

Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

PLANT #: **P-102**

Sample Date: 8/6/18

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 8/7/2018 through 8/13/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	47.5
26A	58-003	Stoneco	400	2.38	2.69	12.7
2NS	38-046	Chelsea	1260	7.62	2.65	39.9
Total Wt			3160	18.94		100.0

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



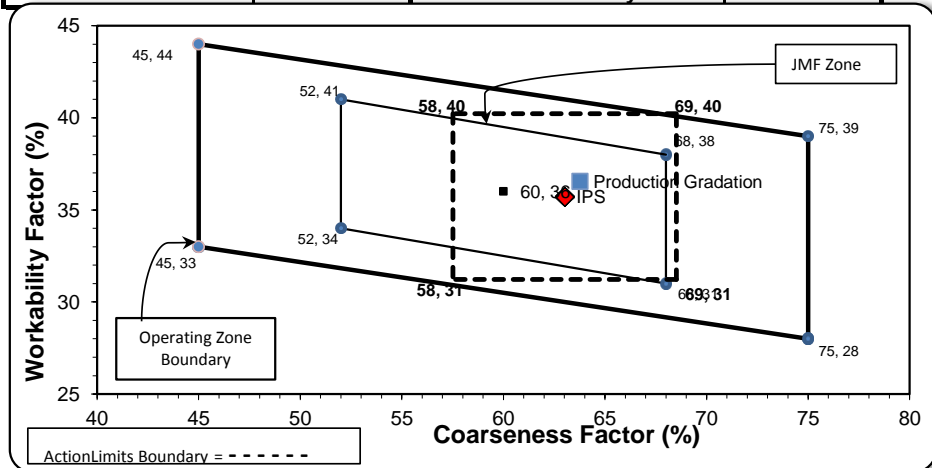
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	78.0	100.0	100.0	89.6	10.3	10.4
1/2"	35.4	99.7	100.0	69.3	20.3	30.7
3/8"	17.6	89.3	100.0	59.5	9.8	40.5
#4	3.0	18.0	100.0	43.6	16.0	56.4
#8	1.0	4.6	89.0	36.5	7.0	63.5
#16	0.7	1.8	67.0	27.3	9.3	72.7
#30	0.6	1.2	47.0	19.2	8.1	80.8
#50	0.6	1.0	26.0	10.8	8.4	89.2
#100	0.5	1.0	6.0	2.8	8.0	97.2
LBW	0.5	0.8	1.0	0.7	2.0	99.3

*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:	37
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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"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

PLANT #: **P-32**

Sample Date: 8/6/18

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 8/7/2018 through 8/13/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1580	9.66	2.62	50.8
26A	71-47	Presque Isle	250	1.53	2.62	8.0
2NS	95-13	Smelter Bay	1280	7.74	2.65	41.2
Total Wt			3110	18.93		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	90.0	100.0	100.0	94.9	5.1	5.1
1/2"	53.7	95.0	100.0	76.1	18.8	23.9
3/8"	26.8	84.2	100.0	61.5	14.5	38.5
#4	3.4	25.8	96.2	43.4	18.1	56.6
#8	1.4	9.2	83.0	35.6	7.8	64.4
#16	1.2	4.7	66.0	28.2	7.5	71.8
#30	1.1	3.5	44.6	19.2	9.0	80.8
#50	1.0	3.1	17.8	8.1	11.1	91.9
#100	1.0	2.7	4.0	2.4	5.7	97.6
LBW	1.4	2.0	0.6	1.1	1.3	98.9

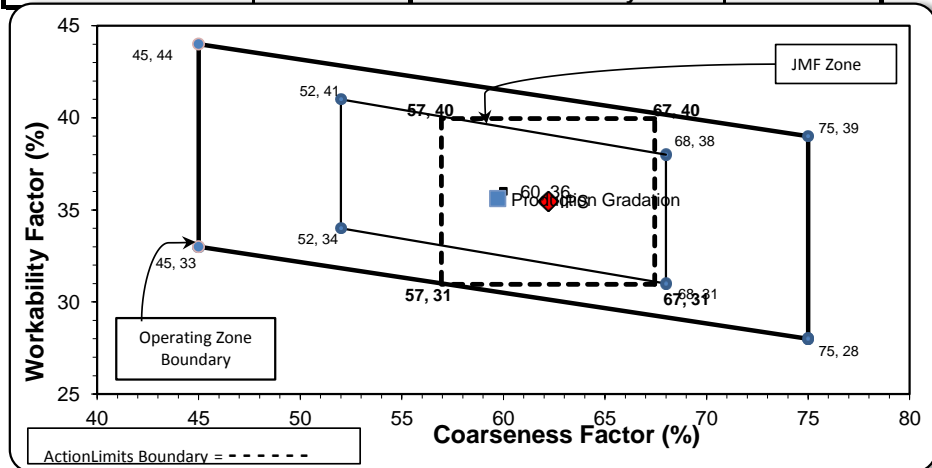


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*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must 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: **60** Workability Factor: **36**



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

PREPARED BY:
 SM, LLC Technical Service

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Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

PLANT #: **P-36**

Sample Date: 8/6/18

Concrete Grade: **S2M**

Contractor: _____

Dates Test Represents: 8/7/2018 through 8/13/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	49.8
26A	71-47	Presque Isle	310	1.90	2.62	10.0
2NS	63-92	AA Grange Hall	1250	7.56	2.65	40.2
Total Wt			3110	18.94		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	90.5	100.0	100.0	95.3	4.7	4.7
1/2"	44.5	95.0	100.0	71.8	23.4	28.2
3/8"	16.8	84.2	100.0	57.0	14.9	43.0
#4	1.9	25.8	97.4	42.7	14.3	57.3
#8	1.3	9.2	84.2	35.4	7.3	64.6
#16	1.2	4.7	69.4	29.0	6.4	71.0
#30	1.1	3.5	51.7	21.7	7.3	78.3
#50	1.1	3.1	25.0	10.9	10.8	89.1
#100	1.0	2.7	4.4	2.5	8.4	97.5
LBW	0.7	2.0	0.3	0.7	1.9	99.3

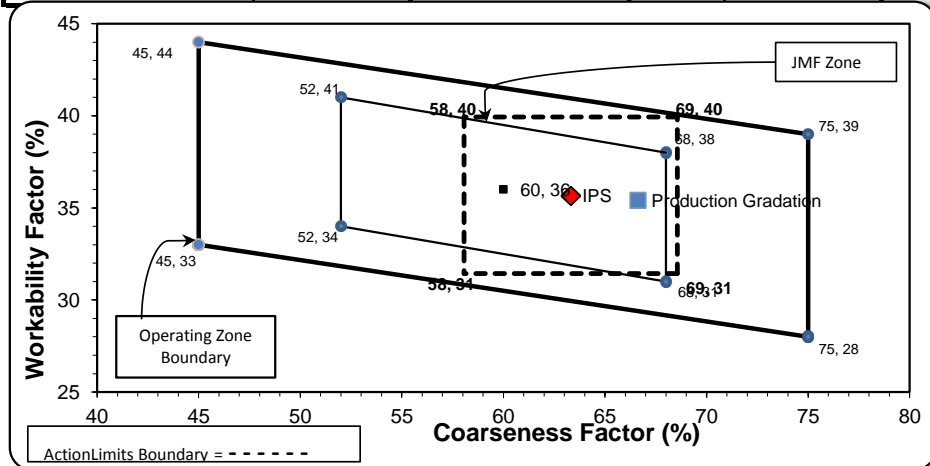


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*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must 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: **67** **Workability Factor:** **35**



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

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Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

PLANT #: P-02

Sample Date: 8/6/18

Concrete Grade: S2M

Contractor: _____

Dates Test Represents: 8/7/2018 through 8/13/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	49.8
26A	71-47	Presque Isle	310	1.90	2.62	10.0
2NS	63-92	AA Grange Hall	1250	7.56	2.65	40.2
Total Wt			3110	18.94		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	90.5	100.0	100.0	95.3	4.7	4.7
1/2"	44.5	95.0	100.0	71.8	23.4	28.2
3/8"	16.8	84.2	100.0	57.0	14.9	43.0
#4	1.9	25.8	97.4	42.7	14.3	57.3
#8	1.3	9.2	84.2	35.4	7.3	64.6
#16	1.2	4.7	69.4	29.0	6.4	71.0
#30	1.1	3.5	51.7	21.7	7.3	78.3
#50	1.1	3.1	25.0	10.9	10.8	89.1
#100	1.0	2.7	4.4	2.5	8.4	97.5
LBW	0.7	2.0	0.3	0.7	1.9	99.3

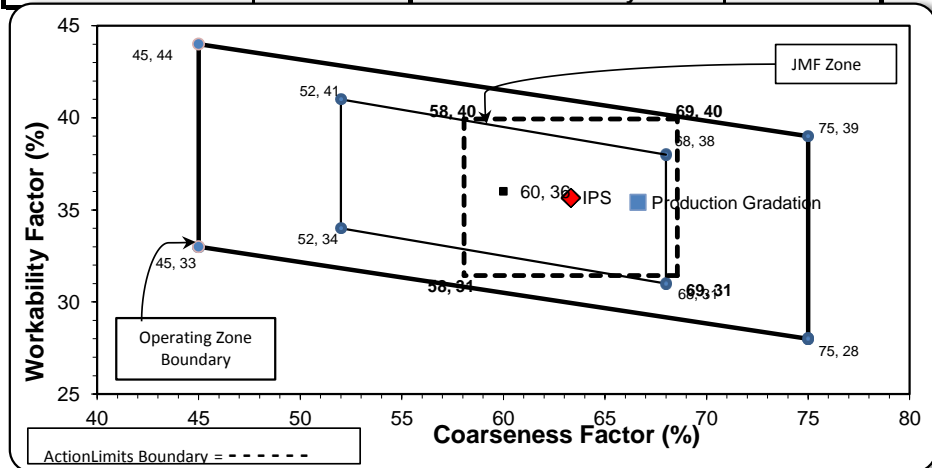


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 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 67 **Workability Factor:** 35



Initial Production Sample (IPS)

Coarseness Factor: <u>63</u>		Workability Factor: <u>36</u>	
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

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