Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Contractor: _____

Sample Date: 4/20/20

Concrete Grade: S2M

Dates Test Represents: 4/21/2020 through 4/27/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1470	8.99	2.62	48.2
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	63-115	Ray Rd	1280	7.74	2.65	42.0
		Total Wt	**3050**	**18.57**		100.0

<----- Verify this number is 100%

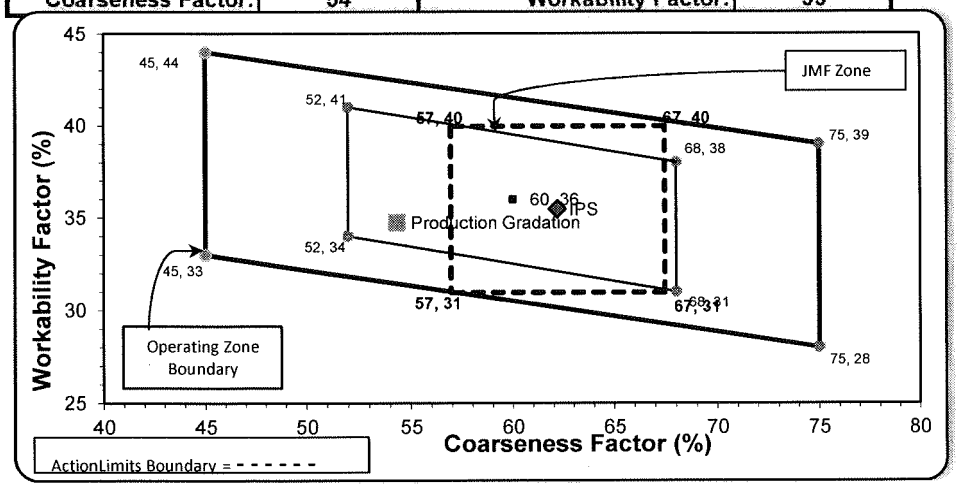
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.4	100.0	100.0	98.3	1.7	1.7
3/4"	83.0	100.0	100.0	91.8	6.5	8.2
1/2"	46.9	98.1	100.0	74.2	17.6	25.8
3/8"	28.6	89.4	100.0	64.5	9.7	35.5
#4	4.8	27.7	95.9	45.3	19.3	54.7
#8	2.4	9.1	77.9	34.7	10.5	65.3
#16	2.0	4.6	62.4	27.6	7.1	72.4
#30	1.9	3.8	47.8	21.3	6.3	78.7
#50	1.8	3.5	25.0	11.7	9.6	88.3
#100	1.6	3.2	7.0	4.0	7.7	96.0
LBW	1.2	2.7	1.3	1.4	2.6	98.6

*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.
Suite 500
Farmington Hills, MI 48336

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	54	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: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.4	%	95-100
	3/4" (19mm)	83.0	%	
	1/2" (12.5mm)	46.9	%	30-60
	3/8" (9.5mm)	28.6	%	
	#4 (4.75mm)	4.8	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.0	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.2	%	0-2
	Total Moisture	3.4	%	

Edw. C. Levy Co.

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Detroit, 48209
(313) 429-2429

Plant 958-JMT

Product 1067-26A Mod LS

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

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)	98.1	%	95-100
	3/8" (9.5mm)	89.4	%	60-95
	#4 (4.75mm)	27.7	%	5-30
	#8 (2.36mm)	9.1	%	0-12
	#16 (1.18mm)	4.6	%	
	#30 (.6mm)	3.8	%	
	#50 (.3mm)	3.5	%	
	#100 (.15mm)	3.2	%	
	#200 (75µm)	2.9	%	
	Wash Loss (#200/75um)	2.7	%	0-3
	Total Moisture	3.8	%	

Edw. C. Levy Co.

8911 W. Jefferson
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(313) 429-2429

Plant 958-JMT

Product 1022-2NS GR

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

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)	77.9	%	65-95
	#16 (1.18mm)	62.4	%	35-75
	#30 (.6mm)	47.8	%	20-55
	#50 (.3mm)	25.0	%	10-30
	#100 (.15mm)	7.0	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	3.6	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Contractor: _____

Sample Date: 4/20/20

Concrete Grade: **S2M**

Dates Test Represents: 4/21/2020 through 4/27/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1650	10.09	2.62	54.1
26A	71-47	Presque Isle	200	1.22	2.62	6.6
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"	96.8	100.0	100.0	98.3	1.7	1.7
3/4"	79.0	100.0	100.0	88.6	9.6	11.4
1/2"	42.9	95.3	100.0	68.8	19.8	31.2
3/8"	25.0	77.3	100.0	57.9	10.9	42.1
#4	4.1	15.9	97.0	41.4	16.5	58.6
#8	2.7	4.6	83.3	34.5	6.9	65.5
#16	2.2	2.8	68.2	28.2	6.3	71.8
#30	1.8	2.5	50.2	20.9	7.3	79.1
#50	1.7	2.3	22.4	9.9	11.0	90.1
#100	1.5	2.1	4.5	2.7	7.2	97.3
LBW	1.0	1.4	0.9	1.0	1.7	99.0

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30701 W. 10 Mile Rd.
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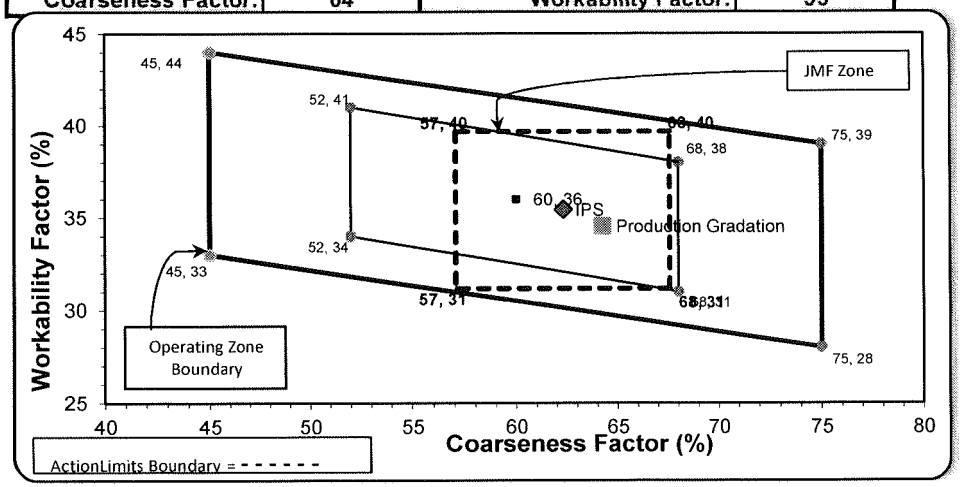
Farmington Hills, MI 48336

*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:	64	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"	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: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.8	%	95-100
	3/4" (19mm)	79.0	%	
	1/2" (12.5mm)	42.9	%	30-60
	3/8" (9.5mm)	25.0	%	
	#4 (4.75mm)	4.1	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.15	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	3.16	%	

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

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)	95.3	%	95-100
	3/8" (9.5mm)	77.3	%	60-95
	#4 (4.75mm)	15.9	%	5-30
	#8 (2.36mm)	4.6	%	0-12
	#16 (1.18mm)	2.8	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	4.00	%	

2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.0	%	95-100
	#8 (2.36mm)	83.3	%	65-95
	#16 (1.18mm)	68.2	%	35-75
	#30 (.6mm)	50.2	%	20-55
	#50 (.3mm)	22.4	%	10-30
	#100 (.15mm)	4.5	%	0-10
	#200 (75µm)	1.3	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	0.9	%	0-3
	Total Moisture	3.89	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-39

Contractor: _____

Sample Date: 4/20/20

Concrete Grade: S2M

Dates Test Represents: 4/21/2020 through 4/27/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1700	10.40	2.62	55.7
26A	71-47	Presque Isle	150	0.92	2.62	4.9
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"	98.5	100.0	100.0	99.2	0.8	0.8
3/4"	83.7	100.0	100.0	90.9	8.2	9.1
1/2"	40.3	97.9	100.0	66.6	24.3	33.4
3/8"	22.5	84.6	100.0	56.0	10.6	44.0
#4	5.1	26.7	97.6	42.6	13.5	57.4
#8	3.2	8.4	84.7	35.5	7.0	64.5
#16	2.7	4.3	70.0	29.3	6.3	70.7
#30	2.5	3.6	50.2	21.3	7.9	78.7
#50	2.4	3.3	21.4	9.9	11.4	90.1
#100	2.2	3.0	3.9	2.9	7.0	97.1
LBW	1.5	2.6	0.8	1.3	1.6	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. Max. 1.5") aggregate is used.

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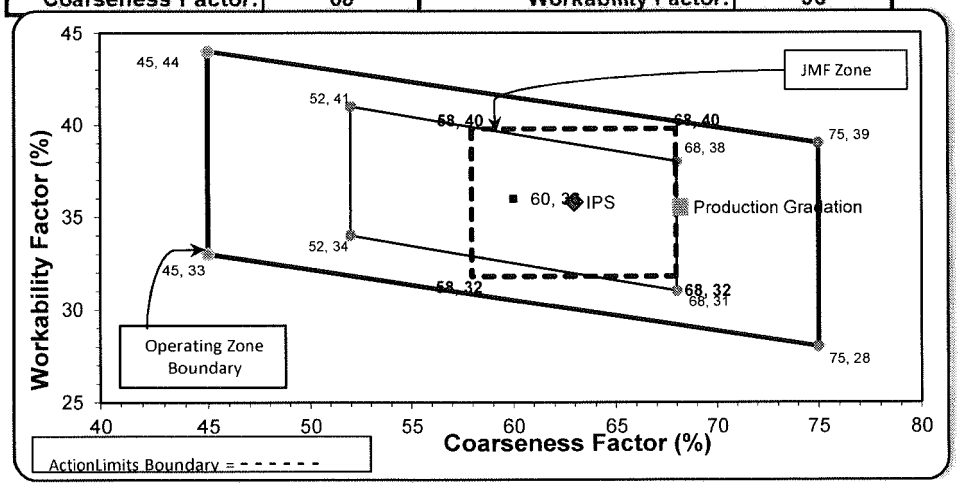
Farmington Hills, MI 48336

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	68	Workability Factor:	36



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"	89.8	10.2	10.2
1/2"	70.7	19.1	29.3
3/8"	59.6	11.1	40.4
#4	43.2	16.4	56.8
#8	35.8	7.4	64.2
#16	29.2	6.6	70.8
#30	21.4	7.8	78.6
#50	9.8	11.6	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

PREPARED BY:
SM, LLC Technical Service

Approved By:

Plant S39-Superior Sterling Heights

Product 1051-6AA LS

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.5	%	95-100
	3/4" (19mm)	83.7	%	
	1/2" (12.5mm)	40.3	%	30-60
	3/8" (9.5mm)	22.5	%	
	#4 (4.75mm)	5.1	%	0-8
	#8 (2.36mm)	3.2	%	
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.60	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	3.06	%	

Plant S39-Superior Sterling Heights

Product 1067-26A Mod LS

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

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)	84.6	%	60-95
	#4 (4.75mm)	26.7	%	5-30
	#8 (2.36mm)	8.4	%	0-12
	#16 (1.18mm)	4.3	%	
	#30 (.6mm)	3.6	%	
	#50 (.3mm)	3.3	%	
	#100 (.15mm)	3.0	%	
	#200 (75µm)	2.6	%	
	Wash Loss (#200/75um)	2.6	%	0-3
	Total Moisture	4.29	%	

Plant S39-Superior Sterling Heights

Product 1022-2NS GR

Period: 04/19/2020 - 04/25/2020

Name/Title Doug Storey / QC Technician

Report Date 04/24/2020

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)	84.7	%	65-95
	#16 (1.18mm)	70.0	%	35-75
	#30 (.6mm)	50.2	%	20-55
	#50 (.3mm)	21.4	%	10-30
	#100 (.15mm)	3.9	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	0.8	%	0-3
	Total Moisture	3.79	%	