Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

Contractor:

Sample Date: 1/27/20

Concrete Grade: **S2M**

Dates Test Represents: 1/28/2020 through 2/3/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1670	10.21	2.62	54.8
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

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

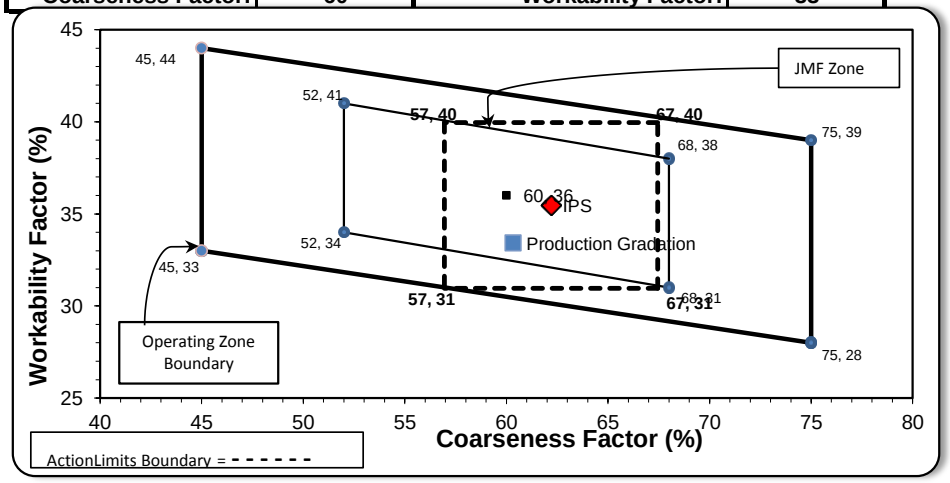
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.8	100.0	100.0	99.3	0.7	0.7
3/4"	87.4	100.0	100.0	93.1	6.2	6.9
1/2"	49.8	95.2	100.0	72.3	20.8	27.7
3/8"	28.5	79.2	100.0	59.8	12.4	40.2
#4	5.1	20.6	95.8	42.4	17.4	57.6
#8	3.0	6.5	78.0	33.4	9.0	66.6
#16	2.8	3.4	61.4	26.5	7.0	73.5
#30	2.6	2.9	46.9	20.5	6.0	79.5
#50	2.5	2.6	25.3	11.7	8.8	88.3
#100	2.4	2.4	5.6	3.7	8.0	96.3
LBW	1.9	2.0	0.8	1.5	2.2	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 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

Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	60	Workability Factor:	33



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: 1/27/20

Concrete Grade: **S2M**

Dates Test Represents: 1/28/2020 through 2/3/2020

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"	95.5	100.0	100.0	97.8	2.2	2.2
3/4"	74.3	100.0	100.0	87.4	10.4	12.6
1/2"	34.7	98.1	100.0	67.7	19.7	32.3
3/8"	15.9	92.0	100.0	57.7	9.9	42.3
#4	2.9	25.0	97.3	42.6	15.1	57.4
#8	2.3	7.6	84.6	35.3	7.3	64.7
#16	1.7	3.2	69.5	28.5	6.7	71.5
#30	1.6	2.1	51.2	21.2	7.4	78.8
#50	1.5	1.8	22.2	9.7	11.5	90.3
#100	1.4	1.6	3.7	2.3	7.4	97.7
LBW	1.2	1.5	0.3	0.9	1.4	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.

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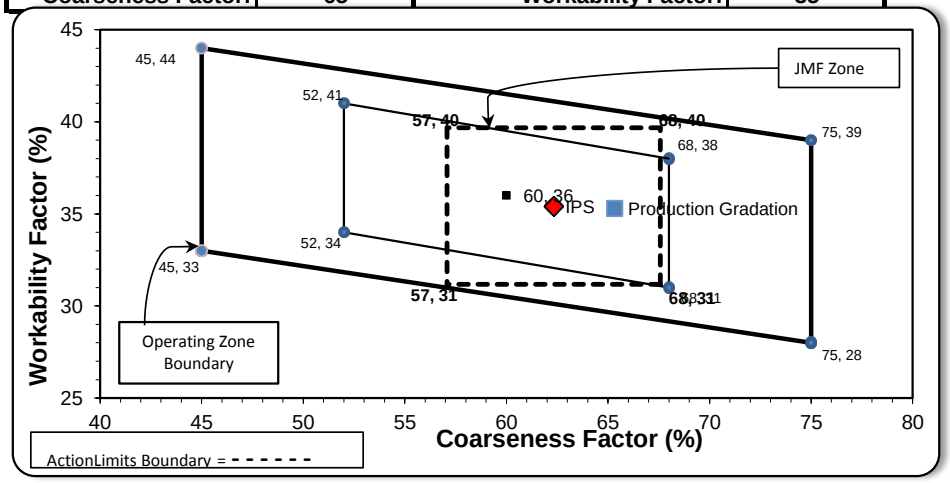
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	65	Workability Factor:	35



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: 1/27/20

Concrete Grade: **S2M**

Dates Test Represents: 1/28/2020 through 2/3/2020

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1850	11.32	2.62	60.7
26A	71-47	Presque Isle	0	0.00	2.62	0.0
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"	99.2	100.0	100.0	99.5	0.5	0.5
3/4"	89.5	100.0	100.0	93.6	5.9	6.4
1/2"	54.9	98.1	100.0	72.6	21.0	27.4
3/8"	35.6	92.0	100.0	60.9	11.7	39.1
#4	4.9	25.0	97.3	41.3	19.7	58.7
#8	2.3	7.6	84.6	34.7	6.6	65.3
#16	2.0	3.2	69.5	28.6	6.1	71.4
#30	1.9	2.1	51.2	21.3	7.3	78.7
#50	1.9	1.8	22.2	9.9	11.4	90.1
#100	1.8	1.6	3.7	2.5	7.3	97.5
LBW	1.6	1.5	0.3	1.1	1.5	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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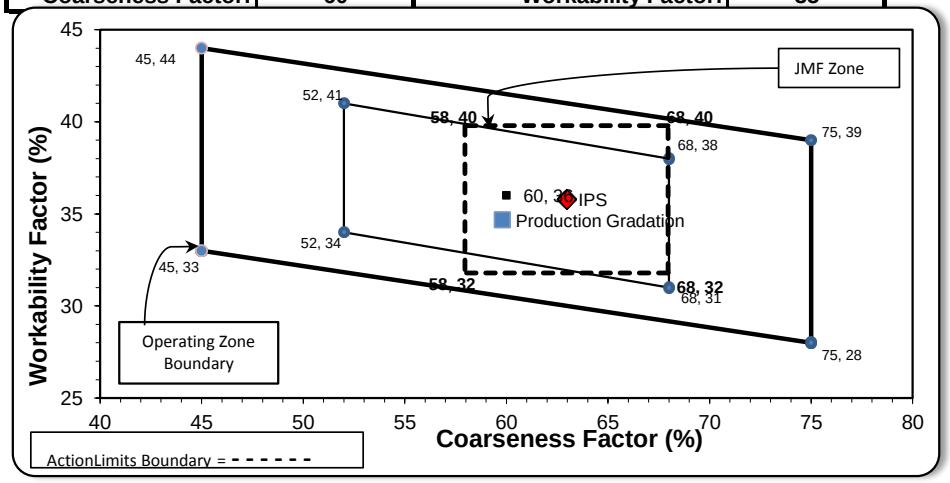
Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	60	Workability Factor:	35



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: 1/27/20

Concrete Grade: **S2M**

Dates Test Represents: 1/28/2020 through 2/3/2020

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	250	1.53	2.62	8.2
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"	95.5	100.0	100.0	97.8	2.2	2.2
3/4"	74.3	100.0	100.0	87.4	10.4	12.6
1/2"	34.7	95.2	100.0	67.5	19.9	32.5
3/8"	15.9	79.2	100.0	56.9	10.6	43.1
#4	2.9	20.6	95.8	43.9	13.0	56.1
#8	2.3	6.5	78.0	34.9	9.0	65.1
#16	1.7	3.4	61.4	27.3	7.6	72.7
#30	1.6	2.9	46.9	21.0	6.3	79.0
#50	1.5	2.6	25.3	11.7	9.3	88.3
#100	1.4	2.4	5.6	3.3	8.5	96.7
LBW	1.2	2.0	0.8	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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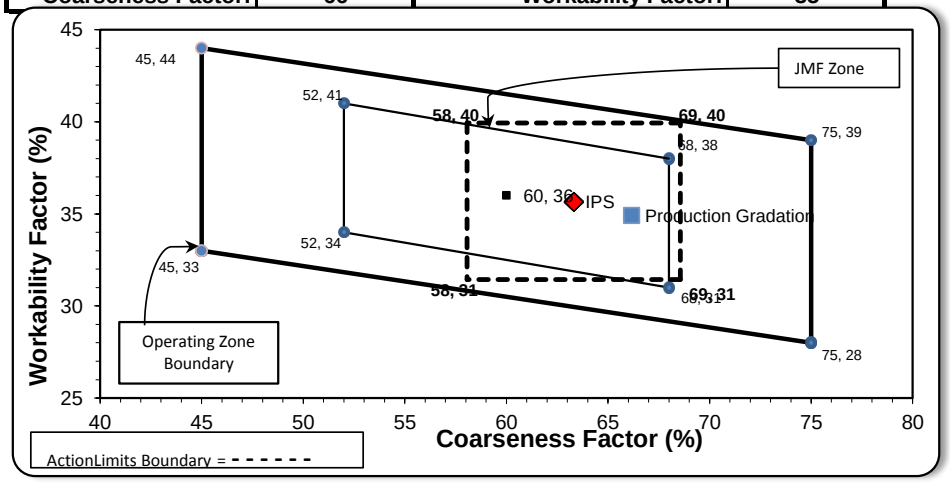
Coarseness Factor:	66	Workability Factor:	35



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:
SM, LLC Technical Service

Approved By: