Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 6/26/23

Concrete Grade: **S2M, 3500HP**

Contractor: _____

Dates Test Represents: 6/27/2023 through 7/3/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1600	9.79	2.62	52.5
26A	71-47	Presque Isle	220	1.35	2.62	7.2
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

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

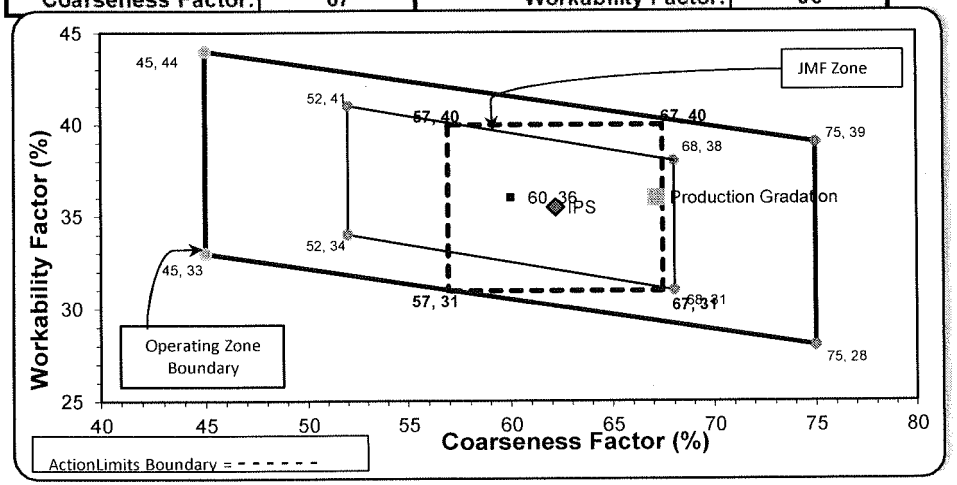
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	79.5	100.0	100.0	89.2	10.8	10.8
1/2"	35.5	95.5	100.0	65.8	23.4	34.2
3/8"	19.8	87.6	100.0	57.0	8.8	43.0
#4	4.1	23.7	96.6	42.8	14.2	57.2
#8	2.3	5.3	85.3	36.0	6.8	64.0
#16	2.1	2.5	70.4	29.7	6.3	70.3
#30	2.0	2.1	50.3	21.5	8.2	78.5
#50	1.9	1.9	24.9	11.2	10.3	88.8
#100	1.7	1.7	7.5	4.0	7.1	96.0
LBW	1.2	1.5	1.3	1.3	2.8	98.7

*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.

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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	67	Workability Factor:	36



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:

Edw. C. Levy Co.

JMT
8911 W. Jefferson
Detroit, 48209
(313) 429-2429

Plant 958-JMT

Product 1054-6AA LS PI

Period: 06/25/2023 - 07/01/2023

Name/Title Doug Storey / QC Technician

Report Date 06/30/2023

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	79.5	%	
	1/2" (12.5mm)	35.5	%	30-60
	3/8" (9.5mm)	19.8	%	
	#4 (4.75mm)	4.1	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	2.9	%	

Edw. C. Levy Co.

JMT
8911 W. Jefferson
Detroit, 48209
(313) 429-2429

Plant 958-JMT

Product 1067-26A Mod LS

Period: 06/25/2023 - 07/01/2023

Name/Title Doug Storey / QC Technician

Report Date 06/30/2023

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)	95.5	%	95-100
	3/8" (9.5mm)	87.6	%	60-95
	#4 (4.75mm)	23.7	%	5-30
	#8 (2.36mm)	5.3	%	0-12
	#16 (1.18mm)	2.5	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.3	%	

Edw. C. Levy Co.

JMT
8911 W. Jefferson
Detroit, 48209
(313) 429-2429

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 06/25/2023 - 07/01/2023

Name/Title Doug Storey / QC Technician

Report Date 06/30/2023

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)	85.3	%	65-95
	#16 (1.18mm)	70.4	%	35-75
	#30 (.6mm)	50.3	%	20-55
	#50 (.3mm)	24.9	%	10-30
	#100 (.15mm)	7.5	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.65		2.6-3
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	5.0	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Sample Date: 6/26/23

Concrete Grade: **S2M, 3500HP**

Contractor: _____

Dates Test Represents: 6/27/2023 through 7/3/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1650	9.83	2.69	53.2
26A	58-003	Stoneco	250	1.49	2.69	8.1
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
		Total Wt	**3100**	**18.58**		100.0

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

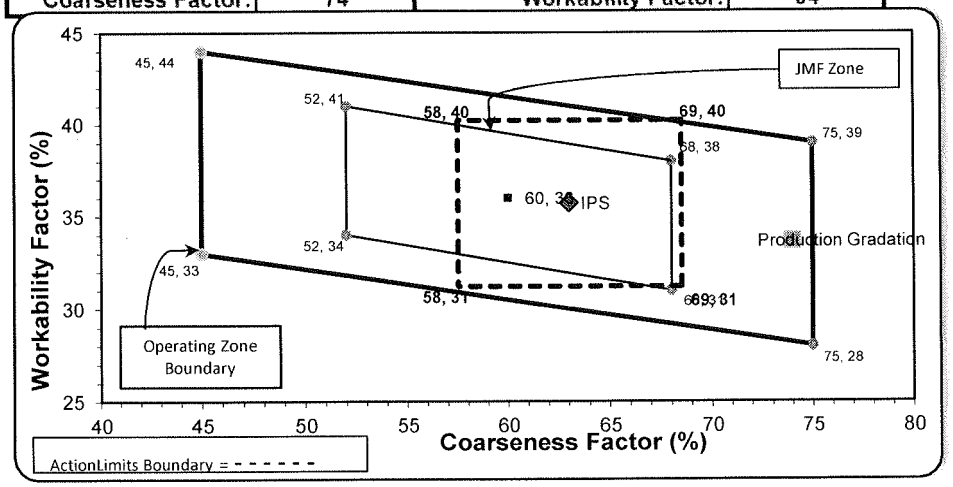
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.3	99.2	100.0	91.6	8.4	8.4
1/2"	32.2	95.8	100.0	63.6	28.0	36.4
3/8"	10.3	83.6	100.0	50.9	12.6	49.1
#4	1.6	7.9	99.1	39.9	11.1	60.2
#8	1.1	2.7	84.9	33.7	6.2	66.3
#16	1.0	2.3	67.5	26.8	6.8	73.2
#30	1.0	2.1	49.2	19.7	7.1	80.3
#50	0.9	2.0	23.1	9.6	10.2	90.4
#100	0.9	1.9	6.5	3.1	6.4	96.9
LBW	0.7	1.7	1.1	0.9	2.2	99.1

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:	74	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 S102-Superior Novi

Product 1051-6AA LS

Period: 06/25/2023 - 07/01/2023

Name/Title Doug Storey / QC Technician

Report Date 06/30/2023

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)	84.3	%	
	1/2" (12.5mm)	32.2	%	30-60
	3/8" (9.5mm)	10.3	%	
	#4 (4.75mm)	1.6	%	0-8
	#8 (2.36mm)	1.1	%	
	#16 (1.18mm)	1.0	%	
	#30 (.6mm)	1.0	%	
	#50 (.3mm)	0.9	%	
	#100 (.15mm)	0.9	%	
	#200 (75µm)	0.78	%	
	Wash Loss (#200/75um)	0.7	%	0-2
	Total Moisture	5.46	%	

Plant S102-Superior Novi

Product 1067-26A Mod LS

Period: 06/25/2023 - 07/01/2023

Name/Title Doug Storey / QC Technician

Report Date 06/30/2023

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)	99.2	%	100-100
	1/2" (12.5mm)	95.8	%	95-100
	3/8" (9.5mm)	83.6	%	60-95
	#4 (4.75mm)	7.9	%	5-30
	#8 (2.36mm)	2.7	%	0-12
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	6.88	%	

Plant S102-Superior Novi

Product 1022-2NS GR

Period: 06/25/2023 - 07/01/2023

Name/Title Doug Storey / QC Technician

Report Date 06/30/2023

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.1	%	95-100
	#8 (2.36mm)	84.9	%	65-95
	#16 (1.18mm)	67.5	%	35-75
	#30 (.6mm)	49.2	%	20-55
	#50 (.3mm)	23.1	%	10-30
	#100 (.15mm)	6.5	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.70		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.57	%	