3	%	
	1/2" (12.5mm)	6.6	%	
	3/8" (9.5mm)	4.9	%	
	#4 (4.75mm)	3.7	%	
	#8 (2.36mm)	3.3	%	
	#16 (1.18mm)	3.1	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.0	%	
	Wash Loss (#200/75um)	1.8	%	0-2
	Total Moisture	2.4	%	

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-35**

Sample Date: **6/6/22**

Dates Test Represents: **6/7/2022** through **6/13/2022**

Concrete Grade: **P1M, 3500HP**

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	Contribution %
CA	58-003	Stoneco	1370	8.16	2.69	43.9
IA	58-003	Stoneco	550	3.28	2.69	17.6
ZNS	81-019	Pleasant Lake	1200	7.26	2.65	38.5
Total Wt:			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

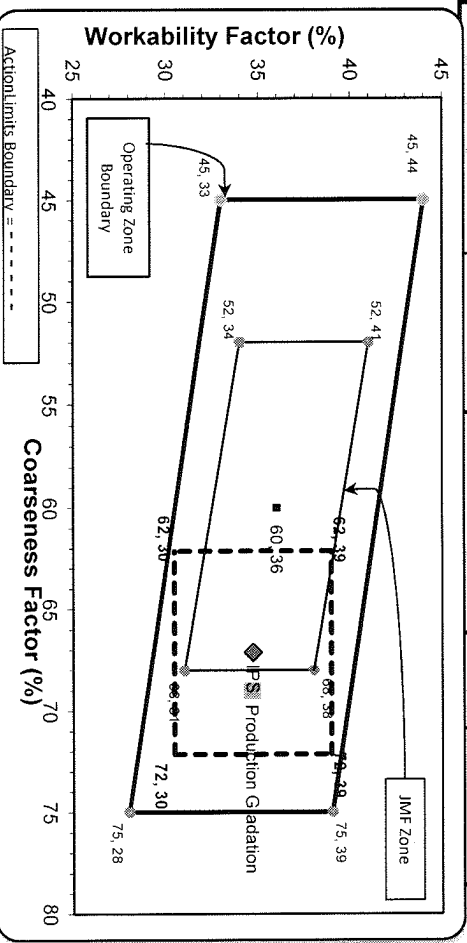
<----- Verify this number is 100%

Sieve	CA	IA	ZNS	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"	53.1	100.0	100.0	79.4	20.6	20.6
3/4"	19.0	100.0	100.0	64.4	35.6	35.6
1/2"	7.7	95.9	100.0	58.7	41.3	41.3
3/8"	5.3	80.0	100.0	54.9	45.1	45.1
#4	1.7	23.7	99.2	43.1	56.9	56.9
#8	1.4	7.6	85.0	34.6	65.4	65.4
#16	1.3	3.9	69.0	27.8	72.2	72.2
#30	1.2	2.7	51.7	20.9	79.1	79.1
#50	1.1	2.3	25.3	10.6	89.4	89.4
#100	1.0	2.2	7.6	3.8	96.3	96.3
LBW	0.8	1.8	1.3	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.

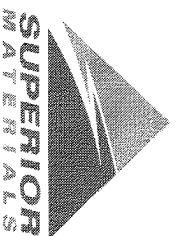
Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **69** Workability Factor: **35**



Initial Production Sample (IPS)

Sieve	Coarseness Factor: <b>67</b>		Workability Factor: <b>35</b>	
	% Passing	% Retained	% Passing	% Retained
2"	100.0	0.0	100.0	0.0
1.5"	100.0	0.0	100.0	0.0
1"	86.9	13.1	86.9	13.1
3/4"	76.1	23.9	76.1	23.9
1/2"	63.7	36.3	63.7	36.3
3/8"	56.2	43.8	56.2	43.8
#4	43.2	56.8	43.2	56.8
#8	34.7	65.3	34.7	65.3
#16	27.5	72.5	27.5	72.5
#30	20.6	79.4	20.6	79.4
#50	9.0	91.0	9.0	91.0
#100	2.1	97.9	2.1	97.9
LBW	1.0	99.0	1.0	99.0



Superior Materials, LLC  
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 Farmington Hills, MI 48336

PREPARED BY:  
 SM, LLC Technical Service

Approved By:



Plant S35-Superior Romulus

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 06/05/2022 - 06/11/2022

Report Date 06/10/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.2	%	95-100
	#8 (2.36mm)	85.0	%	65-95
	#16 (1.18mm)	69.0	%	35-75
	#30 (.6mm)	51.7	%	20-55
	#50 (.3mm)	25.3	%	10-30
	#100 (.15mm)	7.6	%	0-10
	#200 (75µm)	2.1	%	
	FM	2.62		2.6-3
AASHTO T11	#200 (75um)	2.06	%	
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	4.00	%	



Plant S35-Superior Romulus  
 Product 7920-INTERMED AGG P1M LS  
 Period: 06/05/2022 - 06/11/2022

Name/Title Doug Storey / QC Technician  
 Report Date 06/10/2022

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	
	1/2" (12.5mm)	95.9	%	
	3/8" (9.5mm)	80.0	%	
	#4 (4.75mm)	23.7	%	
	#8 (2.36mm)	7.6	%	
	#16 (1.18mm)	3.9	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	1.8	%	0-3
ASTM C566	Total Moisture	4.83	%	



**Plant** S35-Superior Romulus

**Product** 7919-COARSE AGG P1M LS

**Name/Title** Doug Storey / QC Technician

**Period:** 06/05/2022 - 06/11/2022

**Report Date** 06/10/2022

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	53.1	%	
	3/4" (19mm)	19.0	%	
	1/2" (12.5mm)	7.7	%	
	3/8" (9.5mm)	5.3	%	
	#4 (4.75mm)	1.7	%	
	#8 (2.36mm)	1.4	%	
	#16 (1.18mm)	1.3	%	
	#30 (.6mm)	1.2	%	
	#50 (.3mm)	1.1	%	
	#100 (.15mm)	1.0	%	
	#200 (75µm)	0.9	%	
	Wash Loss (#200/75um)	0.8	%	0-2
ASTM C566	Total Moisture	2.54	%	