

# Aggregate Optimization Chart

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

Sample Date: 11/25/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/26/2024 through 12/2/2024

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
<b>Total Wt</b>			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

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



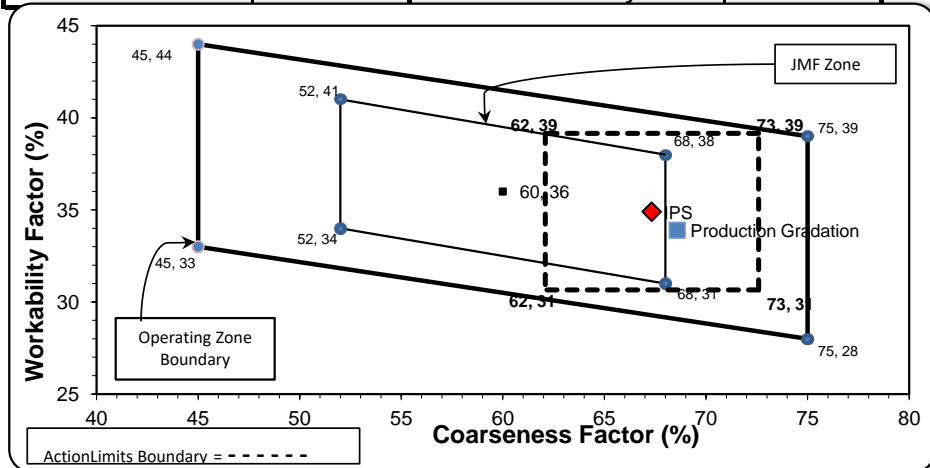
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	59.0	100.0	100.0	80.7	19.3	19.3
3/4"	33.0	100.0	100.0	68.4	12.3	31.6
1/2"	16.1	91.6	100.0	59.3	9.2	40.7
3/8"	12.6	71.2	100.0	54.7	4.6	45.3
#4	2.2	17.5	99.1	41.7	13.0	58.3
#8	1.6	3.4	84.9	33.9	7.8	66.1
#16	1.4	2.0	65.8	26.3	7.6	73.7
#30	1.2	1.8	44.5	17.9	8.3	82.1
#50	1.2	1.6	21.4	9.0	8.9	91.0
#100	1.2	1.5	4.4	2.5	6.6	97.5
LBW	1.0	1.3	0.2	0.7	1.7	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:** 69      **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: 11/25/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/26/2024 through 12/2/2024

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
<b>Total Wt</b>			<b>3120</b>	<b>18.70</b>		<b>100.0</b>

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



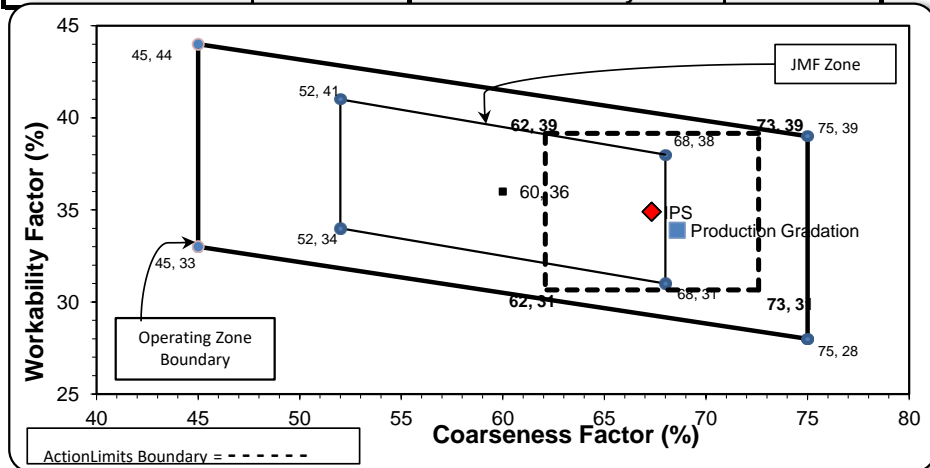
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 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

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"	59.0	100.0	100.0	80.7	19.3	19.3
3/4"	33.0	100.0	100.0	68.4	12.3	31.6
1/2"	16.1	91.6	100.0	59.3	9.2	40.7
3/8"	12.6	71.2	100.0	54.7	4.6	45.3
#4	2.2	17.5	99.1	41.7	13.0	58.3
#8	1.6	3.4	84.9	33.9	7.8	66.1
#16	1.4	2.0	65.8	26.3	7.6	73.7
#30	1.2	1.8	44.5	17.9	8.3	82.1
#50	1.2	1.6	21.4	9.0	8.9	91.0
#100	1.2	1.5	4.4	2.5	6.6	97.5
LBW	1.0	1.3	0.2	0.7	1.7	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

<b>Coarseness Factor:</b>	<b>69</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: 11/25/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/26/2024 through 12/2/2024

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



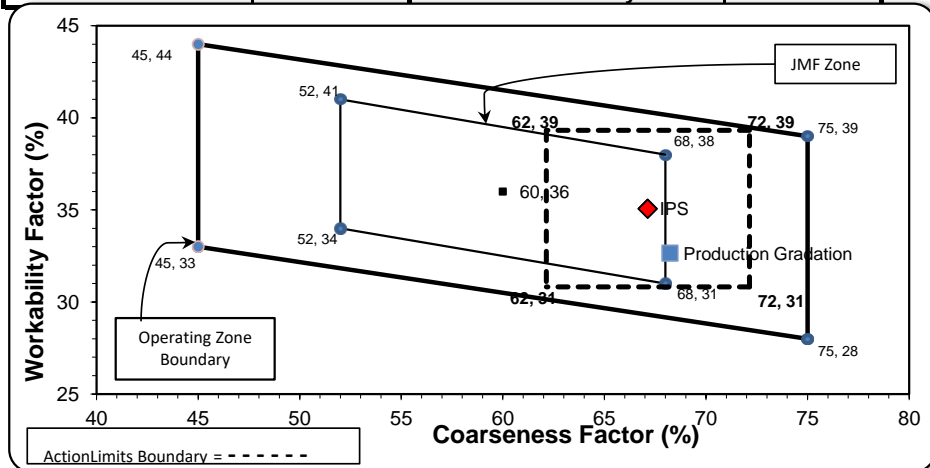
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.3	100.0	100.0	98.7	1.3	1.3
1"	31.7	100.0	100.0	80.6	18.0	19.4
3/4"	5.8	98.5	100.0	72.8	7.8	27.2
1/2"	3.4	72.1	100.0	63.5	9.3	36.5
3/8"	2.8	43.5	100.0	54.1	9.5	45.9
#4	2.2	5.6	98.1	40.8	13.3	59.2
#8	1.8	2.2	80.4	32.7	8.1	67.3
#16	1.7	2.0	62.6	25.6	7.1	74.4
#30	1.6	1.8	46.2	19.1	6.5	80.9
#50	1.5	1.7	24.2	10.4	8.7	89.6
#100	1.5	1.5	5.6	3.1	7.3	96.9
LBW	1.3	1.3	0.8	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:** 68      **Workability Factor:** 33



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"	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

Approved By:

# Aggregate Optimization Chart

**PLANT #:** **P11**

Sample Date: 11/25/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/26/2024 through 12/2/2024

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



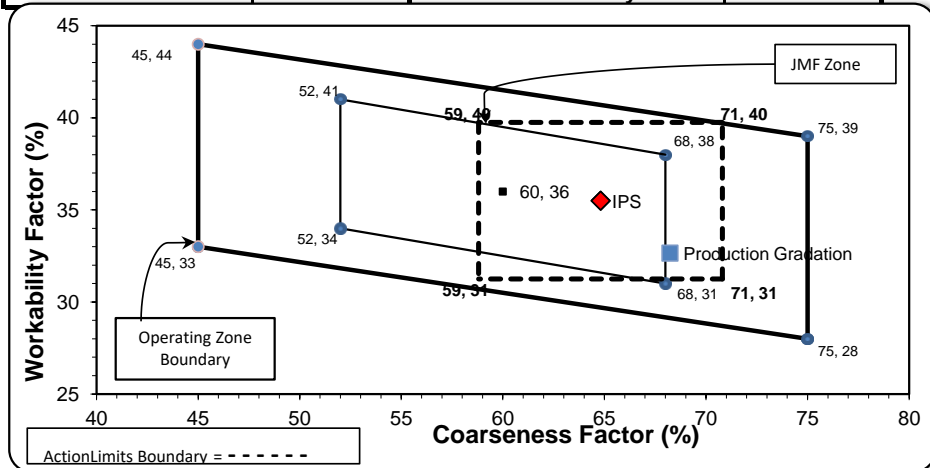
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.3	100.0	100.0	98.7	1.3	1.3
1"	31.7	100.0	100.0	80.6	18.0	19.4
3/4"	5.8	98.5	100.0	72.8	7.8	27.2
1/2"	3.4	72.1	100.0	63.5	9.3	36.5
3/8"	2.8	43.5	100.0	54.1	9.5	45.9
#4	2.2	5.6	98.1	40.8	13.3	59.2
#8	1.8	2.2	80.4	32.7	8.1	67.3
#16	1.7	2.0	62.6	25.6	7.1	74.4
#30	1.6	1.8	46.2	19.1	6.5	80.9
#50	1.5	1.7	24.2	10.4	8.7	89.6
#100	1.5	1.5	5.6	3.1	7.3	96.9
LBW	1.3	1.3	0.8	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:** 68      **Workability Factor:** 33



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-02**

Sample Date: 11/25/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 11/26/2024 through 12/2/2024

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

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	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
<b>Total Wt</b>			<b>3070</b>	<b>18.70</b>		<b>100.0</b>

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



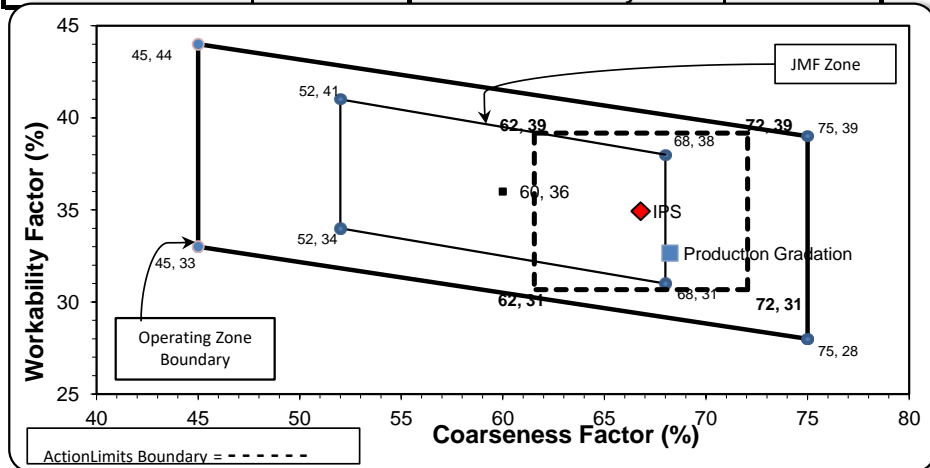
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
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 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.3	100.0	100.0	98.7	1.3	1.3
1"	31.7	100.0	100.0	80.6	18.0	19.4
3/4"	5.8	98.5	100.0	72.8	7.8	27.2
1/2"	3.4	72.1	100.0	63.5	9.3	36.5
3/8"	2.8	43.5	100.0	54.1	9.5	45.9
#4	2.2	5.6	98.1	40.8	13.3	59.2
#8	1.8	2.2	80.4	32.7	8.1	67.3
#16	1.7	2.0	62.6	25.6	7.1	74.4
#30	1.6	1.8	46.2	19.1	6.5	80.9
#50	1.5	1.7	24.2	10.4	8.7	89.6
#100	1.5	1.5	5.6	3.1	7.3	96.9
LBW	1.3	1.3	0.8	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

<b>Coarseness Factor:</b>	<b>68</b>	<b>Workability Factor:</b>	<b>33</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: