

Aggregate Optimization Chart

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

Production Gradation Report

PLANT #: **P-101**

Sample Date: 7/9/18

Concrete Grade: **P1M**

Contractor: _____

Dates Test Represents: 7/10/2018 through 7/16/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	850	5.20	2.62	27.6
IA	71-47	Presque Isle	975	5.96	2.62	31.7
2NS	75-051	Mid-Michigan	1250	7.53	2.66	40.7
Total Wt			3075	18.69		100.0

<----- 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"	98.3	100.0	100.0	99.5	0.5	0.5
1"	41.2	100.0	100.0	83.7	15.8	16.3
3/4"	7.7	97.8	100.0	73.8	10.0	26.2
1/2"	3.6	76.2	100.0	65.8	8.0	34.2
3/8"	2.4	50.1	100.0	57.2	8.6	42.8
#4	1.9	6.9	99.1	43.0	14.2	57.0
#8	1.9	2.7	85.0	35.9	7.1	64.1
#16	1.9	2.2	70.2	29.8	6.2	70.2
#30	1.8	2.0	50.2	21.5	8.2	78.5
#50	1.8	1.8	19.8	9.1	12.4	90.9
#100	1.7	1.7	4.2	2.7	6.4	97.3
LBW	1.5	1.5	0.6	1.1	1.6	98.9



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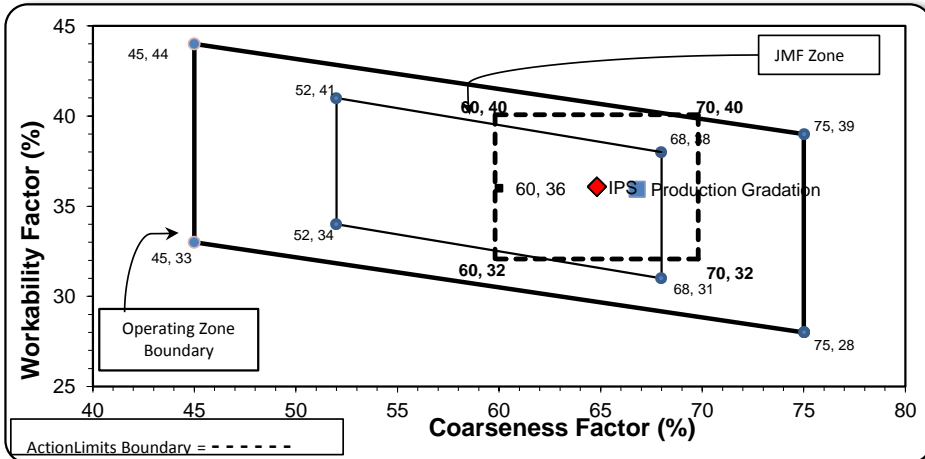
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor:	67	Workability Factor:	36
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Initial Production Sample (IPS)

Coarseness Factor:	65		
Workability Factor:	36		
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, DDP154E8, DDP164E7 and DDP164E8

Production Gradation Report

PLANT #: **P-102**

Sample Date: 7/9/18

Concrete Grade: **P1M**

Contractor: _____

Dates Test Represents: 7/10/2018 through 7/16/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1280	7.63	2.69	41.0
IA	58-003	Stoneco	640	3.81	2.69	20.5
2NS	38-046	Chelsea	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

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



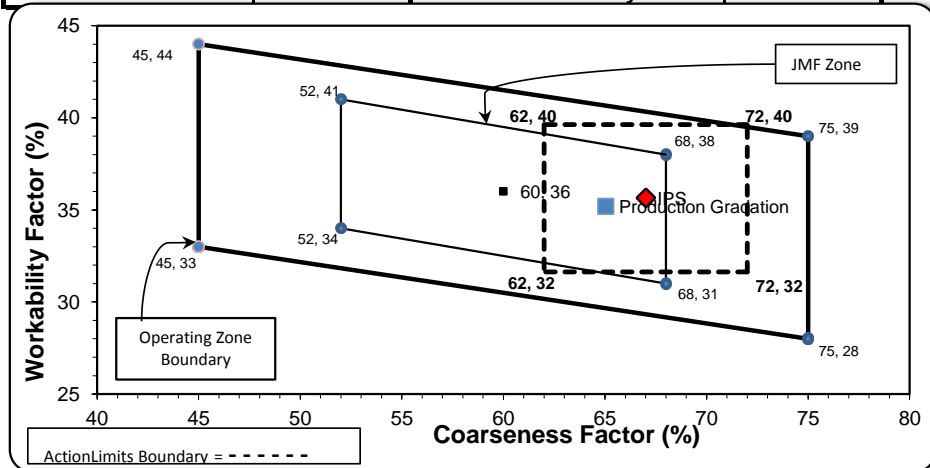
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Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	64.2	100.0	100.0	85.3	14.7	14.7
3/4"	35.9	100.0	100.0	73.7	11.6	26.3
1/2"	11.6	93.7	100.0	62.4	11.3	37.6
3/8"	5.6	83.3	100.0	57.8	4.6	42.2
#4	3.0	26.5	100.0	45.1	12.7	54.9
#8	1.9	6.5	86.0	35.2	9.9	64.8
#16	1.6	2.6	60.0	24.3	10.9	75.7
#30	1.5	1.9	40.0	16.4	7.9	83.6
#50	1.5	1.6	18.0	7.9	8.5	92.1
#100	1.4	1.6	4.0	2.4	5.4	97.6
LBW	1.3	1.4	0.8	1.1	1.3	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

Coarseness Factor:	65	Workability Factor:	35
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Initial Production Sample (IPS)

Coarseness Factor:	67		
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"	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

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Aggregate Optimization Chart

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

Production Gradation Report

PLANT #: **P-103**

Sample Date: 7/9/18

Concrete Grade: **P1M**

Contractor: _____

Dates Test Represents: 7/10/2018 through 7/16/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	58-003	Stoneco	1280	7.63	2.69	41.0
IA	58-003	Stoneco	640	3.81	2.69	20.5
2NS	38-046	Chelsea	1200	7.26	2.65	38.5
Total Wt			3120	18.70		100.0

<----- 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"	64.2	100.0	100.0	85.3	14.7	14.7
3/4"	35.9	100.0	100.0	73.7	11.6	26.3
1/2"	11.6	93.7	100.0	62.4	11.3	37.6
3/8"	5.6	83.3	100.0	57.8	4.6	42.2
#4	3.0	26.5	100.0	45.1	12.7	54.9
#8	1.9	6.5	86.0	35.2	9.9	64.8
#16	1.6	2.6	60.0	24.3	10.9	75.7
#30	1.5	1.9	40.0	16.4	7.9	83.6
#50	1.5	1.6	18.0	7.9	8.5	92.1
#100	1.4	1.6	4.0	2.4	5.4	97.6
LBW	1.3	1.4	0.8	1.1	1.3	98.9

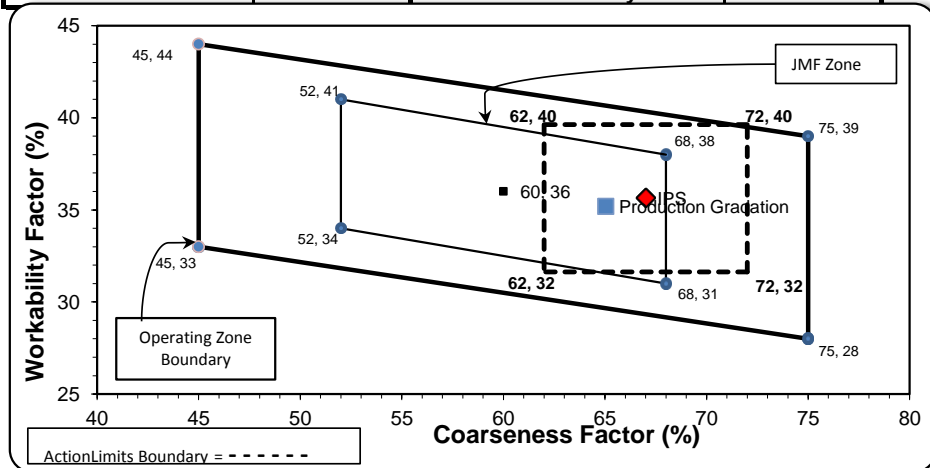
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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



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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 65 **Workability Factor: 35**



Initial Production Sample (IPS)

Coarseness Factor: 67		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"	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

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Approved BY:

Aggregate Optimization Chart

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

Production Gradation Report

PLANT #: **P-39**

Sample Date: 7/9/18

Concrete Grade: **P1M**

Contractor: _____

Dates Test Represents: 7/10/2018 through 7/16/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	850	5.20	2.62	27.7
2NS	63-115	Ray Road	1320	7.98	2.65	43.0
Total Wt			3070	18.69		100.0

<----- 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"	98.3	100.0	100.0	99.5	0.5	0.5
1"	41.2	100.0	100.0	82.8	16.7	17.2
3/4"	7.7	97.8	100.0	72.3	10.4	27.7
1/2"	3.6	76.2	100.0	65.1	7.2	34.9
3/8"	2.4	50.1	100.0	57.6	7.6	42.4
#4	1.9	6.9	96.1	43.8	13.8	56.2
#8	1.9	2.7	79.2	35.4	8.4	64.6
#16	1.9	2.2	63.2	28.3	7.0	71.7
#30	1.8	2.0	48.3	21.8	6.5	78.2
#50	1.8	1.8	26.2	12.3	9.6	87.7
#100	1.7	1.7	6.9	3.9	8.4	96.1
LBW	1.5	1.5	0.7	1.2	2.8	98.8

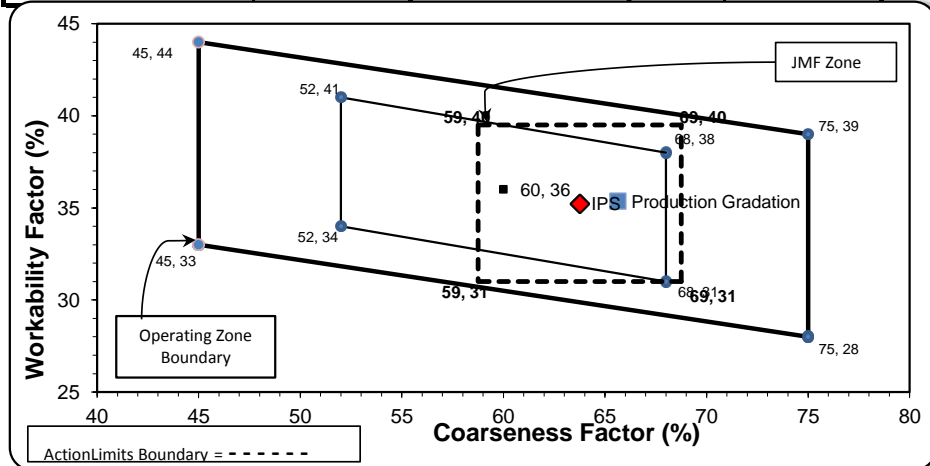
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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



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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 66 **Workability Factor: 35**



Initial Production Sample (IPS)

Coarseness Factor: 64		Workability Factor: 35	
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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