

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7, DDD0K7E8 and DDD0K7E9

Production Gradation Report

PLANT #: **P-102**

Sample Date: 5/28/18

Concrete Grade: DM

Contractor: _____

Dates Test Represents: 5/29/2018 to 6/4/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.1
26A	58-003	Stoneco	445	2.65	2.69	14.9
2NS	38-046	Chelsea	1200	7.26	2.65	40.1
Total Wt			2995	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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	85.3	100.0	100.0	93.4	6.5	6.6
1/2"	38.1	99.7	100.0	72.1	21.3	27.9
3/8"	15.2	87.5	100.0	59.9	12.1	40.1
#4	1.2	13.4	100.0	42.6	17.3	57.4
#8	0.6	2.4	89.0	36.3	6.3	63.7
#16	0.6	1.0	67.0	27.3	9.0	72.7
#30	0.5	0.8	46.0	18.8	8.5	81.2
#50	0.4	0.7	23.0	9.5	9.3	90.5
#100	0.4	0.6	3.0	1.5	8.0	98.5
LBW	0.3	0.4	0.8	0.5	1.0	99.5

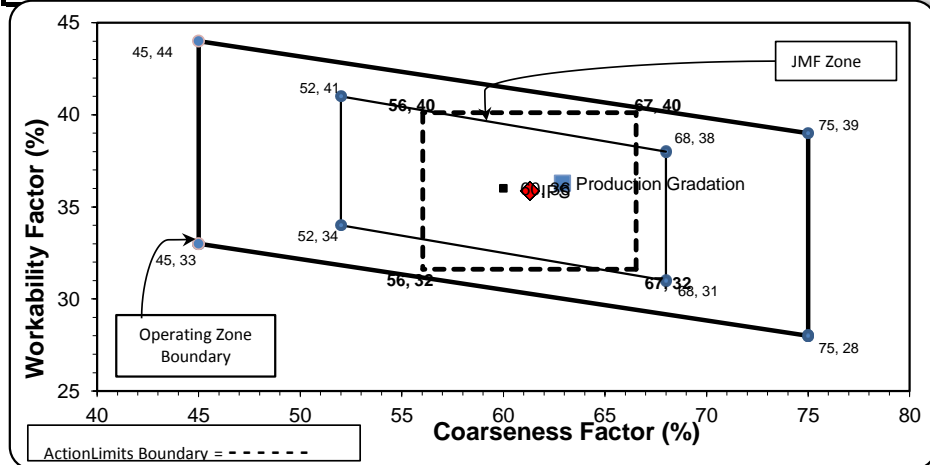


Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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



Initial Production Sample (IPS)

Coarseness Factor: 61		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"	99.3	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:

Approved By:

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7, DDD0K7E8 and DDD0K7E9

Production Gradation Report

PLANT #: **P-103**

Sample Date: 5/28/18

Concrete Grade: DM

Contractor: _____

Dates Test Represents: 5/29/2018 to 6/4/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.1
26A	58-003	Stoneco	445	2.65	2.69	14.9
2NS	38-046	Chelsea	1200	7.26	2.65	40.1
Total Wt			2995	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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	85.3	100.0	100.0	93.4	6.5	6.6
1/2"	38.1	99.7	100.0	72.1	21.3	27.9
3/8"	15.2	87.5	100.0	59.9	12.1	40.1
#4	1.2	13.4	100.0	42.6	17.3	57.4
#8	0.6	2.4	89.0	36.3	6.3	63.7
#16	0.6	1.0	67.0	27.3	9.0	72.7
#30	0.5	0.8	46.0	18.8	8.5	81.2
#50	0.4	0.7	23.0	9.5	9.3	90.5
#100	0.4	0.6	3.0	1.5	8.0	98.5
LBW	0.3	0.4	0.8	0.5	1.0	99.5

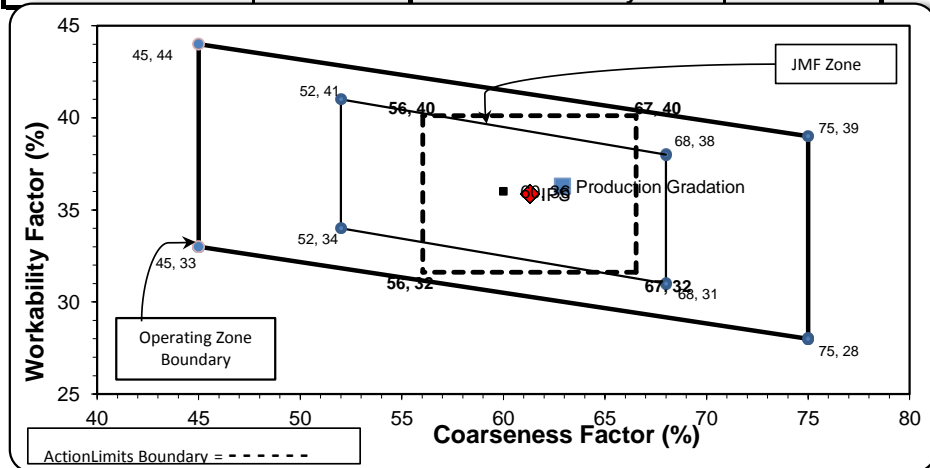


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 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

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



Initial Production Sample (IPS)

Coarseness Factor: 61		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"	99.3	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, DDD0K7E8 and DDD0K7E9

Production Gradation Report

PLANT #: **P-35**

Sample Date: 5/28/18

Concrete Grade: DM

Contractor: _____

Dates Test Represents: 5/29/2018 to 6/4/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1370	8.16	2.69	45.8
26A	58-003	Stoneco	340	2.03	2.69	11.4
2NS	81-93	Burmeister	1280	7.77	2.64	42.8
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"	99.8	100.0	100.0	99.9	0.1	0.1
3/4"	85.3	100.0	100.0	93.3	6.6	6.7
1/2"	38.1	99.7	100.0	71.6	21.7	28.4
3/8"	15.2	87.5	100.0	59.7	11.9	40.3
#4	1.2	13.4	95.3	42.9	16.9	57.1
#8	0.6	2.4	80.8	35.1	7.7	64.9
#16	0.6	1.0	63.2	27.4	7.7	72.6
#30	0.5	0.8	43.6	19.0	8.5	81.0
#50	0.4	0.7	17.6	7.8	11.2	92.2
#100	0.4	0.6	3.0	1.5	6.3	98.5
LBW	0.3	0.4	0.8	0.5	1.0	99.5

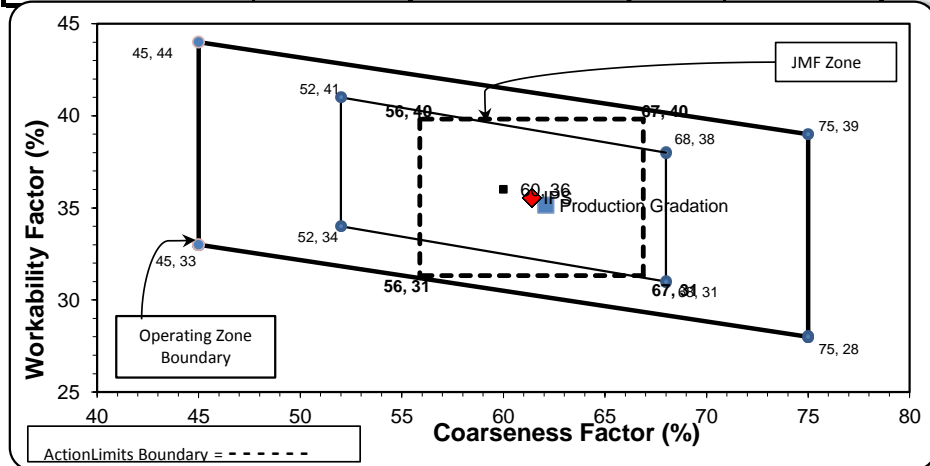


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 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **62** Workability Factor: **35**



Initial Production Sample (IPS)

Coarseness Factor: 61		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"	99.3	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:
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Approved By:

Aggregate Optimization Chart

MIX ID'S: DDD0K7E7, DDD0K7E8 and DDD0K7E9

Production Gradation Report

PLANT #: **P-36**

Sample Date: 5/28/18

Concrete Grade: DM

Contractor: _____

Dates Test Represents: 5/29/2018 to 6/4/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1650	10.09	2.62	55.9
26A	71-47	Presque Isle	100	0.61	2.62	3.4
2NS	63-92	AA Grange Hall	1200	7.26	2.65	40.7
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"	92.6	100.0	100.0	95.9	4.1	4.1
1/2"	54.2	97.3	100.0	74.3	21.6	25.7
3/8"	30.8	80.1	100.0	60.6	13.7	39.4
#4	4.6	9.3	97.3	42.5	18.2	57.5
#8	2.1	2.7	83.7	35.3	7.2	64.7
#16	1.8	1.8	67.7	28.6	6.7	71.4
#30	1.7	1.6	47.8	20.4	8.2	79.6
#50	1.7	1.5	21.6	9.8	10.7	90.2
#100	1.6	1.4	2.8	2.1	7.7	97.9
LBW	1.4	1.2	0.2	0.9	1.2	99.1

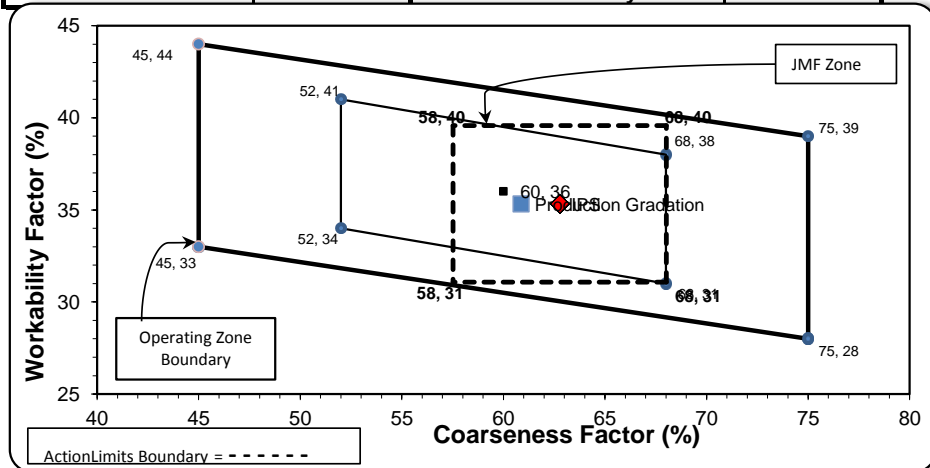


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Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **61** **Workability Factor:** **35**



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, DDD0K7E8 and DDD0K7E9

Production Gradation Report

PLANT #: P-02

Sample Date: 5/28/18

Concrete Grade: DM

Contractor: _____

Dates Test Represents: 5/29/2018 to 6/4/2018

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1650	10.09	2.62	55.9
26A	71-47	Presque Isle	100	0.61	2.62	3.4
2NS	47-16	Buno Road	1200	7.26	2.65	40.7
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"	92.6	100.0	100.0	95.9	4.1	4.1
1/2"	54.2	97.3	100.0	74.3	21.6	25.7
3/8"	30.8	80.1	100.0	60.6	13.7	39.4
#4	4.6	9.3	95.7	41.8	18.8	58.2
#8	2.1	2.7	85.5	36.0	5.8	64.0
#16	1.8	1.8	73.0	30.8	5.3	69.2
#30	1.7	1.6	54.3	23.1	7.7	76.9
#50	1.7	1.5	20.9	9.5	13.6	90.5
#100	1.6	1.4	3.0	2.2	7.3	97.8
LBW	1.4	1.2	0.3	0.9	1.2	99.1

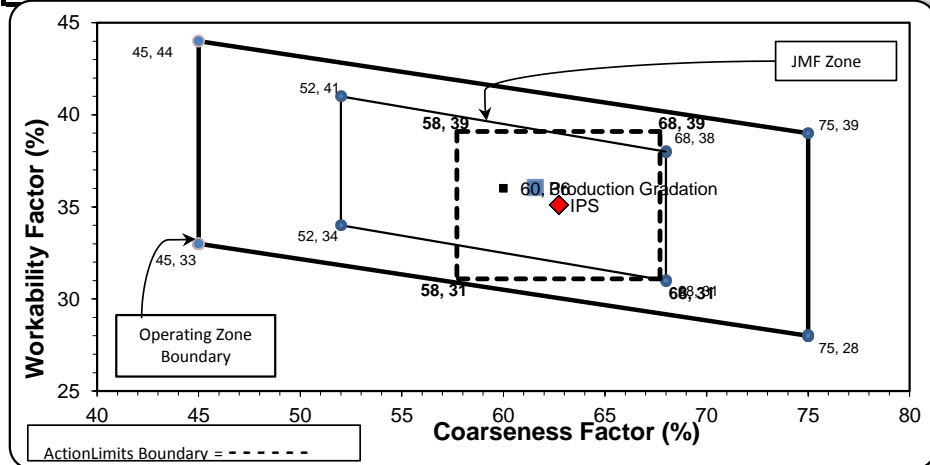


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 *% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **62** Workability Factor: **36**



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"	100.0	0.0	0.0
3/4"	95.1	4.9	4.9
1/2"	74.6	20.5	25.4
3/8"	59.3	15.3	40.7
#4	42.1	17.2	57.9
#8	35.1	7.1	64.9
#16	29.2	5.9	70.8
#30	21.9	7.3	78.1
#50	9.6	12.4	90.4
#100	2.4	7.2	97.6
LBW	0.9	1.5	99.1

PREPARED BY:
 SM, LLC Technical Service

Approved By: