

Aggregate Optimization Chart

PLANT #: 12

Sample Date: 3/25/24

Dates Test Represents: 3/26/2024 through 4/1/2024

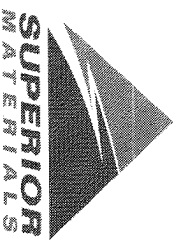
Concrete Grade: P1M, 3500HP

Contractor: _____

MDOT No.: _____

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
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		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"	96.6	100.0	100.0	98.8	1.2	1.2
1"	27.8	100.0	100.0	74.8	24.0	25.2
3/4"	9.0	95.8	100.0	67.2	7.6	32.8
1/2"	2.9	69.3	100.0	58.2	9.0	41.8
3/8"	2.4	41.1	100.0	50.6	7.5	49.4
#4	2.2	6.2	99.3	41.2	9.4	58.8
#8	2.1	2.4	85.9	34.9	6.3	65.1
#16	2.1	2.1	68.6	28.1	6.8	71.9
#30	2.0	2.1	48.9	20.4	7.7	79.6
#50	1.9	2.0	19.7	8.9	11.5	91.1
#100	1.7	1.9	4.0	2.7	6.2	97.3
LBW	1.3	1.6	0.7	1.1	1.5	98.9

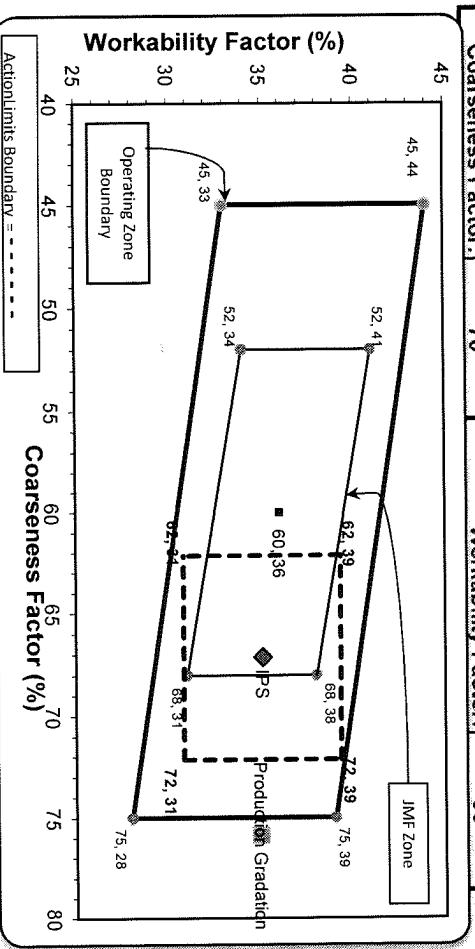


Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

*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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 76 Workability Factor: 35



Initial Production Sample (IPS)

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	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

Coarseness Factor: 67 Workability Factor: 35

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S12-Onsite Southfield

Product 7919-COARSE AGG P1M LS

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

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)	9.0	%	
	1/2" (12.5mm)	2.9	%	
	3/8" (9.5mm)	2.4	%	
	#4 (4.75mm)	2.2	%	
	#8 (2.36mm)	2.1	%	
	#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)	1.3	%	0-2
	Total Moisture	1.92	%	



Plant S12-Onsite Southfield

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 03/24/2024 - 03/30/2024

Report Date 03/29/2024

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)	95.8	%	
	1/2" (12.5mm)	69.3	%	
	3/8" (9.5mm)	41.1	%	
	#4 (4.75mm)	6.2	%	
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.77	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 03/24/2024 - 03/30/2024

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.3	%	95-100
	#8 (2.36mm)	85.9	%	65-95
	#16 (1.18mm)	68.6	%	35-75
	#30 (.6mm)	48.9	%	20-55
	#50 (.3mm)	19.7	%	10-30
	#100 (.15mm)	4.0	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	2.37	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

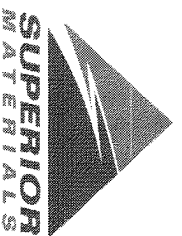
Sample Date: **3/25/24**

Dates Test Represents: **3/26/2024** through **4/1/2024**

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	58-003	Stoneco	1370	8.16	2.69	43.9
IA	58-003	Stoneco	550	3.28	2.69	17.6
N2S	63-114	Highland	1200	7.26	2.65	38.5
Total Wt:						3120
						100.0

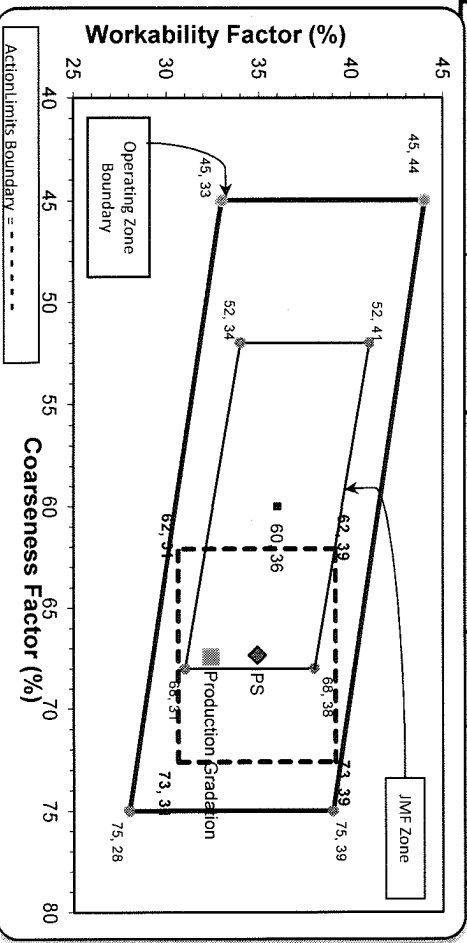
Sieve	CA	IA	N2S	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	54.5	100.0	100.0	80.0	20.0	20.0
3/4"	18.3	100.0	100.0	64.1	15.9	35.9
1/2"	8.3	93.2	100.0	58.5	5.6	41.5
3/8"	5.1	77.9	100.0	54.4	4.1	45.6
#4	2.1	21.2	96.1	41.6	12.8	58.4
#8	2.0	8.3	78.2	32.4	9.2	67.6
#16	1.9	4.8	62.2	25.6	6.8	74.4
#30	1.9	3.8	47.3	19.7	5.9	80.3
#50	1.9	3.4	24.2	10.7	9.0	89.3
#100	1.8	3.2	5.2	3.4	7.4	96.6
LBW	1.6	2.8	0.7	1.5	1.9	98.5

Verify this number is 100%

*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: **32**



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

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: 03/24/2024 - 03/30/2024

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	54.5	%	
	3/4" (19mm)	18.3	%	
	1/2" (12.5mm)	8.3	%	
	3/8" (9.5mm)	5.1	%	
	#4 (4.75mm)	2.1	%	
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75µm)	1.6	%	0-2
	Total Moisture	0.69	%	



Plant S102-Superior Novi

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 03/24/2024 - 03/30/2024

Report Date 03/29/2024

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)	93.2	%	
	3/8" (9.5mm)	77.9	%	
	#4 (4.75mm)	21.2	%	
	#8 (2.36mm)	8.3	%	
	#16 (1.18mm)	4.8	%	
	#30 (.6mm)	3.8	%	
	#50 (.3mm)	3.4	%	
	#100 (.15mm)	3.2	%	
	#200 (75µm)	3.0	%	
	Wash Loss (#200/75um)	2.8	%	0-3
	Total Moisture	3.36	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 03/24/2024 - 03/30/2024

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.1	%	95-100
	#8 (2.36mm)	78.2	%	65-95
	#16 (1.18mm)	62.2	%	35-75
	#30 (.6mm)	47.3	%	20-55
	#50 (.3mm)	24.2	%	10-30
	#100 (.15mm)	5.2	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.87		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	4.66	%	