

# Aggregate Optimization Chart

**PLANT #:** **P-102**

Sample Date: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	58-003	Stoneco	1420	8.46	2.69	45.5
IA	58-003	Stoneco	500	2.98	2.69	16.0
2NS	63-114	Highland	1200	7.26	2.65	38.5
<b>Total Wt</b>			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

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



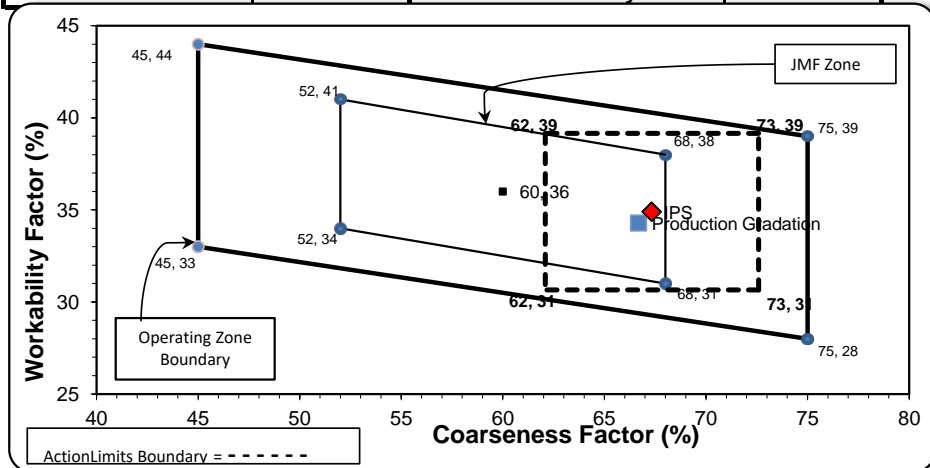
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	68.0	100.0	100.0	85.4	14.6	14.6
3/4"	37.6	100.0	100.0	71.6	13.8	28.4
1/2"	18.6	93.5	100.0	61.9	9.7	38.1
3/8"	12.9	74.0	100.0	56.2	5.7	43.8
#4	3.3	17.1	98.9	42.3	13.9	57.7
#8	2.1	3.8	85.1	34.3	8.0	65.7
#16	1.8	2.1	67.4	27.1	7.2	72.9
#30	1.6	1.7	48.5	19.7	7.4	80.3
#50	1.4	1.5	20.5	8.8	10.9	91.2
#100	1.4	1.3	3.6	2.2	6.5	97.8
LBW	1.1	1.2	0.7	1.0	1.3	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:** **67**      **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: 8/12/24

Concrete Grade: **P1M, 3500HP**

Contractor: \_\_\_\_\_

Dates Test Represents: 8/13/2024 through 8/19/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	58-003	Stoneco	1420	8.46	2.69	45.5
IA	58-003	Stoneco	500	2.98	2.69	16.0
2NS	63-114	Highland	1200	7.26	2.65	38.5
<b>Total Wt</b>			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

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



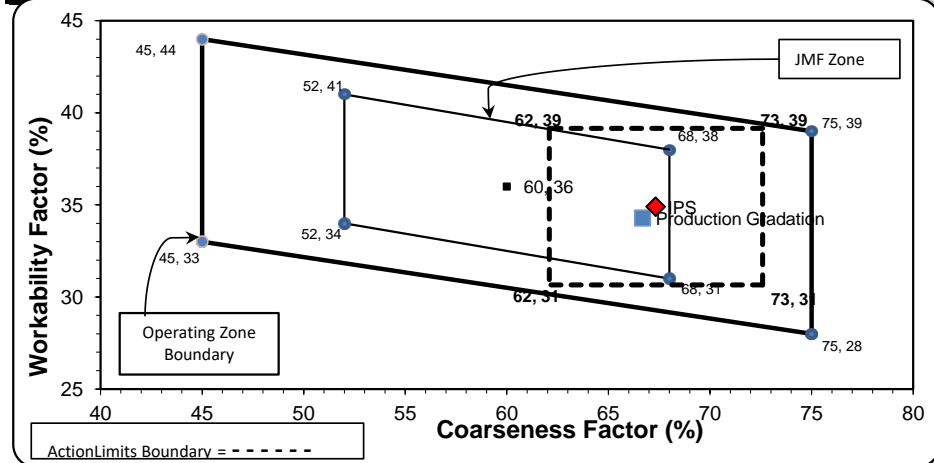
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	68.0	100.0	100.0	85.4	14.6	14.6
3/4"	37.6	100.0	100.0	71.6	13.8	28.4
1/2"	18.6	93.5	100.0	61.9	9.7	38.1
3/8"	12.9	74.0	100.0	56.2	5.7	43.8
#4	3.3	17.1	98.9	42.3	13.9	57.7
#8	2.1	3.8	85.1	34.3	8.0	65.7
#16	1.8	2.1	67.4	27.1	7.2	72.9
#30	1.6	1.7	48.5	19.7	7.4	80.3
#50	1.4	1.5	20.5	8.8	10.9	91.2
#100	1.4	1.3	3.6	2.2	6.5	97.8
LBW	1.1	1.2	0.7	1.0	1.3	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

<b>Coarseness Factor:</b>	<b>67</b>	<b>Workability Factor:</b>	<b>34</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>67</b>		
<b>Workability Factor:</b>	<b>35</b>		
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 #:** 12

Sample Date: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



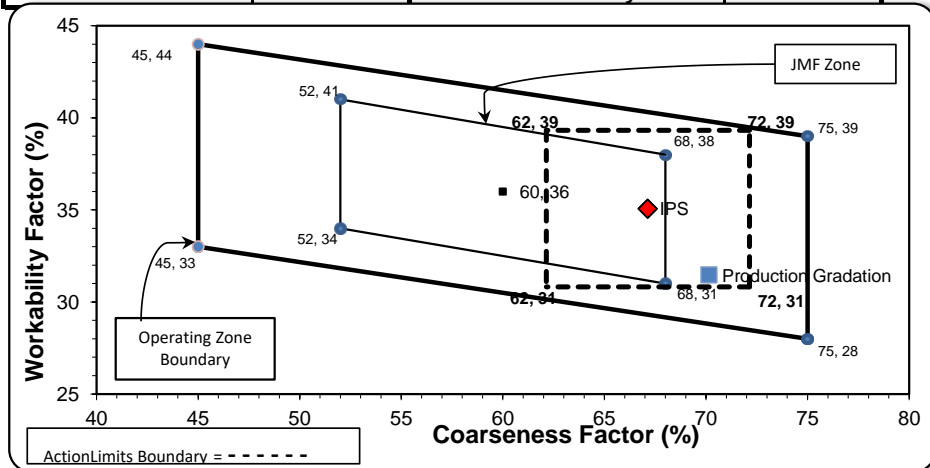
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.4	100.0	100.0	98.8	1.2	1.2
1"	38.7	100.0	100.0	79.6	19.2	20.4
3/4"	10.3	99.3	100.0	70.0	9.6	30.0
1/2"	2.7	72.1	100.0	59.9	10.1	40.1
3/8"	2.0	44.0	100.0	51.9	8.0	48.1
#4	1.7	6.3	97.0	40.2	11.7	59.8
#8	1.6	2.2	77.6	31.5	8.8	68.5
#16	1.6	1.8	61.0	24.9	6.6	75.1
#30	1.5	1.7	46.3	19.1	5.8	80.9
#50	1.4	1.6	26.1	11.1	8.0	88.9
#100	1.4	1.5	7.6	3.9	7.3	96.1
LBW	1.2	1.1	0.9	1.1	2.8	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

<b>Coarseness Factor:</b>	<b>70</b>	<b>Workability Factor:</b>	<b>31</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>67</b>
<b>Workability Factor:</b>	<b>35</b>

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:  
 SM, LLC Technical Service

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# Aggregate Optimization Chart

**PLANT #:** 20

Sample Date: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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	63-92	Grange Hall	1200	7.26	2.65	39.1
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



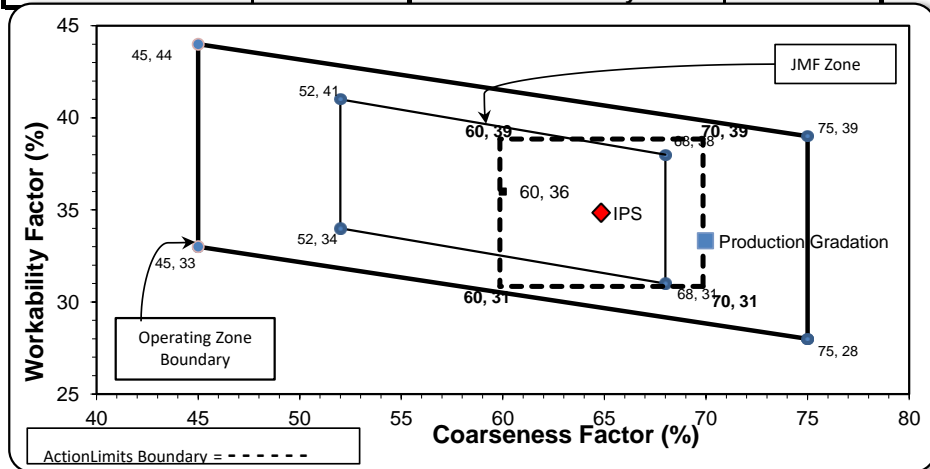
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.6	100.0	100.0	99.6	0.4	0.4
1"	41.6	100.0	100.0	85.4	14.3	14.6
3/4"	12.1	97.4	100.0	77.0	8.3	23.0
1/2"	3.7	66.2	100.0	63.7	13.3	36.3
3/8"	2.7	37.9	100.0	53.3	10.4	46.7
#4	1.8	4.3	97.7	40.2	13.2	59.8
#8	1.7	1.5	82.8	33.3	6.9	66.7
#16	1.6	1.1	67.0	27.0	6.3	73.0
#30	1.6	1.0	48.6	19.8	7.2	80.2
#50	1.5	1.0	20.3	8.7	11.1	91.3
#100	1.4	0.9	3.3	2.0	6.7	98.0
LBW	1.1	0.7	0.6	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



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: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	58-003	Stoneco	1420	8.46	2.69	45.5
IA	58-003	Stoneco	500	2.98	2.69	16.0
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.5
<b>Total Wt</b>			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

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



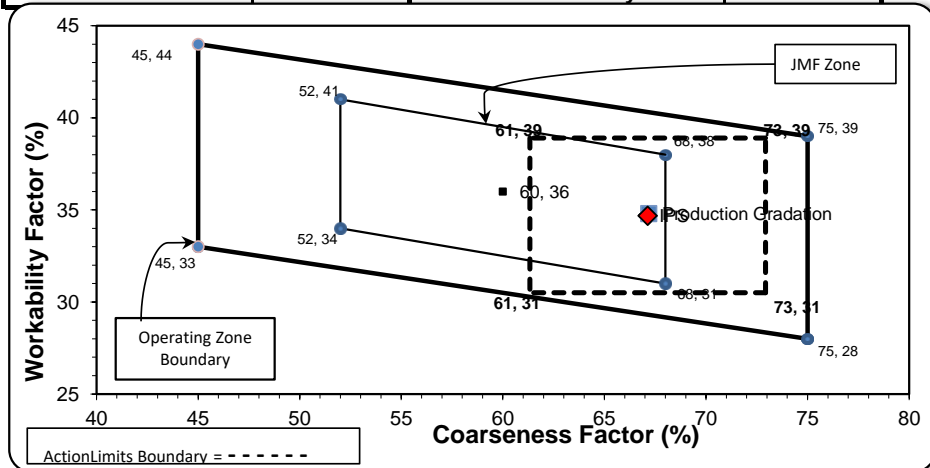
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 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	68.0	100.0	100.0	85.4	14.6	14.6
3/4"	37.6	100.0	100.0	71.6	13.8	28.4
1/2"	18.6	93.5	100.0	61.9	9.7	38.1
3/8"	12.9	74.0	100.0	56.2	5.7	43.8
#4	3.3	17.1	98.4	42.1	14.1	57.9
#8	2.1	3.8	86.4	34.8	7.3	65.2
#16	1.8	2.1	66.2	26.6	8.2	73.4
#30	1.6	1.7	45.1	18.3	8.3	81.7
#50	1.4	1.5	20.2	8.6	9.7	91.4
#100	1.4	1.3	3.7	2.3	6.4	97.7
LBW	1.1	1.2	0.6	0.9	1.3	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

<b>Coarseness Factor:</b>	<b>67</b>	<b>Workability Factor:</b>	<b>35</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>		<b>67</b>	
<b>Workability Factor:</b>		<b>35</b>	
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: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	950	5.81	2.62	30.9
IA	71-47	Presque Isle	920	5.63	2.62	30.0
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



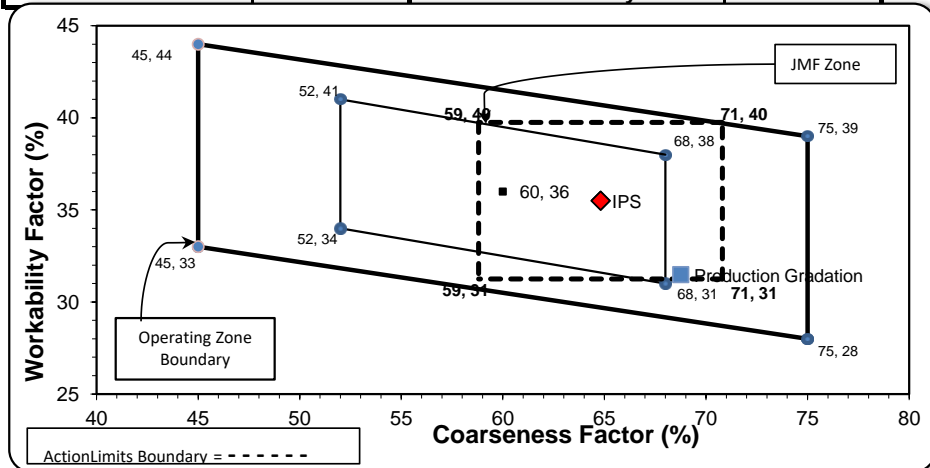
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 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.4	100.0	100.0	98.9	1.1	1.1
1"	38.7	100.0	100.0	81.0	17.9	19.0
3/4"	10.3	99.3	100.0	72.0	9.0	28.0
1/2"	2.7	72.1	100.0	61.5	10.5	38.5
3/8"	2.0	44.0	100.0	52.9	8.6	47.1
#4	1.7	6.3	97.0	40.3	12.6	59.7
#8	1.6	2.2	77.6	31.5	8.8	68.5
#16	1.6	1.8	61.0	24.9	6.6	75.1
#30	1.5	1.7	46.3	19.1	5.8	80.9
#50	1.4	1.6	26.1	11.1	8.0	88.9
#100	1.4	1.5	7.6	3.9	7.3	96.1
LBW	1.2	1.1	0.9	1.1	2.8	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:** 69      **Workability Factor:** 31



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: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	58-003	Stoneco	1420	8.46	2.69	45.5
IA	58-003	Stoneco	500	2.98	2.69	16.0
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.5
<b>Total Wt</b>			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

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



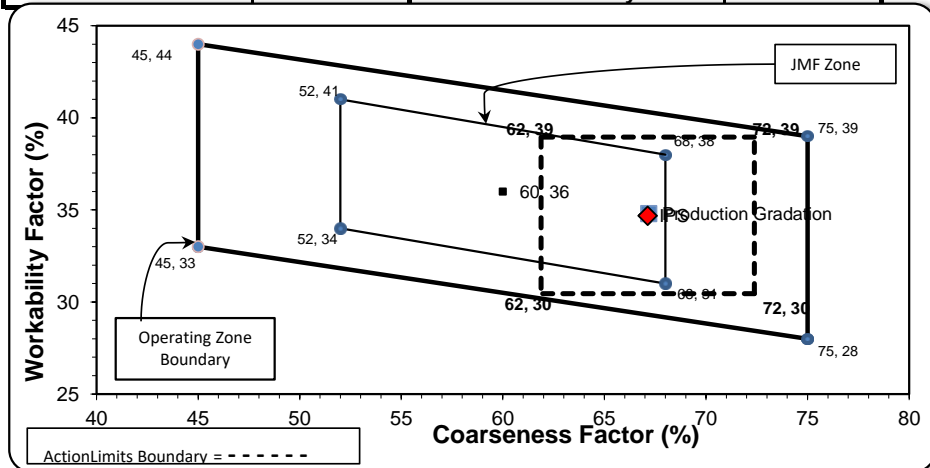
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	68.0	100.0	100.0	85.4	14.6	14.6
3/4"	37.6	100.0	100.0	71.6	13.8	28.4
1/2"	18.6	93.5	100.0	61.9	9.7	38.1
3/8"	12.9	74.0	100.0	56.2	5.7	43.8
#4	3.3	17.1	98.4	42.1	14.1	57.9
#8	2.1	3.8	86.4	34.8	7.3	65.2
#16	1.8	2.1	66.2	26.6	8.2	73.4
#30	1.6	1.7	45.1	18.3	8.3	81.7
#50	1.4	1.5	20.2	8.6	9.7	91.4
#100	1.4	1.3	3.7	2.3	6.4	97.7
LBW	1.1	1.2	0.6	0.9	1.3	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

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



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: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	900	5.50	2.62	29.3
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



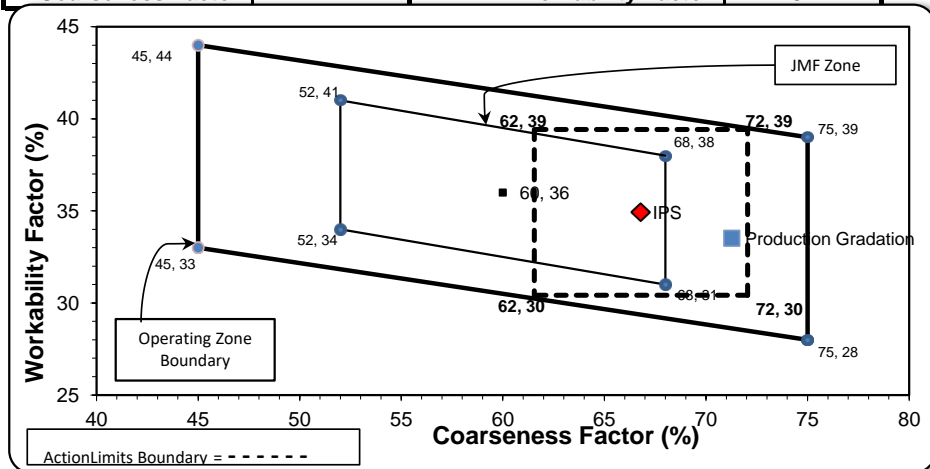
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.4	100.0	100.0	98.9	1.1	1.1
1"	38.7	100.0	100.0	80.6	18.2	19.4
3/4"	10.3	99.3	100.0	71.5	9.2	28.5
1/2"	2.7	72.1	100.0	61.1	10.4	38.9
3/8"	2.0	44.0	100.0	52.6	8.5	47.4
#4	1.7	6.3	97.7	40.6	12.0	59.4
#8	1.6	2.2	82.8	33.5	7.1	66.5
#16	1.6	1.8	67.0	27.2	6.3	72.8
#30	1.5	1.7	48.6	20.0	7.3	80.0
#50	1.4	1.6	20.3	8.8	11.1	91.2
#100	1.4	1.5	3.3	2.2	6.7	97.8
LBW	1.2	1.1	0.6	0.9	1.2	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

<b>Coarseness Factor:</b>	<b>71</b>	<b>Workability Factor:</b>	<b>34</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>67</b>
<b>Workability Factor:</b>	<b>35</b>

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-02**

Sample Date: 8/12/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 8/13/2024 through 8/19/2024

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



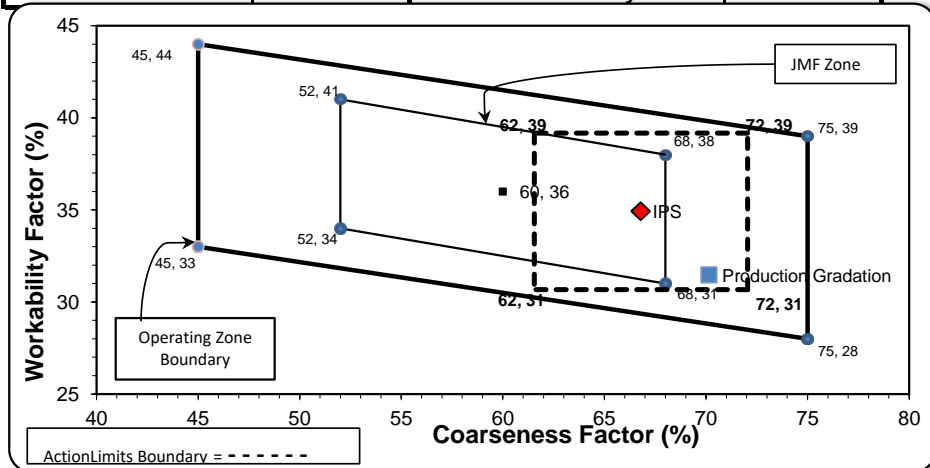
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	96.4	100.0	100.0	98.8	1.2	1.2
1"	38.7	100.0	100.0	79.6	19.2	20.4
3/4"	10.3	99.3	100.0	70.0	9.6	30.0
1/2"	2.7	72.1	100.0	59.9	10.1	40.1
3/8"	2.0	44.0	100.0	51.9	8.0	48.1
#4	1.7	6.3	97.0	40.2	11.7	59.8
#8	1.6	2.2	77.6	31.5	8.8	68.5
#16	1.6	1.8	61.0	24.9	6.6	75.1
#30	1.5	1.7	46.3	19.1	5.8	80.9
#50	1.4	1.6	26.1	11.1	8.0	88.9
#100	1.4	1.5	7.6	3.9	7.3	96.1
LBW	1.2	1.1	0.9	1.1	2.8	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

<b>Coarseness Factor:</b>	<b>70</b>	<b>Workability Factor:</b>	<b>31</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>67</b>
<b>Workability Factor:</b>	<b>35</b>

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: