

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P11**

Sample Date: **5/20/24**

Dates Test Represents: **5/21/2024**

through **5/27/2024**

Concrete Grade: **P1M 3500HP**

Contractor: _____

MDOT No.: _____



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

Verify this number is 100%

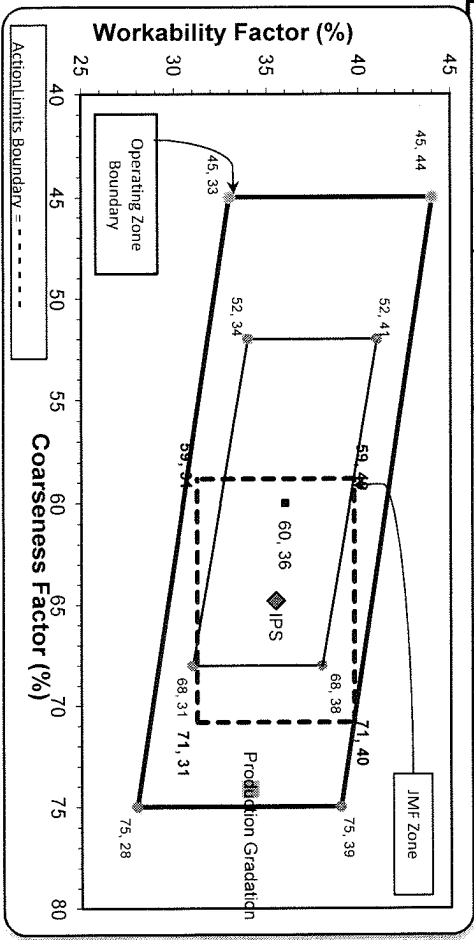
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	970	5.93	2.62	31.6
ZNS	95-013	Smeller Bay	1200	7.26	2.65	39.1
		Total Wt	3070	18.70		100.0

Sieve	CA	IA	ZNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	94.2	100.0	100.0	98.3	1.7	1.7
1"	34.1	100.0	100.0	80.7	17.6	19.3
3/4"	8.2	95.6	100.0	71.7	9.0	28.3
1/2"	1.6	66.3	100.0	60.5	11.2	39.5
3/8"	1.5	36.8	100.0	51.2	9.4	48.8
#4	1.4	4.4	96.1	39.4	11.8	60.6
#8	1.3	1.7	84.9	34.1	5.3	65.9
#16	1.3	1.3	69.9	28.1	6.0	71.9
#30	1.3	1.2	48.5	19.7	8.4	80.3
#50	1.3	1.2	23.0	9.8	10.0	90.2
#100	1.2	1.1	6.6	3.3	6.5	96.7
LBW	0.9	0.9	1.2	1.0	2.3	99.0

*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: **74** Workability Factor: **34**

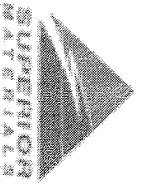


Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	65	36	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: _____



Daily Summary Report

Date Monday, May 20, 2024

Sample Id	Plant	Product	Specification	Sample Type	Time	2" (50mm)	1 1/2" (37.5mm)	1" (25mm)	3/4" (19mm)	1/2" (12.5mm)	3/8" (9.5mm)	#4 (4.75mm)	#8 (2.36mm)	#16 (1.18mm)	#30 (.6mm)	#50 (.3mm)	#100 (.15mm)	#200 (75µm)	Pan	FM	Wash Loss (#200/75µm)	Total Moisture
-674969575	Onsite Jefferson S11	7920 INTERMED AGG P1M LS	Intermed Agg P1M LS Target	QA	10:30	100.0	100.0	100.0	95.6	66.3	36.8	4.4	1.7	1.3	1.2	1.2	1.1	1.0	0.0	0.0	0.9	1.91
-1989635436		7919 COARSE AGG P1M LS	Coarse Agg P1M LS Target	QA	10:35	100.0	94.2	34.1	8.2	1.6	1.5	1.4	1.3	1.3	1.3	1.2	1.2	1.0	0.0	0.0	0.9	0.62
-1989665392		1067 26A Mod LS	26A Mod LS Spec	QA	10:40	100.0	100.0	100.0	100.0	94.2	82.7	21.4	6.3	4.0	3.4	3.0	2.7	2.4	0.0	0.0	2.3	2.38
-126886702		1051 6AA LS	6AA LS	QA	11:00	100.0	100.0	98.6	77.8	35.4	19.0	3.6	2.3	1.9	1.8	1.7	1.6	1.41	0.00	0.00	1.3	2.55
-1989667500		1022 2NS GR	2NS GR Spec	QA	11:10	100.0	100.0	96.1	84.9	69.9	48.5	23.0	6.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	2.71	4.07

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

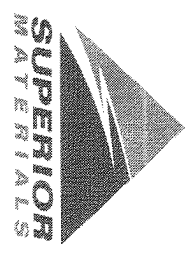
Sample Date: 5/20/24

Dates Test Represents: 5/21/2024 through 5/27/2024

Concrete Grade: P1M, 3500HP

Contractor: _____

MDOT No.: _____



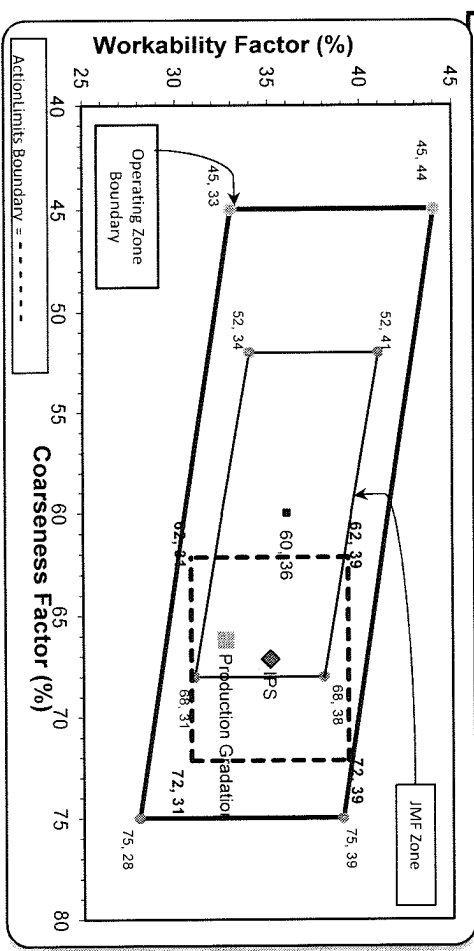
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	900	5.50	2.62	29.3
NNS	63-115	Ray Rd	1200	7.26	2.65	39.1
		Total Wt	3070			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"	95.6	100.0	100.0	98.6	1.4	1.4
1"	35.4	100.0	100.0	79.6	19.0	20.4
3/4"	10.6	97.9	100.0	71.1	8.5	28.9
1/2"	2.0	79.4	100.0	63.0	8.1	37.0
3/8"	1.3	54.4	100.0	55.4	7.6	44.6
#4	1.2	11.2	95.2	40.9	14.6	59.1
#8	1.2	3.4	80.1	32.7	8.2	67.3
#16	1.1	2.2	66.0	26.8	5.9	73.2
#30	1.1	1.9	50.6	20.7	6.1	79.3
#50	1.1	1.8	26.1	11.1	9.6	88.9
#100	1.0	1.6	6.0	3.1	7.9	96.9
LBW	0.7	1.3	1.0	1.0	2.1	99.0

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **66** Workability Factor: **33**



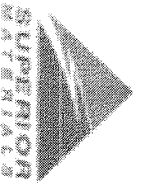
Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	67	35	0.0	0.0
1.5"			0.4	0.4
1"			15.7	16.1
3/4"			9.8	26.0
1/2"			10.3	36.3
3/8"			7.3	43.6
#4			13.4	57.0
#8			7.9	64.9
#16			6.1	71.0
#30			8.0	79.1
#50			12.8	91.9
#100			6.5	98.4
LBW			0.8	99.1

*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.

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Daily Summary Report

Date Thursday, May 23, 2024

Sample Id	-1989671037	-674898931	-1989671039
Plant	S12 Onsite Southfield		
Product	1022 ZNS GR	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	ZNS GR Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
Sample Type	QA	QA	QA
Time	11:06	11:06	11:06
2" (50mm)	100.0	100.0	100.0
1 1/2" (37.5mm)	95.6	100.0	100.0
1" (25mm)	35.4	100.0	100.0
3/4" (19mm)	10.6	97.9	79.4
1/2" (12.5mm)	2.0	79.4	54.4
3/8" (9.5mm)	1.3	11.2	11.2
#4 (4.75mm)	1.2	3.4	3.4
#8 (2.36mm)	1.2	2.2	2.2
#16 (1.18mm)	1.1	1.9	1.9
#30 (.6mm)	1.1	1.8	1.8
#50 (.3mm)	26.1	1.6	1.6
#100 (.15mm)	6.0	1.5	1.5
#200 (75µm)	1.4	0.8	0.8
Pan	0.0	0.0	0.0
FM	2.76		
Wash Loss (#200/75µm)	1.0	0.7	1.3
Total Moisture	4.97	0.23	1.78

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

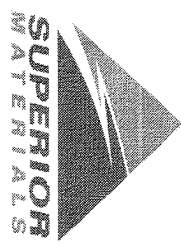
Sample Date: **5/20/24**

Dates Test Represents: **5/21/2024** through **5/27/2024**

Concrete Grade: **P1M 3500HP**

Contractor: _____

MDOT No.: _____



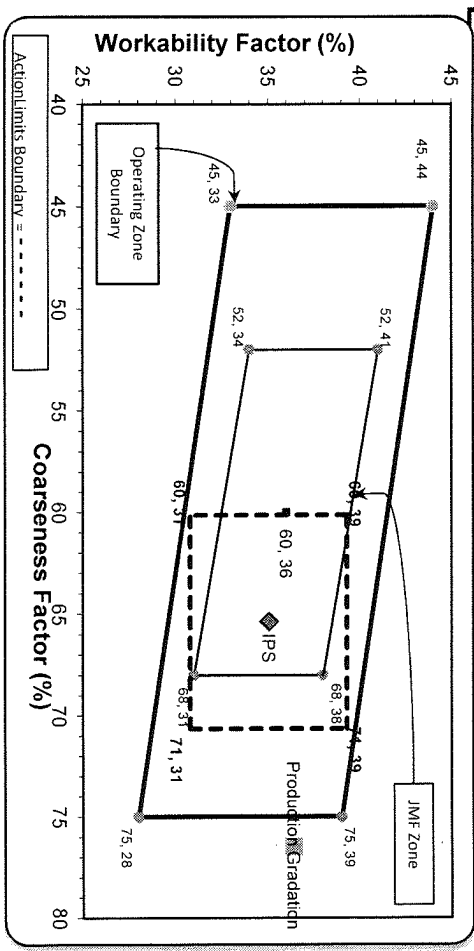
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	920	5.63	2.62	30.0
ZNS	44-051	Krake Willis Rd	1250	7.56	2.65	40.7
Total Wt:			3070			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"	97.0	100.0	100.0	99.1	0.9	0.9
1"	32.7	100.0	100.0	80.3	18.9	19.7
3/4"	8.3	95.3	100.0	71.7	8.6	28.3
1/2"	3.5	64.1	100.0	61.0	10.8	39.0
3/8"	3.1	32.5	100.0	51.4	9.6	48.6
#4	2.8	3.7	99.1	42.3	9.1	57.7
#8	2.7	2.5	85.6	36.4	5.9	63.6
#16	2.7	2.3	70.3	30.1	6.3	69.9
#30	2.6	2.3	52.3	22.7	7.4	77.3
#50	2.4	2.2	25.9	11.9	10.8	88.1
#100	2.1	2.0	6.7	3.9	8.0	96.1
LBW	1.7	1.6	1.3	1.5	2.4	98.5

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **76** Workability Factor: **36**



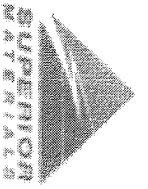
Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	65	35	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

*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: _____



Daily Summary Report

Date Monday, May 20, 2024

Sample Id	Plant	Product	Specification	Sample Type	Time
-674929913	S39 Superior Sterling Heights 7919	COARSE AGG P1M LS	Coarse Agg P-1M LS Target	QA	14:39
-674917792	S39 Superior Sterling Heights 7920	INTERMED AGG P1M LS	Intermed Agg P-1M LS Target	QA	14:40
-674922983	S39 Superior Sterling Heights 1022	2NS GR	2NS GR Spec	QA	14:41
2" (50mm)					100.0
1 1/2" (37.5mm)					97.0
1" (25mm)					32.7
3/4" (19mm)					8.3
1/2" (12.5mm)					3.5
3/8" (9.5mm)					3.1
#4 (4.75mm)					2.8
#8 (2.36mm)					2.7
#16 (1.18mm)					2.7
#30 (.6mm)					2.6
#50 (.3mm)					2.4
#100 (.15mm)					2.1
#200 (75µm)					1.9
Pan					0.0
FM					2.60
Wash Loss (#200/75µm)					1.3
Total Moisture					1.7
					0.68
					100.0
					100.0
					100.0
					64.1
					32.5
					3.7
					2.5
					2.3
					2.3
					2.2
					2.2
					6.7
					1.6
					0.0
					2.50
					1.3
					3.42

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: **5/20/24**

Dates Test Represents: **5/21/2024** through **5/27/2024**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	58-003	Stoneco	1470	8.76	2.69	47.1
IA	58-003	Stoneco	450	2.68	2.69	14.4
NNS	63-114	Highland	1200	7.26	2.65	38.5
Total Wt						18.70
						100.0

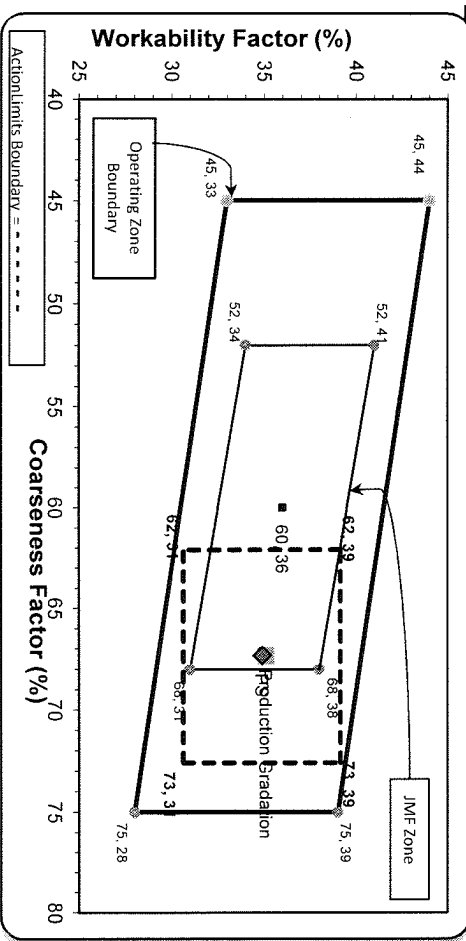
Verify this number is 100%

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"	75.3	100.0	100.0	88.4	11.6	11.6
3/4"	46.2	100.0	100.0	74.7	25.3	36.8
1/2"	23.3	95.3	100.0	63.2	36.8	36.8
3/8"	12.9	81.6	100.0	56.3	43.7	43.7
#4	4.5	20.6	98.6	43.0	57.0	57.0
#8	3.1	6.1	85.2	35.1	64.9	64.9
#16	2.5	3.5	68.8	28.1	71.9	71.9
#30	2.1	2.9	49.8	20.6	79.4	79.4
#50	1.9	2.6	19.6	8.8	91.2	91.2
#100	1.7	2.4	3.3	2.4	97.6	97.6
LBW	1.4	2.1	0.5	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: **67** Workability Factor: **35**



Initial Production Sample (IPS)

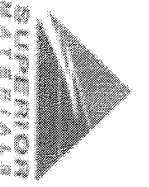
Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	67	35	0.0	0.0
1.5"			0.0	0.0
1"			14.5	14.5
3/4"			12.1	26.6
1/2"			12.4	39.0
3/8"			4.8	43.8
#4			13.1	56.9
#8			8.2	65.1
#16			5.5	70.6
#30			7.8	78.4
#50			13.4	91.9
#100			5.9	97.8
LBW			0.8	98.6



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

PREPARED BY:
 SM, LLC Technical Service

Approved By:



Daily Summary Report

Date Monday, May 20, 2024

Sample Id	-1989671042	-674935586	-1989671044	-674945080	-315824624
Plant	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi
Product	1022 ZNS GR	1051 6AA LS	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	ZNS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
Sample Type	QA	QA	QA	QA	QA
Time	11:03	11:03	11:03	15:38	15:38
2" (50mm)	100.0	100.0	100.0	100.0	100.0
1 1/2" (37.5mm)	100.0	100.0	100.0	100.0	100.0
1" (25mm)	100.0	100.0	100.0	75.3	100.0
3/4" (19mm)	77.8	77.8	100.0	46.2	100.0
1/2" (12.5mm)	31.6	31.6	100.0	23.3	95.3
3/8" (9.5mm)	14.4	14.4	87.1	12.9	81.6
#4 (4.75mm)	98.6	2.6	7.2	4.5	20.6
#8 (2.36mm)	85.2	1.5	2.3	3.1	6.1
#16 (1.18mm)	68.8	1.3	1.8	2.5	3.5
#30 (.6mm)	49.8	1.2	1.6	2.1	2.9
#50 (.3mm)	19.6	1.2	1.5	1.9	2.6
#100 (.15mm)	3.3	1.1	1.5	1.7	2.4
#200 (75µm)	0.9	1.03	1.4	1.5	2.3
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.75				
Wash Loss (#200/75µm)	0.5	0.9	1.3	1.4	2.1
Total Moisture	3.99	2.51	3.38	2.02	3.38