Aggregate Optimization Chart

Presque Isle

Mid Michigan

Production Gradation Report

PLANT #: P-101

71-47

75-051

Sample Date:

26A

2NS

4/4/22 Concrete Grade: DM, 4500HP

1.83

6.93

2.62

2.66

Dates Test Represents: 4/5/2022 4/11/2022 through Specific ft³ Agg. Class Pit# Weight (SSD) Source Gravity Conf 6AA 71-47 Presque Isle 1460 8.93 2.62

300

1150

	MDOT No.:
%	
tribution	
50.2	
10.3	

39.5



Contractor:

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

	Total Wt	2910	17.69		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"	97.8	10	0.0	100.0	98.9	1.1	1.1
3/4"	82.7	10	100.0		91.3	7.6	8.7
1/2"	41.3	98	98.8		70.4	20.9	29.6
3/8"	24.2	86	86.5		60.6	9.8	39.4
#4	3.9	17	17.8		42.7	17.9	57.3
#8	2.2	4	4.3		34.5	8.3	65.5
#16	1.9	2	2.6		28.2	6.3	71.8
#30	1.8	2	2.3		22.2	6.0	77.8
#50	1.7	2.1		29.2	12.6	9.6	87.4
#100	1.6	2	.0	7.3	3.9	8.7	96.1
LBW	1.5	1	.7	0.6	1.2	2.7	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 Gra	dations	ons	Adjusted WF	Initial Produc	tion Sample (IPS	3)
Coarseness Factor:	60	Workability Factor:	34	37.0	Coars	seness Factor:	
45 -					Worl	cability Factor:	
45, 44			JMF Zone	$\neg \mid \blacksquare$	Sieve	Cumulative	
1 3,			JIVII ZOIIC	-	Sieve	% Passing	F
10 1	52, 41	—		- 11	2"	100.0	
3 40 1		57, 39 68, 38	75, 39	- 11	1.5"	100.0	
				- 11	1"	100.0	
35 d		■ Production Gracution ■ 60, 36s		- 11	3/4"	95.0	
2 35 -		i ips		- 11	1/2"	70.5	
	52, 34	-! :		- 11	3/8"	60.0	
Operating Zone Boundary				- 11	#4	44.4	
5 30 -		67 ₆ 8 ,1 ₃₁		- 11	#8	35.5	
Operating Zone	,			- 11	#16	28.5	
O Boundary			75, 28	- 11	#30	21.5	
≥ 25					#50	10.2	
40 45	50 5	55 60 65 70	75	80	#100	3.1	
		Coarseness Factor (%)	. 0	**	LBW	1.3	
ActionLimits Boundary =						_	

Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% 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

62

Sample Date:

Production Gradation

4/4/22 Concrete Grade: DM, 4500HP

Dates Test Represents: 4/5/2022 4/11/2022 through Specific % ft³ Pit# Source Weight (SSD) Gravity Contribution 6AA 58-003 Stoneco 1500 8.94 2.69 50.8

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

37.4

Contractor:



<---- Verify this number is 100%

SUPER	

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

Farmington Hills, MI 48336

				10010	· · · · · · · · · · · · · · · · · · ·	4111001 10 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"	99.6	100.0	100.0	99.8	0.2	0.2
3/4"	79.4	100.0	100.0	89.5	10.3	10.5
1/2"	41.8	99.7	100.0	70.4	19.1	29.6
3/8"	21.1	87.3	100.0	58.6	11.8	41.4
#4	3.6	11.2	99.4	41.7	17.0	58.3
#8	2.1	5.3	85.5	34.9	6.8	65.1
#16	1.7	3.9	67.7	27.6	7.3	72.4
#30	1.6	3.1	48.8	20.1	7.5	79.9
#50	1.5	2.8	23.8	10.3	9.8	89.7
#100	1.4	2.7	6.5	3.5	6.8	96.5
LBW	0.8	2.4	2.0	1.4	2.1	98.6

Aggregate Supplier Gradations

*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.

Coarseness Factor	64	Workability Factor:	35	
45 45, 44 45, 44 45, 33 Operating Zon Boundary	52, 34	Production Gradati	JMF Zone 75, 39 on 75, 28	
25 40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

Batch Plant Gradations

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

Total Wt

Batch Plant Gradations

PLANT #: P-103

Sample Date:

Production Gradation

4/4/22 Concrete Grade: **DM**, **4500HP**

17.71

Jaies Test F	represents:	4/5/2022	through	4/11/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific	%
.99. 0.000		00000	110.9.11 (002)	.,	Gravity	Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	305	1.82	2.69	10.3
2NS	81-019	Pleasant Lake	1150	6.95	2.65	38.9

2955

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

100.0

37.4

<---- 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"	99.6	100.0	100.0	99.8	0.2	0.2
3/4"	79.4	100.0	100.0	89.5	10.3	10.5
1/2"	41.8	99.7	100.0	70.4	19.1	29.6
3/8"	21.1	87.3	100.0	58.6	11.8	41.4
#4	3.6	11.2	99.4	41.7	17.0	58.3
#8	2.1	5.3	85.5	34.9	6.8	65.1
#16	1.7	3.9	67.7	27.6	7.3	72.4
#30	1.6	3.1	48.8	20.1	7.5	79.9
#50	1.5	2.8	23.8	10.3	9.8	89.7
#100	1.4	2.7	6.5	3.5	6.8	96.5
LBW	0.8	2.4	2.0	1.4	2.1	98.6

Aggregate Supplier Gradations

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

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

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

 $\ensuremath{^{*}\%}$ 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.

Coarseness Factor:	64	Workability Factor:	35	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	68, 38 Production Gradation 60, 32 67, 32 67, 32 67, 32	75, 39 75, 28	
40 45 ActionLimits Boundary =	50	Coarseness Factor (%)	75	80

Workability Factor:		36	
Sieve	Sieve Cumulative % Passing		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:

Ray Rd

PLANT #: P-12

Pit#

71-47

71-47

63-115

Sample Date:

Agg. Class

6AA

26A

2NS

4/4/22 Concrete Grade: DM, 4500HP

Dates Test Represents: 4/5/2022 4/11/2022 through Specific % ft³ Weight (SSD) Source Gravity Contribution Presque Isle 1400 8.56 2.62 48.2 Presque Isle 355 2.17 2.62 12.2

6.95

2.65

39.6

1150

MDOT No.:

Contractor:



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

	Total Wt	2905 17.69			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"	97.9	10	0.0	100.0	99.0	1.0	1.0
3/4"	83.3	10	100.0		92.0	7.0	8.0
1/2"	34.6	96	96.0		68.0	24.0	32.0
3/8"	16.8	85	85.0		58.1	9.9	41.9
#4	2.5	25	25.5		42.7	15.4	57.3
#8	1.8	8	8.2		33.3	9.4	66.7 r
#16	1.7	3	3.7		26.3	7.0	73.7
#30	1.6	2.4		47.4	19.8	6.5	80.2 r
#50	1.5	2.1		27.8	12.0	7.8	88.0
#100	1.4	1.9		5.0	2.9	9.1	97.1
LBW	0.6	1	.1	0.8	0.7	2.1	99.3

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation	radations	Adjusted WF	Intial Producti	on Sample (IPS)
Coarseness Factor: 63	Workability Factor: 33	35.8	Coars	eness Factor:
7 45		$\neg \top$	Work	ability Factor:
45, 44	JMF Zone	$\neg \sqcap \blacksquare$	Sieve	Cumulative
52, 41		-	Sieve	% Passing
40]	57, 40 68, 40	- 11	2"	100.0
@	68, 38	- 11	1.5"	100.0
 		- 11	1"	99.3
Q	■ 60, 36 P © oduction Gradation	- 11	3/4"	89.0
Factor (%)	i l	- 11	1/2"	70.3
02,01	<u> </u>	- 11	3/8"	59.9
Morkapility 30 - 45, 33 Operating Zone Boundary	17-22 69-32	- 11	#4	41.9
2 30 -	57, 22 •68, 32	- 11	#8	35.9
Operating Zone		- 11	#16	27.8
Boundary	75, 28	- 11	#30	18.9
> 25 			#50	6.3
-	55 _ 60 _6570 75	80	#100	1.7
	55 Coarseness Factor (%) ⁷⁰ 75		LBW	1.0
ActionLimits Boundary =				

Workability Factor:		36	
Sieve	Sieve Cumulative % Passing		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

Sample Date:

Production Gradation

4/4/22 Concrete Grade: DM, 4500HP

Dates Test F	Represents:	4/5/2022	through	4/11/2022		
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

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

37.0

Contractor:

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

	Total Wt	2905 17.6	59	100.0	< Verify this n	umber 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"	97.2	100.0	100.0	98.5	1.5	1.5
3/4"	85.7	100.0	100.0	92.6	6.0	7.4
1/2"	35.6	96.0	100.0	66.3	26.3	33.7
3/8"	19.8	85.0	100.0	57.2	9.1	42.8
#4	3.8	25.5	95.4	41.9	15.2	58.1
#8	2.4	8.2	82.2	34.5	7.4	65.5
#16	2.0	3.7	67.6	28.1	6.4	71.9
#30	1.8	2.4	48.9	20.5	7.6	79.5
#50	1.7	2.1	24.4	10.7	9.8	89.3
#100	1.6	1.9	7.4	3.9	6.8	96.1
LBW	1.1	1.1	1.8	1.4	2.5	98.6

Aggregate Supplier Gradations

*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.

Coarsenes	s Factor:	65	Workability Factor:	34	
ability Factor (%) 30 35 36 37 38 39 30 30 30 30 30 30 30 30 30 30 30 30 30	45, 33 perating Zone Boundary	52, 34	66, 40 68, 38 60, 38S Production Grad 60, 38S	75, 28	
25 40 ActionLimits Box	45 undary =	50 5	⁵ Coarseness Factor (%) ⁷⁰	75	80

Batch Plant Gradations

Work	ability Factor:	36	
Sieve	Cumulative	%	Cumulative
Sieve	% 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"	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

62

Sample Date:

Production Gradation

4/4/22 Concrete Grade: DM, 4500HP

MOOT	N 1	



MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

36.0

Contractor:

<---- Verify this number is 100%

SUPE	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"	99.6	100.0	100.0	99.8	0.2	0.2
3/4"	79.4	100.0	100.0	89.2	10.6	10.8
1/2"	41.8	99.7	100.0	69.4	19.8	30.6
3/8"	21.1	87.3	100.0	57.3	12.1	42.7
#4	3.6	11.2	99.4	40.0	17.3	60.0
#8	2.1	5.3	85.5	33.5	6.6	66.5
#16	1.7	3.9	67.7	26.5	7.0	73.5
#30	1.6	3.1	48.8	19.3	7.2	80.7
#50	1.5	2.8	23.8	9.9	9.4	90.1
#100	1.4	2.7	6.5	3.4	6.5	96.6
LBW	0.8	2.4	2.0	1.4	2.0	98.6

Aggregate Supplier Gradations

*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.

Coarseness Factor:	64	Workability Factor:	33	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	\neg	68, 38 ■ 60 ₁ β ■ Product on Grad	JMF Zone 75, 39 ation 75, 28	
25 40 45 ActionLimits Boundary =	50 5	5 Coarseness Factor (%)	75	80

Batch Plant Gradations

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

Sample Date:

Production Gradation

4/4/22 Concrete Grade: DM, 4500HP

	MDOT No.:
%	

Dates Test Represents: 4/5/2022 4/11/2022 through Specific ft³ Agg. Class Pit# Source Weight (SSD) Gravity Contribution 6AA 71-47 Presque Isle 1400 8.56 48.2 2.62 26A 71-47 Presque Isle 405 2.48 2.62 13.9 2NS 63-92 Grange Hall 1100 6.65 2.65 37.9 Total Wt 2905 17.69

---- Verify this number is 100%

Contractor:

Adjusted WF Intial Production Sample (IPS)

36.4

Coarseness Factor:

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

	Total Wt	2905 17.09		100.0	< verity this n	iumber 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"	97.9	100.0	100.0	99.0	1.0	1.0
3/4"	83.3	100.0	100.0	92.0	7.0	8.0
1/2"	34.6	96.0	100.0	67.9	24.0	32.1
3/8"	16.8	85.0	100.0	57.8	10.1	42.2
#4	2.5	25.5	97.8	41.8	16.0	58.2
#8	1.8	8.2	84.2	33.9	7.9	66.1
#16	1.7	3.7	67.4	26.9	7.0	73.1
#30	1.6	2.4	48.0	19.3	7.6	80.7
#50	1.5	2.1	20.2	8.7	10.6	91.3
#100	1.4	1.9	3.4	2.2	6.4	97.8
LBW	0.6	1.1	0.6	0.7	1.6	99.3

Aggregate Supplier Gradations

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor	: 64	Workability Factor:	34	
45 45, 44 45, 44 45, 33 Operating Zon Boundary	52, 41 52, 34	58, 39 68, 38 60, 36 Production Gradation IPS 68,31	75, 39 75, 28	
25 40 45 ActionLimits Boundary =	50	Coarseness Factor (%)	75	80 80

Batch Plant Gradations

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

Sample Date:

Production Gradation

4/4/22 Concrete Grade: DM, 4500HP

Dates Test Represents: 4/5/2022 4/11/2022 through

∖gg. 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	300	1.83	2.62	10.3
2NS	44-051	Krake Willis Rd	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

34.3

Coarseness Factor:



---- 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
1"	97.8	100.0	100.0	98.9	1.1	1.1	i
3/4"	82.7	100.0	100.0	91.0	7.8	9.0	i
1/2"	41.3	98.8	100.0	69.5	21.6	30.5	1
3/8"	24.2	86.5	100.0	59.3	10.1	40.7	1
#4	3.9	17.8	96.4	40.4	19.0	59.6	1
#8	2.2	4.3	79.9	31.8	8.5	68.2	n
#16	1.9	2.6	64.4	25.6	6.2	74.4	1
#30	1.8	2.3	47.5	19.2	6.5	80.8	n
#50	1.7	2.1	22.3	9.5	9.6	90.5	1
#100	1.6	2.0	5.9	3.3	6.3	96.7	а
LBW	1.5	1.7	0.6	1.2	2.1	98.8	1

Aggregate Supplier Gradations

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	60	Workability Factor:	32	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41	58, 40 68, 38 • 60, 36 IPS • Production Gradation 58, 32	75, 39 75, 28	
40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%) ⁷⁰	75	80

O Batch Plant Gradations

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

Batch Plant Gradations

PLANT #: P-02

Pit#

71-47

71-47

63-115

Sample Date:

Agg. Class

6AA

26A

2NS

Dates Test Represents:

Production Gradation

Concrete Grade: DM, 4500HP

4/4/22 4/5/2022 through 4/11/2022

4/3/2022	unougn	4/11/2022		
Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
Presque Isle	1455	8.90	2.62	50.1
Presque Isle	350	2.14	2.62	12.0
Ray Rd	1100	6.65	2.65	37.9

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

34.5



Superior Materials, LLC

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Suite 500

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	Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%
Sieve	6AA	26	A	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"	97.9	100	.0	100.0	98.9	1.1	1.1
3/4"	83.3	100	.0	100.0	91.6	7.3	8.4
1/2"	34.6	96.	0	100.0	66.8	24.9	33.2
3/8"	16.8	85.	0	100.0	56.5	10.2	43.5
#4	2.5	25.	5	97.0	41.1	15.5	58.9
#8	1.8	8.2	2	79.4	32.0	9.1	68.0
#16	1.7	3.7		63.2	25.2	6.7	74.8
#30	1.6	2.4		47.4	19.0	6.2	81.0
#50	1.5	2.1		27.8	11.5	7.5	88.5
#100	1.4	1.9	9	5.0	2.8	8.7	97.2
LBW	0.6	1.1		0.8	0.7	2.1	99.3
•						•	

Aggregate SupplierGradations

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	64	Workability Factor:	32	
45 45, 44 45, 44 45, 33	52, 41	58, 39 68, 39 68, 38 Production Gradation	JMF Zone 75, 39	
25 40 45	50	58, 31 686, 341 55 60 65 70 Coarseness Factor (%)	75, 28 75	80
ActionLimits Boundary =				

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"	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	