Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-101**

Contractor: _____

Sample Date: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1020	6.24	2.62	33.2
IA	71-47	Presque Isle	850	5.20	2.62	27.7
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"	100.0	100.0	100.0	100.0	0.0	0.0
1"	43.0	100.0	100.0	81.1	18.9	18.9
3/4"	14.0	99.0	100.0	71.1	9.9	28.9
1/2"	2.6	81.2	100.0	62.4	8.7	37.6
3/8"	1.8	54.0	100.0	54.6	7.8	45.4
#4	1.5	10.7	98.1	41.8	12.8	58.2
#8	1.4	4.2	82.7	34.0	7.9	66.0
#16	1.3	2.8	67.7	27.7	6.3	72.3
#30	1.3	2.5	50.7	20.9	6.7	79.1
#50	1.3	2.4	26.2	11.3	9.6	88.7
#100	1.2	2.3	6.6	3.6	7.7	96.4
LBW	1.0	2.1	0.9	1.3	2.3	98.7

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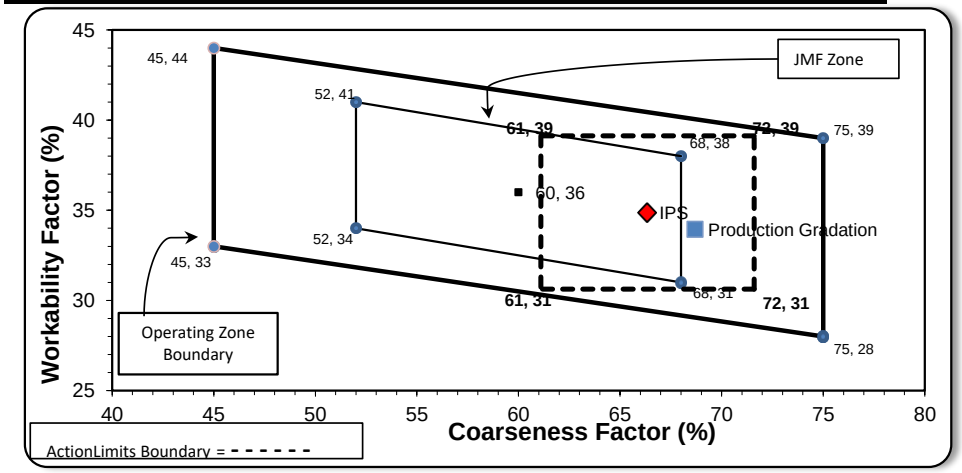
Farmington Hills, MI 48336

*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:	69	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

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Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Contractor:

Sample Date: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1320	7.86	2.69	42.3
IA	58-003	Stoneco	600	3.57	2.69	19.2
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"	68.6	100.0	100.0	86.7	13.3	13.3
3/4"	47.6	100.0	100.0	77.8	8.9	22.2
1/2"	7.7	83.2	100.0	57.7	20.1	42.3
3/8"	2.9	70.6	100.0	53.3	4.5	46.7
#4	1.0	26.8	99.2	43.7	9.5	56.3
#8	0.9	6.1	83.9	33.8	9.9	66.2
#16	0.8	2.7	65.8	26.2	7.7	73.8
#30	0.6	2.1	48.5	19.3	6.9	80.7
#50	0.6	1.8	20.5	8.5	10.8	91.5
#100	0.5	1.6	3.8	2.0	6.5	98.0
LBW	0.3	1.2	0.3	0.5	1.5	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.

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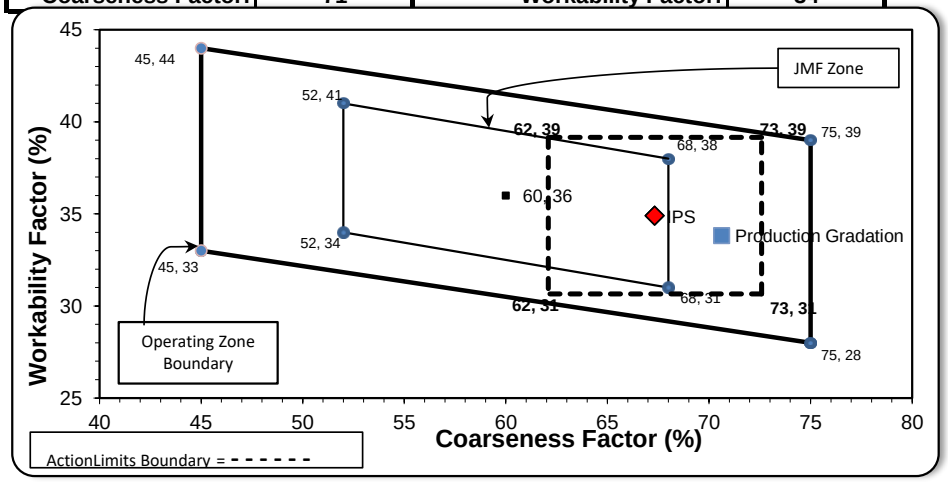
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	71	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

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Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-12**

Contractor:

Sample Date: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	850	5.20	2.62	27.7
IA	71-47	Presque Isle	970	5.93	2.62	31.6
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"	97.6	100.0	100.0	99.3	0.7	0.7
1"	38.9	100.0	100.0	83.1	16.3	16.9
3/4"	6.5	97.8	100.0	73.4	9.7	26.6
1/2"	2.6	73.3	100.0	64.6	8.8	35.4
3/8"	2.0	49.7	100.0	57.0	7.6	43.0
#4	1.9	14.6	98.1	45.1	11.9	54.9
#8	1.8	5.6	80.5	35.0	10.0	65.0
#16	1.7	3.5	63.4	27.4	7.7	72.6
#30	1.7	3.0	47.8	20.9	6.5	79.1
#50	1.6	2.6	25.0	11.4	9.4	88.6
#100	1.6	2.4	5.5	3.4	8.0	96.6
LBW	1.2	1.6	0.8	1.2	2.3	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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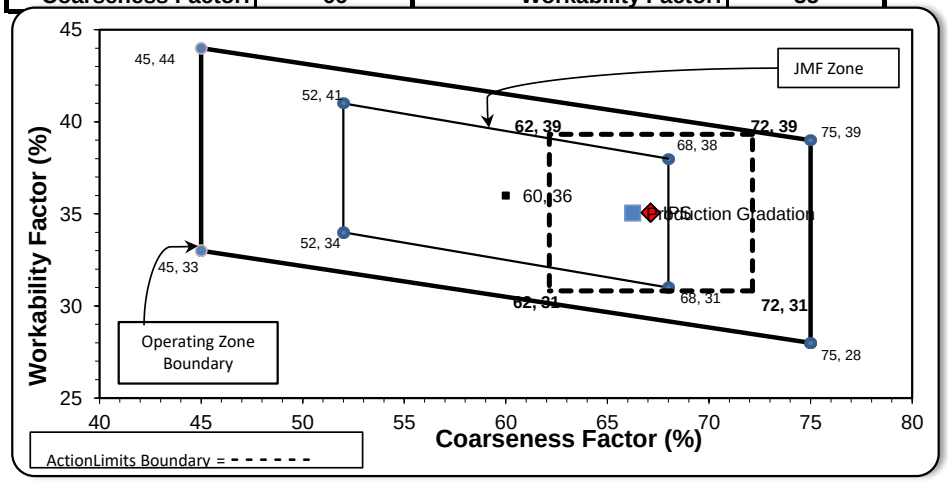
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	66	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

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Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Contractor:

Sample Date: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
CA	71-47	Presque Isle	850	5.20	2.62	27.7
IA	71-47	Presque Isle	1020	6.24	2.62	33.2
2NS	95-013	Smelter Bay	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"	97.6	100.0	100.0	99.3	0.7	0.7
1"	38.9	100.0	100.0	83.1	16.3	16.9
3/4"	6.5	97.8	100.0	73.4	9.7	26.6
1/2"	2.6	73.3	100.0	64.2	9.2	35.8
3/8"	2.0	49.7	100.0	56.2	8.0	43.8
#4	1.9	14.6	96.3	43.0	13.1	57.0
#8	1.8	5.6	82.1	34.5	8.6	65.5
#16	1.7	3.5	66.0	27.4	7.0	72.6
#30	1.7	3.0	46.5	19.6	7.8	80.4
#50	1.6	2.6	21.5	9.7	9.9	90.3
#100	1.6	2.4	5.7	3.5	6.2	96.5
LBW	1.2	1.6	1.1	1.3	2.2	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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

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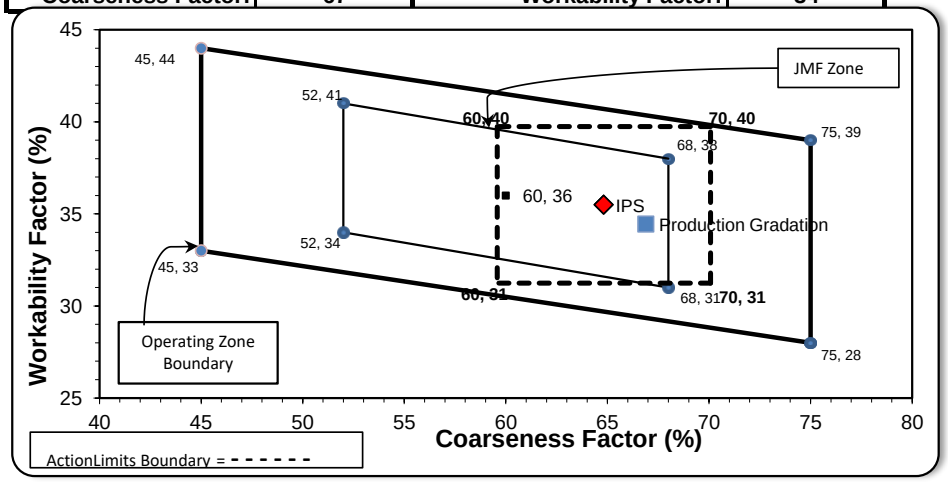
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	67	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"	99.4	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

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Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

Contractor:

Sample Date: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	850	5.20	2.62	27.7
IA	71-47	Presque Isle	1020	6.24	2.62	33.2
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"	97.6	100.0	100.0	99.3	0.7	0.7
1"	38.9	100.0	100.0	83.1	16.3	16.9
3/4"	6.5	97.8	100.0	73.4	9.7	26.6
1/2"	2.6	73.3	100.0	64.2	9.2	35.8
3/8"	2.0	49.7	100.0	56.2	8.0	43.8
#4	1.9	14.6	97.4	43.4	12.7	56.6
#8	1.8	5.6	83.8	35.1	8.3	64.9
#16	1.7	3.5	67.9	28.2	6.9	71.8
#30	1.7	3.0	47.7	20.1	8.1	79.9
#50	1.6	2.6	20.4	9.3	10.8	90.7
#100	1.6	2.4	3.0	2.4	6.9	97.6
LBW	1.2	1.6	0.7	1.1	1.3	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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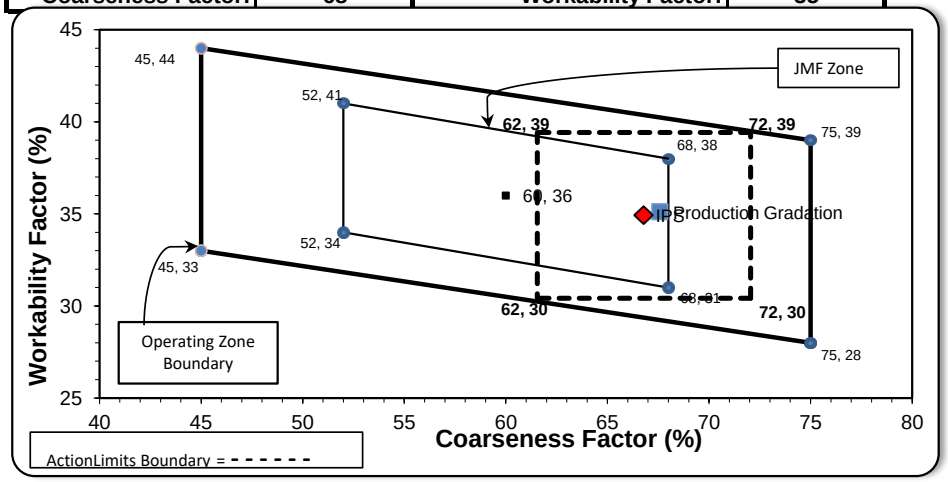
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	68	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

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Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

Contractor: _____

Sample Date: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	850	5.20	2.62	27.7
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"	100.0	100.0	100.0	100.0	0.0	0.0
1"	43.0	100.0	100.0	81.4	18.6	18.6
3/4"	14.0	99.0	100.0	71.7	9.7	28.3
1/2"	2.6	81.2	100.0	63.1	8.6	36.9
3/8"	1.8	54.0	100.0	55.3	7.8	44.7
#4	1.5	10.7	95.5	41.4	13.9	58.6
#8	1.4	4.2	80.6	33.6	7.8	66.4
#16	1.3	2.8	65.4	27.2	6.5	72.8
#30	1.3	2.5	50.2	21.1	6.1	78.9
#50	1.3	2.4	24.3	10.7	10.3	89.3
#100	1.2	2.3	7.5	4.0	6.7	96.0
LBW	1.0	2.1	1.2	1.4	2.6	98.6

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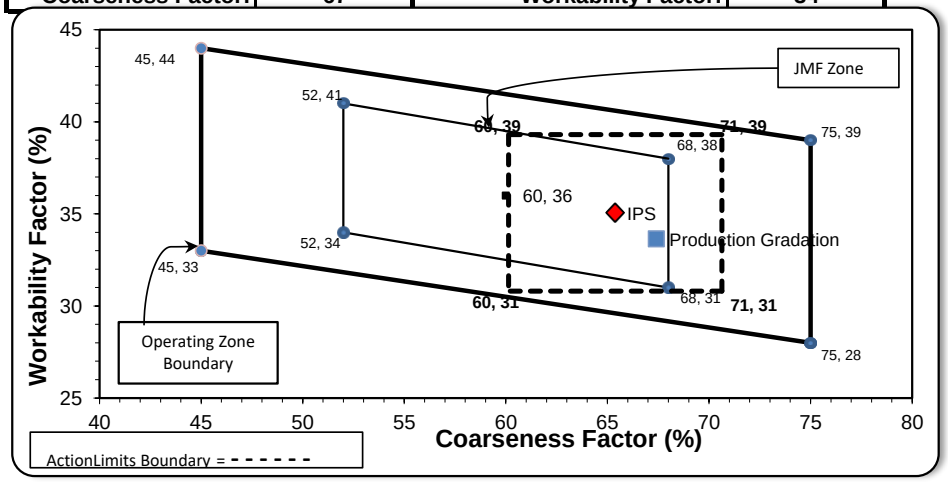
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom.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

Production Gradation ○ Batch Plant Gradations ◉ Aggregate SupplierGradations

Coarseness Factor:	67	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: 6/29/20

Concrete Grade: **P1M**

Dates Test Represents: 6/30/2020 through 7/6/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	850	5.20	2.62	27.7
IA	71-47	Presque Isle	970	5.93	2.62	31.6
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"	97.6	100.0	100.0	99.3	0.7	0.7
1"	38.9	100.0	100.0	83.1	16.3	16.9
3/4"	6.5	97.8	100.0	73.4	9.7	26.6
1/2"	2.6	73.3	100.0	64.6	8.8	35.4
3/8"	2.0	49.7	100.0	57.0	7.6	43.0
#4	1.9	14.6	98.1	45.1	11.9	54.9
#8	1.8	5.6	80.5	35.0	10.0	65.0
#16	1.7	3.5	63.4	27.4	7.7	72.6
#30	1.7	3.0	47.8	20.9	6.5	79.1
#50	1.6	2.6	25.0	11.4	9.4	88.6
#100	1.6	2.4	5.5	3.4	8.0	96.6
LBW	1.2	1.6	0.8	1.2	2.3	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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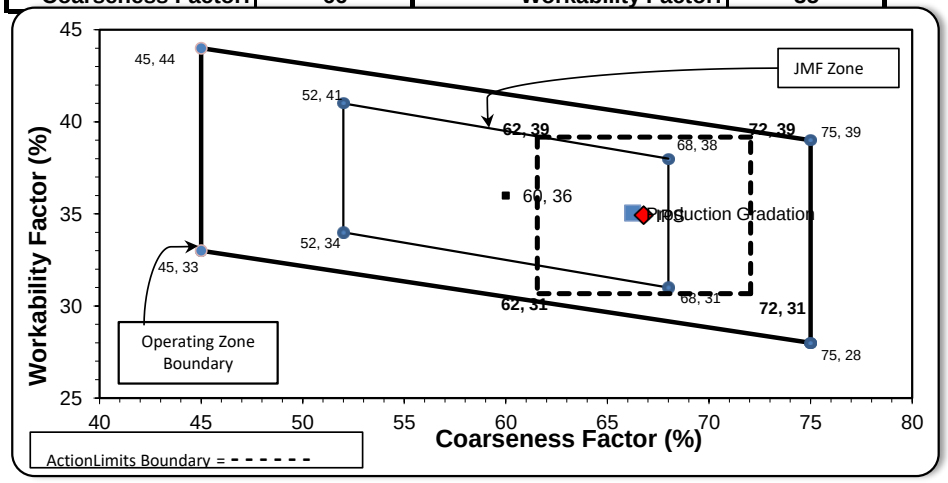
Farmington Hills, MI 48336

Production Gradation ○ Batch Plant Gradations ◉ Aggregate SupplierGradations

Coarseness Factor:	66	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"	72.3	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

PREPARED BY:
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