

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

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%



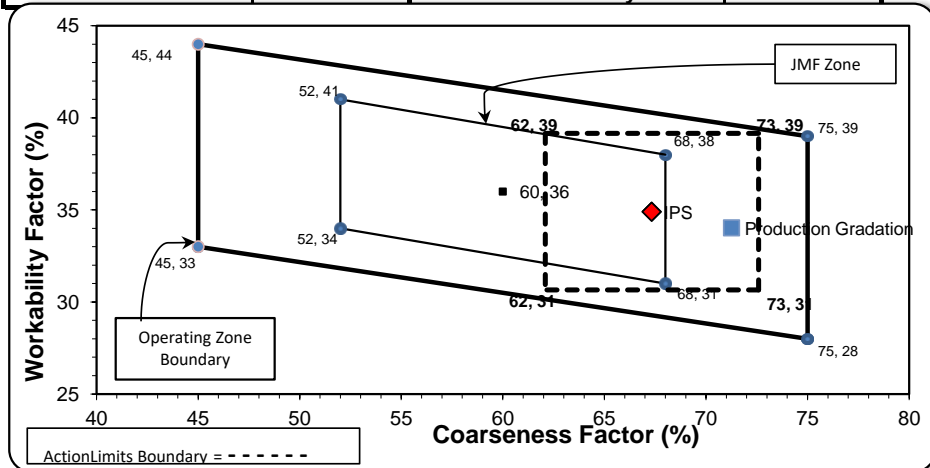
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	66.3	100.0	100.0	84.1	15.9	15.9
3/4"	35.5	100.0	100.0	69.6	14.5	30.4
1/2"	14.0	94.8	100.0	58.7	10.9	41.3
3/8"	6.6	79.2	100.0	53.0	5.7	47.0
#4	1.5	18.8	99.0	41.5	11.5	58.5
#8	1.3	7.7	84.0	34.0	7.5	66.0
#16	1.2	3.6	66.6	26.7	7.3	73.3
#30	1.0	2.6	47.7	19.2	7.5	80.8
#50	1.0	2.3	21.5	9.1	10.1	90.9
#100	1.0	2.2	4.0	2.3	6.7	97.7
LBW	0.8	2.0	0.4	0.8	1.5	99.2

*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: **71** **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

Approved By:

Aggregate Optimization Chart

PLANT #: **P-103**

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

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%



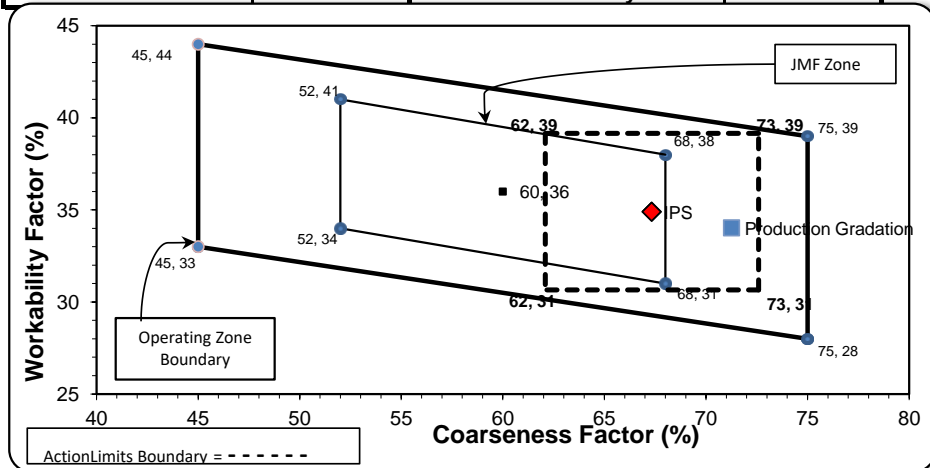
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 Suite 500
 Farmington Hills, MI 48336

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"	66.3	100.0	100.0	84.1	15.9	15.9
3/4"	35.5	100.0	100.0	69.6	14.5	30.4
1/2"	14.0	94.8	100.0	58.7	10.9	41.3
3/8"	6.6	79.2	100.0	53.0	5.7	47.0
#4	1.5	18.8	99.0	41.5	11.5	58.5
#8	1.3	7.7	84.0	34.0	7.5	66.0
#16	1.2	3.6	66.6	26.7	7.3	73.3
#30	1.0	2.6	47.7	19.2	7.5	80.8
#50	1.0	2.3	21.5	9.1	10.1	90.9
#100	1.0	2.2	4.0	2.3	6.7	97.7
LBW	0.8	2.0	0.4	0.8	1.5	99.2

*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:	71	Workability Factor:	34
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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 #: 15

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

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	81-019	Pleasant Lake	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

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



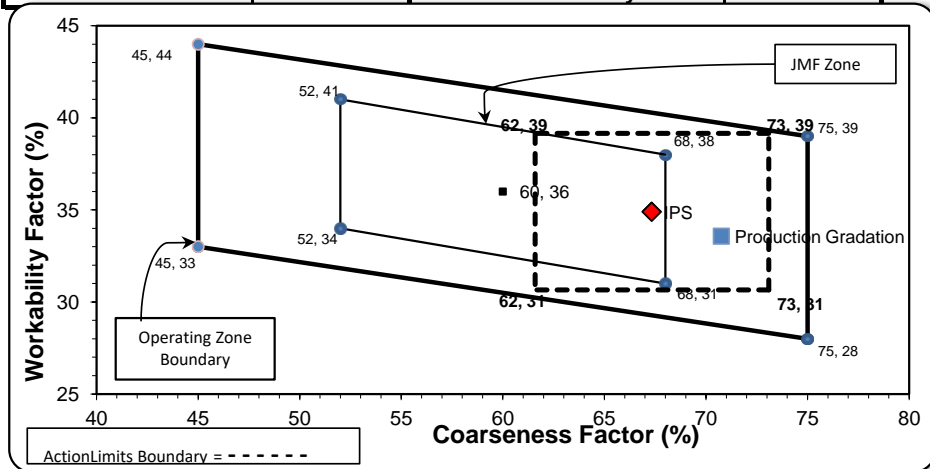
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	66.3	100.0	100.0	84.1	15.9	15.9
3/4"	35.5	100.0	100.0	69.6	14.5	30.4
1/2"	14.0	94.8	100.0	58.7	10.9	41.3
3/8"	6.6	79.2	100.0	53.0	5.7	47.0
#4	1.5	18.8	97.4	40.9	12.1	59.1
#8	1.3	7.7	82.8	33.6	7.3	66.4
#16	1.2	3.6	63.2	25.4	8.2	74.6
#30	1.0	2.6	42.5	17.2	8.2	82.8
#50	1.0	2.3	20.0	8.5	8.7	91.5
#100	1.0	2.2	4.3	2.4	6.1	97.6
LBW	0.8	2.0	1.1	1.1	1.4	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: 71 **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

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Aggregate Optimization Chart

PLANT #: 12

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

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%



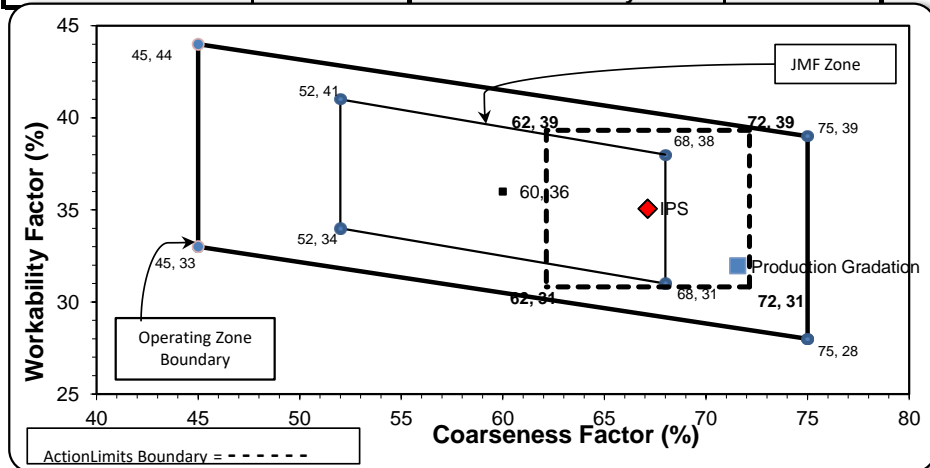
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	88.2	100.0	100.0	96.7	3.3	3.3
1"	26.7	100.0	100.0	79.2	17.4	20.8
3/4"	4.1	99.0	100.0	72.5	6.7	27.5
1/2"	1.3	67.3	100.0	61.4	11.1	38.6
3/8"	1.2	36.5	100.0	51.3	10.1	48.7
#4	1.1	3.9	97.0	39.5	11.8	60.5
#8	1.1	1.9	79.4	32.0	7.5	68.0
#16	1.0	1.5	63.7	25.7	6.3	74.3
#30	1.0	1.5	48.8	19.8	5.8	80.2
#50	0.9	1.4	25.1	10.5	9.3	89.5
#100	0.9	1.3	5.6	2.9	7.7	97.1
LBW	0.7	1.2	0.6	0.8	2.0	99.2

*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:** 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

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Aggregate Optimization Chart

PLANT #: 20

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	870	5.32	2.62	28.3
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



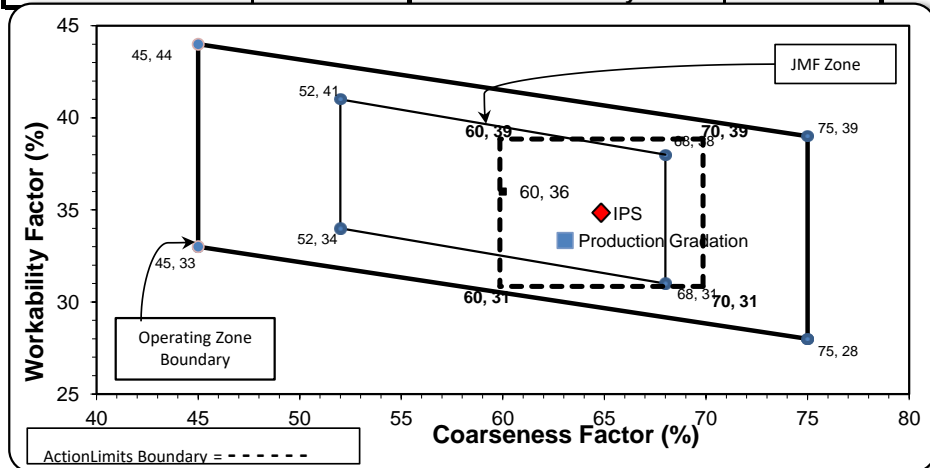
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.8	100.0	100.0	98.6	1.4	1.4
1"	43.0	100.0	100.0	81.4	17.2	18.6
3/4"	14.1	99.0	100.0	71.7	9.7	28.3
1/2"	3.9	85.2	100.0	64.5	7.2	35.5
3/8"	2.8	63.4	100.0	58.0	6.5	42.0
#4	2.1	13.1	97.7	42.6	15.4	57.4
#8	1.9	2.8	81.7	33.3	9.2	66.7
#16	1.8	2.3	65.9	27.0	6.4	73.0
#30	1.8	2.0	48.3	20.0	7.0	80.0
#50	1.7	1.9	22.8	10.0	10.0	90.0
#100	1.6	1.8	3.3	2.3	7.7	97.7
LBW	1.4	1.6	0.4	1.1	1.3	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: 63 **Workability Factor:** 33



Initial Production Sample (IPS)

Coarseness Factor: 65
Workability Factor: 35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.1	0.9	0.9
1"	80.8	18.2	19.2
3/4"	71.3	9.6	28.7
1/2"	64.0	7.3	36.0
3/8"	57.7	6.2	42.3
#4	42.8	15.0	57.2
#8	34.8	7.9	65.2
#16	28.4	6.4	71.6
#30	20.2	8.2	79.8
#50	7.6	12.6	92.4
#100	1.6	6.0	98.4
LBW	1.0	0.6	99.0

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: 21

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

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	81-019	Pleasant Lake	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

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



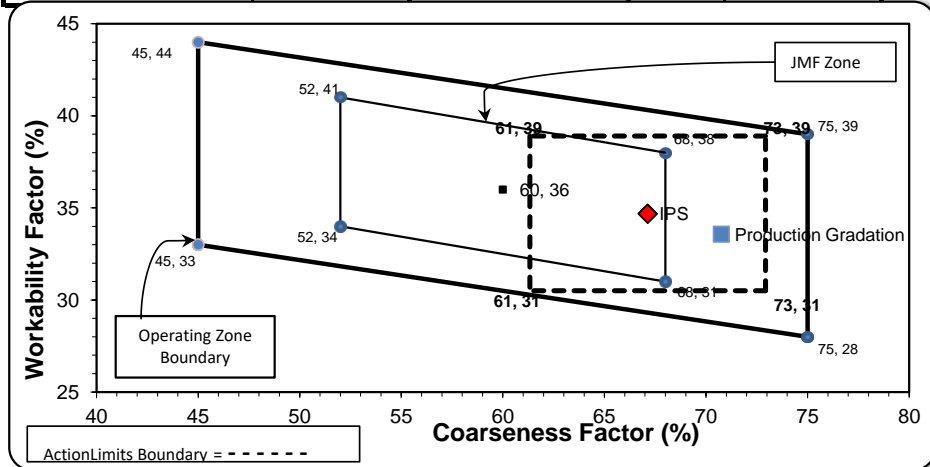
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	66.3	100.0	100.0	84.1	15.9	15.9
3/4"	35.5	100.0	100.0	69.6	14.5	30.4
1/2"	14.0	94.8	100.0	58.7	10.9	41.3
3/8"	6.6	79.2	100.0	53.0	5.7	47.0
#4	1.5	18.8	97.4	40.9	12.1	59.1
#8	1.3	7.7	82.8	33.6	7.3	66.4
#16	1.2	3.6	63.2	25.4	8.2	74.6
#30	1.0	2.6	42.5	17.2	8.2	82.8
#50	1.0	2.3	20.0	8.5	8.7	91.5
#100	1.0	2.2	4.3	2.4	6.1	97.6
LBW	0.8	2.0	1.1	1.1	1.4	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: 71 **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"	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:

Aggregate Optimization Chart

PLANT #: P11

Sample Date: 9/23/24

Concrete Grade: P1M, 3500HP

Dates Test Represents: 9/24/2024 through 9/30/2024

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
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 Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	770	4.71	2.62	25.1
IA	71-47	Presque Isle	1100	6.73	2.62	35.8
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

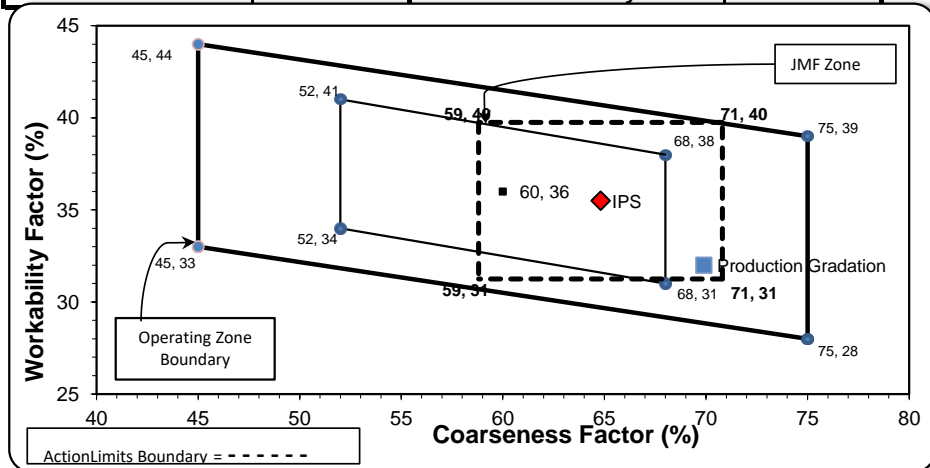
<----- Verify this number is 100%

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	88.2	100.0	100.0	97.0	3.0	3.0
1"	26.7	100.0	100.0	81.6	15.4	18.4
3/4"	4.1	99.0	100.0	75.6	6.0	24.4
1/2"	1.3	67.3	100.0	63.5	12.1	36.5
3/8"	1.2	36.5	100.0	52.5	11.1	47.5
#4	1.1	3.9	97.0	39.6	12.9	60.4
#8	1.1	1.9	79.4	32.0	7.6	68.0
#16	1.0	1.5	63.7	25.7	6.3	74.3
#30	1.0	1.5	48.8	19.9	5.8	80.1
#50	0.9	1.4	25.1	10.5	9.3	89.5
#100	0.9	1.3	5.6	2.9	7.7	97.1
LBW	0.7	1.2	0.6	0.8	2.0	99.2

*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
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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-35**

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
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 Suite 500
 Farmington Hills, MI 48336

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	81-019	Pleasant Lake	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

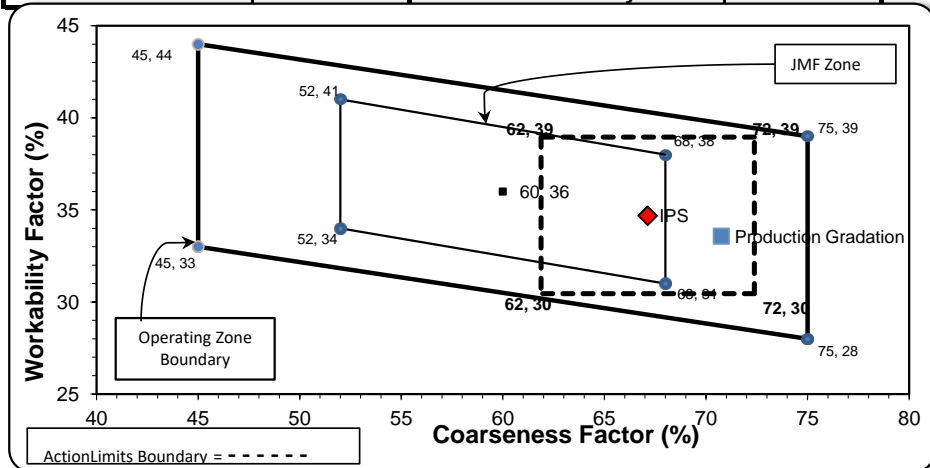
<----- Verify this number is 100%

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"	66.3	100.0	100.0	84.1	15.9	15.9
3/4"	35.5	100.0	100.0	69.6	14.5	30.4
1/2"	14.0	94.8	100.0	58.7	10.9	41.3
3/8"	6.6	79.2	100.0	53.0	5.7	47.0
#4	1.5	18.8	97.4	40.9	12.1	59.1
#8	1.3	7.7	82.8	33.6	7.3	66.4
#16	1.2	3.6	63.2	25.4	8.2	74.6
#30	1.0	2.6	42.5	17.2	8.2	82.8
#50	1.0	2.3	20.0	8.5	8.7	91.5
#100	1.0	2.2	4.3	2.4	6.1	97.6
LBW	0.8	2.0	1.1	1.1	1.4	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: **71** **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"	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:

Aggregate Optimization Chart

PLANT #: **P-36**

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	750	4.59	2.62	24.4
IA	71-47	Presque Isle	1120	6.85	2.62	36.5
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



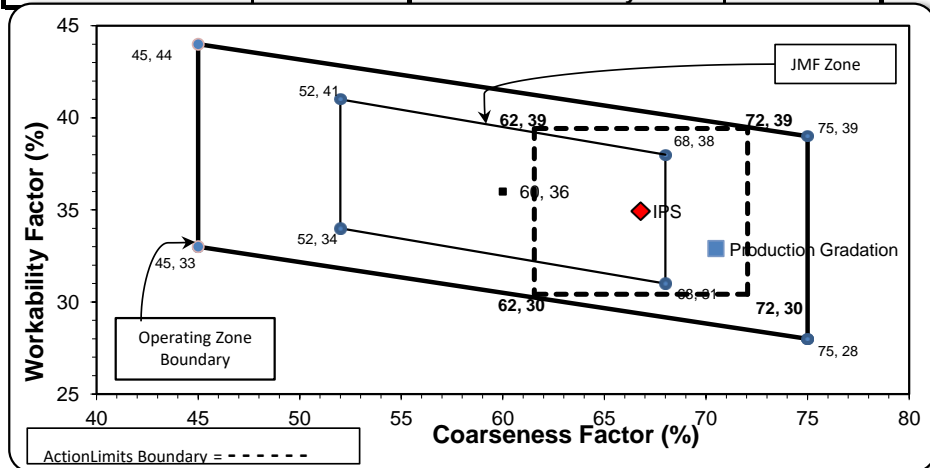
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	88.2	100.0	100.0	97.1	2.9	2.9
1"	26.7	100.0	100.0	82.1	15.0	17.9
3/4"	4.1	99.0	100.0	76.2	5.9	23.8
1/2"	1.3	67.3	100.0	64.0	12.2	36.0
3/8"	1.2	36.5	100.0	52.7	11.3	47.3
#4	1.1	3.9	97.7	39.9	12.8	60.1
#8	1.1	1.9	81.7	32.9	7.0	67.1
#16	1.0	1.5	65.9	26.6	6.3	73.4
#30	1.0	1.5	48.3	19.7	6.9	80.3
#50	0.9	1.4	22.8	9.6	10.0	90.4
#100	0.9	1.3	3.3	2.0	7.7	98.0
LBW	0.7	1.2	0.4	0.8	1.2	99.2

*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:	33
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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:

Aggregate Optimization Chart

PLANT #: **P-39**

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
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 Suite 500
 Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	750	4.59	2.62	24.4
IA	71-47	Presque Isle	1120	6.85	2.62	36.5
2NS	44-051	Krake Willis Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

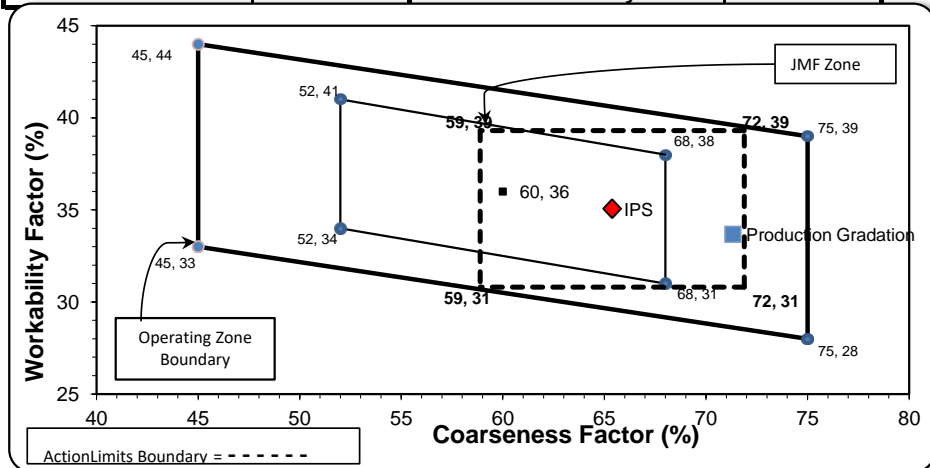
<----- Verify this number is 100%

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	88.2	100.0	100.0	97.1	2.9	2.9
1"	26.7	100.0	100.0	82.1	15.0	17.9
3/4"	4.1	99.0	100.0	76.2	5.9	23.8
1/2"	1.3	67.3	100.0	64.0	12.2	36.0
3/8"	1.2	36.5	100.0	52.7	11.3	47.3
#4	1.1	3.9	99.1	40.4	12.3	59.6
#8	1.1	1.9	83.7	33.7	6.7	66.3
#16	1.0	1.5	68.0	27.4	6.3	72.6
#30	1.0	1.5	49.7	20.2	7.2	79.8
#50	0.9	1.4	22.0	9.3	10.9	90.7
#100	0.9	1.3	5.3	2.8	6.6	97.2
LBW	0.7	1.2	0.4	0.8	2.0	99.2

*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:	71	Workability Factor:	34
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Initial Production Sample (IPS)

Coarseness Factor:	65
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"	74.1	9.8	25.9
1/2"	64.3	9.7	35.7
3/8"	57.5	6.8	42.5
#4	44.5	13.1	55.5
#8	35.1	9.4	64.9
#16	27.9	7.2	72.1
#30	21.7	6.2	78.3
#50	12.6	9.1	87.4
#100	3.5	9.1	96.5
LBW	1.2	2.4	98.8

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: P-02

Sample Date: 9/23/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 9/24/2024 through 9/30/2024

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	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

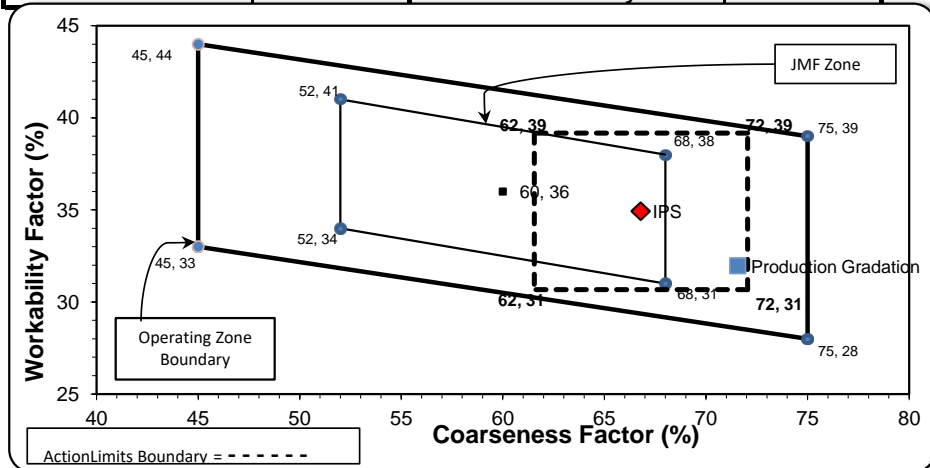
<----- Verify this number is 100%

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	88.2	100.0	100.0	96.7	3.3	3.3
1"	26.7	100.0	100.0	79.2	17.4	20.8
3/4"	4.1	99.0	100.0	72.5	6.7	27.5
1/2"	1.3	67.3	100.0	61.4	11.1	38.6
3/8"	1.2	36.5	100.0	51.3	10.1	48.7
#4	1.1	3.9	97.0	39.5	11.8	60.5
#8	1.1	1.9	79.4	32.0	7.5	68.0
#16	1.0	1.5	63.7	25.7	6.3	74.3
#30	1.0	1.5	48.8	19.8	5.8	80.2
#50	0.9	1.4	25.1	10.5	9.3	89.5
#100	0.9	1.3	5.6	2.9	7.7	97.1
LBW	0.7	1.2	0.6	0.8	2.0	99.2

*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:	32
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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: