

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P11**

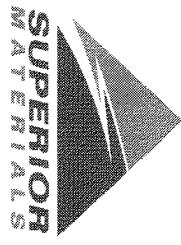
Sample Date: **10/9/23**

Dates Test Represents: **10/10/2023** through **10/16/2023**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MIDOT No.: _____



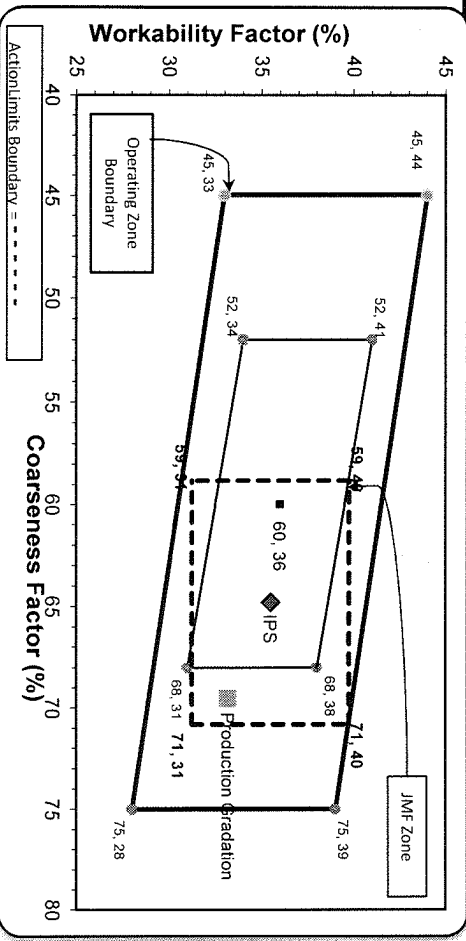
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	870	5.32	2.62	28.3
NNS	95-013	Smelter Bay	1200	7.26	2.65	39.1
Total Wt.			3070	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"	96.6	100.0	100.0	98.9	1.1	1.1
1"	27.8	100.0	100.0	76.5	22.4	23.5
3/4"	5.8	99.4	100.0	69.1	7.3	30.9
1/2"	2.4	72.4	100.0	60.4	8.8	39.6
3/8"	2.3	48.4	100.0	53.6	6.8	46.4
#4	2.2	9.5	95.4	40.7	12.9	59.3
#8	2.2	4.0	80.2	33.2	7.5	66.8
#16	2.1	3.2	64.8	26.9	6.3	73.1
#30	2.0	2.9	50.1	21.1	5.9	78.9
#50	1.9	2.8	21.7	9.9	11.2	90.1
#100	1.7	2.6	5.0	3.2	6.6	96.8
LBW	1.4	2.3	0.4	1.3	2.0	98.7

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **70** Workability Factor: **33**



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

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

*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.

PREPARED BY:
SM, LLC Technical Service

Approved By:



Plant S11-Superior Onsite Jefferson
 Product 7919-COARSE AGG P1M LS
 Period: 10/08/2023 - 10/14/2023

Name/Title Doug Storey / QC Technician
 Report Date 10/13/2023

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	96.6	%	
	1" (25mm)	27.8	%	
	3/4" (19mm)	5.8	%	
	1/2" (12.5mm)	2.4	%	
	3/8" (9.5mm)	2.3	%	
	#4 (4.75mm)	2.2	%	
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	0.29	%	



Plant S11-Superior Onsite Jefferson

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 10/08/2023 - 10/14/2023

Report Date 10/13/2023

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)	99.4	%	
	1/2" (12.5mm)	72.4	%	
	3/8" (9.5mm)	48.4	%	
	#4 (4.75mm)	9.5	%	
	#8 (2.36mm)	4.0	%	
	#16 (1.18mm)	3.2	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75um)	2.3	%	0-3
	Total Moisture	2.31	%	



Plant S11-Superior Onsite Jefferson

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 10/08/2023 - 10/14/2023

Report Date 10/13/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.4	%	95-100
	#8 (2.36mm)	80.2	%	65-95
	#16 (1.18mm)	64.8	%	35-75
	#30 (.6mm)	50.1	%	20-55
	#50 (.3mm)	21.7	%	10-30
	#100 (.15mm)	5.0	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.83		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	4.00	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

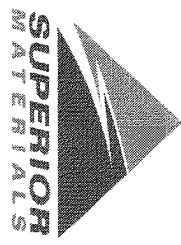
Sample Date: **10/9/23**

Dates Test Represents: **10/10/2023** through **10/16/2023**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____



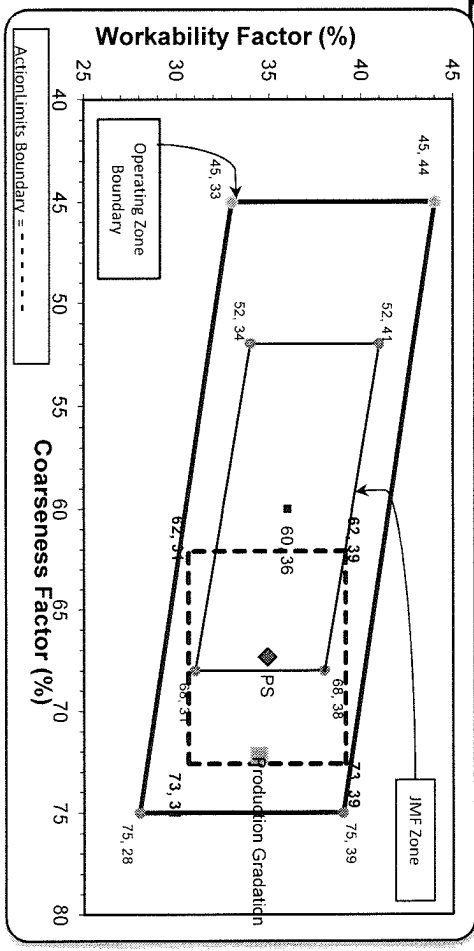
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
CA	58-003	Stonoco	1370	8.16	2.69	43.9	
IA	58-003	Stonoco	550	3.28	2.69	17.6	
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.5	
Total Wt						3120	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"	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"	46.2	100.0	100.0	76.4	23.6	23.6
1/2"	14.2	88.4	100.0	60.3	39.7	39.7
3/8"	5.3	67.6	100.0	52.7	47.3	47.3
#4	3.2	14.0	98.4	41.7	58.3	58.3
#8	1.5	4.3	85.9	34.5	65.5	65.5
#16	1.2	2.6	65.6	26.2	73.8	73.8
#30	1.1	2.2	45.7	18.4	81.6	81.6
#50	1.0	2.0	19.9	8.4	91.6	91.6
#100	1.0	1.8	3.5	2.1	97.9	97.9
LBW	0.8	1.7	0.3	0.8	99.2	99.2

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **72** Workability Factor: **34**



Initial Production Sample (PS)

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

Coarseness Factor: **67** 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.

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: 10/08/2023 - 10/14/2023

Report Date 10/13/2023

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	46.2	%	
	1/2" (12.5mm)	14.2	%	
	3/8" (9.5mm)	5.3	%	
	#4 (4.75mm)	3.2	%	
	#8 (2.36mm)	1.5	%	
	#16 (1.18mm)	1.2	%	
	#30 (.6mm)	1.1	%	
	#50 (.3mm)	1.0	%	
	#100 (.15mm)	1.0	%	
	#200 (75µm)	0.9	%	
	Wash Loss (#200/75um)	0.8	%	0-2
	Total Moisture	2.02	%	



Plant S102-Superior Novi
Product 7920-INTERMED AGG P1M LS
Period: 10/08/2023 - 10/14/2023

Name/Title Doug Storey / QC Technician
Report Date 10/13/2023

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)	88.4	%	
	3/8" (9.5mm)	67.6	%	
	#4 (4.75mm)	14.0	%	
	#8 (2.36mm)	4.3	%	
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	2.82	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 10/08/2023 - 10/14/2023

Report Date 10/13/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.4	%	95-100
	#8 (2.36mm)	85.9	%	65-95
	#16 (1.18mm)	65.6	%	35-75
	#30 (.6mm)	45.7	%	20-55
	#50 (.3mm)	19.9	%	10-30
	#100 (.15mm)	3.5	%	0-10
	#200 (75µm)	0.3	%	
	FM	2.81		2.6-3
	Wash Loss (#200/75um)	0.3	%	0-3
	Total Moisture	3.45	%	