

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Sample Date: **8/10/20**

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

Concrete Grade: **P1M**

Contractor: _____

MDOT No.: _____

Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	720	4.40	2.62	23.5
IA	71-47	Presque Isle	1100	6.73	2.62	35.8
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"	98.9	100.0	100.0	99.7	0.3	0.3
1"	35.9	100.0	100.0	85.0	14.8	15.0
3/4"	12.4	96.9	100.0	78.3	6.6	21.7
1/2"	3.5	62.4	100.0	63.9	14.4	36.1
3/8"	2.9	31.6	100.0	52.7	11.2	47.3
#4	2.4	6.0	96.7	42.1	10.6	57.9
#8	2.0	3.5	83.1	35.6	6.5	64.4
#16	1.9	3.1	67.2	28.9	6.6	71.1
#30	1.8	2.6	45.7	20.0	9.0	80.0
#50	1.7	2.4	21.3	9.9	10.0	90.1
#100	1.5	2.2	5.4	3.3	6.6	96.7
LBW	1.2	2.1	0.9	1.4	1.9	98.6

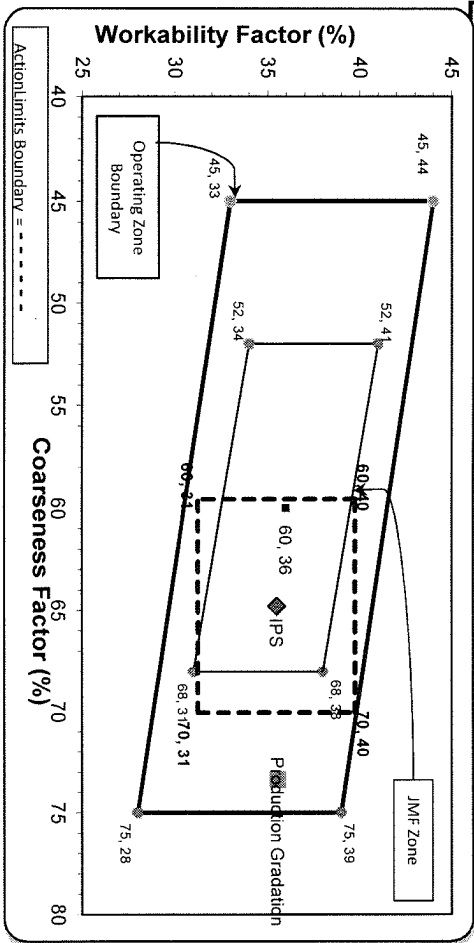


Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Production Gradation		Batch Plant Gradations		Aggregate Supplier Gradations	
Coarseness Factor:	73	Workability Factor:	36	Coarseness Factor:	65
Workability Factor:	36	Coarseness Factor:	73	Workability Factor:	36

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



*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 958-JMT

Product 7919-COARSE AGG P1M LS PI

Name/Title Doug Storey / QC Technician

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

Report Date 08/14/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	98.9	%	
	1" (25mm)	35.9	%	
	3/4" (19mm)	12.4	%	
	1/2" (12.5mm)	3.5	%	
	3/8" (9.5mm)	2.9	%	
	#4 (4.75mm)	2.4	%	
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.8	%	
	#50 (.3mm)	1.7	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	3.4	%	

Plant 958-JMT

Product 7920-INTERMED AGG P1M LS PI

Name/Title Doug Storey / QC Technician

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

Report Date 08/14/2020

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)	96.9	%	
	1/2" (12.5mm)	62.4	%	
	3/8" (9.5mm)	31.6	%	
	#4 (4.75mm)	6.0	%	
	#8 (2.36mm)	3.5	%	
	#16 (1.18mm)	3.1	%	
	#30 (.6mm)	2.6	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	1.9	%	0-3
	Total Moisture	1.2	%	

Edw. C. Levy Co.

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

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 (#200/75µm)	0.8	%	0-3
	Total Moisture	5.5	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Sample Date: 8/10/20

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

Concrete Grade: P1M

Contractor:

MDOT No.:

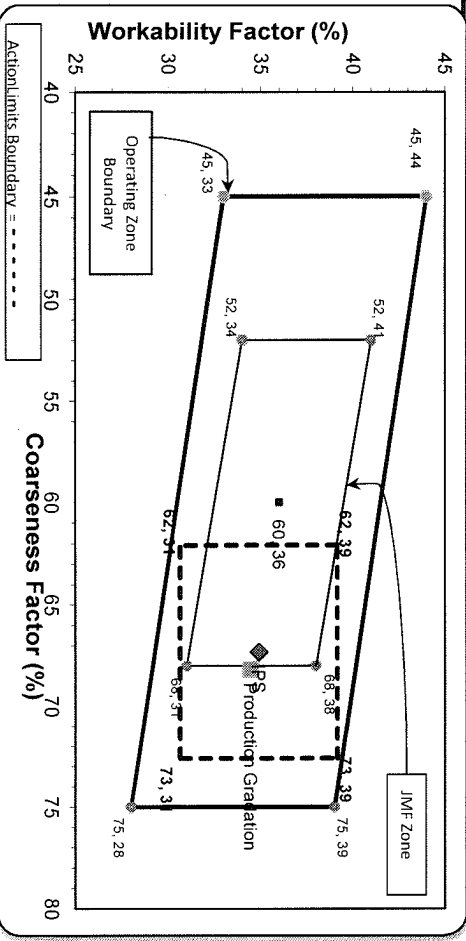
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	% Contribution
CA	58-003	Stonoco	1420	8.46	2.69	45.5
IA	58-003	Stonoco	500	2.98	2.69	16.0
2NS	63-114	Highland	1200	7.26	2.65	38.5
Total Wt						3120
						100.0

<----- 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"	72.0	100.0	100.0	87.3	12.7	12.7
3/4"	47.8	100.0	100.0	76.2	11.0	23.8
1/2"	23.9	90.2	100.0	63.8	12.4	36.2
3/8"	11.9	71.4	100.0	55.3	8.5	44.7
#4	4.2	25.6	99.1	44.1	11.2	55.9
#8	2.9	7.8	82.9	34.5	9.7	65.5
#16	2.7	3.6	65.0	26.8	7.6	73.2
#30	2.5	2.7	47.4	19.8	7.0	80.2
#50	2.2	2.4	24.1	10.7	9.1	89.3
#100	2.0	2.2	7.1	4.0	6.7	96.0
LBW	1.8	2.0	2.2	2.0	2.0	98.0

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

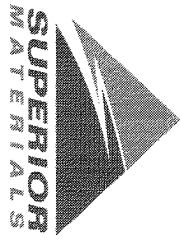
Coarseness Factor: 68 **Workability Factor:** 34



Initial Production Sample (IPS)

Coarseness Factor: 67 **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"	85.5	14.5	14.5
3/4"	73.4	12.1	26.6
1/2"	61.0	12.4	39.0
3/8"	56.2	4.8	43.8
#4	43.1	13.1	56.9
#8	34.9	8.2	65.1
#16	29.4	5.5	70.6
#30	21.6	7.8	78.4
#50	8.1	13.4	91.9
#100	2.2	5.9	97.8
LBW	1.4	0.8	98.6



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
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.

PREPARED BY:
SM, LLC Technical Service

Approved By:



Plant S102-Superior Novi
 Product 7919-COARSE AGG P1M LS
 Period: 08/09/2020 - 08/15/2020

Name/Title Doug Storey / QC Technician
 Report Date 08/14/2020

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	72.0	%	
	3/4" (19mm)	47.8	%	
	1/2" (12.5mm)	23.9	%	
	3/8" (9.5mm)	11.9	%	
	#4 (4.75mm)	4.2	%	
	#8 (2.36mm)	2.9	%	
	#16 (1.18mm)	2.7	%	
	#30 (.6mm)	2.5	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.0	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.7	%	0-2
	Total Moisture	2.01	%	



Plant S102-Superior Novi

Product 7920-INTERMED AGG P1M LS

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

Name/Title Doug Storey / QC Technician

Report Date 08/14/2020

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)	100.0	%	
	1/2" (12.5mm)	90.2	%	
	3/8" (9.5mm)	71.4	%	
	#4 (4.75mm)	25.6	%	
	#8 (2.36mm)	7.8	%	
	#16 (1.18mm)	3.6	%	
	#30 (.6mm)	2.7	%	
	#50 (.3mm)	2.4	%	
	#100 (.15mm)	2.2	%	
	#200 (75µm)	2.0	%	
	Wash Loss (#200/75um)	1.9	%	0-3
	Total Moisture	2.30	%	



Plant S102-Superior Novi
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)	99.1	%	95-100
	#8 (2.36mm)	82.9	%	65-95
	#16 (1.18mm)	65.0	%	35-75
	#30 (.6mm)	47.4	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	7.1	%	0-10
	#200 (75µm)	2.2	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75um)	2.2	%	0-3
	Total Moisture	4.52	%	