

Aggregate Optimization Chart

PLANT #: **P-101**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

MDOT No.: _____



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

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1825	11.16	2.62	59.7
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	75-051	Mid Michigan	1230	7.41	2.66	40.3
Total Wt			3055	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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	91.1	100.0	100.0	94.7	5.3	5.3
1/2"	54.7	97.0	100.0	72.9	21.7	27.1
3/8"	34.7	88.7	100.0	61.0	11.9	39.0
#4	5.5	22.6	96.1	42.0	19.0	58.0
#8	2.6	4.9	80.4	33.9	8.1	66.1
#16	2.4	2.2	65.6	27.8	6.1	72.2
#30	2.3	1.8	50.3	21.6	6.2	78.4
#50	2.2	1.6	24.3	11.1	10.5	88.9
#100	2.1	1.5	8.2	4.6	6.5	95.4
LBW	1.8	1.4	1.1	1.5	3.0	98.5

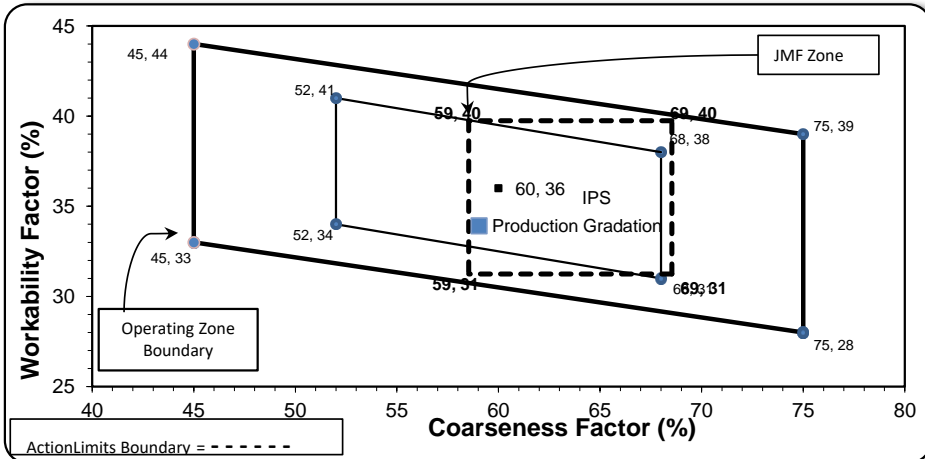
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	59	Workability Factor:	34
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Initial Production Sample (IPS)

Coarseness Factor:	64
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"	93.9	6.1	6.1
1/2"	71.4	22.5	28.6
3/8"	59.0	12.4	41.0
#4	45.1	13.9	54.9
#8	35.5	9.6	64.5
#16	28.3	7.2	71.7
#30	21.3	6.9	78.7
#50	11.0	10.3	89.0
#100	3.4	7.6	96.6
LBW	1.1	2.3	98.9

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-102**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1625	9.68	2.69	52.4
26A	58-003	Stoneco	275	1.64	2.69	8.9
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



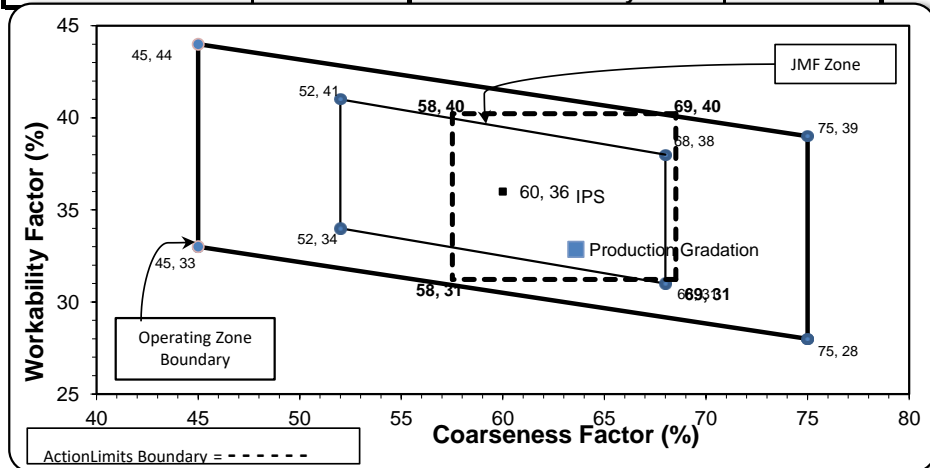
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	83.1	100.0	100.0	91.1	8.8	8.9
1/2"	42.7	99.4	100.0	69.9	21.2	30.1
3/8"	20.7	87.3	100.0	57.3	12.6	42.7
#4	3.5	10.1	97.5	40.5	16.8	59.5
#8	1.8	2.9	81.8	32.9	7.6	67.1
#16	1.6	2.1	64.4	26.0	6.9	74.0
#30	1.4	1.8	45.6	18.5	7.4	81.5
#50	1.4	1.6	22.5	9.6	9.0	90.4
#100	1.3	1.6	6.3	3.3	6.3	96.7
LBW	1.0	1.4	1.1	1.1	2.2	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 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:** **33**



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

Production Gradation Report

PLANT #: **P-103**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1625	9.68	2.69	52.4
26A	58-003	Stoneco	275	1.64	2.69	8.9
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



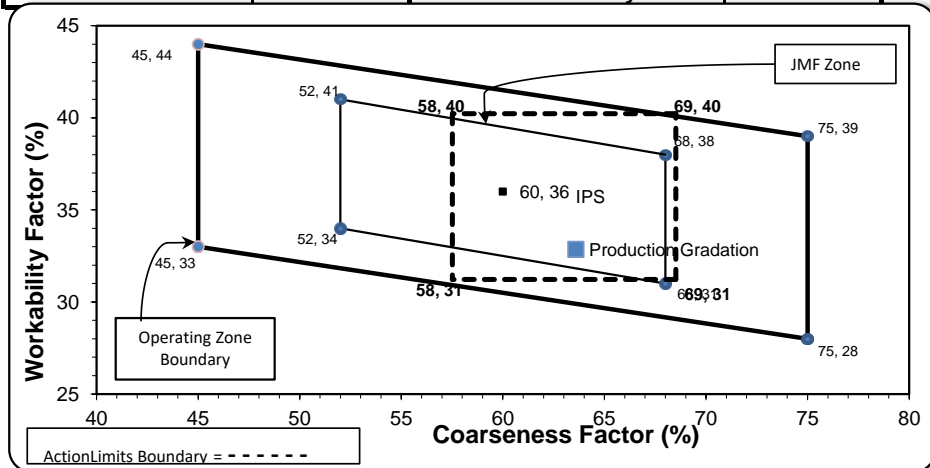
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	83.1	100.0	100.0	91.1	8.8	8.9
1/2"	42.7	99.4	100.0	69.9	21.2	30.1
3/8"	20.7	87.3	100.0	57.3	12.6	42.7
#4	3.5	10.1	97.5	40.5	16.8	59.5
#8	1.8	2.9	81.8	32.9	7.6	67.1
#16	1.6	2.1	64.4	26.0	6.9	74.0
#30	1.4	1.8	45.6	18.5	7.4	81.5
#50	1.4	1.6	22.5	9.6	9.0	90.4
#100	1.3	1.6	6.3	3.3	6.3	96.7
LBW	1.0	1.4	1.1	1.1	2.2	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 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:** **33**



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 #: 14

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1575	9.38	2.69	50.6
26A	58-003	Stoneco	325	1.94	2.69	10.5
2NS	19-04	Schlegel	1210	7.26	2.67	38.9
Total Wt			3110	18.58		100.0

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



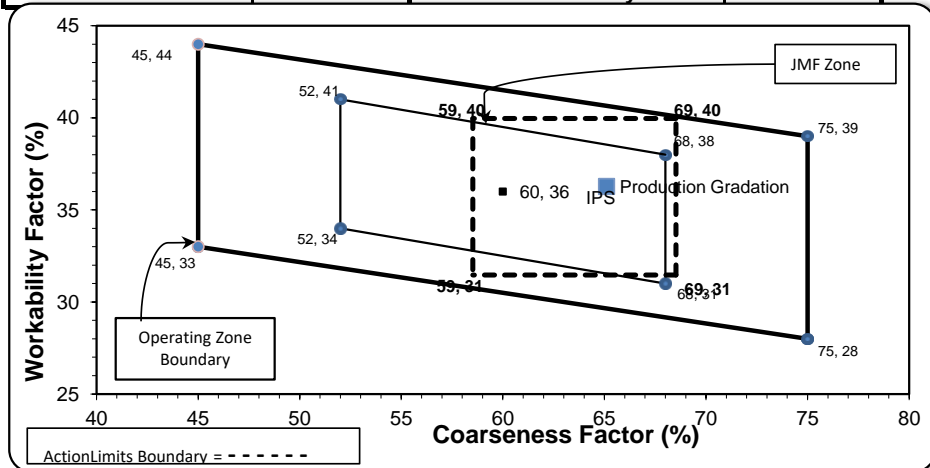
Builders Redi-Mix
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	83.1	100.0	100.0	91.4	8.5	8.6
1/2"	42.7	99.4	100.0	70.9	20.5	29.1
3/8"	20.7	87.3	100.0	58.5	12.4	41.5
#4	3.5	10.1	99.9	41.7	16.8	58.3
#8	1.8	2.9	90.1	36.3	5.4	63.7
#16	1.6	2.1	69.4	28.0	8.2	72.0
#30	1.4	1.8	44.5	18.2	9.8	81.8
#50	1.4	1.6	14.3	6.4	11.8	93.6
#100	1.3	1.6	2.7	1.9	4.6	98.1
LBW	1.0	1.4	0.2	0.7	1.1	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 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:** 36



Initial Production Sample (IPS)

Coarseness Factor: 64
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"	59.2	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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: 12

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

<---- Verify this number is 100%



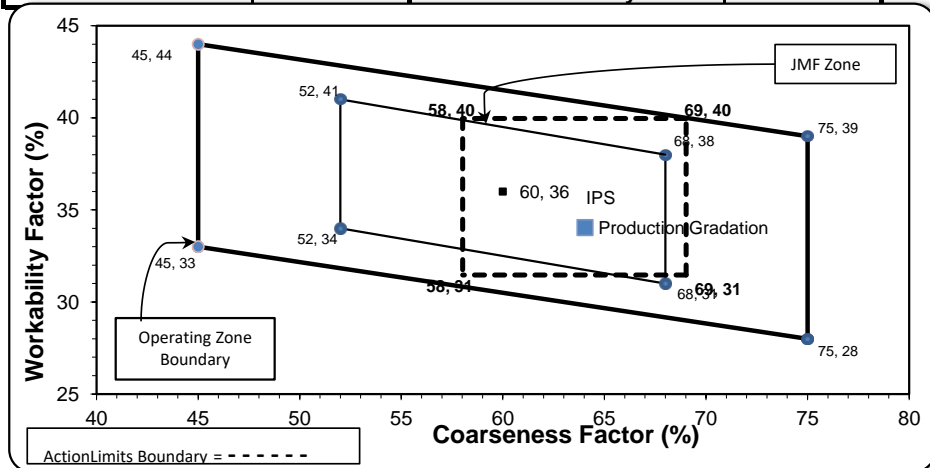
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	97.5	100.0	100.0	98.7	1.3	1.3
3/4"	79.4	100.0	100.0	89.5	9.2	10.5
1/2"	38.3	93.0	100.0	68.0	21.5	32.0
3/8"	20.1	81.5	100.0	57.8	10.3	42.2
#4	2.5	19.2	96.4	41.8	15.9	58.2
#8	1.6	4.6	81.4	34.0	7.8	66.0
#16	1.5	2.4	66.4	27.8	6.3	72.2
#30	1.4	1.9	49.4	20.8	7.0	79.2
#50	1.3	1.8	24.5	10.7	10.1	89.3
#100	1.3	1.7	5.3	2.9	7.8	97.1
LBW	1.0	1.5	0.6	0.9	2.1	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 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



Intial Production Sample (IPS)

Coarseness Factor: 64
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"	59.2	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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: 20

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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%



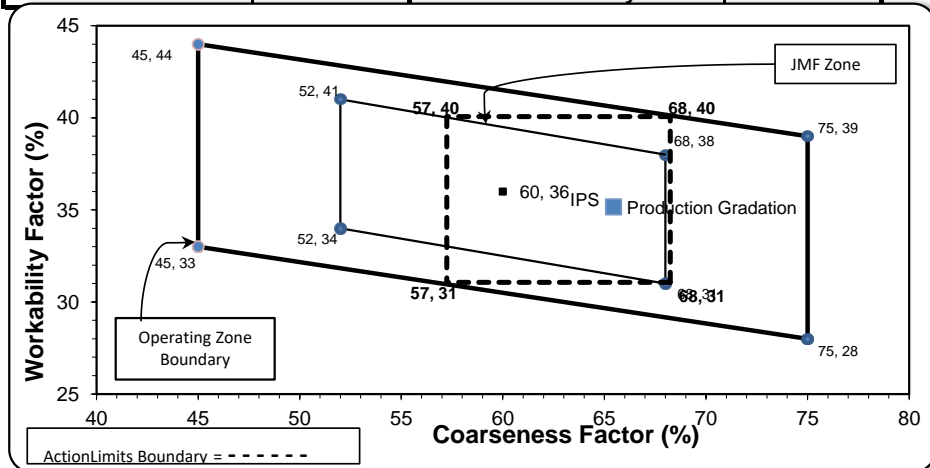
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	97.2	100.0	100.0	98.4	1.6	1.6
3/4"	82.8	100.0	100.0	90.4	8.0	9.6
1/2"	41.8	97.8	100.0	67.5	22.9	32.5
3/8"	24.4	90.9	100.0	57.6	9.9	42.4
#4	3.6	26.3	97.3	42.7	14.8	57.3
#8	1.9	5.2	82.8	35.2	7.6	64.8
#16	1.7	2.0	68.0	28.9	6.3	71.1
#30	1.6	1.5	49.6	21.3	7.6	78.7
#50	1.6	1.4	20.2	9.2	12.1	90.8
#100	1.5	1.2	2.7	2.0	7.2	98.0
LBW	1.3	1.2	0.1	0.8	1.2	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:** 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"	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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: p11

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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%



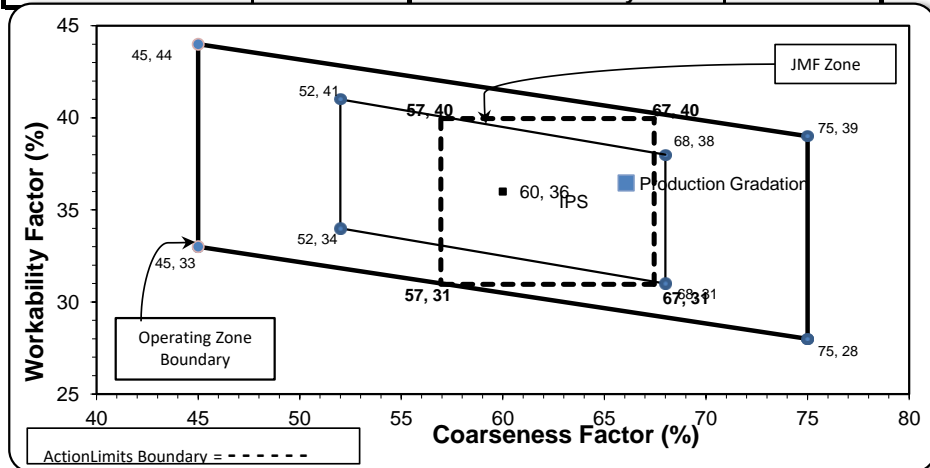
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	95.1	100.0	100.0	97.6	2.4	2.4
3/4"	70.8	100.0	100.0	85.6	12.0	14.4
1/2"	32.7	93.0	100.0	66.2	19.5	33.8
3/8"	18.6	81.5	100.0	58.0	8.1	42.0
#4	3.3	19.2	97.0	42.8	15.3	57.2
#8	2.0	4.6	86.8	36.5	6.3	63.5
#16	1.8	2.4	72.3	30.3	6.2	69.7
#30	1.7	1.9	51.4	21.8	8.5	78.2
#50	1.6	1.8	24.3	10.8	11.0	89.2
#100	1.5	1.7	7.2	3.8	7.0	96.2
LBW	1.1	1.5	1.6	1.3	2.5	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:** 36



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-32**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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%

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"	95.1	100.0	100.0	97.6	2.4	2.4
3/4"	70.8	100.0	100.0	85.6	12.0	14.4
1/2"	32.7	93.0	100.0	66.2	19.5	33.8
3/8"	18.6	81.5	100.0	58.0	8.1	42.0
#4	3.3	19.2	97.0	42.8	15.3	57.2
#8	2.0	4.6	86.8	36.5	6.3	63.5
#16	1.8	2.4	72.3	30.3	6.2	69.7
#30	1.7	1.9	51.4	21.8	8.5	78.2
#50	1.6	1.8	24.3	10.8	11.0	89.2
#100	1.5	1.7	7.2	3.8	7.0	96.2
LBW	1.1	1.5	1.6	1.3	2.5	98.7

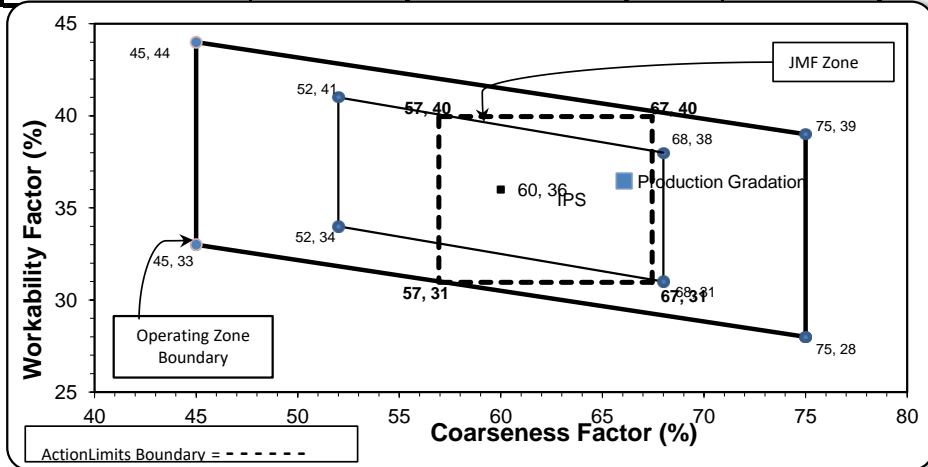
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size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



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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 66 **Workability Factor: 36**



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: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1625	9.68	2.69	52.4
26A	58-003	Stoneco	275	1.64	2.69	8.9
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



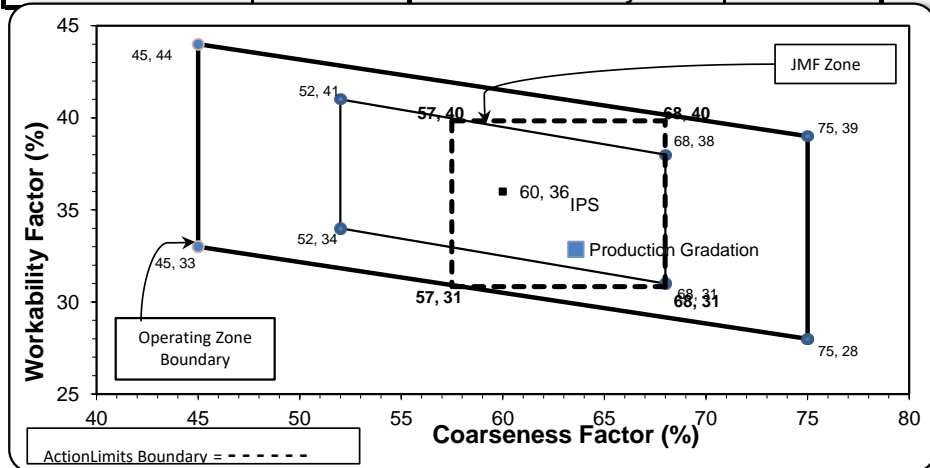
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	83.1	100.0	100.0	91.1	8.8	8.9
1/2"	42.7	99.4	100.0	69.9	21.2	30.1
3/8"	20.7	87.3	100.0	57.3	12.6	42.7
#4	3.5	10.1	97.5	40.5	16.8	59.5
#8	1.8	2.9	81.8	32.9	7.6	67.1
#16	1.6	2.1	64.4	26.0	6.9	74.0
#30	1.4	1.8	45.6	18.5	7.4	81.5
#50	1.4	1.6	22.5	9.6	9.0	90.4
#100	1.3	1.6	6.3	3.3	6.3	96.7
LBW	1.0	1.4	1.1	1.1	2.2	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 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:** **33**



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

PREPARED BY:
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Approved By:

Aggregate Optimization Chart

PLANT #: **P-36**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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	350	2.14	2.62	11.5
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
Total Wt			3050	18.57		100.0

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



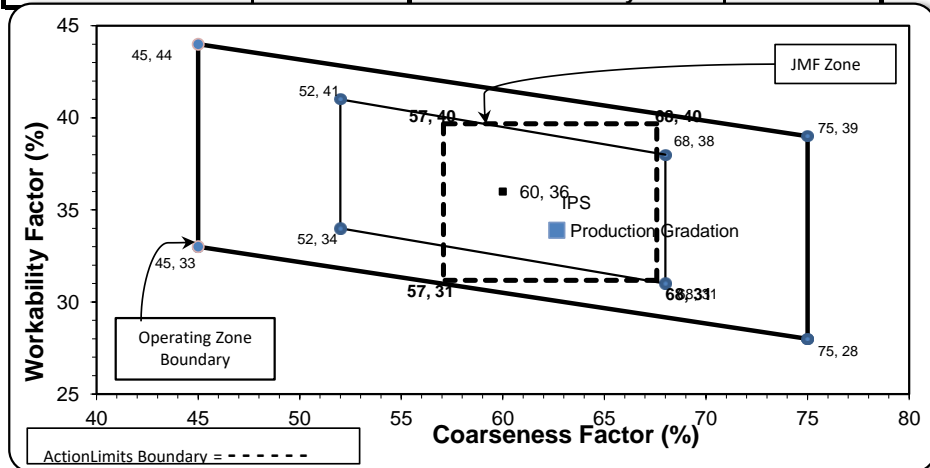
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.5	100.0	100.0	98.8	1.2	1.2
3/4"	79.4	100.0	100.0	89.9	8.9	10.1
1/2"	38.3	93.0	100.0	68.9	21.0	31.1
3/8"	20.1	81.5	100.0	58.6	10.3	41.4
#4	2.5	19.2	97.3	41.7	16.9	58.3
#8	1.6	4.6	82.8	33.9	7.8	66.1
#16	1.5	2.4	68.0	27.8	6.1	72.2
#30	1.4	1.9	49.6	20.4	7.3	79.6
#50	1.3	1.8	20.2	8.8	11.6	91.2
#100	1.3	1.7	2.7	1.9	6.9	98.1
LBW	1.0	1.5	0.1	0.7	1.2	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 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: **63** **Workability Factor:** **34**



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"	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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Aggregate Optimization Chart

PLANT #: **P-38**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1625	9.68	2.69	52.4
26A	58-003	Stoneco	275	1.64	2.69	8.9
2NS	81-019	Pleasant Lake	1200	7.26	2.65	38.7
Total Wt			3100	18.58		100.0

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



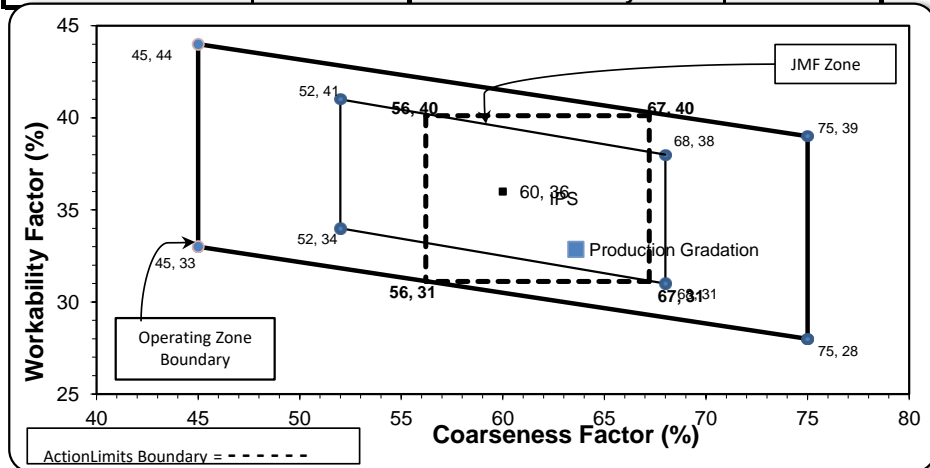
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 Farmington Hills, MI 48336

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	83.1	100.0	100.0	91.1	8.8	8.9
1/2"	42.7	99.4	100.0	69.9	21.2	30.1
3/8"	20.7	87.3	100.0	57.3	12.6	42.7
#4	3.5	10.1	97.5	40.5	16.8	59.5
#8	1.8	2.9	81.8	32.9	7.6	67.1
#16	1.6	2.1	64.4	26.0	6.9	74.0
#30	1.4	1.8	45.6	18.5	7.4	81.5
#50	1.4	1.6	22.5	9.6	9.0	90.4
#100	1.3	1.6	6.3	3.3	6.3	96.7
LBW	1.0	1.4	1.1	1.1	2.2	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 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:	33
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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-39**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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	44-051	Krake Willis Rd	1250	7.56	2.65	41.0
Total Wt			3050	18.57		100.0

<---- Verify this number is 100%



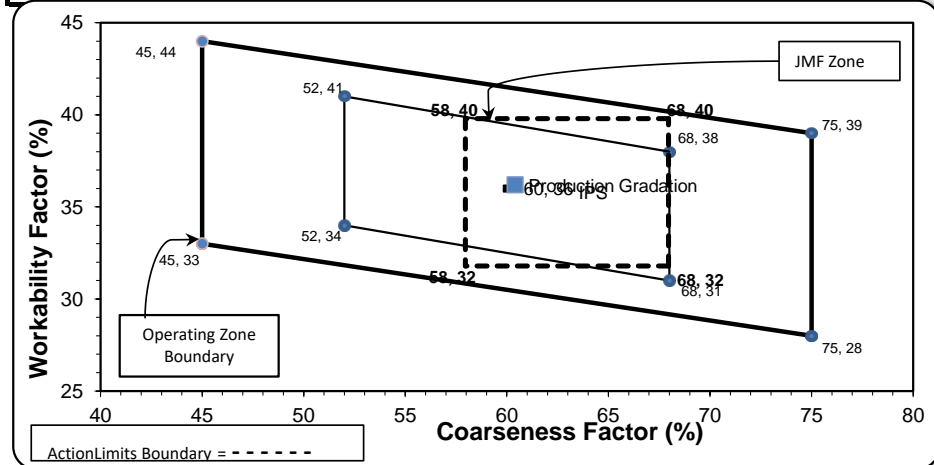
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	91.1	100.0	100.0	94.7	5.3	5.3
1/2"	54.7	97.0	100.0	73.3	21.5	26.7
3/8"	34.7	88.7	100.0	61.5	11.8	38.5
#4	5.5	22.6	98.9	43.8	17.7	56.2
#8	2.6	4.9	84.6	36.2	7.6	63.8
#16	2.4	2.2	68.9	29.7	6.6	70.3
#30	2.3	1.8	49.7	21.7	7.9	78.3
#50	2.2	1.6	23.8	11.1	10.7	88.9
#100	2.1	1.5	6.5	3.9	7.1	96.1
LBW	1.8	1.4	1.6	1.7	2.2	98.3

*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 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:	60	Workability Factor:	36
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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"	89.8	10.2	10.2
1/2"	70.7	19.1	29.3
3/8"	59.6	11.1	40.4
#4	43.2	16.4	56.8
#8	35.8	7.4	64.2
#16	29.2	6.6	70.8
#30	21.4	7.8	78.6
#50	9.8	11.6	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-02**

Sample Date: 9/25/23

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 9/26/2023 through 10/2/2023

Contractor: _____

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	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



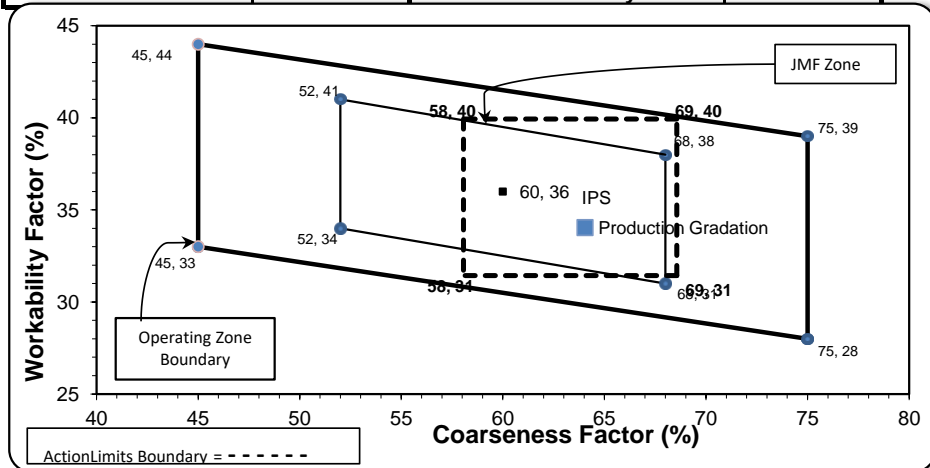
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.5	100.0	100.0	98.7	1.3	1.3
3/4"	79.4	100.0	100.0	89.5	9.2	10.5
1/2"	38.3	93.0	100.0	68.0	21.5	32.0
3/8"	20.1	81.5	100.0	57.8	10.3	42.2
#4	2.5	19.2	96.4	41.8	15.9	58.2
#8	1.6	4.6	81.4	34.0	7.8	66.0
#16	1.5	2.4	66.4	27.8	6.3	72.2
#30	1.4	1.9	49.4	20.8	7.0	79.2
#50	1.3	1.8	24.5	10.7	10.1	89.3
#100	1.3	1.7	5.3	2.9	7.8	97.1
LBW	1.0	1.5	0.6	0.9	2.1	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 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**



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: