

Aggregate Optimization Chart

PLANT #: **P-103**

Contractor: _____

Sample Date: 6/16/25

Concrete Grade: **P1M, 3500HP, 4000HP**

Dates Test Represents: 6/17/2025 through 6/23/2025

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1450	8.64	2.69	46.5
IA	58-003	Stoneco	470	2.80	2.69	15.1
2NS	63-114	Highland	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

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



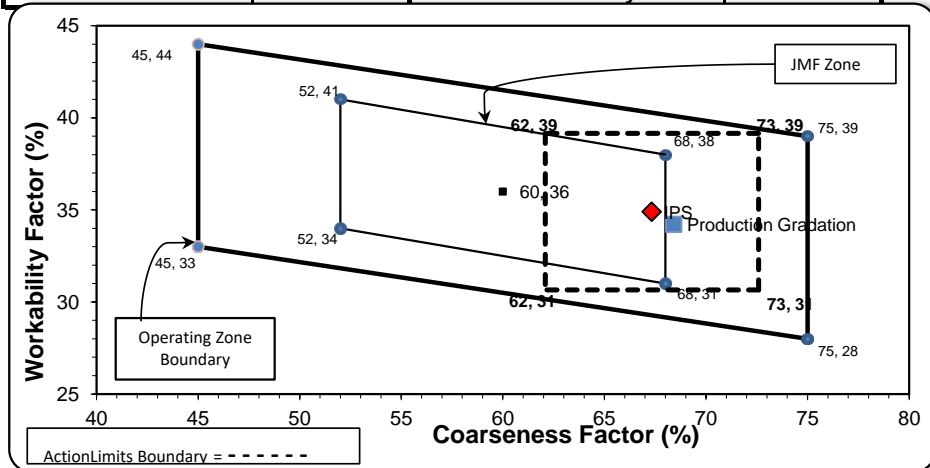
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	66.7	100.0	100.0	84.5	15.5	15.5
3/4"	38.4	100.0	100.0	71.4	13.2	28.6
1/2"	18.6	87.1	100.0	60.2	11.1	39.8
3/8"	13.6	67.8	100.0	55.0	5.2	45.0
#4	3.0	16.5	99.1	42.0	13.0	58.0
#8	1.9	4.5	84.9	34.2	7.8	65.8
#16	1.6	2.6	67.3	27.0	7.2	73.0
#30	1.5	1.9	48.0	19.4	7.6	80.6
#50	1.4	1.7	21.3	9.1	10.3	90.9
#100	1.4	1.5	3.5	2.2	6.9	97.8
LBW	1.2	1.4	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:	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 #: P11

Contractor: _____

Sample Date: 6/16/25

Concrete Grade: **P1M, 3500HP, 4000HP**

Dates Test Represents: 6/17/2025 through 6/23/2025

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	800	4.89	2.62	26.1
IA	71-47	Presque Isle	1070	6.54	2.62	34.9
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



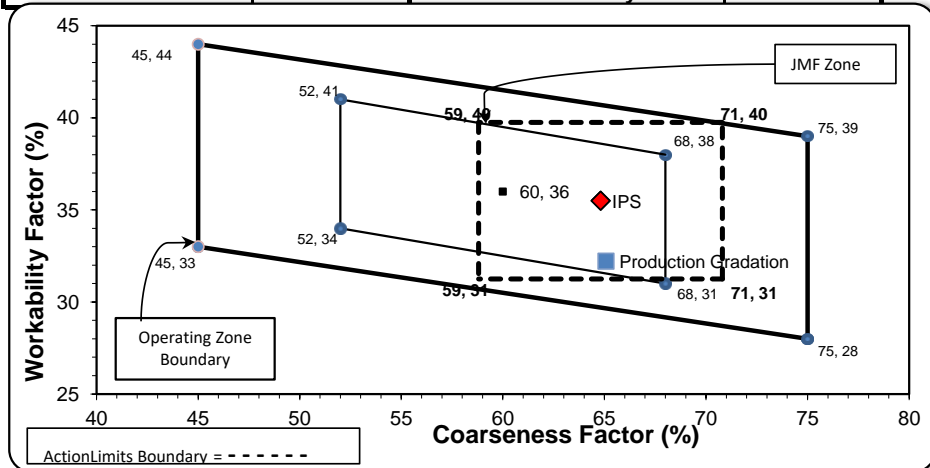
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.4	100.0	100.0	99.3	0.7	0.7
1"	31.5	100.0	100.0	82.1	17.2	17.9
3/4"	7.6	99.1	100.0	75.6	6.5	24.4
1/2"	1.4	76.9	100.0	66.3	9.4	33.7
3/8"	1.2	47.3	100.0	55.9	10.4	44.1
#4	1.1	7.1	95.6	40.1	15.8	59.9
#8	1.1	3.0	79.0	32.2	7.9	67.8
#16	1.1	2.4	62.5	25.6	6.7	74.4
#30	1.0	2.3	46.9	19.4	6.2	80.6
#50	1.0	2.2	25.8	11.1	8.3	88.9
#100	0.9	2.0	7.1	3.7	7.4	96.3
LBW	0.7	1.7	1.1	1.2	2.5	98.8

*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: 65 **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-36**

Contractor: _____

Sample Date: **6/16/25**

Concrete Grade: **P1M, 3500HP, 4000HP**

Dates Test Represents: **6/17/2025** through **6/23/2025**

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

<---- Verify this number is 100%



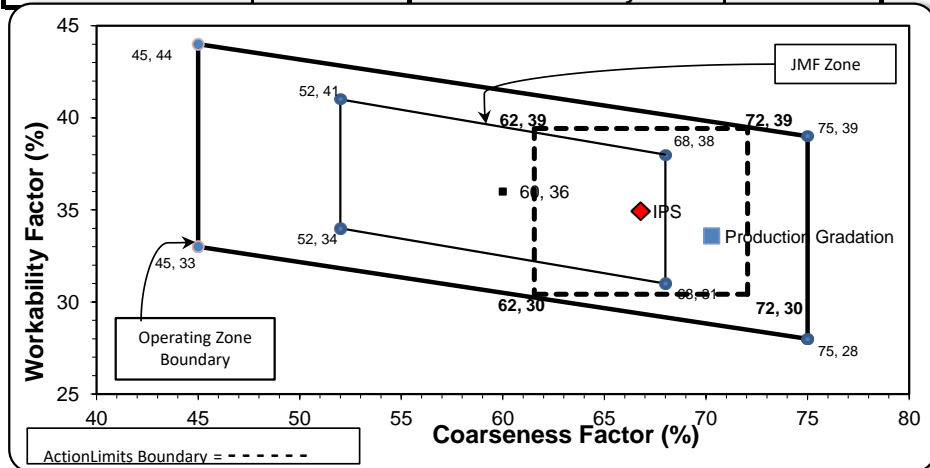
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.4	100.0	100.0	99.2	0.8	0.8
1"	31.5	100.0	100.0	78.4	20.8	21.6
3/4"	7.6	99.1	100.0	70.5	7.8	29.5
1/2"	1.4	76.9	100.0	62.1	8.5	37.9
3/8"	1.2	47.3	100.0	53.3	8.7	46.7
#4	1.1	7.1	97.5	40.5	12.8	59.5
#8	1.1	3.0	82.8	33.6	6.9	66.4
#16	1.1	2.4	67.4	27.4	6.2	72.6
#30	1.0	2.3	49.4	20.3	7.1	79.7
#50	1.0	2.2	22.2	9.6	10.7	90.4
#100	0.9	2.0	3.6	2.3	7.4	97.7
LBW	0.7	1.7	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: **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"	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

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Approved By:

Aggregate Optimization Chart

PLANT #: **P-39**

Contractor: _____

Sample Date: 6/16/25

Concrete Grade: **P1M, 3500HP, 4000HP**

Dates Test Represents: 6/17/2025 through 6/23/2025

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	63-009	Koenig Oxford	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



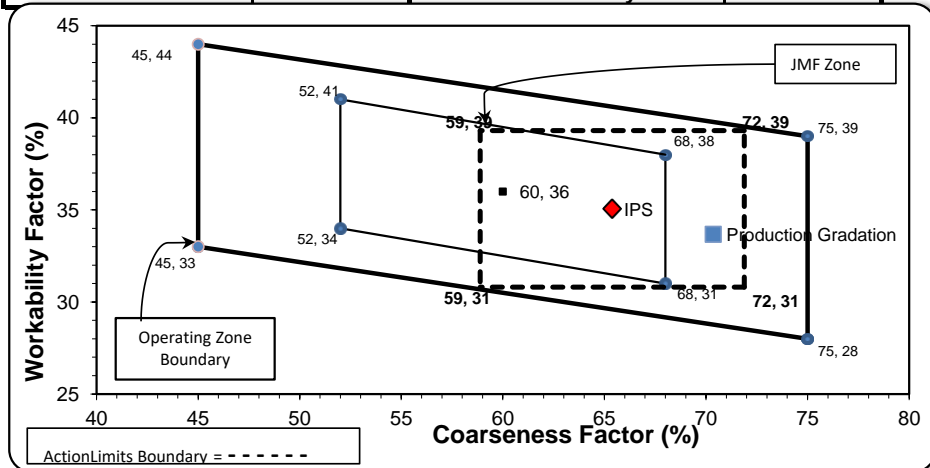
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.4	100.0	100.0	99.2	0.8	0.8
1"	31.5	100.0	100.0	78.4	20.8	21.6
3/4"	7.6	99.1	100.0	70.5	7.8	29.5
1/2"	1.4	76.9	100.0	62.1	8.5	37.9
3/8"	1.2	47.3	100.0	53.3	8.7	46.7
#4	1.1	7.1	97.0	40.3	13.0	59.7
#8	1.1	3.0	83.0	33.7	6.7	66.3
#16	1.1	2.4	68.3	27.7	5.9	72.3
#30	1.0	2.3	51.2	21.0	6.7	79.0
#50	1.0	2.2	25.0	10.7	10.3	89.3
#100	0.9	2.0	4.5	2.6	8.1	97.4
LBW	0.7	1.7	0.5	0.9	1.7	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:	70	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

Contractor: _____

Sample Date: 6/16/25

Concrete Grade: **P1M, 3500HP, 4000HP**

Dates Test Represents: 6/17/2025 through 6/23/2025

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	800	4.89	2.62	26.1
IA	71-47	Presque Isle	1070	6.54	2.62	34.9
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



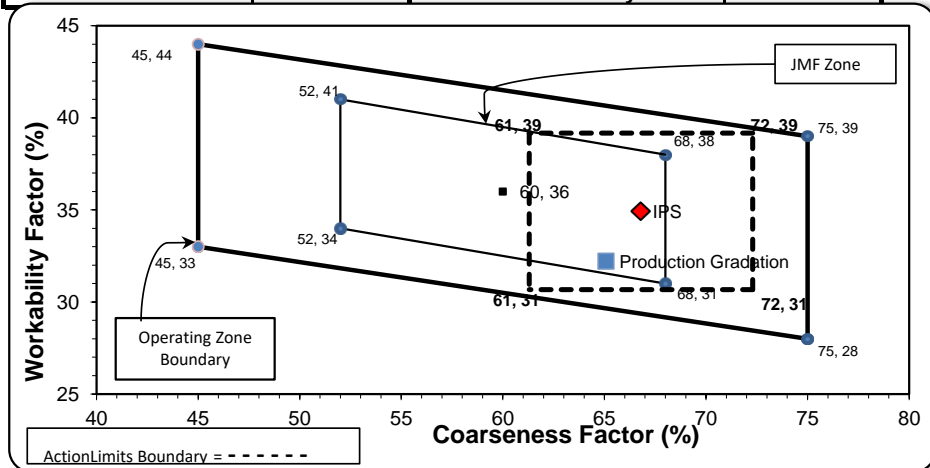
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	97.4	100.0	100.0	99.3	0.7	0.7
1"	31.5	100.0	100.0	82.1	17.2	17.9
3/4"	7.6	99.1	100.0	75.6	6.5	24.4
1/2"	1.4	76.9	100.0	66.3	9.4	33.7
3/8"	1.2	47.3	100.0	55.9	10.4	44.1
#4	1.1	7.1	95.6	40.1	15.8	59.9
#8	1.1	3.0	79.0	32.2	7.9	67.8
#16	1.1	2.4	62.5	25.6	6.7	74.4
#30	1.0	2.3	46.9	19.4	6.2	80.6
#50	1.0	2.2	25.8	11.1	8.3	88.9
#100	0.9	2.0	7.1	3.7	7.4	96.3
LBW	0.7	1.7	1.1	1.2	2.5	98.8

*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:	65	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: