

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P11**

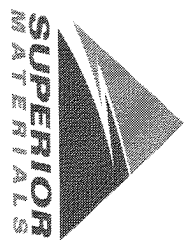
Sample Date: **5/29/23**

Dates Test Represents: **5/30/2023** through **6/5/2023**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____

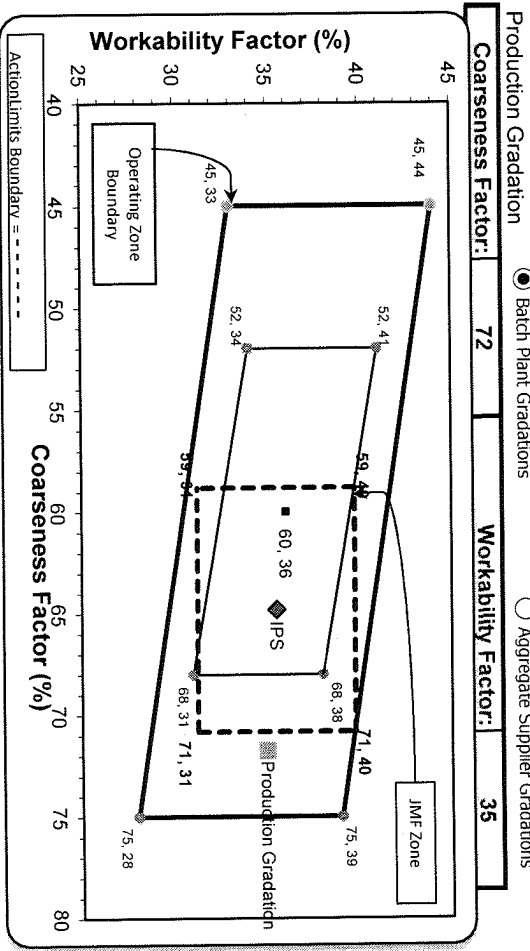


Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
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Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	850	5.20	2.62	27.7
NNS	95-013	Smelter Bay	1250	7.56	2.65	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"	94.7	100.0	100.0	98.3	1.7	1.7
1"	41.9	100.0	100.0	81.6	16.7	18.4
3/4"	10.7	95.6	100.0	70.6	11.1	29.4
1/2"	3.5	67.5	100.0	60.5	10.1	39.5
3/8"	2.8	42.4	100.0	53.3	7.2	46.7
#4	2.6	7.3	95.8	41.8	11.5	58.2
#8	2.5	3.1	81.8	35.0	6.9	65.0
#16	2.4	2.3	66.7	28.6	6.4	71.4
#30	2.3	2.1	49.0	21.3	7.3	78.7
#50	2.2	1.9	23.3	10.7	10.6	89.3
#100	2.0	1.7	5.5	3.3	7.4	96.7
LBW	1.6	1.3	1.0	1.3	2.1	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.



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 S11-Superior Onsite Jefferson

Product 7919-COARSE AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 05/28/2023 - 06/03/2023

Report Date 06/02/2023

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	94.7	%	
	1" (25mm)	41.9	%	
	3/4" (19mm)	10.7	%	
	1/2" (12.5mm)	3.4	%	
	3/8" (9.5mm)	2.8	%	
	#4 (4.75mm)	2.6	%	
	#8 (2.36mm)	2.5	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-2
	Total Moisture	1.96	%	



Plant S11-Superior Onsite Jefferson

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 05/28/2023 - 06/03/2023

Report Date 06/02/2023

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)	95.6	%	
	1/2" (12.5mm)	67.5	%	
	3/8" (9.5mm)	42.4	%	
	#4 (4.75mm)	7.3	%	
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	3.33	%	



Plant S11-Superior Onsite Jefferson

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 05/28/2023 - 06/03/2023

Report Date 06/02/2023

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)	81.8	%	65-95
	#16 (1.18mm)	66.7	%	35-75
	#30 (.6mm)	49.0	%	20-55
	#50 (.3mm)	23.3	%	10-30
	#100 (.15mm)	5.5	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.78		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	4.03	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Sample Date: 5/29/23

Dates Test Represents: 5/30/2023 through 6/5/2023

Concrete Grade: P1M, 3500HP

Contractor: _____

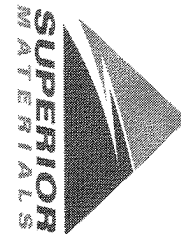
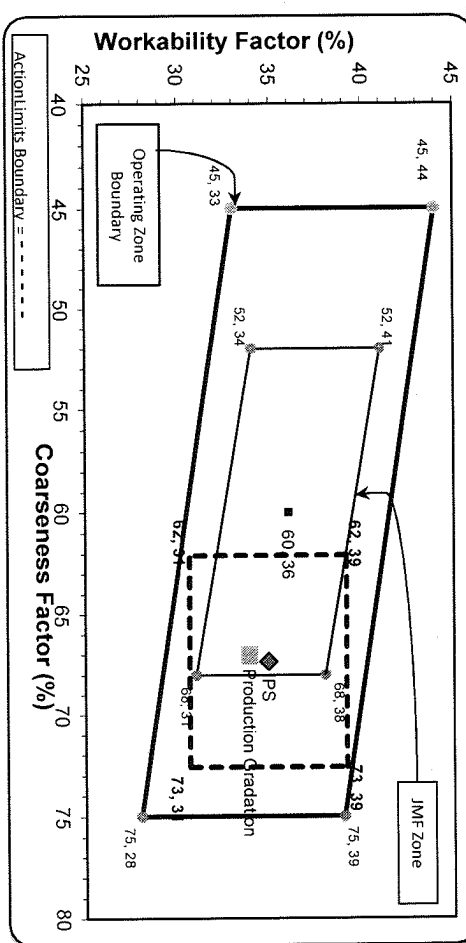
MDOT No.: _____

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
NNS	81-019	Pleasant Lake	1200	7.26	2.65	38.5
Total Wt			3120	18.70		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"	68.3	100.0	100.0	86.1	13.9	13.9
3/4"	34.3	100.0	100.0	71.2	28.8	28.8
1/2"	18.2	87.2	100.0	61.8	38.2	38.2
3/8"	11.6	68.8	100.0	55.7	44.3	44.3
#4	2.1	19.9	98.7	42.4	57.6	57.6
#8	1.4	5.6	83.9	33.9	66.1	66.1
#16	1.2	2.8	66.5	26.6	73.4	73.4
#30	1.1	2.3	47.4	19.1	80.9	80.9
#50	1.0	2.1	21.9	9.2	90.8	90.8
#100	0.9	1.9	6.3	3.2	96.8	96.8
LBW	0.8	1.6	1.5	1.2	98.8	98.8

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 67 Workability Factor: 34



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

*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.

Initial Production Sample (IPS)			
Coarseness Factor: 67		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"	85.5	14.5	14.5
3/4"	73.4	12.1	26.6
1/2"	61.0	12.4	39.0
3/8"	56.2	4.8	43.8
#4	43.1	13.1	56.9
#8	34.9	8.2	65.1
#16	29.4	5.5	70.6
#30	21.6	7.8	78.4
#50	8.1	13.4	91.9
#100	2.2	5.9	97.8
LBW	1.4	0.8	98.6

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S102-Superior Novi

Product 7919-COARSE AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 05/30/2023 - 06/05/2023

Report Date 06/10/2023

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	68.3	%	
	3/4" (19mm)	34.3	%	
	1/2" (12.5mm)	18.2	%	
	3/8" (9.5mm)	11.6	%	
	#4 (4.75mm)	2.1	%	
	#8 (2.36mm)	1.4	%	
	#16 (1.18mm)	1.2	%	
	#30 (.6mm)	1.1	%	
	#50 (.3mm)	1.0	%	
	#100 (.15mm)	0.9	%	
	#200 (75µm)	0.8	%	
	Wash Loss (#200/75µm)	0.8	%	0-2
	Total Moisture	2.09	%	



Plant S102-Superior Novi

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 05/30/2023 - 06/05/2023

Report Date 06/10/2023

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)	87.2	%	
	3/8" (9.5mm)	68.8	%	
	#4 (4.75mm)	19.9	%	
	#8 (2.36mm)	5.6	%	
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75µm)	1.6	%	0-3
	Total Moisture	2.46	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 05/28/2023 - 06/03/2023

Report Date 06/02/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.7	%	95-100
	#8 (2.36mm)	83.9	%	65-95
	#16 (1.18mm)	66.5	%	35-75
	#30 (.6mm)	47.4	%	20-55
	#50 (.3mm)	21.9	%	10-30
	#100 (.15mm)	6.3	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75µm)	1.5	%	0-3
	Total Moisture	3.52	%	