

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 11/18/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/19/2024 through 11/25/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1470	8.76	2.69	47.1
IA	58-003	Stoneco	450	2.68	2.69	14.4
2NS	63-114	Highland	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

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



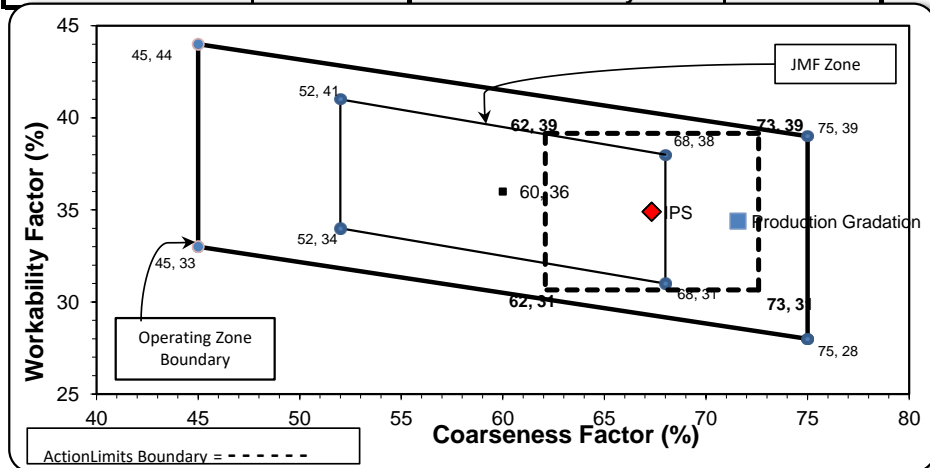
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	60.0	100.0	100.0	81.2	18.8	18.8
3/4"	32.0	100.0	100.0	68.0	13.2	32.0
1/2"	13.0	91.8	100.0	57.8	10.1	42.2
3/8"	8.7	72.7	100.0	53.0	4.8	47.0
#4	2.5	17.8	99.1	41.9	11.2	58.1
#8	1.6	5.0	85.6	34.4	7.5	65.6
#16	1.5	2.6	68.0	27.2	7.2	72.8
#30	1.4	1.7	48.5	19.6	7.7	80.4
#50	1.3	1.4	23.8	10.0	9.6	90.0
#100	1.2	1.2	5.1	2.7	7.3	97.3
LBW	1.0	1.0	0.2	0.7	2.0	99.3

*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:	72	Workability Factor:	34
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Intial 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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-103**

Sample Date: 11/18/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/19/2024 through 11/25/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1470	8.76	2.69	47.1
IA	58-003	Stoneco	450	2.68	2.69	14.4
2NS	63-114	Highland	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

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



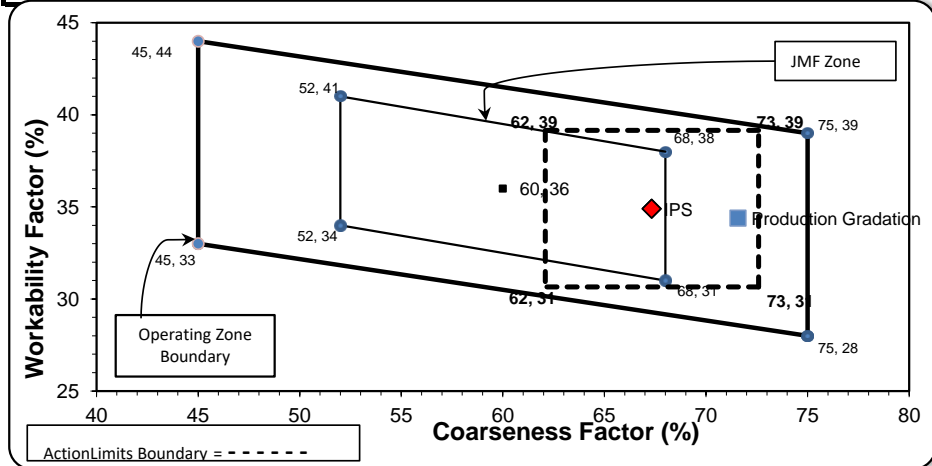
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	60.0	100.0	100.0	81.2	18.8	18.8
3/4"	32.0	100.0	100.0	68.0	13.2	32.0
1/2"	13.0	91.8	100.0	57.8	10.1	42.2
3/8"	8.7	72.7	100.0	53.0	4.8	47.0
#4	2.5	17.8	99.1	41.9	11.2	58.1
#8	1.6	5.0	85.6	34.4	7.5	65.6
#16	1.5	2.6	68.0	27.2	7.2	72.8
#30	1.4	1.7	48.5	19.6	7.7	80.4
#50	1.3	1.4	23.8	10.0	9.6	90.0
#100	1.2	1.2	5.1	2.7	7.3	97.3
LBW	1.0	1.0	0.2	0.7	2.0	99.3

*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: 72 **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

PREPARED BY:
 SM, LLC Technical Service

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Aggregate Optimization Chart

PLANT #: 12

Sample Date: 11/18/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/19/2024 through 11/25/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	870	5.32	2.62	28.3
IA	71-47	Presque Isle	1000	6.12	2.62	32.6
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



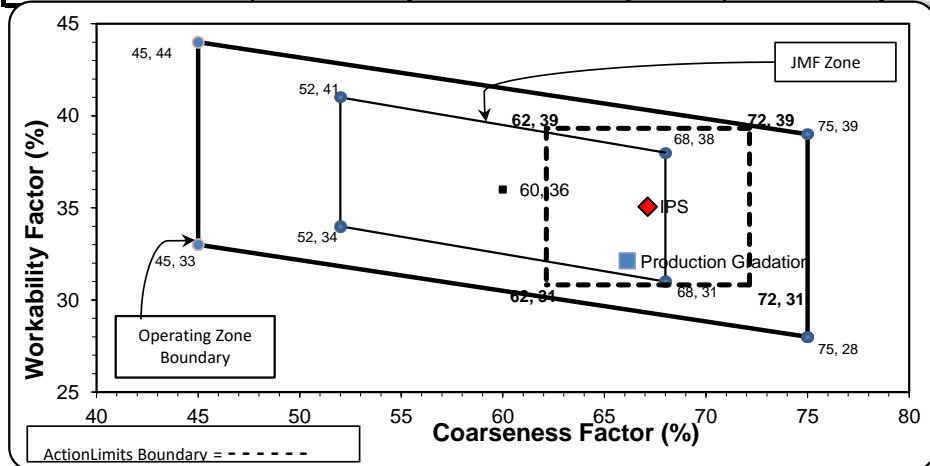
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.8	100.0	100.0	99.1	0.9	0.9
1"	28.0	100.0	100.0	79.6	19.5	20.4
3/4"	4.6	98.7	100.0	72.5	7.1	27.5
1/2"	1.3	76.1	100.0	64.2	8.3	35.8
3/8"	1.3	48.1	100.0	55.1	9.1	44.9
#4	1.2	6.1	97.8	40.6	14.6	59.4
#8	1.2	2.2	79.5	32.1	8.4	67.9
#16	1.2	1.7	63.0	25.5	6.6	74.5
#30	1.2	1.5	48.1	19.6	5.9	80.4
#50	1.2	1.5	26.5	11.2	8.4	88.8
#100	1.1	1.4	6.0	3.1	8.1	96.9
LBW	1.0	1.3	1.0	1.1	2.0	98.9

*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: 66 **Workability Factor:** 32



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"	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

PREPARED BY:
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Aggregate Optimization Chart

PLANT #: **P11**

Sample Date: 11/18/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/19/2024 through 11/25/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	870	5.32	2.62	28.3
IA	71-47	Presque Isle	1000	6.12	2.62	32.6
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



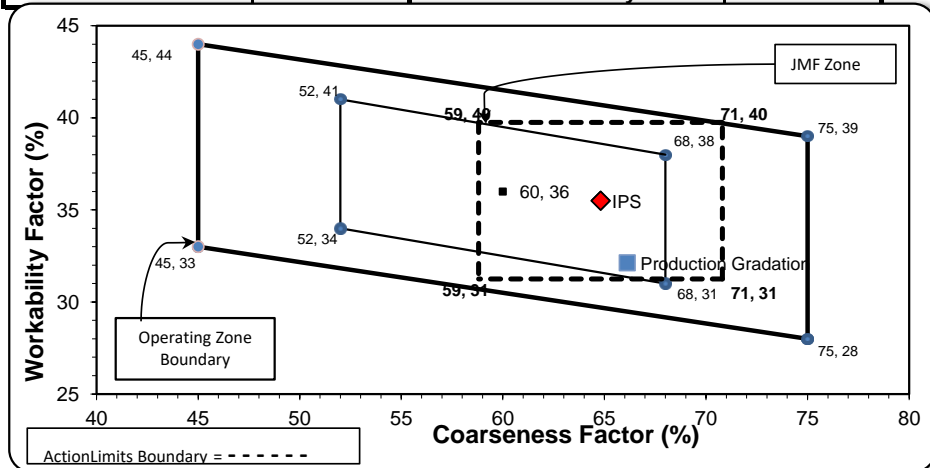
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 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.8	100.0	100.0	99.1	0.9	0.9
1"	28.0	100.0	100.0	79.6	19.5	20.4
3/4"	4.6	98.7	100.0	72.5	7.1	27.5
1/2"	1.3	76.1	100.0	64.2	8.3	35.8
3/8"	1.3	48.1	100.0	55.1	9.1	44.9
#4	1.2	6.1	97.8	40.6	14.6	59.4
#8	1.2	2.2	79.5	32.1	8.4	67.9
#16	1.2	1.7	63.0	25.5	6.6	74.5
#30	1.2	1.5	48.1	19.6	5.9	80.4
#50	1.2	1.5	26.5	11.2	8.4	88.8
#100	1.1	1.4	6.0	3.1	8.1	96.9
LBW	1.0	1.3	1.0	1.1	2.0	98.9

*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: **66** **Workability Factor:** **32**



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:

Aggregate Optimization Chart

PLANT #: **P-O2**

Sample Date: 11/18/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/19/2024 through 11/25/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	870	5.32	2.62	28.3
IA	71-47	Presque Isle	1000	6.12	2.62	32.6
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



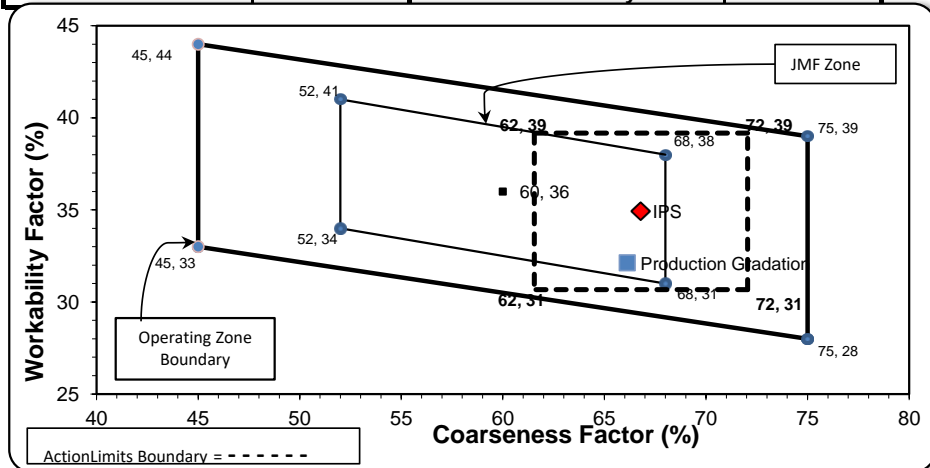
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.8	100.0	100.0	99.1	0.9	0.9
1"	28.0	100.0	100.0	79.6	19.5	20.4
3/4"	4.6	98.7	100.0	72.5	7.1	27.5
1/2"	1.3	76.1	100.0	64.2	8.3	35.8
3/8"	1.3	48.1	100.0	55.1	9.1	44.9
#4	1.2	6.1	97.8	40.6	14.6	59.4
#8	1.2	2.2	79.5	32.1	8.4	67.9
#16	1.2	1.7	63.0	25.5	6.6	74.5
#30	1.2	1.5	48.1	19.6	5.9	80.4
#50	1.2	1.5	26.5	11.2	8.4	88.8
#100	1.1	1.4	6.0	3.1	8.1	96.9
LBW	1.0	1.3	1.0	1.1	2.0	98.9

*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: **66** Workability Factor: **32**



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"	72.3	12.7	27.7
1/2"	64.5	7.8	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: