

# Aggregate Optimization Chart

MIX ID'S: DDP154E7, DDP154E8, DDP164E7 and DDP164E8

Production Gradation Report

**PLANT #:** **P-101**

Sample Date: 9/18/17

Concrete Grade: **P1M**

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

Dates Test Represents: 9/18/2017 to 9/24/2017

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	750	4.59	2.62	24.4
2NS	63-115	Ray Road	1320	7.98	2.65	43.0
<b>Total Wt</b>			<b>3070</b>	<b>18.69</b>		<b>100.0</b>

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.4	100.0	100.0	99.5	0.5	0.5
1"	39.2	100.0	100.0	80.2	19.3	19.8
3/4"	10.9	98.6	100.0	70.6	9.6	29.4
1/2"	2.2	82.8	100.0	63.9	6.7	36.1
3/8"	1.9	51.4	100.0	56.2	7.8	43.8
#4	1.8	6.8	97.2	44.0	12.1	56.0
#8	1.7	2.5	78.8	35.0	9.0	65.0
#16	1.7	2.0	59.5	26.6	8.4	73.4
#30	1.6	1.9	42.4	19.2	7.4	80.8
#50	1.6	1.8	21.3	10.1	9.1	89.9
#100	1.4	1.7	5.1	3.1	7.1	96.9
LBW	1.1	1.5	0.6	1.0	2.1	99.0



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 Suite 500  
 Farmington Hills, MI 48336

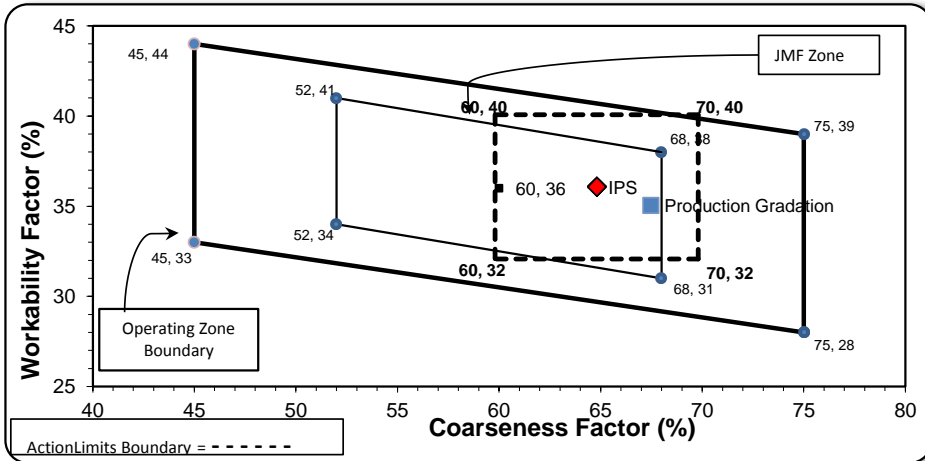
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2"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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

<b>Coarseness Factor:</b>	<b>67</b>	<b>Workability Factor:</b>	<b>35</b>
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Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>65</b>		
<b>Workability Factor:</b>	<b>36</b>		
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.3	0.7	0.7
1"	83.6	15.7	16.4
3/4"	73.0	10.6	27.0
1/2"	65.1	7.9	34.9
3/8"	58.6	6.5	41.4
#4	45.8	12.8	54.2
#8	36.1	9.7	63.9
#16	28.8	7.3	71.2
#30	21.7	7.1	78.3
#50	10.3	11.4	89.7
#100	3.1	7.2	96.9
LBW	1.3	1.8	98.7



PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

MIX ID'S: DDP154E7 and DDP154E8

Production Gradation Report

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

Sample Date: 9/18/17

Concrete Grade: **P1M**

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

Dates Test Represents: 9/18/2017 to 9/24/2017

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	58-003	Stoneco	1370	8.16	2.69	43.5
IA	58-003	Stoneco	550	3.28	2.69	17.5
2NS	63-114	AA Highland	1230	7.44	2.65	39.0
<b>Total Wt</b>			<b>3150</b>	<b>18.88</b>		<b>100.0</b>

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

Sieve	CA	IA	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"	64.1	100.0	100.0	84.4	15.6	15.6
3/4"	33.6	100.0	100.0	71.1	13.3	28.9
1/2"	7.4	94.8	100.0	58.8	12.3	41.2
3/8"	2.6	83.9	100.0	54.8	4.0	45.2
#4	1.2	27.8	99.8	44.3	10.5	55.7
#8	1.0	7.2	85.6	35.1	9.2	64.9
#16	0.8	2.5	64.7	26.0	9.1	74.0
#30	0.7	1.6	42.6	17.2	8.8	82.8
#50	0.7	1.5	13.3	5.8	11.5	94.2
#100	0.6	1.3	2.0	1.3	4.5	98.7
LBW	0.6	1.1	0.3	0.6	0.7	99.4

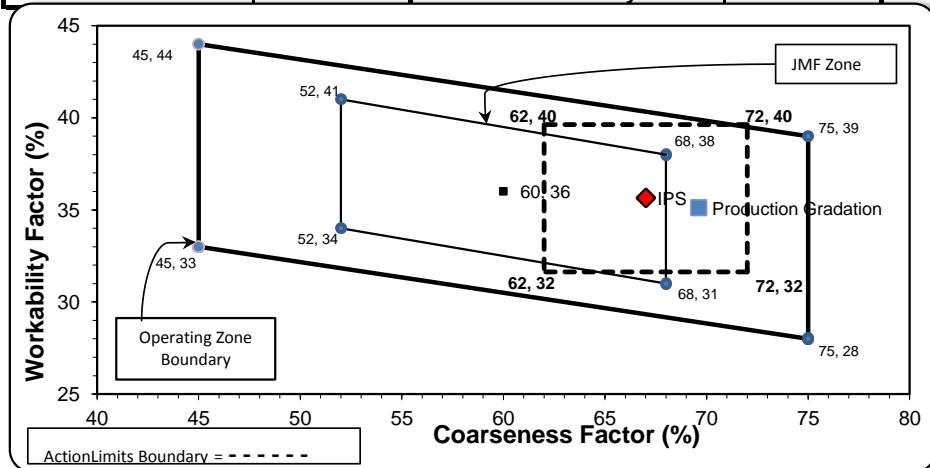


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 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: **70**      Workability Factor: **35**



Initial Production Sample (IPS)

Coarseness Factor: <b>67</b>		Workability Factor: <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"	87.2	12.8	12.8
3/4"	76.6	10.6	23.4
1/2"	64.4	12.2	35.6
3/8"	56.9	7.6	43.1
#4	44.1	12.7	55.9
#8	35.6	8.5	64.4
#16	27.7	8.0	72.3
#30	19.5	8.2	80.5
#50	7.8	11.6	92.2
#100	2.3	5.6	97.7
LBW	0.6	1.6	99.4

PREPARED BY:

Approved By:

# Aggregate Optimization Chart

MIX ID'S: DDP154E7, DDP154E8, DDP164E7 and DDP164E8

Production Gradation Report

**PLANT #:** **P-39**

Sample Date: 9/18/17

Concrete Grade: **P1M**

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

Dates Test Represents: 9/18/2017 to 9/24/2017

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

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1000	6.12	2.62	32.6
IA	71-47	Presque Isle	750	4.59	2.62	24.4
2NS	63-115	Ray Road	1320	7.98	2.65	43.0
<b>Total Wt</b>			<b>3070</b>	<b>18.69</b>		<b>100.0</b>

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

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.4	100.0	100.0	99.5	0.5	0.5
1"	39.2	100.0	100.0	80.2	19.3	19.8
3/4"	10.9	98.6	100.0	70.6	9.6	29.4
1/2"	2.2	82.8	100.0	63.9	6.7	36.1
3/8"	1.9	51.4	100.0	56.2	7.8	43.8
#4	1.8	6.8	97.2	44.0	12.1	56.0
#8	1.7	2.5	78.8	35.0	9.0	65.0
#16	1.7	2.0	59.5	26.6	8.4	73.4
#30	1.6	1.9	42.4	19.2	7.4	80.8
#50	1.6	1.8	21.3	10.1	9.1	89.9
#100	1.4	1.7	5.1	3.1	7.1	96.9
LBW	1.1	1.5	0.6	1.0	2.1	99.0

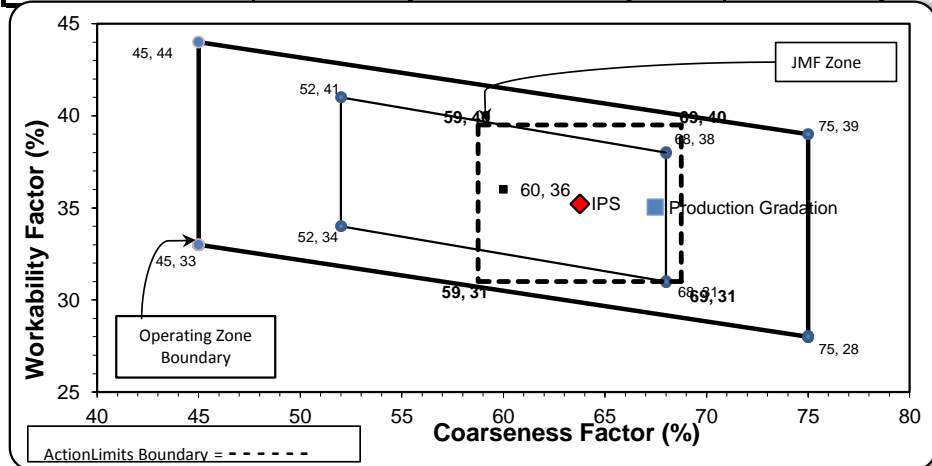


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 \*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

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



Initial Production Sample (IPS)

Coarseness Factor: <b>64</b>		Workability Factor: <b>35</b>	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.4	0.6	0.6
1"	84.3	15.1	15.7
3/4"	73.9	10.4	26.1
1/2"	65.7	8.2	34.3
3/8"	58.7	7.0	41.3
#4	45.1	13.6	54.9
#8	35.3	9.8	64.7
#16	28.1	7.2	71.9
#30	21.2	6.9	78.8
#50	10.1	11.1	89.9
#100	3.1	7.0	96.9
LBW	1.4	1.7	98.6

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