

Aggregate Optimization Chart

PLANT #: **P-101**

Sample Date: 7/1/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 7/2/2024 through 7/8/2024

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	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"	97.1	100.0	100.0	99.1	0.9	0.9
1"	47.6	100.0	100.0	84.6	14.5	15.4
3/4"	12.1	99.6	100.0	74.1	10.5	25.9
1/2"	2.2	71.3	100.0	62.3	11.8	37.7
3/8"	1.7	43.3	100.0	53.3	9.0	46.7
#4	1.4	4.6	96.1	39.4	13.8	60.6
#8	1.4	1.4	79.5	31.9	7.5	68.1
#16	1.4	1.1	63.5	25.6	6.3	74.4
#30	1.3	1.0	48.7	19.7	5.8	80.3
#50	1.3	1.0	26.2	10.9	8.8	89.1
#100	1.2	0.9	7.9	3.7	7.2	96.3
LBW	1.0	0.7	1.2	1.0	2.7	99.0

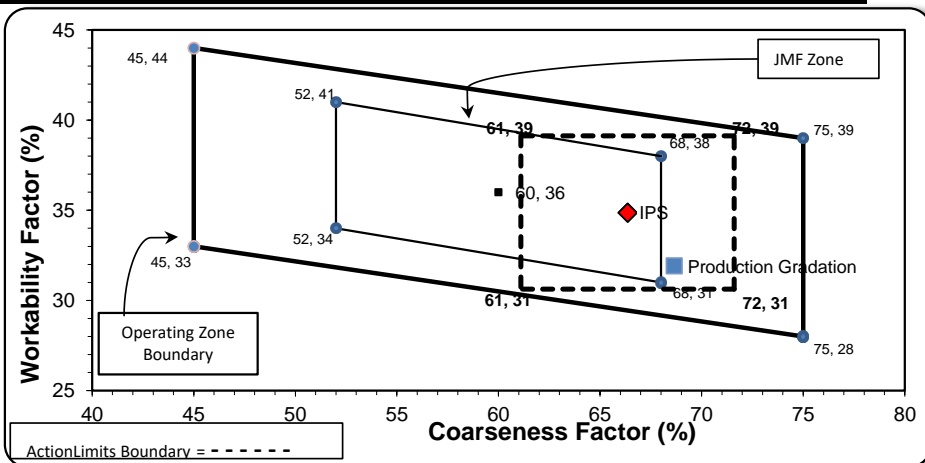
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	69	Workability Factor:	32
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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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 7/2/2024 through 7/8/2024

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%



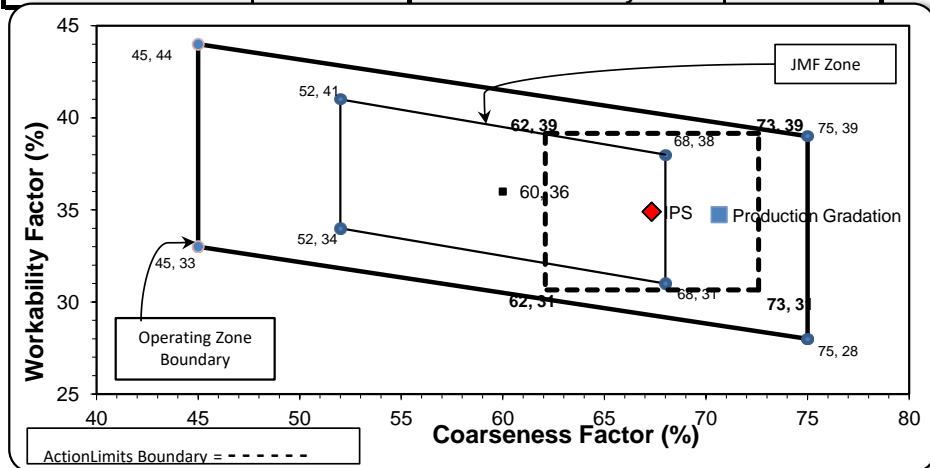
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 Suite 500
 Farmington Hills, MI 48336

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"	66.2	100.0	100.0	84.1	15.9	15.9
3/4"	39.4	100.0	100.0	71.4	12.6	28.6
1/2"	12.8	94.8	100.0	58.2	13.3	41.8
3/8"	9.4	76.3	100.0	53.9	4.3	46.1
#4	2.8	18.4	98.8	42.0	11.9	58.0
#8	1.7	5.7	86.1	34.7	7.2	65.3
#16	1.5	3.0	69.7	27.9	6.8	72.1
#30	1.4	2.0	50.3	20.3	7.7	79.7
#50	1.3	1.6	18.5	8.0	12.3	92.0
#100	1.2	1.4	3.0	1.9	6.0	98.1
LBW	0.8	0.7	0.6	0.7	1.2	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:	71	Workability Factor:	35
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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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 7/2/2024 through 7/8/2024

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%



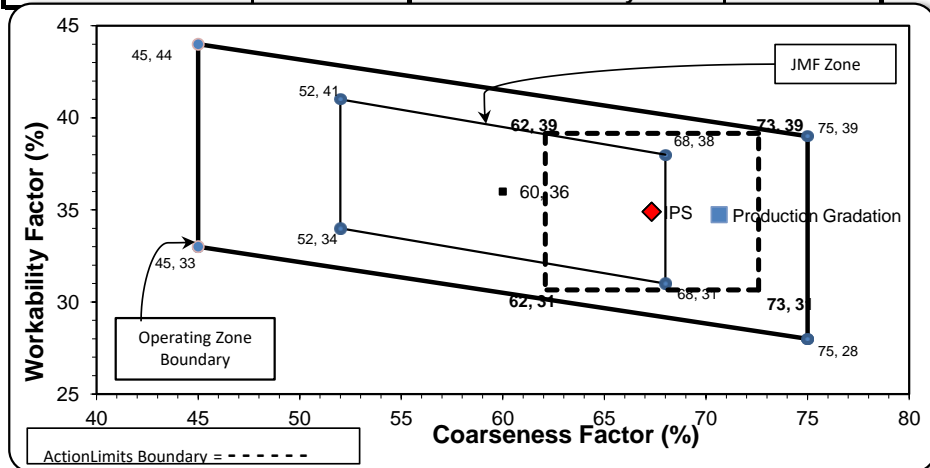
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 Suite 500
 Farmington Hills, MI 48336

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"	66.2	100.0	100.0	84.1	15.9	15.9
3/4"	39.4	100.0	100.0	71.4	12.6	28.6
1/2"	12.8	94.8	100.0	58.2	13.3	41.8
3/8"	9.4	76.3	100.0	53.9	4.3	46.1
#4	2.8	18.4	98.8	42.0	11.9	58.0
#8	1.7	5.7	86.1	34.7	7.2	65.3
#16	1.5	3.0	69.7	27.9	6.8	72.1
#30	1.4	2.0	50.3	20.3	7.7	79.7
#50	1.3	1.6	18.5	8.0	12.3	92.0
#100	1.2	1.4	3.0	1.9	6.0	98.1
LBW	0.8	0.7	0.6	0.7	1.2	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:	71	Workability Factor:	35
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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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 7/2/2024 through 7/8/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	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
Total Wt			3070	18.70		100.0

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



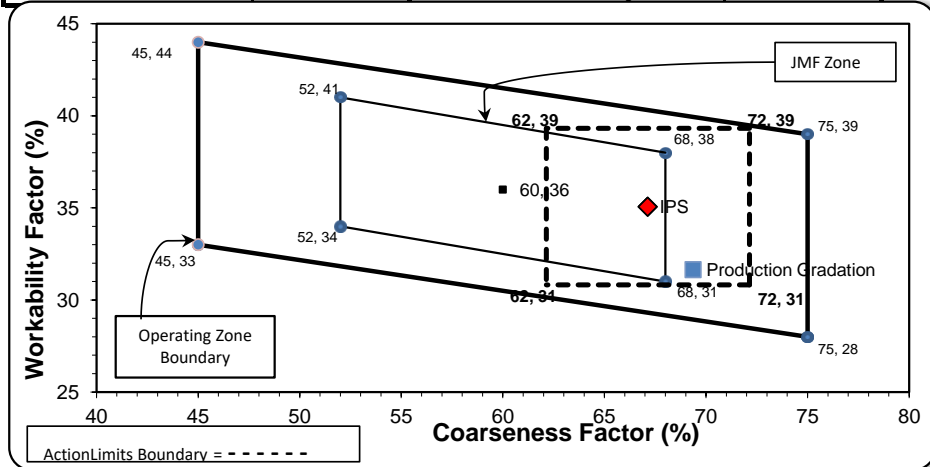
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.1	100.0	100.0	99.1	0.9	0.9
1"	47.6	100.0	100.0	83.8	15.3	16.2
3/4"	12.1	99.6	100.0	72.7	11.1	27.3
1/2"	2.2	71.3	100.0	61.1	11.5	38.9
3/8"	1.7	43.3	100.0	52.6	8.5	47.4
#4	1.4	4.6	96.0	39.3	13.3	60.7
#8	1.4	1.4	78.8	31.7	7.7	68.3
#16	1.4	1.1	62.6	25.2	6.4	74.8
#30	1.3	1.0	47.6	19.3	5.9	80.7
#50	1.3	1.0	25.6	10.7	8.6	89.3
#100	1.2	0.9	5.5	2.8	7.9	97.2
LBW	1.0	0.7	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: 69 **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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 7/2/2024 through 7/8/2024

Contractor: _____

MDOT No.: _____

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

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



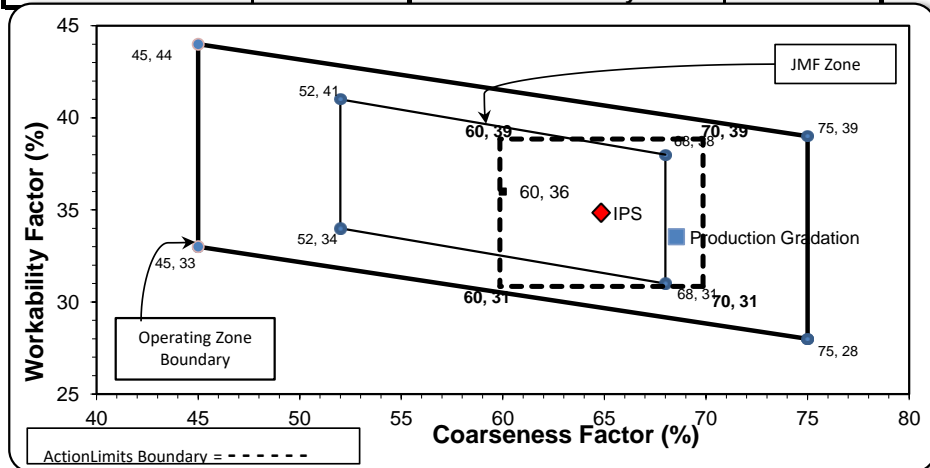
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 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.1	100.0	100.0	99.1	0.9	0.9
1"	35.4	100.0	100.0	80.0	19.1	20.0
3/4"	7.0	98.8	100.0	70.9	9.1	29.1
1/2"	2.4	74.8	100.0	62.2	8.6	37.8
3/8"	1.8	49.4	100.0	54.4	7.8	45.6
#4	1.5	9.3	97.7	41.4	13.0	58.6
#8	1.5	3.3	82.1	33.5	7.9	66.5
#16	1.4	2.4	66.2	27.0	6.5	73.0
#30	1.4	2.2	49.0	20.2	6.8	79.8
#50	1.4	2.1	21.7	9.5	10.7	90.5
#100	1.3	2.0	3.4	2.3	7.2	97.7
LBW	1.0	1.7	0.5	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: 69 **Workability Factor:** 34



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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 7/2/2024 through 7/8/2024

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	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



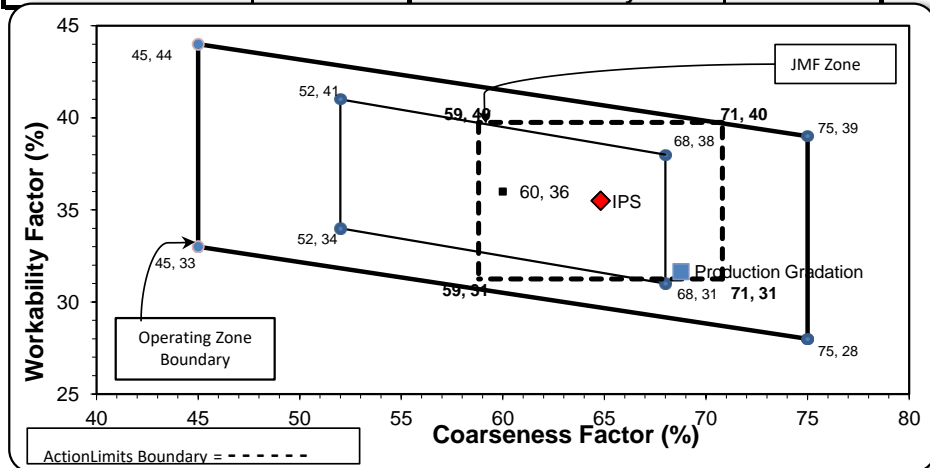
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.1	100.0	100.0	99.1	0.9	0.9
1"	47.6	100.0	100.0	84.3	14.8	15.7
3/4"	12.1	99.6	100.0	73.5	10.8	26.5
1/2"	2.2	71.3	100.0	61.8	11.7	38.2
3/8"	1.7	43.3	100.0	53.0	8.8	47.0
#4	1.4	4.6	96.0	39.4	13.6	60.6
#8	1.4	1.4	78.8	31.7	7.7	68.3
#16	1.4	1.1	62.6	25.2	6.4	74.8
#30	1.3	1.0	47.6	19.3	5.9	80.7
#50	1.3	1.0	25.6	10.7	8.6	89.3
#100	1.2	0.9	5.5	2.8	7.9	97.2
LBW	1.0	0.7	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: 69 **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-35**

Sample Date: 7/1/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 7/2/2024 through 7/8/2024

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

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



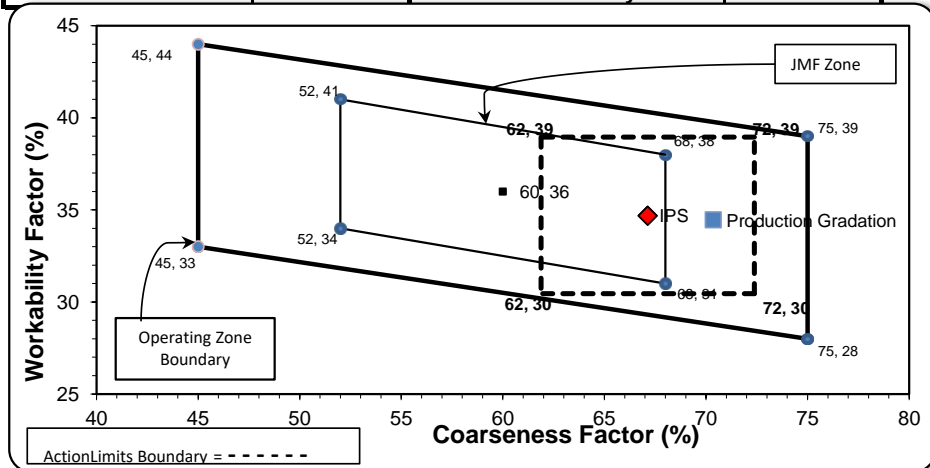
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	66.2	100.0	100.0	84.1	15.9	15.9
3/4"	39.4	100.0	100.0	71.4	12.6	28.6
1/2"	12.8	94.8	100.0	58.2	13.3	41.8
3/8"	9.4	76.3	100.0	53.9	4.3	46.1
#4	2.8	18.4	98.2	41.7	12.2	58.3
#8	1.7	5.7	85.4	34.5	7.3	65.5
#16	1.5	3.0	63.5	25.6	8.9	74.4
#30	1.4	2.0	41.7	17.0	8.6	83.0
#50	1.3	1.6	19.2	8.2	8.8	91.8
#100	1.2	1.4	3.1	2.0	6.3	98.0
LBW	0.8	0.7	0.4	0.6	1.3	99.4

*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:** **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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 7/2/2024 through 7/8/2024

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	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



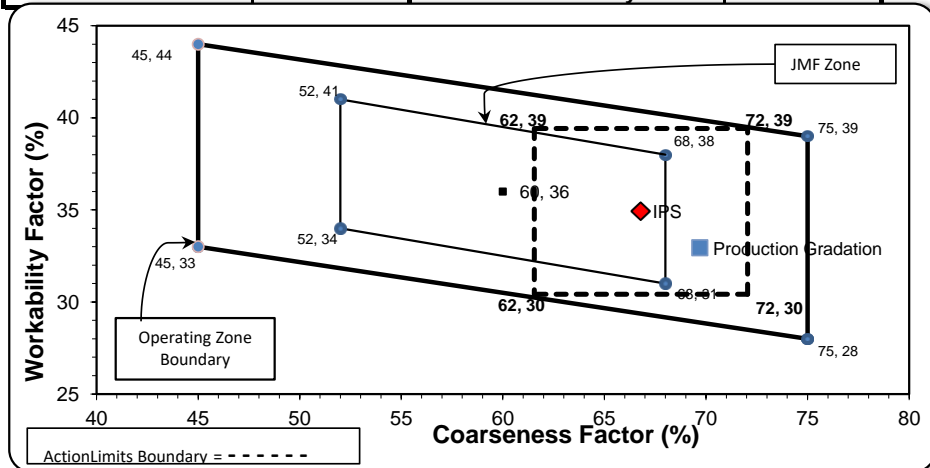
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.1	100.0	100.0	99.1	0.9	0.9
1"	47.6	100.0	100.0	84.6	14.5	15.4
3/4"	12.1	99.6	100.0	74.1	10.5	25.9
1/2"	2.2	71.3	100.0	62.3	11.8	37.7
3/8"	1.7	43.3	100.0	53.3	9.0	46.7
#4	1.4	4.6	97.7	40.1	13.2	59.9
#8	1.4	1.4	82.1	32.9	7.1	67.1
#16	1.4	1.1	66.2	26.6	6.3	73.4
#30	1.3	1.0	49.0	19.9	6.8	80.1
#50	1.3	1.0	21.7	9.2	10.7	90.8
#100	1.2	0.9	3.4	2.0	7.2	98.0
LBW	1.0	0.7	0.5	0.7	1.3	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: **70** **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"	72.1	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: 7/1/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 7/2/2024 through 7/8/2024

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	950	5.81	2.62	30.9
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%



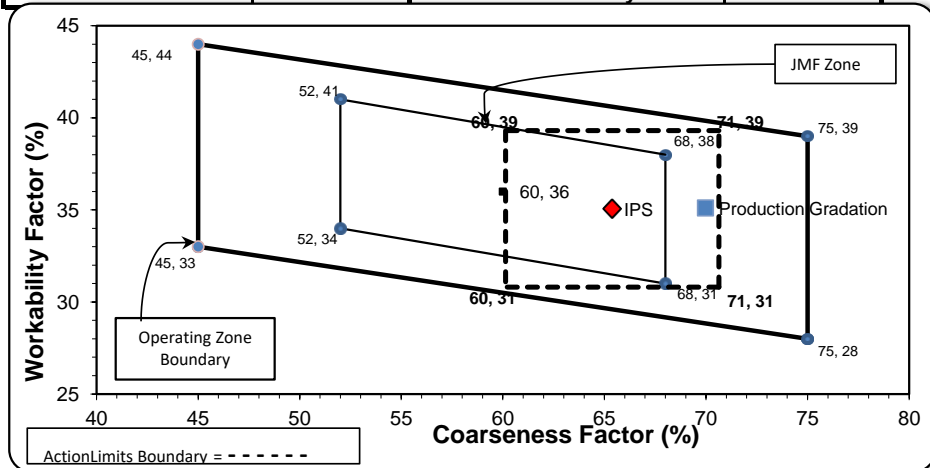
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.1	100.0	100.0	99.2	0.8	0.8
1"	47.6	100.0	100.0	85.2	14.0	14.8
3/4"	12.1	99.6	100.0	75.0	10.2	25.0
1/2"	2.2	71.3	100.0	63.4	11.6	36.6
3/8"	1.7	43.3	100.0	54.6	8.8	45.4
#4	1.4	4.6	99.2	42.2	12.4	57.8
#8	1.4	1.4	84.2	35.1	7.1	64.9
#16	1.4	1.1	67.9	28.4	6.7	71.6
#30	1.3	1.0	49.7	20.9	7.5	79.1
#50	1.3	1.0	23.2	10.1	10.8	89.9
#100	1.2	0.9	6.0	3.1	7.1	96.9
LBW	1.0	0.7	0.3	0.6	2.4	99.4

*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:** **35**



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-O2**

Sample Date: 7/1/24

Concrete Grade: **P1M, 3500HP**

Contractor: _____

Dates Test Represents: 7/2/2024 through 7/8/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	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
Total Wt			3070	18.70		100.0

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



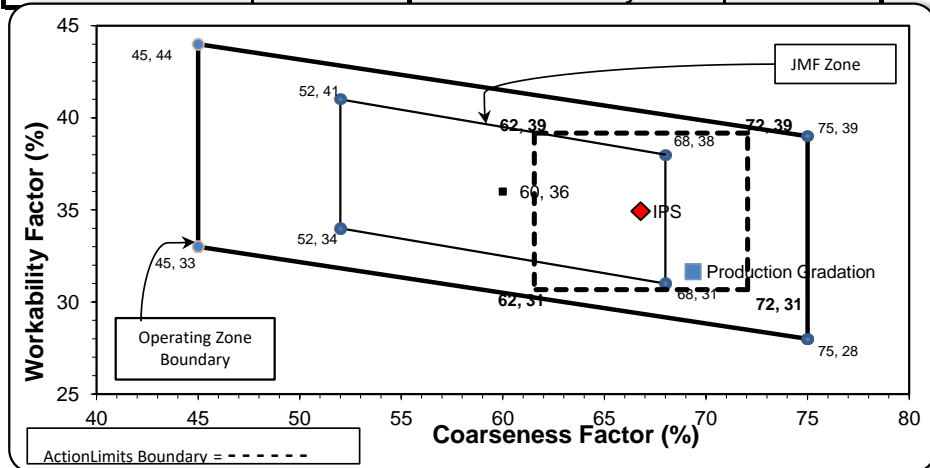
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.1	100.0	100.0	99.1	0.9	0.9
1"	47.6	100.0	100.0	83.8	15.3	16.2
3/4"	12.1	99.6	100.0	72.7	11.1	27.3
1/2"	2.2	71.3	100.0	61.1	11.5	38.9
3/8"	1.7	43.3	100.0	52.6	8.5	47.4
#4	1.4	4.6	96.0	39.3	13.3	60.7
#8	1.4	1.4	78.8	31.7	7.7	68.3
#16	1.4	1.1	62.6	25.2	6.4	74.8
#30	1.3	1.0	47.6	19.3	5.9	80.7
#50	1.3	1.0	25.6	10.7	8.6	89.3
#100	1.2	0.9	5.5	2.8	7.9	97.2
LBW	1.0	0.7	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: **69** **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: