

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: 9/16/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1400	8.34	2.69	47.5
26A	58-003	Stoneco	400	2.38	2.69	13.6
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"	99.7	100.0	100.0	99.9	0.1	0.1
3/4"	80.8	100.0	100.0	90.9	9.0	9.1
1/2"	38.2	99.8	100.0	70.6	20.2	29.4
3/8"	13.6	90.0	100.0	57.6	13.0	42.4
#4	2.8	12.4	99.3	41.7	15.9	58.3
#8	1.5	3.1	85.9	34.6	7.1	65.4
#16	1.0	1.9	68.6	27.5	7.1	72.5
#30	1.0	1.7	48.1	19.5	8.0	80.5
#50	1.0	1.6	20.7	8.8	10.7	91.2
#100	0.9	1.5	4.0	2.2	6.6	97.8
LBW	1.0	1.4	0.4	0.8	1.4	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.

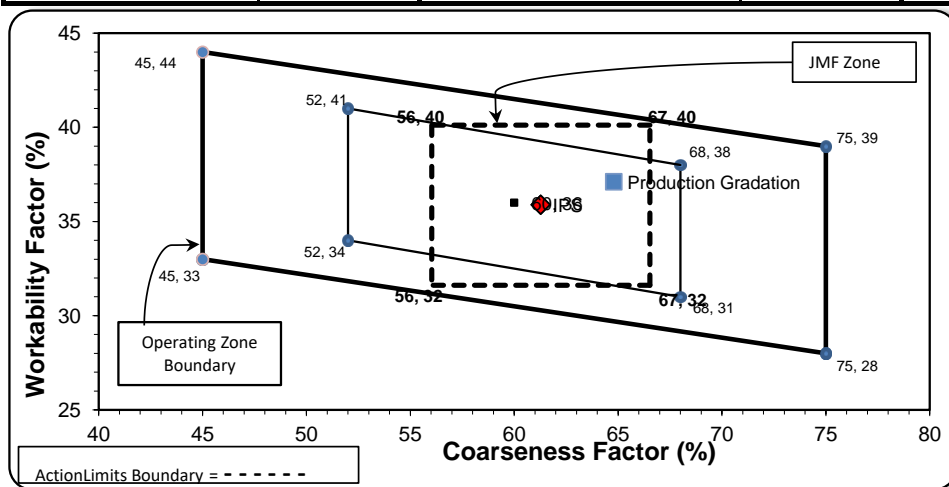
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	65	Workability Factor:	35	37.1
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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"	89.2	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: 9/16/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1400	8.34	2.69	47.5
26A	58-003	Stoneco	400	2.38	2.69	13.6
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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 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"	99.7	100.0	100.0	99.9	0.1	0.1
3/4"	80.8	100.0	100.0	90.9	9.0	9.1
1/2"	38.2	99.8	100.0	70.6	20.2	29.4
3/8"	13.6	90.0	100.0	57.6	13.0	42.4
#4	2.8	12.4	99.3	41.7	15.9	58.3
#8	1.5	3.1	85.9	34.6	7.1	65.4
#16	1.0	1.9	68.6	27.5	7.1	72.5
#30	1.0	1.7	48.1	19.5	8.0	80.5
#50	1.0	1.6	20.7	8.8	10.7	91.2
#100	0.9	1.5	4.0	2.2	6.6	97.8
LBW	1.0	1.4	0.4	0.8	1.4	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

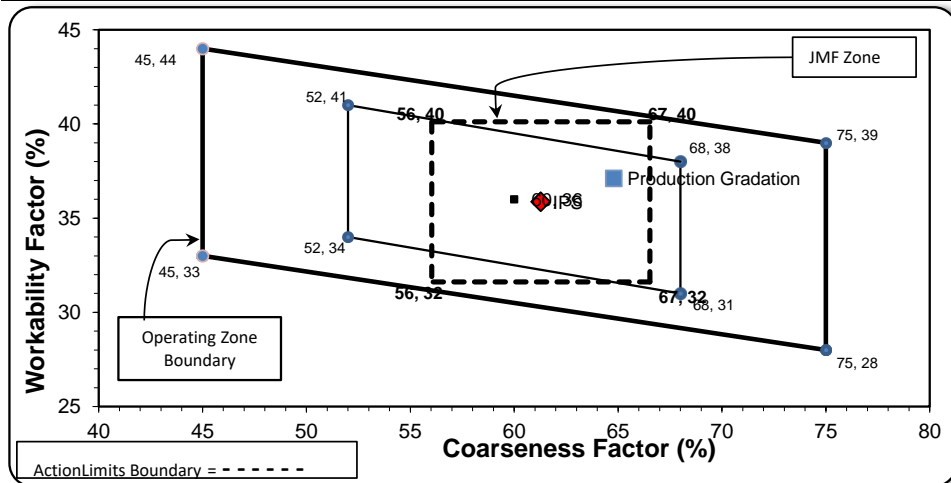
Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	65	Workability Factor:	35	37.1
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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"	89.2	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

PLANT #: 12

Sample Date: 9/16/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1350	8.26	2.62	46.5
26A	71-47	Presque Isle	405	2.48	2.62	13.9
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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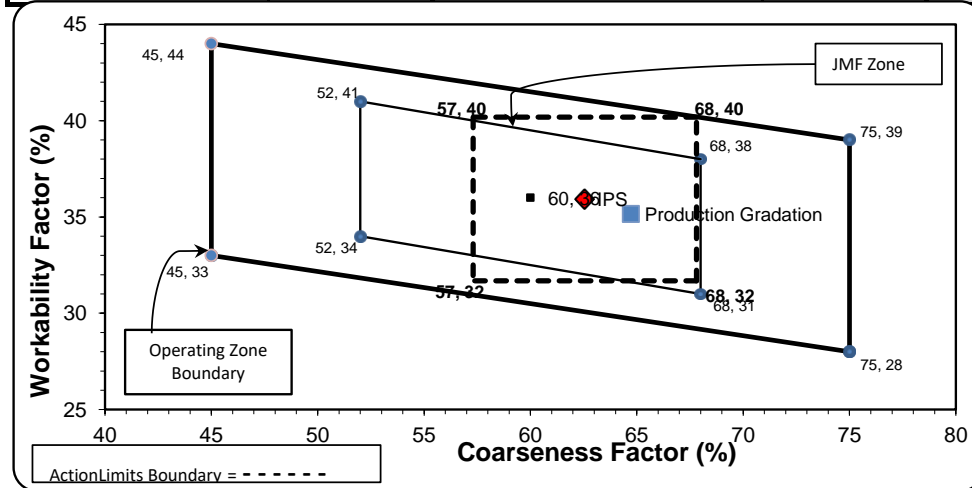
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.1	100.0	100.0	98.2	1.8	1.8
3/4"	62.5	100.0	100.0	82.6	15.6	17.4
1/2"	25.7	92.4	100.0	64.4	18.2	35.6
3/8"	12.6	78.7	100.0	56.4	8.0	43.6
#4	3.0	14.6	97.0	41.8	14.6	58.2
#8	2.0	3.5	78.9	32.7	9.2	67.3
#16	1.9	2.0	61.9	25.7	7.0	74.3
#30	1.8	1.7	46.3	19.4	6.3	80.6
#50	1.8	1.6	25.6	11.2	8.2	88.8
#100	1.7	1.5	6.3	3.5	7.7	96.5
LBW	1.1	1.3	0.7	1.0	2.5	99.0

*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:	65	Workability Factor:	33	Adjusted WF	35.2	Coarseness Factor:	63
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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"	89.0	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: 9/16/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1355	8.29	2.62	46.6
26A	71-47	Presque Isle	400	2.45	2.62	13.8
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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 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"	96.1	100.0	100.0	98.2	1.8	1.8
3/4"	62.5	100.0	100.0	82.5	15.7	17.5
1/2"	25.7	92.4	100.0	64.3	18.2	35.7
3/8"	12.6	78.7	100.0	56.3	8.0	43.7
#4	3.0	14.6	97.0	41.8	14.5	58.2
#8	2.0	3.5	78.9	32.6	9.2	67.4
#16	1.9	2.0	61.9	25.7	7.0	74.3
#30	1.8	1.7	46.3	19.4	6.3	80.6
#50	1.8	1.6	25.6	11.2	8.2	88.8
#100	1.7	1.5	6.3	3.5	7.7	96.5
LBW	1.1	1.3	0.7	1.0	2.5	99.0

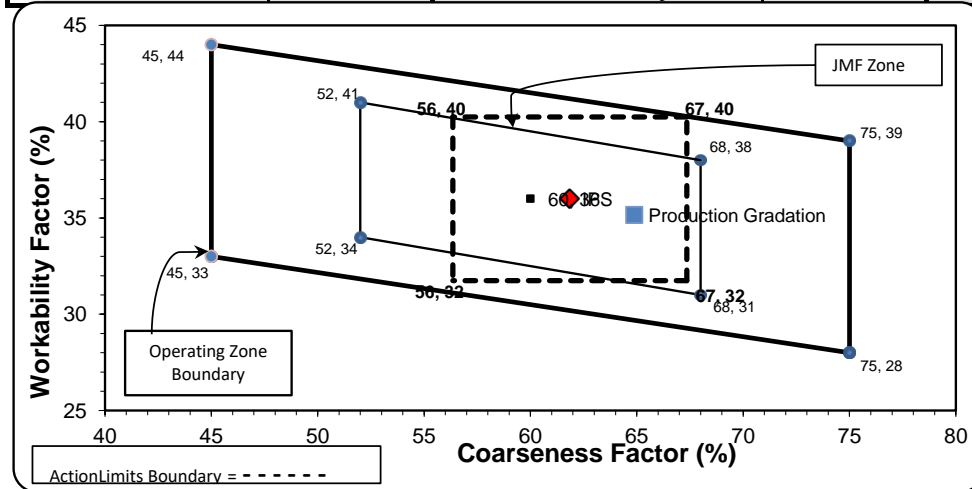
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:	65	Workability Factor:	33	Adjusted WF	35.1	Coarseness Factor:	62
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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"	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: 9/16/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1475	8.79	2.69	50.0
26A	58-003	Stoneco	325	1.94	2.69	11.0
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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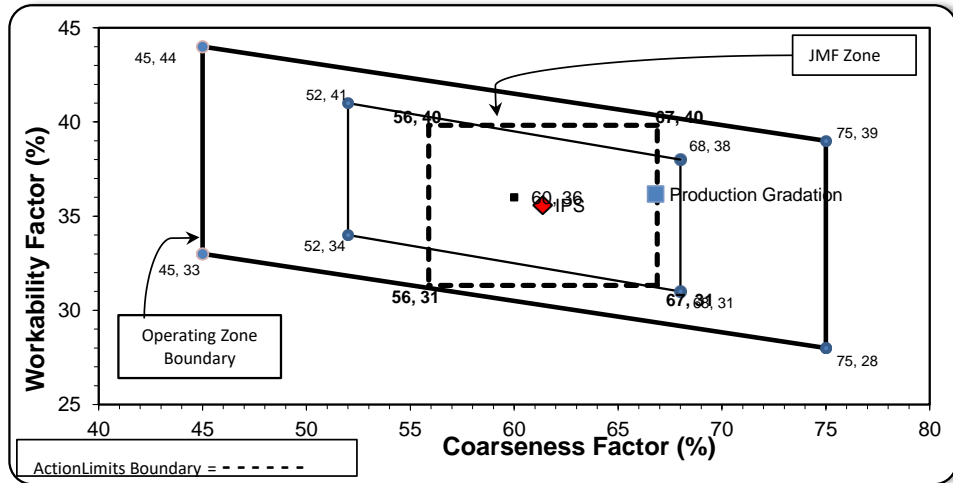
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.7	100.0	100.0	99.9	0.2	0.2
3/4"	80.8	100.0	100.0	90.4	9.4	9.6
1/2"	38.2	99.8	100.0	69.1	21.3	30.9
3/8"	13.6	90.0	100.0	55.7	13.4	44.3
#4	2.8	12.4	97.4	40.7	15.0	59.3
#8	1.5	3.1	83.6	33.7	7.1	66.3
#16	1.0	1.9	63.9	25.6	8.1	74.4
#30	1.0	1.7	43.0	17.5	8.2	82.6
#50	1.0	1.6	20.6	8.7	8.7	91.3
#100	0.9	1.5	4.3	2.3	6.4	97.7
LBW	1.0	1.4	0.5	0.8	1.4	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:	34	Adjusted WF	36.2
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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"	89.1	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: 9/16/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1475	8.79	2.69	50.0
26A	58-003	Stoneco	325	1.94	2.69	11.0
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
Total Wt			2950	17.68		100.0

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



Superior Materials, LLC
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 Farmington Hills, MI 48336

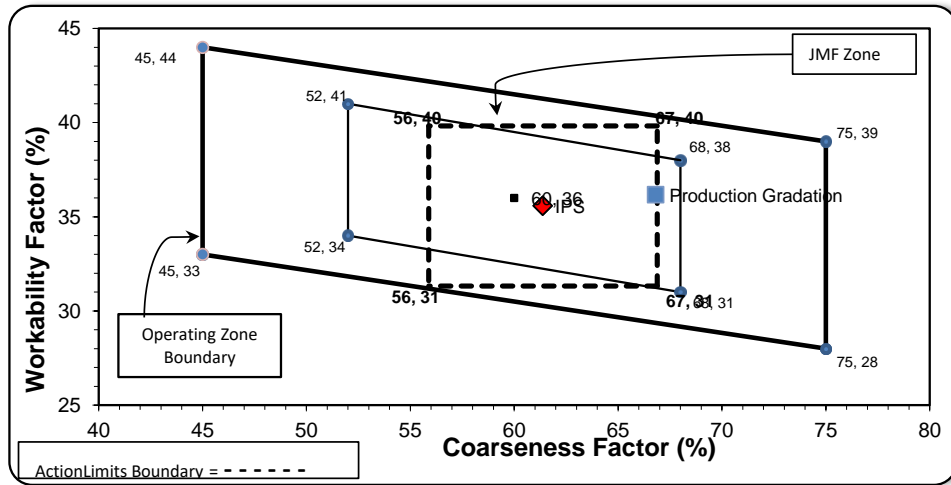
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.7	100.0	100.0	99.9	0.2	0.2
3/4"	80.8	100.0	100.0	90.4	9.4	9.6
1/2"	38.2	99.8	100.0	69.1	21.3	30.9
3/8"	13.6	90.0	100.0	55.7	13.4	44.3
#4	2.8	12.4	97.4	40.7	15.0	59.3
#8	1.5	3.1	83.6	33.7	7.1	66.3
#16	1.0	1.9	63.9	25.6	8.1	74.4
#30	1.0	1.7	43.0	17.5	8.2	82.6
#50	1.0	1.6	20.6	8.7	8.7	91.3
#100	0.9	1.5	4.3	2.3	6.4	97.7
LBW	1.0	1.4	0.5	0.8	1.4	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:	34	36.2
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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"	89.1	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: 9/16/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 9/17/2024 through 9/23/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1350	8.26	2.62	46.5
26A	71-47	Presque Isle	405	2.48	2.62	13.9
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"	96.1	100.0	100.0	98.2	1.8	1.8
3/4"	62.5	100.0	100.0	82.6	15.6	17.4
1/2"	25.7	92.4	100.0	64.4	18.2	35.6
3/8"	12.6	78.7	100.0	56.4	8.0	43.6
#4	3.0	14.6	97.0	41.8	14.6	58.2
#8	2.0	3.5	78.9	32.7	9.2	67.3
#16	1.9	2.0	61.9	25.7	7.0	74.3
#30	1.8	1.7	46.3	19.4	6.3	80.6
#50	1.8	1.6	25.6	11.2	8.2	88.8
#100	1.7	1.5	6.3	3.5	7.7	96.5
LBW	1.1	1.3	0.7	1.0	2.5	99.0

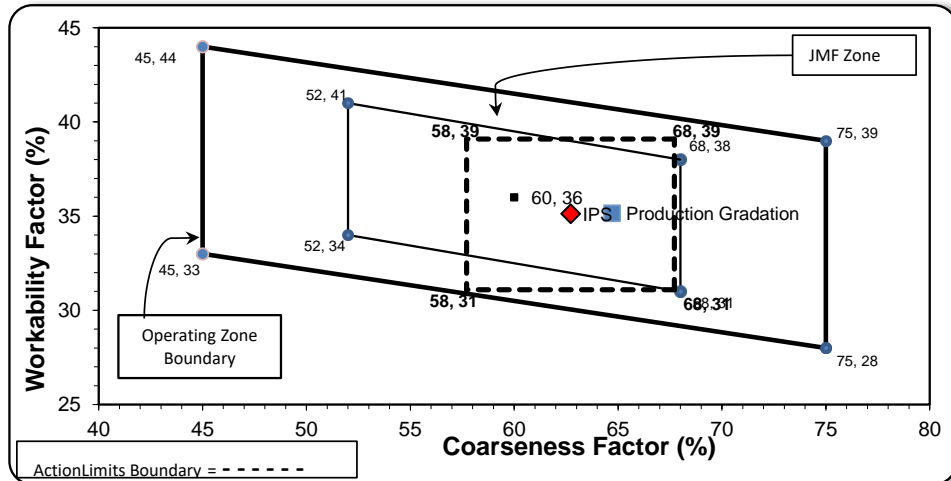
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size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

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

Coarseness Factor:	65	Workability Factor:	33	35.2
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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: