Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-101**

Contractor:

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	950	5.81	2.62	30.9
2NS	75-051	Mid-Michigan	1200	7.23	2.66	39.1
		Total Wt	**3070**	**18.67**		100.0

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

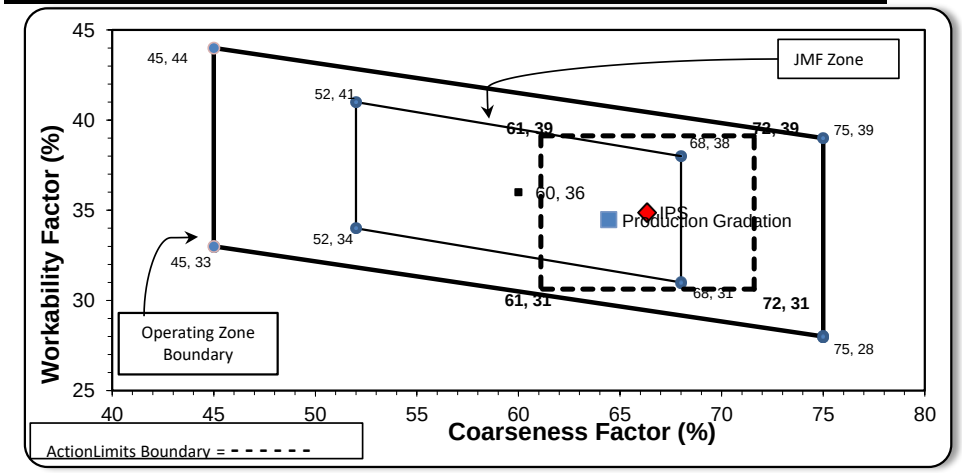
Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	42.8	100.0	100.0	82.9	16.5	17.1
3/4"	13.6	99.0	100.0	73.8	9.1	26.2
1/2"	4.2	80.3	100.0	65.2	8.6	34.8
3/8"	3.4	57.1	100.0	57.8	7.4	42.2
#4	2.7	12.0	98.6	43.1	14.7	56.9
#8	2.4	4.0	83.2	34.5	8.6	65.5
#16	2.2	2.6	66.5	27.5	7.0	72.5
#30	2.1	2.3	50.5	21.1	6.4	78.9
#50	2.0	2.2	26.7	11.7	9.4	88.3
#100	1.8	2.1	6.5	3.7	8.0	96.3
LBW	1.5	1.8	0.9	1.4	2.4	98.6

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:	64	Workability Factor:	34



Initial Production Sample (IPS)

Coarseness Factor:	66
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	84.3	15.3	15.7
3/4"	74.8	9.6	25.2
1/2"	64.3	10.4	35.7
3/8"	56.8	7.5	43.2
#4	43.0	13.8	57.0
#8	34.9	8.1	65.1
#16	26.4	8.5	73.6
#30	19.9	6.5	80.1
#50	10.4	9.5	89.6
#100	3.4	7.0	96.6
LBW	1.2	2.2	98.8

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Contractor:

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1420	8.46	2.69	45.5
IA	58-003	Stoneco	500	2.98	2.69	16.0
2NS	63-114	Highland	1200	7.26	2.65	38.5
		Total Wt	**3120**	**18.70**		100.0

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

Sieve	CA	IA	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"	64.6	100.0	100.0	83.9	16.1	16.1
3/4"	36.0	100.0	100.0	70.9	13.0	29.1
1/2"	14.8	93.8	100.0	60.2	10.6	39.8
3/8"	4.4	84.2	100.0	54.0	6.3	46.0
#4	1.6	17.6	99.2	41.7	12.3	58.3
#8	1.3	6.1	85.2	34.3	7.4	65.7
#16	1.2	2.7	67.3	26.9	7.5	73.1
#30	1.1	1.8	46.7	18.8	8.1	81.2
#50	1.0	1.7	16.2	7.0	11.8	93.0
#100	0.9	1.6	2.8	1.7	5.2	98.3
LBW	0.8	1.3	0.3	0.7	1.1	99.3

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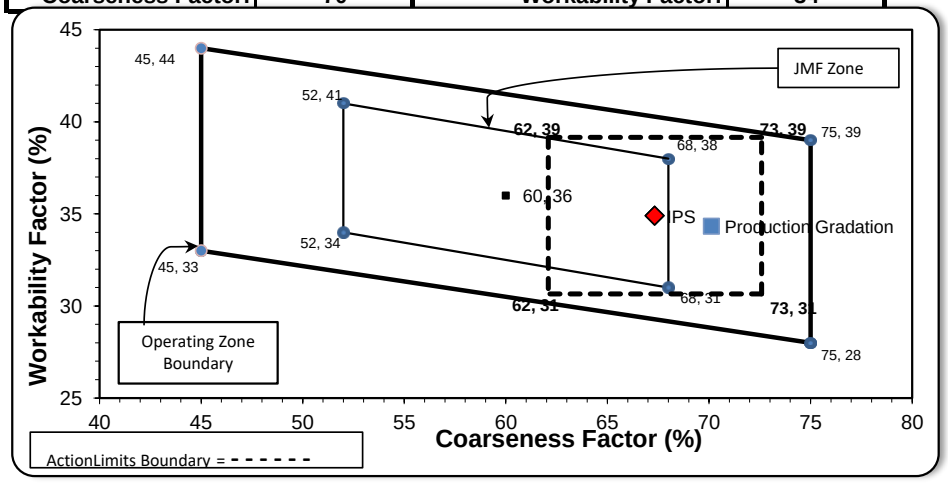
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	70	Workability Factor:	34



Intial Production Sample (IPS)

Coarseness Factor:	67
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"	85.5	14.5	14.5
3/4"	73.4	12.1	26.6
1/2"	61.0	12.4	39.0
3/8"	56.2	4.8	43.8
#4	43.1	13.1	56.9
#8	34.9	8.2	65.1
#16	29.4	5.5	70.6
#30	21.6	7.8	78.4
#50	8.1	13.4	91.9
#100	2.2	5.9	97.8
LBW	1.4	0.8	98.6

PREPARED BY:
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Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-12**

Contractor:

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	900	5.50	2.62	29.3
2NS	63-115	Ray Rd	1250	7.56	2.65	40.7
		Total Wt	**3070**	**18.69**		100.0

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	42.8	100.0	100.0	82.9	16.5	17.1
3/4"	13.6	99.0	100.0	73.8	9.0	26.2
1/2"	4.2	80.3	100.0	65.5	8.3	34.5
3/8"	3.4	57.1	100.0	58.5	7.0	41.5
#4	2.7	12.0	98.0	44.2	14.2	55.8
#8	2.4	4.0	80.5	34.7	9.6	65.3
#16	2.2	2.6	63.3	27.2	7.5	72.8
#30	2.1	2.3	47.2	20.5	6.7	79.5
#50	2.0	2.2	22.6	10.4	10.1	89.6
#100	1.8	2.1	4.3	2.9	7.5	97.1
LBW	1.5	1.8	0.5	1.2	1.7	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.

Superior Materials, LLC
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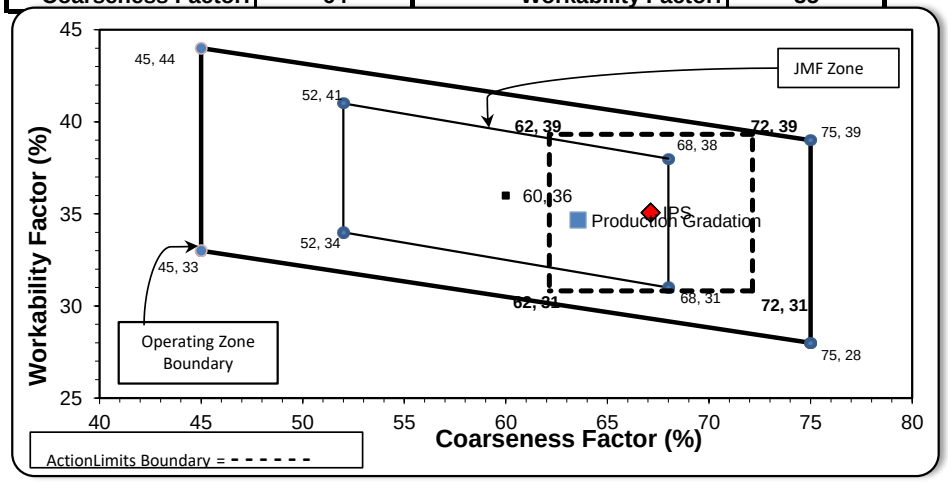
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	64	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	67
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	83.9	15.7	16.1
3/4"	74.0	9.8	26.0
1/2"	63.7	10.3	36.3
3/8"	56.4	7.3	43.6
#4	43.0	13.4	57.0
#8	35.1	7.9	64.9
#16	29.0	6.1	71.0
#30	20.9	8.0	79.1
#50	8.1	12.8	91.9
#100	1.6	6.5	98.4
LBW	0.9	0.8	99.1

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-20**

Contractor:

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	870	5.32	2.62	28.3
IA	71-47	Presque Isle	1000	6.12	2.62	32.6
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
		Total Wt	**3070**	**18.70**		100.0

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	41.5	100.0	100.0	83.4	16.0	16.6
3/4"	11.3	98.3	100.0	74.3	9.1	25.7
1/2"	2.6	78.3	100.0	65.3	9.0	34.7
3/8"	1.8	52.5	100.0	56.7	8.6	43.3
#4	1.4	7.6	97.5	41.0	15.7	59.0
#8	1.3	3.7	85.0	34.8	6.2	65.2
#16	1.2	2.7	70.0	28.6	6.2	71.4
#30	1.2	2.4	49.7	20.5	8.0	79.5
#50	1.1	2.3	20.6	9.1	11.4	90.9
#100	1.0	2.2	2.8	2.1	7.0	97.9
LBW	0.9	2.0	0.5	1.1	1.0	98.9

Superior Materials, LLC
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Suite 500
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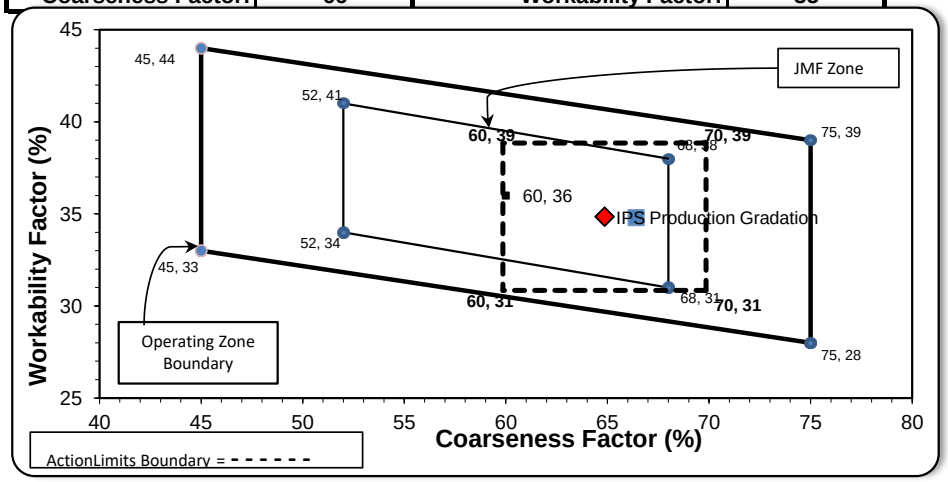
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	66	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	65
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.1	0.9	0.9
1"	80.8	18.2	19.2
3/4"	71.3	9.6	28.7
1/2"	64.0	7.3	36.0
3/8"	57.7	6.2	42.3
#4	42.8	15.0	57.2
#8	34.8	7.9	65.2
#16	28.4	6.4	71.6
#30	20.2	8.2	79.8
#50	7.6	12.6	92.4
#100	1.6	6.0	98.4
LBW	1.0	0.6	99.0

PREPARED BY:
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Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Contractor:

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	900	5.50	2.62	29.3
2NS	95-013	Smelter Bay	1250	7.56	2.65	40.7
		Total Wt	**3070**	**18.69**		100.0

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	42.8	100.0	100.0	82.9	16.5	17.1
3/4"	13.6	99.0	100.0	73.8	9.0	26.2
1/2"	4.2	80.3	100.0	65.5	8.3	34.5
3/8"	3.4	57.1	100.0	58.5	7.0	41.5
#4	2.7	12.0	96.4	43.6	14.9	56.4
#8	2.4	4.0	83.5	35.9	7.7	64.1
#16	2.2	2.6	67.3	28.8	7.1	71.2
#30	2.1	2.3	45.4	19.8	9.0	80.2
#50	2.0	2.2	22.0	10.2	9.6	89.8
#100	1.8	2.1	6.7	3.9	6.3	96.1
LBW	1.5	1.8	1.3	1.5	2.4	98.5

Superior Materials, LLC
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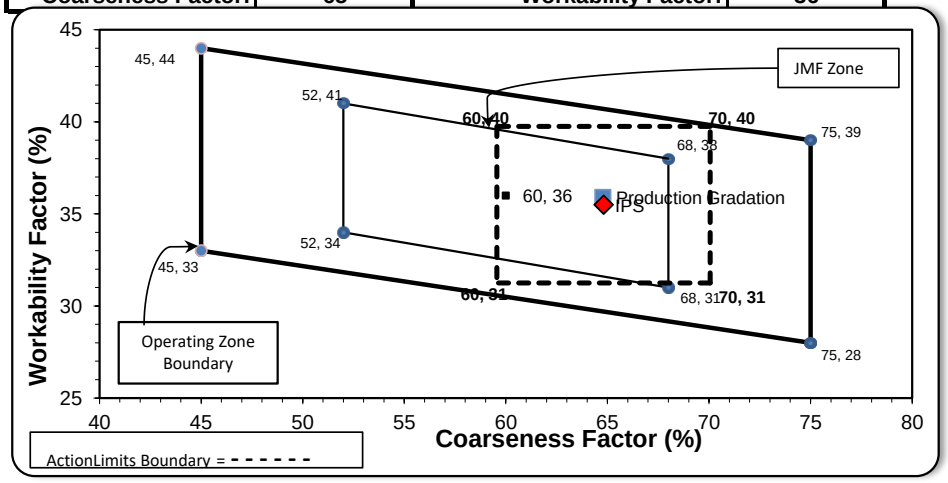
Suite 500
Farmington Hills, MI 48336

*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:	65	Workability Factor:	36



Intial Production Sample (IPS)

Coarseness Factor:	65
Workability Factor:	36

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.0	0.6	0.6
1"	84.0	15.3	16.0
3/4"	73.5	10.5	26.5
1/2"	65.2	8.2	34.8
3/8"	58.2	7.1	41.8
#4	44.1	14.1	55.9
#8	35.5	8.6	64.5
#16	29.1	6.4	70.9
#30	21.9	7.3	78.1
#50	9.6	12.2	90.4
#100	2.6	7.1	97.4
LBW	1.0	1.6	99.0

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

Contractor: _____

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	970	5.93	2.62	31.6
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
		Total Wt	**3070**	**18.70**		100.0

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	42.8	100.0	100.0	83.2	16.2	16.8
3/4"	13.6	99.0	100.0	74.4	8.9	25.6
1/2"	4.2	80.3	100.0	65.7	8.7	34.3
3/8"	3.4	57.1	100.0	58.1	7.6	41.9
#4	2.7	12.0	97.5	42.7	15.4	57.3
#8	2.4	4.0	85.0	35.2	7.5	64.8
#16	2.2	2.6	70.0	28.8	6.4	71.2
#30	2.1	2.3	49.7	20.8	8.1	79.2
#50	2.0	2.2	20.6	9.3	11.4	90.7
#100	1.8	2.1	2.8	2.3	7.0	97.7
LBW	1.5	1.8	0.5	1.2	1.1	98.8

Superior Materials, LLC
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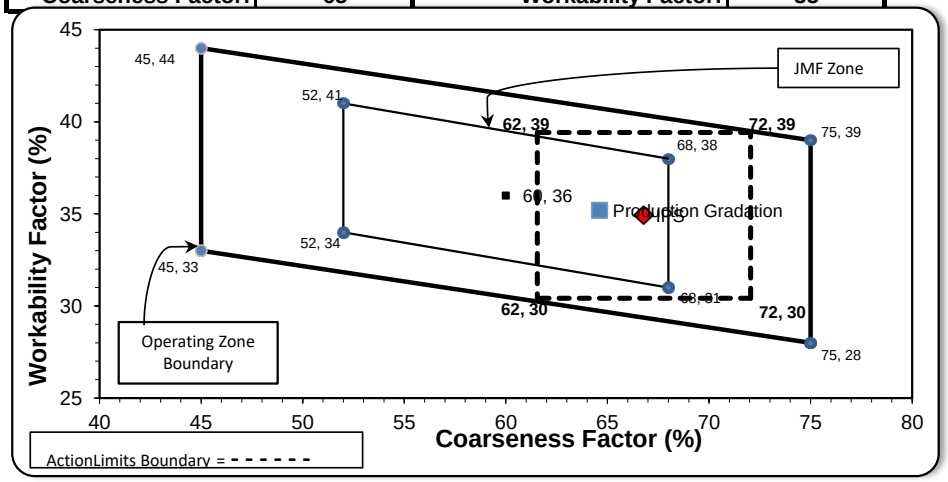
Suite 500
Farmington Hills, MI 48336

*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:	65	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	67
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"	85.0	15.0	15.0
3/4"	72.1	12.9	27.9
1/2"	64.5	7.6	35.5
3/8"	56.5	8.0	43.5
#4	42.7	13.8	57.3
#8	34.9	7.8	65.1
#16	29.0	5.9	71.0
#30	21.0	8.0	79.0
#50	8.2	12.8	91.8
#100	1.6	6.5	98.4
LBW	0.7	0.9	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

Contractor: _____

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	950	5.81	2.62	30.9
2NS	44-051	Krake Willis Rd	1220	7.38	2.65	39.7
		Total Wt	**3070**	**18.69**		100.0

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

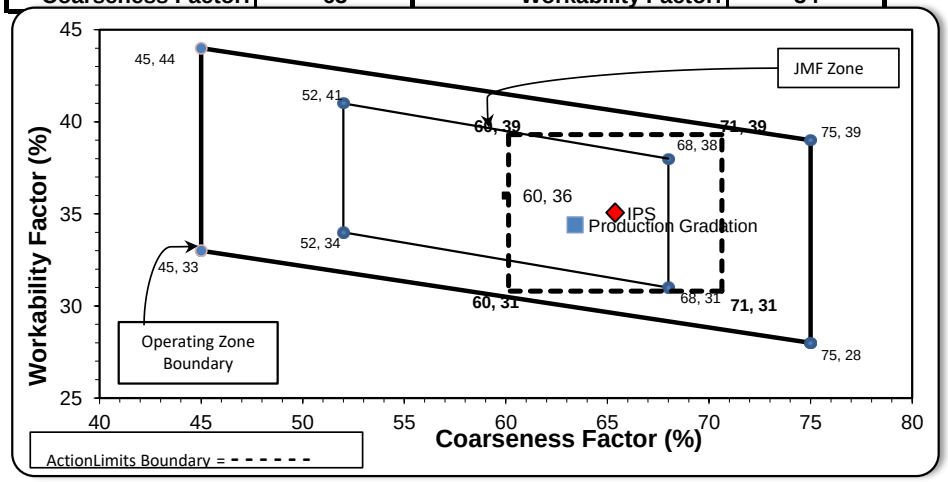
Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	42.8	100.0	100.0	83.2	16.2	16.8
3/4"	13.6	99.0	100.0	74.4	8.9	25.6
1/2"	4.2	80.3	100.0	65.8	8.5	34.2
3/8"	3.4	57.1	100.0	58.4	7.4	41.6
#4	2.7	12.0	95.3	42.4	16.0	57.6
#8	2.4	4.0	81.7	34.4	8.0	65.6
#16	2.2	2.6	66.6	27.9	6.5	72.1
#30	2.1	2.3	51.4	21.8	6.2	78.2
#50	2.0	2.2	24.4	11.0	10.8	89.0
#100	1.8	2.1	8.0	4.4	6.6	95.6
LBW	1.5	1.8	1.4	1.6	2.8	98.4

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:	63	Workability Factor:	34



Intial Production Sample (IPS)

Coarseness Factor:	65
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	83.9	15.7	16.1
3/4"	74.1	9.8	25.9
1/2"	64.3	9.7	35.7
3/8"	57.5	6.8	42.5
#4	44.5	13.1	55.5
#8	35.1	9.4	64.9
#16	27.9	7.2	72.1
#30	21.7	6.2	78.3
#50	12.6	9.1	87.4
#100	3.5	9.1	96.5
LBW	1.2	2.4	98.8

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-O2**

Contractor: _____

Sample Date: 9/21/20

Concrete Grade: **P1M**

Dates Test Represents: 9/22/2020 through 9/28/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	900	5.50	2.62	29.3
2NS	63-115	Ray Rd	1250	7.56	2.65	40.7
		Total Wt	**3070**	**18.69**		100.0

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.0	100.0	100.0	99.4	0.6	0.6
1"	42.8	100.0	100.0	82.9	16.5	17.1
3/4"	13.6	99.0	100.0	73.8	9.0	26.2
1/2"	4.2	80.3	100.0	65.5	8.3	34.5
3/8"	3.4	57.1	100.0	58.5	7.0	41.5
#4	2.7	12.0	98.0	44.2	14.2	55.8
#8	2.4	4.0	80.5	34.7	9.6	65.3
#16	2.2	2.6	63.3	27.2	7.5	72.8
#30	2.1	2.3	47.2	20.5	6.7	79.5
#50	2.0	2.2	22.6	10.4	10.1	89.6
#100	1.8	2.1	4.3	2.9	7.5	97.1
LBW	1.5	1.8	0.5	1.2	1.7	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.

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

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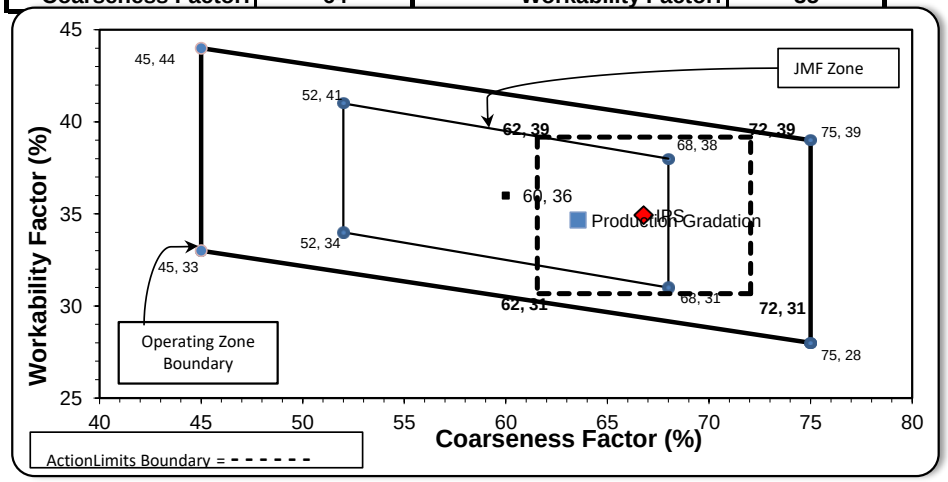

Intial Production Sample (IPS)

Coarseness Factor:	67
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"	85.0	15.0	15.0
3/4"	72.3	12.7	27.7
1/2"	64.5	7.8	35.5
3/8"	56.5	8.0	43.5
#4	42.7	13.8	57.3
#8	34.9	7.8	65.1
#16	29.0	5.9	71.0
#30	21.0	8.0	79.0
#50	8.2	12.8	91.8
#100	1.6	6.5	98.4
LBW	0.7	0.9	99.3

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Approved By: