

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Sample Date: 9/13/21

Dates Test Represents: 9/14/2021 through 9/20/2021

Concrete Grade: **P1M**

Contractor: _____

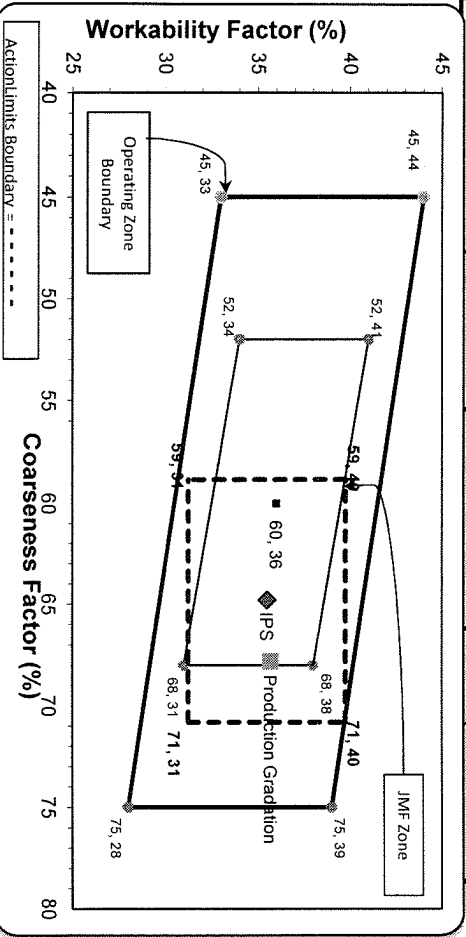
MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	950	5.81	2.62	30.9
IA	71-47	Presque Isle	870	5.32	2.62	28.3
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"	98.5	100.0	100.0	99.5	0.5	0.5
1"	44.7	100.0	100.0	82.9	16.6	17.1
3/4"	13.6	100.0	100.0	73.3	9.6	26.7
1/2"	4.8	74.9	100.0	63.4	9.8	36.6
3/8"	3.7	51.3	100.0	56.4	7.0	43.6
#4	2.5	12.7	95.0	43.1	13.3	56.9
#8	2.3	5.2	82.3	35.7	7.4	64.3
#16	2.1	3.5	67.3	29.0	6.7	71.0
#30	2.0	3.1	49.4	21.6	7.4	78.4
#50	2.0	2.7	25.2	11.6	10.0	88.4
#100	1.7	2.5	8.2	4.6	7.1	95.4
LBW	1.3	1.8	1.6	1.6	3.0	98.4

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **68** 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



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 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 09/12/2021 - 09/18/2021

Report Date 09/17/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.0	%	95-100
	#8 (2.36mm)	82.3	%	65-95
	#16 (1.18mm)	67.3	%	35-75
	#30 (.6mm)	49.4	%	20-55
	#50 (.3mm)	25.2	%	10-30
	#100 (.15mm)	8.2	%	0-10
	#200 (75µm)	2.1	%	
	FM	2.72		2.6-3
	Wash Loss (#200/75um)	1.6	%	0-3
	Total Moisture	4.0	%	

Plant 958-JMT

Product 7920-INTERMED AGG P1M LS PI

Name/Title Doug Storey / QC Technician

Period: 09/12/2021 - 09/18/2021

Report Date 09/17/2021

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)	100.0	%	
	1/2" (12.5mm)	74.9	%	
	3/8" (9.5mm)	51.3	%	
	#4 (4.75mm)	12.7	%	
	#8 (2.36mm)	5.2	%	
	#16 (1.18mm)	3.5	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.1	%	
	Wash Loss (#200/75um)	1.8	%	0-3
	Total Moisture	2.5	%	

Edw. C. Levy Co.

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

Plant 958-JMT
Product 7919-COARSE AGG P1M LS PI
Period: 09/12/2021 - 09/18/2021

Name/Title Doug Storey / QC Technician
Report Date 09/17/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS PI Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	98.5	%	
	1" (25mm)	44.7	%	
	3/4" (19mm)	13.6	%	
	1/2" (12.5mm)	4.8	%	
	3/8" (9.5mm)	3.7	%	
	#4 (4.75mm)	2.5	%	
	#8 (2.36mm)	2.3	%	
	#16 (1.18mm)	2.1	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	2.0	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75um)	1.3	%	0-2
	Total Moisture	2.0	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

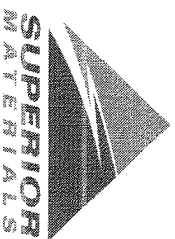
Sample Date: **9/13/21**

Dates Test Represents: **9/14/2021** through **9/20/2021**

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	58-003	Stonoco	1370	8.16	2.69	43.9
IA	58-003	Stonoco	550	3.28	2.69	17.6
ZNS	81-093	Burmeister	1200	7.26	2.65	38.5
			Total Wt	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"	100.0	100.0	100.0	100.0	0.0	0.0
1"	73.1	100.0	100.0	88.2	11.8	11.8
3/4"	38.5	100.0	100.0	73.0	15.2	27.0
1/2"	16.4	95.2	100.0	62.4	10.6	37.6
3/8"	8.6	77.3	100.0	55.9	6.6	44.1
#4	2.9	27.0	96.7	42.8	13.0	57.2
#8	2.1	7.0	81.2	33.4	9.5	66.6
#16	1.9	3.3	66.5	27.0	6.4	73.0
#30	1.7	2.3	47.4	19.4	7.6	80.6
#50	1.6	1.9	25.3	10.8	8.6	89.2
#100	1.5	1.7	8.3	4.2	6.6	95.8
LBW	1.2	1.4	1.3	1.3	2.9	98.7

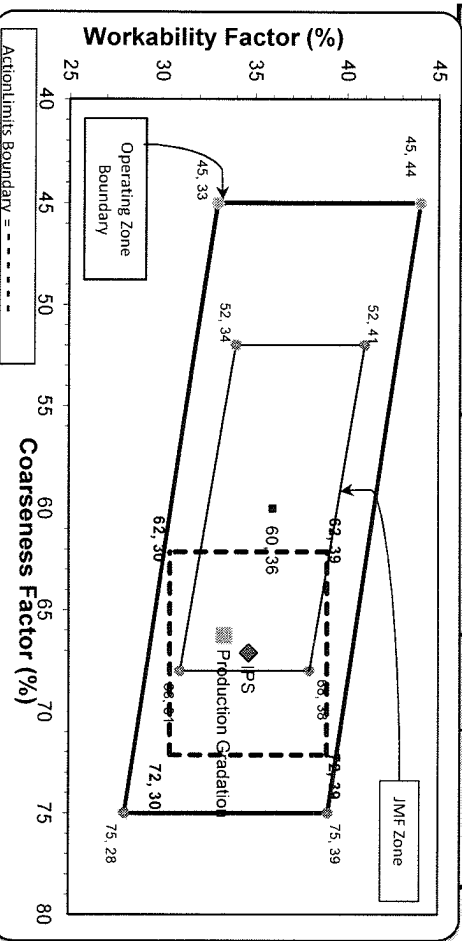
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max.
nom. max., #100 and #200 sieves.
** Retained must be at least 4% for each sieve except max.
nom. max., #100 and #200 sieves.
* Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **66** Workability Factor: **33**

Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	67	35	100.0	0.0	0.0
1.5"			100.0	0.0	0.0
1"			86.9	13.1	13.1
3/4"			76.1	10.8	23.9
1/2"			63.7	12.4	36.3
3/8"			56.2	7.5	43.8
#4			43.2	13.0	56.8
#8			34.7	8.5	65.3
#16			27.5	7.2	72.5
#30			20.6	7.0	79.4
#50			9.0	11.6	91.0
#100			2.1	6.9	97.9
LBW			1.0	1.1	99.0



PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S35-Superior Romulus

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 09/12/2021 - 09/18/2021

Report Date 09/17/2021

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.7	%	95-100
	#8 (2.36mm)	81.2	%	65-95
	#16 (1.18mm)	66.5	%	35-75
	#30 (.6mm)	47.4	%	20-55
	#50 (.3mm)	25.3	%	10-30
	#100 (.15mm)	8.3	%	0-10
	#200 (75µm)	1.5	%	
	FM	2.76		2.6-3
AASHTO T11	-#200 (75µm)	1.50	%	
	Wash Loss (#200/75µm)	1.3	%	0-3
ASTM C566	Total Moisture	4.13	%	



Plant S35-Superior Romulus
 Product 7920-INTERMED AGG P1M LS
 Period: 09/12/2021 - 09/18/2021

Name/Title Doug Storey / QC Technician
 Report Date 09/17/2021

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)	100.0	%	
	1/2" (12.5mm)	95.2	%	
	3/8" (9.5mm)	77.3	%	
	#4 (4.75mm)	27.0	%	
	#8 (2.36mm)	7.0	%	
	#16 (1.18mm)	3.3	%	
	#30 (.6mm)	2.3	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75µm)	1.4	%	0-3
ASTM C566	Total Moisture	5.22	%	



Plant S35-Superior Romulus
Product 7919-COARSE AGG P1M LS
Period: 09/12/2021 - 09/18/2021

Name/Title Doug Storey / QC Technician
Report Date 09/17/2021

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	73.1	%	
	3/4" (19mm)	38.5	%	
	1/2" (12.5mm)	16.4	%	
	3/8" (9.5mm)	8.6	%	
	#4 (4.75mm)	2.9	%	
	#8 (2.36mm)	2.1	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.7	%	
	#50 (.3mm)	1.6	%	
	#100 (.15mm)	1.5	%	
	#200 (75µm)	1.4	%	
	Wash Loss (#200/75µm)	1.2	%	0-2
ASTM C566	Total Moisture	1.66	%	