Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 9/7/20

Concrete Grade: P1M

Dates Test Represents: 9/8/2020 through 9/14/2020

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	870	5.32	2.62	28.3
IA	71-47	Presque Isle	950	5.81	2.62	30.9
2NS	95-013	Smelter Bay	1250	7.56	2.65	40.7
		Total Wt	**3070**	**18.69**		100.0

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	93.6	100.0	100.0	98.2	1.8	1.8
1"	35.1	100.0	100.0	81.6	16.6	18.4
3/4"	14.2	98.3	100.0	75.2	6.4	24.8
1/2"	1.7	81.3	100.0	66.4	8.8	33.6
3/8"	1.7	53.7	100.0	57.8	8.5	42.2
#4	1.6	12.1	96.0	43.3	14.5	56.7
#8	1.6	5.9	83.1	36.1	7.2	63.9
#16	1.5	3.8	68.4	29.5	6.7	70.5
#30	1.5	3.1	47.8	20.8	8.6	79.2
#50	1.4	2.6	21.8	10.1	10.8	89.9
#100	1.3	2.2	5.8	3.4	6.7	96.6
LBW	1.1	1.6	1.8	1.5	1.9	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.
Suite 500
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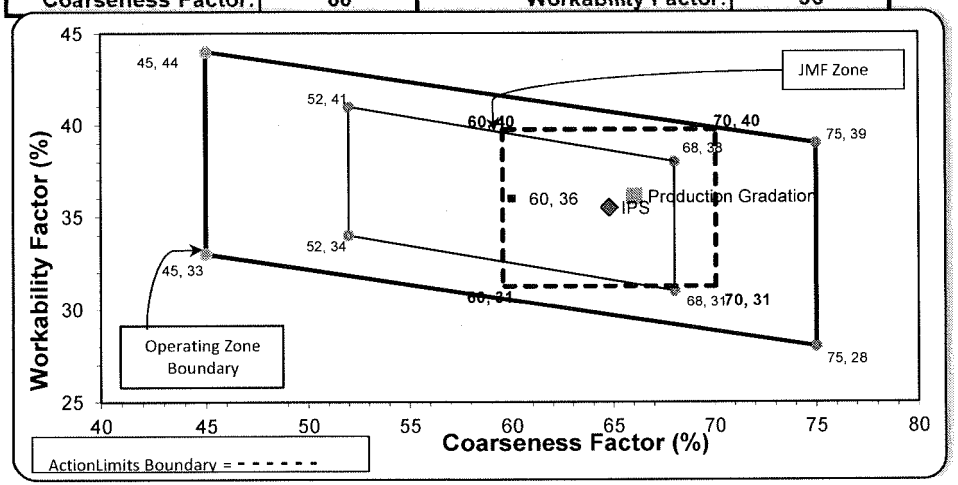
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	66	Workability Factor:	36



Intial Production Sample (IPS)

Coarseness Factor:	65
Workability Factor:	36

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.0	0.6	0.6
1"	84.0	15.3	16.0
3/4"	73.5	10.5	26.5
1/2"	65.2	8.2	34.8
3/8"	58.2	7.1	41.8
#4	44.1	14.1	55.9
#8	35.5	8.6	64.5
#16	29.1	6.4	70.9
#30	21.9	7.3	78.1
#50	9.6	12.2	90.4
#100	2.6	7.1	97.4
LBW	1.0	1.6	99.0

PREPARED BY:
SM, LLC Technical Service

Approved By:

Edw. C. Levy Co.

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

Plant 958-JMT

Product 7919-COARSE AGG P1M LS PI

Period: 09/06/2020 - 09/12/2020

Name/Title Doug Storey / QC Technician

Report Date 09/11/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	93.6	%	
	1" (25mm)	35.1	%	
	3/4" (19mm)	14.2	%	
	1/2" (12.5mm)	1.7	%	
	3/8" (9.5mm)	1.7	%	
	#4 (4.75mm)	1.6	%	
	#8 (2.36mm)	1.6	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.4	%	
	#100 (.15mm)	1.3	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75um)	1.1	%	0-2
	Total Moisture	2.6	%	

Edw. C. Levy Co.

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Plant 958-JMT

Product 7920-INTERMED AGG P1M LS PI

Period: 09/06/2020 - 09/12/2020

Name/Title Doug Storey / QC Technician

Report Date 09/11/2020

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	98.3	%	
	1/2" (12.5mm)	81.3	%	
	3/8" (9.5mm)	53.7	%	
	#4 (4.75mm)	12.1	%	
	#8 (2.36mm)	5.9	%	
	#16 (1.18mm)	3.8	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	3.1	%	

Edw. C. Levy Co.

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Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Period: 09/06/2020 - 09/12/2020

Name/Title Doug Storey / QC Technician

Report Date 09/11/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.0	%	95-100
	#8 (2.36mm)	83.1	%	65-95
	#16 (1.18mm)	68.4	%	35-75
	#30 (.6mm)	47.8	%	20-55
	#50 (.3mm)	21.8	%	10-30
	#100 (.15mm)	5.8	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.77		2.6-3
	Wash Loss (#200/75um)	1.8	%	0-3
	Total Moisture	6.7	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-39

Contractor: _____

Sample Date: 9/7/20

Concrete Grade: **P1M**

Dates Test Represents: 9/8/2020 through 9/14/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	950	5.81	2.62	30.9
2NS	44-051	Krake Willis Rd	1220	7.38	2.65	39.7
		Total Wt	**3070**	**18.69**		100.0

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

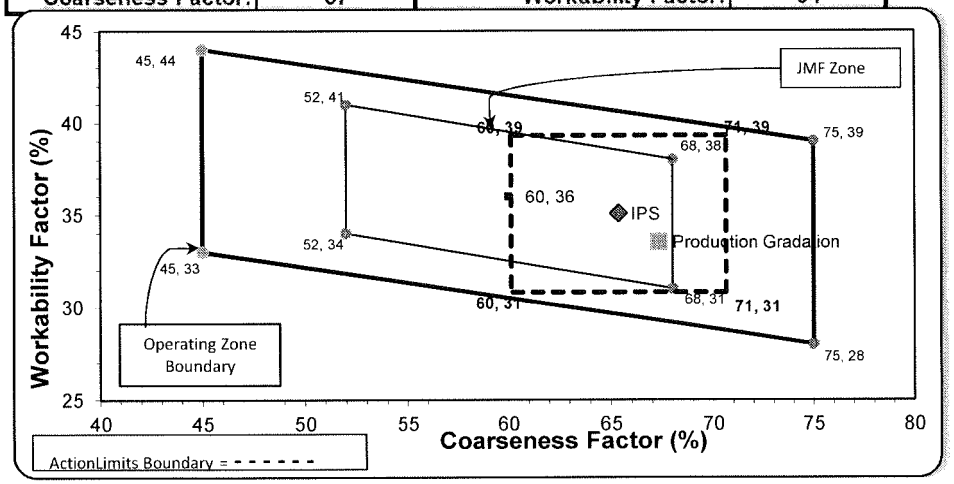
Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	50.7	100.0	100.0	85.5	14.5	14.5
3/4"	16.0	96.6	100.0	74.3	11.2	25.7
1/2"	7.3	68.7	100.0	63.1	11.2	36.9
3/8"	5.4	45.0	100.0	55.2	7.9	44.8
#4	3.2	10.5	96.1	42.4	12.9	57.6
#8	2.6	4.7	78.8	33.5	8.8	66.5
#16	2.3	3.3	63.0	26.7	6.8	73.3
#30	2.3	2.9	46.9	20.2	6.5	79.8
#50	2.2	2.7	20.6	9.7	10.5	90.3
#100	2.1	2.6	6.0	3.8	5.9	96.2
LBW	1.5	2.0	1.4	1.6	2.2	98.4

*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 SupplierGradations

Coarseness Factor:	67	Workability Factor:	34



Intial Production Sample (IPS)

Coarseness Factor:	65
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	83.9	15.7	16.1
3/4"	74.1	9.8	25.9
1/2"	64.3	9.7	35.7
3/8"	57.5	6.8	42.5
#4	44.5	13.1	55.5
#8	35.1	9.4	64.9
#16	27.9	7.2	72.1
#30	21.7	6.2	78.3
#50	12.6	9.1	87.4
#100	3.5	9.1	96.5
LBW	1.2	2.4	98.8

PREPARED BY:
SM, LLC Technical Service

Approved By:

SUPERIOR MATERIALS

Plant S39-Superior Sterling Heights

Product 7919-COARSE AGG P1M LS

Period: 09/06/2020 - 09/12/2020

Name/Title Doug Storey / QC Technician

Report Date 09/11/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	50.7	%	
	3/4" (19mm)	16.0	%	
	1/2" (12.5mm)	7.3	%	
	3/8" (9.5mm)	5.4	%	
	#4 (4.75mm)	3.2	%	
	#8 (2.36mm)	2.6	%	
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	2.56	%	

SUPERIOR MATERIALS

Plant S39-Superior Sterling Heights

Product 7920-INTERMED AGG P1M LS

Period: 09/06/2020 - 09/12/2020

Name/Title Doug Storey / QC Technician

Report Date 09/11/2020

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	96.6	%	
	1/2" (12.5mm)	68.7	%	
	3/8" (9.5mm)	45.0	%	
	#4 (4.75mm)	10.5	%	
	#8 (2.36mm)	4.7	%	
	#16 (1.18mm)	3.3	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	2.3	%	
	Wash Loss (#200/75um)	2.0	%	0-3
	Total Moisture	3.48	%	

Plant S39-Superior Sterling Heights

Product 1022-2NS GR

Period: 09/06/2020 - 09/12/2020

Name/Title Doug Storey / QC Technician

Report Date 09/11/2020

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)	78.8	%	65-95
	#16 (1.18mm)	63.0	%	35-75
	#30 (.6mm)	46.9	%	20-55
	#50 (.3mm)	20.6	%	10-30
	#100 (.15mm)	6.0	%	0-10
	#200 (75µm)	1.6	%	
	FM	2.88		2.6-3
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	0.71	%	