

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 8/15/22

Dates Test Represents: 8/16/2022 through 8/22/2022

Concrete Grade: DM, 4500HP

Contractor:

MDOT No.:

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	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						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"	98.0	100.0	100.0	98.9	1.1	1.1
3/4"	83.0	100.0	100.0	90.9	8.0	9.1
1/2"	43.9	95.9	100.0	69.7	21.2	30.3
3/8"	22.6	85.1	100.0	57.5	12.1	42.5
#4	4.2	26.0	95.9	42.0	15.5	58.0
#8	2.2	8.2	82.9	34.6	7.4	65.4
#16	1.9	4.1	67.9	28.2	6.4	71.8
#30	1.8	3.3	49.2	20.7	7.5	79.3
#50	1.7	2.6	24.7	10.9	9.8	89.1
#100	1.5	2.4	7.8	4.1	6.8	95.9
LBW	1.2	2.0	1.3	1.3	2.8	98.7

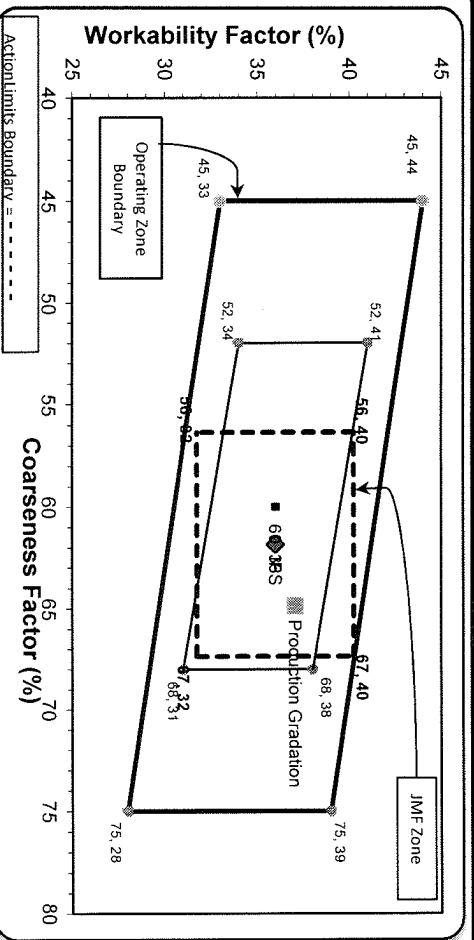
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 65 **Workability Factor:** 35 **Adjusted WF:** 37.1

Initial 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



*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.

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Plant 958-JMT
 Product 1022-2NS GR - Smelter Bay
 Period: 08/14/2022 - 08/20/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/19/2022

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)	82.9	%	65-95
	#16 (1.18mm)	67.9	%	35-75
	#30 (.6mm)	49.2	%	20-55
	#50 (.3mm)	24.7	%	10-30
	#100 (.15mm)	7.8	%	0-10
	#200 (75µm)	1.9	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	1.3	%	0-3

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 08/14/2022 - 08/20/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/19/2022

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)	95.9	%	95-100
	3/8" (9.5mm)	85.1	%	60-95
	#4 (4.75mm)	26.0	%	5-30
	#8 (2.36mm)	8.2	%	0-12
	#16 (1.18mm)	4.1	%	
	#30 (.6mm)	3.3	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.4	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	2.0	%	0-3

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 08/14/2022 - 08/20/2022

Report Date 08/19/2022

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.0	%	95-100
	3/4" (19mm)	83.0	%	
	1/2" (12.5mm)	43.9	%	30-60
	3/8" (9.5mm)	22.6	%	
	#4 (4.75mm)	4.2	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.2	%	0-2

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

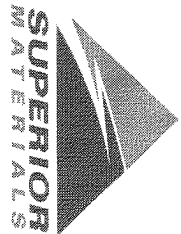
Sample Date: 8/15/22

Dates Test Represents: 8/16/2022 through 8/22/2022

Concrete Grade: DM 4500HP

Contractor: _____

MDOT No.: _____



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

Verify this number is 100%

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	300	1.83	2.62	10.3
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

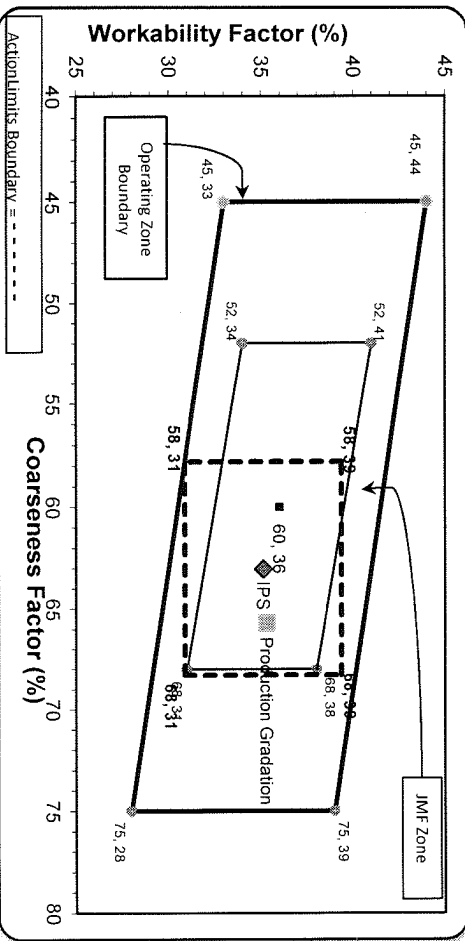
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	95.9	100.0	100.0	97.9	2.1	2.1
3/4"	76.6	100.0	100.0	87.9	12.1	12.1
1/2"	36.0	95.8	100.0	66.4	33.6	33.6
3/8"	18.4	81.7	100.0	55.8	44.2	44.2
#4	3.6	22.2	96.9	40.8	59.2	59.2
#8	2.2	6.6	81.8	32.8	67.2	67.2
#16	2.0	3.3	66.1	26.4	73.6	73.6
#30	1.9	2.6	47.5	19.2	80.8	80.8
#50	1.7	2.3	18.8	8.2	91.8	91.8
#100	1.6	2.1	3.6	2.4	97.6	97.6
LBW	1.2	1.7	0.4	0.9	99.1	99.1

*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: 33 Adjusted WF: 35.3

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

Name/Title Doug Storey / QC Technician

Period: 08/14/2022 - 08/20/2022

Report Date 08/19/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.9	%	95-100
	#8 (2.36mm)	81.8	%	65-95
	#16 (1.18mm)	66.1	%	35-75
	#30 (.6mm)	47.5	%	20-55
	#50 (.3mm)	18.8	%	10-30
	#100 (.15mm)	3.6	%	0-10
	#200 (75µm)	0.7	%	
	FM	2.85		2.6-3
	Wash Loss (#200/75um)	0.4	%	0-3
	Total Moisture	3.07	%	



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: 08/14/2022 - 08/20/2022

Report Date 08/19/2022

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)	95.8	%	95-100
	3/8" (9.5mm)	81.7	%	60-95
	#4 (4.75mm)	22.2	%	5-30
	#8 (2.36mm)	6.6	%	0-12
	#16 (1.18mm)	3.3	%	
	#30 (.6mm)	2.6	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	2.32	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 08/14/2022 - 08/20/2022

Report Date 08/19/2022

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	95.9	%	95-100
	3/4" (19mm)	76.6	%	
	1/2" (12.5mm)	36.0	%	30-60
	3/8" (9.5mm)	18.4	%	
	#4 (4.75mm)	3.6	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.3	%	
AASHTO T11	-#200 (75um)	1.30	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	2.07	%	