

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

Sample Date: 6/10/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 6/11/2024 through 6/17/2024

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

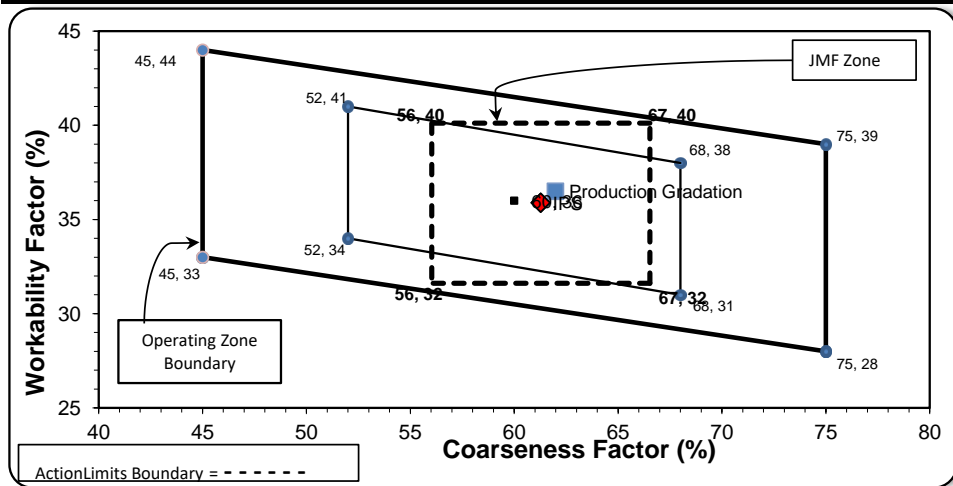
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.9	7.1	7.1
1/2"	39.6	99.1	100.0	71.2	21.7	28.8
3/8"	17.8	86.0	100.0	59.1	12.1	40.9
#4	2.9	6.8	98.9	40.9	18.2	59.1
#8	1.7	1.3	84.7	34.0	6.9	66.0
#16	1.5	1.2	67.3	27.1	6.9	72.9
#30	1.4	1.1	48.2	19.6	7.5	80.4
#50	1.3	1.1	16.1	7.0	12.6	93.0
#100	1.2	1.0	2.5	1.7	5.4	98.3
LBW	1.0	0.9	0.4	0.8	0.9	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:	62	Workability Factor:	34	36.5
---------------------------	-----------	----------------------------	-----------	-------------

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: 6/10/24

Concrete Grade: **DM, 4500HP**

Contractor: _____

Dates Test Represents: 6/11/2024 through 6/17/2024

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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.9	7.1	7.1
1/2"	39.6	99.1	100.0	71.2	21.7	28.8
3/8"	17.8	86.0	100.0	59.1	12.1	40.9
#4	2.9	6.8	98.9	40.9	18.2	59.1
#8	1.7	1.3	84.7	34.0	6.9	66.0
#16	1.5	1.2	67.3	27.1	6.9	72.9
#30	1.4	1.1	48.2	19.6	7.5	80.4
#50	1.3	1.1	16.1	7.0	12.6	93.0
#100	1.2	1.0	2.5	1.7	5.4	98.3
LBW	1.0	0.9	0.4	0.8	0.9	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.

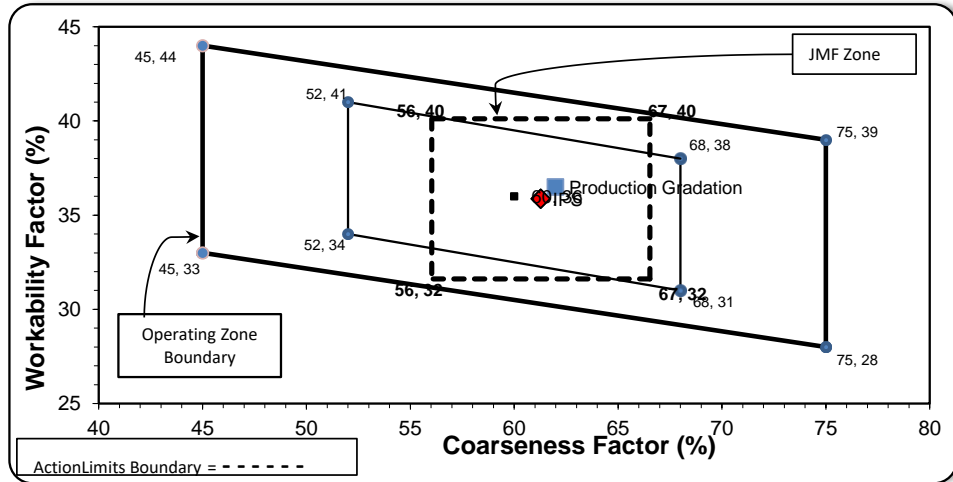
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations Adjusted WF Initial Production Sample (IPS)

Coarseness Factor: 62	Workability Factor: 34	Adjusted WF: 36.5
------------------------------	-------------------------------	--------------------------

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

PLANT #: 12

Contractor: _____

Sample Date: 6/10/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 6/11/2024 through 6/17/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	255	1.56	2.62	8.8
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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



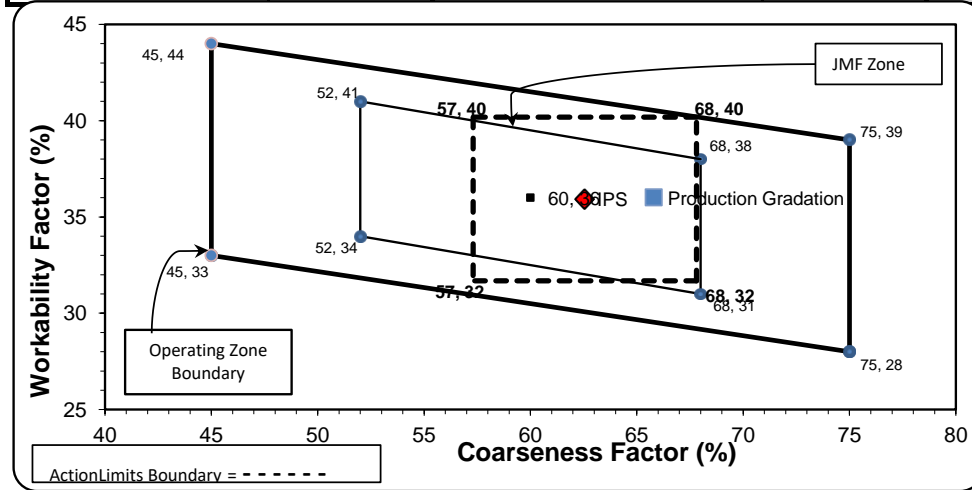
Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	74.2	100.0	100.0	86.7	12.3	13.3
1/2"	33.6	95.6	100.0	65.3	21.4	34.7
3/8"	18.0	84.0	100.0	56.3	9.1	43.7
#4	3.0	18.1	95.8	41.1	15.2	58.9
#8	2.4	3.7	80.7	33.5	7.6	66.5
#16	2.1	2.0	64.7	26.9	6.6	73.1
#30	2.1	1.7	49.5	20.8	6.0	79.2
#50	2.0	1.6	27.2	11.9	8.9	88.1
#100	2.0	1.5	6.4	3.7	8.2	96.3
LBW	1.7	1.3	0.8	1.3	2.4	98.7

*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:	66	Workability Factor:	34	Adjusted WF	36.0	Coarseness Factor:	63
---------------------------	-----------	----------------------------	-----------	--------------------	-------------	---------------------------	-----------



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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

PLANT #: p11

Contractor: _____

Sample Date: 6/10/24

Concrete Grade: DM, 4500HP

Dates Test Represents: 6/11/2024 through 6/17/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4
26A	71-47	Presque Isle	350	2.14	2.62	12.0
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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



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

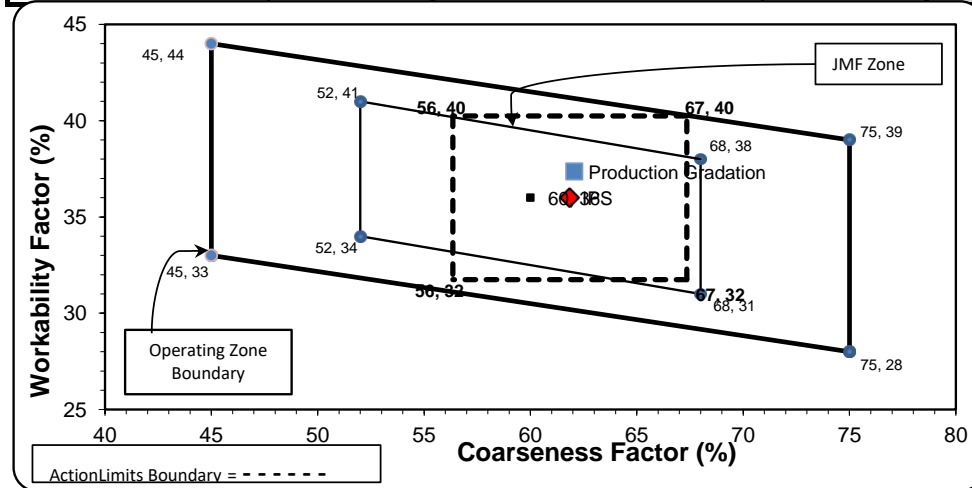
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.9	100.0	100.0	98.5	1.5	1.5
3/4"	71.5	100.0	100.0	86.2	12.3	13.8
1/2"	34.5	95.6	100.0	67.8	18.4	32.2
3/8"	20.4	84.0	100.0	59.6	8.2	40.4
#4	4.6	18.1	95.8	42.3	17.2	57.7
#8	2.9	3.7	83.4	34.9	7.5	65.1
#16	2.4	2.0	68.0	28.3	6.5	71.7
#30	2.3	1.7	48.9	20.7	7.6	79.3
#50	2.2	1.6	24.3	10.9	9.8	89.1
#100	2.0	1.5	7.2	4.0	6.9	96.0
LBW	1.2	1.3	1.3	1.3	2.7	98.7

*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:	35	Adjusted WF	37.4	Coarseness Factor:	62
--------------------	-----------	---------------------	-----------	-------------	-------------	--------------------	-----------



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

PREPARED BY:
 SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

Sample Date: 6/10/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 6/11/2024 through 6/17/2024

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	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
 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"	85.1	100.0	100.0	92.9	7.1	7.1
1/2"	39.6	99.1	100.0	71.2	21.7	28.8
3/8"	17.8	86.0	100.0	59.1	12.1	40.9
#4	2.9	6.8	98.3	40.6	18.5	59.4
#8	1.7	1.3	85.1	34.2	6.5	65.8
#16	1.5	1.2	63.1	25.5	8.7	74.5
#30	1.4	1.1	39.1	16.1	9.4	83.9
#50	1.3	1.1	15.2	6.7	9.4	93.3
#100	1.2	1.0	2.6	1.7	5.0	98.3
LBW	1.0	0.9	0.5	0.8	0.9	99.2

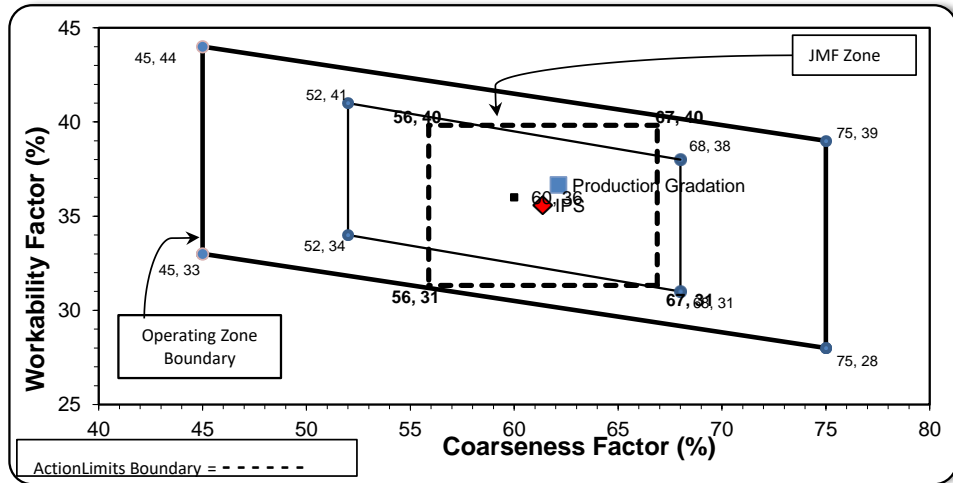
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size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

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

Coarseness Factor:	62	Workability Factor:	34	36.7
---------------------------	-----------	----------------------------	-----------	-------------

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: 6/10/24

Concrete Grade: DM, 4500HP

Contractor: _____

Dates Test Represents: 6/11/2024 through 6/17/2024

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

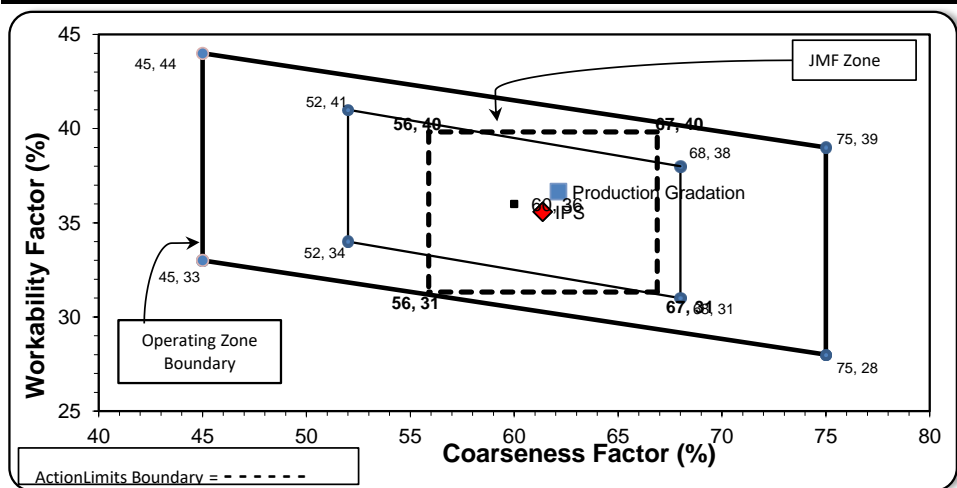
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	85.1	100.0	100.0	92.9	7.1	7.1
1/2"	39.6	99.1	100.0	71.2	21.7	28.8
3/8"	17.8	86.0	100.0	59.1	12.1	40.9
#4	2.9	6.8	98.3	40.6	18.5	59.4
#8	1.7	1.3	85.1	34.2	6.5	65.8
#16	1.5	1.2	63.1	25.5	8.7	74.5
#30	1.4	1.1	39.1	16.1	9.4	83.9
#50	1.3	1.1	15.2	6.7	9.4	93.3
#100	1.2	1.0	2.6	1.7	5.0	98.3
LBW	1.0	0.9	0.5	0.8	0.9	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: 62	Workability Factor: 34	36.7
-------------------------------------	--------------------------------------	-------------

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: 6/10/24

Concrete Grade: **DM, 4500HP**

Contractor: _____

Dates Test Represents: 6/11/2024 through 6/17/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	255	1.56	2.62	8.8
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
Total Wt			2905	17.69		100.0

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



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"	98.1	100.0	100.0	99.0	1.0	1.0
3/4"	74.2	100.0	100.0	86.7	12.3	13.3
1/2"	33.6	95.6	100.0	65.3	21.4	34.7
3/8"	18.0	84.0	100.0	56.3	9.1	43.7
#4	3.0	18.1	95.8	41.1	15.2	58.9
#8	2.4	3.7	80.7	33.5	7.6	66.5
#16	2.1	2.0	64.7	26.9	6.6	73.1
#30	2.1	1.7	49.5	20.8	6.0	79.2
#50	2.0	1.6	27.2	11.9	8.9	88.1
#100	2.0	1.5	6.4	3.7	8.2	96.3
LBW	1.7	1.3	0.8	1.3	2.4	98.7

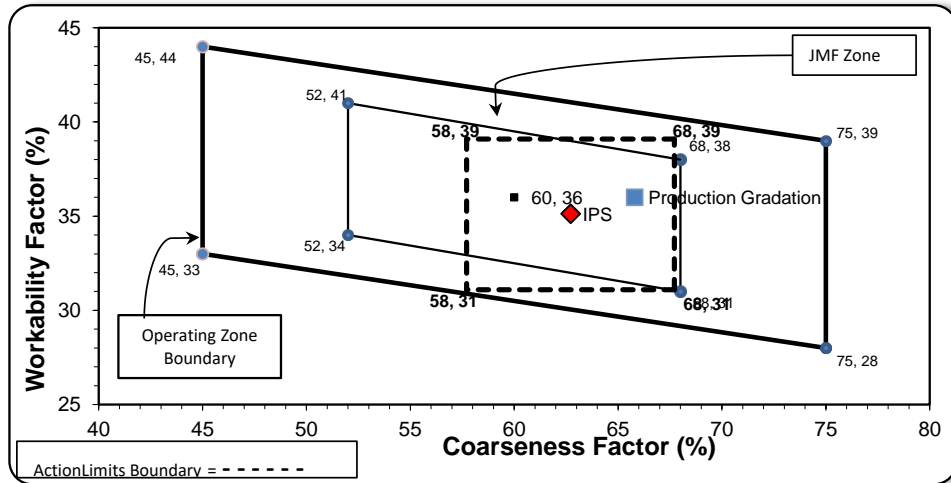
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size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

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

Coarseness Factor: 66	Workability Factor: 34	Adjusted WF: 36.0
------------------------------	-------------------------------	--------------------------

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: