Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Contractor: _____

Sample Date: 7/27/20

Concrete Grade: S2M

Dates Test Represents: 7/28/2020 through 8/3/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	91.6	100.0	100.0	96.1	3.9	3.9
1/2"	51.1	95.8	100.0	76.7	19.4	23.3
3/8"	32.6	83.6	100.0	66.5	10.2	33.5
#4	5.8	20.8	96.1	44.2	22.3	55.8
#8	2.7	5.8	81.7	35.0	9.2	65.0
#16	2.3	3.4	65.6	28.0	7.0	72.0
#30	2.2	3.1	45.5	19.8	8.2	80.2
#50	2.1	3.0	21.3	10.0	9.8	90.0
#100	2.0	2.9	5.7	3.6	6.4	96.4
LBW	1.8	2.7	1.3	1.7	1.9	98.3

*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.

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30701 W. 10 Mile Rd.
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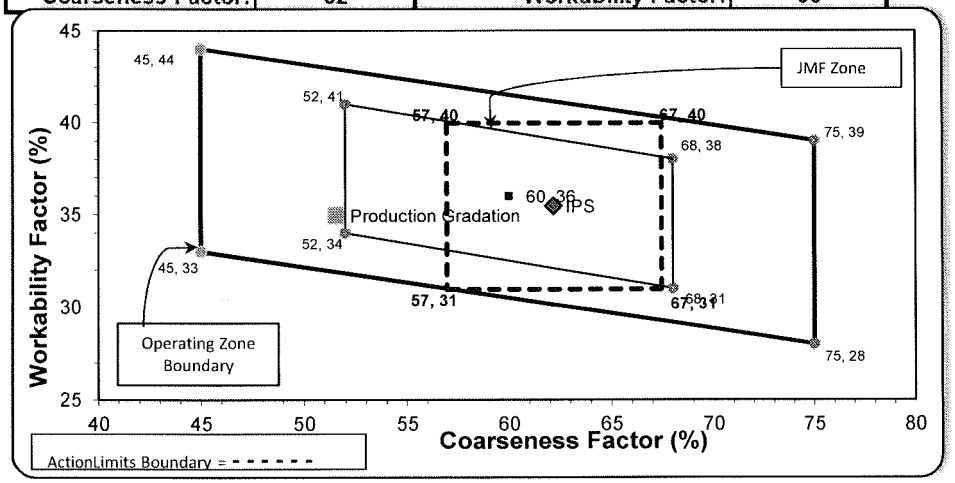
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	52	Workability Factor:	35



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.

8911 W. Jefferson
Detroit, 48209
(313) 429-2429

Plant 958-JMT

Product 1054-6AA LS PI

Period: 07/26/2020 - 08/01/2020

Name/Title Doug Storey / QC Technician

Report Date 07/31/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	91.6	%	
	1/2" (12.5mm)	51.1	%	30-60
	3/8" (9.5mm)	32.6	%	
	#4 (4.75mm)	5.8	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.2	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	2.6	%	

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(313) 429-2429

Plant 958-JMT

Product 1067-26A Mod LS

Period: 07/26/2020 - 08/01/2020

Name/Title Doug Storey / QC Technician

Report Date 07/31/2020

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)	95.8	%	95-100
	3/8" (9.5mm)	83.6	%	60-95
	#4 (4.75mm)	20.8	%	5-30
	#8 (2.36mm)	5.8	%	0-12
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	3.0	%	
	#100 (.15mm)	2.9	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75um)	2.4	%	0-3
	Total Moisture	0.6	%	

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8911 W. Jefferson
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(313) 429-2429

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 07/26/2020 - 08/01/2020

Name/Title Doug Storey / QC Technician

Report Date 07/31/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.1	%	95-100
	#8 (2.36mm)	81.7	%	65-95
	#16 (1.18mm)	65.6	%	35-75
	#30 (.6mm)	45.5	%	20-55
	#50 (.3mm)	21.3	%	10-30
	#100 (.15mm)	5.7	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.8	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Contractor: _____

Sample Date: 7/27/20

Concrete Grade: S2M

Dates Test Represents: 7/28/2020 through 8/3/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	49.2
26A	71-47	Presque Isle	350	2.14	2.62	11.5
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	81.1	100.0	100.0	90.7	9.3	9.3
1/2"	41.7	97.9	100.0	71.1	19.6	28.9
3/8"	24.8	88.9	100.0	61.7	9.3	38.3
#4	5.4	27.3	97.6	44.2	17.6	55.8
#8	2.8	8.5	84.4	35.6	8.6	64.4
#16	2.4	4.3	71.8	29.9	5.6	70.1
#30	2.3	3.5	50.5	21.4	8.5	78.6
#50	2.2	3.2	18.6	8.8	12.6	91.2
#100	2.1	3.0	3.2	2.6	6.1	97.4
LBW	1.8	2.9	1.7	1.9	0.7	98.1

Superior Materials, LLC
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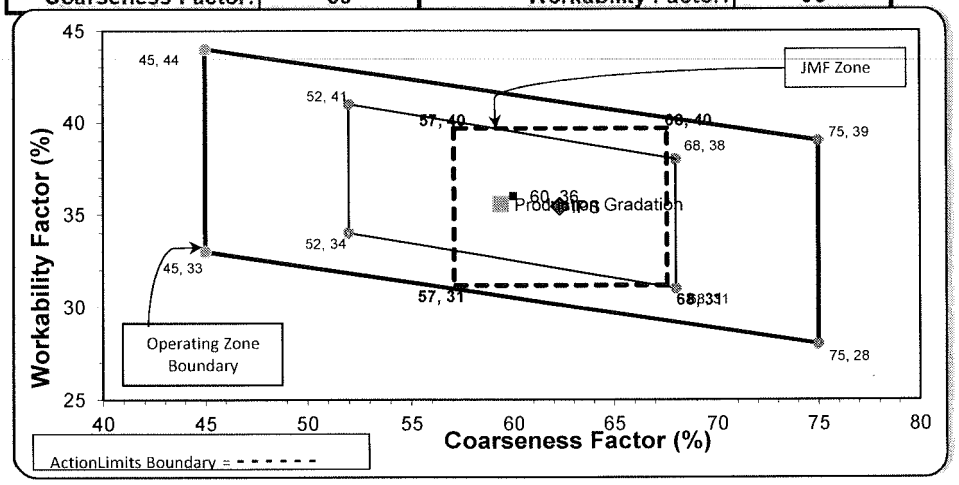
Farmington Hills, MI 48336

*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:	59	Workability Factor:	36



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"	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:

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Period: 07/26/2020 - 08/01/2020

Name/Title Doug Storey / QC Technician

Report Date 08/01/2020

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)	81.1	%	
	1/2" (12.5mm)	41.7	%	30-60
	3/8" (9.5mm)	24.8	%	
	#4 (4.75mm)	5.4	%	0-8
	#8 (2.36mm)	2.8	%	
	#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	3.52	%	

StonemontQC

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Period: 07/26/2020 - 08/01/2020

Name/Title Doug Storey / QC Technician

Report Date 08/01/2020

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)	97.9	%	95-100
	3/8" (9.5mm)	88.9	%	60-95
	#4 (4.75mm)	27.3	%	5-30
	#8 (2.36mm)	8.5	%	0-12
	#16 (1.18mm)	4.3	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.2	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.9	%	
	Wash Loss (#200/75um)	2.8	%	0-3
	Total Moisture	0.19	%	

StonemontQC

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Period: 07/26/2020 - 08/01/2020

Name/Title Doug Storey / QC Technician

Report Date 08/01/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.6	%	95-100
	#8 (2.36mm)	84.4	%	65-95
	#16 (1.18mm)	71.8	%	35-75
	#30 (.6mm)	50.5	%	20-55
	#50 (.3mm)	18.6	%	10-30
	#100 (.15mm)	3.2	%	0-10
	#200 (75µm)	1.7	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	1.5	%	0-3
	Total Moisture	3.02	%	