Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Contractor: _____

Sample Date: 3/2/20

Concrete Grade: **S2M**

Dates Test Represents: 3/3/2020 through 3/9/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1670	10.21	2.62	54.8
26A	71-47	Presque Isle	100	0.61	2.62	3.3
2NS	63-115	Ray Rd	1280	7.74	2.65	42.0
		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"	98.4	100.0	100.0	99.1	0.9	0.9
3/4"	82.8	100.0	100.0	90.6	8.5	9.4
1/2"	41.0	99.1	100.0	67.7	22.9	32.3
3/8"	20.7	78.5	100.0	55.9	11.8	44.1
#4	3.4	16.5	96.4	42.9	13.0	57.1
#8	2.0	6.2	78.0	34.0	8.8	66.0
#16	1.8	4.2	62.3	27.3	6.8	72.7
#30	1.5	3.7	48.0	21.1	6.2	78.9
#50	1.4	3.4	24.6	11.2	9.9	88.8
#100	1.3	3.1	6.2	3.4	7.8	96.6
LBW	0.9	2.9	1.2	1.1	2.3	98.9

*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
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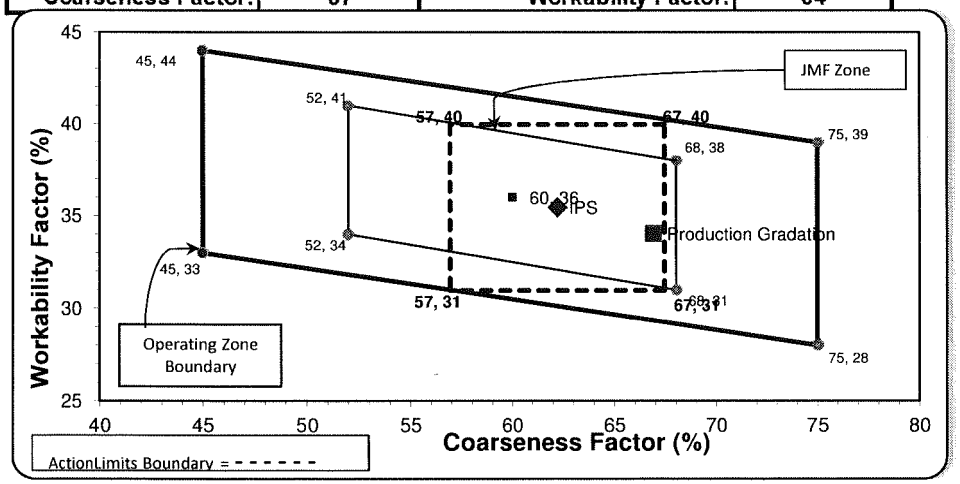
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	67	Workability Factor:	34



Intial Production Sample (IPS)

Coarseness Factor:	62
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"	100.0	0.0	0.0
3/4"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

PREPARED BY:
SM, LLC Technical Service

Approved By:

Edw. C. Levy Co.

JMT
8911 W. Jefferson
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(313) 429-2429

Plant 958-JMT

Product 1054-6AA LS PI

Period: 03/01/2020 - 03/07/2020

Name/Title Doug Storey / QC Technician

Report Date 03/05/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.4	%	95-100
	3/4" (19mm)	82.8	%	
	1/2" (12.5mm)	41.0	%	30-60
	3/8" (9.5mm)	20.7	%	
	#4 (4.75mm)	3.4	%	0-8
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.8	%	
	#30 (0.6mm)	1.5	%	
	#50 (0.3mm)	1.4	%	
	#100 (0.15mm)	1.3	%	
	#200 (75µm)	1.1	%	
	Wash Loss (#200/75um)	0.9	%	0-2
	Total Moisture	3.4	%	

Edw. C. Levy Co.

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Plant 958-JMT

Product 1067-26A Mod LS

Period: 03/01/2020 - 03/07/2020

Name/Title Doug Storey / QC Technician

Report Date 03/05/2020

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)	99.1	%	95-100
	3/8" (9.5mm)	78.5	%	60-95
	#4 (4.75mm)	16.5	%	5-30
	#8 (2.36mm)	6.2	%	0-12
	#16 (1.18mm)	4.2	%	
	#30 (0.6mm)	3.7	%	
	#50 (0.3mm)	3.4	%	
	#100 (0.15mm)	3.1	%	
	#200 (75µm)	2.9	%	
	Wash Loss (#200/75um)	2.9	%	0-3
	Total Moisture	4.3	%	

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Plant 958-JMT

Product 1022-2NS GR

Period: 03/01/2020 - 03/07/2020

Name/Title Doug Storey / QC Technician

Report Date 03/05/2020

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)	78.0	%	65-95
	#16 (1.18mm)	62.3	%	35-75
	#30 (0.6mm)	48.0	%	20-55
	#50 (0.3mm)	24.6	%	10-30
	#100 (0.15mm)	6.2	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	5.1	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-O2**

Contractor: _____

Sample Date: 3/2/20

Concrete Grade: **S2M**

Dates Test Represents: 3/3/2020 through 3/9/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1750	10.70	2.62	57.4
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-115	Ray Rd	1300	7.86	2.65	42.6
		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"	99.3	100.0	100.0	99.6	0.4	0.4
3/4"	81.9	100.0	100.0	89.6	10.0	10.4
1/2"	43.8	98.3	100.0	67.8	21.9	32.2
3/8"	21.9	90.8	100.0	55.2	12.6	44.8
#4	3.7	29.1	95.9	43.0	12.2	57.0
#8	2.2	8.3	78.8	34.8	8.1	65.2
#16	2.0	4.2	62.7	27.9	7.0	72.1
#30	1.9	3.3	47.9	21.5	6.4	78.5
#50	1.8	3.0	25.0	11.7	9.8	88.3
#100	1.7	2.7	5.6	3.4	8.3	96.6
LBW	1.4	2.3	0.8	1.1	2.2	98.9

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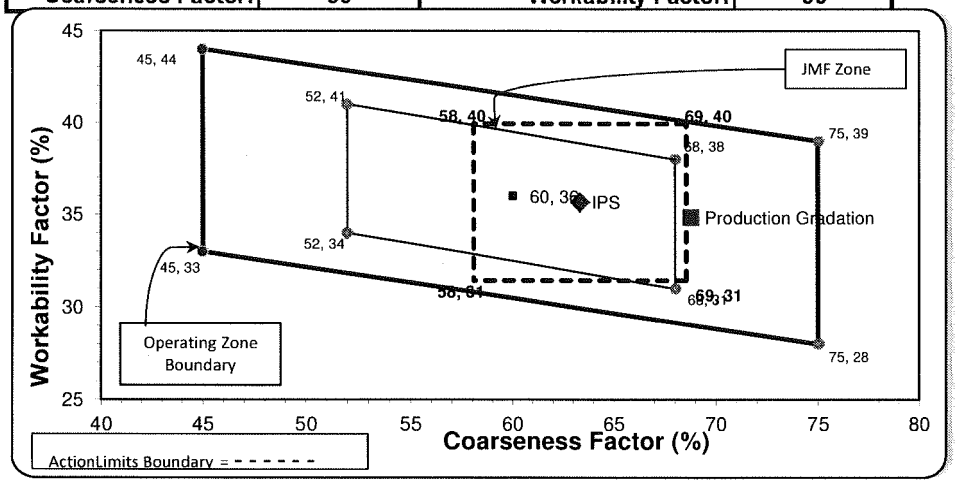
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate SupplierGradations

Coarseness Factor:	69	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	63
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"	95.6	4.4	4.4
1/2"	73.1	22.6	26.9
3/8"	59.3	13.8	40.7
#4	42.8	16.5	57.2
#8	35.7	7.1	64.3
#16	28.9	6.8	71.1
#30	20.7	8.2	79.3
#50	9.9	10.8	90.1
#100	2.1	7.8	97.9
LBW	0.9	1.2	99.1

PREPARED BY:
SM, LLC Technical Service

Approved By:

Plant S02-Superior Hoover

Product 1051-6AA LS

Period: 03/01/2020 - 03/07/2020

Name/Title Doug Storey / QC Technician

Report Date 03/06/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	99.3	%	95-100
	3/4" (19mm)	81.9	%	
	1/2" (12.5mm)	43.8	%	30-60
	3/8" (9.5mm)	21.9	%	
	#4 (4.75mm)	3.7	%	0-8
	#8 (2.36mm)	2.2	%	
	#16 (1.18mm)	2.0	%	
	#30 (0.6mm)	1.9	%	
	#50 (0.3mm)	1.8	%	
	#100 (0.15mm)	1.7	%	
	#200 (75µm)	1.58	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	2.96	%	

SUPERIOR MATERIALS

Plant S02-Superior Hoover

Product 1067-26A Mod LS

Period: 03/01/2020 - 03/07/2020

Name/Title Doug Storey / QC Technician

Report Date 03/06/2020

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)	98.3	%	95-100
	3/8" (9.5mm)	90.8	%	60-95
	#4 (4.75mm)	29.1	%	5-30
	#8 (2.36mm)	8.3	%	0-12
	#16 (1.18mm)	4.2	%	
	#30 (0.6mm)	3.3	%	
	#50 (0.3mm)	3.0	%	
	#100 (0.15mm)	2.7	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75um)	2.3	%	0-3
	Total Moisture	3.89	%	

Plant S02-Superior Hoover

Product 1022-2NS GR

Period: 03/01/2020 - 03/07/2020

Name/Title Doug Storey / QC Technician

Report Date 03/06/2020

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)	78.8	%	65-95
	#16 (1.18mm)	62.7	%	35-75
	#30 (0.6mm)	47.9	%	20-55
	#50 (0.3mm)	25.0	%	10-30
	#100 (0.15mm)	5.6	%	0-10
	#200 (75µm)	1.1	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75um)	0.8	%	0-3
	Total Moisture	3.94	%	