Production Gradation Report

PLANT #:

Concrete Grade: DM, 4500HP Sample Date: Dates Test Represents: 11/12/2024 11/18/2024 through

Contractor:

Dates Tool I	toprodento.	11/12/2021	unoagn	11/10/2021		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	300	1.79	2.69	10.2
2NS	63-114	Highland	1150	6.95	2.65	39.0
		Total Wt	2950	17.68		100.0

MDOT No.:			-

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	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"	99.7	10	0.0	100.0	99.8	0.2	0.2
3/4"	81.1	10	0.0	100.0	90.4	9.5	9.6
1/2"	43.9	99	9.3	100.0	71.4	19.0	28.6
3/8"	22.6	88	3.2	100.0	59.4	12.0	40.6
#4	3.3	11	1.5	98.9	41.4	18.0	58.6
#8	2.0	2	.4	85.0	34.4	7.0	65.6
#16	1.0	1	.3	66.3	26.5	7.9	73.5
#30	0.9	1.1		45.4	18.3	8.2	81.7
#50	0.8	1.0		21.0	8.7	9.6	91.3
#100	0.8	1.0		4.5	2.3	6.4	97.7
LBW	0.7	0	.9	0.3	0.6	1.7	99.4

*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.

	Production Gradation	Batch Plant Grad	dations Aggregate Supplier Grad	Aggregate Supplier Gradations		Intial Production Sample (IPS)		
	Coarseness Factor:	62	Workability Factor:	34	36.9	Coars	eness Factor:	
-	45 -					Work	ability Factor:	
	45, 44			JMF Zone	7 I I	Sieve	Cumulative	
	1 1				- ∥	Sieve	% Passing	R
	l 	52, 41	40 67 40			2"	100.0	
	40 1	""		75, 39	- 11	1.5"	100.0	

Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% 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

Workability Factor (%)	45 7 40 - 35 - 30 - 30 - 25 - 25	45, 44 52, 41 56, 40 68, 38 Production Gradation 52, 34 Operating Zone Boundary	75, 39 75, 28
_	40	0 45 50 55 Coarseness Factor (%) 70 7	5 80

PREPARED BY: SM, LLC Technical Service

PLANT #:

Coarseness Factor:

Sample Date:

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

36.9

Concrete Grade: DM, 4500HP

Dates Test F	Represents:	11/12/2024	through	11/18/2024		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	300	1.79	2.69	10.2
2NS	63-114	Highland	1150	6.95	2.65	39.0

it # Source		Meight (000)	ft ³	Specific	%
IL #	Source	Weight (SSD)	Tt ·	Gravity	Contribution
-003	Stoneco	1500	8.94	2.69	50.8
-003	Stoneco	300	1.79	2.69	10.2
-114	Highland	1150	6.95	2.65	39.0
	Total Wt	2950	17.68		100.0

---- Verify this number is 100%

SUPERIOR	
MATERIALS	
Superior Materials, LLG	С

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

	i Otai Wt	2930 17.00		100.0	< verily tris in	umber is 10076
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	99.8	0.2	0.2
3/4"	81.1	100.0	100.0	90.4	9.5	9.6
1/2"	43.9	99.3	100.0	71.4	19.0	28.6
3/8"	22.6	88.2	100.0	59.4	12.0	40.6
#4	3.3	11.5	98.9	41.4	18.0	58.6
#8	2.0	2.4	85.0	34.4	7.0	65.6
#16	1.0	1.3	66.3	26.5	7.9	73.5
#30	0.9	1.1	45.4	18.3	8.2	81.7
#50	0.8	1.0	21.0	8.7	9.6	91.3
#100	0.8	1.0	4.5	2.3	6.4	97.7
LBW	0.7	0.9	0.3	0.6	1.7	99.4

Workability Factor:

*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.

Coarseriess ractor.	UZ	Workability Factor.	J .	
45				<u> </u>
45, 44			JMF Zone	
	52, 41	37.10	•	_
(a) 40 f	36	,40	75, 39	
Factor (%)		68, 38 Production Gradation	Ĭ	
35 -		Production Gradation		
	52, 34	<u> </u>		
45, 33				
= 30	56	, 32 67, 32, 31		
Atjiiiq 30 45, 33 Operating Zone Boundary			75, 28	
			10, 20	
25 + 40 45	50 55	5 60 65 70	75	 80
40 45		Coarseness Factor (%)	73	00

Workability 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"	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

ActionLimits Boundary = - - - - -

Approved BY:

Aggregate Optimization Chart

Total Wt

11/11/24

PLANT #: **12**

Sample Date:

LBW

Concrete Grade: DM, 4500HP

100.0

1.4

Contractor:

11/12/2024 **Dates Test Represents:** 11/18/2024 through % Specific Agg. Class Pit# ft³ Source Weight (SSD) Gravity Contribution 1755 10.73 6AA 71-47 Presque Isle 2.62 60.4 26A 71-47 Presque Isle 0 0.00 2.62 0.0 2NS 63-115 Ray Rd 1150 6.95 2.65 39.6

2905

MDOT No.:

2.0



<---- Verify this number is 100%

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

Cumulative Cumulative 26A Sieve 6AA **2NS** % Retained % Retained % Passing 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 98.4 1" 100.0 100.0 99.0 1.0 1.0 3/4" 6.3 7.2 88.0 100.0 100.0 92.8 1/2' 52.8 95.4 100.0 71.5 21.3 28.5 3/8' 34.4 83.4 100.0 60.4 11.1 39.6 #4 6.3 18.9 97.6 42.4 17.9 57.6 #8 2.6 5.0 80.2 33.3 9.1 66.7 #16 2.1 2.9 64.2 26.7 6.6 73.3 #30 2.0 2.5 48.3 20.3 6.4 79.7 #50 88.7 2.0 2.3 25.4 11.3 9.1 #100 1.9 2.2 5.7 3.4 7.9 96.6

1.1

2.1

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.

Production	on Gradation	Batch Plant Gra	dations	ons	Adjusted WF	Intial Producti	on Sample (IPS	;)
Coar	seness Factor:	59	Workability Factor:	33	35.8	Coars	seness Factor:	
45					$\neg \top$	Work	cability Factor:	
	45, 44			JMF Zone	7 I I	Sieve	Cumulative	
	1	52, 41			I	Sieve	% Passing	
40]	11,1	57, 40 68, 40			2"	100.0	
§ 40 ·	-		68, 38	75, 39		1.5"	100.0	
<u>-</u>			!			1"	99.3	Ī
일 -	-		୍ଞ୍ୟା ନ® ୍ଲେମ୍ବର Gradation			3/4"	89.0	
Factor 35	j		i —			1/2"	70.3	Ī
1		52, 34	- ! i			3/8"	59.9	Ī
≝	45, 33		57-27			#4	41.9	
₹ 30	- 1		37, 32 68, 32 68, 31			#8	35.9	Ī
Workability	Operating Zone	\neg				#16	27.8	Ī
∣ ō	Boundary			75, 28		#30	18.9	
 	<u> </u>					#50	6.3	Ī
	10 45	50 55	60 65 70	75	80	#100	1.7	
			Coarseness Factor (%)	. 0	55	LBW	1.0	
Action	Limits Boundary =							

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"	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

98.6

PREPARED BY: SM, LLC Technical Service

1.6

Approved By:

Aggregate Optimization Chart

PLANT #: p11

Concrete Grade: DM, 4500HP

Sample Date: 11/11/24 Dates Test Represents: 11/12/2024 11/18/2024 through

				,,		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1755	10.73	2.62	60.4
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		T-4-1 \A/4	2005	47.00		400.0

MDOT No.:

Contractor:

Coarseness Factor:

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

	l otal 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"	98.4	10	0.0	100.0	99.0	1.0	1.0
3/4"	88.0	10	0.0	100.0	92.8	6.3	7.2
1/2"	52.8	95	5.4	100.0	71.5	21.3	28.5
3/8"	34.4	83	3.4	100.0	60.4	11.1	39.6
#4	6.3	18	3.9	97.6	42.4	17.9	57.6
#8	2.6	5	.0	80.2	33.3	9.1	66.7
#16	2.1	2	.9	64.2	26.7	6.6	73.3
#30	2.0	2	.5	48.3	20.3	6.4	79.7
#50	2.0	2	.3	25.4	11.3	9.1	88.7
#100	1.9	2	.2	5.7	3.4	7.9	96.6
LBW	1.6	2	.1	1.1	1.4	2.0	98.6
Production Gra	adation O Batch Plant Grada	tions Agg	regate Supplier Gra	adations	Adjusted WF	Intial Production	on Sample (IPS

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

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

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

62

*% 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.

Coarseness Factor:	59	Workability Factor:	33	35.8
45	52, 34	67, 40 68, 38 68, 38 68, 38 7, 32 68, 31	75, 39 75, 28	
25 + 40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

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

PREPARED BY: SM, LLC Technical Service Approved By:

PLANT #: **P-02**

Sample Date:

Dates Test Represents:

11/11/24 11/12/2024 Concrete Grade: DM, 4500HP

Contractor:

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1755	10.73	2.62	60.4
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		T-1-1 W/1	200	1		4000

through

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1755	10.73	2.62	60.4
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<u> </u>		Total Wt	2905	17.69		100.0

		IP		21		B
/1	И A	JP TE	R	1	4 L	s

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	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"	98.4	100.0	100.0	99.0	1.0	1.0
3/4"	88.0	100.0	100.0	92.8	6.3	7.2
1/2"	52.8	95.4	100.0	71.5	21.3	28.5
3/8"	34.4	83.4	100.0	60.4	11.1	39.6
#4	6.3	18.9	97.6	42.4	17.9	57.6
#8	2.6	5.0	80.2	33.3	9.1	66.7
#16	2.1	2.9	64.2	26.7	6.6	73.3
#30	2.0	2.5	48.3	20.3	6.4	79.7
#50	2.0	2.3	25.4	11.3	9.1	88.7
#100	1.9	2.2	5.7	3.4	7.9	96.6
LBW	1.6	2.1	1.1	1.4	2.0	98.6
					_	

11/18/2024

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

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

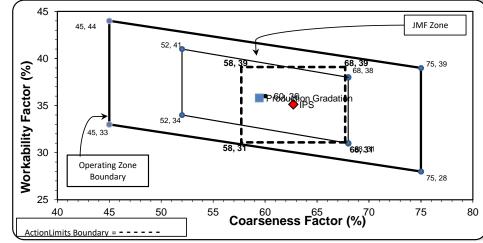
nom. max., #100 and #200 sieves.

*% 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	Batch Plant Gra	dations	Aggregate SupplierGrad	ations	Adjusted WF	Intial Production Sample (IPS	5)
Coarseness Factor:	59		Workability Factor:	33	35.8	Coarseness Factor:	63
AF.						Workability 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"	95.1	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: