

# Aggregate Optimization Chart

**PLANT #:** P-32

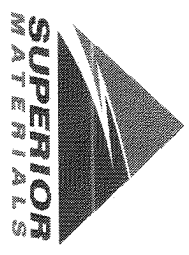
Sample Date: 12/14/20

Dates Test Represents: 12/15/2020 through 12/21/2020

Concrete Grade: P1M

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

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



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

Agg. Class	Pit #	Source	Weight (ss)	ft <sup>3</sup>	Specific Gravity	Contribution %
CA	71-47	Presque Isle	1070	6.54	2.62	34.9
IA	71-47	Presque Isle	750	4.59	2.62	24.4
2NS	95-013	Smelter Bay	1250	7.56	2.65	40.7
		<b>Total Wt</b>	<b>3070</b>	<b>18.69</b>		<b>100.0</b>

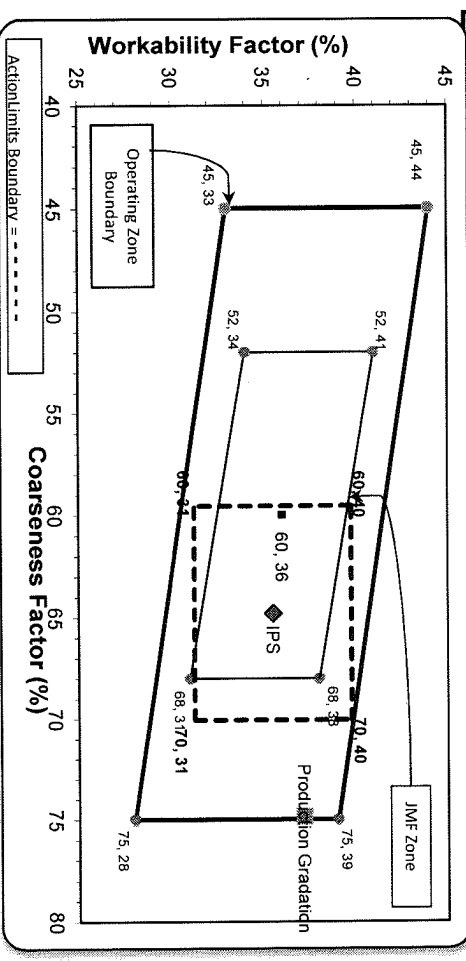
  

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	93.9	100.0	100.0	97.9	2.1	2.1
1"	54.9	100.0	100.0	84.3	13.6	15.7
3/4"	23.1	98.5	100.0	72.8	11.4	27.2
1/2"	5.4	74.1	100.0	60.7	12.1	39.3
3/8"	3.0	45.8	100.0	53.0	7.8	47.0
#4	2.6	20.9	95.8	45.0	7.9	55.0
#8	2.1	11.6	82.5	37.2	7.9	62.8
#16	1.9	2.9	66.2	28.3	8.8	71.7
#30	1.8	2.7	45.8	19.9	8.4	80.1
#50	1.7	2.4	27.6	12.4	7.5	87.6
#100	1.5	2.0	8.4	4.4	8.0	95.6
LBW	1.3	1.5	1.1	1.3	3.2	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. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: 75 Workability Factor: 37



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: \_\_\_\_\_

# Edw. C. Levy Co.

Plant 958-JMT

Product 7919-COARSE AGG P1M LS PI

Name/Title Doug Storey / QC Technician

Period: 12/13/2020 - 12/19/2020

Report Date 12/18/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	93.9	%	
	1" (25mm)	54.9	%	
	3/4" (19mm)	23.1	%	
	1/2" (12.5mm)	5.4	%	
	3/8" (9.5mm)	3.0	%	
	#4 (4.75mm)	2.6	%	
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75µm)	1.3	%	0-2
	Total Moisture	2.9	%	

# Edw. C. Levy Co.

Plant 958-JMT

Product 7920-INTERMED AGG P1M LS PI

Name/Title Doug Storey / QC Technician

Period: 12/13/2020 - 12/19/2020

Report Date 12/18/2020

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)	98.5	%	
	1/2" (12.5mm)	74.1	%	
	3/8" (9.5mm)	45.8	%	
	#4 (4.75mm)	20.9	%	
	#8 (2.36mm)	11.6	%	
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.7	%	

# Edw. C. Levy Co.

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 12/13/2020 - 12/19/2020

Name/Title Doug Storey / QC Technician

Report Date 12/18/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.8	%	95-100
	#8 (2.36mm)	82.5	%	65-95
	#16 (1.18mm)	66.2	%	35-75
	#30 (.6mm)	45.8	%	20-55
	#50 (.3mm)	27.6	%	10-30
	#100 (.15mm)	8.4	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75µm)	1.1	%	0-3
	Total Moisture	5.7	%	

# Aggregate Optimization Chart

## Production Gradation Report

**PLANT #:** P-39

Sample Date: 12/14/20

Dates Test Represents: 12/15/2020 through 12/21/2020

Concrete Grade: P1M

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

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

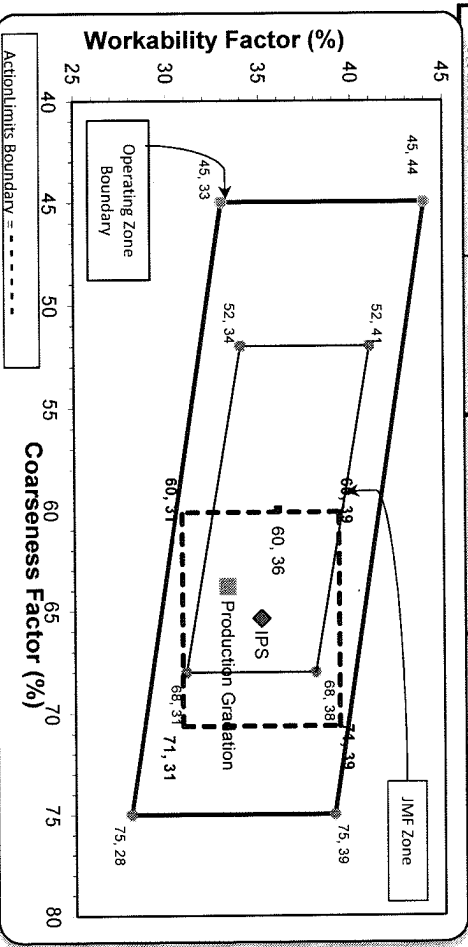
Aggr. Class	Pit #	Source	Weight (ss)	ft <sup>3</sup>	Specific Gravity	Contribution %
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	900	5.50	2.62	29.3
2NS	44-051	Krake Willis Rd	1200	7.26	2.65	39.1
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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

Sieve	CA	IA	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"	48.1	100.0	100.0	83.6	16.4	16.4
3/4"	11.8	97.2	100.0	71.3	12.3	28.7
1/2"	5.2	79.6	100.0	64.1	7.2	35.9
3/8"	3.8	58.4	100.0	57.4	6.7	42.6
#4	2.6	16.4	96.2	43.2	14.2	56.8
#8	2.2	6.0	78.8	33.3	10.0	66.7
#16	2.0	3.9	63.8	26.7	6.5	73.3
#30	1.9	3.5	48.3	20.5	6.2	79.5
#50	1.8	3.2	24.4	11.0	9.5	89.0
#100	1.7	3.0	5.4	3.5	7.5	96.5
LBW	1.4	2.5	0.5	1.4	2.2	98.6

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

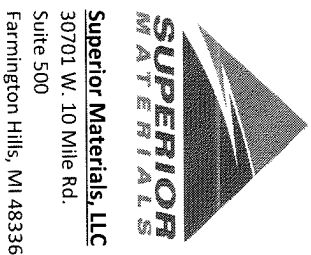
Coarseness Factor: 64 Workability Factor: 33



Initial Production Sample (IPS)

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	83.9	15.7	16.1
3/4"	74.1	9.8	25.9
1/2"	64.3	9.7	35.7
3/8"	57.5	6.8	42.5
#4	44.5	13.1	55.5
#8	35.1	9.4	64.9
#16	27.9	7.2	72.1
#30	21.7	6.2	78.3
#50	12.6	9.1	87.4
#100	3.5	9.1	96.5
LBW	1.2	2.4	98.8

Coarseness Factor: 65 Workability Factor: 35



\*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.



Plant S39-Superior Sterling Heights  
 Product 7919-COARSE AGG P1M LS  
 Period: 12/13/2020 - 12/19/2020

Name/Title Doug Storey / QC Technician  
 Report Date 12/18/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	48.1	%	
	3/4" (19mm)	11.8	%	
	1/2" (12.5mm)	5.2	%	
	3/8" (9.5mm)	3.8	%	
	#4 (4.75mm)	2.6	%	
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	1.99	%	



Plant S39-Superior Sterling Heights  
 Product 7920-INTERMED AGG P1M LS  
 Period: 12/13/2020 - 12/19/2020

Name/Title Doug Storey / QC Technician  
 Report Date 12/18/2020

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)	97.2	%	
	1/2" (12.5mm)	79.6	%	
	3/8" (9.5mm)	58.4	%	
	#4 (4.75mm)	16.4	%	
	#8 (2.36mm)	6.0	%	
	#16 (1.18mm)	3.9	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.2	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.6	%	
	Wash Loss (#200/75um)	2.5	%	0-3
	Total Moisture	4.08	%	



**Plant** S39-Superior Sterling Heights  
**Product** 1022-2NS GR  
**Period:** 12/13/2020 - 12/19/2020

**Name/Title** Doug Storey / QC Technician  
**Report Date** 12/18/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.2	%	95-100
	#8 (2.36mm)	78.8	%	65-95
	#16 (1.18mm)	63.8	%	35-75
	#30 (.6mm)	48.3	%	20-55
	#50 (.3mm)	24.4	%	10-30
	#100 (.15mm)	5.4	%	0-10
	#200 (75µm)	0.7	%	
	FM	2.83		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	4.52	%	