

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 3/21/22

Dates Test Represents: 3/22/2022 through 3/28/2022

Concrete Grade: DM 4500HP

Contractor: _____

MDOT No.: _____

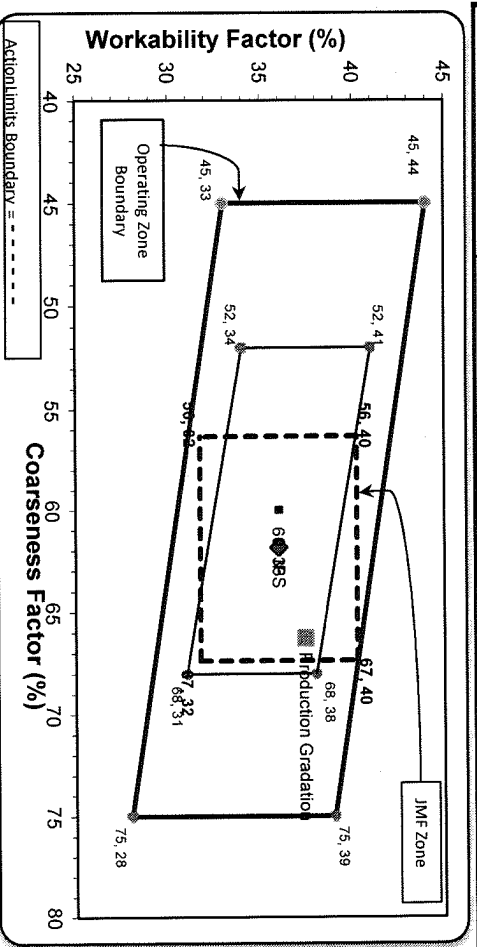
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1505	9.21	2.62	51.8
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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"	97.9	100.0	100.0	98.9	1.1	1.1
3/4"	80.8	100.0	100.0	90.1	8.9	9.9
1/2"	39.8	95.3	100.0	68.4	21.6	31.6
3/8"	18.9	87.1	100.0	56.9	11.5	43.1
#4	3.7	28.5	95.9	42.3	14.5	57.7
#8	2.5	9.9	82.8	34.9	7.4	65.1
#16	2.2	4.6	68.1	28.5	6.4	71.5
#30	2.0	3.2	49.7	21.0	7.5	79.0
#50	2.0	2.6	24.9	11.1	9.9	88.9
#100	1.9	2.4	7.6	4.2	6.9	95.8
LBW	1.4	2.0	1.8	1.6	2.6	98.4

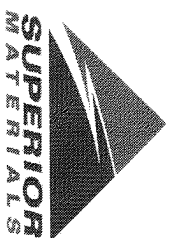
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 66 Workability Factor: 35 Adjusted WF: 37.4



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:	Adjusted WF
2"	100.0	62	36	37.4
1.5"	100.0			
1"	100.0			
3/4"	95.0			
1/2"	72.3			
3/8"	60.4			
#4	42.6			
#8	36.0			
#16	29.5			
#30	20.3			
#50	9.5			
#100	3.4			
LBW	1.3			



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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____

Plant 958-JMT
 Product 1022-2NS GR - Smelter Bay
 Period: 03/20/2022 - 03/26/2022

Name/Title Doug Storey / QC Technician
 Report Date 03/25/2022

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)	82.8	%	65-95
	#16 (1.18mm)	68.1	%	35-75
	#30 (.6mm)	49.7	%	20-55
	#50 (.3mm)	24.9	%	10-30
	#100 (.15mm)	7.6	%	0-10
	#200 (75µm)	2.1	%	
	FM	2.71		2.6-3
	Wash Loss (#200/75um)	1.8	%	0-3
	Total Moisture	4.5	%	

Plant: 958-JMT
 Product: 1067-26A Mod LS
 Period: 03/20/2022 - 03/26/2022

Name/Title: Doug Storey / QC Technician
 Report Date: 03/25/2022

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)	95.3	%	95-100
	3/8" (9.5mm)	87.1	%	60-95
	#4 (4.75mm)	28.5	%	5-30
	#8 (2.36mm)	9.9	%	0-12
	#16 (1.18mm)	4.6	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	2.0	%	0-3
	Total Moisture	3.6	%	

Edw. C. Levy Co.

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Plant 958-JMT

Product 1054-6AA LS PI

Period: 03/20/2022 - 03/26/2022

Name/Title Doug Storey / QC Technician

Report Date 03/25/2022

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.9	%	95-100
	3/4" (19mm)	80.8	%	
	1/2" (12.5mm)	39.8	%	30-60
	3/8" (9.5mm)	18.9	%	
	#4 (4.75mm)	3.7	%	0-8
	#8 (2.36mm)	2.5	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	2.6	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 3/21/22

Dates Test Represents: 3/22/2022 through 3/28/2022

Concrete Grade: DM 4500HP

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1400	8.56	2.62	48.2
26A	71-47	Presque Isle	405	2.48	2.62	13.9
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
			Total Wt	2905		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"	98.6	100.0	100.0	99.3	0.7	0.7
3/4"	85.5	100.0	100.0	93.0	6.3	7.0
1/2"	34.1	95.5	100.0	67.6	25.4	32.4
3/8"	18.3	84.3	100.0	58.4	9.2	41.6
#4	4.6	17.6	97.9	41.7	16.7	58.3
#8	3.1	5.6	83.6	33.9	7.8	66.1
#16	3.0	3.5	67.9	27.6	6.3	72.4
#30	2.9	2.8	47.9	19.9	7.7	80.1
#50	2.8	2.5	20.1	9.3	10.6	90.7
#100	2.6	2.2	4.0	3.1	6.2	96.9
LBW	2.0	1.6	0.9	1.5	1.5	98.5

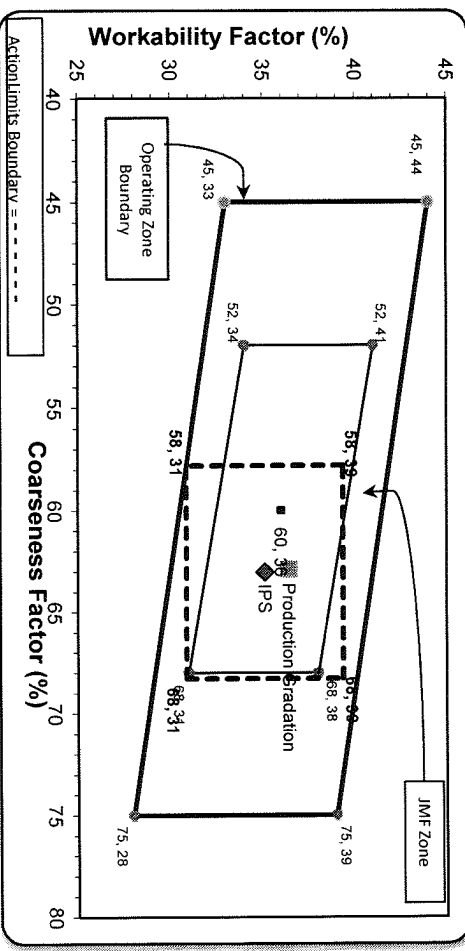
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max. #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 63 Workability Factor: 34 Adjusted WF: 36.4

Initial 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: 03/20/2022 - 03/26/2022

Name/Title Doug Storey / QC Technician
Report Date 03/25/2022

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)	83.6	%	65-95
	#16 (1.18mm)	67.9	%	35-75
	#30 (.6mm)	47.9	%	20-55
	#50 (.3mm)	20.1	%	10-30
	#100 (.15mm)	4.0	%	0-10
	#200 (75µm)	1.1	%	
	FM	2.79		2.6-3
	Wash Loss (#200/75µm)	0.9	%	0-3
	Total Moisture	3.53	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 03/20/2022 - 03/26/2022

Report Date 03/25/2022

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)	95.5	%	95-100
	3/8" (9.5mm)	84.3	%	60-95
	#4 (4.75mm)	17.6	%	5-30
	#8 (2.36mm)	5.6	%	0-12
	#16 (1.18mm)	3.5	%	
	#30 (.6mm)	2.8	%	
	#50 (.3mm)	2.5	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	2.71	%	



Superior Auburn Hills
 2470 Auburn Road
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Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 03/20/2022 - 03/26/2022

Report Date 03/25/2022

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.6	%	95-100
	3/4" (19mm)	85.5	%	
	1/2" (12.5mm)	34.1	%	30-60
	3/8" (9.5mm)	18.3	%	
	#4 (4.75mm)	4.6	%	0-8
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	3.0	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	2.3	%	
AASHTO T11	#200 (75um)	2.32	%	
	Wash Loss (#200/75um)	2.0	%	0-2
	Total Moisture	2.51	%	