

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P11**

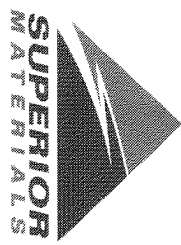
Sample Date: **7/22/24**

Dates Test Represents: **7/23/2024** through **7/29/2024**

Concrete Grade: **P1M 3500HP**

Contractor: _____

MDOT No.: _____



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

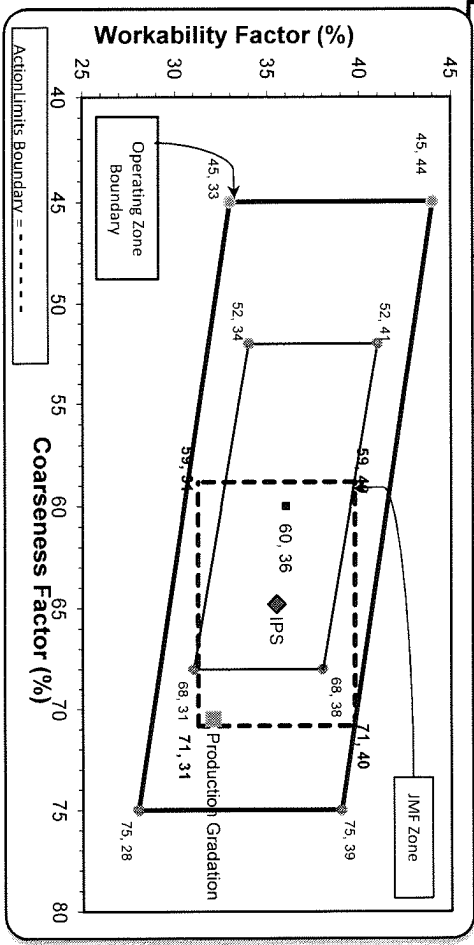
Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	1020	6.24	2.62	33.2
IA	71-47	Presque Isle	850	5.20	2.62	27.7
ZNS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt:			3070	18.70		100.0

Sieve	CA	IA	ZNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.0	100.0	100.0	98.3	1.7	1.7
1"	31.8	100.0	100.0	77.3	21.0	22.7
3/4"	6.0	100.0	100.0	68.8	8.6	31.2
1/2"	2.8	71.5	100.0	59.8	9.0	40.2
3/8"	2.4	44.2	100.0	52.1	7.7	47.9
#4	2.1	6.7	95.6	39.9	12.2	60.1
#8	2.0	2.4	78.6	32.1	7.9	67.9
#16	1.9	1.9	63.5	26.0	6.1	74.0
#30	1.8	1.8	48.9	20.2	5.8	79.8
#50	1.7	1.7	27.2	11.7	8.5	88.3
#100	1.5	1.7	71.1	28.8	-17.1	71.2
LBW	1.1	1.2	0.8	1.0	27.8	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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **70** Workability Factor: **32**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	65	36	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: _____

Superior QA Samples

Location: Onsite Jefferson
 Date: 7/28/2024

Material Sieve	Coarse Agg	6AA	Inter. Agg Percent Passing	26Amod	2NS
2 in	100.0	100.0	100.0	100.0	100.0
1 1/2 in	95.0	100.0	100.0	100.0	100.0
1 in	31.8	95.5	100.0	100.0	100.0
3/4 in	6.0	74.0	100.0	100.0	100.0
1/2 in	2.8	30.1	71.5	94.0	100.0
3/8 in	2.4	13.3	44.2	81.1	100.0
No. 4	2.1	1.8	6.7	16.4	95.6
No. 8	2.0	1.4	2.4	4.8	78.6
No. 16	1.9	1.2	1.9	3.2	63.5
No. 30	1.8	1.1	1.8	2.9	48.9
No. 50	1.7	1.1	1.7	2.8	27.2
No. 100	1.5	1.0	1.7	2.7	7.1
No. 200	1.2	1.0	1.3	2.5	1.1
LBW	1.1	0.8	1.2	2.5	0.8
MO	0.9	2.7	2.1	2.3	4.1

Tested By: Douglas Storey

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

Sample Date: 7/22/24

Dates Test Represents: 7/23/2024 through 7/29/2024

Concrete Grade: P1M, 3500HP

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
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Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
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IA	71-47	Presque Isle	850	5.20	2.62	27.7
NNS	63-115	Ray Rd	1200	7.26	2.65	39.1
		Total Wt	3070			100.0

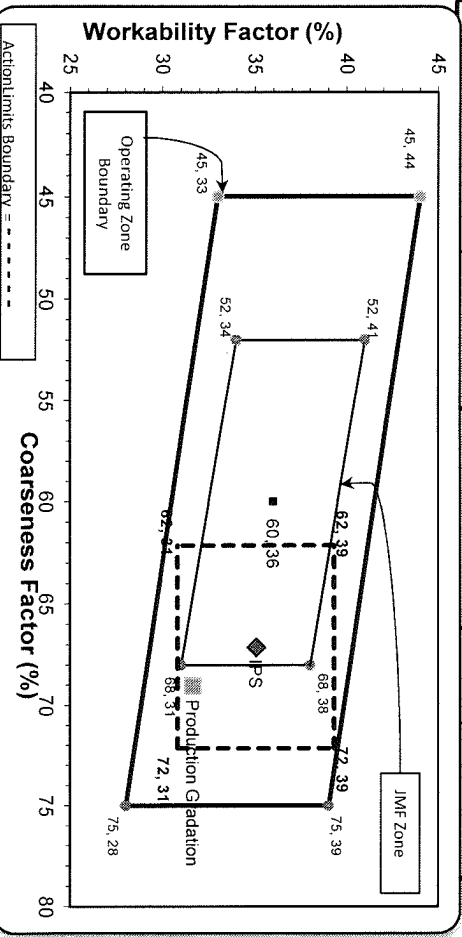
Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.5	100.0	100.0	99.5	0.5	0.5
1"	24.8	100.0	100.0	75.0	24.5	25.0
3/4"	3.9	98.3	100.0	67.6	7.4	32.4
1/2"	1.5	72.3	100.0	59.6	8.0	40.4
3/8"	1.4	47.9	100.0	52.8	6.8	47.2
#4	1.3	8.2	95.1	39.9	12.9	60.1
#8	1.3	2.5	78.1	31.7	8.2	68.3
#16	1.3	1.7	62.5	25.3	6.3	74.7
#30	1.2	1.6	47.9	19.6	5.8	80.4
#50	1.2	1.6	27.3	11.5	8.1	88.5
#100	1.1	1.5	7.9	3.9	7.6	96.1
LBW	1.1	1.2	1.3	1.2	2.7	98.8

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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

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"	83.9	15.7	16.1
3/4"	74.0	9.8	26.0
1/2"	63.7	10.3	36.3
3/8"	56.4	7.3	43.6
#4	43.0	13.4	57.0
#8	35.1	7.9	64.9
#16	29.0	6.1	71.0
#30	20.9	8.0	79.1
#50	8.1	12.8	91.9
#100	1.6	6.5	98.4
LBW	0.9	0.8	99.1

Coarseness Factor: **67** Workability Factor: **35**

Coarseness Factor: **69** Workability Factor: **32**

PREPARED BY:
SM, LLC Technical Service

Approved By: _____

Superior QA Samples

Location: Onsite Southfield

Date: 7/28/2024

Material Sieve	Coarse Agg	Inter. Agg.	2NS Percent Passing
2 in	100.0	100.0	100.0
1 1/2 in	98.5	100.0	100.0
1 in	24.8	100.0	100.0
3/4 in	3.9	98.3	100.0
1/2 in	1.5	72.3	100.0
3/8 in	1.4	47.9	100.0
No. 4	1.3	8.2	95.1
No. 8	1.3	2.5	78.1
No. 16	1.3	1.7	62.5
No. 30	1.2	1.6	47.9
No. 50	1.2	1.6	27.3
No. 100	1.1	1.5	7.9
No. 200	1.1	1.4	1.5
LBW	1.1	1.2	1.3
MO	0.3	1.6	2.4

Tested By: Douglas Storey