

Aggregate Optimization Chart

PLANT #: **P-101**

Sample Date: 11/30/20

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/1/2020 through 12/7/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1675	10.25	2.62	54.8
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	75-051	Mid-Michigan	1230	7.41	2.66	40.3
Total Wt			3055	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"	98.9	100.0	100.0	99.4	0.6	0.6
3/4"	79.0	100.0	100.0	88.5	10.9	11.5
1/2"	42.5	99.3	100.0	68.4	20.0	31.6
3/8"	24.2	90.6	100.0	58.0	10.5	42.0
#4	2.9	21.5	98.7	42.4	15.6	57.6
#8	1.5	6.4	83.0	34.6	7.8	65.4
#16	1.3	3.1	66.0	27.4	7.1	72.6
#30	1.3	2.4	48.4	20.3	7.1	79.7
#50	1.2	2.2	22.6	9.9	10.5	90.1
#100	1.2	2.0	4.0	2.4	7.5	97.6
LBW	1.1	1.8	0.6	0.9	1.4	99.1

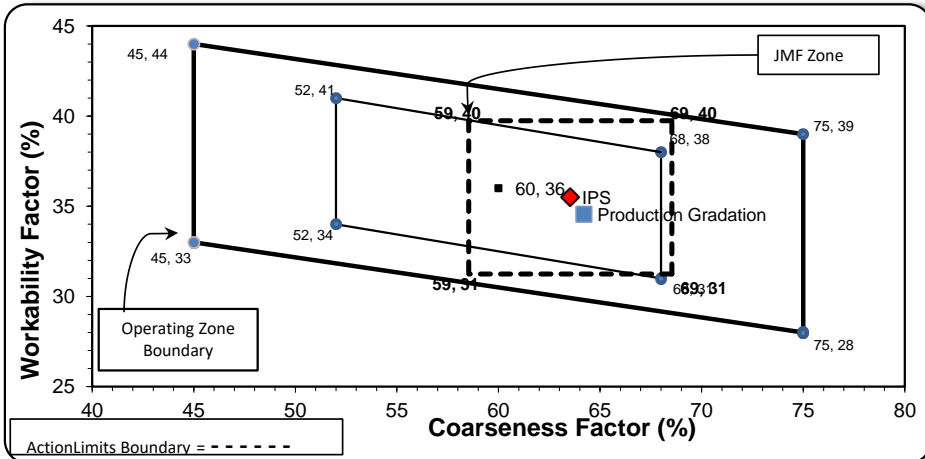
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	64	Workability Factor:	35
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Initial Production Sample (IPS)

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-32**

Sample Date: 11/30/20

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/1/2020 through 12/7/2020

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	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

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



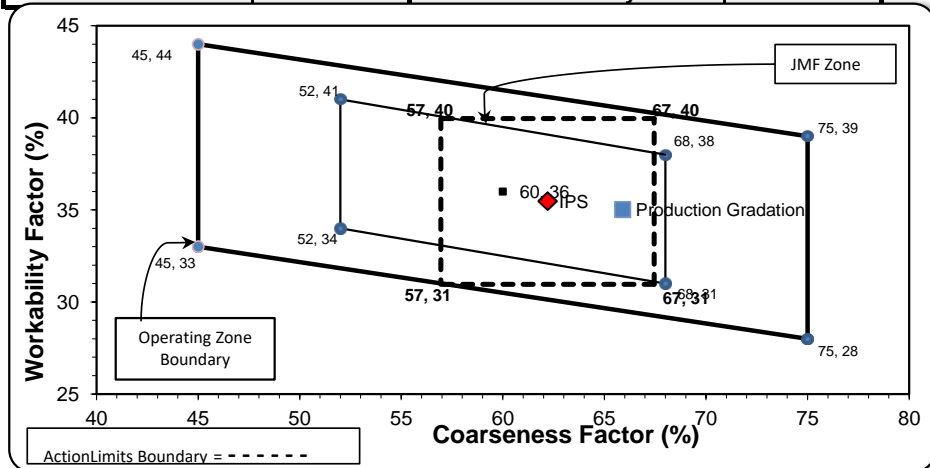
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.4	100.0	100.0	98.6	1.4	1.4
3/4"	73.2	100.0	100.0	85.3	13.3	14.7
1/2"	40.6	98.1	100.0	67.4	17.9	32.6
3/8"	23.7	78.9	100.0	57.2	10.2	42.8
#4	3.5	14.4	95.6	41.2	16.0	58.8
#8	2.2	4.6	83.3	35.0	6.2	65.0
#16	2.0	3.3	67.8	28.6	6.4	71.4
#30	2.0	2.8	47.3	20.3	8.3	79.7
#50	1.9	2.8	27.0	12.1	8.2	87.9
#100	1.8	2.8	7.2	4.0	8.0	96.0
LBW	1.3	1.8	1.3	1.3	2.7	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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	66	Workability Factor:	35
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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

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Aggregate Optimization Chart

PLANT #: **P-36**

Sample Date: 11/30/20

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/1/2020 through 12/7/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1650	10.09	2.62	54.1
26A	71-47	Presque Isle	200	1.22	2.62	6.6
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
Total Wt			3050	18.57		100.0

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



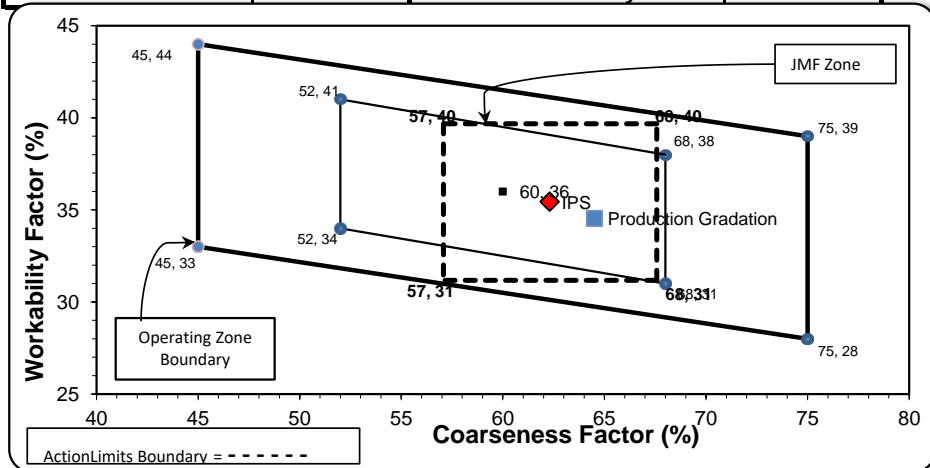
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.3	100.0	100.0	98.5	1.5	1.5
3/4"	73.5	100.0	100.0	85.7	12.9	14.3
1/2"	41.5	98.1	100.0	68.2	17.4	31.8
3/8"	24.5	78.9	100.0	57.8	10.5	42.2
#4	4.7	14.4	97.0	41.7	16.1	58.3
#8	2.7	4.6	83.3	34.5	7.1	65.5
#16	2.1	3.3	68.4	28.3	6.3	71.7
#30	1.8	2.8	47.1	19.7	8.6	80.3
#50	1.7	2.8	17.2	7.9	11.8	92.1
#100	1.7	2.8	2.3	2.0	5.9	98.0
LBW	1.4	1.8	0.4	1.0	1.0	99.0

*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
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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-02**

Sample Date: 11/30/20

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 12/1/2020 through 12/7/2020

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%



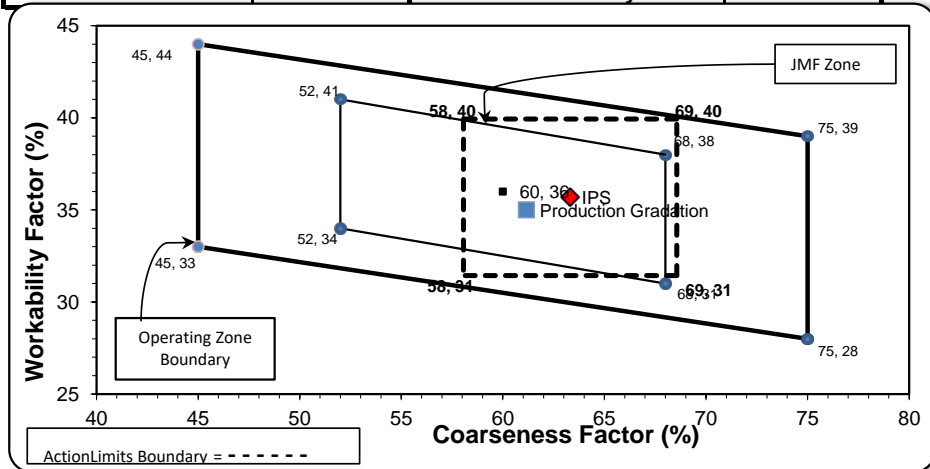
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 30701 W. 10 Mile Rd.
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.3	100.0	100.0	98.6	1.4	1.4
3/4"	73.5	100.0	100.0	86.5	12.1	13.5
1/2"	41.5	98.1	100.0	70.1	16.4	29.9
3/8"	24.5	78.9	100.0	60.2	9.9	39.8
#4	4.7	14.4	97.2	44.8	15.5	55.2
#8	2.7	4.6	78.2	35.0	9.8	65.0
#16	2.1	3.3	60.6	27.1	7.9	72.9
#30	1.8	2.8	44.9	20.2	6.9	79.8
#50	1.7	2.8	20.7	9.9	10.4	90.1
#100	1.7	2.8	3.8	2.7	7.2	97.3
LBW	1.4	1.8	0.7	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.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	61	Workability Factor:	35
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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"	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: