

Aggregate Optimization Chart

PLANT #: **P-101**

Sample Date: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1070	6.54	2.62	34.9
IA	71-47	Presque Isle	800	4.89	2.62	26.1
2NS	75-051	Mid Michigan	1200	7.23	2.66	39.1
Total Wt			3070	18.67		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"	97.3	100.0	100.0	99.1	0.9	0.9
1"	37.0	100.0	100.0	78.0	21.0	22.0
3/4"	22.1	99.0	100.0	72.6	5.5	27.4
1/2"	8.4	78.2	100.0	62.4	10.2	37.6
3/8"	4.5	50.1	100.0	53.7	8.7	46.3
#4	2.5	7.4	96.4	40.5	13.2	59.5
#8	2.0	2.4	81.4	33.1	7.3	66.9
#16	1.8	1.7	66.9	27.2	5.9	72.8
#30	1.8	1.6	52.7	21.6	5.6	78.4
#50	1.7	1.5	28.2	12.0	9.6	88.0
#100	1.6	1.5	8.3	4.2	7.8	95.8
LBW	1.3	1.3	1.2	1.3	2.9	98.7

*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.

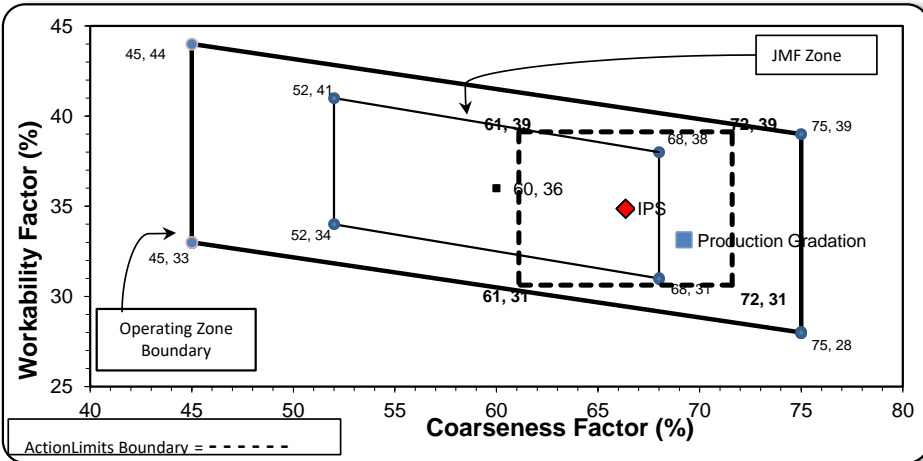
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	69	Workability Factor:	33
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Initial Production Sample (IPS)

Coarseness Factor:	66
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"	84.3	15.3	15.7
3/4"	74.8	9.6	25.2
1/2"	64.3	10.4	35.7
3/8"	56.8	7.5	43.2
#4	43.0	13.8	57.0
#8	34.9	8.1	65.1
#16	26.4	8.5	73.6
#30	19.9	6.5	80.1
#50	10.4	9.5	89.6
#100	3.4	7.0	96.6
LBW	1.2	2.2	98.8



PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 5/20/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 5/21/2024 through 5/27/2024

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%



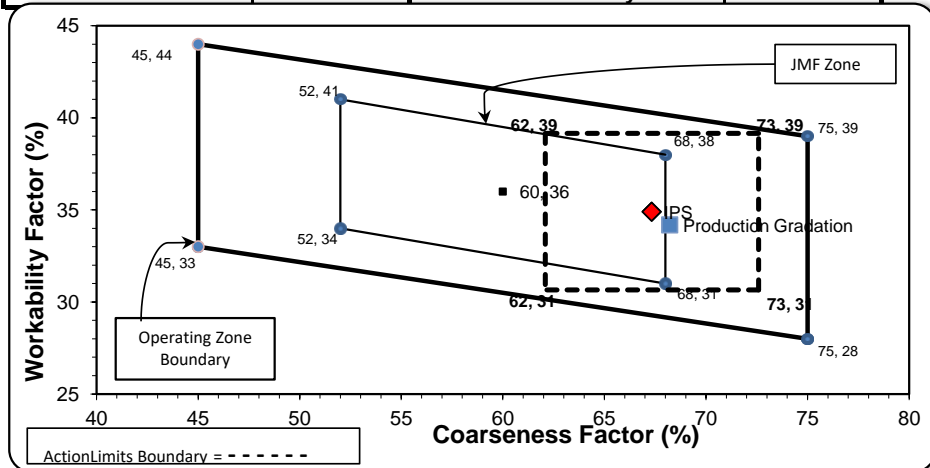
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 Suite 500
 Farmington Hills, MI 48336

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"	67.7	100.0	100.0	84.8	15.2	15.2
3/4"	35.6	100.0	100.0	69.7	15.1	30.3
1/2"	18.0	95.3	100.0	60.7	9.0	39.3
3/8"	11.2	78.8	100.0	55.1	5.6	44.9
#4	2.6	17.0	99.0	41.8	13.4	58.2
#8	1.6	4.6	85.2	34.2	7.6	65.8
#16	1.4	2.4	68.2	27.2	7.0	72.8
#30	1.2	1.7	49.2	19.7	7.5	80.3
#50	1.2	1.5	17.7	7.6	12.1	92.4
#100	1.0	1.4	2.5	1.6	6.0	98.4
LBW	0.7	1.2	0.5	0.7	0.9	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:	68	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

Approved By:

Aggregate Optimization Chart

PLANT #: **P-103**

Sample Date: 5/20/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 5/21/2024 through 5/27/2024

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%



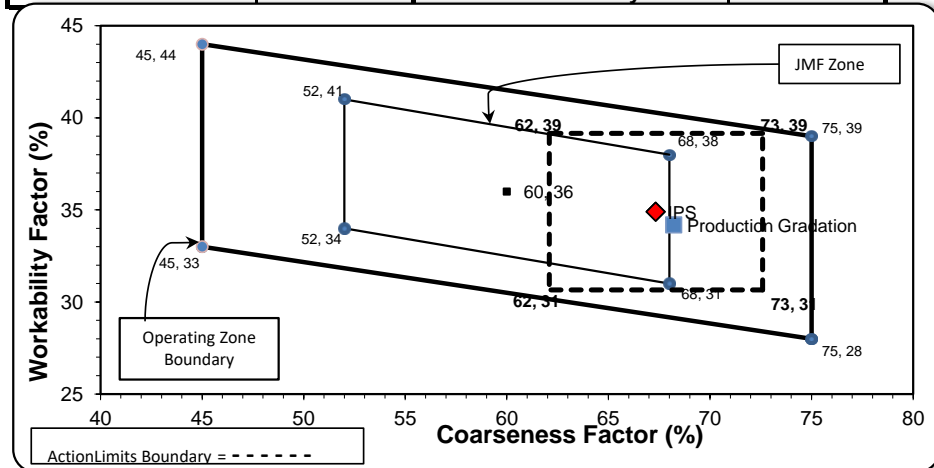
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	67.7	100.0	100.0	84.8	15.2	15.2
3/4"	35.6	100.0	100.0	69.7	15.1	30.3
1/2"	18.0	95.3	100.0	60.7	9.0	39.3
3/8"	11.2	78.8	100.0	55.1	5.6	44.9
#4	2.6	17.0	99.0	41.8	13.4	58.2
#8	1.6	4.6	85.2	34.2	7.6	65.8
#16	1.4	2.4	68.2	27.2	7.0	72.8
#30	1.2	1.7	49.2	19.7	7.5	80.3
#50	1.2	1.5	17.7	7.6	12.1	92.4
#100	1.0	1.4	2.5	1.6	6.0	98.4
LBW	0.7	1.2	0.5	0.7	0.9	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:	68	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

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Aggregate Optimization Chart

PLANT #: 12

Sample Date: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	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	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



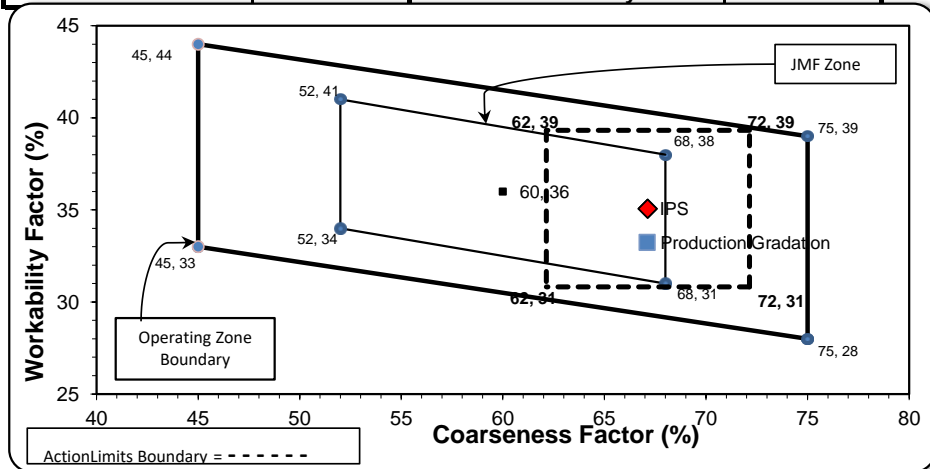
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.3	100.0	100.0	99.1	0.9	0.9
1"	37.0	100.0	100.0	80.1	19.1	19.9
3/4"	22.1	99.0	100.0	75.1	5.0	24.9
1/2"	8.4	78.2	100.0	64.7	10.4	35.3
3/8"	4.5	50.1	100.0	55.2	9.5	44.8
#4	2.5	7.4	96.0	40.5	14.7	59.5
#8	2.0	2.4	81.6	33.2	7.3	66.8
#16	1.8	1.7	66.2	26.9	6.3	73.1
#30	1.8	1.6	50.6	20.8	6.1	79.2
#50	1.7	1.5	25.7	11.0	9.8	89.0
#100	1.6	1.5	4.6	2.7	8.3	97.3
LBW	1.3	1.3	0.5	1.0	1.8	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:** 33



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: 5/20/24

Dates Test Represents: 5/21/2024 through 5/27/2024

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	950	5.81	2.62	30.9
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



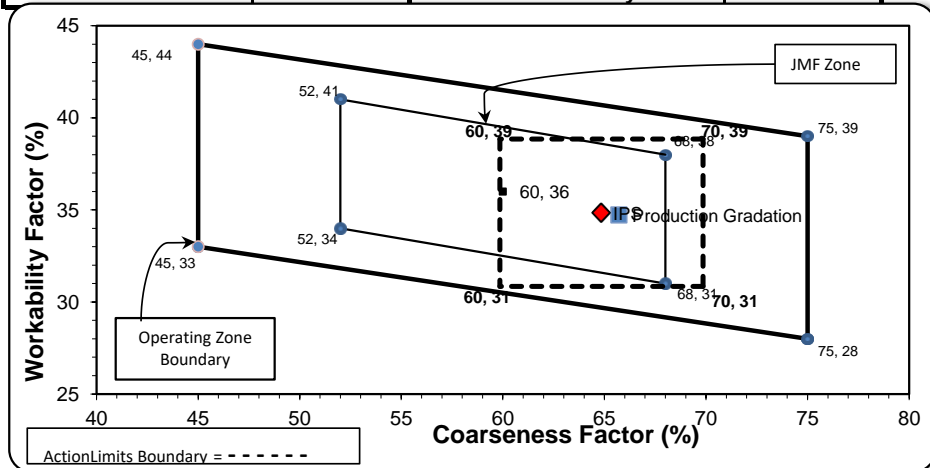
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 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.4	100.0	100.0	99.2	0.8	0.8
1"	35.7	100.0	100.0	80.7	18.5	19.3
3/4"	10.2	99.2	100.0	72.8	7.9	27.2
1/2"	2.7	77.9	100.0	64.0	8.8	36.0
3/8"	2.4	55.9	100.0	57.1	6.9	42.9
#4	2.3	14.7	98.0	43.5	13.6	56.5
#8	2.3	5.9	82.4	34.7	8.8	65.3
#16	2.2	4.1	67.1	28.2	6.6	71.8
#30	2.1	3.5	49.9	21.2	6.9	78.8
#50	2.0	3.3	22.3	10.3	10.9	89.7
#100	1.8	3.0	4.2	3.1	7.2	96.9
LBW	1.5	2.5	0.6	1.5	1.7	98.5

*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:	35
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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"	99.1	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 #: P11

Sample Date: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	970	5.93	2.62	31.6
2NS	95-013	Smelter Bay	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



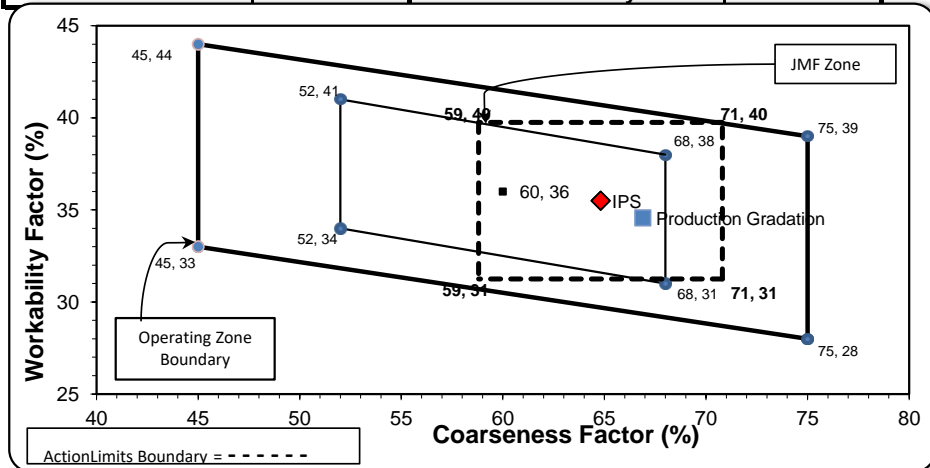
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.3	100.0	100.0	99.2	0.8	0.8
1"	37.0	100.0	100.0	81.5	17.7	18.5
3/4"	22.1	99.0	100.0	76.8	4.7	23.2
1/2"	8.4	78.2	100.0	66.3	10.6	33.7
3/8"	4.5	50.1	100.0	56.2	10.0	43.8
#4	2.5	7.4	96.3	40.7	15.5	59.3
#8	2.0	2.4	85.0	34.6	6.1	65.4
#16	1.8	1.7	70.4	28.6	6.0	71.4
#30	1.8	1.6	50.5	20.8	7.8	79.2
#50	1.7	1.5	23.6	10.2	10.6	89.8
#100	1.6	1.5	6.9	3.6	6.6	96.4
LBW	1.3	1.3	1.3	1.3	2.3	98.7

*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: <u>65</u>		Workability Factor: <u>36</u>	
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: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

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%



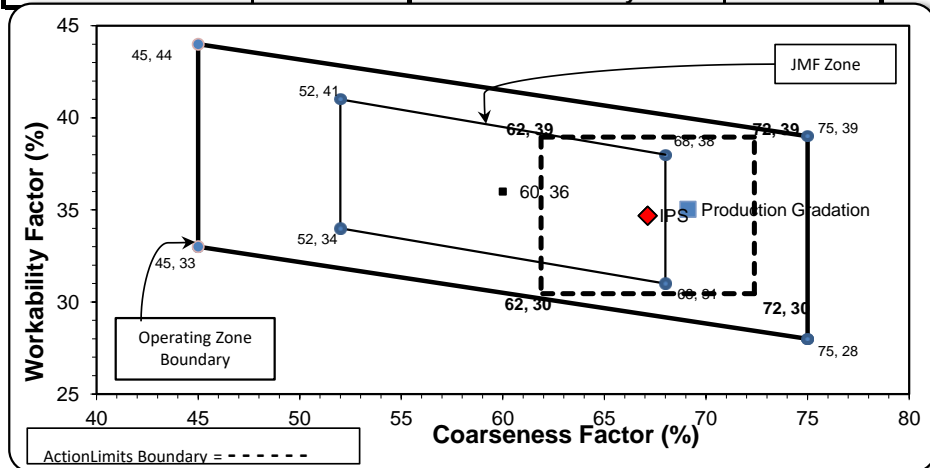
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	67.7	100.0	100.0	84.8	15.2	15.2
3/4"	35.6	100.0	100.0	69.7	15.1	30.3
1/2"	18.0	95.3	100.0	60.7	9.0	39.3
3/8"	11.2	78.8	100.0	55.1	5.6	44.9
#4	2.6	17.0	99.3	41.9	13.2	58.1
#8	1.6	4.6	87.4	35.0	6.8	65.0
#16	1.4	2.4	64.3	25.7	9.3	74.3
#30	1.2	1.7	38.7	15.7	10.0	84.3
#50	1.2	1.5	14.5	6.4	9.3	93.6
#100	1.0	1.4	2.5	1.6	4.7	98.4
LBW	0.7	1.2	0.4	0.7	1.0	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: **69** **Workability Factor:** **35**



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"	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: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

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	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
Total Wt			3070	18.70		100.0

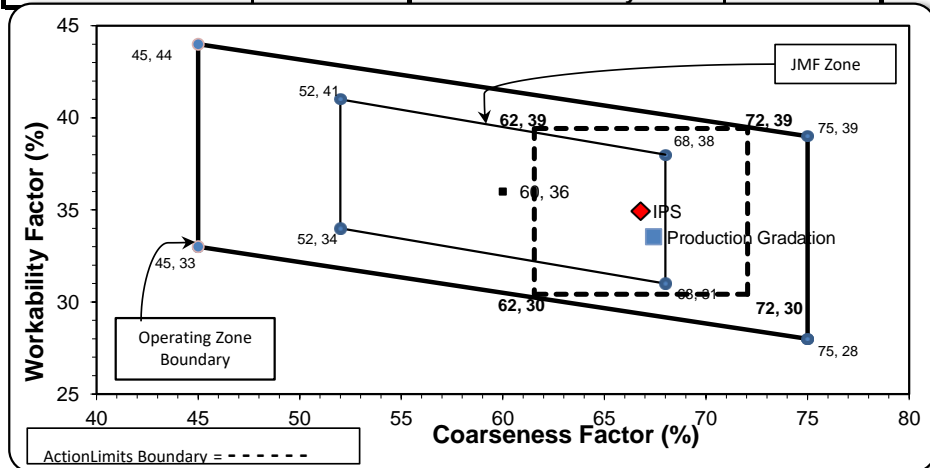
<---- Verify this number is 100%

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.3	100.0	100.0	99.1	0.9	0.9
1"	37.0	100.0	100.0	80.1	19.1	19.9
3/4"	22.1	99.0	100.0	75.1	5.0	24.9
1/2"	8.4	78.2	100.0	64.7	10.4	35.3
3/8"	4.5	50.1	100.0	55.2	9.5	44.8
#4	2.5	7.4	98.0	41.3	13.9	58.7
#8	2.0	2.4	82.4	33.5	7.7	66.5
#16	1.8	1.7	67.1	27.3	6.2	72.7
#30	1.8	1.6	49.9	20.5	6.8	79.5
#50	1.7	1.5	22.3	9.7	10.8	90.3
#100	1.6	1.5	4.2	2.6	7.1	97.4
LBW	1.3	1.3	0.6	1.0	1.6	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"	85.0	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: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	920	5.63	2.62	30.0
2NS	44-051	Krake Willis Rd	1250	7.56	2.65	40.7
Total Wt			3070	18.69		100.0

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



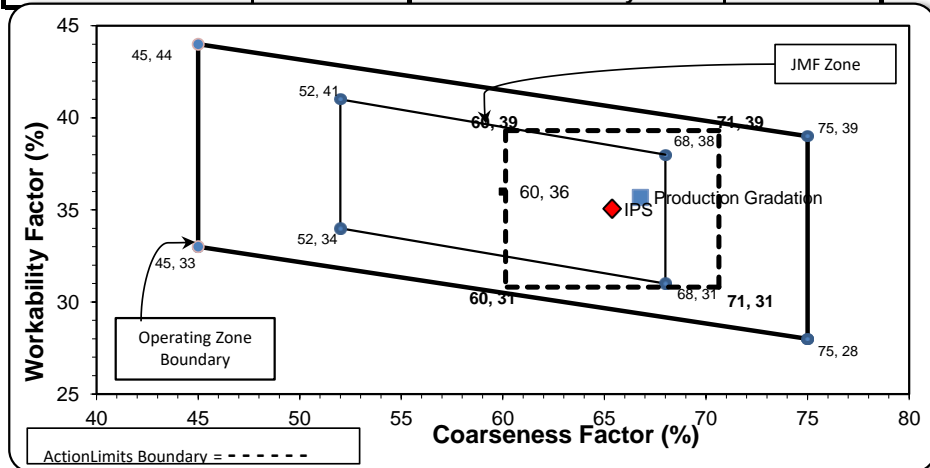
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.3	100.0	100.0	99.2	0.8	0.8
1"	37.0	100.0	100.0	81.5	17.7	18.5
3/4"	22.1	99.0	100.0	76.9	4.7	23.1
1/2"	8.4	78.2	100.0	66.6	10.2	33.4
3/8"	4.5	50.1	100.0	57.0	9.6	43.0
#4	2.5	7.4	99.2	43.3	13.7	56.7
#8	2.0	2.4	84.4	35.7	7.7	64.3
#16	1.8	1.7	68.9	29.1	6.6	70.9
#30	1.8	1.6	50.4	21.5	7.6	78.5
#50	1.7	1.5	21.8	9.8	11.7	90.2
#100	1.6	1.5	5.2	3.0	6.8	97.0
LBW	1.3	1.3	0.8	1.1	1.9	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: **67** **Workability Factor:** **36**



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: 5/20/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 5/21/2024 through 5/27/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	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	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



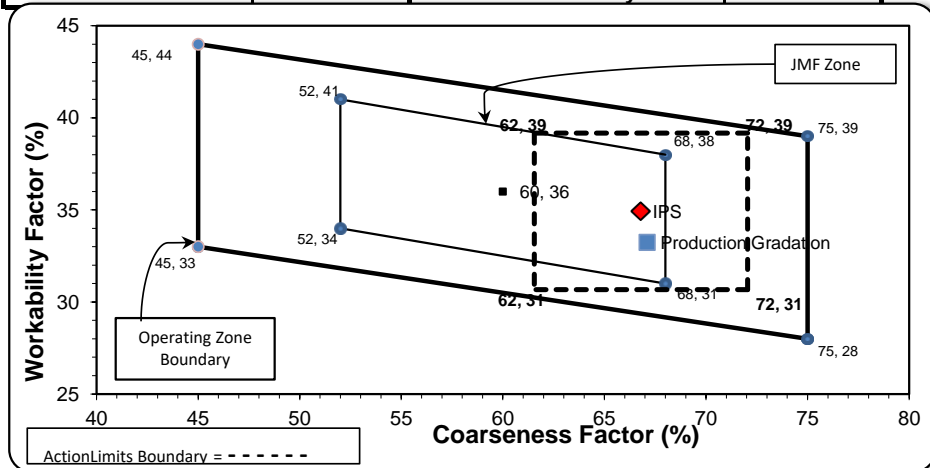
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.3	100.0	100.0	99.1	0.9	0.9
1"	37.0	100.0	100.0	80.1	19.1	19.9
3/4"	22.1	99.0	100.0	75.1	5.0	24.9
1/2"	8.4	78.2	100.0	64.7	10.4	35.3
3/8"	4.5	50.1	100.0	55.2	9.5	44.8
#4	2.5	7.4	96.0	40.5	14.7	59.5
#8	2.0	2.4	81.6	33.2	7.3	66.8
#16	1.8	1.7	66.2	26.9	6.3	73.1
#30	1.8	1.6	50.6	20.8	6.1	79.2
#50	1.7	1.5	25.7	11.0	9.8	89.0
#100	1.6	1.5	4.6	2.7	8.3	97.3
LBW	1.3	1.3	0.5	1.0	1.8	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:** **33**



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: