Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 10/10/22

Concrete Grade: **DM, 4500HP**

Contractor: _____

Dates Test Represents: 10/11/2022 through 10/17/2022

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		100.0

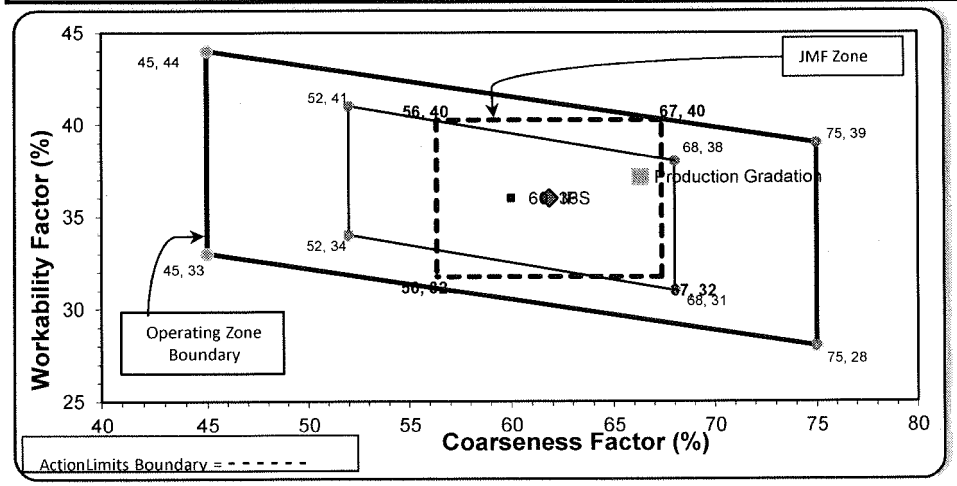
<----- Verify this number is 100%

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"	98.3	100.0	100.0	99.1	0.9	0.9
3/4"	82.1	100.0	100.0	90.4	8.7	9.6
1/2"	38.4	98.0	100.0	66.9	23.5	33.1
3/8"	20.6	87.8	100.0	56.7	10.2	43.3
#4	3.5	22.7	95.6	41.3	15.4	58.7
#8	2.2	6.0	83.5	34.6	6.6	65.4
#16	1.9	3.0	68.6	28.4	6.3	71.6
#30	1.9	2.5	50.0	21.0	7.4	79.0
#50	1.8	2.3	24.7	10.9	10.1	89.1
#100	1.7	2.1	7.4	4.0	6.9	96.0
LBW	1.3	1.9	1.2	1.3	2.7	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.

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	66	Workability Factor:	35	Adjusted WF	37.1



Intial Production Sample (IPS)

Coarseness Factor:	62
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"	95.0	5.0	5.0
1/2"	72.3	22.8	27.7
3/8"	60.4	11.8	39.6
#4	42.6	17.8	57.4
#8	36.0	6.6	64.0
#16	29.5	6.5	70.5
#30	20.3	9.2	79.7
#50	9.5	10.8	90.5
#100	3.4	6.1	96.6
LBW	1.3	2.1	98.7

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.

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

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 10/09/2022 - 10/15/2022

Name/Title Doug Storey / QC Technician

Report Date 10/14/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.6	%	95-100
	#8 (2.36mm)	83.5	%	65-95
	#16 (1.18mm)	68.6	%	35-75
	#30 (.6mm)	50.0	%	20-55
	#50 (.3mm)	24.7	%	10-30
	#100 (.15mm)	7.4	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.70		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	3.3	%	

Edw. C. Levy Co.

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

Plant 958-JMT

Product 1067-26A Mod LS

Period: 10/09/2022 - 10/15/2022

Name/Title Doug Storey / QC Technician

Report Date 10/14/2022

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)	98.0	%	95-100
	3/8" (9.5mm)	87.8	%	60-95
	#4 (4.75mm)	22.7	%	5-30
	#8 (2.36mm)	6.0	%	0-12
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	2.0	%	
	Wash Loss (#200/75um)	1.9	%	0-3
	Total Moisture	2.8	%	

Edw. C. Levy Co.

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

Plant 958-JMT

Product 1054-6AA LS PI

Period: 10/09/2022 - 10/15/2022

Name/Title Doug Storey / QC Technician

Report Date 10/14/2022

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.3	%	95-100
	3/4" (19mm)	82.1	%	
	1/2" (12.5mm)	38.4	%	30-60
	3/8" (9.5mm)	20.6	%	
	#4 (4.75mm)	3.5	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	0.7	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 10/10/22

Concrete Grade: **DM, 4500HP**

Contractor: _____

Dates Test Represents: 10/11/2022 through 10/17/2022

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	**2905**	**17.69**		100.0

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

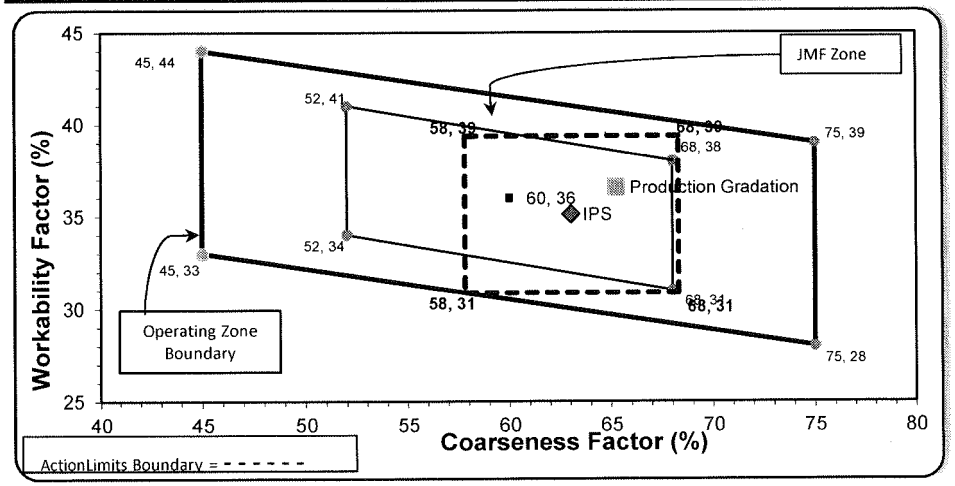
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.2	100.0	100.0	99.6	0.4	0.4
3/4"	79.6	100.0	100.0	89.5	10.1	10.5
1/2"	38.7	95.6	100.0	67.9	21.6	32.1
3/8"	19.6	85.7	100.0	57.0	10.9	43.0
#4	3.7	23.0	97.9	41.4	15.6	58.6
#8	2.3	6.3	85.1	34.1	7.3	65.9
#16	2.0	2.8	70.4	28.0	6.1	72.0
#30	1.8	2.1	51.9	20.8	7.2	79.2
#50	1.8	1.9	21.6	9.3	11.5	90.7
#100	1.7	1.8	4.1	2.6	6.7	97.4
LBW	1.5	1.6	0.5	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:	65	Workability Factor:	34	Adjusted WF 36.6



Intial Production Sample (IPS)

Coarseness Factor:	63
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"	90.3	8.8	9.7
1/2"	69.2	21.1	30.8
3/8"	59.1	10.1	40.9
#4	41.8	17.3	58.2
#8	35.1	6.6	64.9
#16	28.5	6.6	71.5
#30	21.2	7.3	78.8
#50	8.7	12.5	91.3
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By:

Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Period: 10/09/2022 - 10/15/2022

Name/Title Doug Storey / QC Technician

Report Date 10/13/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.9	%	95-100
	#8 (2.36mm)	85.1	%	65-95
	#16 (1.18mm)	70.4	%	35-75
	#30 (.6mm)	51.9	%	20-55
	#50 (.3mm)	21.6	%	10-30
	#100 (.15mm)	4.1	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.69		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	2.87	%	

Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Period: 10/09/2022 - 10/15/2022

Name/Title Doug Storey / QC Technician

Report Date 10/13/2022

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)	95.6	%	95-100
	3/8" (9.5mm)	85.7	%	60-95
	#4 (4.75mm)	23.0	%	5-30
	#8 (2.36mm)	6.3	%	0-12
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	2.58	%	

Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Period: 10/09/2022 - 10/15/2022

Name/Title Doug Storey / QC Technician

Report Date 10/13/2022

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)	79.6	%	
	1/2" (12.5mm)	38.7	%	30-60
	3/8" (9.5mm)	19.6	%	
	#4 (4.75mm)	3.7	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
AASHTO T11	-#200 (75um)	1.56	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	2.78	%	