Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-101 Contractor:

10/2/23 Concrete Grade: DM, 4500HP Sample Date: 10/3/2023 10/9/2023 Dates Test Represents: through

Batto Toot I	toproconto.	. 0, 0, 2020	unougn	10/0/2020		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1450	8.87	2.62	50.0
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	75-051	Mid Michigan	1150	6.93	2.66	39.7
		Total Wt	2900	17.63		100.0

MDOT No.:

--- Verify this number is 100%

SUPERIOR	-

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	i
1.5"	100.0	100.0	100.0	100.0	0.0	0.0	ı
1"	98.5	100.0	100.0	99.3	0.8	0.8	ı
3/4"	79.4	100.0	100.0	89.7	9.6	10.3	ı
1/2"	36.1	94.6	100.0	67.5	22.2	32.5	ı
3/8"	19.6	84.1	100.0	58.2	9.3	41.8	*
#4	3.4	20.2	96.3	42.0	16.2	58.0	*.
#8	2.4	4.6	81.6	34.0	7.9	66.0	no
#16	2.2	2.3	67.6	28.1	5.9	71.9	*
#30	2.1	1.8	52.8	22.2	6.0	77.8	no
#50	2.0	1.7	27.2	12.0	10.2	88.0	*
#100	1.9	1.6	7.8	4.2	7.8	95.8	a ′
LBW	1.6	1.4	1.0	1.3	2.9	98.7	ı

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

nom. max., #100 and #200 sieves.

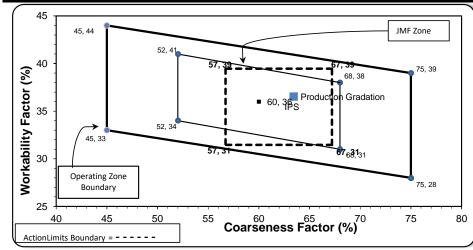
*% Retained must be at least 4% for each sieve except max.,

nom. max., #100 and #200 sieves.

*% Retained must be at least 4% for the 3/4" sieve when

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

Production Gradation	O Batch Plant Grad	dations	Aggregate Supplier Gradations		Adjusted WF Initial Production Sample (IPS)		
Coarseness Factor	: 63	Workability Fact	or: 34	36.5	Coarseness Factor:	62	
45					Workability Factor:	35	



work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
0.010	% Passing	Retained	% 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

Sample Date:

10/2/23 Concrete Grade: DM, 4500HP 10/9/2023

Contractor:

MDOT No.:

Dates	s Test F	Represents:	10/3/2023	through	10/9/2023		
Agg.	Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6	AA	58-003	Stoneco	1400	8.34	2.69	47.5
2	6A	58-003	Stoneco	400	2.38	2.69	13.6
21	NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
			Total Wt	2950	17.68		100.0

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

SUPERIOR MATERIALS

Superior Materials, LLC 30701 W. 10 Mile Rd.

Suite 500

Farmington Hills, MI 48336

	l otal Wt	2950	17.68		100.0	< Verify this n	umber is 100%
Sieve	6AA	26	iΑ	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	100	0.0	100.0	100.0	0.0	0.0
1"	100.0	100	0.0	100.0	100.0	0.0	0.0
3/4"	80.2	100	0.0	100.0	90.6	9.4	9.4
1/2"	35.4	98	.6	100.0	69.2	21.5	30.8
3/8"	12.8	87	.0	100.0	56.9	12.3	43.1
#4	2.8	5.	0	98.4	40.4	16.5	59.6
#8	1.8	1.	6	84.5	34.0	6.4	66.0
#16	1.6	1.	3	65.7	26.5	7.5	73.5
#30	1.6	1.	2	45.5	18.7	7.9	81.3
#50	1.5	1.1		21.5	9.2	9.4	90.8
#100	1.4	1.	0	4.2	2.4	6.8	97.6
LBW	1.0	0.	8	0.6	0.8	1.6	99.2
						_	

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

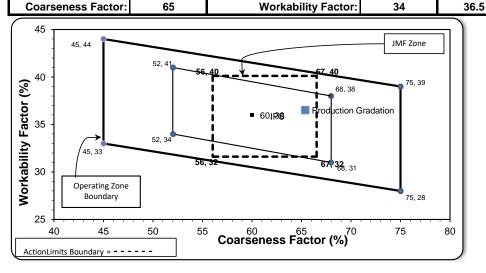
nom. max., #100 and #200 sieves.

*% 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.

 Batch Plant Gradations Aggregate Supplier Gradations **Production Gradation** Adjusted WF Intial Production Sample (IPS) **Coarseness Factor:**



Work	ability 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

61

Pleasant Lake

1.4

1.0

Total Wt

PLANT #: P-103

81-019

Sample Date:

2NS

#100

LBW

10/2/23 Concrete Grade: DM, 4500HP

6.95

17.68

2.65

4.2

Dates Test F	Represents:	10/3/2023	through	10/9/2023		
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

1150

2950

Contractor:

97.6

MDOT No.:

%	
tribution	
47.5	
13.6	

39.0

100.0

2.4

0.8

6.8

1.6

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"	80.2	100.0	100.0	90.6	9.4	9.4
1/2"	35.4	98.6	100.0	69.2	21.5	30.8
3/8"	12.8	87.0	100.0	56.9	12.3	43.1
#4	2.8	5.0	98.4	40.4	16.5	59.6
#8	1.8	1.6	84.5	34.0	6.4	66.0
#16	1.6	1.3	65.7	26.5	7.5	73.5
#30	1.6	1.2	45.5	18.7	7.9	81.3
#50	1.5	1.1	21.5	9.2	9.4	90.8



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*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

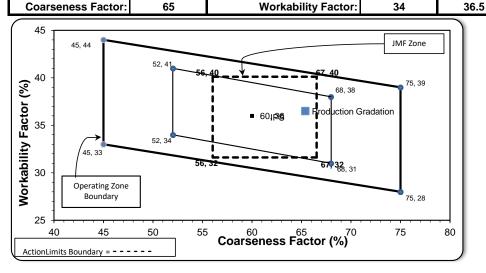
nom. max., #100 and #200 sieves.

*% 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.

Aggregate Supplier Gradations O Batch Plant Gradations Adjusted WF Intial Production Sample (IPS) **Production Gradation Coarseness Factor:**

1.0



Work	ability 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

61

PREPARED BY: SM, LLC Technical Service

10/2/23

PLANT #: 14

Sample Date:

Concrete Grade: DM, 4500HP

Contractor:

Dates Test Represents: 10/3/2023 through 10/9/2023

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1400	8.34	2.69	47.3
26A	58-003	Stoneco	460	2.74	2.69	15.5
2NS	19-04	Schlegel	1100	6.60	2.67	37.2
		Total Wt	2960	17 68		100.0

MDOT No.:

this number is 100%

Cumulative % Retained 0.0 0.0 0.0 0.0 0.0 Farmington Hills, MI 48336

Builders
Finish First With Builders

Builders Redi-Mix
30701 W. 10 Mile Rd.

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

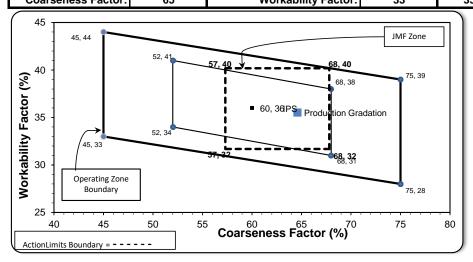
nom. max., #100 and #200 sieves.

*% 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.

	Total Wt	2960	17.68		100.0	< Verify this n	umber is 100%
Sieve	6AA	26	6A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	10	0.0	100.0	100.0	0.0	0.0
1"	100.0	10	0.0	100.0	100.0	0.0	0.0
3/4"	80.2	10	0.0	100.0	90.6	9.4	9.4
1/2"	35.4	98	3.6	100.0	69.2	21.4	30.8
3/8"	12.8	87	' .0	100.0	56.7	12.5	43.3
#4	2.8	5	.0	99.6	39.1	17.6	60.9
#8	1.8	1	.6	85.9	33.0	6.1	67.0
#16	1.6	1	.3	68.1	26.3	6.8	73.7
#30	1.6	1	.2	49.9	19.5	6.8	80.5
#50	1.5	1	.1	17.6	7.4	12.1	92.6
#100	1.4	1	.0	3.4	2.1	5.3	97.9
LBW	1.0	0	.8	1.0	1.0	1.1	99.0



Work	ability 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

63

PREPARED BY: SM, LLC Technical Service

Aggregate Optimization Chart

PLANT #:

Sample Date:

Concrete Grade: DM, 4500HP 10/2/23

Dates Test F	Represents:	10/3/2023	through	10/9/2023		
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

Contractor:

MDOT No.:

Agg. 6/ 26 2N Total Wt 2905 17 60

SUPERIOR MATERIALS

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

	i otai wt	2900	17.09		100.0	< verify this n	umber is 100%
Sieve	6AA	26	6 A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	10	0.0	100.0	100.0	0.0	0.0
1"	99.1	10	0.0	100.0	99.6	0.4	0.4
3/4"	75.6	10	0.0	100.0	87.8	11.7	12.2
1/2"	33.6	93	3.0	100.0	66.1	21.7	33.9
3/8"	16.6	81	.5	100.0	56.4	9.7	43.6
#4	2.7	19	9.2	96.5	41.6	14.9	58.4
#8	2.2	4	.6	80.9	33.6	8.0	66.4
#16	2.0	2	.4	65.6	27.2	6.4	72.8
#30	1.9	1	.9	48.7	20.4	6.8	79.6
#50	1.9	1	.8	24.4	10.8	9.6	89.2
#100	1.8	1	.7	5.7	3.3	7.5	96.7
LBW	1.4	1	.5	0.7	1.1	2.2	98.9

*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.

63

*% 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	O Batch Plant Grad	ations Aggregate Supplier Gradations		Adjusted WF	Intial Producti	on Sample (IPS)
Coarseness Factor	: 66	Workability Factor: 3	34	36.1	Coars	eness Factor:
7 45				$\neg \top$	Work	ability Factor:
45, 44	52, 41	JN	MF Zone]	Sieve	Cumulative % Passing
_ 40 -	52, 4	57, 40 68, 40		11	2"	100.0
Factor (%)		68, 38	75, 39	- 11	1.5"	100.0
				- 11	1"	99.3
\$ 0.5		■ 60, 36PS ■ Production Gradation		- 11	3/4"	89.0
35 -		! !		- 11	1/2"	70.3
	52, 34			- 11	3/8"	59.9
Noverting 200 Boundary		57, 22 68, 32		- 11	#4	41.9
8 30 -		68, 31		- 11	#8	35.9
Operating Zon	e		Į.	- 11	#16	27.8
Boundary			75, 28	- 11	#30	18.9
25					#50	6.3
40 45	50 55	5 60 65 70 7	75	80	#100	1.7
		Coarseness Factor (%)			LBW	1.0
ActionLimits Boundary = -						

Work	ability 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

Aggregate Optimization Chart

PLANT #: 10/2/23

Sample Date:

Concrete Grade: DM, 4500HP

Contractor:

MDOT No.:

Dates Test F	Represents:	10/3/2023	through	10/9/2023		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6

Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
•	•	Total Wt	2905	17.69		100.0

SUPERIOR MATERIALS	

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

	Total Wt	2905	17.69	100.0 < Verify this number		umber is 100%	
Sieve	6AA	26A		2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0		100.0	100.0	0.0	0.0
1"	97.7	100.0		100.0	98.8	1.2	1.2
3/4"	74.5	100.0		100.0	87.2	11.6	12.8
1/2"	38.5	93.0		100.0	68.5	18.8	31.5
3/8"	26.0	81.5		100.0	61.0	7.4	39.0
#4	6.3	19.2		96.5	43.3	17.7	56.7
#8	3.4	4.6		85.4	36.0	7.4	64.0
#16	3.0	2.4		71.0	29.9	6.1	70.1
#30	2.8	1.9		50.9	21.7	8.1	78.3
#50	2.7	1.8		24.5	11.2	10.5	88.8
#100	2.5	1.7		7.4	4.4	6.9	95.6
LBW	1.8	1.5		1.1	1.5	2.9	98.5

*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.

62

*% 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 Grad	ations Aggregate Supplier Gradatio	ns	Adjusted WF	Intial Product	ion Sample (IPS)
Coarseness Factor:	61	Workability Factor:	36	38.5	Coars	seness Factor:
45				$\neg \top$	Worl	cability Factor:
45, 44	52, 41		JMF Zone]	Sieve	Cumulative % Passing
40 1	56	67, 40		- 11	2"	100.0
Factor (%)		Production Grada [®] ion ³⁸	75, 39	- 11	1.5"	100.0
=				- 11	1"	100.0
\$ 0.5		■ 60,3MBS		- 11	3/4"	95.0
8 35		! !		- 11	1/2"	72.3
	52, 34	i !		- 11	3/8"	60.4
W A A A A A A A A A A A A A A A A A A A	50	7, 32		- 11	#4	42.6
ig 30		68, 31		- 11	#8	36.0
Operating Zone			\rightarrow	- 11	#16	29.5
Boundary			75, 28	- 11	#30	20.3
25				 ∥	#50	9.5
40 45	50 55	60 65 70	75	80	#100	3.4
		Coarseness Factor (%)			LBW	1.3
ActionLimits Boundary =						

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

Sample Date:

Production Gradation

10/2/23

Total Wt

O Batch Plant Gradations

Contractor:

Concrete Grade: DM, 4500HP

Adjusted WF

Dates Test F	Represents:	10/3/2023	through	10/9/2023		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6

2905

MDOT No.:

----- Verify this number is 100%

SUPERIOR MATERIALS

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"	97.7	100.0	100.0	98.8	1.2	1.2			
3/4"	74.5	100.0	100.0	87.2	11.6	12.8			
1/2"	38.5	93.0	100.0	68.5	18.8	31.5			
3/8"	26.0	81.5	100.0	61.0	7.4	39.0			
#4	6.3	19.2	96.5	43.3	17.7	56.7			
#8	3.4	4.6	85.4	36.0	7.4	64.0			
#16	3.0	2.4	71.0	29.9	6.1	70.1			
#30	2.8	1.9	50.9	21.7	8.1	78.3			
#50	2.7	1.8	24.5	11.2	10.5	88.8			
#100	2.5	1.7	7.4	4.4	6.9	95.6			
LBW	1.8	1.5	1.1	1.5	2.9	98.5			

Aggregate Supplier Gradations

17.69

*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.

Intial Production Sample (IPS)

62

Coarseness Factor:

Coarseness Factor:	61	Workability Factor:	36	38.5
45 45, 44 45, 33 Operating Zone Boundary	52, 34	■ Production Gradafför i 8 ■ 60, 388S ■ 60, 388S	75, 39	
25 40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

Work	ability 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

Sample Date:

10/2/23

Contractor:

MDOT No.:

Dates Test F	Represents:	10/3/2023	through	10/9/2023		
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
		T 4 1 14/4	5	1		4000

%	
tribution	
47.5	
13.6	
39.0	

Concrete Grade: DM, 4500HP

SUPERIOR MATERIALS

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

	Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%	_
Sieve	6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained	
2"	100.0	100	0.0	100.0	100.0	0.0	0.0	1
1.5"	100.0	100	0.0	100.0	100.0	0.0	0.0	
1"	100.0	100	0.0	100.0	100.0	0.0	0.0	1
3/4"	80.2	100	0.0	100.0	90.6	9.4	9.4	1
1/2"	35.4	98	.6	100.0	69.2	21.5	30.8	1
3/8"	12.8	87	.0	100.0	56.9	12.3	43.1	
#4	2.8	5.	0	98.4	40.4	16.5	59.6	
#8	1.8	1.	6	84.5	34.0	6.4	66.0	n
#16	1.6	1.3	3	65.7	26.5	7.5	73.5	
#30	1.6	1.:	2	45.5	18.7	7.9	81.3	n
#50	1.5	1.	1	21.5	9.2	9.4	90.8	
#100	1.4	1.	0	4.2	2.4	6.8	97.6	а
LBW	1.0	0.	8	0.6	0.8	1.6	99.2	7

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

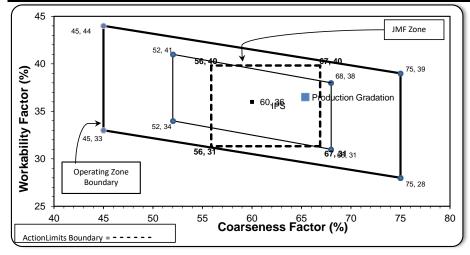
nom. max., #100 and #200 sieves.

*% 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		lations	 Aggregate Supplier Gradations 		Adjusted WF Intial Production Sample (IPS)		
	Coarseness Factor:	65	Workability Factor:	34	36.5	Coarseness Factor:		



Work	ability 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

Sample Date:

10/2/23

Contractor:

Concrete Grade: DM, 4500HP

Dates Test Represents:		10/3/2023	through	10/9/2023			
	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	63-92	Grange Hall	1150	6.95	2.65	39.6
			Total Wt	2905	17.69		100.0

MDOT No.:

Verify this number is 100%

SUPER	RIOR

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"	99.1	100.0	100.0	99.6	0.4	0.4
3/4"	75.6	100.0	100.0	87.8	11.7	12.2
1/2"	33.6	93.0	100.0	66.1	21.7	33.9
3/8"	16.6	81.5	100.0	56.4	9.7	43.6
#4	2.7	19.2	97.5	42.0	14.5	58.0
#8	2.2	4.6	83.3	34.6	7.4	65.4
#16	2.0	2.4	69.0	28.6	6.0	71.4
#30	1.9	1.9	50.2	21.0	7.5	79.0
#50	1.9	1.8	19.9	9.0	12.0	91.0
#100	1.8	1.7	2.7	2.1	6.9	97.9
LBW	1.4	1.5	0.4	1.0	1.1	99.0

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

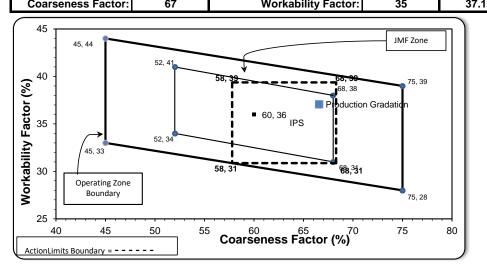
nom. max., #100 and #200 sieves.

*% 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	O Batch Plant Grad	Gradations • Aggregate Supplier Gradations		Adjusted WF Intial Production Sa	
Coarseness Factor	: 67	Workability Factor:	35	37.1	Coarseness Factor:



Work	ability 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

63

10/3/2023

Source

Stoneco

Stoneco

Pleasant Lake Total Wt

PLANT #: P-38

Pit#

58-003

58-003

81-019

Sample Date:

Agg. Class

6AA

26A

2NS

Dates Test Represents:

10/2/23

through

Weight (SSD)

1400

400

1150

2950

10/9/2023

ft³

8.34

2.38

6.95

17.68

Concrete Grade: DM, 4500HP

Specific

Gravity

2.69

2.69

2.65

Contractor:

% Contribution 47.5

13.6

39.0

100.0

MDOT No.:

- Verify this number is 100%

SUPERIOR MATERIALS

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"	80.2	100.0	100.0	90.6	9.4	9.4
1/2"	35.4	98.6	100.0	69.2	21.5	30.8
3/8"	12.8	87.0	100.0	56.9	12.3	43.1
#4	2.8	5.0	98.4	40.4	16.5	59.6
#8	1.8	1.6	84.5	34.0	6.4	66.0
#16	1.6	1.3	65.7	26.5	7.5	73.5
#30	1.6	1.2	45.5	18.7	7.9	81.3
#50	1.5	1.1	21.5	9.2	9.4	90.8
#100	1.4	1.0	4.2	2.4	6.8	97.6
LBW	1.0	0.8	0.6	0.8	1.6	99.2

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

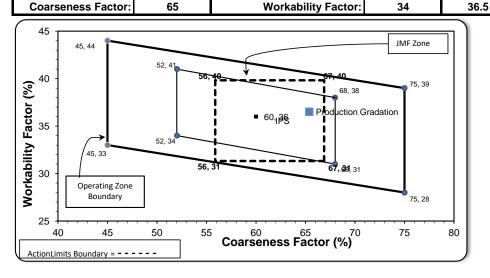
nom. max., #100 and #200 sieves.

*% 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.

 Aggregate Supplier Gradations O Batch Plant Gradations **Production Gradation** Adjusted WF Intial Production Sample (IPS) **Coarseness Factor:**



Work	ability 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

61

Sample Date:

10/2/23

Contractor:

MDOT No.:

10/3/2023 **Dates Test Represents:** 10/9/2023 through Specific Agg. Class ft³ Pit# Weight (SSD) Source Con Gravity 6AA 71-47 1505 9.21 2.62 Presque Isle 26A 71-47 Presque Isle 300 1.83 2.62 2NS 1100 6.65 44-051 Krake Willis Rd 2.65

	IVI
%	
ntribution	
51.8	
10.3	
27.0	

Concrete Grade: DM, 4500HP

SUPERIOR MATERIALS	

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

2.10	Total Wt	2905	17.69	2.00	100.0	< Verify this n	umber is 100%
Sieve	6AA	20	6 A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	10	0.0	100.0	100.0	0.0	0.0
1"	98.5	10	0.0	100.0	99.2	0.8	0.8
3/4"	79.4	10	0.0	100.0	89.3	9.9	10.7
1/2"	36.1	94	1.6	100.0	66.3	23.0	33.7
3/8"	19.6	84	1.1	100.0	56.7	9.6	43.3
#4	3.4	20).2	98.9	41.3	15.4	58.7
#8	2.4	4	.6	84.6	33.8	7.5	66.2
#16	2.2	2	.3	68.9	27.5	6.3	72.5
#30	2.1	1	.8	49.7	20.1	7.4	79.9
#50	2.0	1	.7	23.8	10.2	9.9	89.8
#100	1.9	1	.6	6.5	3.6	6.6	96.4
LBW	1.6	1	.4	1.6	1.6	2.0	98.4

*Maximum % Retained must be above the 3/8" sieve.

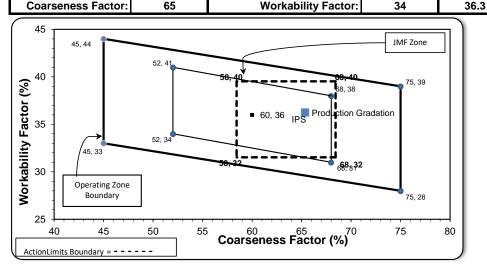
*Any two adjacent sieves must equal 10% except max.,

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

O Batch Plant Gradations Aggregate Supplier Gradations **Production Gradation** Adjusted WF Intial Production Sample (IPS) **Coarseness Factor:**



Work	ability 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

63

Sample Date:

10/2/23

Contractor:

Concrete Grade: DM, 4500HP

Dates Test F	Represents:	10/3/2023	through	10/9/2023		
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

MDOT No.:

<---- Verify this number is 100%

SUPERIOR MATERIALS

Superior Materials, LLC 30701 W. 10 Mile Rd. Suite 500

Farmington Hills, MI 48336

	Total Wt	2905 17.09		100.0	C Verily trils II	diffiber 13 10070
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"	99.1	100.0	100.0	99.6	0.4	0.4
3/4"	75.6	100.0	100.0	87.8	11.7	12.2
1/2"	33.6	93.0	100.0	66.1	21.7	33.9
3/8"	16.6	81.5	100.0	56.4	9.7	43.6
#4	2.7	19.2	96.5	41.6	14.9	58.4
#8	2.2	4.6	80.9	33.6	8.0	66.4
#16	2.0	2.4	65.6	27.2	6.4	72.8
#30	1.9	1.9	48.7	20.4	6.8	79.6
#50	1.9	1.8	24.4	10.8	9.6	89.2
#100	1.8	1.7	5.7	3.3	7.5	96.7
LBW	1.4	1.5	0.7	1.1	2.2	98.9

*Maximum % Retained must be above the 3/8" sieve.

*Any two adjacent sieves must equal 10% except max.,

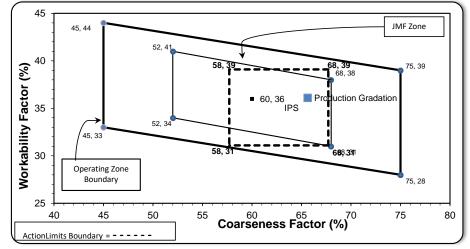
nom. max., #100 and #200 sieves.

*% 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	O Batch Plant Grad	ations Aggregate SupplierGrada	 Aggregate SupplierGradations 		Intial Production Sample (IPS)	
Coarseness Factor	: 66	Workability Factor:	34	36.1	Coarseness Factor:	
					Workability Factor:	



110111	ability i dotoii	•	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
	•	Retailleu	/0 Netaineu
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