

Aggregate Optimization Chart

PLANT #: **P-32**

Sample Date: **10/5/20**

Dates Test Represents: **10/6/2020** through **10/12/2020**

Concrete Grade: **S2M**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1520	9.30	2.62	49.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

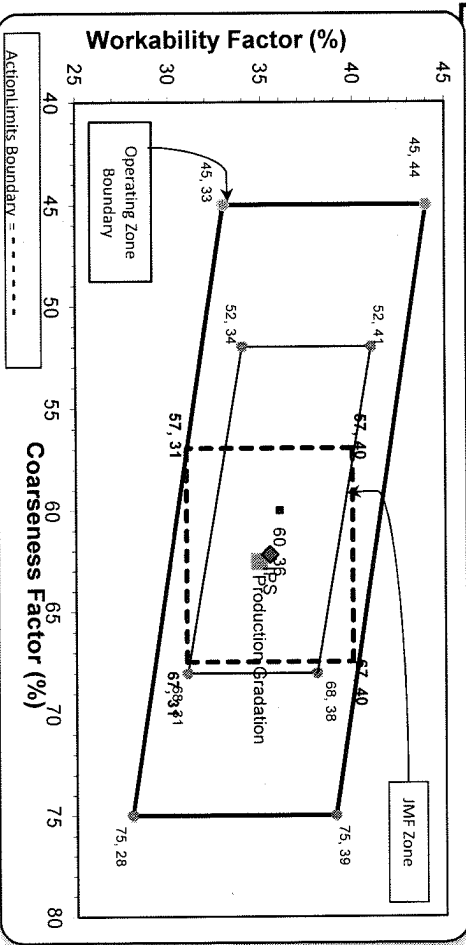
<----- Verify this number is 100%

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"	96.8	100.0	100.0	98.4	1.6	1.6
3/4"	75.0	100.0	100.0	87.5	10.9	12.5
1/2"	37.3	97.1	100.0	68.5	19.1	31.5
3/8"	21.2	85.3	100.0	59.3	9.2	40.7
#4	4.3	19.9	95.0	42.4	16.9	57.6
#8	2.5	5.8	82.0	34.9	7.5	65.1
#16	2.2	3.0	64.5	27.4	7.5	72.6
#30	2.1	2.4	44.6	19.3	8.1	80.7
#50	2.0	2.2	20.2	9.4	9.9	90.6
#100	1.8	2.0	9.4	4.9	4.5	95.1
LBW	1.5	1.8	1.4	1.5	3.4	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

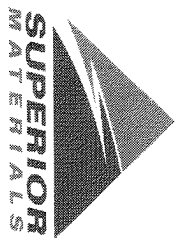
Coarseness Factor: **63** Workability Factor: **35**



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



Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
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PREPARED BY:
 SM, LLC Technical Service

Approved By: _____

Aggregate Optimization Chart

PLANT #: **P-36**

Sample Date: 10/5/20

Dates Test Represents: 10/6/2020 through 10/12/2020

Concrete Grade: **S2M**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (ss)	ft ³	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

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"	96.6	100.0	100.0	98.3	1.7	1.7
3/4"	82.1	100.0	100.0	91.2	7.1	8.8
1/2"	47.1	97.9	100.0	73.7	17.5	26.3
3/8"	27.9	87.2	100.0	63.1	10.7	36.9
#4	5.0	20.6	97.4	43.1	19.9	56.9
#8	2.5	5.8	83.9	34.9	8.2	65.1
#16	2.0	3.2	68.4	28.3	6.6	71.7
#30	2.0	2.7	47.9	20.1	8.1	79.9
#50	1.8	2.5	18.5	8.5	11.7	91.5
#100	1.7	2.4	6.3	3.6	4.9	96.4
LBW	1.2	1.8	0.9	1.2	2.4	98.8

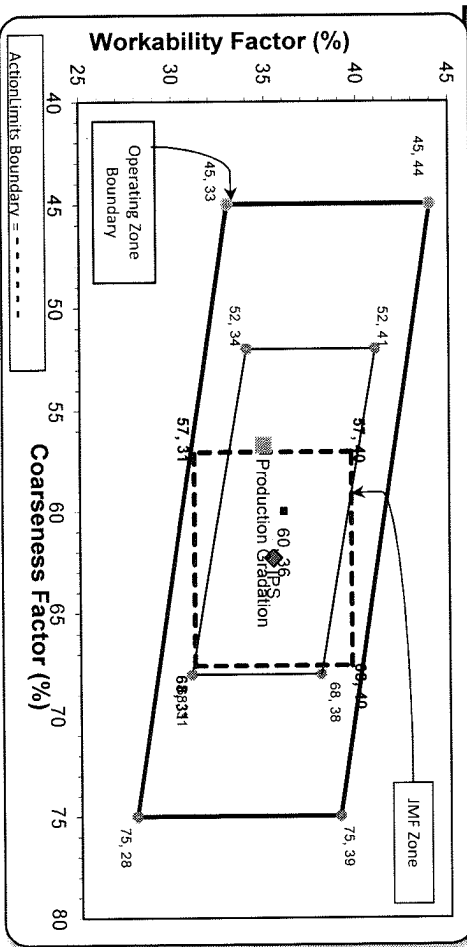


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*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max., #100 and #200 sieves.
 *% Retained must 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 Supplier Gradations

Coarseness Factor: **57** Workability Factor: **35**



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"	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-02**

Contractor: _____

Sample Date: **10/5/20**

Concrete Grade: **S2M**

Dates Test Represents: **10/6/2020** through **10/12/2020**

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						100.0

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

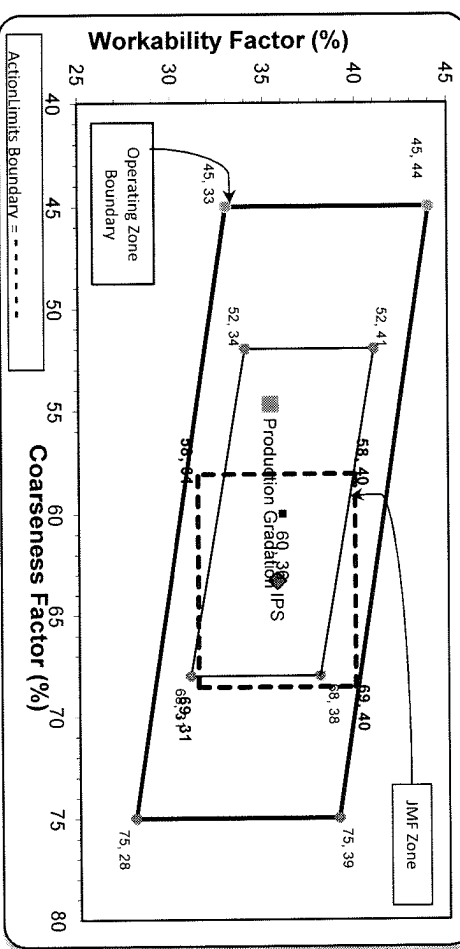
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.5	100.0	100.0	98.7	1.3	1.3
3/4"	88.8	100.0	100.0	94.3	4.4	5.7
1/2"	55.2	97.5	100.0	77.1	17.2	22.9
3/8"	32.3	85.4	100.0	64.6	12.4	35.4
#4	5.4	18.0	98.2	45.8	18.9	54.2
#8	2.2	4.7	79.6	35.4	10.4	64.6
#16	1.8	2.4	62.8	27.8	7.5	72.2
#30	1.7	2.0	47.0	21.0	6.8	79.0
#50	1.6	1.8	21.1	9.9	11.1	90.1
#100	1.5	1.6	4.1	2.6	7.3	97.4
LBW	1.2	1.4	0.7	1.0	1.6	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.

SUPERIOR MATERIALS
 Superior Materials, LLC
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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **55** 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"	95.6	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

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