

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 7/26/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 7/27/2021 through 8/2/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1690	10.07	2.69	54.5
26A	58-003	Stoneco	200	1.19	2.69	6.5
2NS	63-114	Highland	1210	7.32	2.65	39.0
Total Wt			3100	18.58		100.0

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



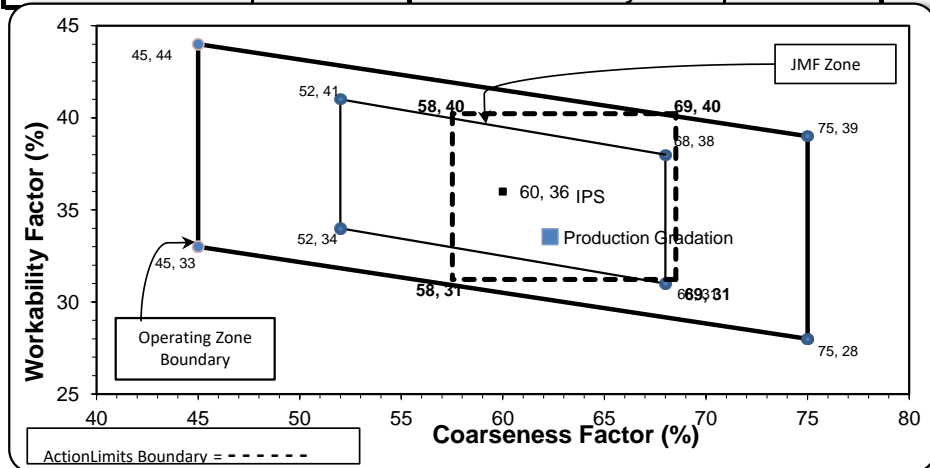
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	80.8	100.0	100.0	89.5	9.5	10.5
1/2"	47.4	99.6	100.0	71.3	18.2	28.7
3/8"	25.8	85.0	100.0	58.6	12.7	41.4
#4	4.7	8.3	99.0	41.7	16.8	58.3
#8	1.5	2.1	83.5	33.5	8.2	66.5
#16	1.5	1.5	63.6	25.7	7.8	74.3
#30	1.2	1.3	43.3	17.6	8.1	82.4
#50	1.0	1.2	19.5	8.2	9.4	91.8
#100	1.0	1.2	4.6	2.4	5.8	97.6
LBW	0.7	0.9	0.7	0.7	1.7	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:	62	Workability Factor:	34
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Initial Production Sample (IPS)

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-20**

Sample Date: 7/26/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 7/27/2021 through 8/2/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1700	10.40	2.62	55.7
26A	71-47	Presque Isle	100	0.61	2.62	3.3
2NS	63-92	Grange Hall	1250	7.56	2.65	41.0
Total Wt			3050	18.57		100.0

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



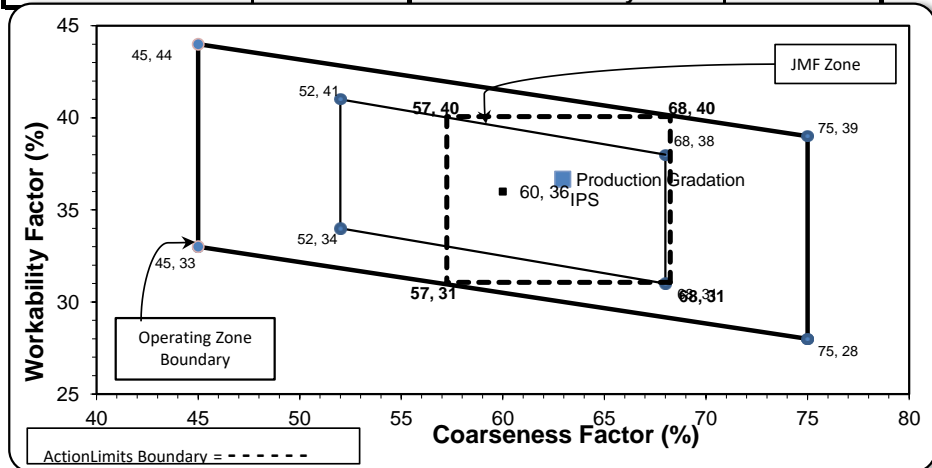
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.5	100.0	100.0	99.7	0.3	0.3
3/4"	88.5	100.0	100.0	93.6	6.1	6.4
1/2"	49.8	98.4	100.0	72.0	21.6	28.0
3/8"	29.0	91.1	100.0	60.1	11.8	39.9
#4	4.1	25.8	98.3	43.4	16.7	56.6
#8	2.1	6.3	86.1	36.7	6.8	63.3
#16	1.8	2.7	71.1	30.2	6.4	69.8
#30	1.7	2.1	51.6	22.2	8.1	77.8
#50	1.6	1.9	23.1	10.4	11.7	89.6
#100	1.5	1.8	3.2	2.2	8.2	97.8
LBW	1.4	1.6	0.4	1.0	1.2	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: **63** **Workability Factor:** **37**



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"	93.3	6.7	6.7
1/2"	70.6	22.6	29.4
3/8"	59.6	11.0	40.4
#4	43.9	15.7	56.1
#8	35.6	8.4	64.4
#16	28.4	7.2	71.6
#30	19.4	9.0	80.6
#50	7.5	11.9	92.5
#100	0.9	6.6	99.1
LBW	0.9	0.1	99.1

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 SM, LLC Technical Service

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Aggregate Optimization Chart

PLANT #: **P-32**

Sample Date: 7/26/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 7/27/2021 through 8/2/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	49.2
26A	71-47	Presque Isle	320	1.96	2.62	10.5
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



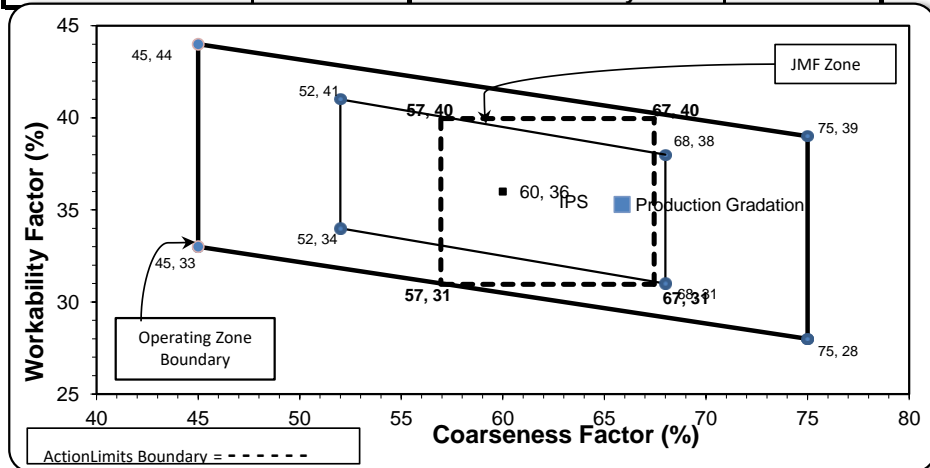
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.2	100.0	100.0	99.1	0.9	0.9
3/4"	78.4	100.0	100.0	89.4	9.7	10.6
1/2"	38.0	95.3	100.0	69.0	20.4	31.0
3/8"	17.1	82.4	100.0	57.4	11.6	42.6
#4	3.8	15.1	96.8	42.5	14.9	57.5
#8	2.6	4.1	83.3	35.3	7.2	64.7
#16	2.2	1.8	68.1	28.7	6.6	71.3
#30	2.0	1.4	46.8	20.0	8.7	80.0
#50	1.9	1.3	22.5	10.1	9.9	89.9
#100	1.8	1.2	6.2	3.5	6.6	96.5
LBW	1.5	1.0	1.5	1.4	2.1	98.6

*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**



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

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Aggregate Optimization Chart

PLANT #: **P-35**

Sample Date: 7/26/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 7/27/2021 through 8/2/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1700	10.13	2.69	54.8
26A	58-003	Stoneco	200	1.19	2.69	6.5
2NS	81-093	Burmeister	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



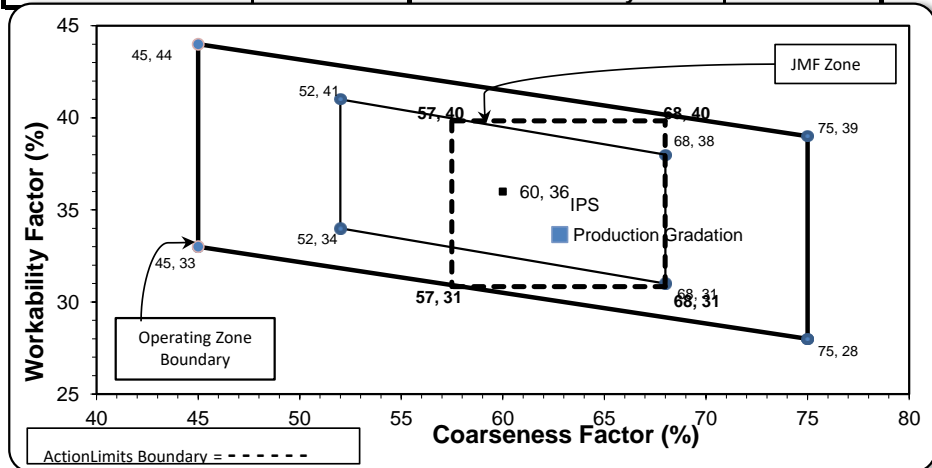
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	80.8	100.0	100.0	89.5	9.5	10.5
1/2"	47.4	99.6	100.0	71.1	18.3	28.9
3/8"	25.8	85.0	100.0	58.3	12.8	41.7
#4	4.7	8.3	99.0	41.4	16.9	58.6
#8	1.5	2.1	84.5	33.7	7.8	66.3
#16	1.5	1.5	65.6	26.3	7.4	73.7
#30	1.2	1.3	44.7	18.0	8.3	82.0
#50	1.0	1.2	15.4	6.6	11.5	93.4
#100	1.0	1.2	2.5	1.6	5.0	98.4
LBW	0.7	0.9	0.7	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:	63	Workability Factor:	34
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Initial Production Sample (IPS)

Coarseness Factor:	63		
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"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.4	11.9	40.6
#4	43.0	16.5	57.0
#8	35.3	7.6	64.7
#16	28.2	7.1	71.8
#30	21.6	6.6	78.4
#50	9.1	12.5	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: 7/26/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 7/27/2021 through 8/2/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1800	11.01	2.62	59.0
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-115	Ray Rd	1250	7.56	2.65	41.0
Total Wt			3050	18.57		100.0

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



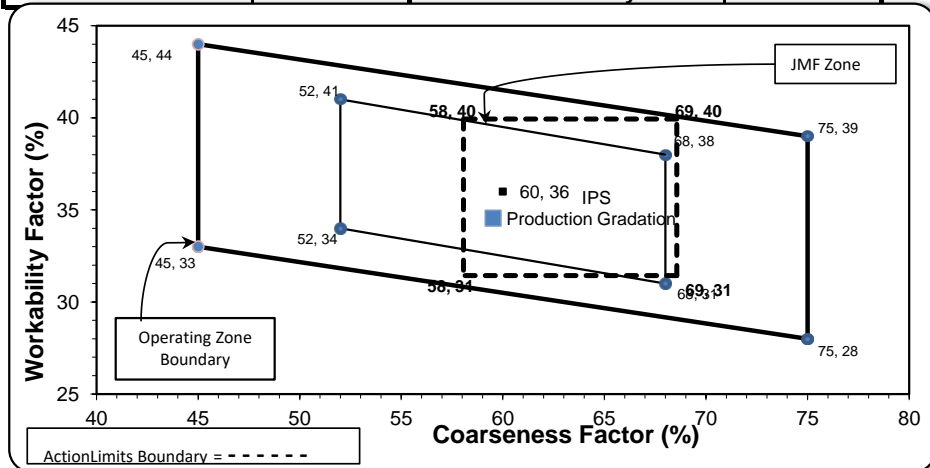
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 30701 W. 10 Mile Rd.
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 Farmington Hills, MI 48336

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	98.9	1.1	1.1
3/4"	84.1	100.0	100.0	90.6	8.3	9.4
1/2"	53.6	95.3	100.0	72.6	18.0	27.4
3/8"	34.0	82.4	100.0	61.0	11.6	39.0
#4	7.3	15.1	96.3	43.8	17.3	56.2
#8	3.0	4.1	80.0	34.6	9.2	65.4
#16	2.4	1.8	64.5	27.9	6.7	72.1
#30	2.2	1.4	48.5	21.2	6.7	78.8
#50	2.1	1.3	26.1	11.9	9.2	88.1
#100	2.0	1.2	6.6	3.9	8.1	96.1
LBW	1.5	1.0	0.9	1.3	2.6	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:	60	Workability Factor:	35
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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"	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: