

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 9/12/22

Dates Test Represents: 9/13/2022 through 9/19/2022

Concrete Grade: **S2M, 3500HP**

Contractor: _____

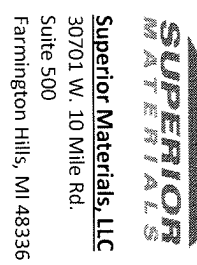
MIDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1420	8.69	2.62	46.6
26A	71-47	Presque Isle	400	2.45	2.62	13.1
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
			Total Wt	3050	18.57	100.0

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

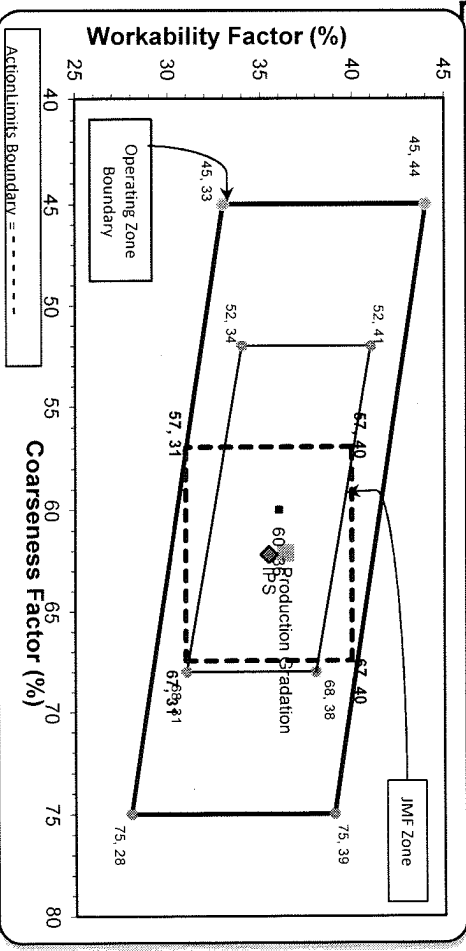
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.3	100.0	100.0	98.3	1.7	1.7
3/4"	76.7	100.0	100.0	89.2	9.1	10.8
1/2"	35.6	97.0	100.0	69.6	19.5	30.4
3/8"	18.1	89.4	100.0	60.5	9.1	39.5
#4	4.1	29.5	96.5	44.7	15.8	55.3
#8	2.3	9.0	84.6	36.4	8.3	63.6
#16	1.9	4.1	69.7	29.5	6.8	70.5
#30	1.8	3.1	50.5	21.6	7.9	78.4
#50	1.7	2.8	23.8	10.8	10.9	89.2
#100	1.6	2.5	6.7	3.8	7.0	96.2
LBW	1.4	2.2	1.1	1.4	2.4	98.6

*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: **36**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	62	35	0.0	0.0
1.5"	62	35	0.0	0.0
1"	62	35	0.0	0.0
3/4"	62	35	6.0	6.0
1/2"	62	35	23.7	29.8
3/8"	62	35	10.4	40.1
#4	62	35	17.2	57.3
#8	62	35	7.2	64.5
#16	62	35	7.0	71.6
#30	62	35	9.2	80.8
#50	62	35	10.3	91.1
#100	62	35	5.9	96.9
LBW	62	35	1.7	98.6

PREPARED BY:
SM, LLC Technical Service

Approved By: _____

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 09/11/2022 - 09/17/2022

Report Date 09/16/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.5	%	95-100
	#8 (2.36mm)	84.6	%	65-95
	#16 (1.18mm)	69.7	%	35-75
	#30 (.6mm)	50.5	%	20-55
	#50 (.3mm)	23.8	%	10-30
	#100 (.15mm)	6.7	%	0-10
	#200 (75µm)	1.5	%	
	FM	2.68		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	4.2	%	

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 09/11/2022 - 09/17/2022

Report Date 09/16/2022

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)	97.0	%	95-100
	3/8" (9.5mm)	89.4	%	60-95
	#4 (4.75mm)	29.5	%	5-30
	#8 (2.36mm)	9.0	%	0-12
	#16 (1.18mm)	4.1	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.3	%	
	Wash Loss (#200/75um)	2.2	%	0-3
	Total Moisture	2.9	%	

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 09/11/2022 - 09/17/2022

Report Date 09/16/2022

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.3	%	95-100
	3/4" (19mm)	76.7	%	
	1/2" (12.5mm)	35.6	%	30-60
	3/8" (9.5mm)	18.1	%	
	#4 (4.75mm)	4.1	%	0-8
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	2.6	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

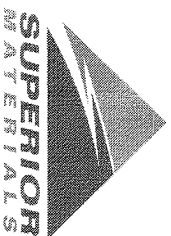
Sample Date: 9/12/22

Dates Test Represents: 9/13/2022 through 9/19/2022

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



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

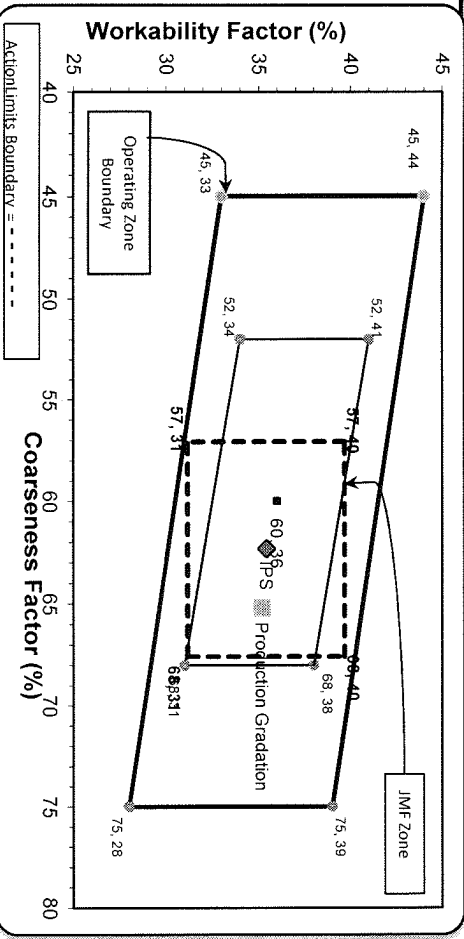
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
GAA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
ZNS	63-92	Grange Hall	1200	7.26	2.65	39.3
			Total Wt	3050	18.57	100.0

Sieve	6AA	26A	ZNS	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	98.7	1.3	1.3
3/4"	82.5	100.0	100.0	91.1	7.6	8.9
1/2"	38.2	96.3	100.0	68.2	22.9	31.8
3/8"	19.3	87.1	100.0	57.7	10.5	42.3
#4	4.3	22.1	98.1	43.0	14.8	57.0
#8	2.7	5.3	84.6	35.2	7.8	64.8
#16	2.4	2.5	70.6	29.2	5.9	70.8
#30	2.3	2.0	52.9	22.2	7.1	77.8
#50	2.2	1.9	22.1	10.0	12.2	90.0
#100	2.2	1.8	4.2	2.9	7.1	97.1
LBW	1.9	1.6	0.7	1.4	1.5	98.6

*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: **35**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	62	35	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: _____



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: 09/11/2022 - 09/17/2022

Report Date 09/16/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.1	%	95-100
	#8 (2.36mm)	84.6	%	65-95
	#16 (1.18mm)	70.6	%	35-75
	#30 (.6mm)	52.9	%	20-55
	#50 (.3mm)	22.1	%	10-30
	#100 (.15mm)	4.2	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.67		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	3.38	%	



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: 09/11/2022 - 09/17/2022

Report Date 09/16/2022

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)	96.3	%	95-100
	3/8" (9.5mm)	87.1	%	60-95
	#4 (4.75mm)	22.1	%	5-30
	#8 (2.36mm)	5.3	%	0-12



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: 09/11/2022 - 09/17/2022

Report Date 09/16/2022

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)	82.5	%	
	1/2" (12.5mm)	38.2	%	30-60
	3/8" (9.5mm)	19.3	%	
	#4 (4.75mm)	4.3	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.0	%	
	Wash Loss (#200/75um)	1.9	%	0-2