

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7 and DDD0K7E9

Production Gradation Report

PLANT #: **P-101**

Sample Date: 5/8/17

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 5/8/2017 to 5/14/2017

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1400	8.56	2.62	47.5
26A	71-47	Presque Isle	270	1.65	2.62	9.2
2NS	63-115	Ray Road	1280	7.74	2.65	43.4
Total Wt			2950	17.96		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"	86.2	100.0	100.0	93.5	6.5	6.5
1/2"	38.3	97.0	100.0	70.4	23.0	29.6
3/8"	18.6	84.7	100.0	60.0	10.5	40.0
#4	2.4	13.7	97.9	44.9	15.1	55.1
#8	1.4	3.7	80.4	35.9	9.0	64.1
#16	1.2	2.3	62.8	28.0	7.9	72.0
#30	1.2	2.1	46.2	20.8	7.2	79.2
#50	1.1	2.0	23.0	10.7	10.1	89.3
#100	1.1	1.9	4.7	2.7	7.9	97.3
LBW	1.0	1.7	0.5	0.8	1.9	99.2



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 Suite 500
 Farmington Hills, MI 48336

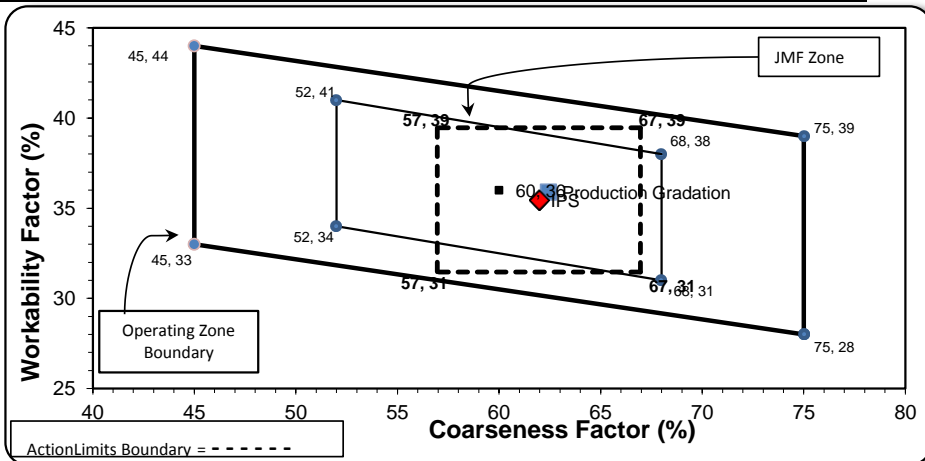
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 62 **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"	95.0	5.0	5.0
1/2"	70.5	24.5	29.5
3/8"	60.0	10.5	40.0
#4	44.4	15.6	55.6
#8	35.5	9.0	64.5
#16	28.5	7.0	71.5
#30	21.5	7.0	78.5
#50	10.2	11.3	89.8
#100	3.1	7.1	96.9
LBW	1.3	1.8	98.7



PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7 and DDD0K7E9

Production Gradation Report

PLANT #: **P-103**

Sample Date: 5/8/17

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 5/8/2017 to 5/14/2017

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1520	9.06	2.69	50.8
26A	58-003	Stoneco	250	1.49	2.69	8.4
2NS	81-93	Burmeister	1220	7.41	2.64	40.8
Total Wt			2990	17.95		100.0

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



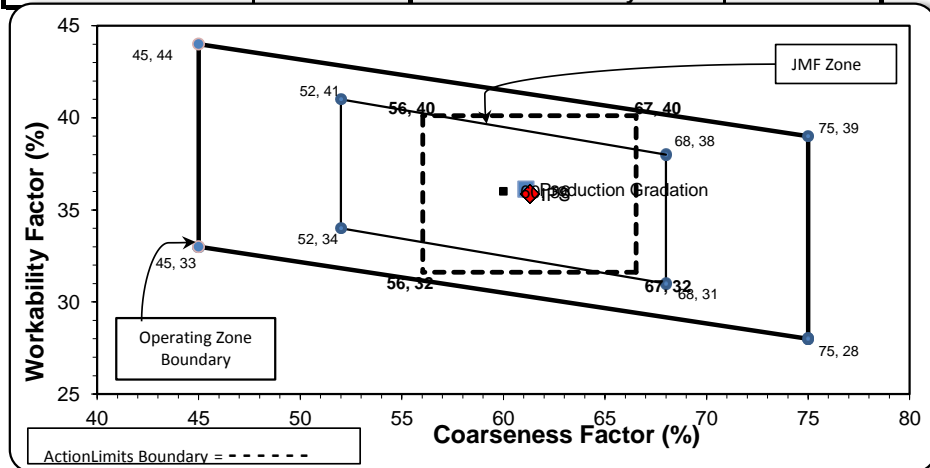
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	83.1	100.0	100.0	91.4	8.6	8.6
1/2"	47.7	99.7	100.0	73.4	18.0	26.6
3/8"	25.7	84.9	100.0	61.0	12.4	39.0
#4	4.4	28.0	98.9	44.9	16.0	55.1
#8	1.9	5.7	85.0	36.1	8.8	63.9
#16	0.9	2.3	68.7	28.7	7.4	71.3
#30	0.8	1.6	47.2	19.8	8.9	80.2
#50	0.7	1.4	17.2	7.5	12.3	92.5
#100	0.7	1.3	2.8	1.6	5.9	98.4
LBW	0.9	1.0	1.0	0.9	0.7	99.1

*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:	61	Workability Factor:	36
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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"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

PREPARED BY:
 SM, LLC Technical Service

Approved BY:

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7 and DDD0K7E9

Production Gradation Report

PLANT #: **P-36**

Sample Date: 5/8/17

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 5/8/2017 to 5/14/2017

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1560	9.29	2.69	52.2
26A	71-47	Presque Isle	200	1.22	2.62	6.7
2NS	63-92	AA Grange Hall	1230	7.44	2.65	41.1
Total Wt			2990	17.96		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"	83.1	100.0	100.0	91.2	8.8	8.8
1/2"	47.7	97.0	100.0	72.5	18.7	27.5
3/8"	25.7	84.7	100.0	60.2	12.3	39.8
#4	4.4	13.7	98.0	43.5	16.7	56.5
#8	1.9	3.7	85.8	36.5	7.0	63.5
#16	0.9	2.3	70.4	29.6	7.0	70.4
#30	0.8	2.1	51.3	21.7	7.9	78.3
#50	0.7	2.0	21.7	9.4	12.2	90.6
#100	0.7	1.9	2.7	1.6	7.8	98.4
LBW	0.9	1.7	0.2	0.7	0.9	99.3

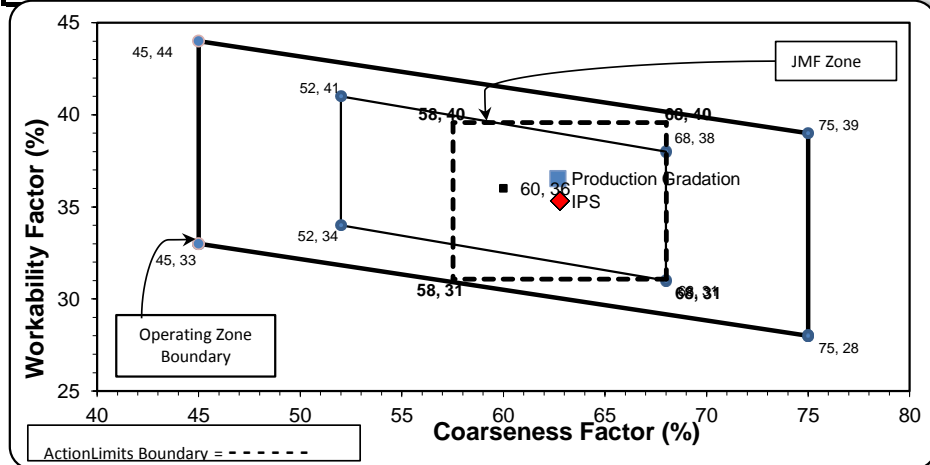


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 Suite 500
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*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve 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: **63** Workability Factor: **37**



Initial Production Sample (IPS)

Coarseness Factor: 63		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"	99.9	0.1	0.1
3/4"	89.1	10.8	10.9
1/2"	71.3	17.8	28.7
3/8"	59.4	11.9	40.6
#4	42.6	16.8	57.4
#8	35.3	7.3	64.7
#16	28.5	6.8	71.5
#30	20.9	7.6	79.1
#50	9.0	12.0	91.0
#100	1.7	7.3	98.3
LBW	0.7	1.0	99.3

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7 and DDD0K7E9

Production Gradation Report

PLANT #: **P-38**

Sample Date: 5/8/17

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 5/8/2017 to 5/14/2017

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1520	9.06	2.69	50.8
26A	58-003	Stoneco	250	1.49	2.69	8.4
2NS	81-93	Burmeister	1220	7.41	2.64	40.8
Total Wt			2990	17.95		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"	83.1	100.0	100.0	91.4	8.6	8.6
1/2"	47.7	99.7	100.0	73.4	18.0	26.6
3/8"	25.7	84.9	100.0	61.0	12.4	39.0
#4	4.4	28.0	98.9	44.9	16.0	55.1
#8	1.9	5.7	85.0	36.1	8.8	63.9
#16	0.9	2.3	68.7	28.7	7.4	71.3
#30	0.8	1.6	47.2	19.8	8.9	80.2
#50	0.7	1.4	17.2	7.5	12.3	92.5
#100	0.7	1.3	2.8	1.6	5.9	98.4
LBW	0.9	1.0	1.0	0.9	0.7	99.1

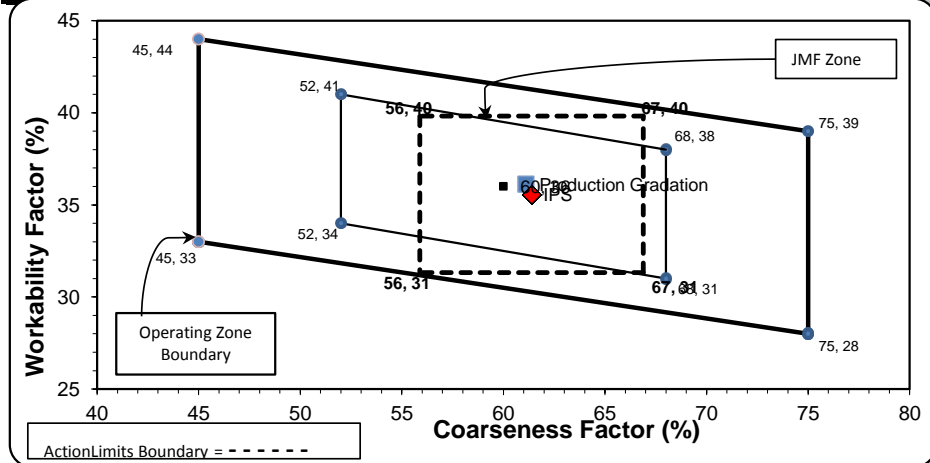


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 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **61** Workability Factor: **36**



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"	99.3	0.7	0.7
3/4"	89.1	10.2	10.9
1/2"	70.5	18.6	29.5
3/8"	60.5	10.0	39.5
#4	44.1	16.4	55.9
#8	35.6	8.5	64.4
#16	27.7	7.9	72.3
#30	20.6	7.1	79.4
#50	8.7	11.8	91.3
#100	1.6	7.1	98.4
LBW	1.1	0.6	98.9

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7 and DDD0K7E9

Production Gradation Report

PLANT #: **P-39**

Sample Date: 5/8/17

Concrete Grade: **DM**

Contractor: _____

Dates Test Represents: 5/8/2017 to 5/14/2017

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1400	8.56	2.62	47.5
26A	71-47	Presque Isle	270	1.65	2.62	9.2
2NS	63-115	Ray Road	1280	7.74	2.65	43.4
Total Wt			2950	17.96		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"	86.2	100.0	100.0	93.5	6.5	6.5
1/2"	38.3	97.0	100.0	70.4	23.0	29.6
3/8"	18.6	84.7	100.0	60.0	10.5	40.0
#4	2.4	13.7	97.9	44.9	15.1	55.1
#8	1.4	3.7	80.4	35.9	9.0	64.1
#16	1.2	2.3	62.8	28.0	7.9	72.0
#30	1.2	2.1	46.2	20.8	7.2	79.2
#50	1.1	2.0	23.0	10.7	10.1	89.3
#100	1.1	1.9	4.7	2.7	7.9	97.3
LBW	1.0	1.7	0.5	0.8	1.9	99.2

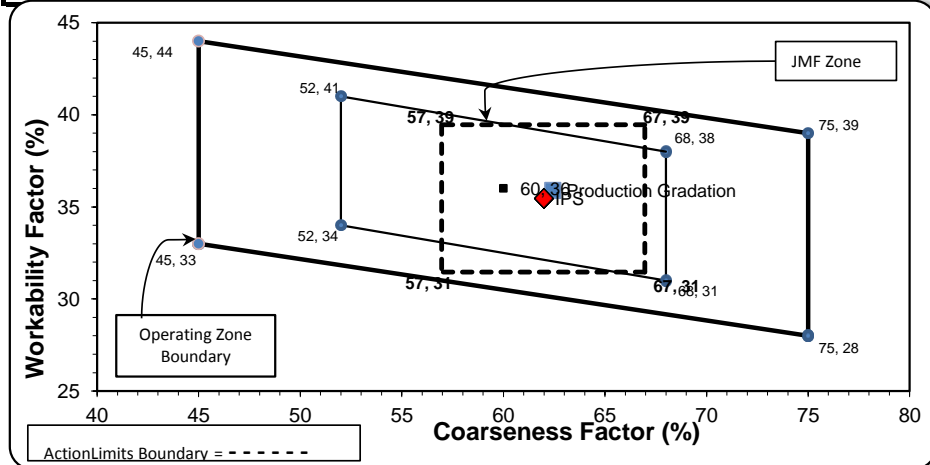


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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: 62 **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"	95.0	5.0	5.0
1/2"	70.5	24.5	29.5
3/8"	60.0	10.5	40.0
#4	44.4	15.6	55.6
#8	35.5	9.0	64.5
#16	28.5	7.0	71.5
#30	21.5	7.0	78.5
#50	10.2	11.3	89.8
#100	3.1	7.1	96.9
LBW	1.3	1.8	98.7

PREPARED BY:
 SM, LLC Technical Service

Approved By: