

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

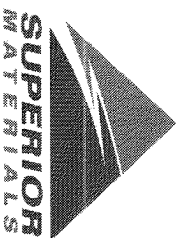
Sample Date: **12/7/20**

Dates Test Represents: **12/8/2020** through **12/14/2020**

Concrete Grade: **P1M**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

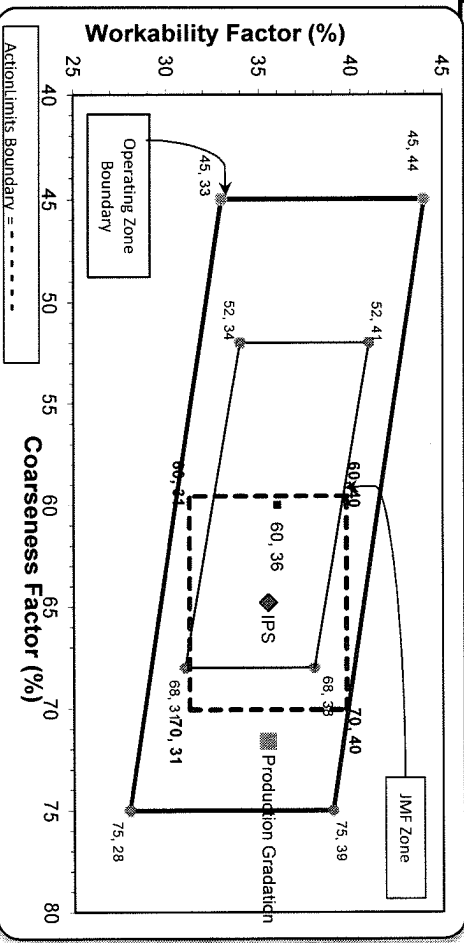
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	1070	6.54	2.62	34.9
IA	71-47	Presque Isle	750	4.59	2.62	24.4
NNS	95-013	Smelter Bay	1250	7.56	2.65	40.7
Total Wt			3070	18.69		100.0

Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.2	100.0	100.0	98.3	1.7	1.7
1"	45.3	100.0	100.0	80.9	17.4	19.1
3/4"	14.0	98.3	100.0	69.6	11.3	30.4
1/2"	4.0	75.5	100.0	60.6	9.1	39.4
3/8"	2.0	50.7	100.0	53.8	6.8	46.2
#4	2.0	10.8	95.8	42.3	11.5	57.7
#8	1.9	4.4	82.9	35.5	6.9	64.5
#16	1.9	3.1	66.8	28.6	6.9	71.4
#30	1.8	2.8	46.6	20.3	8.3	79.7
#50	1.8	2.6	27.4	12.4	7.9	87.6
#100	1.7	2.5	9.5	5.1	7.3	94.9
LBW	1.4	1.8	1.2	1.4	3.7	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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **72** Workability Factor: **35**



Initial Production Sample (IPS)

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.

Plant 958-JMT
 Product 7919-COARSE AGG P1M LS PI
 Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
 Report Date 12/12/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	95.2	%	
	1" (25mm)	45.3	%	
	3/4" (19mm)	14.0	%	
	1/2" (12.5mm)	4.0	%	
	3/8" (9.5mm)	2.0	%	
	#4 (4.75mm)	2.0	%	
	#8 (2.36mm)	1.9	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.4	%	0-2
	Total Moisture	2.1	%	

Edw. C. Levy Co.

Plant 958-JMT
 Product 7920-INTERMED AGG P1M LS PI
 Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
 Report Date 12/11/2020

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)	75.5	%	
	3/8" (9.5mm)	50.7	%	
	#4 (4.75mm)	10.8	%	
	#8 (2.36mm)	4.4	%	
	#16 (1.18mm)	3.1	%	
	#30 (.6mm)	2.8	%	
	#50 (.3mm)	2.6	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	1.8	%	0-3
	Total Moisture	3.5	%	

Edw. C. Levy Co.

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

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

Report Date 12/11/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.8	%	95-100
	#8 (2.36mm)	82.9	%	65-95
	#16 (1.18mm)	66.8	%	35-75
	#30 (.6mm)	46.6	%	20-55
	#50 (.3mm)	27.4	%	10-30
	#100 (.15mm)	9.5	%	0-10
	#200 (75µm)	1.4	%	
	FM	2.71		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	4.7	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-39

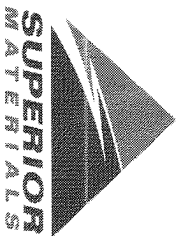
Sample Date: 12/7/20

Dates Test Represents: 12/8/2020 through 12/14/2020

Concrete Grade: P1M

Contractor: _____

MDOT No.: _____



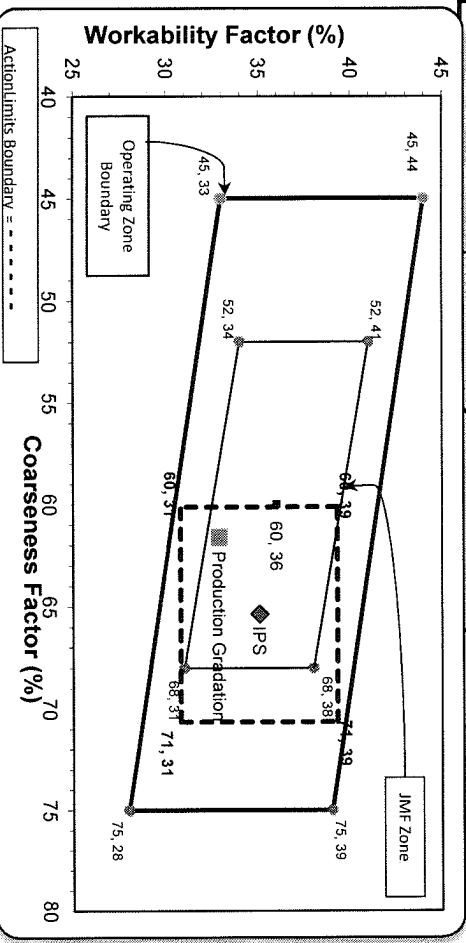
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	900	5.50	2.62	29.3
ZNS	44-051	Krake Willis Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

Sieve	CA	IA	ZNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	62.5	100.0	100.0	88.2	11.8	11.8
1"	24.8	100.0	100.0	76.2	23.8	23.8
3/4"	6.8	98.5	100.0	70.1	29.9	29.9
1/2"	4.9	83.8	100.0	65.2	34.8	34.8
3/8"	3.3	63.2	100.0	58.7	41.3	41.3
#4	3.0	19.6	95.2	43.9	56.1	56.1
#8	2.7	6.5	77.1	32.9	67.1	67.1
#16	2.5	3.7	62.1	26.1	73.9	73.9
#30	2.3	3.1	47.5	20.2	79.8	79.8
#50	2.1	2.9	29.5	13.0	87.0	87.0
#100	2.0	2.7	3.2	2.7	97.3	97.3
LBW	1.7	1.9	1.1	1.5	98.5	98.5

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 62 Workability Factor: 33



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	65	35	0.0	0.0
1.5"			0.4	0.4
1"			15.7	16.1
3/4"			25.9	25.9
1/2"			35.7	35.7
3/8"			42.5	42.5
#4			55.5	55.5
#8			64.9	64.9
#16			72.1	72.1
#30			78.3	78.3
#50			87.4	87.4
#100			96.5	96.5
LBW			98.8	98.8

*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.

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S39-Superior Sterling Heights
 Product 7919-COARSE AGG P1M LS
 Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
 Report Date 12/11/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	62.5	%	
	1" (25mm)	24.8	%	
	3/4" (19mm)	6.8	%	
	1/2" (12.5mm)	4.9	%	
	3/8" (9.5mm)	3.3	%	
	#4 (4.75mm)	3.0	%	
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.5	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.1	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	3.71	%	



Plant S39-Superior Sterling Heights
 Product 7920-INTERMED AGG P1M LS
 Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
 Report Date 12/11/2020

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)	98.5	%	
	1/2" (12.5mm)	83.8	%	
	3/8" (9.5mm)	63.2	%	
	#4 (4.75mm)	19.6	%	
	#8 (2.36mm)	6.5	%	
	#16 (1.18mm)	3.7	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.9	%	
	#100 (.15mm)	2.7	%	
	#200 (75µm)	2.2	%	
	Wash Loss (#200/75µm)	1.9	%	0-3
	Total Moisture	4.24	%	



Plant S39-Superior Sterling Heights
Product 1022-2NS GR
Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
Report Date 12/11/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.2	%	95-100
	#8 (2.36mm)	77.1	%	65-95
	#16 (1.18mm)	62.1	%	35-75
	#30 (.6mm)	47.5	%	20-55
	#50 (.3mm)	29.5	%	10-30
	#100 (.15mm)	3.2	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.85		2.6-3
	Wash Loss (#200/75um)	1.1	%	0-3
	Total Moisture	3.93	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-101

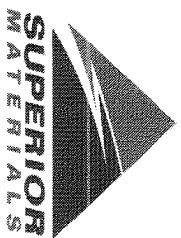
Sample Date: 12/7/20

Dates Test Represents: 12/8/2020 through 12/14/2020

Concrete Grade: P1M

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

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

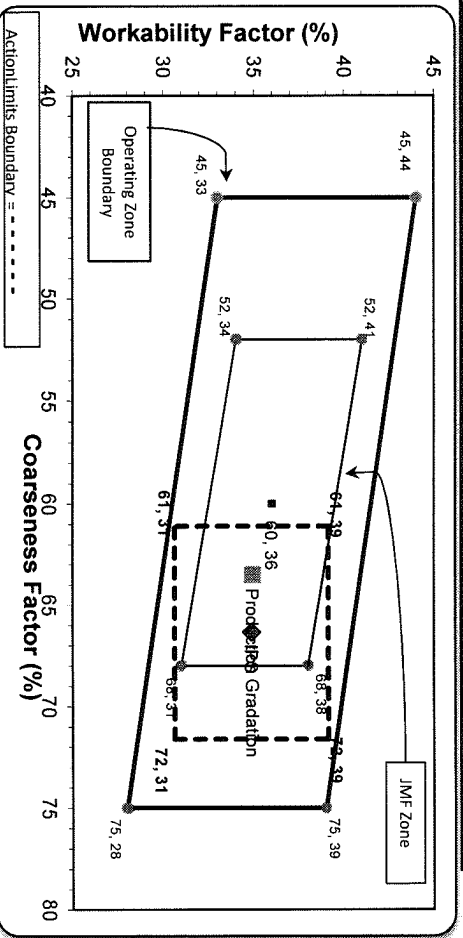
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	900	5.50	2.62	29.3
N2S	75-051	Mid-Michigan	1200	7.23	2.66	39.1
		Total Wt	3070			100.0

Sieve	CA	IA	N2S	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"	56.8	100.0	100.0	86.4	13.6	13.6
3/4"	13.4	100.0	100.0	72.1	14.3	27.9
1/2"	4.5	82.1	100.0	64.6	7.5	35.4
3/8"	4.0	62.5	100.0	58.7	5.9	41.3
#4	3.4	15.0	96.1	43.0	15.6	57.0
#8	3.1	5.0	83.1	34.9	8.1	65.1
#16	2.9	2.9	68.1	28.4	6.5	71.6
#30	2.8	2.5	46.8	19.9	8.5	80.1
#50	2.7	2.3	25.9	11.7	8.3	88.3
#100	2.6	2.2	7.6	4.4	7.2	95.6
LBW	1.7	1.7	1.4	1.6	2.9	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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations
Coarseness Factor: 64 **Workability Factor: 35**

Initial Production Sample (IPS)
Coarseness Factor: 66 **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"	84.3	15.3	15.7
3/4"	74.8	9.6	25.2
1/2"	64.3	10.4	35.7
3/8"	56.8	7.5	43.2
#4	43.0	13.8	57.0
#8	34.9	8.1	65.1
#16	26.4	8.5	73.6
#30	19.9	6.5	80.1
#50	10.4	9.5	89.6
#100	3.4	7.0	96.6
LBW	1.2	2.2	98.8

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S101-Superior Mount Clemens
 Product 7919-COARSE AGG P1M LS
 Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
 Report Date 12/11/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	56.8	%	
	3/4" (19mm)	13.4	%	
	1/2" (12.5mm)	4.5	%	
	3/8" (9.5mm)	4.0	%	
	#4 (4.75mm)	3.4	%	
	#8 (2.36mm)	3.1	%	
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.8	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	2.44	%	



Plant S101-Superior Mount Clemens
 Product 7920-INTERMED AGG P1M LS
 Period: 12/06/2020 - 12/12/2020

Name/Title Doug Storey / QC Technician
 Report Date 12/11/2020

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)	98.0	%	
	1/2" (12.5mm)	82.1	%	
	3/8" (9.5mm)	62.5	%	
	#4 (4.75mm)	15.0	%	
	#8 (2.36mm)	5.0	%	
	#16 (1.18mm)	2.9	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.3	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.9	%	
	Wash Loss (#200/75um)	1.7	%	0-3
	Total Moisture	3.66	%	



Plant S101-Superior Mount Clemens

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

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

Report Date 12/11/2020

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)	83.1	%	65-95
	#16 (1.18mm)	68.1	%	35-75
	#30 (.6mm)	46.8	%	20-55
	#50 (.3mm)	25.9	%	10-30
	#100 (.15mm)	7.6	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	1.4	%	0-3
	Total Moisture	6.44	%	