

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Sample Date: **8/22/22**

Dates Test Represents: **8/23/2022** through **8/29/2022**

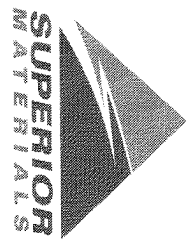
Concrete Grade: **P1M, 3500HP**

Contractor: _____

MIDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	920	5.63	2.62	30.0
2NS	95-013	Smelter Bay	1250	7.56	2.65	40.7
Total Wt						18.69
						100.0

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.4	100.0	100.0	99.5	0.5	0.5
1"	48.4	100.0	100.0	84.9	14.7	15.1
3/4"	19.1	98.3	100.0	75.8	9.1	24.2
1/2"	6.4	76.0	100.0	65.4	10.4	34.6
3/8"	4.6	49.9	100.0	57.0	8.3	43.0
#4	2.9	11.2	95.6	43.1	13.9	56.9
#8	2.5	4.6	83.0	35.9	7.2	64.1
#16	2.4	3.4	67.6	29.2	6.7	70.8
#30	2.3	3.1	48.3	21.3	8.0	78.7
#50	2.2	2.8	24.1	11.3	10.0	88.7
#100	2.1	2.5	7.4	4.4	6.9	95.6
LBW	1.6	1.9	1.5	1.6	2.7	98.4

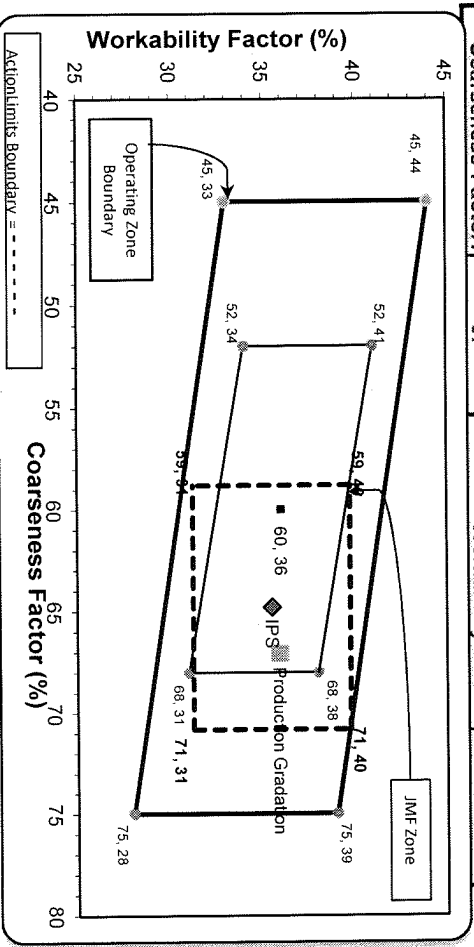


Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

*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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **67** Workability Factor: **36**



Initial 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: _____

Plant 958-JMT
 Product 1022-2NS GR - Smelter Bay
 Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.6	%	95-100
	#8 (2.36mm)	83.0	%	65-95
	#16 (1.18mm)	67.6	%	35-75
	#30 (.6mm)	48.3	%	20-55
	#50 (.3mm)	24.1	%	10-30
	#100 (.15mm)	7.4	%	0-10
	#200 (75µm)	2.0	%	
	FM	2.74		2.6-3
	Wash Loss (#200/75µm)	1.5	%	0-3
	Total Moisture	4.3	%	

Plant 958-JMT
 Product 7920-INTERMED AGG P1M LS PI Name/Title Doug Storey / QC Technician
 Period: 08/21/2022 - 08/27/2022 Report Date 08/27/2022

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)	76.0	%	
	3/8" (9.5mm)	49.9	%	
	#4 (4.75mm)	11.2	%	
	#8 (2.36mm)	4.6	%	
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.8	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75µm)	1.9	%	0-3
	Total Moisture	2.5	%	

Edw. C. Levy Co.

JMT
 8911 W. Jefferson
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Plant 958-JMT

Product 7919-COARSE AGG P1M LS PI

Name/Title Doug Storey / QC Technician

Period: 08/21/2022 - 08/27/2022

Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	98.4	%	
	1" (25mm)	48.4	%	
	3/4" (19mm)	19.1	%	
	1/2" (12.5mm)	6.4	%	
	3/8" (9.5mm)	4.6	%	
	#4 (4.75mm)	2.9	%	
	#8 (2.36mm)	2.5	%	
	#16 (1.18mm)	2.4	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	2.2	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.6	%	0-2
	Total Moisture	1.9	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

Sample Date: **8/22/22**

Dates Test Represents: **8/23/2022** through **8/29/2022**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

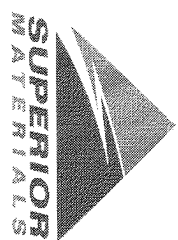
MIDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	970	5.93	2.62	31.6
2NS	63-92	Grange Hill	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	94.4	100.0	100.0	98.4	1.6	1.6
1"	38.9	100.0	100.0	82.1	16.3	17.9
3/4"	11.2	98.9	100.0	73.6	8.5	26.4
1/2"	2.9	97.1	100.0	70.6	3.0	29.4
3/8"	2.4	76.9	100.0	64.1	6.5	35.9
#4	2.1	50.3	97.0	54.4	9.7	45.6
#8	2.0	11.6	80.1	35.6	18.9	64.4
#16	1.9	4.7	64.1	27.1	8.5	72.9
#30	1.8	3.5	44.7	19.1	8.0	80.9
#50	1.8	2.9	16.4	7.9	11.3	92.1
#100	1.7	2.8	3.5	2.8	5.1	97.2
LBW	1.3	2.3	0.6	1.3	1.4	98.7

Verify this number is 100%

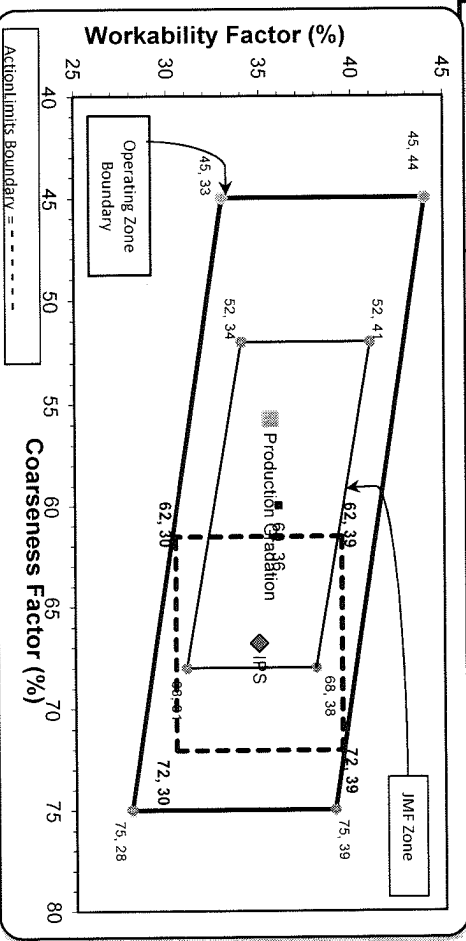
Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336



*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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **56** Workability Factor: **36**



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"	85.0	15.0	15.0
3/4"	72.1	12.9	27.9
1/2"	64.5	7.6	35.5
3/8"	56.5	8.0	43.5
#4	42.7	13.8	57.3
#8	34.9	7.8	65.1
#16	29.0	5.9	71.0
#30	21.0	8.0	79.0
#50	8.2	12.8	91.8
#100	1.6	6.5	98.4
LBW	0.7	0.9	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
Product 1022-2NS GR
Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
Report Date 08/27/2022

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)	80.1	%	65-95
	#16 (1.18mm)	64.1	%	35-75
	#30 (.6mm)	44.7	%	20-55
	#50 (.3mm)	16.4	%	10-30
	#100 (.15mm)	3.5	%	0-10
	#200 (75µm)	0.7	%	
	FM	2.94		2.6-3
	Wash Loss (#200/75um)	0.6	%	0-3
	Total Moisture	4.03	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
 Product 7920-INTERMED AGG P1M LS
 Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
 Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS Target
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	98.9	%	
	1/2" (12.5mm)	97.1	%	
	3/8" (9.5mm)	76.9	%	
	#4 (4.75mm)	50.3	%	
	#8 (2.36mm)	11.6	%	
	#16 (1.18mm)	4.7	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	2.9	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.4	%	
	Wash Loss (#200/75µm)	2.3	%	0-3
	Total Moisture	3.31	%	



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2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills
Product 7919-COARSE AGG P1M LS
Period: 08/21/2022 - 08/27/2022

Name/Title Doug Storey / QC Technician
Report Date 08/27/2022

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	94.4	%	
	1" (25mm)	38.9	%	
	3/4" (19mm)	11.2	%	
	1/2" (12.5mm)	2.9	%	
	3/8" (9.5mm)	2.4	%	
	#4 (4.75mm)	2.1	%	
	#8 (2.36mm)	2.0	%	
	#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)	1.3	%	0-2
	Total Moisture	1.62	%	