

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Sample Date: **9/20/21**

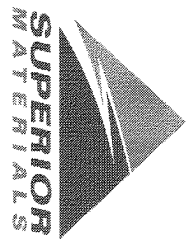
Dates Test Represents: **9/21/2021**

through **9/27/2021**

Concrete Grade: **P1M**

Contractor: _____

MIDOT No.: _____



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

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
CA	71-47	Presque Isle	950	5.81	2.62	30.9	
IA	71-47	Presque Isle	870	5.32	2.62	28.3	
2NS	95-013	Smelter Bay	1250	7.56	2.65	40.7	
Total Wt.						3070	100.0

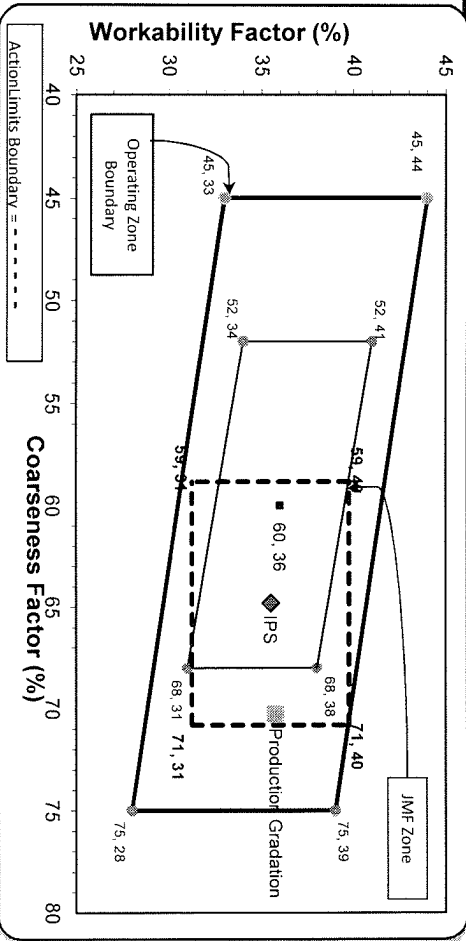
Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	91.3	100.0	100.0	97.3	2.7	2.7
1"	19.8	100.0	100.0	75.2	22.1	24.8
3/4"	3.7	98.3	100.0	69.7	5.5	30.3
1/2"	2.2	72.9	100.0	62.1	7.7	37.9
3/8"	2.1	47.6	100.0	54.9	7.2	45.1
#4	2.1	10.2	95.3	42.3	12.5	57.7
#8	2.0	4.5	83.2	35.8	6.6	64.2
#16	1.9	2.9	67.9	29.1	6.7	70.9
#30	1.8	2.5	49.8	21.5	7.5	78.5
#50	1.7	2.4	25.3	11.5	10.0	88.5
#100	1.5	2.2	8.4	4.5	7.0	95.5
LBW	1.2	1.7	1.7	1.5	3.0	98.5

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Initial Production Sample (IPS)

Coarseness Factor: **70** Workability Factor: **36**

Coarseness Factor: **65** Workability Factor: **36**



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: 09/19/2021 - 09/25/2021

Name/Title Doug Storey / QC Technician
 Report Date 09/24/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.3	%	95-100
	#8 (2.36mm)	83.2	%	65-95
	#16 (1.18mm)	67.9	%	35-75
	#30 (.6mm)	49.8	%	20-55
	#50 (.3mm)	25.3	%	10-30
	#100 (.15mm)	8.4	%	0-10
	#200 (75µm)	2.2	%	
	FM	2.70		2.6-3
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	4.0	%	

Plant 958-JMT
 Product 7920-INTERMED AGG P1M LS PI
 Period: 09/19/2021 - 09/25/2021

Name/Title Doug Storey / QC Technician
 Report Date 09/24/2021

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)	98.3	%	
	1/2" (12.5mm)	72.9	%	
	3/8" (9.5mm)	47.6	%	
	#4 (4.75mm)	10.2	%	
	#8 (2.36mm)	4.5	%	
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	1.5	%	

Edw. C. Levy Co.

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 8911 W. Jefferson
 Detroit, 48209
 (313) 429-2429

Plant: 958-JMT
Product: 7919-COARSE AGG P1M LS PI
Period: 09/19/2021 - 09/25/2021

Name/Title: Doug Storey / QC Technician
Report Date: 09/24/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	91.3	%	
	1" (25mm)	19.8	%	
	3/4" (19mm)	3.7	%	
	1/2" (12.5mm)	2.2	%	
	3/8" (9.5mm)	2.1	%	
	#4 (4.75mm)	2.1	%	
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	2.5	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

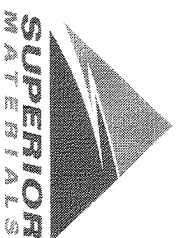
Sample Date: **9/20/21**

Dates Test Represents: **9/21/2021** through **9/27/2021**

Concrete Grade: **P1M**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
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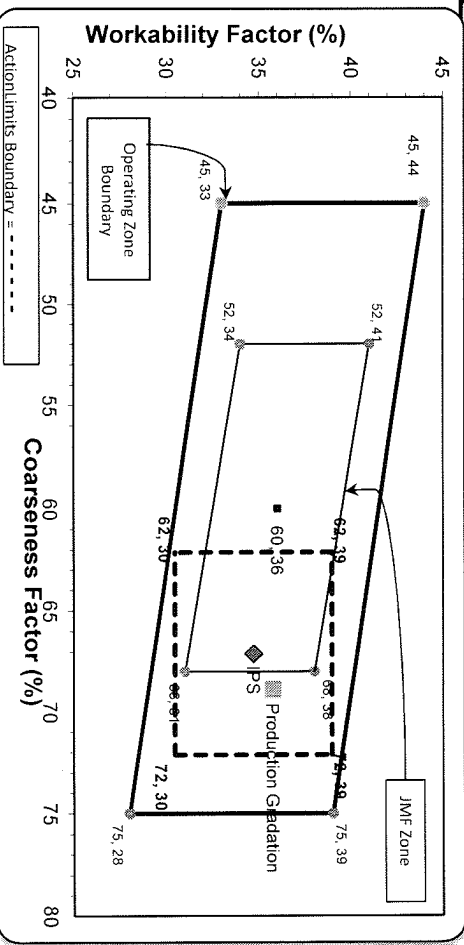
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution	
CA	58-003	Stoneco	1370	8.16	2.69	43.9	
IA	58-003	Stoneco	550	3.28	2.69	17.6	
ZNS	81-093	Burmeister	1200	7.26	2.65	38.5	
Total Wt:						3120	100.0

Sieve	CA	IA	ZNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.1	0.9	0.9
1"	74.0	100.0	100.0	88.6	10.5	11.4
3/4"	34.7	100.0	100.0	71.3	17.3	28.7
1/2"	12.0	97.0	100.0	60.8	10.5	39.2
3/8"	6.5	81.7	100.0	55.7	5.1	44.3
#4	3.1	27.4	99.6	44.5	11.2	55.5
#8	2.4	6.7	87.1	35.7	8.8	64.3
#16	2.1	3.2	70.2	28.5	7.2	71.5
#30	1.9	2.2	51.5	21.0	7.5	79.0
#50	1.7	1.9	17.4	7.8	13.3	92.2
#100	1.6	1.8	3.6	2.4	5.4	97.6
LBW	1.4	1.6	1.6	1.5	0.9	98.5

*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: **69** Workability Factor: **36**

Sieve	% Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	86.9	13.1	13.1
3/4"	76.1	10.8	23.9
1/2"	63.7	12.4	36.3
3/8"	56.2	7.5	43.8
#4	43.2	13.0	56.8
#8	34.7	8.5	65.3
#16	27.5	7.2	72.5
#30	20.6	7.0	79.4
#50	9.0	11.6	91.0
#100	2.1	6.9	97.9
LBW	1.0	1.1	99.0

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S35-Superior Romulus
 Product 1022-2NS GR
 Period: 09/19/2021 - 09/25/2021

Name/Title Doug Storey / QC Technician
 Report Date 09/24/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.6	%	95-100
	#8 (2.36mm)	87.1	%	65-95
	#16 (1.18mm)	70.2	%	35-75
	#30 (.6mm)	51.5	%	20-55
	#50 (.3mm)	17.4	%	10-30
	#100 (.15mm)	3.6	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.70		2.6-3
AASHTO T11	-#200 (75um)	1.74	%	
	Wash Loss (#200/75um)	1.6	%	0-3
ASTM C566	Total Moisture	6.39	%	



Plant S35-Superior Romulus

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 09/19/2021 - 09/25/2021

Report Date 09/24/2021

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)	97.0	%	
	3/8" (9.5mm)	81.7	%	
	#4 (4.75mm)	27.4	%	
	#8 (2.36mm)	6.7	%	
	#16 (1.18mm)	3.2	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-3
ASTM C566	Total Moisture	3.48	%	



Plant S35-Superior Romulus

Product 7919-COARSE AGG P1M LS

Period: 09/19/2021 - 09/25/2021

Name/Title Doug Storey / QC Technician

Report Date 09/24/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	98.0	%	
	1" (25mm)	74.0	%	
	3/4" (19mm)	34.7	%	
	1/2" (12.5mm)	12.0	%	
	3/8" (9.5mm)	6.5	%	
	#4 (4.75mm)	3.1	%	
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-2
ASTM C566	Total Moisture	2.55	%	