

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 12/27/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/28/2021 through 1/3/2022

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	48.4
26A	58-003	Stoneco	390	2.32	2.69	12.6
2NS	63-114	Highland	1210	7.32	2.65	39.0
Total Wt			3100	18.58		100.0

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



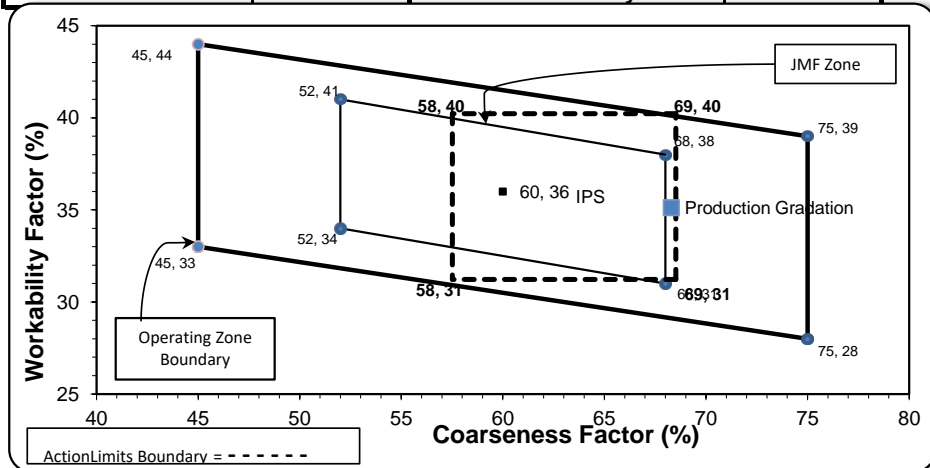
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.1	100.0	100.0	92.3	7.7	7.7
1/2"	35.0	99.3	100.0	68.5	23.8	31.5
3/8"	15.3	73.6	100.0	55.7	12.8	44.3
#4	2.1	8.3	99.7	41.0	14.7	59.0
#8	1.1	3.5	87.5	35.1	5.8	64.9
#16	0.8	2.4	68.2	27.3	7.8	72.7
#30	0.7	1.8	46.1	18.6	8.8	81.4
#50	0.6	1.7	18.3	7.6	10.9	92.4
#100	0.5	1.5	2.9	1.6	6.1	98.4
LBW	0.5	1.2	0.4	0.5	1.0	99.5

*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: **68** **Workability Factor:** **35**



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-35**

Sample Date: 12/27/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/28/2021 through 1/3/2022

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	48.4
26A	58-003	Stoneco	400	2.38	2.69	12.9
2NS	81-093	Burmeister	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



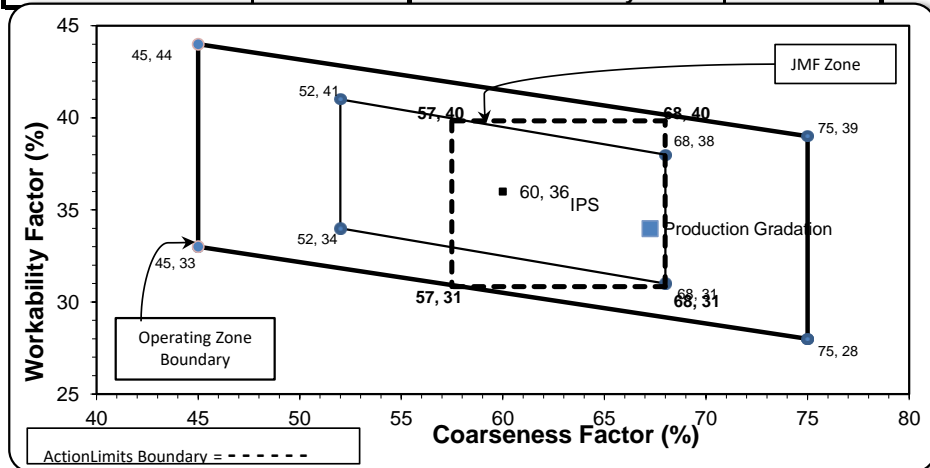
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.1	100.0	100.0	92.3	7.7	7.7
1/2"	35.0	99.3	100.0	68.5	23.8	31.5
3/8"	15.3	73.6	100.0	55.6	12.8	44.4
#4	2.1	8.3	98.6	40.3	15.4	59.7
#8	1.1	3.5	85.3	34.0	6.3	66.0
#16	0.8	2.4	69.0	27.4	6.6	72.6
#30	0.7	1.8	51.0	20.3	7.1	79.7
#50	0.6	1.7	20.2	8.3	12.0	91.7
#100	0.5	1.5	3.8	1.9	6.4	98.1
LBW	0.5	1.2	1.4	0.9	1.0	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: **67** **Workability Factor:** **34**



Intial 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

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Aggregate Optimization Chart

PLANT #: **P-36**

Sample Date: 12/27/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/28/2021 through 1/3/2022

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	300	1.83	2.62	9.8
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
Total Wt			3050	18.57		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"	99.3	100.0	100.0	99.6	0.4	0.4
3/4"	87.6	100.0	100.0	93.7	5.9	6.3
1/2"	48.7	97.9	100.0	73.7	20.0	26.3
3/8"	27.7	91.5	100.0	62.4	11.3	37.6
#4	5.8	29.8	97.4	44.2	18.2	55.8
#8	3.2	7.3	82.9	35.0	9.2	65.0
#16	2.7	2.8	68.0	28.4	6.6	71.6
#30	2.5	2.3	49.9	21.1	7.3	78.9
#50	2.4	2.1	24.9	11.2	9.9	88.8
#100	2.3	2.1	3.4	2.7	8.5	97.3
LBW	1.7	1.9	0.3	1.2	1.5	98.8

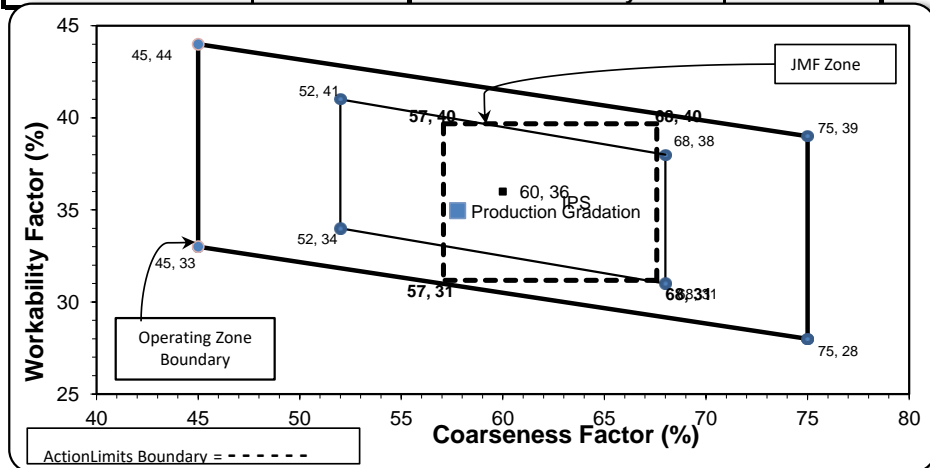
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.



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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	58	Workability Factor:	35
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Intial 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"	99.1	0.9	0.9
3/4"	90.5	8.6	9.5
1/2"	69.8	20.7	30.2
3/8"	59.8	10.0	40.2
#4	42.2	17.6	57.8
#8	35.4	6.7	64.6
#16	28.8	6.7	71.2
#30	21.4	7.4	78.6
#50	8.8	12.6	91.2
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

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 SM, LLC Technical Service

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Aggregate Optimization Chart

PLANT #: **P-02**

Sample Date: 12/27/21

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/28/2021 through 1/3/2022

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1600	9.79	2.62	52.5
26A	71-47	Presque Isle	200	1.22	2.62	6.6
2NS	63-115	Ray Rd	1250	7.56	2.65	41.0
Total Wt			3050	18.57		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"	99.3	100.0	100.0	99.6	0.4	0.4
3/4"	87.6	100.0	100.0	93.5	6.1	6.5
1/2"	48.7	97.9	100.0	73.0	20.5	27.0
3/8"	27.7	91.5	100.0	61.5	11.4	38.5
#4	5.8	29.8	96.4	44.5	17.0	55.5
#8	3.2	7.3	78.6	34.4	10.1	65.6
#16	2.7	2.8	62.1	27.1	7.3	72.9
#30	2.5	2.3	45.5	20.1	6.9	79.9
#50	2.4	2.1	24.3	11.4	8.8	88.6
#100	2.3	2.1	4.9	3.4	8.0	96.6
LBW	1.7	1.9	0.9	1.4	2.0	98.6

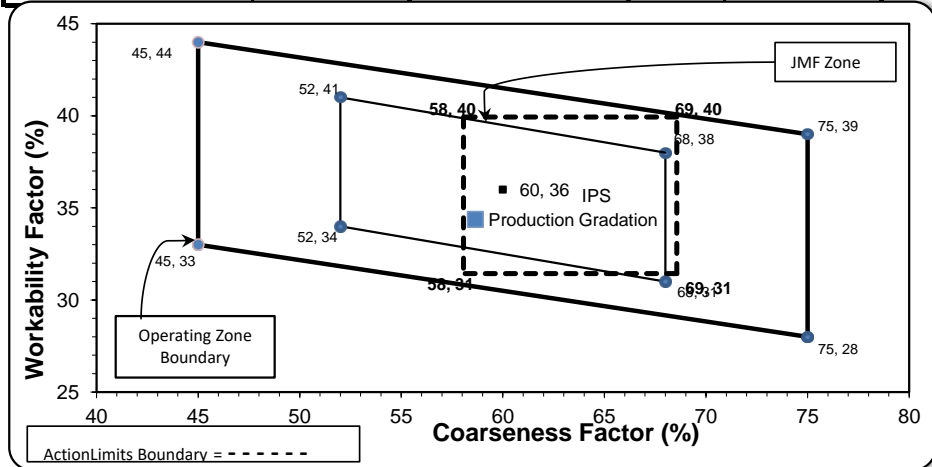
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.



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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **59** **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: