

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	63-114	Highland	1150	6.95	2.65	39.0
Total Wt			2950	17.68		100.0

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



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

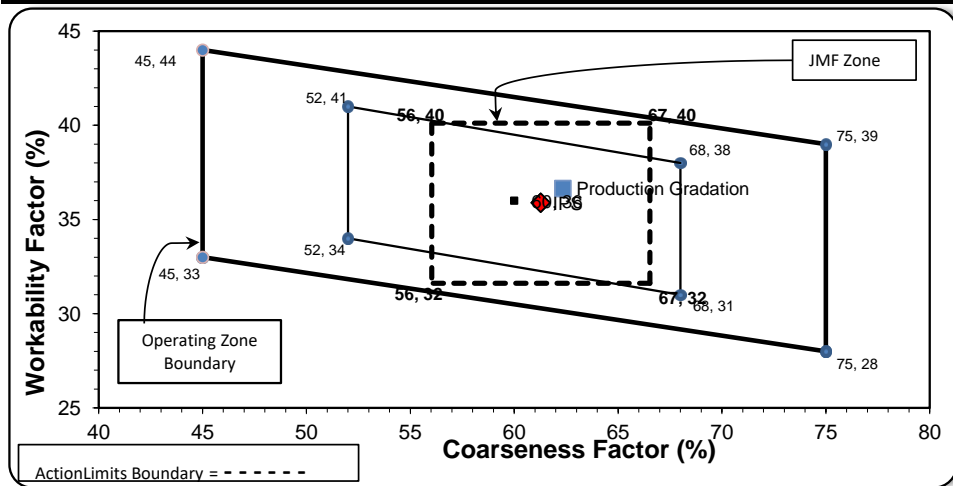
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	81.9	100.0	100.0	91.7	8.3	8.3
1/2"	34.8	98.2	100.0	69.9	21.8	30.1
3/8"	15.1	85.6	100.0	59.0	10.9	41.0
#4	3.0	8.1	99.0	41.2	17.7	58.8
#8	1.8	1.5	84.9	34.1	7.1	65.9
#16	1.4	1.2	66.4	26.7	7.4	73.3
#30	1.3	1.1	47.6	19.3	7.4	80.7
#50	1.2	1.0	20.4	8.7	10.7	91.3
#100	1.2	1.0	3.8	2.2	6.5	97.8
LBW	1.0	0.8	0.9	0.9	1.3	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	62	Workability Factor:	34	36.6
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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

Production Gradation Report

PLANT #: P-103

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	63-114	Highland	1150	6.95	2.65	39.0
Total Wt			2950	17.68		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"	81.9	100.0	100.0	91.7	8.3	8.3
1/2"	34.8	98.2	100.0	69.9	21.8	30.1
3/8"	15.1	85.6	100.0	59.0	10.9	41.0
#4	3.0	8.1	99.0	41.2	17.7	58.8
#8	1.8	1.5	84.9	34.1	7.1	65.9
#16	1.4	1.2	66.4	26.7	7.4	73.3
#30	1.3	1.1	47.6	19.3	7.4	80.7
#50	1.2	1.0	20.4	8.7	10.7	91.3
#100	1.2	1.0	3.8	2.2	6.5	97.8
LBW	1.0	0.8	0.9	0.9	1.3	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

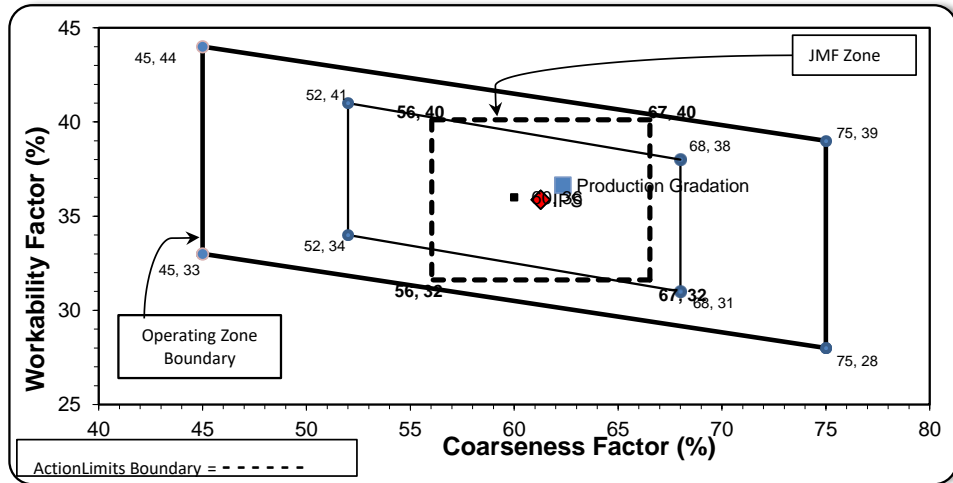
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations Adjusted WF Initial Production Sample (IPS)

Coarseness Factor: 62	Workability Factor: 34	36.6
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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:
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Aggregate Optimization Chart

PLANT #: 12

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt			2905	17.69		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"	97.5	100.0	100.0	98.8	1.2	1.2
3/4"	78.9	100.0	100.0	89.5	9.3	10.5
1/2"	34.0	96.4	100.0	66.7	22.8	33.3
3/8"	13.8	86.1	100.0	55.5	11.2	44.5
#4	2.3	17.9	96.0	41.0	14.5	59.0
#8	1.7	3.5	81.3	33.4	7.6	66.6
#16	1.6	1.9	65.1	26.8	6.6	73.2
#30	1.5	1.6	49.0	20.3	6.5	79.7
#50	1.4	1.5	24.9	10.7	9.6	89.3
#100	1.3	1.4	4.1	2.4	8.3	97.6
LBW	0.9	1.2	0.5	0.8	1.6	99.2

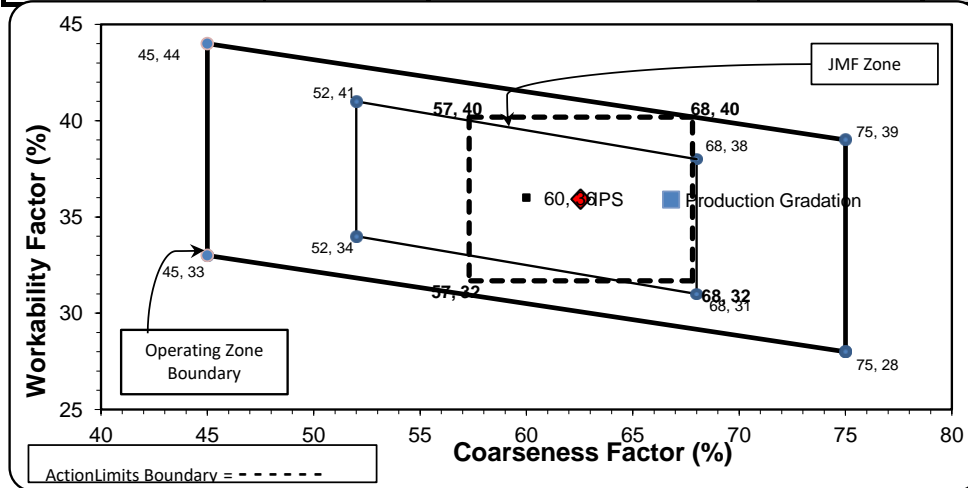
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	67	Workability Factor:	33	Adjusted WF	35.9	Coarseness Factor:	63
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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"	89.0	10.3	11.0
1/2"	70.3	18.7	29.7
3/8"	59.9	10.4	40.1
#4	41.9	18.0	58.1
#8	35.9	6.0	64.1
#16	27.8	8.2	72.2
#30	18.9	8.8	81.1
#50	6.3	12.6	93.7
#100	1.7	4.6	98.3
LBW	1.0	0.7	99.0

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Aggregate Optimization Chart

PLANT #: p11

Contractor: _____

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1505	9.21	2.62	51.8
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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



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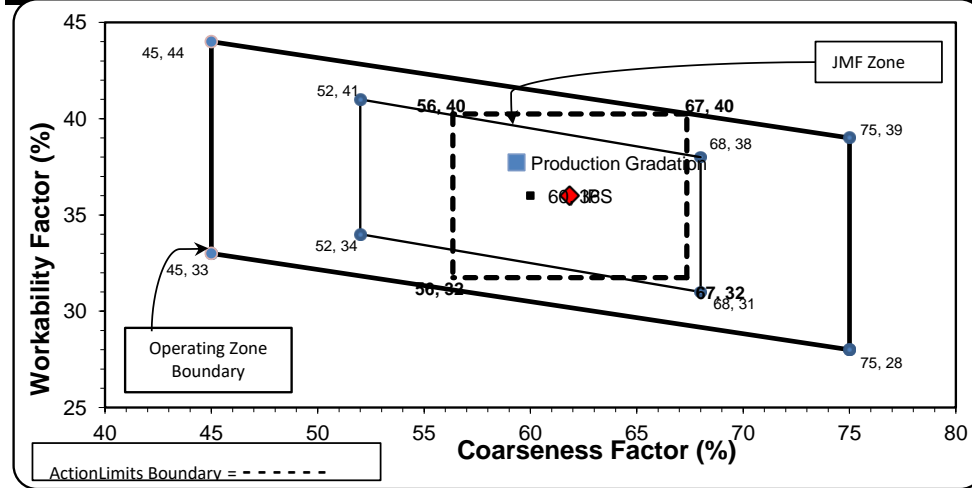
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.6	100.0	100.0	98.8	1.2	1.2
3/4"	80.8	100.0	100.0	90.1	8.7	9.9
1/2"	43.1	96.4	100.0	70.2	19.8	29.8
3/8"	28.1	86.1	100.0	61.6	8.7	38.4
#4	6.5	17.9	96.5	43.1	18.4	56.9
#8	3.3	3.5	83.9	35.2	7.9	64.8
#16	2.1	1.9	69.3	28.7	6.5	71.3
#30	2.7	1.6	49.6	21.2	7.5	78.8
#50	2.6	1.5	23.1	10.6	10.6	89.4
#100	2.4	1.4	6.8	4.1	6.6	95.9
LBW	2.0	1.2	1.4	1.7	2.4	98.3

*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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	59	Workability Factor:	35	37.7	Coarseness Factor:	62
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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"	100.0	0.0	0.0	
3/4"	95.0	5.0	5.0	
1/2"	72.3	22.8	27.7	
3/8"	60.4	11.8	39.6	
#4	42.6	17.8	57.4	
#8	36.0	6.6	64.0	
#16	29.5	6.5	70.5	
#30	20.3	9.2	79.7	
#50	9.5	10.8	90.5	
#100	3.4	6.1	96.6	
LBW	1.3	2.1	98.7	

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Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
Total Wt			2950	17.68		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"	81.9	100.0	100.0	91.7	8.3	8.3
1/2"	34.8	98.2	100.0	69.9	21.8	30.1
3/8"	15.1	85.6	100.0	59.0	10.9	41.0
#4	3.0	8.1	98.6	41.0	17.9	59.0
#8	1.8	1.5	86.2	34.7	6.4	65.3
#16	1.4	1.2	66.7	26.8	7.8	73.2
#30	1.3	1.1	44.3	18.0	8.8	82.0
#50	1.2	1.0	20.8	8.8	9.2	91.2
#100	1.2	1.0	4.2	2.3	6.5	97.7
LBW	1.0	0.8	0.8	0.9	1.4	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 4% for the 3/4" sieve when

a 1.5" max. size (nom. Max. 1.0") aggregate is used.

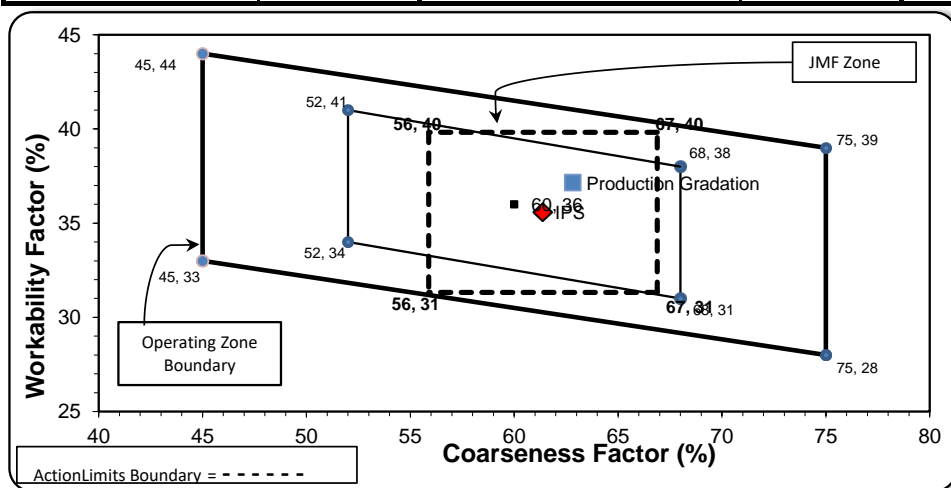
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	63	Workability Factor:	35	37.2
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Coarseness Factor:	61
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Workability Factor:	36
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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

Production Gradation Report

PLANT #: **P-38**

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
Total Wt			2950	17.68		100.0

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



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 Farmington Hills, MI 48336

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"	81.9	100.0	100.0	91.7	8.3	8.3
1/2"	34.8	98.2	100.0	69.9	21.8	30.1
3/8"	15.1	85.6	100.0	59.0	10.9	41.0
#4	3.0	8.1	98.6	41.0	17.9	59.0
#8	1.8	1.5	86.2	34.7	6.4	65.3
#16	1.4	1.2	66.7	26.8	7.8	73.2
#30	1.3	1.1	44.3	18.0	8.8	82.0
#50	1.2	1.0	20.8	8.8	9.2	91.2
#100	1.2	1.0	4.2	2.3	6.5	97.7
LBW	1.0	0.8	0.8	0.9	1.4	99.1

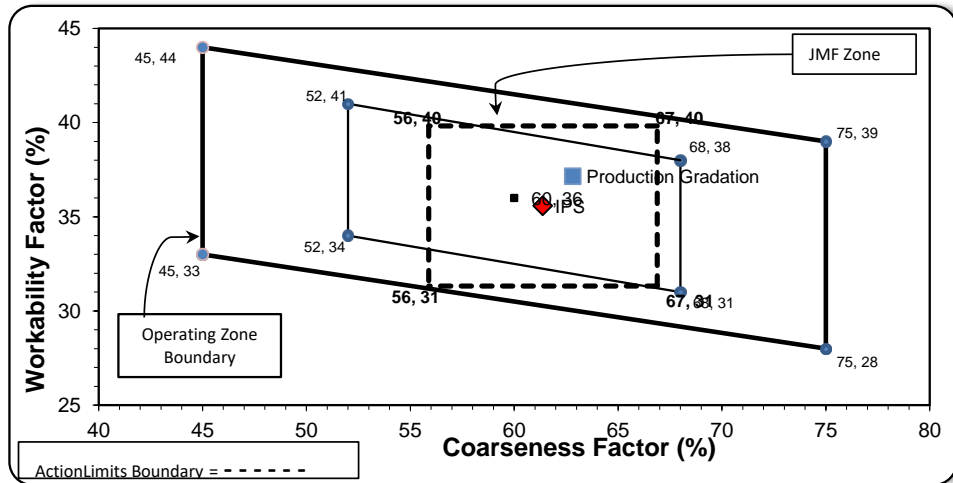
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	63	Workability Factor:	35	37.2
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Coarseness Factor:	61
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Workability Factor:	36
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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

Production Gradation Report

PLANT #: **P-02**

Sample Date: 4/29/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 4/30/2024 through 5/6/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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



Superior Materials, LLC
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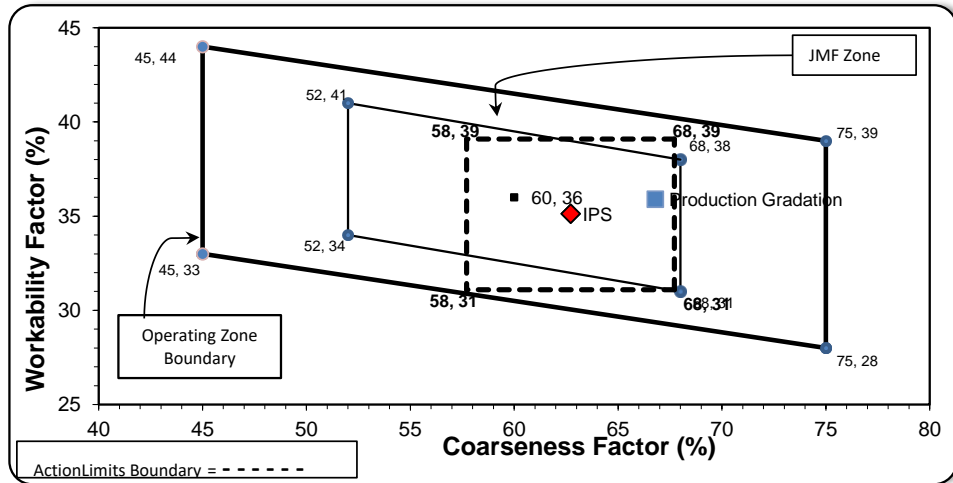
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.5	100.0	100.0	98.8	1.2	1.2
3/4"	78.9	100.0	100.0	89.5	9.3	10.5
1/2"	34.0	96.4	100.0	66.7	22.8	33.3
3/8"	13.8	86.1	100.0	55.5	11.2	44.5
#4	2.3	17.9	96.0	41.0	14.5	59.0
#8	1.7	3.5	81.3	33.4	7.6	66.6
#16	1.6	1.9	65.1	26.8	6.6	73.2
#30	1.5	1.6	49.0	20.3	6.5	79.7
#50	1.4	1.5	24.9	10.7	9.6	89.3
#100	1.3	1.4	4.1	2.4	8.3	97.6
LBW	0.9	1.2	0.5	0.8	1.6	99.2

*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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	67	Workability Factor:	33	35.9
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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: