Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 8/10/20

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 8/11/2020 through 8/17/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	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"	98.8	100.0	100.0	99.4	0.6	0.6
3/4"	81.8	100.0	100.0	90.3	9.0	9.7
1/2"	39.9	95.2	100.0	67.8	22.6	32.2
3/8"	22.1	84.0	100.0	57.6	10.2	42.4
#4	4.2	23.3	96.7	42.8	14.8	57.2
#8	2.4	7.3	83.1	35.3	7.5	64.7
#16	2.1	4.1	67.2	28.5	6.8	71.5
#30	2.0	3.5	45.7	19.7	8.8	80.3
#50	2.0	3.3	21.3	9.9	9.9	90.1
#100	1.9	3.0	5.4	3.4	6.5	96.6
LBW	1.7	2.8	0.9	1.4	1.9	98.6

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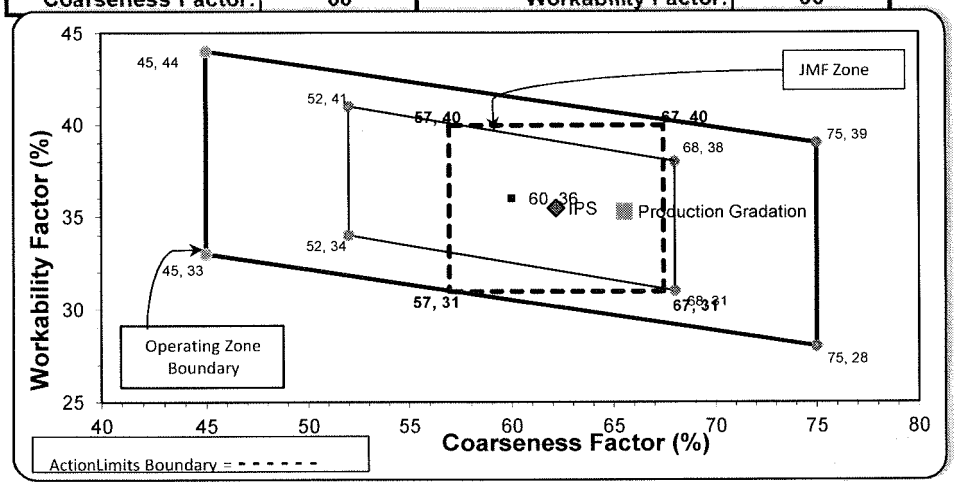
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	66	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: 08/09/2020 - 08/15/2020

Name/Title Doug Storey / QC Technician

Report Date 08/14/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.8	%	95-100
	3/4" (19mm)	81.8	%	
	1/2" (12.5mm)	39.9	%	30-60
	3/8" (9.5mm)	22.1	%	
	#4 (4.75mm)	4.2	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.9	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-2
	Total Moisture	2.7	%	

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Plant 958-JMT

Product 1067-26A Mod LS

Period: 08/10/2020 - 08/17/2020

Name/Title Doug Storey / QC Technician

Report Date 08/17/2020

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)	95.2	%	95-100
	3/8" (9.5mm)	84.0	%	60-95
	#4 (4.75mm)	23.3	%	5-30
	#8 (2.36mm)	7.3	%	0-12
	#16 (1.18mm)	4.1	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.8	%	
	Wash Loss (#200/75um)	2.7	%	0-3
	Total Moisture	4.3	%	

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Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 08/09/2020 - 08/15/2020

Name/Title Doug Storey / QC Technician

Report Date 08/14/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.7	%	95-100
	#8 (2.36mm)	83.1	%	65-95
	#16 (1.18mm)	67.2	%	35-75
	#30 (.6mm)	45.7	%	20-55
	#50 (.3mm)	21.3	%	10-30
	#100 (.15mm)	5.4	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.81		2.6-3
	Wash Loss (#200/75um)	0.8	%	0-3
	Total Moisture	5.5	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Sample Date: 8/10/20

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 8/11/2020 through 8/17/2020

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"	97.6	100.0	100.0	98.8	1.2	1.2
3/4"	75.6	100.0	100.0	88.0	10.8	12.0
1/2"	35.0	96.1	100.0	67.6	20.4	32.4
3/8"	20.8	84.5	100.0	59.3	8.3	40.7
#4	4.3	25.4	97.9	43.5	15.7	56.5
#8	2.4	7.4	86.0	35.9	7.7	64.1
#16	2.2	3.9	71.5	29.7	6.2	70.3
#30	2.1	3.3	49.5	20.9	8.8	79.1
#50	2.0	3.0	17.0	8.0	12.9	92.0
#100	1.8	2.8	2.2	2.1	5.9	97.9
LBW	1.7	2.4	0.9	1.5	0.6	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.

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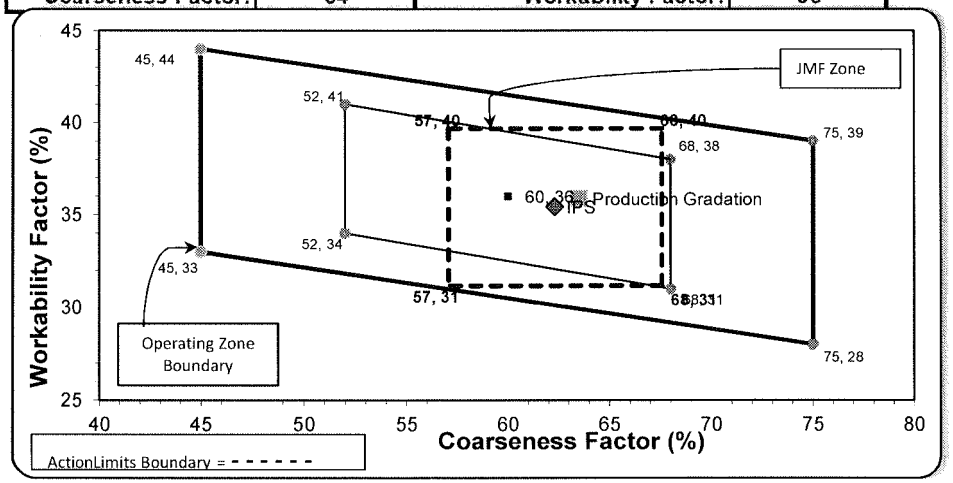
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	64	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: 08/09/2020 - 08/15/2020

Name/Title Doug Storey / QC Technician

Report Date 08/14/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	97.6	%	95-100
	3/4" (19mm)	75.6	%	
	1/2" (12.5mm)	35.0	%	30-60
	3/8" (9.5mm)	20.8	%	
	#4 (4.75mm)	4.3	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-2
	Total Moisture	3.46	%	

2470 Auburn Road
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Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Period: 08/09/2020 - 08/15/2020

Name/Title Doug Storey / QC Technician

Report Date 08/14/2020

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)	96.1	%	95-100
	3/8" (9.5mm)	84.5	%	60-95
	#4 (4.75mm)	25.4	%	5-30
	#8 (2.36mm)	7.4	%	0-12
	#16 (1.18mm)	3.9	%	
	#30 (.6mm)	3.3	%	
	#50 (.3mm)	3.0	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75um)	2.2	%	0-3
	Total Moisture	3.71	%	

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Period: 08/09/2020 - 08/15/2020

Name/Title Doug Storey / QC Technician

Report Date 08/14/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.9	%	95-100
	#8 (2.36mm)	86.0	%	65-95
	#16 (1.18mm)	71.5	%	35-75
	#30 (.6mm)	49.5	%	20-55
	#50 (.3mm)	17.0	%	10-30
	#100 (.15mm)	2.2	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.76		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	3.58	%	