

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Sample Date: 9/14/20

Dates Test Represents: 9/15/2020 through 9/21/2020

Concrete Grade: **S2M**

Contractor: _____

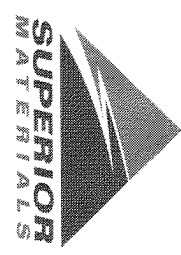
MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1620	9.91	2.62	53.1
26A	71-47	Presque Isle	200	1.22	2.62	6.6
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"	97.9	100.0	100.0	98.9	1.1	1.1
3/4"	69.4	100.0	100.0	83.7	15.1	16.3
1/2"	34.3	96.6	100.0	64.9	18.9	35.1
3/8"	19.0	83.1	100.0	55.9	9.0	44.1
#4	4.6	13.2	96.4	42.2	13.7	57.8
#8	2.5	3.4	83.5	35.2	7.0	64.8
#16	2.2	1.9	67.3	28.4	6.8	71.6
#30	2.1	1.6	45.4	19.5	8.9	80.5
#50	2.0	1.5	22.0	10.0	9.5	90.0
#100	2.0	1.4	6.7	3.9	6.2	96.1
LBW	1.7	1.2	1.3	1.5	2.4	98.5

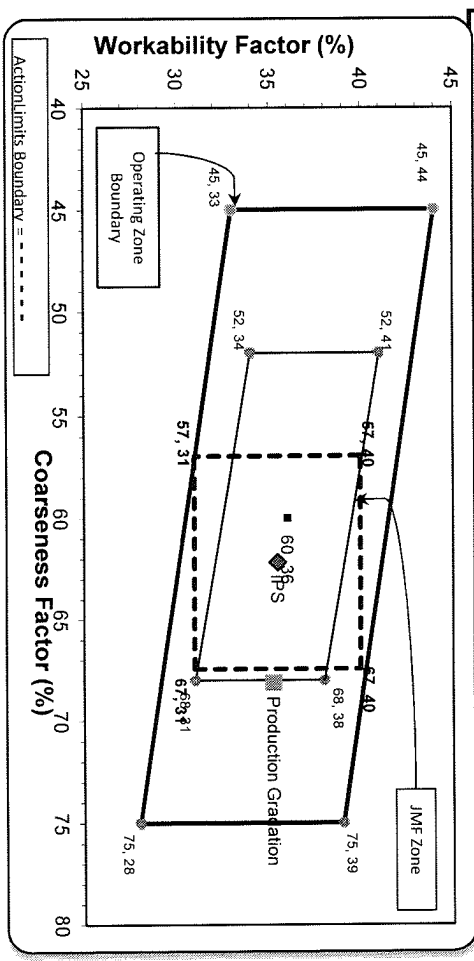
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max.: #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max.: #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size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



Superior Materials, LLC
 30701 W. 10 Mile Rd.
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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **68** Workability Factor: **35**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	62	35	0.0	0.0
1.5"			0.0	0.0
1"			0.0	0.0
3/4"			6.0	6.0
1/2"			23.7	29.8
3/8"			59.9	40.1
#4			17.2	57.3
#8			7.2	64.5
#16			7.0	71.6
#30			9.2	80.8
#50			10.3	91.1
#100			5.9	96.9
LBW			1.7	98.6

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____

Plant 958-JMT

Product 1054-6AA LS PI

Period: 09/13/2020 - 09/19/2020

Name/Title Doug Storey / QC Technician

Report Date 09/18/2020

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)	69.4	%	
	1/2" (12.5mm)	34.3	%	30-60
	3/8" (9.5mm)	19.0	%	
	#4 (4.75mm)	4.6	%	0-8
	#8 (2.36mm)	2.5	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	2.8	%	

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 09/13/2020 - 09/19/2020

Name/Title Doug Storey / QC Technician
 Report Date 09/18/2020

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)	96.6	%	95-100
	3/8" (9.5mm)	83.1	%	60-95
	#4 (4.75mm)	13.2	%	5-30
	#8 (2.36mm)	3.4	%	0-12
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.6	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	2.8	%	

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Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 09/13/2020 - 09/19/2020

Report Date 09/18/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.4	%	95-100
	#8 (2.36mm)	83.5	%	65-95
	#16 (1.18mm)	67.3	%	35-75
	#30 (.6mm)	45.4	%	20-55
	#50 (.3mm)	22.0	%	10-30
	#100 (.15mm)	6.7	%	0-10
	#200 (75µm)	1.9	%	
	FM	2.79		2.6-3
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	4.8	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-103**

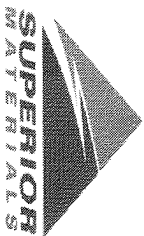
Sample Date: **9/14/20**

Dates Test Represents: **9/15/2020** through **9/21/2020**

Concrete Grade: **S2M**

Contractor: _____

MDOT No.: _____



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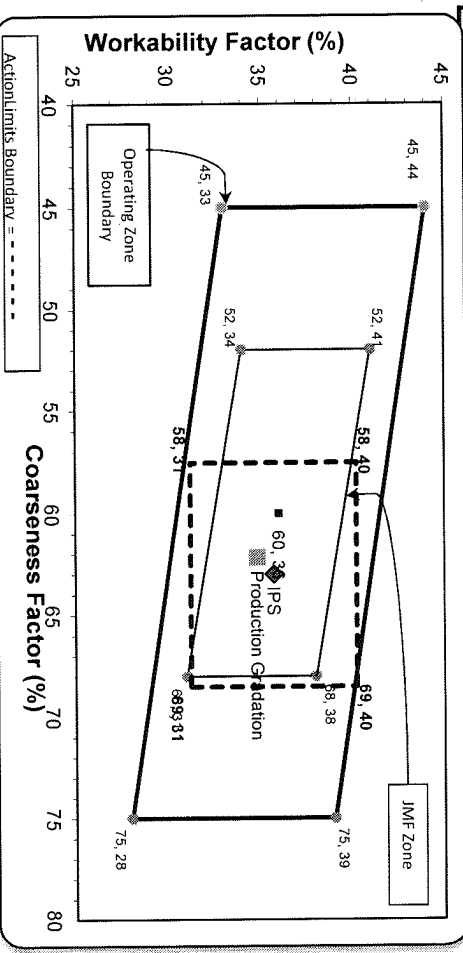
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	58-003	Stoneco	1640	9.77	2.69	52.9	
26A	58-003	Stoneco	250	1.49	2.69	8.1	
2NS	63-114	Highland	1210	7.32	2.65	39.0	
Total Wt:						18.58	100.0

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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.4	100.0	100.0	91.7	8.3	8.3
1/2"	46.9	99.2	100.0	71.8	19.9	28.2
3/8"	25.6	85.6	100.0	59.5	12.4	40.5
#4	6.3	14.7	99.2	43.2	16.2	56.8
#8	3.1	4.4	84.1	34.8	8.4	65.2
#16	2.4	2.5	66.2	27.3	7.5	72.7
#30	2.2	2.0	48.3	20.2	7.1	79.8
#50	2.1	1.8	24.3	10.7	9.4	89.3
#100	2.0	1.7	6.6	3.8	7.0	96.2
LBW	1.5	1.5	1.1	1.3	2.4	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. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **62** Workability Factor: **35**



Initial Production Sample (IPS)

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	0.8	0.8
3/4"	8.3	9.1
1/2"	19.6	28.7
3/8"	11.8	40.5
#4	15.7	56.2
#8	8.1	64.3
#16	8.7	73.0
#30	8.4	81.4
#50	11.8	93.2
#100	5.4	98.6
LBW	0.8	99.4

Coarseness Factor: **63** Workability Factor: **36**

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S103-Superior Brighton
 Product 1051-6AA LS
 Period: 09/13/2020 - 09/19/2020

Name/Title Doug Storey / QC Technician
 Report Date 09/18/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	84.4	%	
	1/2" (12.5mm)	46.9	%	30-60
	3/8" (9.5mm)	25.6	%	
	#4 (4.75mm)	6.3	%	0-8
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.80	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	2.78	%	



Plant S103-Superior Brighton

Product 1067-26A Mod LS

Period: 09/13/2020 - 09/19/2020

Name/Title Doug Storey / QC Technician

Report Date 09/18/2020

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)	99.2	%	95-100
	3/8" (9.5mm)	85.6	%	60-95
	#4 (4.75mm)	14.7	%	5-30
	#8 (2.36mm)	4.4	%	0-12
	#16 (1.18mm)	2.5	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	4.84	%	



Plant S103-Superior Brighton
Product 1022-2NS GR
Period: 09/13/2020 - 09/19/2020

Name/Title Doug Storey / QC Technician
Report Date 09/18/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.2	%	95-100
	#8 (2.36mm)	84.1	%	65-95
	#16 (1.18mm)	66.2	%	35-75
	#30 (.6mm)	48.3	%	20-55
	#50 (.3mm)	24.3	%	10-30
	#100 (.15mm)	6.6	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.71		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.90	%	