

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **12**

Sample Date: **4/15/24**

Dates Test Represents: **4/16/2024** through **4/22/2024**

Concrete Grade: **DM, 4500HP**

Contractor: _____

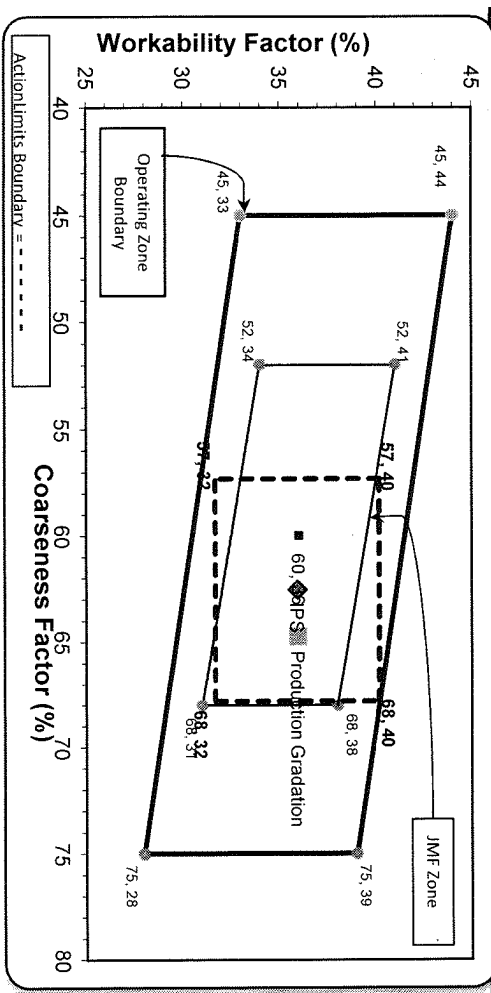
MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
GAA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
ZNS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt:			2905	17.69		100.0

Sieve	6AA	26A	ZNS	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"	96.2	100.0	100.0	98.1	1.9	1.9
3/4"	73.4	100.0	100.0	86.7	11.4	13.3
1/2"	30.9	93.7	100.0	64.8	21.9	35.2
3/8"	17.5	81.8	100.0	56.9	7.9	43.1
#4	2.8	15.6	96.8	41.4	15.6	58.6
#8	2.3	3.1	80.8	33.5	7.9	66.5
#16	2.2	1.9	64.2	26.7	6.7	73.3
#30	2.0	1.7	47.4	19.9	6.8	80.1
#50	1.9	1.5	21.9	9.8	10.2	90.2
#100	1.7	1.5	3.2	2.3	7.5	97.7
LBW	1.3	1.3	0.5	1.0	1.3	99.0

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **65** Workability Factor: **33** Adjusted WF: **36.0**

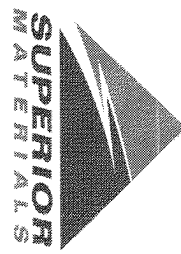


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Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.0	10.3	11.0
1/2"	70.3	18.7	29.7
3/8"	59.9	10.4	40.1
#4	41.9	18.0	58.1
#8	35.9	6.0	64.1
#16	27.8	8.2	72.2
#30	18.9	8.8	81.1
#50	6.3	12.6	93.7
#100	1.7	4.6	98.3
LBW	1.0	0.7	99.0

Initial Production Sample (IPS) Coarseness Factor: **63** 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 4% for the 3/4" sieve when a 1.5" max size (nom. Max. 1.0") aggregate is used.



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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S12-Onsite Southfield

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/14/2024 - 04/20/2024

Report Date 04/19/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.2	%	95-100
	3/4" (19mm)	73.4	%	
	1/2" (12.5mm)	30.9	%	30-60
	3/8" (9.5mm)	17.5	%	
	#4 (4.75mm)	2.8	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.53	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	1.08	%	



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/14/2024 - 04/20/2024

Report Date 04/19/2024

Procedure	Sieve/Test	Result	Unit	26A LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	93.7	%	95-100
	3/8" (9.5mm)	81.8	%	60-95
	#4 (4.75mm)	15.6	%	5-30
	#8 (2.36mm)	3.1	%	0-12
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	1.62	%	



Plant S12-Onsite Southfield

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/14/2024 - 04/20/2024

Report Date 04/19/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.8	%	95-100
	#8 (2.36mm)	80.8	%	65-95
	#16 (1.18mm)	64.2	%	35-75
	#30 (.6mm)	47.4	%	20-55
	#50 (.3mm)	21.9	%	10-30
	#100 (.15mm)	3.2	%	0-10
	#200 (75µm)	0.5	%	
	FM	2.86		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	3.15	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

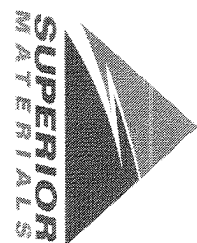
Sample Date: **4/15/24**

Dates Test Represents: **4/16/2024** through **4/22/2024**

Concrete Grade: **DM, 4500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
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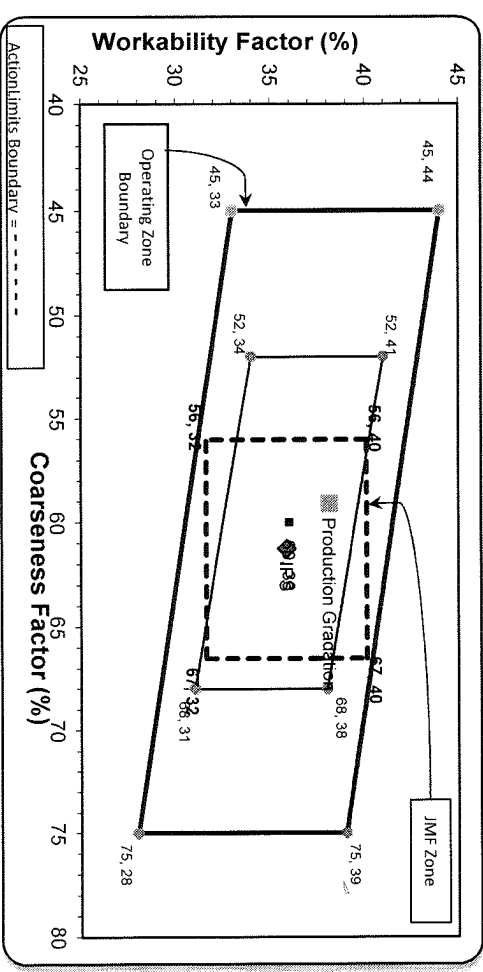
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stonoco	1350	8.04	2.69	45.8
26A	58-003	Stonoco	450	2.68	2.69	15.3
2NS	63-114	Highland	1150	6.95	2.65	39.0
			Total Wt	2950		100.0

Sieve	6AA	26A	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"	81.4	100.0	100.0	91.5	8.5	8.5
1/2"	43.8	96.5	100.0	73.7	17.7	26.3
3/8"	22.9	81.9	100.0	62.0	11.8	38.0
#4	4.5	20.6	99.4	44.0	18.0	56.0
#8	2.4	7.4	85.7	35.6	8.3	64.4
#16	2.1	4.4	66.6	27.6	8.0	72.4
#30	2.0	3.6	46.4	19.6	8.0	80.4
#50	1.8	3.3	18.8	8.7	10.9	91.3
#100	1.7	3.1	3.8	2.7	5.9	97.3
LBW	1.4	3.0	0.9	1.4	1.3	98.6

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **59** Workability Factor: **36** Adjusted WF: **38.1**

Initial Production Sample (IPS) Coarseness Factor: **61** Workability Factor: **36**



Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

*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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S102-Superior Novi

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 04/14/2024 - 04/20/2024

Report Date 04/18/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	81.4	%	
	1/2" (12.5mm)	43.8	%	30-60
	3/8" (9.5mm)	22.9	%	
	#4 (4.75mm)	4.5	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.62	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	3.29	%	



Plant S102-Superior Novi

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 04/14/2024 - 04/20/2024

Report Date 04/18/2024

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	96.5	%	95-100
	3/8" (9.5mm)	81.9	%	60-95
	#4 (4.75mm)	20.6	%	5-30
	#8 (2.36mm)	7.4	%	0-12
	#16 (1.18mm)	4.4	%	
	#30 (.6mm)	3.6	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	3.1	%	
	#200 (75µm)	3.0	%	
	Wash Loss (#200/75um)	3.0	%	0-3
	Total Moisture	4.52	%	



Plant S102-Superior Novi

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 04/14/2024 - 04/20/2024

Report Date 04/18/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.4	%	95-100
	#8 (2.36mm)	85.7	%	65-95
	#16 (1.18mm)	66.6	%	35-75
	#30 (.6mm)	46.4	%	20-55
	#50 (.3mm)	18.8	%	10-30
	#100 (.15mm)	3.8	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.79		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	4.25	%	