

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

**PLANT #:** **P-102**

Sample Date: 12/10/18

Concrete Grade: **S2M**

Contractor: \_\_\_\_\_

Dates Test Represents: 12/11/2018 through 12/17/2018

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	49.1
26A	58-003	Stoneco	350	2.09	2.69	11.1
2NS	47-16	Buno Rd	1260	7.62	2.65	39.9
<b>Total Wt</b>			<b>3160</b>	<b>18.94</b>		<b>100.0</b>

<----- 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"	99.6	100.0	100.0	99.8	0.2	0.2
3/4"	80.2	100.0	100.0	90.3	9.5	9.7
1/2"	43.8	99.8	100.0	72.4	17.9	27.6
3/8"	20.9	87.0	100.0	59.8	12.7	40.2
#4	4.1	24.7	96.0	43.0	16.7	57.0
#8	2.6	6.6	85.8	36.2	6.8	63.8
#16	2.0	3.1	72.3	30.2	6.1	69.8
#30	1.8	2.4	53.0	22.3	7.9	77.7
#50	1.8	2.2	18.2	8.4	13.9	91.6
#100	1.6	2.1	2.5	2.0	6.4	98.0
LBW	1.4	1.9	0.3	1.0	1.0	99.0

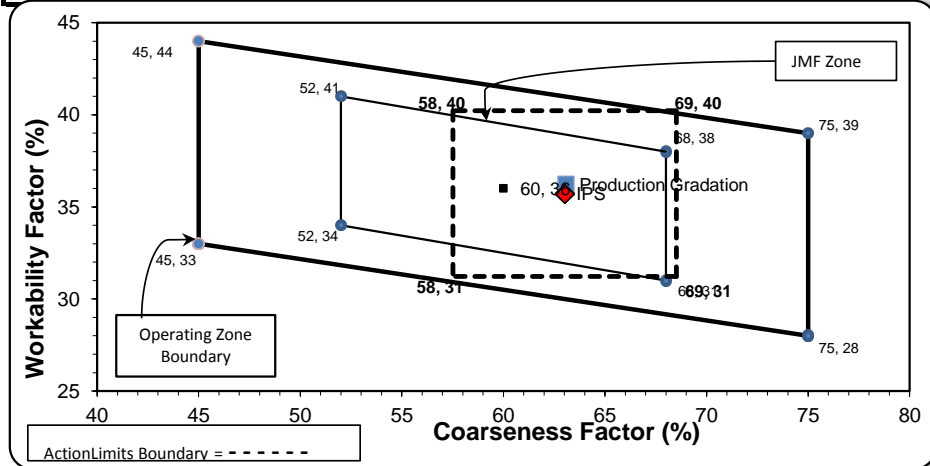
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2"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



**Superior Materials, LLC**  
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Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

**Coarseness Factor: 63**      **Workability Factor: 36**



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"	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: 12/10/18

Concrete Grade: **S2M**

Contractor: \_\_\_\_\_

Dates Test Represents: 12/11/2018 through 12/17/2018

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	49.8
26A	71-47	Presque Isle	330	2.02	2.62	10.6
2NS	95-13	Smelter Bay	1230	7.44	2.65	39.5
<b>Total Wt</b>			<b>3110</b>	<b>18.94</b>		<b>100.0</b>

<----- 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"	87.8	100.0	100.0	93.9	6.1	6.1
1/2"	45.2	97.2	100.0	72.4	21.5	27.6
3/8"	25.7	80.1	100.0	60.9	11.5	39.1
#4	4.5	11.3	97.9	42.2	18.7	57.8
#8	2.1	2.6	84.9	34.9	7.3	65.1
#16	1.7	1.6	68.7	28.2	6.7	71.8
#30	1.6	1.4	48.2	20.0	8.2	80.0
#50	1.5	1.3	21.2	9.3	10.7	90.7
#100	1.4	1.2	4.9	2.8	6.5	97.2
LBW	1.2	1.0	1.4	1.3	1.5	98.7

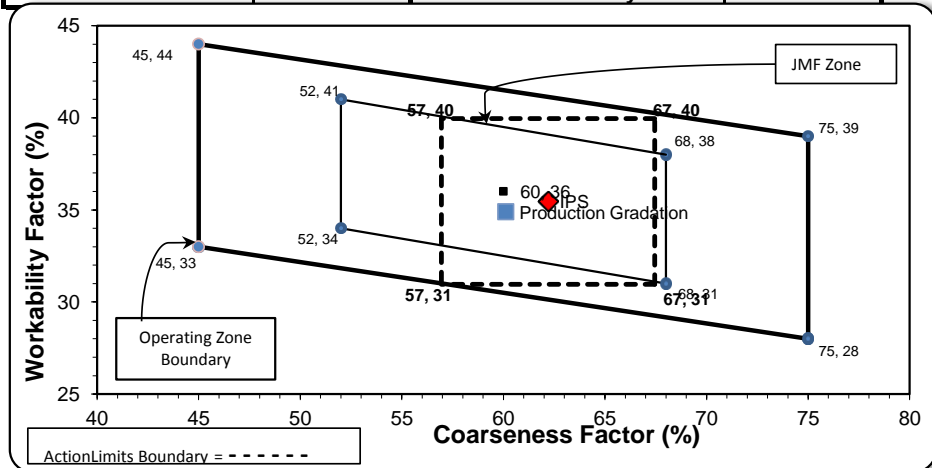


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\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained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



Initial Production Sample (IPS)

Coarseness Factor: <b>62</b>		Workability Factor: <b>35</b>	
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

Approved By:

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

**PLANT #:** **P-36**

Sample Date: 12/10/18

Concrete Grade: **S2M**

Contractor: \_\_\_\_\_

Dates Test Represents: 12/11/2018 through 12/17/2018

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	48.2
26A	71-47	Presque Isle	360	2.20	2.62	11.6
2NS	63-92	AA Grange Hall	1250	7.56	2.65	40.2
<b>Total Wt</b>			<b>3110</b>	<b>18.94</b>		<b>100.0</b>

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



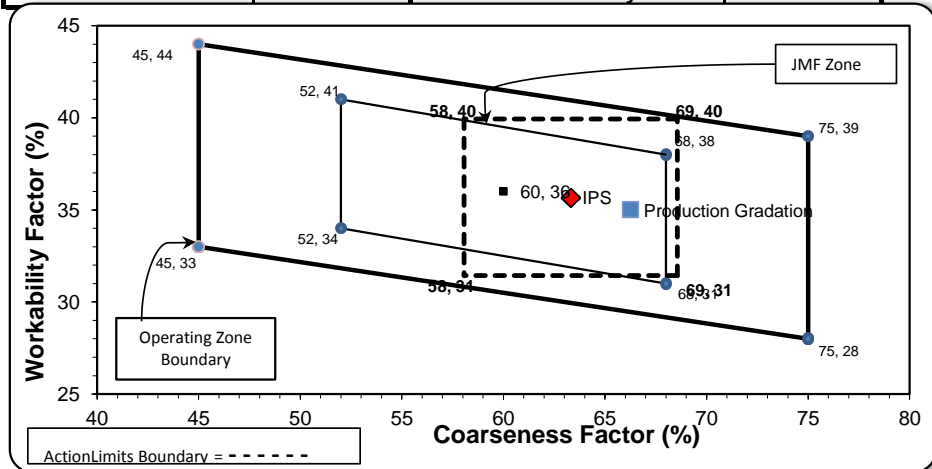
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.6	100.0	100.0	92.6	7.4	7.4
1/2"	35.5	97.2	100.0	68.6	24.0	31.4
3/8"	15.5	80.1	100.0	56.9	11.6	43.1
#4	1.8	11.3	97.6	41.4	15.5	58.6
#8	1.3	2.6	84.8	35.0	6.4	65.0
#16	1.2	1.6	68.6	28.3	6.7	71.7
#30	1.1	1.4	47.6	19.8	8.5	80.2
#50	1.1	1.3	18.6	8.2	11.7	91.8
#100	1.0	1.2	2.7	1.7	6.5	98.3
LBW	0.9	1.0	0.3	0.7	1.0	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

<b>Coarseness Factor:</b>	<b>66</b>	<b>Workability Factor:</b>	<b>35</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>63</b>		
<b>Workability Factor:</b>	<b>36</b>		
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:  
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Approved By:

# Aggregate Optimization Chart

MIX ID'S: DDS257E7 and DDS257E8

Production Gradation Report

**PLANT #:** **P-O2**

Sample Date: 12/10/18

Concrete Grade: **S2M**

Contractor: \_\_\_\_\_

Dates Test Represents: 12/11/2018 through 12/17/2018

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	48.2
26A	71-47	Presque Isle	360	2.20	2.62	11.6
2NS	63-92	AA Grange Hall	1250	7.56	2.65	40.2
<b>Total Wt</b>			<b>3110</b>	<b>18.94</b>		<b>100.0</b>

<----- 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"	84.6	100.0	100.0	92.6	7.4	7.4
1/2"	35.5	97.2	100.0	68.6	24.0	31.4
3/8"	15.5	80.1	100.0	56.9	11.6	43.1
#4	1.8	11.3	97.6	41.4	15.5	58.6
#8	1.3	2.6	84.8	35.0	6.4	65.0
#16	1.2	1.6	68.6	28.3	6.7	71.7
#30	1.1	1.4	47.6	19.8	8.5	80.2
#50	1.1	1.3	18.6	8.2	11.7	91.8
#100	1.0	1.2	2.7	1.7	6.5	98.3
LBW	0.9	1.0	0.3	0.7	1.0	99.3

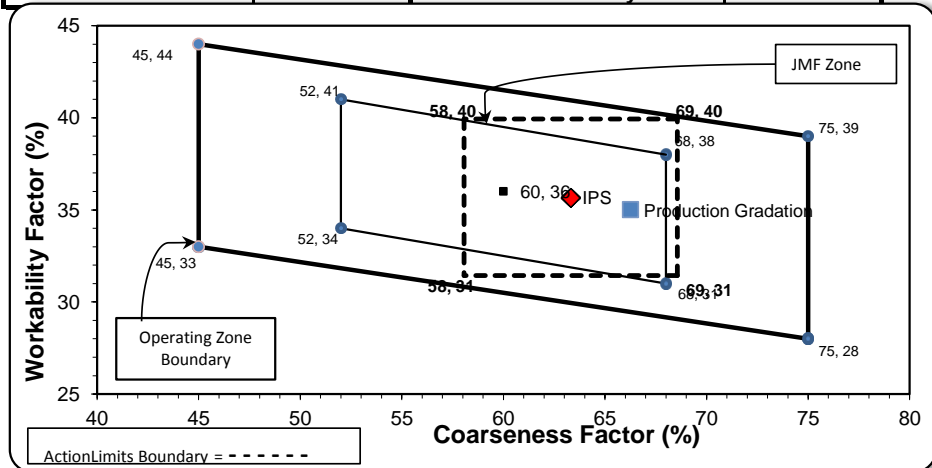


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 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

<b>Coarseness Factor:</b>	<b>66</b>	<b>Workability Factor:</b>	<b>35</b>
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Initial Production Sample (IPS)

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