

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 11

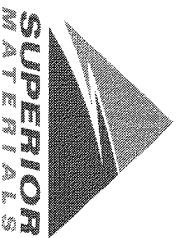
Sample Date: 10/31/22

Dates Test Represents: 11/1/2022 through 11/7/2022

Concrete Grade: DM, 4500HP

Contractor: _____

MDOT No.: _____



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

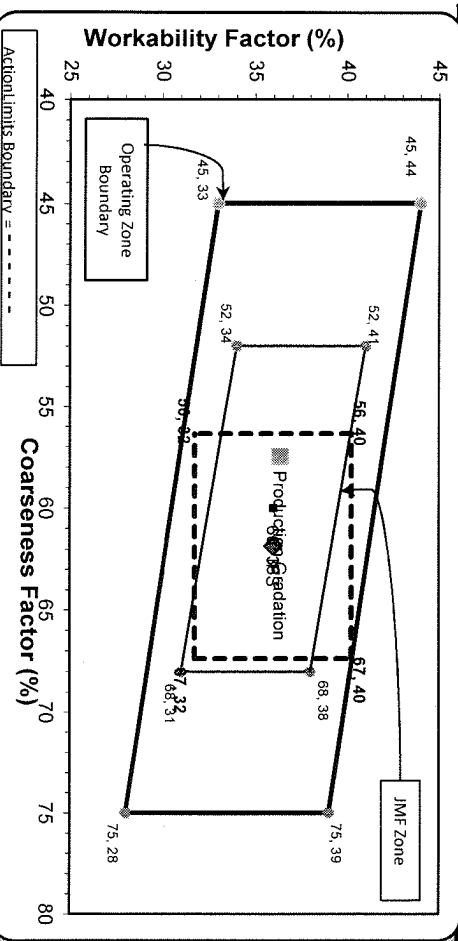
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
GAA	71-47	Presque Isle	1355	8.29	2.62	46.6	
26A	71-47	Presque Isle	400	2.45	2.62	13.8	
NNS	95-013	Smelter Bay	1150	6.95	2.65	39.6	
Total Wt:						2905	100.0

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	0.6	0.6
3/4"	7.6	8.1
1/2"	19.1	27.2
3/8"	10.8	38.0
#4	18.7	56.7
#8	9.4	66.1
#16	6.5	72.7
#30	6.1	78.8
#50	9.7	88.5
#100	8.3	96.8
LBW	2.2	99.0

*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: **57** Workability Factor: **34** Adjusted WF: **36.4**



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

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



11/04/2022

1022-2NS GR

Procedure	Sieve/Test	Average	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.2	%	95-100
	#8 (2.36mm)	81.0	%	65-95
	#16 (1.18mm)	65.9	%	35-75
	#30 (.6mm)	50.9	%	20-55
	#50 (.3mm)	26.6	%	10-30
	#100 (.15mm)	5.9	%	0-10
	#200 (75µm)	1.2	%	
	FM	2.72		2.60-3.00
	Wash Loss (#200/75um)	0.9	%	0.0-3.0
	Total Moisture	4.36	%	

Name/Title Doug Storey / QC Technician



11/04/2022

1067-26A Mod LS

Procedure	Sieve/Test	Average	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)	96.0	%	95-100
	3/8" (9.5mm)	85.4	%	60-95
	#4 (4.75mm)	22.7	%	5-30
	#8 (2.36mm)	7.3	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.9	%	0.0-3.0
	Total Moisture	5.35	%	

Name/Title

Doug Storey / QC Technician



11/04/2022

1051-6AA LS

Procedure	Sieve/Test	Average	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.8	%	95-100
	3/4" (19mm)	82.6	%	
	1/2" (12.5mm)	42.9	%	30-60
	3/8" (9.5mm)	22.8	%	
	#4 (4.75mm)	3.6	%	0-8
	#8 (2.36mm)	1.7	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.4	%	
	#50 (.3mm)	1.3	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.09	%	
	Wash Loss (#200/75µm)	0.9	%	0.0-2.0
	Total Moisture	3.35	%	

Name/Title Doug Storey / QC Technician

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

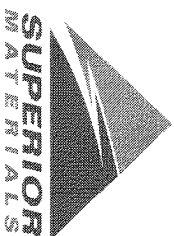
Sample Date: 10/31/22

Dates Test Represents: 11/1/2022 through 11/7/2022

Concrete Grade: **DM, 4500HP**

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 %
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	305	1.87	2.62	10.5
NNS	63-92	Grange Hall	1100	6.65	2.65	37.9
Total Wt			2905	17.69		100.0

Sieve	6AA	26A	NNS	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"	98.4	100.0	100.0	99.2	0.8	0.8
3/4"	81.5	100.0	100.0	90.4	8.7	9.6
1/2"	38.2	95.2	100.0	67.6	22.9	32.4
3/8"	20.7	84.4	100.0	57.4	10.2	42.6
#4	4.1	20.7	97.5	41.2	16.2	58.8
#8	2.7	5.8	81.1	32.7	8.5	67.3
#16	2.4	2.9	65.8	26.5	6.3	73.5
#30	2.3	2.3	47.8	19.5	6.9	80.5
#50	2.2	2.1	18.4	8.3	11.2	91.7
#100	2.1	2.0	3.5	2.6	5.7	97.4
LBW	1.7	1.6	0.5	1.2	1.4	98.8

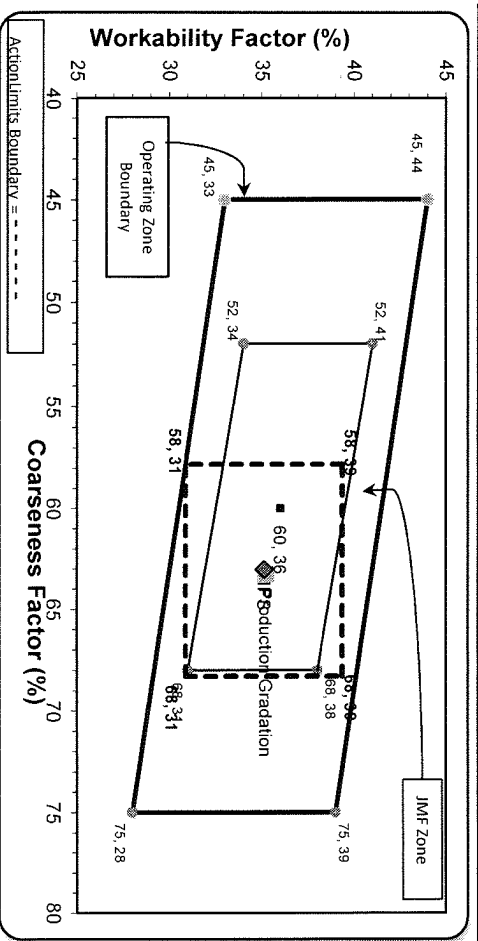
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max.
nom. max. #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max.
nom. max. #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when
a 2" max. size (nom. Max.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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **63** Workability Factor: **33** Adjusted WF: **35.2**

Initial Production Sample (IPS)

Sieve	Coarseness Factor: 63	Workability Factor: 35
2"	100.0	0.0
1.5"	100.0	0.0
1"	99.1	0.9
3/4"	90.3	8.8
1/2"	69.2	21.1
3/8"	59.1	10.1
#4	41.8	17.3
#8	35.1	6.6
#16	28.5	6.6
#30	21.2	7.3
#50	8.7	12.5
#100	1.8	7.0
LBW	0.7	1.0



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: 10/30/2022 - 11/05/2022

Report Date 11/04/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.5	%	95-100
	#8 (2.36mm)	81.1	%	65-95
	#16 (1.18mm)	65.8	%	35-75
	#30 (.6mm)	47.8	%	20-55
	#50 (.3mm)	18.4	%	10-30
	#100 (.15mm)	3.5	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.86		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	3.70	%	



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: 10/30/2022 - 11/05/2022

Report Date 11/04/2022

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)	95.2	%	95-100
	3/8" (9.5mm)	84.4	%	60-95
	#4 (4.75mm)	20.7	%	5-30
	#8 (2.36mm)	5.8	%	0-12
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	2.75	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Period: 10/30/2022 - 11/05/2022

Name/Title Doug Storey / QC Technician

Report Date 11/04/2022

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.4	%	95-100
	3/4" (19mm)	81.5	%	
	1/2" (12.5mm)	38.2	%	30-60
	3/8" (9.5mm)	20.7	%	
	#4 (4.75mm)	4.1	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	3.04	%	