

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 11/15/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 11/16/2021 through 11/22/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1600	9.53	2.69	51.6
26A	58-003	Stoneco	290	1.73	2.69	9.4
2NS	63-114	Highland	1210	7.32	2.65	39.0
Total Wt			3100	18.58		100.0

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



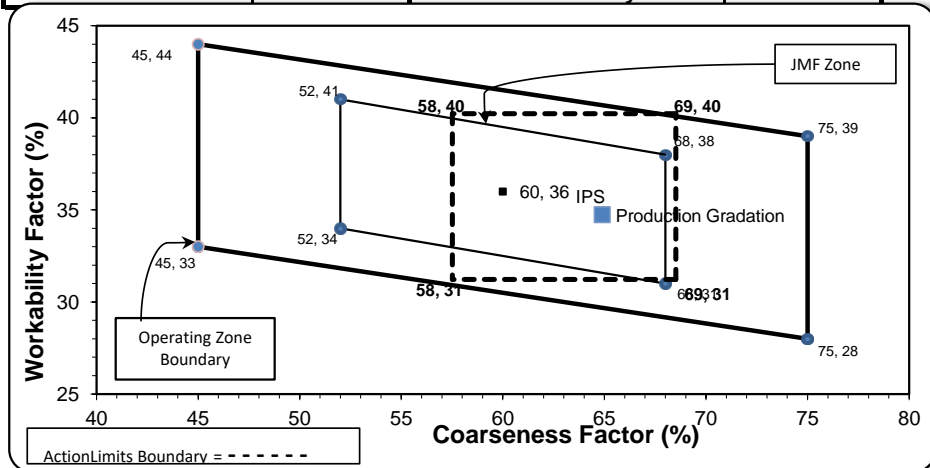
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	99.7	100.0	100.0	99.8	0.2	0.2
3/4"	83.4	100.0	100.0	91.4	8.4	8.6
1/2"	43.9	99.6	100.0	71.0	20.4	29.0
3/8"	20.7	84.8	100.0	57.6	13.4	42.4
#4	2.8	11.5	99.6	41.4	16.3	58.6
#8	1.0	2.0	87.2	34.7	6.7	65.3
#16	1.3	1.0	67.9	27.3	7.5	72.7
#30	1.2	0.8	47.6	19.3	8.0	80.7
#50	1.1	0.7	19.7	8.3	11.0	91.7
#100	0.9	0.6	3.2	1.8	6.6	98.2
LBW	0.5	0.4	0.7	0.6	1.2	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:	65	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"	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-32**

Sample Date: 11/15/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 11/16/2021 through 11/22/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	270	1.65	2.62	8.9
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



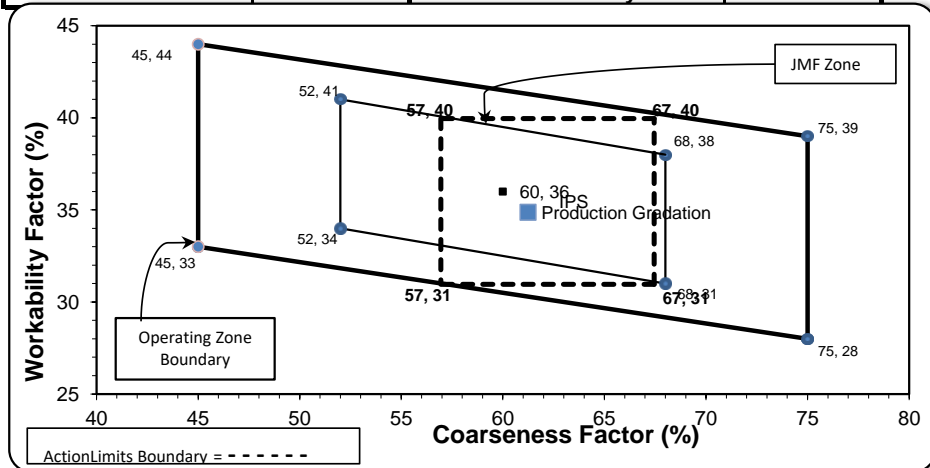
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.8	100.0	100.0	98.9	1.1	1.1
3/4"	78.3	100.0	100.0	89.0	9.9	11.0
1/2"	41.5	95.3	100.0	69.9	19.1	30.1
3/8"	25.7	76.0	100.0	60.1	9.7	39.9
#4	5.0	11.4	95.7	42.1	18.0	57.9
#8	2.6	3.6	82.4	34.9	7.3	65.1
#16	2.2	2.0	66.9	28.3	6.6	71.7
#30	2.0	1.6	48.0	20.5	7.8	79.5
#50	1.9	1.4	24.9	11.1	9.4	88.9
#100	1.8	1.3	7.7	4.1	7.0	95.9
LBW	1.2	0.9	2.0	1.5	2.6	98.5

*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:	61	Workability Factor:	35
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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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 SM, LLC Technical Service

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Aggregate Optimization Chart

PLANT #: **P-35**

Sample Date: 11/15/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 11/16/2021 through 11/22/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1600	9.53	2.69	51.6
26A	58-003	Stoneco	300	1.79	2.69	9.7
2NS	81-093	Burmeister	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



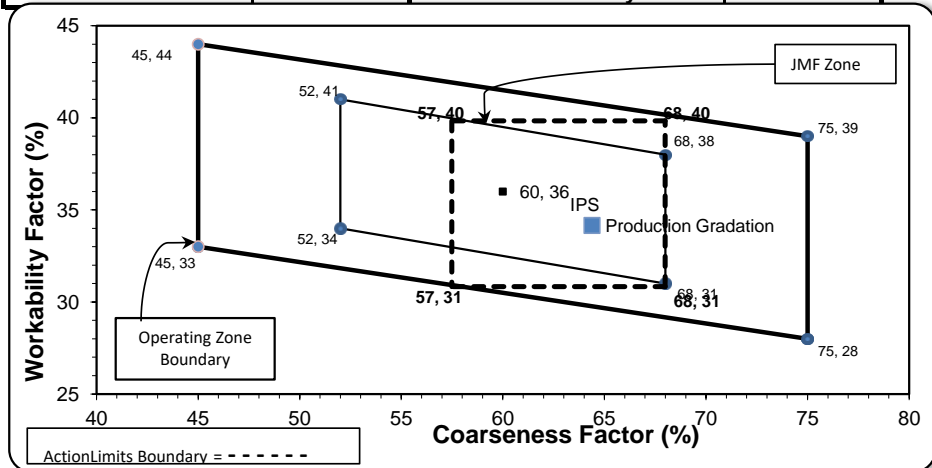
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.7	100.0	100.0	99.8	0.2	0.2
3/4"	83.4	100.0	100.0	91.4	8.4	8.6
1/2"	43.9	99.6	100.0	71.0	20.4	29.0
3/8"	20.7	84.8	100.0	57.6	13.4	42.4
#4	2.8	11.5	98.9	40.8	16.8	59.2
#8	1.0	2.0	86.4	34.2	6.7	65.8
#16	1.3	1.0	71.8	28.6	5.6	71.4
#30	1.2	0.8	53.9	21.6	7.0	78.4
#50	1.1	0.7	21.2	8.8	12.7	91.2
#100	0.9	0.6	3.5	1.9	7.0	98.1
LBW	0.5	0.4	1.2	0.8	1.1	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: 64 **Workability Factor:** 34



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

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Aggregate Optimization Chart

PLANT #: **P-02**

Sample Date: 11/15/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 11/16/2021 through 11/22/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	250	1.53	2.62	8.2
2NS	63-115	Ray Rd	1250	7.56	2.65	41.0
Total Wt			3050	18.57		100.0

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



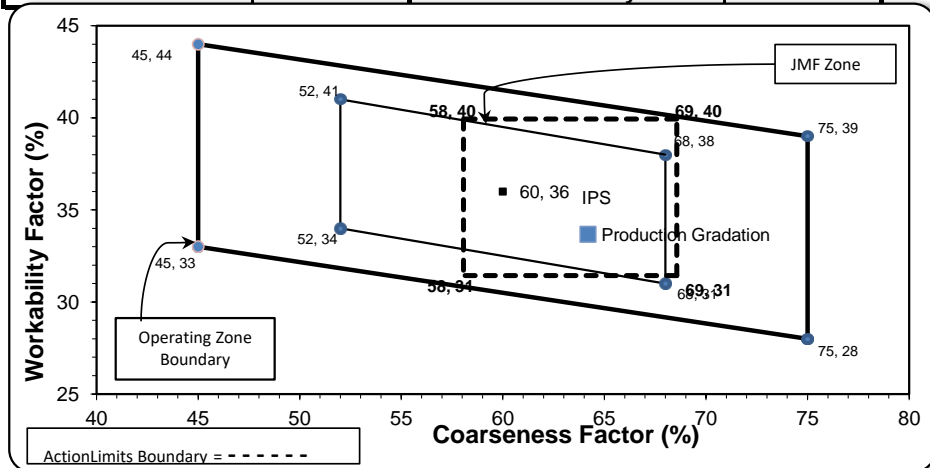
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	95.8	100.0	100.0	97.9	2.1	2.1
3/4"	67.0	100.0	100.0	83.2	14.6	16.8
1/2"	31.6	95.3	100.0	64.9	18.4	35.1
3/8"	20.1	76.0	100.0	57.4	7.4	42.6
#4	3.1	11.4	96.3	42.0	15.5	58.0
#8	2.3	3.6	78.6	33.7	8.3	66.3
#16	2.1	2.0	62.3	26.8	6.9	73.2
#30	2.0	1.6	47.2	20.5	6.3	79.5
#50	1.9	1.4	28.8	12.9	7.6	87.1
#100	1.8	1.3	6.3	3.6	9.3	96.4
LBW	1.3	0.9	0.8	1.1	2.5	98.9

*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**



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: