

Aggregate Optimization Chart

PLANT #: **P-103**

Sample Date: 12/7/20

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 12/8/2020 through 12/14/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	52.5
26A	58-003	Stoneco	255	1.52	2.69	8.6
2NS	63-114	Highland	1150	6.95	2.65	38.9
Total Wt			2955	17.71		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	83.8	100.0	100.0	91.5	8.5	8.5
1/2"	46.2	99.8	100.0	71.8	19.7	28.2
3/8"	25.0	89.1	100.0	59.7	12.0	40.3
#4	3.5	10.1	98.7	41.1	18.6	58.9
#8	1.4	2.4	81.8	32.8	8.3	67.2
#16	1.0	1.4	63.3	25.3	7.5	74.7
#30	0.9	1.0	45.7	18.3	6.9	81.7
#50	0.7	0.9	19.6	8.1	10.3	91.9
#100	0.6	0.8	3.4	1.7	6.4	98.3
LBW	0.5	0.6	0.3	0.4	1.3	99.6

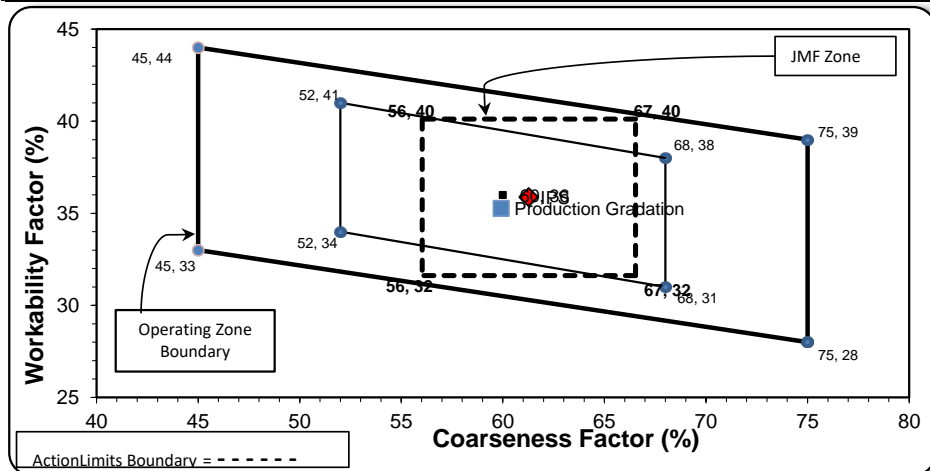
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	60	Workability Factor:	33	Adjusted WF	35.3
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Coarseness Factor:	61
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"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:
 SM, LLC Technical Service

Approved BY:

Aggregate Optimization Chart

PLANT #: **P-32**

Sample Date: 12/7/20

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 12/8/2020 through 12/14/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
Total Wt			2905	17.69		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"	99.3	100.0	100.0	99.6	0.4	0.4
3/4"	86.2	100.0	100.0	92.6	7.0	7.4
1/2"	43.5	95.1	100.0	69.4	23.2	30.6
3/8"	22.0	75.7	100.0	56.6	12.8	43.4
#4	3.0	25.6	96.7	41.6	14.9	58.4
#8	2.2	10.4	82.0	34.4	7.3	65.6
#16	2.1	5.3	65.7	27.5	6.9	72.5
#30	2.0	2.3	44.6	18.9	8.6	81.1
#50	2.0	1.8	21.0	9.5	9.4	90.5
#100	1.9	1.8	5.7	3.4	6.1	96.6
LBW	1.5	1.7	1.5	1.5	1.9	98.5

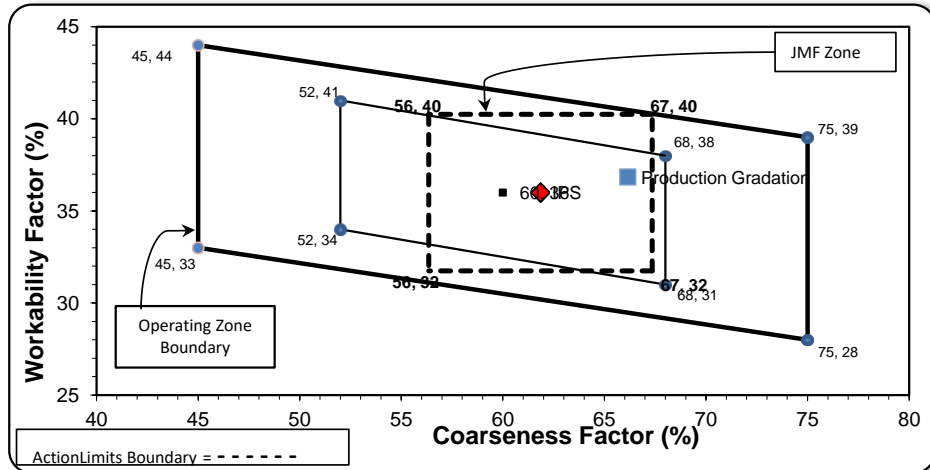
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	66	Workability Factor:	34	Adjusted WF	36.9
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Coarseness Factor:	62
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"	95.0	5.0	5.0
1/2"	72.3	22.8	27.7
3/8"	60.4	11.8	39.6
#4	42.6	17.8	57.4
#8	36.0	6.6	64.0
#16	29.5	6.5	70.5
#30	20.3	9.2	79.7
#50	9.5	10.8	90.5
#100	3.4	6.1	96.6
LBW	1.3	2.1	98.7

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 SM, LLC Technical Service

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Aggregate Optimization Chart

PLANT #: **P-36**

Sample Date: 12/7/20

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 12/8/2020 through 12/14/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.4
26A	71-47	Presque Isle	255	1.56	2.62	8.8
2NS	63-92	Grange Hall	1100	6.65	2.65	37.8
Total Wt			2910	17.72		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"	96.0	100.0	100.0	97.9	2.1	2.1
3/4"	65.0	100.0	100.0	81.3	16.6	18.7
1/2"	31.7	95.1	100.0	63.1	18.2	36.9
3/8"	20.1	75.7	100.0	55.2	7.9	44.8
#4	6.1	25.6	97.2	42.2	12.9	57.8
#8	2.6	10.4	83.9	34.0	8.2	66.0
#16	2.3	5.3	68.6	27.6	6.4	72.4
#30	2.2	2.3	48.5	19.7	7.9	80.3
#50	2.0	1.8	19.4	8.6	11.2	91.4
#100	1.9	1.8	3.1	2.3	6.2	97.7
LBW	1.5	1.7	0.5	1.1	1.2	98.9

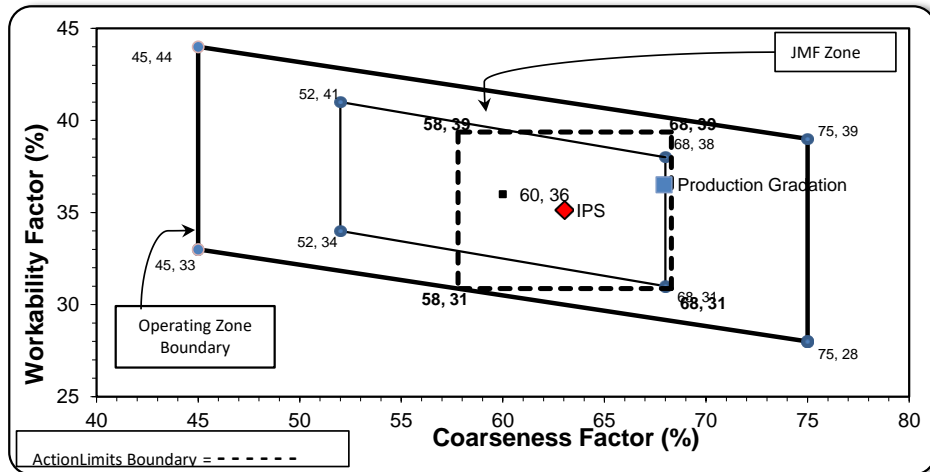
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	68	Workability Factor:	34	Adjusted WF	36.5
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Coarseness Factor:	63
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"	90.3	8.8	9.7
1/2"	69.2	21.1	30.8
3/8"	59.1	10.1	40.9
#4	41.8	17.3	58.2
#8	35.1	6.6	64.9
#16	28.5	6.6	71.5
#30	21.2	7.3	78.8
#50	8.7	12.5	91.3
#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

PLANT #: **P-02**

Sample Date: 12/7/20

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 12/8/2020 through 12/14/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt			2905	17.69		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"	96.0	100.0	100.0	97.9	2.1	2.1
3/4"	65.0	100.0	100.0	81.3	16.6	18.7
1/2"	31.7	95.1	100.0	63.1	18.2	36.9
3/8"	20.1	75.7	100.0	55.6	7.5	44.4
#4	6.1	25.6	96.7	43.3	12.2	56.7
#8	2.6	10.4	79.2	33.5	9.8	66.5
#16	2.3	5.3	63.1	26.6	6.9	73.4
#30	2.2	2.3	47.2	20.0	6.6	80.0
#50	2.0	1.8	21.7	9.8	10.2	90.2
#100	1.9	1.8	4.0	2.7	7.1	97.3
LBW	1.5	1.7	0.6	1.2	1.6	98.8

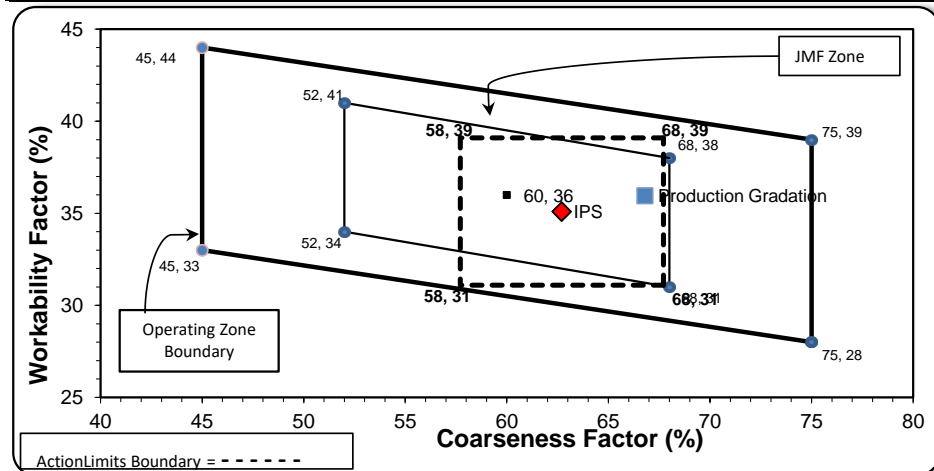
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	67	Workability Factor:	33	Adjusted WF	36.0
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Coarseness Factor:	63
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"	95.1	4.9	4.9
1/2"	74.6	20.5	25.4
3/8"	59.3	15.3	40.7
#4	42.1	17.2	57.9
#8	35.1	7.1	64.9
#16	29.2	5.9	70.8
#30	21.9	7.3	78.1
#50	9.6	12.4	90.4
#100	2.4	7.2	97.6
LBW	0.9	1.5	99.1

PREPARED BY:
 SM, LLC Technical Service

Approved By: