Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1640	9.77	2.69	52.9
26A	58-003	Stoneco	250	1.49	2.69	8.1
2NS	63-114	Highland	1210	7.32	2.65	39.0
		Total Wt	**3100**	**18.58**		100.0

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

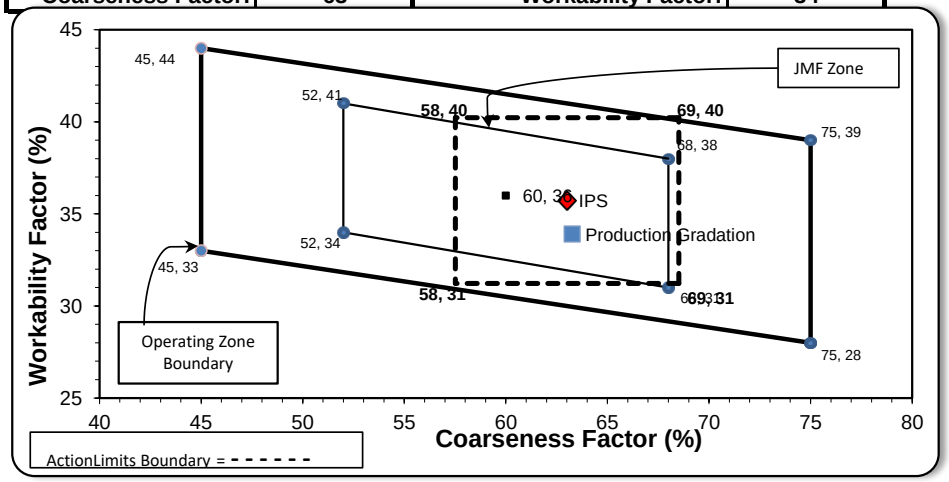
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	87.4	100.0	100.0	93.3	6.7	6.7
1/2"	49.2	99.4	100.0	73.1	20.3	26.9
3/8"	23.4	84.0	100.0	58.2	14.9	41.8
#4	3.9	6.0	99.0	41.2	17.0	58.8
#8	1.6	2.9	84.1	33.9	7.3	66.1
#16	1.1	2.2	66.7	26.8	7.1	73.2
#30	0.8	2.0	46.8	18.9	7.9	81.1
#50	0.6	1.9	17.1	7.1	11.7	92.9
#100	0.5	1.7	2.9	1.5	5.6	98.5
LBW	0.5	1.5	0.3	0.5	1.0	99.5

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

*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



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"	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**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1640	9.77	2.69	52.9
26A	58-003	Stoneco	250	1.49	2.69	8.1
2NS	63-114	Highland	1210	7.32	2.65	39.0
		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"	87.4	100.0	100.0	93.3	6.7	6.7
1/2"	49.2	99.4	100.0	73.1	20.3	26.9
3/8"	23.4	84.0	100.0	58.2	14.9	41.8
#4	3.9	6.0	99.0	41.2	17.0	58.8
#8	1.6	2.9	84.1	33.9	7.3	66.1
#16	1.1	2.2	66.7	26.8	7.1	73.2
#30	0.8	2.0	46.8	18.9	7.9	81.1
#50	0.6	1.9	17.1	7.1	11.7	92.9
#100	0.5	1.7	2.9	1.5	5.6	98.5
LBW	0.5	1.5	0.3	0.5	1.0	99.5

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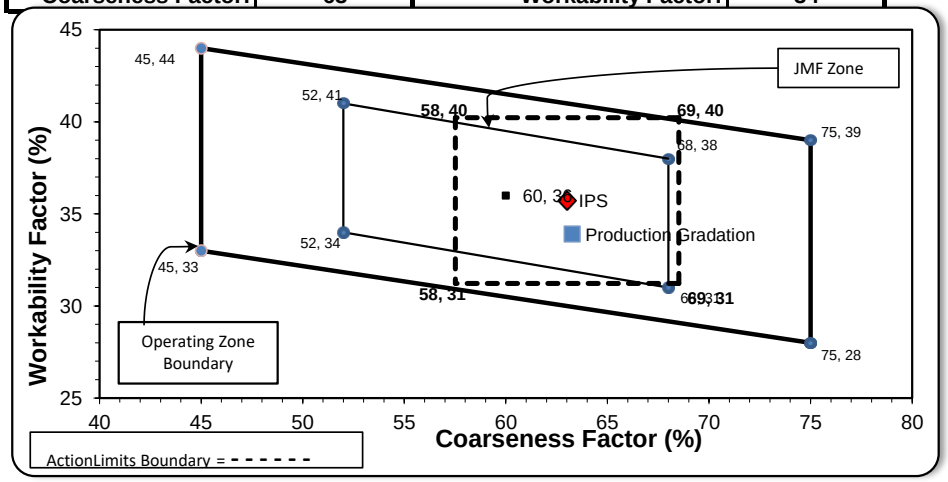
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	63	Workability Factor:	34



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"	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-12**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

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	220	1.35	2.62	7.2
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

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

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	98.8	1.2	1.2
3/4"	75.2	100.0	100.0	87.0	11.9	13.0
1/2"	34.9	96.3	100.0	65.6	21.4	34.4
3/8"	17.1	83.9	100.0	55.4	10.2	44.6
#4	3.8	28.3	98.4	43.7	11.6	56.3
#8	2.6	9.8	79.8	34.3	9.5	65.7
#16	2.3	4.9	61.9	26.5	7.7	73.5
#30	2.1	3.9	46.2	20.0	6.5	80.0
#50	1.9	3.6	24.7	11.2	8.8	88.8
#100	1.8	3.3	5.3	3.3	7.9	96.7
LBW	1.3	2.3	0.5	1.0	2.3	99.0

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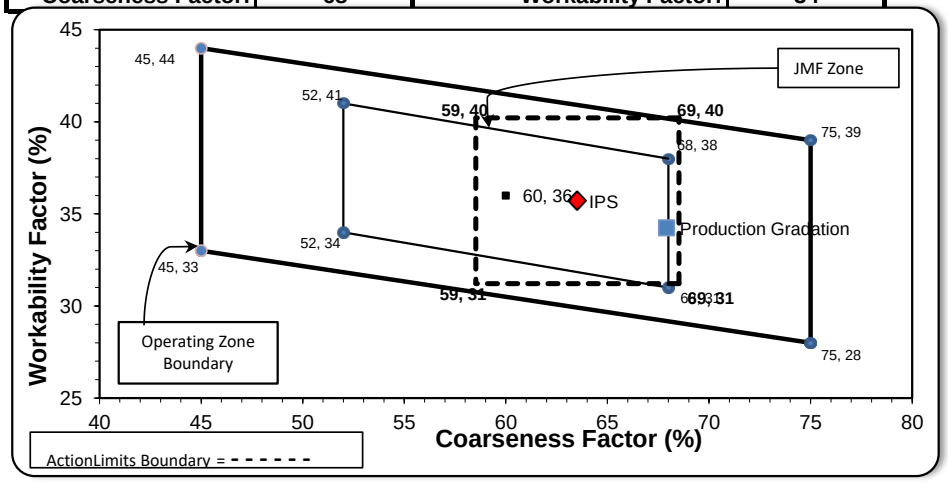
Suite 500
Farmington Hills, MI 48336

*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:	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

Production Gradation Report

PLANT #: **P-32**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1520	9.30	2.62	49.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
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"	97.4	100.0	100.0	98.7	1.3	1.3
3/4"	81.9	100.0	100.0	91.0	7.7	9.0
1/2"	42.0	96.3	100.0	70.7	20.2	29.3
3/8"	21.6	83.9	100.0	59.3	11.4	40.7
#4	4.3	28.3	96.1	43.7	15.7	56.3
#8	2.5	9.8	83.3	35.8	7.9	64.2
#16	2.1	4.9	69.3	29.5	6.3	70.5
#30	2.0	3.9	46.8	20.3	9.2	79.7
#50	1.9	3.6	18.5	8.8	11.5	91.2
#100	1.7	3.3	4.5	3.0	5.8	97.0
LBW	1.1	2.3	1.0	1.2	1.8	98.8

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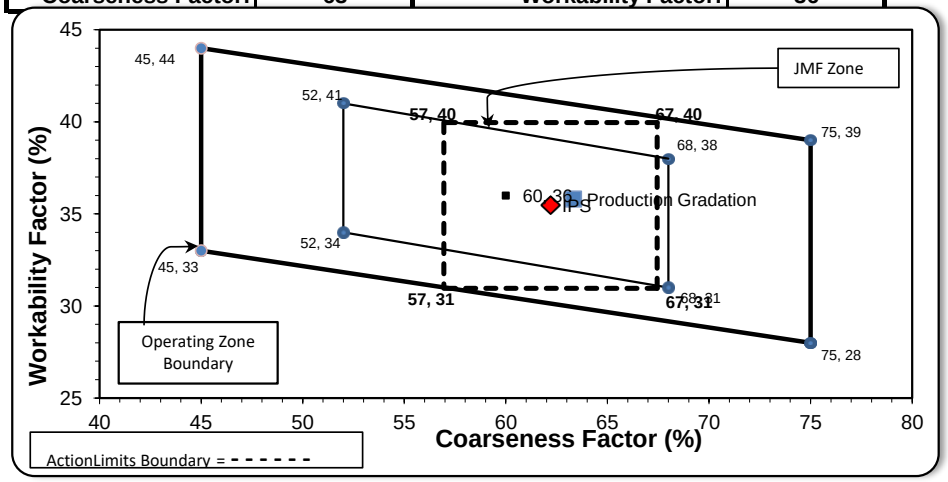
Suite 500
Farmington Hills, MI 48336

*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:	36



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"	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

Production Gradation Report

PLANT #: **P-36**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	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%

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"	75.2	100.0	100.0	87.8	11.1	12.2
1/2"	34.9	96.3	100.0	67.6	20.2	32.4
3/8"	17.1	83.9	100.0	57.4	10.2	42.6
#4	3.8	28.3	97.4	43.4	13.9	56.6
#8	2.6	9.8	85.3	36.0	7.5	64.0
#16	2.3	4.9	71.7	29.9	6.1	70.1
#30	2.1	3.9	52.1	22.0	7.9	78.0
#50	1.9	3.6	22.9	10.4	11.6	89.6
#100	1.8	3.3	2.5	2.2	8.1	97.8
LBW	1.3	2.3	0.5	1.1	1.1	98.9

Superior Materials, LLC
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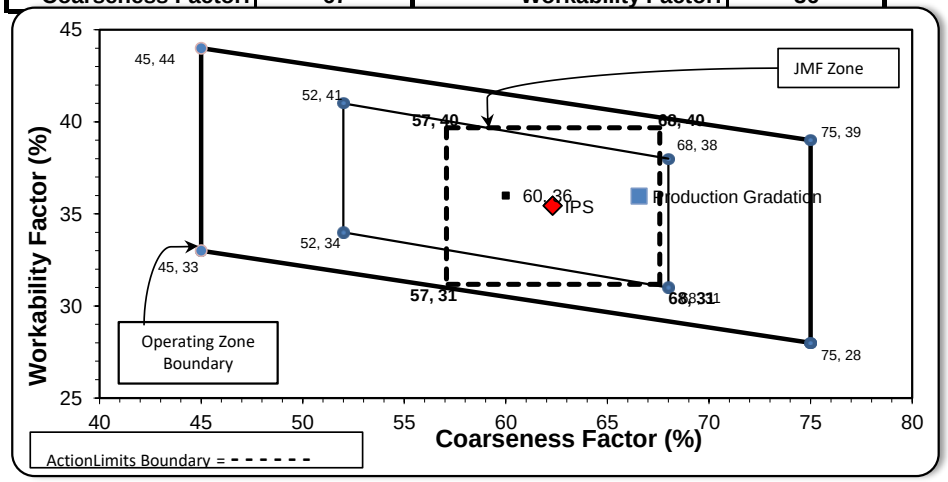
Suite 500
Farmington Hills, MI 48336

*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:	36



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

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1700	10.40	2.62	55.7
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	44-051	Krake Willis Rd	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"	98.1	100.0	100.0	98.9	1.1	1.1
3/4"	80.9	100.0	100.0	89.4	9.6	10.6
1/2"	46.7	97.4	100.0	70.2	19.2	29.8
3/8"	30.4	85.6	100.0	60.5	9.7	39.5
#4	6.8	21.4	95.2	42.3	18.2	57.7
#8	2.4	5.4	80.1	33.1	9.2	66.9
#16	1.7	2.6	64.3	26.4	6.7	73.6
#30	1.6	2.0	48.3	20.0	6.4	80.0
#50	1.5	1.9	22.8	9.9	10.1	90.1
#100	1.4	1.8	6.1	3.3	6.6	96.7
LBW	1.3	1.6	0.7	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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

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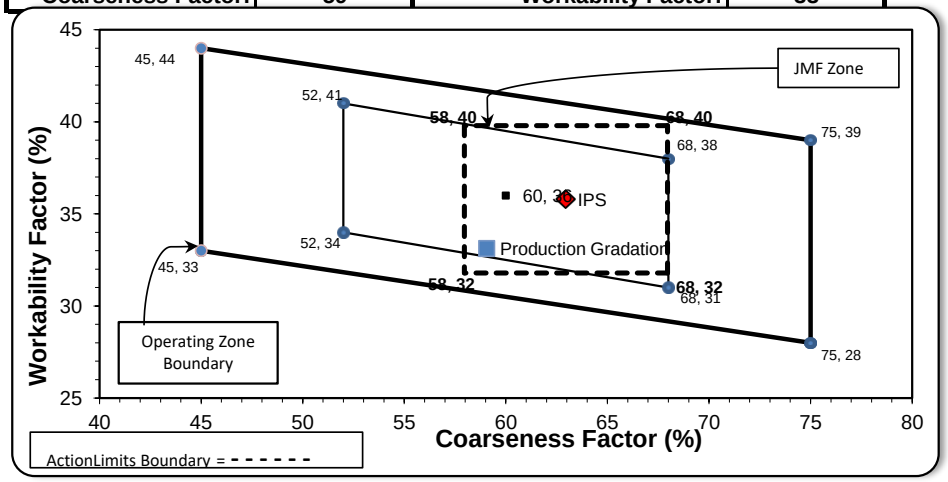
Suite 500
Farmington Hills, MI 48336

Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	59	Workability Factor:	33



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"	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

Production Gradation Report

PLANT #: **P-O2**

Contractor:

Sample Date: 6/8/20

Concrete Grade: **S2M**

Dates Test Represents: 6/9/2020 through 6/15/2020

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	200	1.22	2.62	6.6
2NS	63-115	Ray Rd	1300	7.86	2.65	42.6
		Total Wt	**3050**	**18.57**		100.0

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

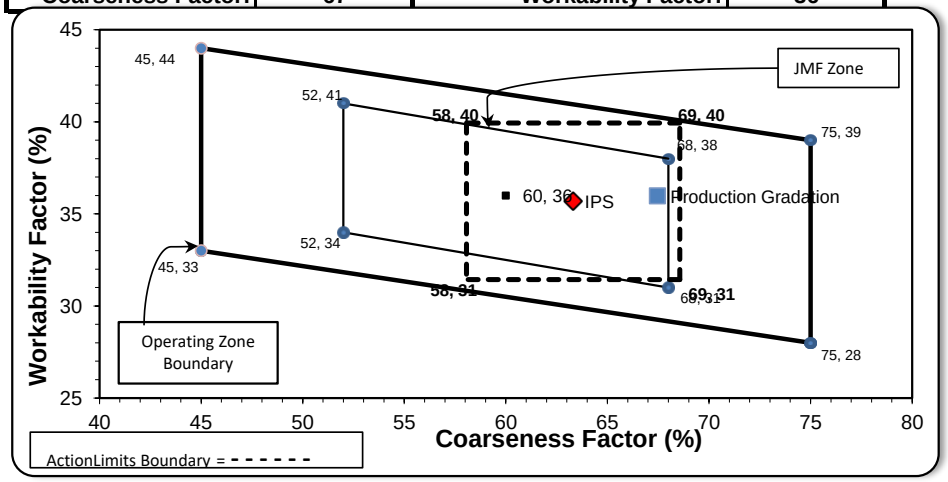
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.8	100.0	100.0	98.9	1.1	1.1
3/4"	75.2	100.0	100.0	87.4	11.5	12.6
1/2"	34.9	96.3	100.0	66.7	20.7	33.3
3/8"	17.1	83.9	100.0	56.8	9.9	43.2
#4	3.8	28.3	98.4	45.7	11.1	54.3
#8	2.6	9.8	79.8	36.0	9.8	64.0
#16	2.3	4.9	61.9	27.9	8.1	72.1
#30	2.1	3.9	46.2	21.0	6.9	79.0
#50	1.9	3.6	24.7	11.7	9.3	88.3
#100	1.8	3.3	5.3	3.4	8.3	96.6
LBW	1.3	2.3	0.5	1.0	2.4	99.0

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

*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 SupplierGradations

Coarseness Factor:	67	Workability Factor:	36



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"	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:
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