

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-101**

Sample Date: 3/27/23

Concrete Grade: **DM, 4500HP**

Contractor: _____

Dates Test Represents: 3/28/2023 through 4/3/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1400	8.56	2.62	48.3
26A	71-47	Presque Isle	350	2.14	2.62	12.1
2NS	63-115	Ray Rd	1150	6.95	2.65	39.7
Total Wt			2900	17.66		100.0

<----- Verify this number is 100%



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

Sieve	6AA	26A	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"	97.5	100.0	100.0	98.8	1.2	1.2
3/4"	78.7	100.0	100.0	89.7	9.1	10.3
1/2"	31.5	96.7	100.0	66.5	23.2	33.5
3/8"	16.4	85.5	100.0	57.9	8.6	42.1
#4	3.1	19.0	97.6	42.5	15.4	57.5
#8	1.8	4.9	80.1	33.2	9.3	66.8
#16	1.6	2.9	63.6	26.3	6.9	73.7
#30	1.6	2.4	47.5	19.9	6.4	80.1
#50	1.5	2.3	24.3	10.6	9.3	89.4
#100	1.5	2.2	5.3	3.1	7.5	96.9
LBW	1.3	2.0	0.9	1.2	1.9	98.8

*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.

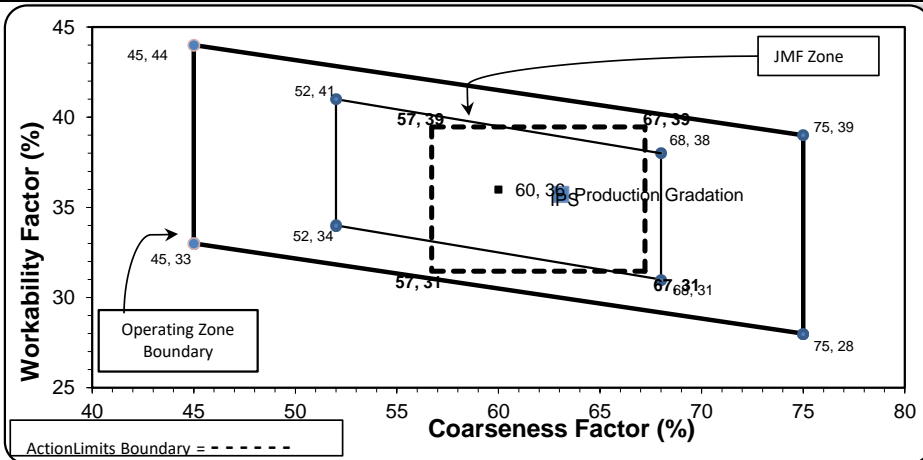
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	63	Workability Factor:	33	Adjusted WF	35.7
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Coarseness Factor:	62
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"	100.0	0.0	0.0
3/4"	95.0	5.0	5.0
1/2"	70.5	24.5	29.5
3/8"	60.0	10.5	40.0
#4	44.4	15.6	55.6
#8	35.5	9.0	64.5
#16	28.5	7.0	71.5
#30	21.5	7.0	78.5
#50	10.2	11.3	89.8
#100	3.1	7.1	96.9
LBW	1.3	1.8	98.7



PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 3/27/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 3/28/2023 through 4/3/2023

Contractor: _____

MDOT No.: _____



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 Suite 500
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Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	300	1.79	2.69	10.2
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
Total Wt			2950	17.68		100.0

<----- Verify this number is 100%

Sieve	6AA	26A	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	88.8	100.0	100.0	94.3	5.7	5.7
1/2"	42.9	100.0	100.0	71.0	23.3	29.0
3/8"	19.1	89.4	100.0	57.8	13.2	42.2
#4	1.5	11.9	96.8	39.7	18.1	60.3
#8	0.6	3.9	82.4	32.8	6.9	67.2
#16	0.6	2.7	66.4	26.5	6.4	73.5
#30	0.5	2.3	48.8	19.5	7.0	80.5
#50	0.5	2.1	23.5	9.6	9.9	90.4
#100	0.4	2.0	6.5	2.9	6.7	97.1
LBW	0.3	1.9	1.3	0.9	2.1	99.1

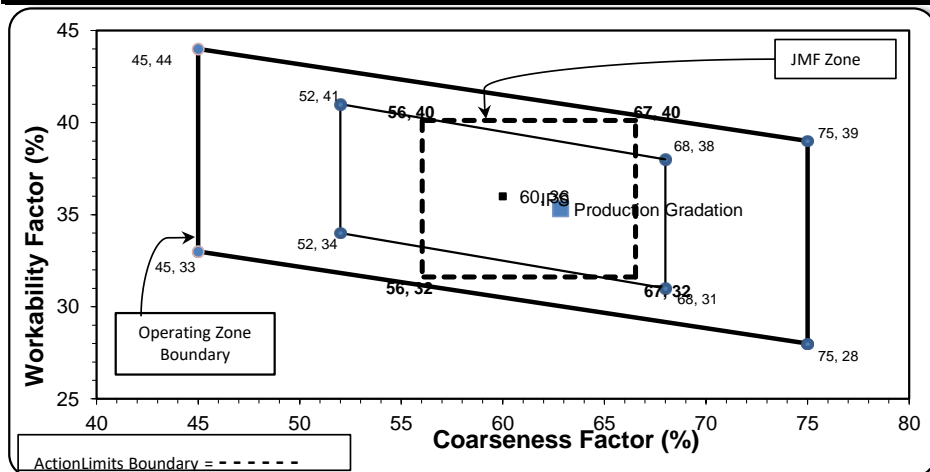
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	63	Workability Factor:	33	Adjusted WF	35.3
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Coarseness Factor:	61
Workability Factor:	36



Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-32**

Sample Date: 3/27/23

Concrete Grade: **DM, 4500HP**

Contractor: _____

Dates Test Represents: 3/28/2023 through 4/3/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4
26A	71-47	Presque Isle	350	2.14	2.62	12.0
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

<----- Verify this number is 100%



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Sieve	6AA	26A	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"	96.3	100.0	100.0	98.2	1.8	1.8
3/4"	76.1	100.0	100.0	88.4	9.8	11.6
1/2"	33.1	95.3	100.0	67.1	21.4	32.9
3/8"	17.5	84.4	100.0	58.2	8.9	41.8
#4	3.5	17.3	96.5	42.0	16.2	58.0
#8	1.8	4.7	84.9	35.0	6.9	65.0
#16	1.7	2.4	69.3	28.5	6.5	71.5
#30	1.6	1.9	50.6	21.0	7.5	79.0
#50	1.6	1.8	24.8	10.8	10.2	89.2
#100	1.5	1.7	7.2	3.8	7.0	96.2
LBW	1.2	1.5	1.3	1.3	2.5	98.7

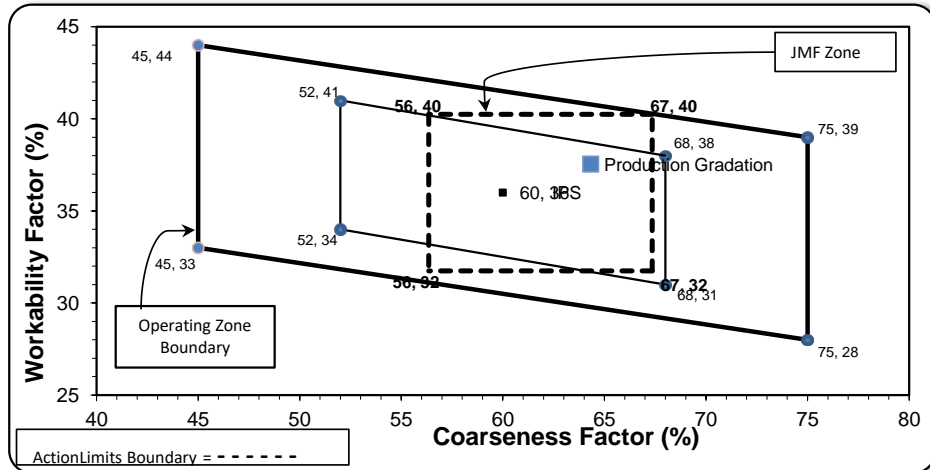
*Maximum % Retained must be above the 3/8" sieve.
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 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	64	Workability Factor:	35	37.5
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Coarseness Factor:	62
Workability Factor:	36



Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	95.0	5.0	5.0
1/2"	72.3	22.8	27.7
3/8"	60.4	11.8	39.6
#4	42.6	17.8	57.4
#8	36.0	6.6	64.0
#16	29.5	6.5	70.5
#30	20.3	9.2	79.7
#50	9.5	10.8	90.5
#100	3.4	6.1	96.6
LBW	1.3	2.1	98.7

PREPARED BY:
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