

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **12**

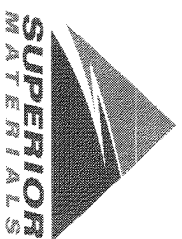
Sample Date: **4/8/24**

Dates Test Represents: **4/9/2024** through **4/15/2024**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____



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

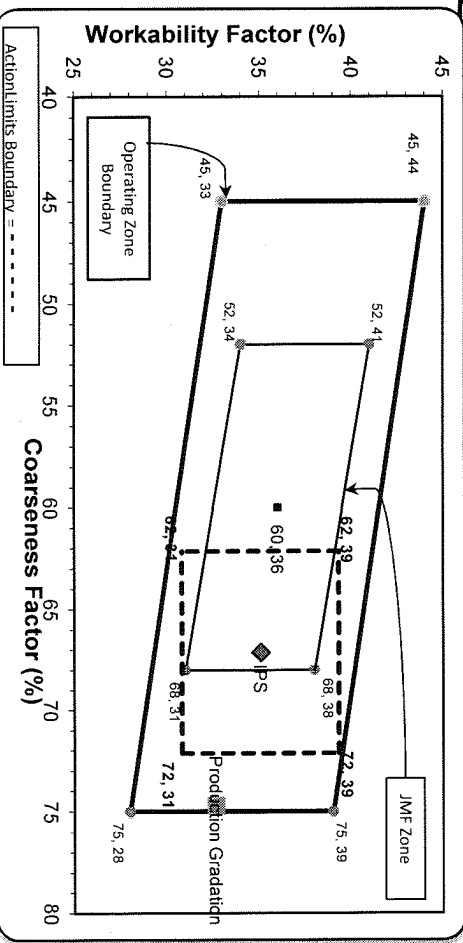
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	1070	6.54	2.62	34.9
IA	71-47	Presque Isle	800	4.89	2.62	26.1
NNS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt:			3070	18.70		100.0

Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	94.6	100.0	100.0	98.1	1.9	1.9
1"	39.3	100.0	100.0	78.8	19.3	21.2
3/4"	10.0	97.9	100.0	68.1	10.8	31.9
1/2"	2.7	66.1	100.0	57.3	10.8	42.7
3/8"	2.0	38.0	100.0	49.7	7.6	50.3
#4	1.8	4.9	96.6	39.7	10.0	60.3
#8	1.7	2.0	80.7	32.7	7.0	67.3
#16	1.7	1.6	65.1	26.5	6.2	73.5
#30	1.6	1.5	49.8	20.4	6.0	79.6
#50	1.5	1.4	26.4	11.2	9.2	88.8
#100	1.4	1.3	5.9	3.1	8.1	96.9
LBW	1.0	1.1	1.1	1.1	2.1	98.9

*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: **75** Workability Factor: **33**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	67	35	100.0	0.0	0.0
1.5"			99.6	0.4	0.4
1"			83.9	15.7	16.1
3/4"			74.0	9.8	26.0
1/2"			63.7	10.3	36.3
3/8"			56.4	7.3	43.6
#4			43.0	13.4	57.0
#8			35.1	7.9	64.9
#16			29.0	6.1	71.0
#30			20.9	8.0	79.1
#50			8.1	12.8	91.9
#100			1.6	6.5	98.4
LBW			0.9	0.8	99.1

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S12-Onsite Southfield

Product 7919-COARSE AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	94.6	%	
	1" (25mm)	39.3	%	
	3/4" (19mm)	10.0	%	
	1/2" (12.5mm)	2.7	%	
	3/8" (9.5mm)	2.0	%	
	#4 (4.75mm)	1.8	%	
	#8 (2.36mm)	1.7	%	
	#16 (1.18mm)	1.7	%	
	#30 (.6mm)	1.6	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.1	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	0.11	%	



Plant S12-Onsite Southfield

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

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)	97.9	%	
	1/2" (12.5mm)	66.1	%	
	3/8" (9.5mm)	38.0	%	
	#4 (4.75mm)	4.9	%	
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	0.90	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.6	%	95-100
	#8 (2.36mm)	80.7	%	65-95
	#16 (1.18mm)	65.1	%	35-75
	#30 (.6mm)	49.8	%	20-55
	#50 (.3mm)	26.4	%	10-30
	#100 (.15mm)	5.9	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.76		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.01	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: **4/8/24**

Dates Test Represents: **4/9/2024** through **4/15/2024**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____



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

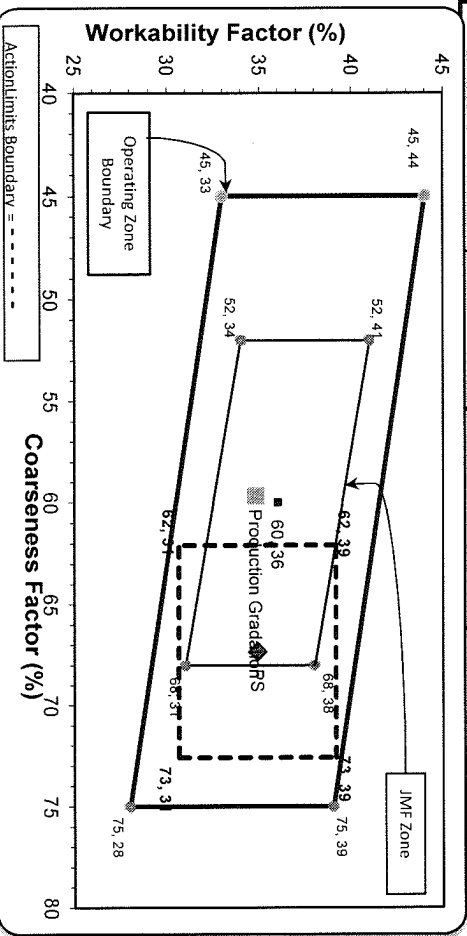
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	58-003	Stoneco	1370	8.16	2.69	43.9
IA	58-003	Stoneco	550	3.28	2.69	17.6
NNS	63-114	Highland	1200	7.26	2.65	38.5
Total Wt						18.70
Total Wt						100.0

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"	78.5	100.0	100.0	90.6	9.4	9.4
3/4"	53.3	100.0	100.0	79.5	11.1	20.5
1/2"	30.9	92.2	100.0	68.3	11.2	31.7
3/8"	21.4	75.1	100.0	61.1	7.2	38.9
#4	4.4	17.8	99.0	43.1	18.0	56.9
#8	1.9	7.0	85.1	34.8	8.3	65.2
#16	1.5	4.3	68.0	27.6	7.2	72.4
#30	1.4	3.5	49.5	20.3	7.3	79.7
#50	1.3	3.2	21.7	9.5	10.8	90.5
#100	1.3	3.0	4.8	2.9	6.5	97.1
LBW	1.2	2.8	1.0	1.4	1.5	98.6

*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)



Sieve	Workability Factor: 60	Workability Factor: 35
2"	100.0	100.0
1.5"	100.0	100.0
1"	78.5	100.0
3/4"	53.3	100.0
1/2"	30.9	92.2
3/8"	21.4	75.1
#4	4.4	17.8
#8	1.9	7.0
#16	1.5	4.3
#30	1.4	3.5
#50	1.3	3.2
#100	1.3	3.0
LBW	1.2	2.8

Sieve	Workability Factor: 67	Workability Factor: 35
2"	100.0	100.0
1.5"	100.0	100.0
1"	85.5	100.0
3/4"	73.4	100.0
1/2"	61.0	100.0
3/8"	56.2	100.0
#4	43.1	100.0
#8	34.9	100.0
#16	29.4	100.0
#30	21.6	100.0
#50	8.1	100.0
#100	2.2	100.0
LBW	1.4	100.0

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: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	78.5	%	
	3/4" (19mm)	53.3	%	
	1/2" (12.5mm)	30.9	%	
	3/8" (9.5mm)	21.4	%	
	#4 (4.75mm)	4.4	%	
	#8 (2.36mm)	1.9	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.3	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	2.27	%	



Plant S102-Superior Novi

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 04/07/2024 - 04/13/2024

Report Date 04/13/2024

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)	92.2	%	
	3/8" (9.5mm)	75.1	%	
	#4 (4.75mm)	17.8	%	
	#8 (2.36mm)	7.0	%	
	#16 (1.18mm)	4.3	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.2	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	3.0	%	
	Wash Loss (#200/75um)	2.8	%	0-3
	Total Moisture	3.94	%	



Plant S102-Superior Novi
Product 1022-2NS GR
Period: 04/07/2024 - 04/13/2024

Name/Title Doug Storey / QC Technician
Report Date 04/13/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.0	%	95-100
	#8 (2.36mm)	85.1	%	65-95
	#16 (1.18mm)	68.0	%	35-75
	#30 (.6mm)	49.5	%	20-55
	#50 (.3mm)	21.7	%	10-30
	#100 (.15mm)	4.8	%	0-10
	#200 (75µm)	1.1	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	2.48	%	