Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 10/19/20

Concrete Grade: S2M

Contractor: _____

Dates Test Represents: 10/20/2020 through 10/26/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1670	10.21	2.62	54.8
26A	71-47	Presque Isle	150	0.92	2.62	4.9
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"	99.4	100.0	100.0	99.7	0.3	0.3
3/4"	84.9	100.0	100.0	91.7	7.9	8.3
1/2"	47.1	98.7	100.0	71.0	20.8	29.0
3/8"	27.6	90.8	100.0	59.9	11.1	40.1
#4	4.6	19.2	96.0	42.2	17.7	57.8
#8	2.0	5.4	83.3	35.0	7.2	65.0
#16	1.6	2.8	67.1	28.1	6.9	71.9
#30	1.5	2.5	46.7	19.8	8.3	80.2
#50	1.4	2.2	22.1	9.8	10.0	90.2
#100	1.4	2.1	6.1	3.3	6.5	96.7
LBW	1.2	1.7	1.0	1.1	2.2	98.9

*Maximum % Retained must be above the 3/8" sieve.

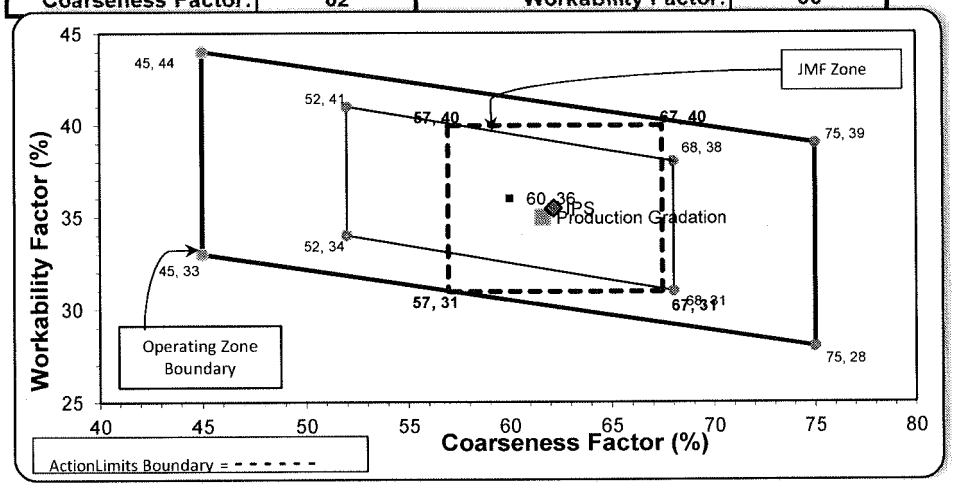
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.

*% 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:	62	Workability Factor:	35



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

SUPERIOR MATERIALS

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

PREPARED BY:
SM, LLC Technical Service

Approved By:

Edw. C. Levy Co.

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

Plant 958-JMT

Product 1054-6AA LS PI

Period: 10/18/2020 - 10/24/2020

Name/Title Doug Storey / QC Technician

Report Date 10/26/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.4	%	95-100
	3/4" (19mm)	84.9	%	
	1/2" (12.5mm)	47.1	%	30-60
	3/8" (9.5mm)	27.6	%	
	#4 (4.75mm)	4.6	%	0-8
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.6	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	3.0	%	

Edw. C. Levy Co.

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(313) 429-2429

Plant 958-JMT

Product 1067-26A Mod LS

Period: 10/18/2020 - 10/24/2020

Name/Title Doug Storey / QC Technician

Report Date 10/26/2020

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)	98.7	%	95-100
	3/8" (9.5mm)	90.8	%	60-95
	#4 (4.75mm)	19.2	%	5-30
	#8 (2.36mm)	5.4	%	0-12
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	3.6	%	

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(313) 429-2429

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 10/18/2020 - 10/24/2020

Name/Title Doug Storey / QC Technician

Report Date 10/26/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.0	%	95-100
	#8 (2.36mm)	83.3	%	65-95
	#16 (1.18mm)	67.1	%	35-75
	#30 (.6mm)	46.7	%	20-55
	#50 (.3mm)	22.1	%	10-30
	#100 (.15mm)	6.1	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.79		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	4.3	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 10/19/20

Concrete Grade: S2M

Contractor: _____

Dates Test Represents: 10/20/2020 through 10/26/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1700	10.40	2.62	55.7
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
		Total Wt	**3050**	**18.57**		100.0

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

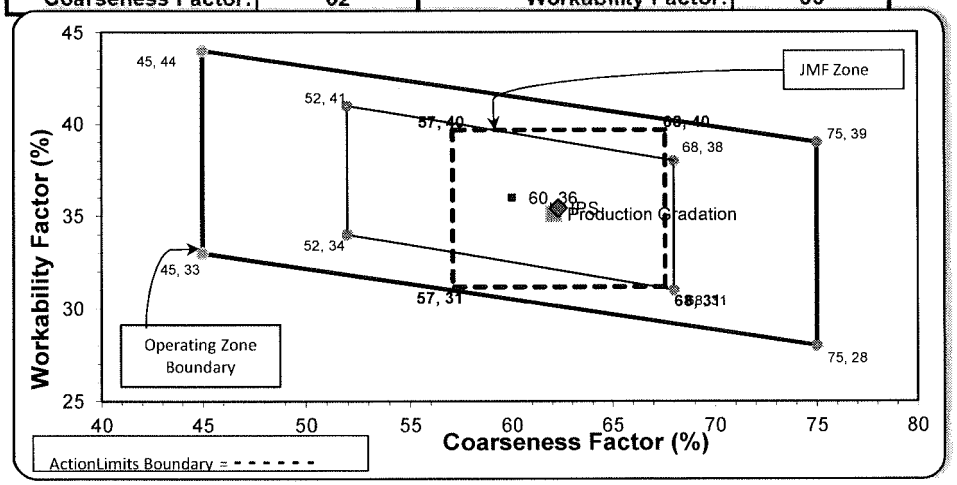
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.4	100.0	100.0	98.6	1.4	1.4
3/4"	86.0	100.0	100.0	92.2	6.4	7.8
1/2"	47.8	98.2	100.0	70.8	21.4	29.2
3/8"	28.9	86.7	100.0	59.7	11.1	40.3
#4	6.3	19.1	97.1	42.7	17.1	57.3
#8	2.3	5.6	85.3	35.1	7.5	64.9
#16	2.1	2.8	69.3	28.6	6.5	71.4
#30	1.8	2.3	50.0	20.8	7.8	79.2
#50	1.7	2.0	23.8	10.4	10.4	89.6
#100	1.7	1.6	4.4	2.8	7.7	97.2
LBW	1.5	1.3	0.6	1.1	1.6	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.

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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	62	Workability Factor:	35



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"	99.1	0.9	0.9
3/4"	90.5	8.6	9.5
1/2"	69.8	20.7	30.2
3/8"	59.8	10.0	40.2
#4	42.2	17.6	57.8
#8	35.4	6.7	64.6
#16	28.8	6.7	71.2
#30	21.4	7.4	78.6
#50	8.8	12.6	91.2
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By:

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Period: 10/18/2020 - 10/24/2020

Name/Title Doug Storey / QC Technician

Report Date 10/26/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.4	%	95-100
	3/4" (19mm)	86.0	%	
	1/2" (12.5mm)	47.8	%	30-60
	3/8" (9.5mm)	28.9	%	
	#4 (4.75mm)	6.3	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	3.63	%	
AASHTO T11	-#200 (75um)	1.58	%	

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Period: 10/18/2020 - 10/24/2020

Name/Title Doug Storey / QC Technician

Report Date 10/26/2020

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)	98.2	%	95-100
	3/8" (9.5mm)	86.7	%	60-95
	#4 (4.75mm)	19.1	%	5-30
	#8 (2.36mm)	5.6	%	0-12
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	4.32	%	

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Period: 10/18/2020 - 10/24/2020

Name/Title Doug Storey / QC Technician

Report Date 10/26/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.1	%	95-100
	#8 (2.36mm)	85.3	%	65-95
	#16 (1.18mm)	69.3	%	35-75
	#30 (.6mm)	50.0	%	20-55
	#50 (.3mm)	23.8	%	10-30
	#100 (.15mm)	4.4	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.70		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	4.09	%	