

Aggregate Optimization Chart

PLANT #: **P-20**

Sample Date: 3/8/21 Concrete Grade: **DM**

Dates Test Represents: 3/9/2021 through 3/15/2021

Contractor: _____

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	250	1.53	2.62	8.6
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
Total Wt			2905	17.69		100.0

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



Superior Materials, LLC
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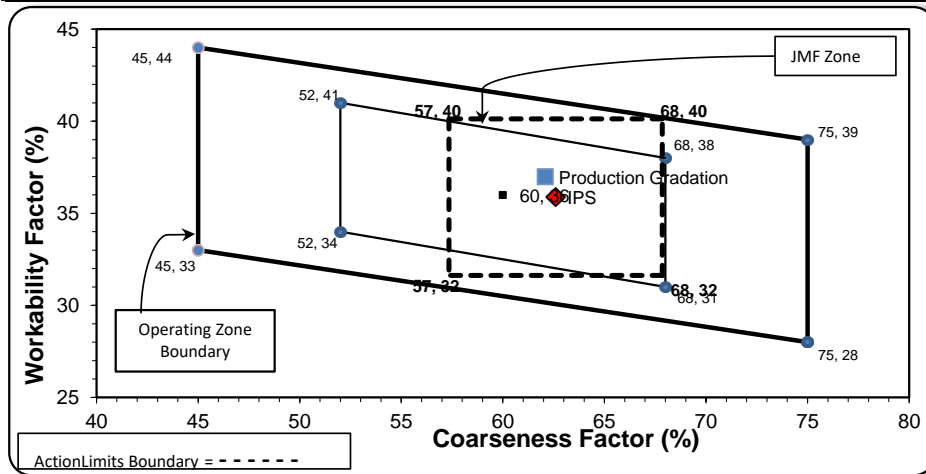
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.2	100.0	100.0	99.0	1.0	1.0
3/4"	85.7	100.0	100.0	92.3	6.7	7.7
1/2"	46.0	98.3	100.0	70.9	21.4	29.1
3/8"	25.6	90.1	100.0	59.3	11.6	40.7
#4	5.4	22.0	97.5	41.7	17.6	58.3
#8	2.8	5.8	85.8	34.5	7.2	65.5
#16	1.8	3.4	70.2	27.8	6.6	72.2
#30	1.6	2.9	49.6	19.9	8.0	80.1
#50	1.5	2.7	20.5	8.8	11.1	91.2
#100	1.4	2.5	3.0	2.1	6.7	97.9
LBW	1.3	2.3	0.8	1.2	0.9	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:	62	Workability Factor:	34	Adjusted WF	37.0
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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"	89.2	10.8	10.8
1/2"	68.4	20.8	31.6
3/8"	59.9	8.6	40.1
#4	43.0	16.9	57.0
#8	35.9	7.1	64.1
#16	29.0	6.8	71.0
#30	21.3	7.7	78.7
#50	9.9	11.4	90.1
#100	2.4	7.5	97.6
LBW	1.2	1.2	98.8

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-32**

Contractor: _____

Sample Date: 3/8/21

Concrete Grade: **DM**

Dates Test Represents: 3/9/2021 through 3/15/2021

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1400	8.56	2.62	48.2
26A	71-47	Presque Isle	355	2.17	2.62	12.2
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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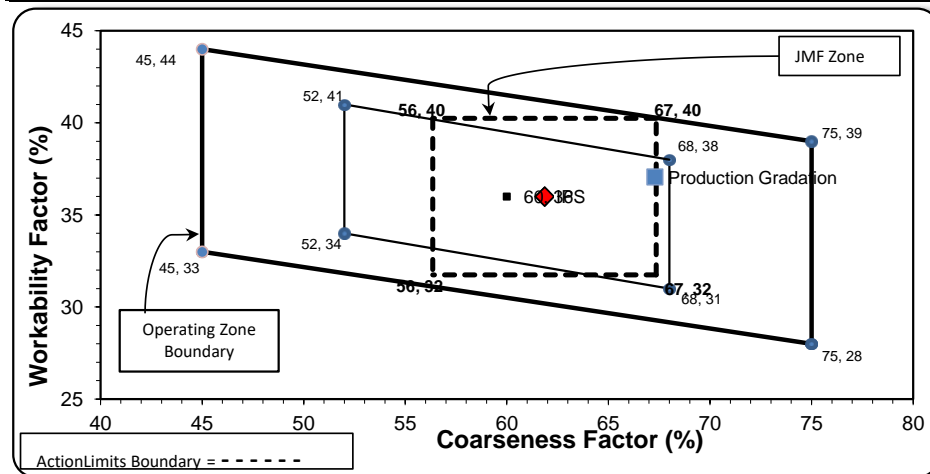
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.2	100.0	100.0	98.7	1.3	1.3
3/4"	70.7	100.0	100.0	85.9	12.8	14.1
1/2"	30.1	97.3	100.0	66.0	19.9	34.0
3/8"	11.6	88.4	100.0	56.0	10.0	44.0
#4	2.4	14.7	96.2	41.0	14.9	59.0
#8	2.0	4.2	83.6	34.6	6.5	65.4
#16	1.9	2.1	67.4	27.9	6.7	72.1
#30	1.8	1.7	45.2	19.0	8.9	81.0
#50	1.7	1.5	18.3	8.2	10.7	91.8
#100	1.5	1.4	4.4	2.6	5.6	97.4
LBW	1.2	1.2	0.9	1.1	1.6	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:	67	Workability Factor:	35	Adjusted WF	37.1
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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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: **P-02**

Sample Date: 3/8/21 Concrete Grade: DM

Dates Test Represents: 3/9/2021 through 3/15/2021

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	300	1.83	2.62	10.3
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"	99.2	100.0	100.0	99.6	0.4	0.4
3/4"	75.5	100.0	100.0	87.7	11.9	12.3
1/2"	33.2	97.3	100.0	66.3	21.5	33.7
3/8"	16.9	88.4	100.0	57.2	9.1	42.8
#4	2.9	14.7	97.5	41.6	15.6	58.4
#8	1.8	4.2	79.8	32.9	8.6	67.1
#16	1.7	2.1	61.4	25.4	7.6	74.6
#30	1.6	1.7	44.5	18.6	6.8	81.4
#50	1.5	1.5	19.8	8.7	9.8	91.3
#100	1.4	1.4	3.4	2.2	6.6	97.8
LBW	1.1	1.2	0.5	0.9	1.3	99.1

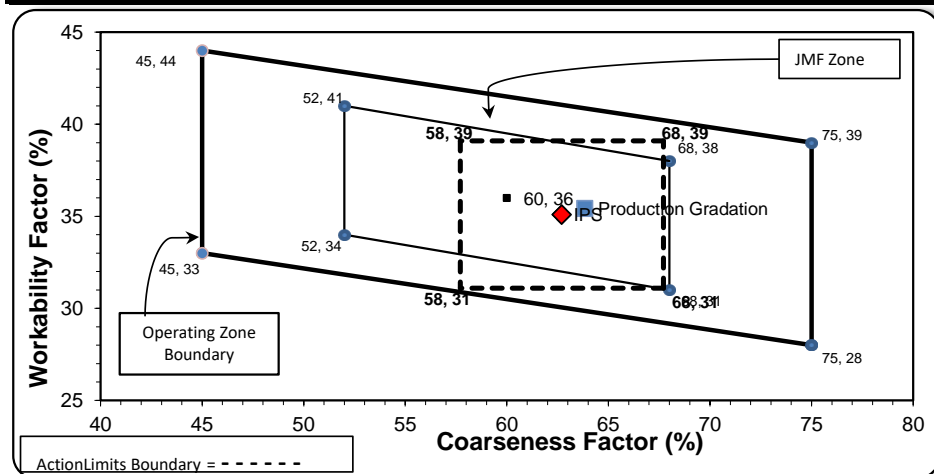
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:	64	Workability Factor:	33	35.4	Coarseness Factor:	63
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Workability Factor:	35
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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

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Approved By: