Aggregate Optimization Chart

Production Gradation Report

PLANT #: p11

Sample Date: 5/6/24

Concrete Grade: **S2M, 3500HP**

Contractor: _____

Dates Test Represents: 5/7/2024 through 5/13/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1470	8.99	2.62	48.2
26A	71-47	Presque Isle	350	2.14	2.62	11.5
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

<----- Verify this number is 100%

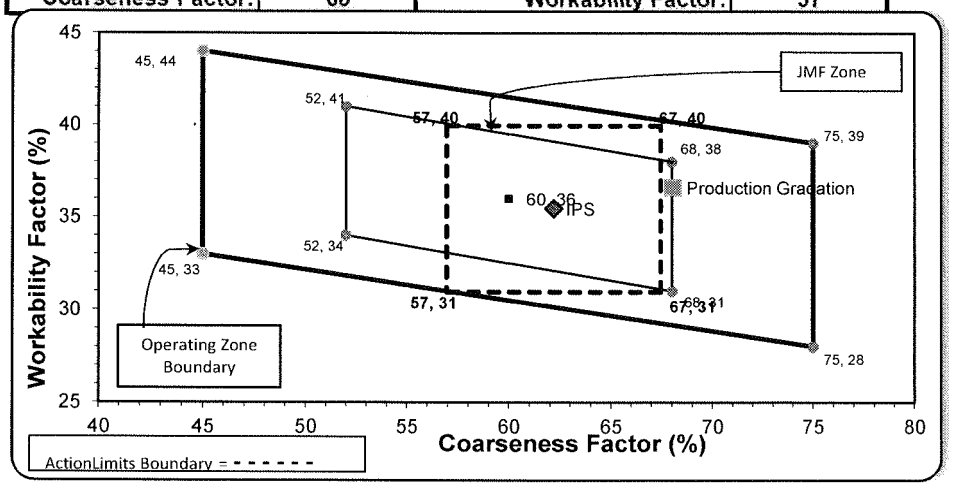
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	94.6	100.0	100.0	97.4	2.6	2.6
3/4"	65.2	100.0	100.0	83.2	14.2	16.8
1/2"	28.3	95.7	100.0	64.9	18.3	35.1
3/8"	14.6	82.8	100.0	56.9	8.1	43.1
#4	3.6	21.9	96.4	43.1	13.7	56.9
#8	2.8	6.1	85.7	36.6	6.5	63.4
#16	2.6	3.9	70.9	30.3	6.3	69.7
#30	2.5	3.3	50.8	22.1	8.2	77.9
#50	2.4	3.0	24.1	11.2	10.9	88.8
#100	2.3	2.8	7.3	4.4	6.8	95.6
LBW	1.9	2.5	1.4	1.8	2.6	98.2

*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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	68	Workability Factor:	37



Intial Production Sample (IPS)

Coarseness Factor:	62
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

PREPARED BY:
SM, LLC Technical Service

Approved By:

Plant S11-Onsite Jefferson

Product 1051-6AA LS

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	94.6	%	95-100
	3/4" (19mm)	65.2	%	
	1/2" (12.5mm)	28.3	%	30-60
	3/8" (9.5mm)	14.6	%	
	#4 (4.75mm)	3.6	%	0-8
	#8 (2.36mm)	2.8	%	
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.3	%	
	#200 (75µm)	2.12	%	
	Wash Loss (#200/75um)	1.9	%	0-2
	Total Moisture	1.88	%	

SUPERIOR MATERIALS

Plant S11-Onsite Jefferson

Product 1067-26A Mod LS

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

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)	95.7	%	95-100
	3/8" (9.5mm)	82.8	%	60-95
	#4 (4.75mm)	21.9	%	5-30
	#8 (2.36mm)	6.1	%	0-12
	#16 (1.18mm)	3.9	%	
	#30 (.6mm)	3.3	%	
	#50 (.3mm)	3.0	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.6	%	
	Wash Loss (#200/75um)	2.5	%	0-3
	Total Moisture	2.41	%	

SUPERIOR MATERIALS

Plant S11-Onsite Jefferson

Product 1022-2NS GR

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.4	%	95-100
	#8 (2.36mm)	85.7	%	65-95
	#16 (1.18mm)	70.9	%	35-75
	#30 (.6mm)	50.8	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	7.3	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.65		2.6-3
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	4.70	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-103

Contractor: _____

Sample Date: 5/6/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 5/7/2024 through 5/13/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	48.4
26A	58-003	Stoneco	400	2.38	2.69	12.9
2NS	63-114	Highland	1200	7.26	2.65	38.7
		Total Wt	**3100**	**18.58**		100.0

<----- Verify this number is 100%

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"	99.2	100.0	100.0	99.6	0.4	0.4
3/4"	89.3	100.0	100.0	94.8	4.8	5.2
1/2"	46.8	99.9	100.0	74.2	20.6	25.8
3/8"	22.3	92.0	100.0	61.4	12.9	38.6
#4	2.9	12.2	98.5	41.1	20.3	58.9
#8	1.5	3.4	83.9	33.6	7.5	66.4
#16	1.3	2.6	67.5	27.1	6.5	72.9
#30	1.1	2.3	50.3	20.3	6.8	79.7
#50	1.1	2.1	21.3	9.0	11.3	91.0
#100	1.0	2.0	3.4	2.1	7.0	97.9
LBW	0.8	2.0	0.9	1.0	1.1	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.

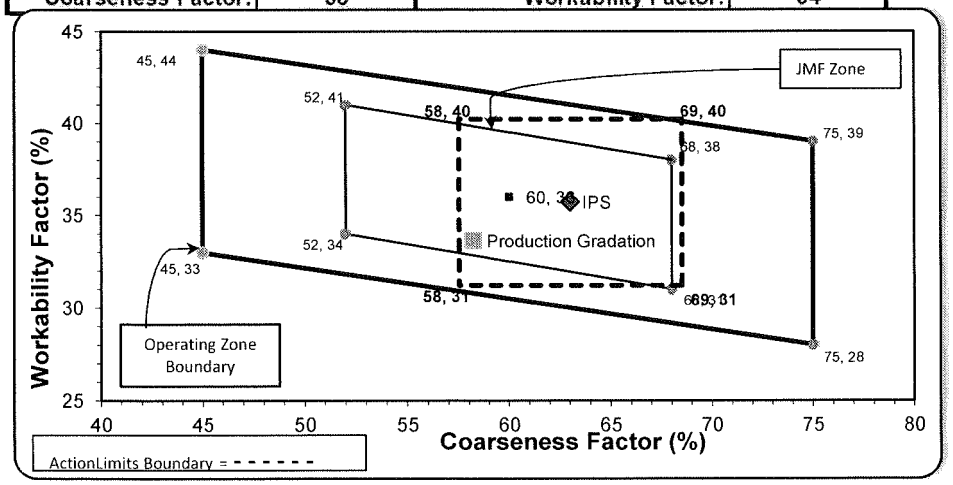
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.

*% Retained must be at least 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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	58	Workability Factor:	34



Intial Production Sample (IPS)

Coarseness Factor:	63
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"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:
SM, LLC Technical Service

Approved BY:

Plant S103-Superior Brighton

Product 1051-6AA LS

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.2	%	95-100
	3/4" (19mm)	89.3	%	
	1/2" (12.5mm)	46.8	%	30-60
	3/8" (9.5mm)	22.3	%	
	#4 (4.75mm)	2.9	%	0-8
	#8 (2.36mm)	1.5	%	
	#16 (1.18mm)	1.3	%	
	#30 (.6mm)	1.1	%	
	#50 (.3mm)	1.1	%	
	#100 (.15mm)	1.0	%	
	#200 (75µm)	0.97	%	
	Wash Loss (#200/75um)	0.8	%	0-2
	Total Moisture	3.44	%	

Plant S103-Superior Brighton

Product 1067-26A Mod LS

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

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)	99.9	%	95-100
	3/8" (9.5mm)	92.0	%	60-95
	#4 (4.75mm)	12.2	%	5-30
	#8 (2.36mm)	3.4	%	0-12
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	2.0	%	
	Wash Loss (#200/75um)	2.0	%	0-3
	Total Moisture	3.53	%	

Plant S103-Superior Brighton

Product 1022-2NS GR

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.5	%	95-100
	#8 (2.36mm)	83.9	%	65-95
	#16 (1.18mm)	67.5	%	35-75
	#30 (.6mm)	50.3	%	20-55
	#50 (.3mm)	21.3	%	10-30
	#100 (.15mm)	3.4	%	0-10
	#200 (75µm)	1.1	%	
	FM	2.75		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	3.55	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-02

Contractor: _____

Sample Date: 5/6/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 5/7/2024 through 5/13/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	270	1.65	2.62	8.9
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

<----- Verify this number is 100%

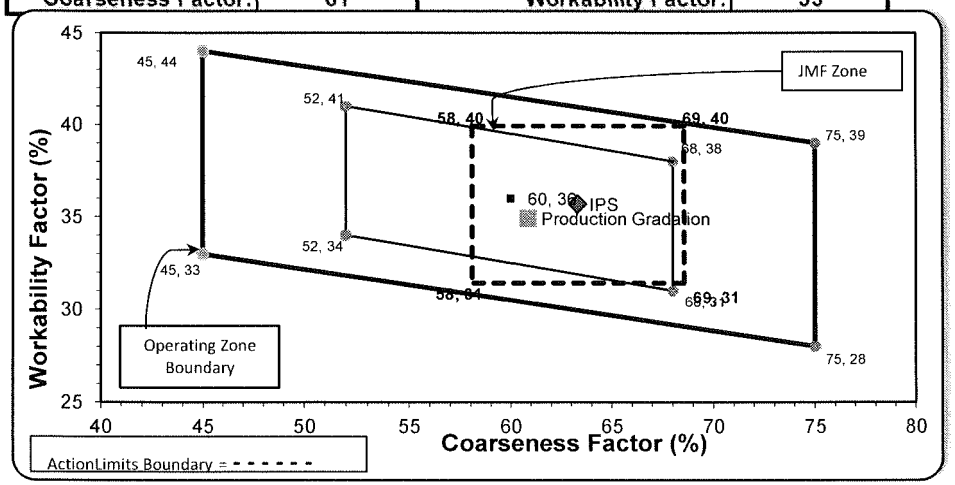
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.0	100.0	100.0	99.0	1.0	1.0
3/4"	81.5	100.0	100.0	90.6	8.4	9.4
1/2"	40.2	93.4	100.0	69.0	21.6	31.0
3/8"	25.3	81.5	100.0	60.4	8.6	39.6
#4	6.4	18.6	95.9	43.6	16.8	56.4
#8	3.9	5.0	80.6	34.9	8.6	65.1
#16	3.4	3.0	65.2	28.3	6.6	71.7
#30	3.2	2.6	48.7	21.5	6.8	78.5
#50	3.1	2.4	22.4	10.8	10.7	89.2
#100	2.9	2.1	4.1	3.3	7.5	96.7
LBW	2.5	1.7	0.4	1.6	1.7	98.4

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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate SupplierGradations

Coarseness Factor:	61	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	63
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"	100.0	0.0	0.0
3/4"	95.6	4.4	4.4
1/2"	73.1	22.6	26.9
3/8"	59.3	13.8	40.7
#4	42.8	16.5	57.2
#8	35.7	7.1	64.3
#16	28.9	6.8	71.1
#30	20.7	8.2	79.3
#50	9.9	10.8	90.1
#100	2.1	7.8	97.9
LBW	0.9	1.2	99.1

PREPARED BY:
SM, LLC Technical Service

Approved By:

SUPERIOR MATERIALS

Plant S2-Hoover

Product 1051-6AA LS

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.0	%	95-100
	3/4" (19mm)	81.5	%	
	1/2" (12.5mm)	40.2	%	30-60
	3/8" (9.5mm)	25.3	%	
	#4 (4.75mm)	6.4	%	0-8
	#8 (2.36mm)	3.9	%	
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	3.1	%	
	#100 (.15mm)	2.9	%	
	#200 (75µm)	2.69	%	
	Wash Loss (#200/75um)	2.5	%	0-2
	Total Moisture	3.70	%	

Plant S2-Hoover

Product 1067-26A Mod LS

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

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)	93.4	%	95-100
	3/8" (9.5mm)	81.5	%	60-95
	#4 (4.75mm)	18.6	%	5-30
	#8 (2.36mm)	5.0	%	0-12
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.6	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	2.50	%	

SUPERIOR MATERIALS

Plant S2-Hoover

Product 1022-2NS GR

Period: 05/05/2024 - 05/11/2024

Name/Title Doug Storey / QC Technician

Report Date 05/10/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.9	%	95-100
	#8 (2.36mm)	80.6	%	65-95
	#16 (1.18mm)	65.2	%	35-75
	#30 (.6mm)	48.7	%	20-55
	#50 (.3mm)	22.4	%	10-30
	#100 (.15mm)	4.1	%	0-10
	#200 (75µm)	0.5	%	
	FM	2.83		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	4.44	%	