

Aggregate Optimization Chart

PLANT #: P-32

Sample Date: 1/4/21

Dates Test Represents: 1/5/2021 through 1/11/2021

Concrete Grade: P1M

Contractor:

MIDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	820	5.02	2.62	26.7
2NS	95-013	Smeiter 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"	96.3	100.0	100.0	98.8	1.2	1.2
1"	37.4	100.0	100.0	79.6	19.2	20.4
3/4"	8.3	98.6	100.0	69.8	9.9	30.2
1/2"	2.8	76.4	100.0	62.0	7.7	38.0
3/8"	2.5	54.2	100.0	56.0	6.0	44.0
#4	2.4	9.8	96.4	42.7	13.4	57.3
#8	2.3	4.4	82.7	35.6	7.1	64.4
#16	2.1	3.3	67.0	28.8	6.8	71.2
#30	2.1	3.0	46.4	20.4	8.5	79.6
#50	2.0	2.8	19.1	9.2	11.2	90.8
#100	1.8	2.6	4.4	3.1	6.1	96.9
LBW	1.5	2.3	0.8	1.4	1.6	98.6

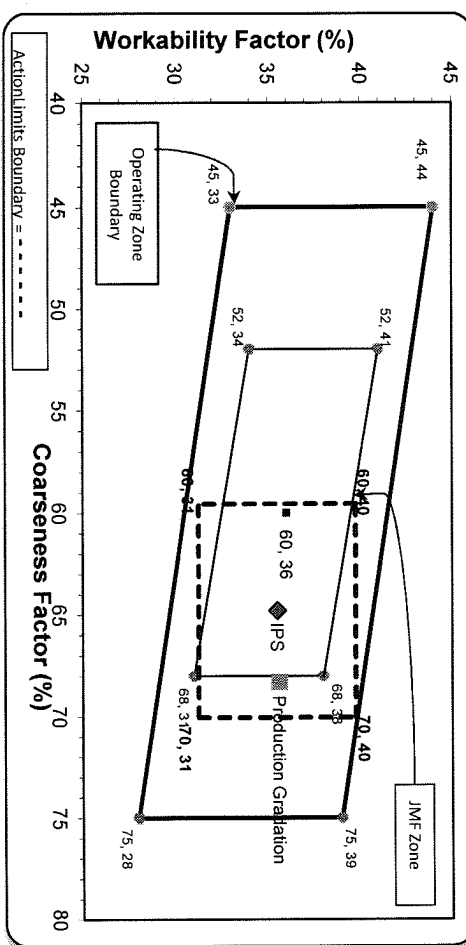
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size (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: 68 Workability Factor: 36



Initial Production Sample (IPS)

Sieve	% 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: 01/03/2021 - 01/09/2021

Name/Title Doug Storey / QC Technician

Report Date 01/08/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	96.3	%	
	1" (25mm)	37.4	%	
	3/4" (19mm)	8.3	%	
	1/2" (12.5mm)	2.8	%	
	3/8" (9.5mm)	2.5	%	
	#4 (4.75mm)	2.4	%	
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.8	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	1.5	%	

Edw. C. Levy Co.

Plant 958-JMT
 Product 7920-INTERMED AGG P1M LS PI
 Period: 01/03/2021 - 01/09/2021

Name/Title Doug Storey / QC Technician
 Report Date 01/08/2021

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)	98.6	%	
	1/2" (12.5mm)	76.4	%	
	3/8" (9.5mm)	54.2	%	
	#4 (4.75mm)	9.8	%	
	#8 (2.36mm)	4.4	%	
	#16 (1.18mm)	3.3	%	
	#30 (.6mm)	3.0	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.6	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75um)	2.3	%	0-3
	Total Moisture	3.2	%	

Edw. C. Levy Co.

Plant 958-JMT
Product 1022-2NS GR - Smelter Bay
Period: 01/03/2021 - 01/09/2021

Name/Title Doug Storey / QC Technician
Report Date 01/08/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.4	%	95-100
	#8 (2.36mm)	82.7	%	65-95
	#16 (1.18mm)	67.0	%	35-75
	#30 (.6mm)	46.4	%	20-55
	#50 (.3mm)	19.1	%	10-30
	#100 (.15mm)	4.4	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.84		2.6-3
	Wash Loss (#200/75um)	0.8	%	0-3
	Total Moisture	6.2	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

Sample Date: **1/4/21**

Dates Test Represents: **1/5/2021** through **1/11/2021**

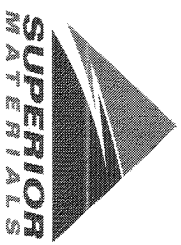
Concrete Grade: **P1M**

Contractor: _____

MDOT No.: _____

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	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt						18,700

Sieve	CA	IA	N2S	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	94.9	100.0	100.0	98.4	1.6	1.6
1"	46.0	100.0	100.0	82.9	15.5	17.1
3/4"	18.8	97.3	100.0	73.6	9.4	26.4
1/2"	6.1	73.0	100.0	62.4	11.1	37.6
3/8"	4.5	49.6	100.0	55.1	7.4	44.9
#4	3.1	6.8	96.9	40.8	14.2	59.2
#8	2.8	2.4	84.1	34.5	6.4	65.5
#16	2.7	1.8	68.9	28.3	6.1	71.7
#30	2.5	1.7	49.7	20.7	7.6	79.3
#50	2.4	1.6	19.1	8.7	12.0	91.3
#100	2.2	1.5	3.0	2.3	6.4	97.7
LBW	1.5	1.3	0.4	1.0	1.3	99.0



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

Production Gradation	Coarseness Factor:	Workability Factor:
<input checked="" type="radio"/> Batch Plant Gradations	69	34
<input type="radio"/> Aggregate Supplier Gradations		

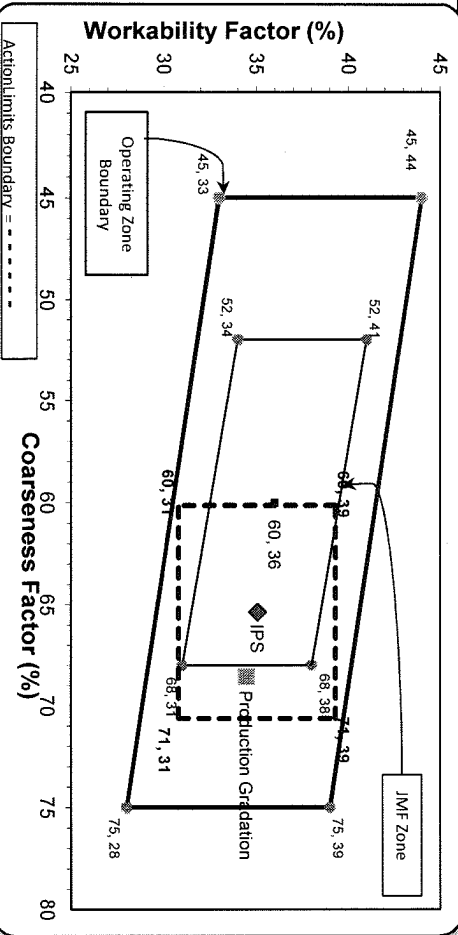
Initial Production Sample (IPS)

Coarseness Factor: **65**

Workability Factor: **35**

Verify this number is 100%

*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.



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: _____



Plant S39-Superior Sterling Heights
Product 7919-COARSE AGG P1M LS
Period: 01/03/2021 - 01/09/2021

Name/Title Doug Storey / QC Technician
Report Date 01/08/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	94.9	%	
	1" (25mm)	46.0	%	
	3/4" (19mm)	18.8	%	
	1/2" (12.5mm)	6.1	%	
	3/8" (9.5mm)	4.5	%	
	#4 (4.75mm)	3.1	%	
	#8 (2.36mm)	2.8	%	
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75µm)	1.5	%	0-2
	Total Moisture	3.35	%	



Plant S39-Superior Sterling Heights
 Product 7920-INTERMED AGG P1M LS
 Period: 01/03/2021 - 01/09/2021

Name/Title Doug Storey / QC Technician
 Report Date 01/08/2021

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)	97.3	%	
	1/2" (12.5mm)	73.0	%	
	3/8" (9.5mm)	49.6	%	
	#4 (4.75mm)	6.8	%	
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.6	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.3	%	0-3
	Total Moisture	4.39	%	



Plant S39-Superior Sterling Heights

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 01/03/2021 - 01/09/2021

Report Date 01/08/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.9	%	95-100
	#8 (2.36mm)	84.1	%	65-95
	#16 (1.18mm)	68.9	%	35-75
	#30 (.6mm)	49.7	%	20-55
	#50 (.3mm)	19.1	%	10-30
	#100 (.15mm)	3.0	%	0-10
	#200 (75µm)	0.7	%	
	FM	2.78		2.6-3
	Wash Loss (#200/75µm)	0.4	%	0-3
	Total Moisture	3.58	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-101

Sample Date: 1/4/21

Dates Test Represents: 1/5/2021 through 1/11/2021

Concrete Grade: P1M

Contractor: _____

MDOT No.: _____

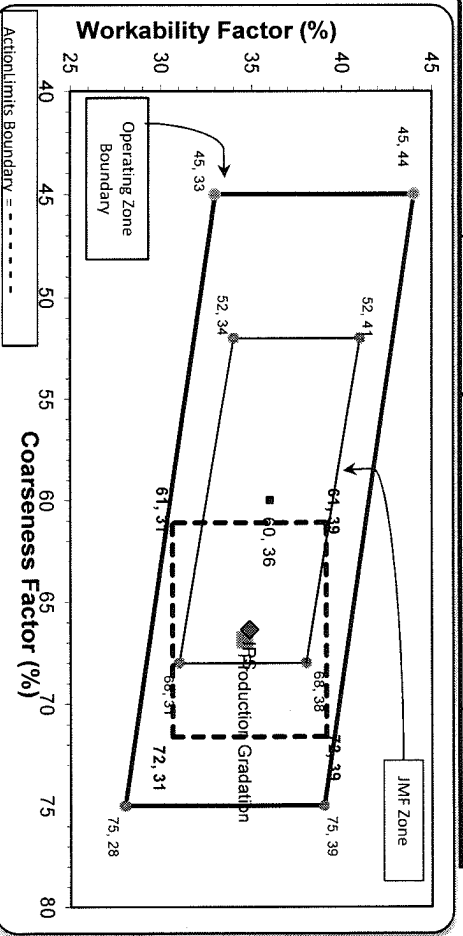
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	900	5.50	2.62	29.3
NNS	75-051	Mid-Michigan	1200	7.23	2.66	39.1
Total Wt			3070	18.67		100.0

Verify this number is 100%

Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.3	100.0	100.0	98.5	1.5	1.5
1"	39.7	100.0	100.0	80.9	17.6	19.1
3/4"	7.2	100.0	100.0	70.4	10.6	29.6
1/2"	2.0	100.0	100.0	62.6	7.7	37.4
3/8"	1.9	56.6	100.0	56.3	6.4	43.7
#4	1.9	10.5	98.7	42.3	14.0	57.7
#8	1.8	3.7	84.3	34.6	7.7	65.4
#16	1.8	2.6	69.1	28.3	6.3	71.7
#30	1.7	2.3	50.3	20.9	7.5	79.1
#50	1.7	2.2	24.1	10.6	10.3	89.4
#100	1.6	2.0	5.2	3.1	7.5	96.9
LBW	1.3	1.6	1.0	1.3	1.9	98.7

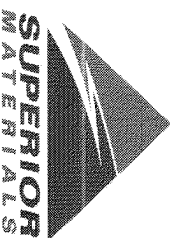
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max. #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size (nom.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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations
Coarseness Factor: 67 **Workability Factor: 35**



Initial Production Sample (IPS)

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



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

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Plant S101-Superior Mount Clemens

Product 7919-COARSE AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 01/03/2021 - 01/09/2021

Report Date 01/08/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	95.3	%	
	1" (25mm)	39.7	%	
	3/4" (19mm)	7.2	%	
	1/2" (12.5mm)	2.0	%	
	3/8" (9.5mm)	1.9	%	
	#4 (4.75mm)	1.9	%	
	#8 (2.36mm)	1.8	%	
	#16 (1.18mm)	1.8	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.6	%	
	#200 (75µm)	1.3	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	1.56	%	



Plant S101-Superior Mount Clemens
 Product 7920-INTERMED AGG P1M LS
 Period: 01/03/2021 - 01/09/2021

Name/Title Doug Storey / QC Technician
 Report Date 01/08/2021

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)	98.9	%	
	1/2" (12.5mm)	78.2	%	
	3/8" (9.5mm)	56.6	%	
	#4 (4.75mm)	10.5	%	
	#8 (2.36mm)	3.7	%	
	#16 (1.18mm)	2.6	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.7	%	
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	2.96	%	



Plant S101-Superior Mount Clemens

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 01/03/2021 - 01/09/2021

Report Date 01/08/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	98.7	%	95-100
	#8 (2.36mm)	84.3	%	65-95
	#16 (1.18mm)	69.1	%	35-75
	#30 (.6mm)	50.3	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	5.2	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.68		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	3.88	%	