

Aggregate Optimization Chart

PLANT #: **P-101**

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	720	4.40	2.62	23.5
IA	71-47	Presque Isle	1150	7.03	2.62	37.5
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"	92.3	100.0	100.0	98.2	1.8	1.8
1"	19.6	100.0	100.0	81.1	17.1	18.9
3/4"	3.8	98.2	100.0	76.8	4.4	23.2
1/2"	2.0	68.9	100.0	65.4	11.4	34.6
3/8"	1.9	34.6	100.0	52.5	12.9	47.5
#4	1.8	4.7	96.5	39.9	12.6	60.1
#8	1.7	2.2	81.8	33.2	6.7	66.8
#16	1.6	1.8	67.5	27.4	5.8	72.6
#30	1.5	1.6	53.0	21.7	5.8	78.3
#50	1.4	1.6	28.0	11.9	9.8	88.1
#100	1.3	1.5	8.4	4.2	7.7	95.8
LBW	1.1	1.2	1.5	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

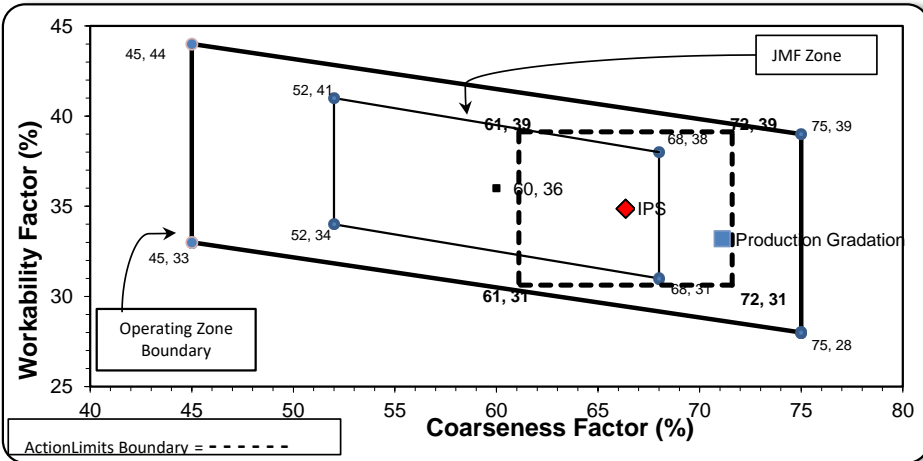
Coarseness Factor: **71** **Workability Factor:** **33**

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: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

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%



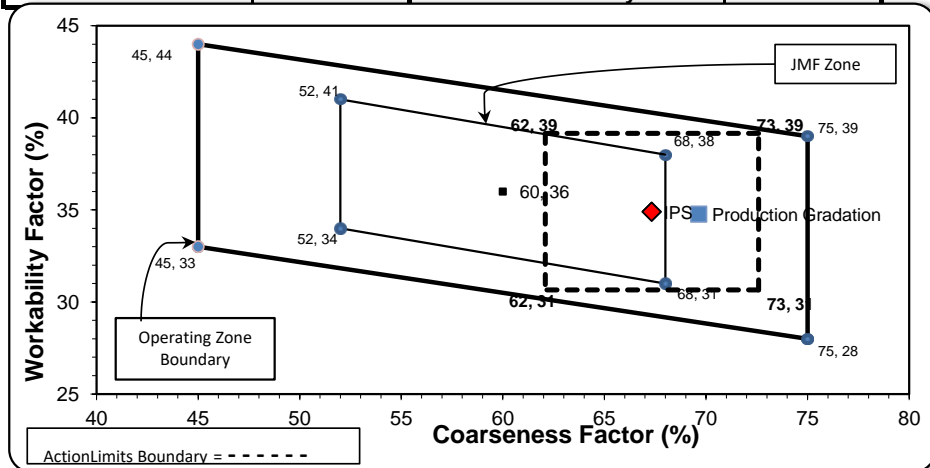
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 Suite 500
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	62.7	100.0	100.0	82.4	17.6	17.6
3/4"	38.4	100.0	100.0	71.0	11.4	29.0
1/2"	16.0	94.3	100.0	59.6	11.4	40.4
3/8"	9.9	79.4	100.0	54.6	5.0	45.4
#4	2.9	27.9	99.4	43.6	11.0	56.4
#8	1.9	6.9	85.5	34.8	8.8	65.2
#16	1.7	3.1	66.6	26.9	7.9	73.1
#30	1.6	2.0	45.8	18.7	8.2	81.3
#50	1.5	1.5	21.3	9.1	9.5	90.9
#100	1.4	1.4	4.5	2.6	6.5	97.4
LBW	1.2	1.2	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:** **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"	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:
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Aggregate Optimization Chart

PLANT #: **P-103**

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

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%



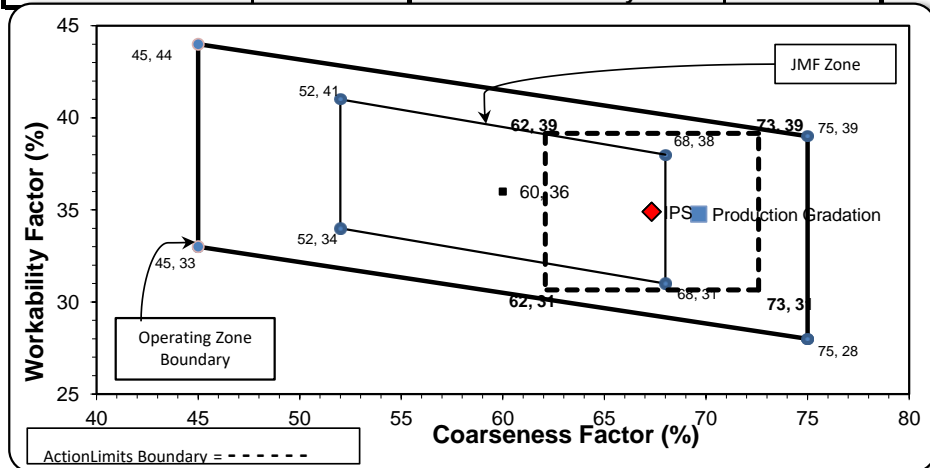
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 Farmington Hills, MI 48336

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"	62.7	100.0	100.0	82.4	17.6	17.6
3/4"	38.4	100.0	100.0	71.0	11.4	29.0
1/2"	16.0	94.3	100.0	59.6	11.4	40.4
3/8"	9.9	79.4	100.0	54.6	5.0	45.4
#4	2.9	27.9	99.4	43.6	11.0	56.4
#8	1.9	6.9	85.5	34.8	8.8	65.2
#16	1.7	3.1	66.6	26.9	7.9	73.1
#30	1.6	2.0	45.8	18.7	8.2	81.3
#50	1.5	1.5	21.3	9.1	9.5	90.9
#100	1.4	1.4	4.5	2.6	6.5	97.4
LBW	1.2	1.2	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: **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"	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 #: 15

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

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%

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"	62.7	100.0	100.0	82.4	17.6	17.6
3/4"	38.4	100.0	100.0	71.0	11.4	29.0
1/2"	16.0	94.3	100.0	59.6	11.4	40.4
3/8"	9.9	79.4	100.0	54.6	5.0	45.4
#4	2.9	27.9	97.6	42.9	11.6	57.1
#8	1.9	6.9	85.3	34.7	8.2	65.3
#16	1.7	3.1	67.4	27.2	7.5	72.8
#30	1.6	2.0	47.1	19.2	8.0	80.8
#50	1.5	1.5	23.2	9.8	9.3	90.2
#100	1.4	1.4	4.9	2.7	7.1	97.3
LBW	1.2	1.2	0.6	1.0	1.8	99.0

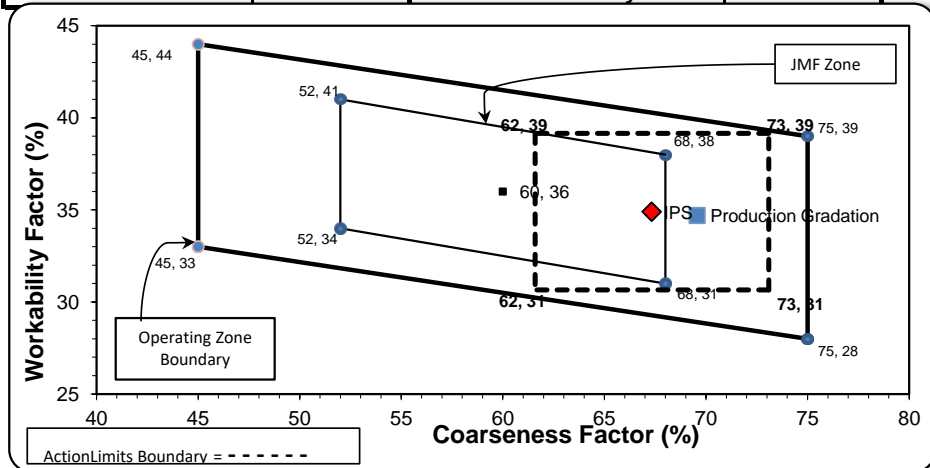


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*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must 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
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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: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

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

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



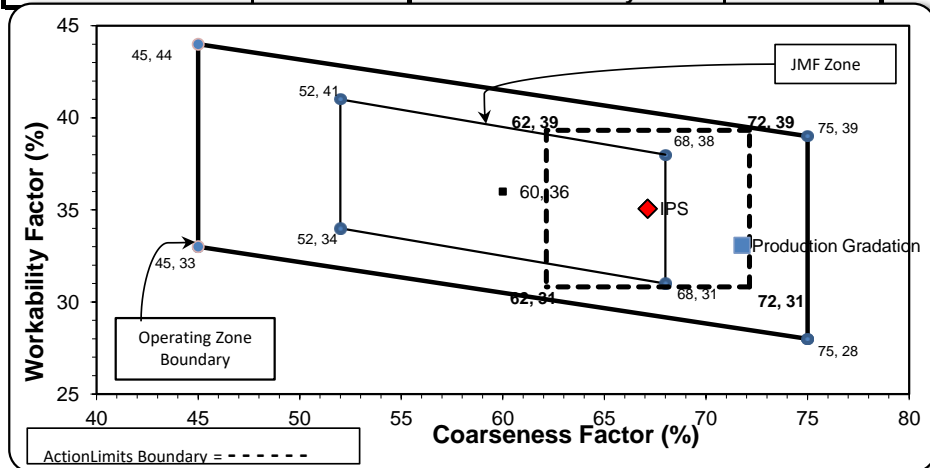
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	92.3	100.0	100.0	98.1	1.9	1.9
1"	19.6	100.0	100.0	79.8	18.2	20.2
3/4"	3.8	98.2	100.0	75.2	4.6	24.8
1/2"	2.0	68.9	100.0	64.3	10.9	35.7
3/8"	1.9	34.6	100.0	52.0	12.3	48.0
#4	1.8	4.7	96.9	40.0	12.0	60.0
#8	1.7	2.2	81.5	33.1	6.9	66.9
#16	1.6	1.8	65.2	26.5	6.5	73.5
#30	1.5	1.6	49.8	20.4	6.1	79.6
#50	1.4	1.6	26.7	11.4	9.1	88.6
#100	1.3	1.5	6.6	3.4	7.9	96.6
LBW	1.1	1.2	0.8	1.0	2.4	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: 72 **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:
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Approved By:

Aggregate Optimization Chart

PLANT #: 20

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	870	5.32	2.62	28.3
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



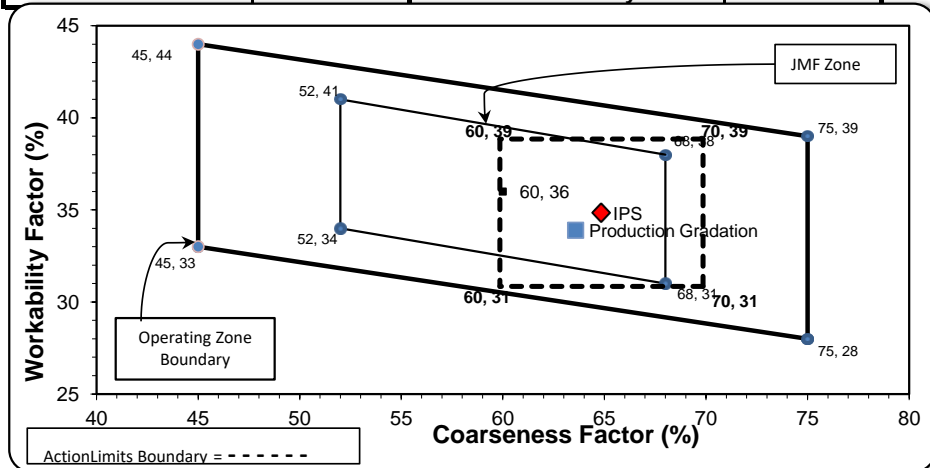
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	95.8	100.0	100.0	98.6	1.4	1.4
1"	43.0	100.0	100.0	81.4	17.2	18.6
3/4"	14.1	99.0	100.0	71.7	9.7	28.3
1/2"	3.9	85.2	100.0	64.5	7.2	35.5
3/8"	2.8	63.4	100.0	58.0	6.5	42.0
#4	2.1	13.1	97.6	42.5	15.4	57.5
#8	1.9	2.8	83.1	33.9	8.7	66.1
#16	1.8	2.3	68.4	28.0	5.9	72.0
#30	1.8	2.0	50.1	20.7	7.2	79.3
#50	1.7	1.9	22.5	9.9	10.8	90.1
#100	1.6	1.8	3.2	2.3	7.6	97.7
LBW	1.4	1.6	0.8	1.2	1.1	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:	64	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"	99.1	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: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

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%



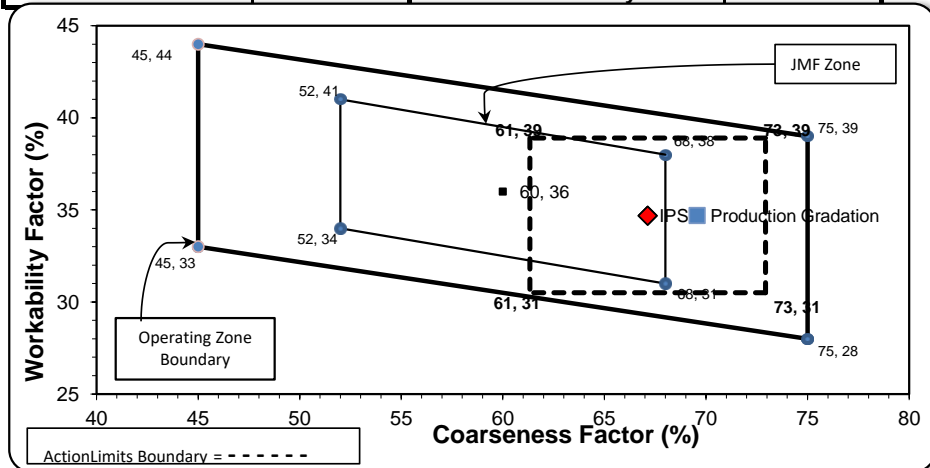
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 Suite 500
 Farmington Hills, MI 48336

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"	62.7	100.0	100.0	82.4	17.6	17.6
3/4"	38.4	100.0	100.0	71.0	11.4	29.0
1/2"	16.0	94.3	100.0	59.6	11.4	40.4
3/8"	9.9	79.4	100.0	54.6	5.0	45.4
#4	2.9	27.9	97.6	42.9	11.6	57.1
#8	1.9	6.9	85.3	34.7	8.2	65.3
#16	1.7	3.1	67.4	27.2	7.5	72.8
#30	1.6	2.0	47.1	19.2	8.0	80.8
#50	1.5	1.5	23.2	9.8	9.3	90.2
#100	1.4	1.4	4.9	2.7	7.1	97.3
LBW	1.2	1.2	0.6	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: 70 **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 #: P11

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	700	4.28	2.62	22.8
IA	71-47	Presque Isle	1170	7.16	2.62	38.1
2NS	63-115	Ray Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



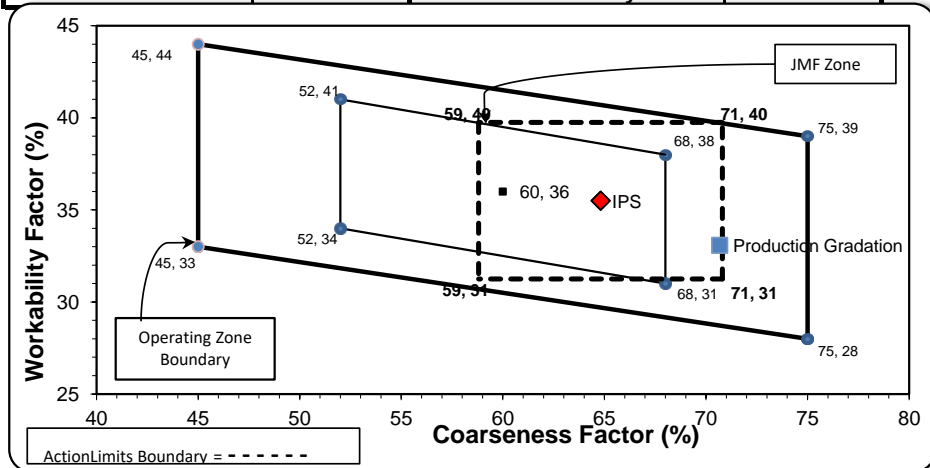
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	92.3	100.0	100.0	98.2	1.8	1.8
1"	19.6	100.0	100.0	81.7	16.6	18.3
3/4"	3.8	98.2	100.0	77.4	4.3	22.6
1/2"	2.0	68.9	100.0	65.8	11.6	34.2
3/8"	1.9	34.6	100.0	52.7	13.1	47.3
#4	1.8	4.7	96.9	40.1	12.6	59.9
#8	1.7	2.2	81.5	33.1	7.0	66.9
#16	1.6	1.8	65.2	26.5	6.5	73.5
#30	1.5	1.6	49.8	20.4	6.1	79.6
#50	1.4	1.6	26.7	11.4	9.1	88.6
#100	1.3	1.5	6.6	3.4	7.9	96.6
LBW	1.1	1.2	0.8	1.0	2.4	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: 71 **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-35**

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

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%



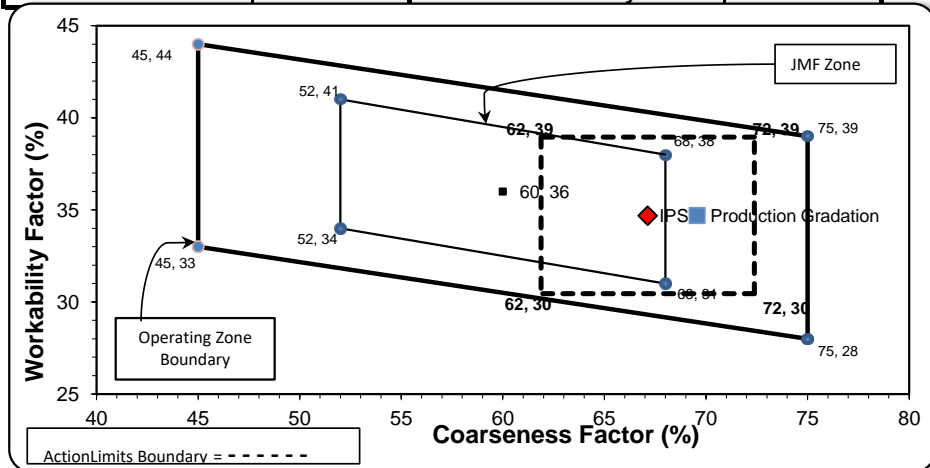
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 Suite 500
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	62.7	100.0	100.0	82.4	17.6	17.6
3/4"	38.4	100.0	100.0	71.0	11.4	29.0
1/2"	16.0	94.3	100.0	59.6	11.4	40.4
3/8"	9.9	79.4	100.0	54.6	5.0	45.4
#4	2.9	27.9	97.6	42.9	11.6	57.1
#8	1.9	6.9	85.3	34.7	8.2	65.3
#16	1.7	3.1	67.4	27.2	7.5	72.8
#30	1.6	2.0	47.1	19.2	8.0	80.8
#50	1.5	1.5	23.2	9.8	9.3	90.2
#100	1.4	1.4	4.9	2.7	7.1	97.3
LBW	1.2	1.2	0.6	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:	70	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"	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: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	720	4.40	2.62	23.5
IA	71-47	Presque Isle	1150	7.03	2.62	37.5
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



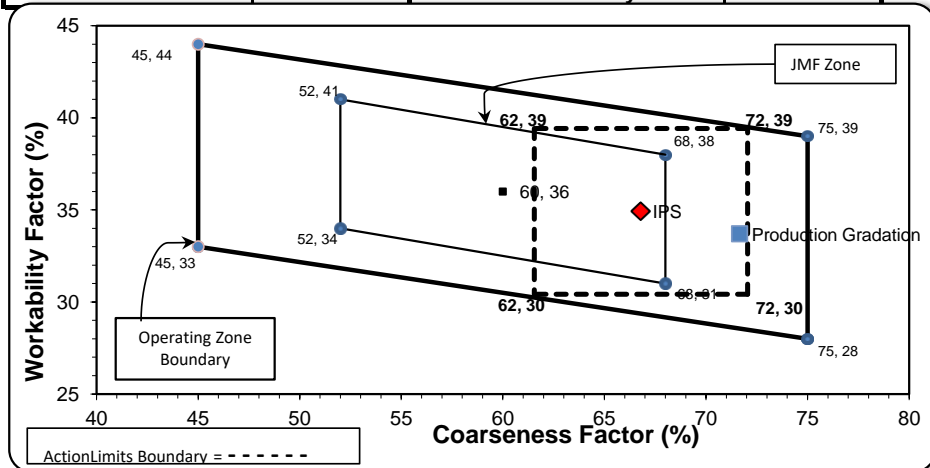
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	92.3	100.0	100.0	98.2	1.8	1.8
1"	19.6	100.0	100.0	81.1	17.1	18.9
3/4"	3.8	98.2	100.0	76.8	4.4	23.2
1/2"	2.0	68.9	100.0	65.4	11.4	34.6
3/8"	1.9	34.6	100.0	52.5	12.9	47.5
#4	1.8	4.7	97.6	40.3	12.2	59.7
#8	1.7	2.2	83.1	33.7	6.6	66.3
#16	1.6	1.8	68.4	27.8	5.9	72.2
#30	1.5	1.6	50.1	20.5	7.3	79.5
#50	1.4	1.6	22.5	9.7	10.8	90.3
#100	1.3	1.5	3.2	2.1	7.6	97.9
LBW	1.1	1.2	0.8	1.0	1.1	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:	72	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"	85.0	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: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	700	4.28	2.62	22.8
IA	71-47	Presque Isle	1170	7.16	2.62	38.1
2NS	44-051	Krake Willis Rd	1200	7.26	2.65	39.1
Total Wt			3070	18.70		100.0

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



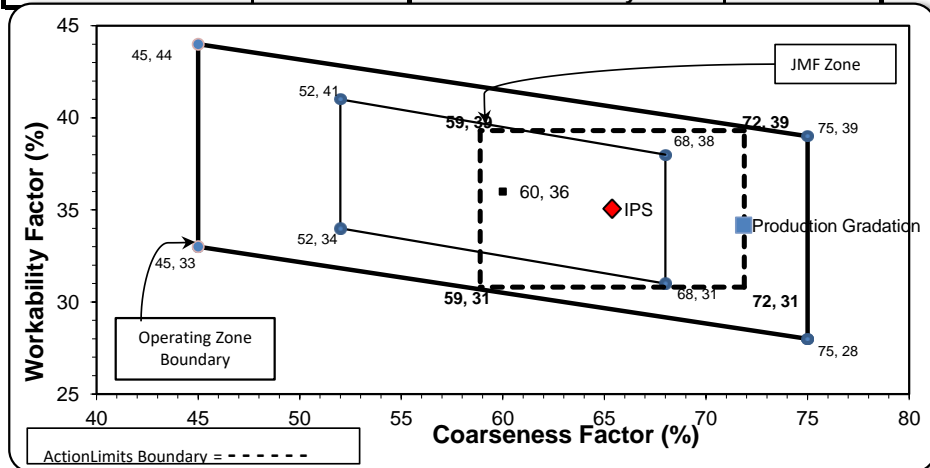
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 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	92.3	100.0	100.0	98.2	1.8	1.8
1"	19.6	100.0	100.0	81.7	16.6	18.3
3/4"	3.8	98.2	100.0	77.4	4.3	22.6
1/2"	2.0	68.9	100.0	65.8	11.6	34.2
3/8"	1.9	34.6	100.0	52.7	13.1	47.3
#4	1.8	4.7	99.2	41.0	11.7	59.0
#8	1.7	2.2	84.3	34.2	6.8	65.8
#16	1.6	1.8	67.3	27.4	6.8	72.6
#30	1.5	1.6	48.7	20.0	7.4	80.0
#50	1.4	1.6	22.6	9.8	10.2	90.2
#100	1.3	1.5	6.4	3.4	6.4	96.6
LBW	1.1	1.2	0.5	0.9	2.5	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:	72	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-O2**

Sample Date: 10/7/24

Concrete Grade: **P1M, 3500HP**

Dates Test Represents: 10/8/2024 through 10/14/2024

Contractor: _____

MDOT No.: _____

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

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



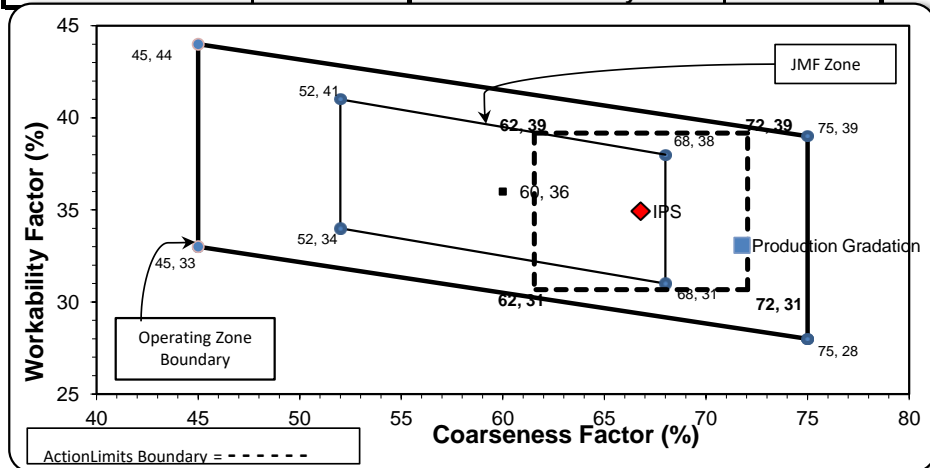
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	92.3	100.0	100.0	98.1	1.9	1.9
1"	19.6	100.0	100.0	79.8	18.2	20.2
3/4"	3.8	98.2	100.0	75.2	4.6	24.8
1/2"	2.0	68.9	100.0	64.3	10.9	35.7
3/8"	1.9	34.6	100.0	52.0	12.3	48.0
#4	1.8	4.7	96.9	40.0	12.0	60.0
#8	1.7	2.2	81.5	33.1	6.9	66.9
#16	1.6	1.8	65.2	26.5	6.5	73.5
#30	1.5	1.6	49.8	20.4	6.1	79.6
#50	1.4	1.6	26.7	11.4	9.1	88.6
#100	1.3	1.5	6.6	3.4	7.9	96.6
LBW	1.1	1.2	0.8	1.0	2.4	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:	72	Workability Factor:	33
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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: