Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-101**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.7
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	75-051	Mid Michigan	1150	6.93	2.66	39.7
		Total Wt	**2900**	**17.63**		100.0

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

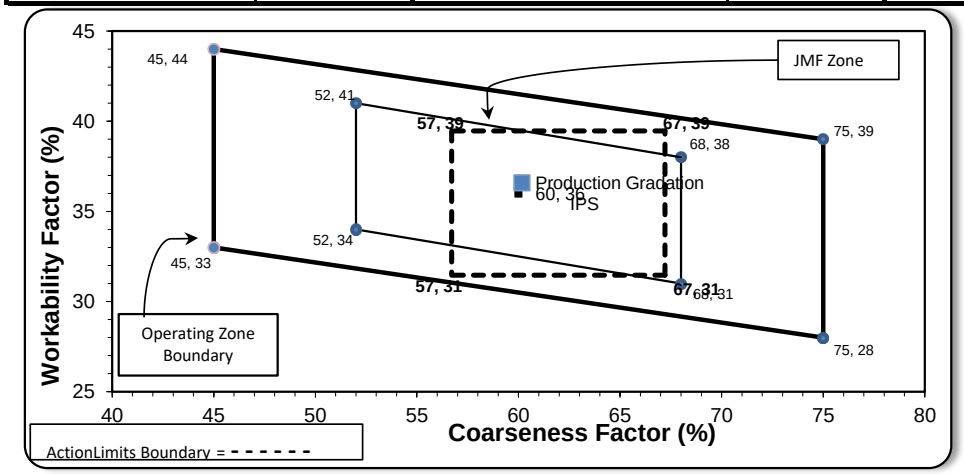
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	82.4	100.0	100.0	90.9	9.1	9.1
1/2"	40.7	95.8	100.0	69.0	21.9	31.0
3/8"	25.6	86.4	100.0	60.3	8.6	39.7
#4	4.5	21.7	96.7	42.5	17.8	57.5
#8	1.9	6.0	82.2	34.1	8.4	65.9
#16	1.6	3.2	67.7	28.0	6.1	72.1
#30	1.6	2.6	52.1	21.7	6.2	78.3
#50	1.5	2.3	26.7	11.6	10.2	88.4
#100	1.5	2.2	7.3	3.9	7.7	96.1
LBW	1.2	2.0	1.3	1.3	2.6	98.7

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:	60	Workability Factor:	34	Adjusted WF 36.6



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

Production Gradation Report

PLANT #: **P-102**

Contractor: _____

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1575	9.38	2.69	53.4
26A	58-003	Stoneco	225	1.34	2.69	7.6
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
		Total Wt	**2950**	**17.68**		100.0

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

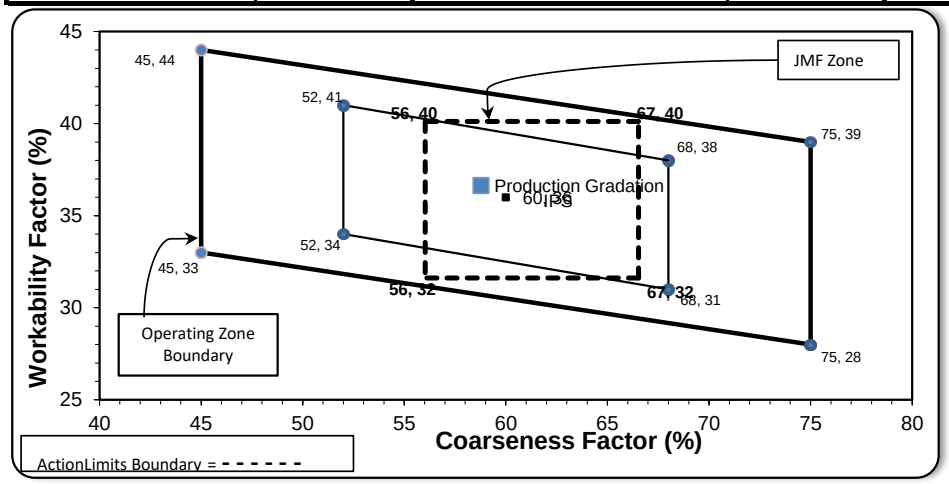
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	87.0	100.0	100.0	93.1	6.9	6.9
1/2"	48.9	100.0	100.0	72.7	20.3	27.3
3/8"	28.9	90.2	100.0	61.3	11.4	38.7
#4	5.0	9.9	98.3	41.7	19.5	58.3
#8	2.6	3.2	83.4	34.1	7.6	65.9
#16	2.1	2.4	65.9	27.0	7.2	73.0
#30	1.8	2.0	46.7	19.3	7.7	80.7
#50	1.6	1.9	23.0	10.0	9.4	90.0
#100	1.6	1.8	6.6	3.6	6.4	96.4
LBW	1.3	1.6	1.3	1.3	2.2	98.7

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:	59	Workability Factor:	34	Adjusted WF 36.6



Intial 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

Production Gradation Report

PLANT #: **P-103**

Contractor: _____

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1575	9.38	2.69	53.4
26A	58-003	Stoneco	225	1.34	2.69	7.6
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
		Total Wt	**2950**	**17.68**		100.0

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

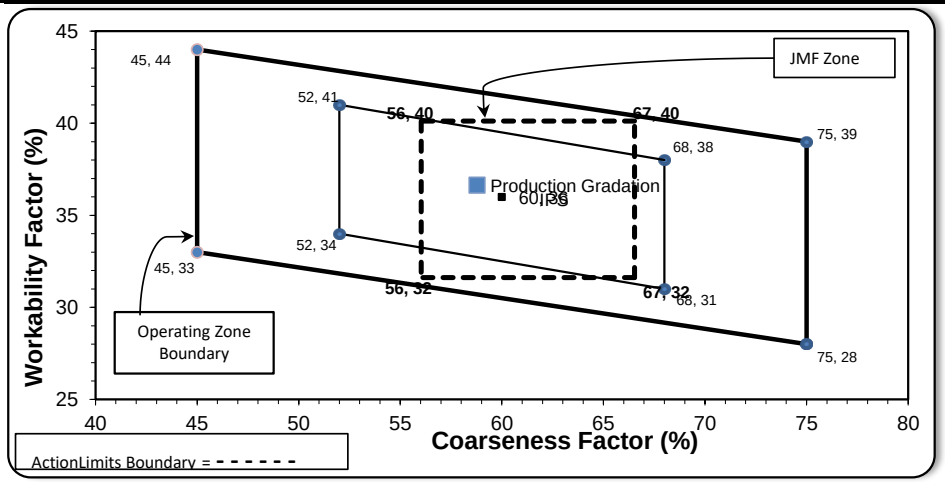
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	87.0	100.0	100.0	93.1	6.9	6.9
1/2"	48.9	100.0	100.0	72.7	20.3	27.3
3/8"	28.9	90.2	100.0	61.3	11.4	38.7
#4	5.0	9.9	98.3	41.7	19.5	58.3
#8	2.6	3.2	83.4	34.1	7.6	65.9
#16	2.1	2.4	65.9	27.0	7.2	73.0
#30	1.8	2.0	46.7	19.3	7.7	80.7
#50	1.6	1.9	23.0	10.0	9.4	90.0
#100	1.6	1.8	6.6	3.6	6.4	96.4
LBW	1.3	1.6	1.3	1.3	2.2	98.7

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:	59	Workability Factor:	34	Adjusted WF 36.6



Intial 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

Production Gradation Report

PLANT #: 14

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1600	9.53	2.69	54.1
26A	58-003	Stoneco	260	1.55	2.69	8.8
2NS	19-04	Schlegel	1100	6.60	2.67	37.2
		Total Wt	**2960**	**17.68**		100.0

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

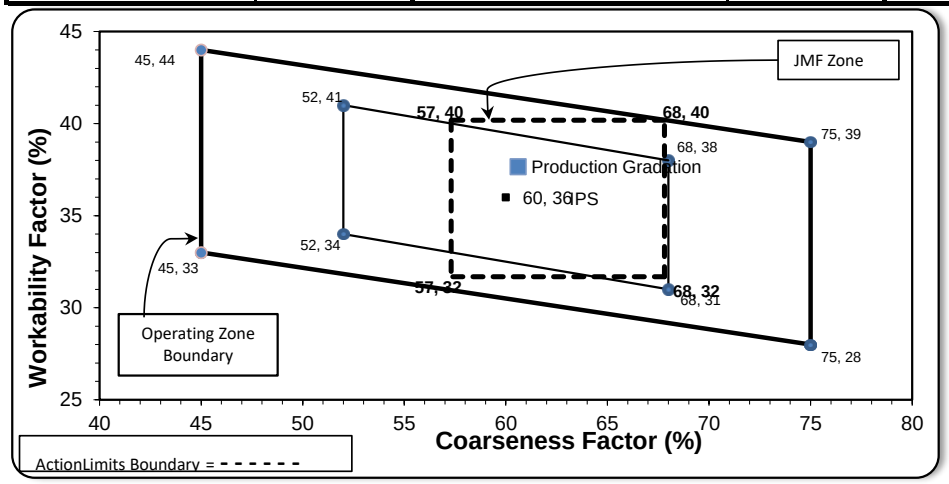
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	87.0	100.0	100.0	93.0	7.0	7.0
1/2"	48.9	100.0	100.0	72.4	20.6	27.6
3/8"	28.9	90.2	100.0	60.7	11.7	39.3
#4	5.0	9.9	99.9	40.7	20.0	59.3
#8	2.6	3.2	90.1	35.2	5.5	64.8
#16	2.1	2.4	69.4	27.1	8.0	72.9
#30	1.8	2.0	44.5	17.7	9.5	82.3
#50	1.6	1.9	14.3	6.3	11.3	93.7
#100	1.6	1.8	2.7	2.0	4.3	98.0
LBW	1.3	1.6	0.2	0.9	1.1	99.1

Builders Redi-Mix
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:	61	Workability Factor:	35	Adjusted WF 37.7



Intial Production Sample (IPS)

Coarseness Factor:	63
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

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **12**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	53.4
26A	71-47	Presque Isle	205	1.25	2.62	7.1
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		100.0

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

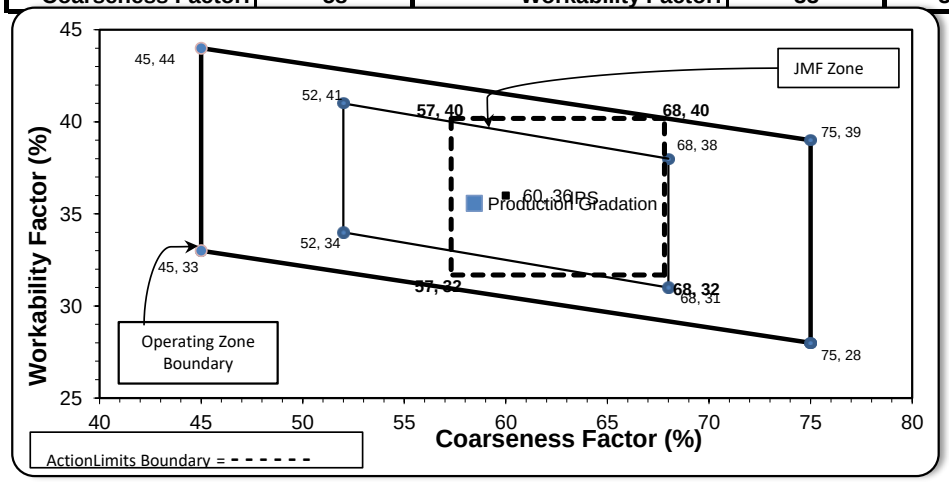
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	97.8	100.0	100.0	98.8	1.2	1.2
3/4"	79.0	100.0	100.0	88.8	10.0	11.2
1/2"	43.6	95.5	100.0	69.6	19.2	30.4
3/8"	28.2	88.5	100.0	60.9	8.7	39.1
#4	6.0	20.6	96.0	42.7	18.2	57.3
#8	2.8	4.8	78.9	33.1	9.6	66.9
#16	2.4	2.6	62.9	26.4	6.7	73.6
#30	2.3	2.0	47.7	20.3	6.1	79.7
#50	2.2	1.8	25.8	11.5	8.7	88.5
#100	2.1	1.8	6.0	3.6	7.9	96.4
LBW	1.8	1.5	0.7	1.3	2.3	98.7

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:	58	Workability Factor:	33	Adjusted WF 35.6



Intial Production Sample (IPS)

Coarseness Factor:	63
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

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **p11**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1605	9.82	2.62	55.2
26A	71-47	Presque Isle	150	0.92	2.62	5.2
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		100.0

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

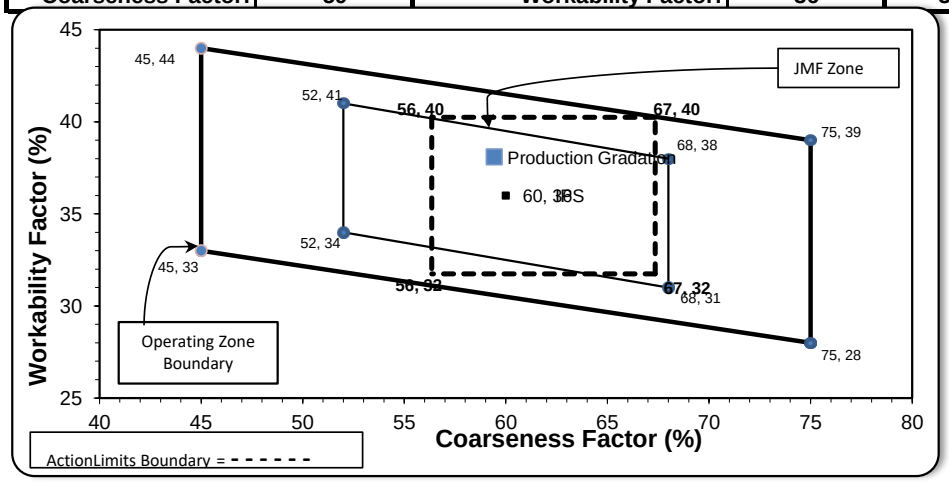
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.2	100.0	100.0	99.6	0.4	0.4
3/4"	86.2	100.0	100.0	92.4	7.2	7.6
1/2"	50.4	95.5	100.0	72.4	20.0	27.6
3/8"	31.8	88.5	100.0	61.7	10.6	38.3
#4	5.7	20.6	96.7	42.5	19.2	57.5
#8	3.0	4.8	85.1	35.6	6.9	64.4
#16	2.5	2.6	70.2	29.3	6.3	70.7
#30	2.4	2.0	50.6	21.5	7.8	78.5
#50	2.3	1.8	25.0	11.3	10.2	88.7
#100	2.2	1.8	7.6	4.3	6.9	95.7
LBW	1.8	1.5	1.3	1.6	2.7	98.4

*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.

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

Production Gradation ○ Batch Plant Gradations ◉ Aggregate Supplier Gradations

Coarseness Factor:	59	Workability Factor:	36	Adjusted WF 38.1



Intial Production Sample (IPS)

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-32**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1605	9.82	2.62	55.2
26A	71-47	Presque Isle	150	0.92	2.62	5.2
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		100.0

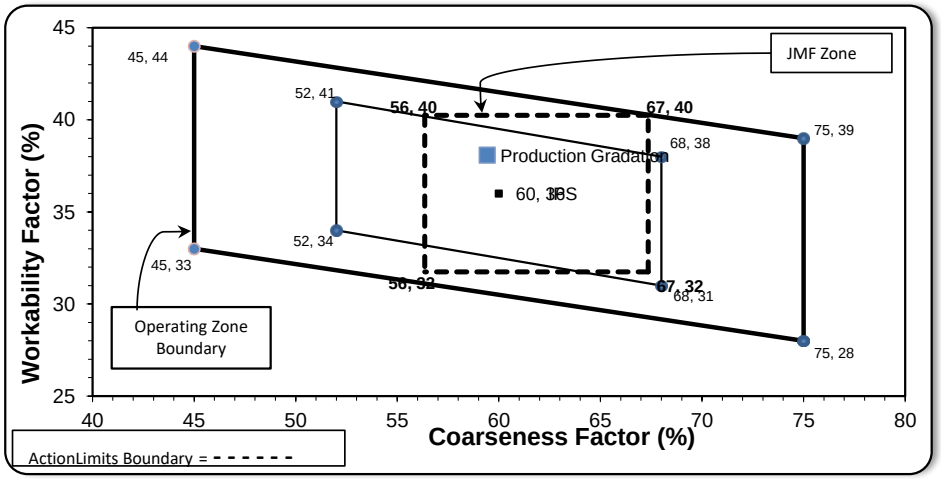
<----- Verify this number is 100%

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"	99.2	100.0	100.0	99.6	0.4	0.4
3/4"	86.2	100.0	100.0	92.4	7.2	7.6
1/2"	50.4	95.5	100.0	72.4	20.0	27.6
3/8"	31.8	88.5	100.0	61.7	10.6	38.3
#4	5.7	20.6	96.7	42.5	19.2	57.5
#8	3.0	4.8	85.1	35.6	6.9	64.4
#16	2.5	2.6	70.2	29.3	6.3	70.7
#30	2.4	2.0	50.6	21.5	7.8	78.5
#50	2.3	1.8	25.0	11.3	10.2	88.7
#100	2.2	1.8	7.6	4.3	6.9	95.7
LBW	1.8	1.5	1.3	1.6	2.7	98.4

*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:	59	Workability Factor:	36	Adjusted WF 38.1



Intial Production Sample (IPS)

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

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

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-35**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1575	9.38	2.69	53.4
26A	58-003	Stoneco	225	1.34	2.69	7.6
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
		Total Wt	**2950**	**17.68**		100.0

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

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"	87.0	100.0	100.0	93.1	6.9	6.9
1/2"	48.9	100.0	100.0	72.7	20.3	27.3
3/8"	28.9	90.2	100.0	61.3	11.4	38.7
#4	5.0	9.9	98.3	41.7	19.5	58.3
#8	2.6	3.2	83.4	34.1	7.6	65.9
#16	2.1	2.4	65.9	27.0	7.2	73.0
#30	1.8	2.0	46.7	19.3	7.7	80.7
#50	1.6	1.9	23.0	10.0	9.4	90.0
#100	1.6	1.8	6.6	3.6	6.4	96.4
LBW	1.3	1.6	1.3	1.3	2.2	98.7

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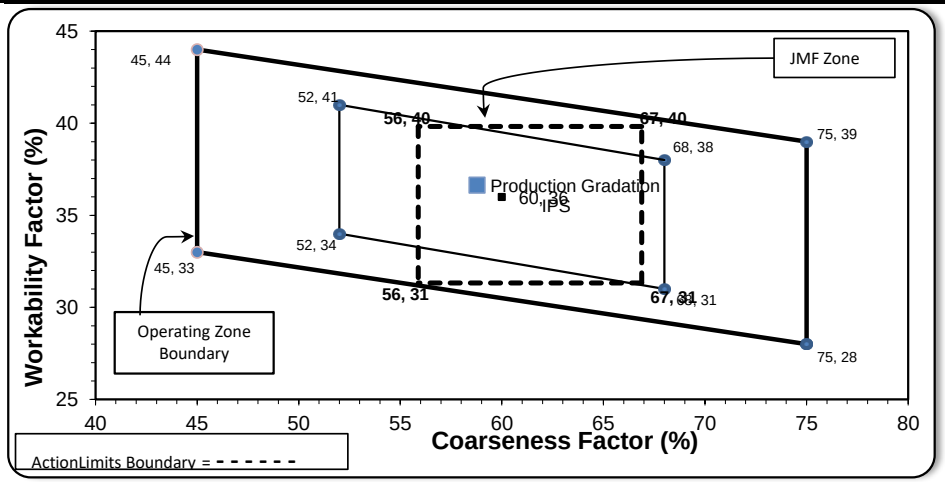
Suite 500
Farmington Hills, MI 48336

*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:	59	Workability Factor:	34	Adjusted WF 36.6



Intial 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

Production Gradation Report

PLANT #: **P-36**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	53.4
26A	71-47	Presque Isle	205	1.25	2.62	7.1
2NS	63-92	Grange Hall	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		100.0

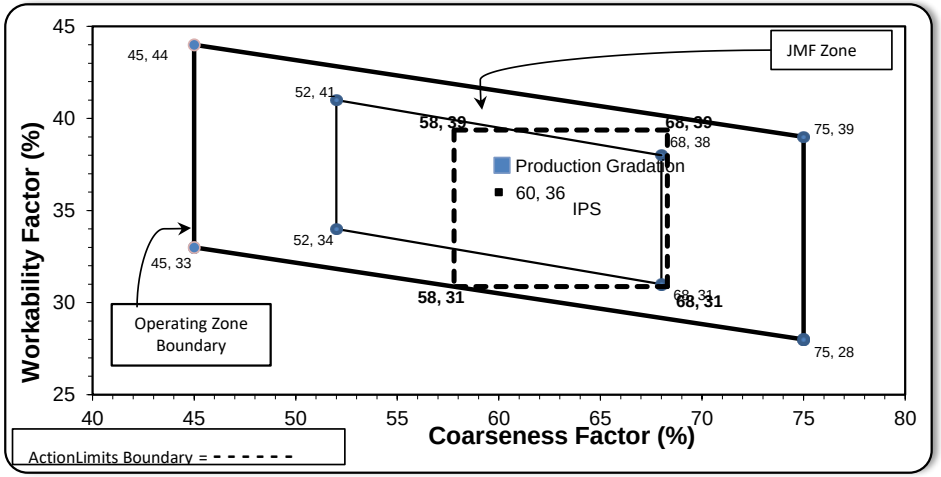
<----- Verify this number is 100%

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"	97.8	100.0	100.0	98.8	1.2	1.2
3/4"	79.0	100.0	100.0	88.8	10.0	11.2
1/2"	43.6	95.5	100.0	69.6	19.2	30.4
3/8"	28.2	88.5	100.0	60.9	8.7	39.1
#4	6.0	20.6	97.3	43.2	17.7	56.8
#8	2.8	4.8	83.7	35.0	8.2	65.0
#16	2.4	2.6	68.5	28.6	6.4	71.4
#30	2.3	2.0	48.8	20.7	7.9	79.3
#50	2.2	1.8	22.2	10.1	10.6	89.9
#100	2.1	1.8	4.3	2.9	7.1	97.1
LBW	1.8	1.5	0.7	1.3	1.6	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 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:	60	Workability Factor:	35	Adjusted WF 37.5



Intial 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"	99.1	0.9	0.9
3/4"	90.3	8.8	9.7
1/2"	69.2	21.1	30.8
3/8"	59.1	10.1	40.9
#4	41.8	17.3	58.2
#8	35.1	6.6	64.9
#16	28.5	6.6	71.5
#30	21.2	7.3	78.8
#50	8.7	12.5	91.3
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

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

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Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-38**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1575	9.38	2.69	53.4
26A	58-003	Stoneco	225	1.34	2.69	7.6
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
		Total Wt	**2950**	**17.68**		100.0

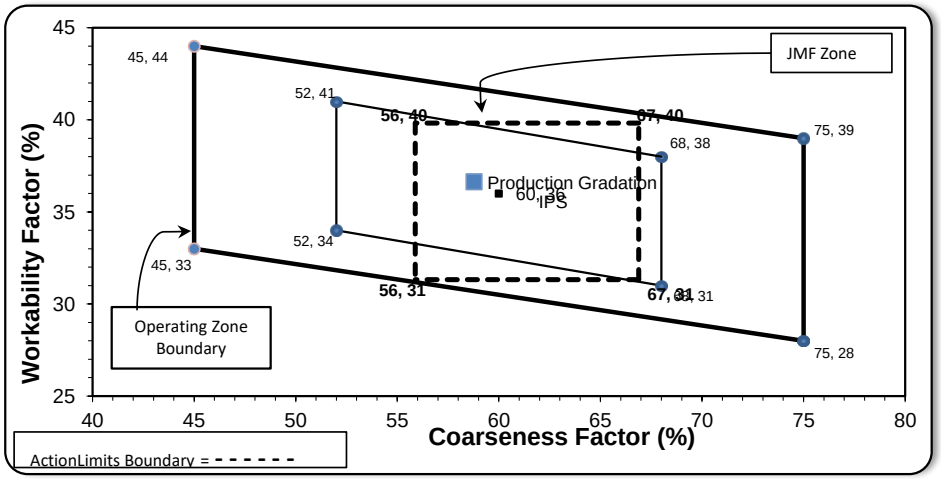
<----- Verify this number is 100%

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"	87.0	100.0	100.0	93.1	6.9	6.9
1/2"	48.9	100.0	100.0	72.7	20.3	27.3
3/8"	28.9	90.2	100.0	61.3	11.4	38.7
#4	5.0	9.9	98.3	41.7	19.5	58.3
#8	2.6	3.2	83.4	34.1	7.6	65.9
#16	2.1	2.4	65.9	27.0	7.2	73.0
#30	1.8	2.0	46.7	19.3	7.7	80.7
#50	1.6	1.9	23.0	10.0	9.4	90.0
#100	1.6	1.8	6.6	3.6	6.4	96.4
LBW	1.3	1.6	1.3	1.3	2.2	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 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:	59	Workability Factor:	34	Adjusted WF 36.6



Intial 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

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Suite 500
Farmington Hills, MI 48336

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Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-39**

Contractor:

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	44-051	Krake Willis Rd	1100	6.65	2.65	37.9
		Total Wt	**2905**	**17.69**		100.0

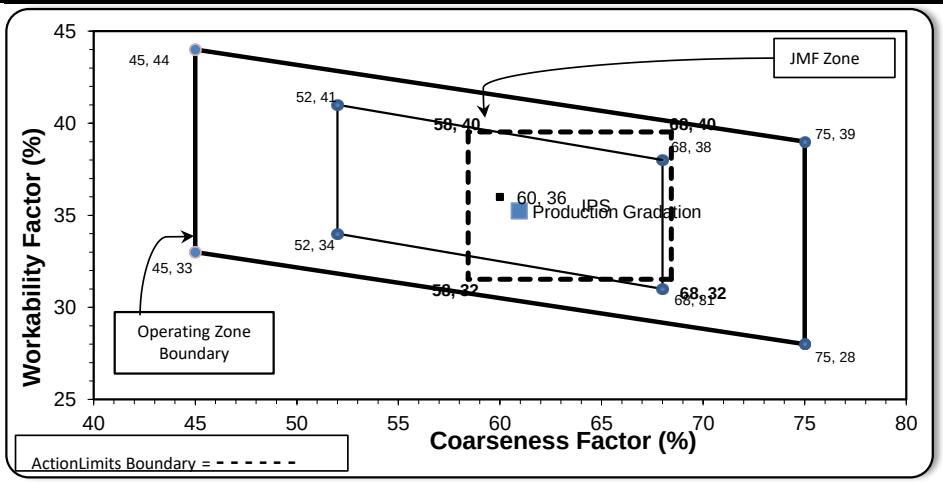
<----- Verify this number is 100%

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"	82.4	100.0	100.0	90.6	9.4	9.4
1/2"	40.7	95.8	100.0	67.9	22.7	32.1
3/8"	25.6	86.4	100.0	59.0	8.9	41.0
#4	4.5	21.7	95.9	40.6	18.4	59.4
#8	1.9	6.0	82.4	32.7	7.9	67.3
#16	1.6	3.2	68.2	27.0	5.8	73.0
#30	1.6	2.6	51.0	20.4	6.6	79.6
#50	1.5	2.3	23.0	9.7	10.7	90.3
#100	1.5	2.2	5.6	3.1	6.6	96.9
LBW	1.2	2.0	1.1	1.2	1.9	98.8

*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:	33	Adjusted WF 35.2



Intial Production Sample (IPS)

Coarseness Factor:	63
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"	89.7	10.3	10.3
1/2"	70.3	19.4	29.7
3/8"	59.1	11.2	40.9
#4	42.8	16.3	57.2
#8	35.5	7.3	64.5
#16	29.0	6.5	71.0
#30	21.2	7.7	78.8
#50	9.8	11.5	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

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

PREPARED BY:
SM, LLC Technical Service

Approved By:

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-O2**

Contractor: _____

Sample Date: 7/17/23

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 7/18/2023 through 7/24/2023

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	53.4
26A	71-47	Presque Isle	205	1.25	2.62	7.1
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		100.0

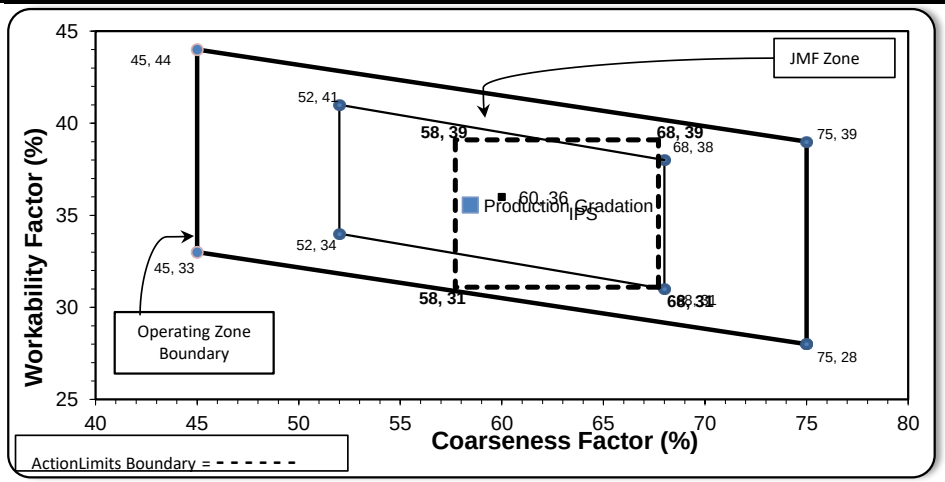
<----- Verify this number is 100%

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"	97.8	100.0	100.0	98.8	1.2	1.2
3/4"	79.0	100.0	100.0	88.8	10.0	11.2
1/2"	43.6	95.5	100.0	69.6	19.2	30.4
3/8"	28.2	88.5	100.0	60.9	8.7	39.1
#4	6.0	20.6	96.0	42.7	18.2	57.3
#8	2.8	4.8	78.9	33.1	9.6	66.9
#16	2.4	2.6	62.9	26.4	6.7	73.6
#30	2.3	2.0	47.7	20.3	6.1	79.7
#50	2.2	1.8	25.8	11.5	8.7	88.5
#100	2.1	1.8	6.0	3.6	7.9	96.4
LBW	1.8	1.5	0.7	1.3	2.3	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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation ○ Batch Plant Gradations ◉ Aggregate SupplierGradations

Coarseness Factor:	58	Workability Factor:	33	Adjusted WF 35.6



Intial 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

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

PREPARED BY:
SM, LLC Technical Service

Approved By: