

Aggregate Optimization Chart

PLANT #: P-102

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	63-114	Highland	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



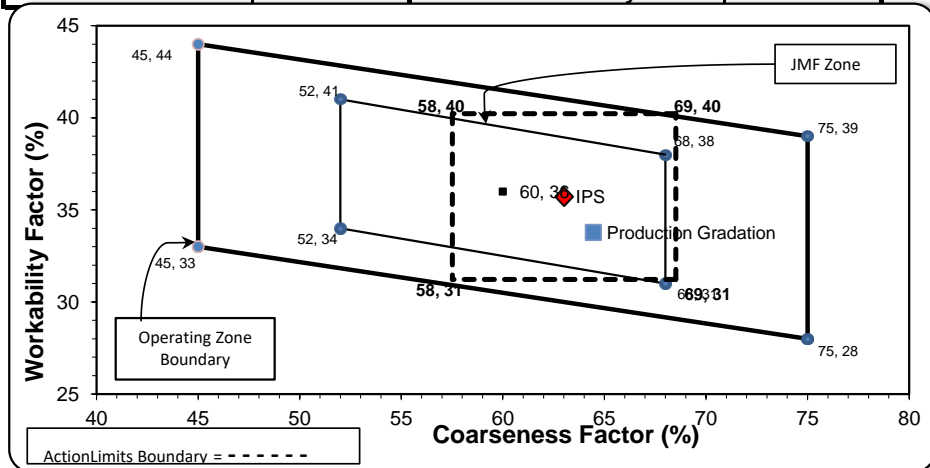
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	6AA	26A	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.6	7.5	7.5
1/2"	39.6	99.1	100.0	69.7	22.9	30.3
3/8"	17.8	86.0	100.0	57.3	12.4	42.7
#4	2.9	6.8	98.9	40.5	16.8	59.5
#8	1.7	1.3	84.7	33.8	6.7	66.2
#16	1.5	1.2	67.3	26.9	6.8	73.1
#30	1.4	1.1	48.2	19.5	7.5	80.5
#50	1.3	1.1	16.1	7.0	12.5	93.0
#100	1.2	1.0	2.5	1.7	5.3	98.3
LBW	1.0	0.9	0.4	0.8	0.9	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") 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:	63
Workability Factor:	36

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: P-103

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	63-114	Highland	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



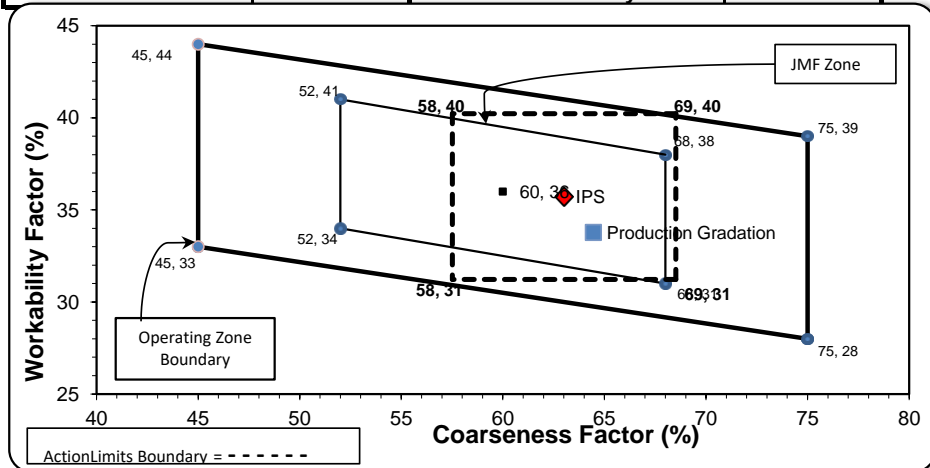
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 Suite 500
 Farmington Hills, MI 48336

Sieve	6AA	26A	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.6	7.5	7.5
1/2"	39.6	99.1	100.0	69.7	22.9	30.3
3/8"	17.8	86.0	100.0	57.3	12.4	42.7
#4	2.9	6.8	98.9	40.5	16.8	59.5
#8	1.7	1.3	84.7	33.8	6.7	66.2
#16	1.5	1.2	67.3	26.9	6.8	73.1
#30	1.4	1.1	48.2	19.5	7.5	80.5
#50	1.3	1.1	16.1	7.0	12.5	93.0
#100	1.2	1.0	2.5	1.7	5.3	98.3
LBW	1.0	0.9	0.4	0.8	0.9	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") 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:	63		
Workability Factor:	36		
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:
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Aggregate Optimization Chart

PLANT #: 12

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1570	9.60	2.62	51.5
26A	71-47	Presque Isle	250	1.53	2.62	8.2
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



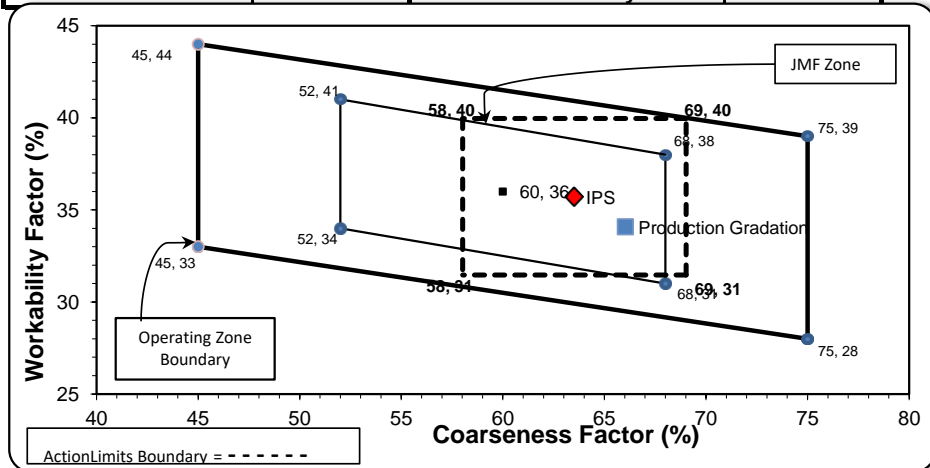
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 Suite 500
 Farmington Hills, MI 48336

Sieve	6AA	26A	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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	74.2	100.0	100.0	86.7	12.3	13.3
1/2"	33.6	95.6	100.0	65.5	21.3	34.5
3/8"	18.0	84.0	100.0	56.5	9.0	43.5
#4	3.0	18.1	95.8	41.7	14.8	58.3
#8	2.4	3.7	80.7	34.1	7.6	65.9
#16	2.1	2.0	64.7	27.3	6.7	72.7
#30	2.1	1.7	49.5	21.2	6.2	78.8
#50	2.0	1.6	27.2	12.1	9.1	87.9
#100	2.0	1.5	6.4	3.7	8.4	96.3
LBW	1.7	1.3	0.8	1.3	2.4	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 66 **Workability Factor:** 34



Initial Production Sample (IPS)

Coarseness Factor: <u>64</u>		Workability Factor: <u>36</u>	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.2	12.1	40.8
#4	41.5	17.7	58.5
#8	35.7	5.8	64.3
#16	27.9	7.9	72.1
#30	18.3	9.5	81.7
#50	7.3	11.0	92.7
#100	2.0	5.3	98.0
LBW	0.9	1.1	99.1

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Aggregate Optimization Chart

PLANT #: p11

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1450	8.87	2.62	47.5
26A	71-47	Presque Isle	370	2.26	2.62	12.1
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



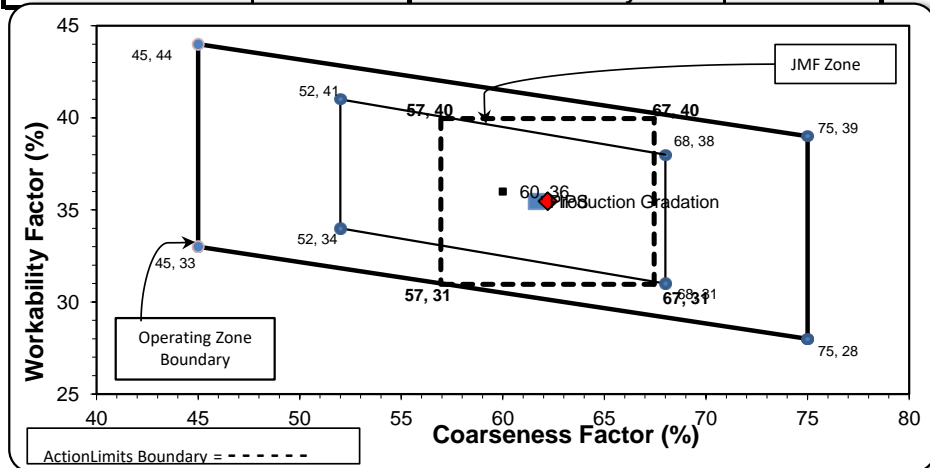
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.9	100.0	100.0	98.5	1.5	1.5
3/4"	71.5	100.0	100.0	86.5	12.1	13.5
1/2"	34.5	95.6	100.0	68.3	18.1	31.7
3/8"	20.4	84.0	100.0	60.2	8.1	39.8
#4	4.6	18.1	95.8	43.0	17.2	57.0
#8	2.9	3.7	83.4	35.5	7.6	64.5
#16	2.4	2.0	68.0	28.8	6.7	71.2
#30	2.3	1.7	48.9	21.0	7.8	79.0
#50	2.2	1.6	24.3	11.0	10.0	89.0
#100	2.0	1.5	7.2	4.0	7.0	96.0
LBW	1.2	1.3	1.3	1.3	2.8	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 62 **Workability Factor:** 35



Initial Production Sample (IPS)

Coarseness Factor: 62
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"	100.0	0.0	0.0
3/4"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-35**

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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

Sieve	6AA	26A	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.6	7.5	7.5
1/2"	39.6	99.1	100.0	69.7	22.9	30.3
3/8"	17.8	86.0	100.0	57.3	12.4	42.7
#4	2.9	6.8	98.3	40.3	17.1	59.7
#8	1.7	1.3	85.1	33.9	6.3	66.1
#16	1.5	1.2	63.1	25.3	8.6	74.7
#30	1.4	1.1	39.1	16.0	9.4	84.0
#50	1.3	1.1	15.2	6.7	9.3	93.3
#100	1.2	1.0	2.6	1.7	4.9	98.3
LBW	1.0	0.9	0.5	0.8	0.9	99.2

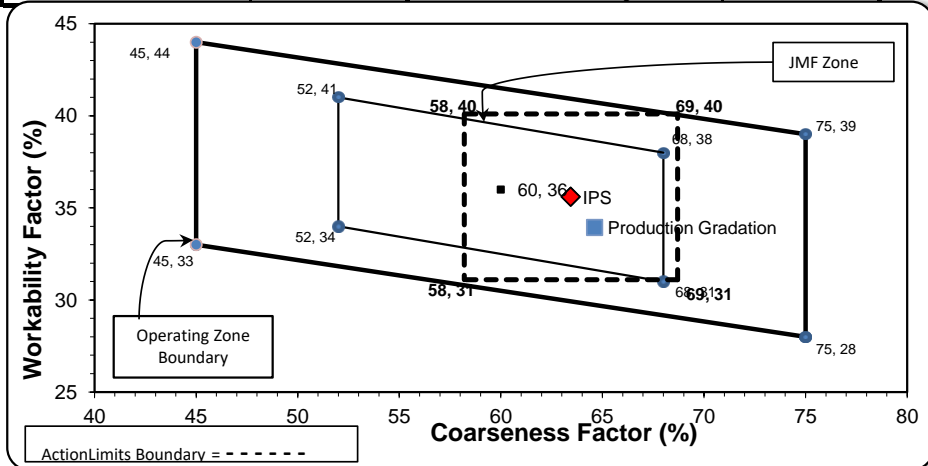


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*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **65** **Workability Factor:** **34**



Intial Production Sample (IPS)

Coarseness Factor: **63**
Workability Factor: **36**

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	93.1	6.9	6.9
1/2"	70.0	23.1	30.0
3/8"	59.1	10.9	40.9
#4	46.0	13.1	54.0
#8	35.6	10.4	64.4
#16	27.2	8.4	72.8
#30	19.8	7.4	80.2
#50	10.1	9.7	89.9
#100	2.5	7.6	97.5
LBW	0.9	1.6	99.1

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-38**

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



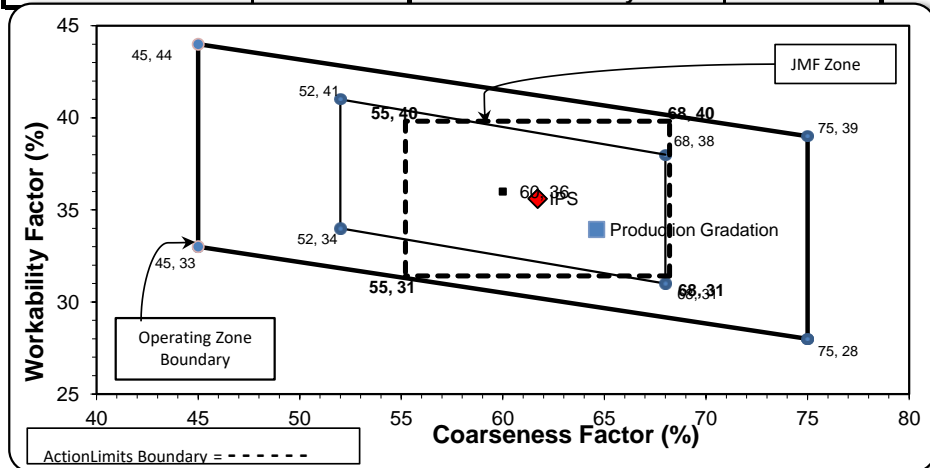
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	6AA	26A	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.6	7.5	7.5
1/2"	39.6	99.1	100.0	69.7	22.9	30.3
3/8"	17.8	86.0	100.0	57.3	12.4	42.7
#4	2.9	6.8	98.3	40.3	17.1	59.7
#8	1.7	1.3	85.1	33.9	6.3	66.1
#16	1.5	1.2	63.1	25.3	8.6	74.7
#30	1.4	1.1	39.1	16.0	9.4	84.0
#50	1.3	1.1	15.2	6.7	9.3	93.3
#100	1.2	1.0	2.6	1.7	4.9	98.3
LBW	1.0	0.9	0.5	0.8	0.9	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **65** **Workability Factor:** **34**



Initial Production Sample (IPS)

Coarseness Factor: **62**
Workability Factor: **36**

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	91.1	8.1	8.9
1/2"	72.0	19.1	28.0
3/8"	60.3	11.7	39.7
#4	43.4	16.9	56.6
#8	35.6	7.8	64.4
#16	28.4	7.2	71.6
#30	21.8	6.7	78.2
#50	9.1	12.6	90.9
#100	1.7	7.4	98.3
LBW	1.1	0.6	98.9

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: P-02

Sample Date: 6/10/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 6/11/2024 through 6/17/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1570	9.60	2.62	51.5
26A	71-47	Presque Isle	250	1.53	2.62	8.2
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



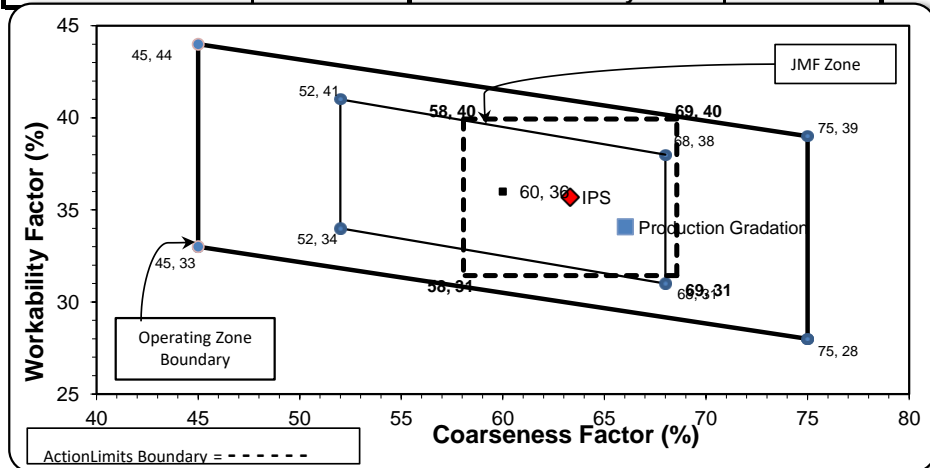
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 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Sieve	6AA	26A	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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	74.2	100.0	100.0	86.7	12.3	13.3
1/2"	33.6	95.6	100.0	65.5	21.3	34.5
3/8"	18.0	84.0	100.0	56.5	9.0	43.5
#4	3.0	18.1	95.8	41.7	14.8	58.3
#8	2.4	3.7	80.7	34.1	7.6	65.9
#16	2.1	2.0	64.7	27.3	6.7	72.7
#30	2.1	1.7	49.5	21.2	6.2	78.8
#50	2.0	1.6	27.2	12.1	9.1	87.9
#100	2.0	1.5	6.4	3.7	8.4	96.3
LBW	1.7	1.3	0.8	1.3	2.4	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **66** Workability Factor: **34**



Initial Production Sample (IPS)

Coarseness Factor: **63**
 Workability Factor: **36**

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	95.6	4.4	4.4
1/2"	73.1	22.6	26.9
3/8"	59.3	13.8	40.7
#4	42.8	16.5	57.2
#8	35.7	7.1	64.3
#16	28.9	6.8	71.1
#30	20.7	8.2	79.3
#50	9.9	10.8	90.1
#100	2.1	7.8	97.9
LBW	0.9	1.2	99.1

PREPARED BY:
 SM, LLC Technical Service

Approved By: