### **Production Gradation Report**

PLANT #: P-101 Contractor:

Sample Date: 7/27/20 DM Concrete Grade: Dates Test Represents: 7/28/2020 8/3/2020 through

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1560	9.54	2.62	53.6
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	75-051	Mid-Michigan	1150	6.93	2.66	39.5
		Total Wt	2910	17.69		100.0

MDOT No.:



**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	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"	97.6	100.0	100.0	98.7	1.3	1.3
3/4"	77.2	100.0	100.0	87.8	10.9	12.2
1/2"	33.6	97.7	100.0	64.2	23.5	35.8
3/8"	20.4	88.5	100.0	56.5	7.7	43.5
#4	2.9	22.1	98.3	41.9	14.6	58.1
#8	1.5	6.4	82.1	33.7	8.2	66.3 r
#16	1.3	2.7	65.9	26.9	6.8	73.1
#30	1.3	2.0	50.0	20.6	6.3	79.4 r
#50	1.2	1.9	25.7	10.9	9.7	89.1
#100	1.2	1.7	6.2	3.2	7.7	96.8
LBW	1.1	1.7	0.7	1.0	2.2	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 8% for the 1" sieve when

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

Production Gradation	O Batch Plant Grad	dations        Aggregate Supplier Gradati	ons	Adjusted WF	Initial Produc	tion Sample (IPS	3)
Coarseness Factor:	66	Workability Factor:	34	36.2	Coars	seness Factor:	
45 —					Worl	kability Factor:	
45, 44			JMF Zone	¬	Sieve	Cumulative	
1 1 1			31411 20110		Sieve	% Passing	F
10	52, 41			- 11	2"	100.0	
<b>⊚</b> <sup>40</sup> ;		57, 39	75, 39	- 11	1.5"	100.0	
0		00,30		- 11	1"	100.0	
Factor (%)		■ 60 36 Production G	radation	- 11	3/4"	95.0	
<b>2</b> 35 -		i PS		- 11	1/2"	70.5	
1 /	52, 34	<del>-!</del>		- 11	3/8"	60.0	
Operating Zone Boundary				- 11	#4	44.4	
30 -		57, 31 <b>67</b> <sub>6</sub> 3,1 <sub>31</sub>		- 11	#8	35.5	
Operating Zone				- 11	#16	28.5	
Boundary			75, 28	- 11	#30	21.5	
<b>≥</b> <sub>25</sub>   <b>□</b>					#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 % 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

PLANT #: P-102

Sample Date:

Dates Test Represents:

**Production Gradation** 

7/27/20 DM Concrete Grade: 7/28/2020 8/3/2020

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

**Coarseness Factor:** 

35.7

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific 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	63-114	Highland	1150	6.95	2.65	38.9
		Total Wt	2955	17.71		100.0

through

%	
ribution	
8.05	
10.3	
38.9	



----- Verify this number is 100%

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

	i otai wt	2900	17.71		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"	86.1	10	0.0	100.0	92.9	7.1	7.1
1/2"	41.4	99	9.1	100.0	70.2	22.8	29.8
3/8"	18.7	85	5.0	100.0	57.2	13.0	42.8
#4	2.5	13	3.0	99.3	41.3	15.9	58.7
#8	1.2	4.	.0	82.8	33.2	8.0	66.8
#16	0.9	2	.3	63.6	25.4	7.8	74.6
#30	0.8	2	.0	45.4	18.3	7.2	81.7
#50	0.7	1.	.8	18.8	7.9	10.4	92.1
#100	0.6	1.	.7	4.0	2.0	5.8	98.0
LBW	0.6	1.	.3	0.3	0.6	1.5	99.4

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	52, 34	68, 38 68, 38 Production Gradat 67, 32 67, 32	JMF Zone 75, 39	
25 40 45  ActionLimits Boundary =	50 5	Coarseness Factor (%)	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"	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

**PLANT #:** P-103

Sample Date:

7/27/20 DM Concrete Grade: 7/28/2020 8/3/2020 through

Contractor:	

MDOT No.:

Dates Test F	Represents:	7/28/2020	through	8/3/2020		
Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	Specific 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	63-114	Highland	1150	6.95	2.65	38.9
		Total Wt	2955	17.71		100.0

	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
	1500	8.94	2.69	50.8
	305	1.82	2.69	10.3
	1150	6.95	2.65	38.9
Wt	2955	17.71		100.0

< Verify this n	umber is 100%
% Retained	Cumulative % Retained
0.0	0.0

**Coarseness Factor:** 



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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.

61

\*% Retained must be at least 8% for the 1" sieve when

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

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained	
2"	100.0	100.0	100.0	100.0	0.0	0.0	1
1.5"	100.0	100.0	100.0	100.0	0.0	0.0	1
1"	100.0	100.0	100.0	100.0	0.0	0.0	1
3/4"	86.1	100.0	100.0	92.9	7.1	7.1	1
1/2"	41.4	99.1	100.0	70.2	22.8	29.8	1
3/8"	18.7	85.0	100.0	57.2	13.0	42.8	*
#4	2.5	13.0	99.3	41.3	15.9	58.7	1 *
#8	1.2	4.0	82.8	33.2	8.0	66.8	nc
#16	0.9	2.3	63.6	25.4	7.8	74.6	*
#30	0.8	2.0	45.4	18.3	7.2	81.7	nc
#50	0.7	1.8	18.8	7.9	10.4	92.1	*
#100	0.6	1.7	4.0	2.0	5.8	98.0	a:
LBW	0.6	1.3	0.3	0.6	1.5	99.4	1
Production Gra	dation O Batch Plant Gradations	<ul><li>Aggregate Supplier 0</li></ul>	Gradations	Adjusted WF	Intial Production	on Sample (IPS	3)

Production Gradation	O Batch Plant Grada	ations    Aggregate Supplier Grad	lations	Adjusted W
Coarseness Fact	or: 64	Workability Factor:	33	35.7
45 45, 44	52, 41 <b></b>	40 67 40	JMF Zone 75, 39	

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

$\bigcap$	<sup>45</sup> [	45, 44 JMF Z	Zone Tone
Workability Factor (%)	35 -	52, 41 56, 40 67, 40	5, 39
Worka	25	Operating Zone Boundary 75	5, 28
Ac	40	0 45 50 55 60 65 70 75 nits Boundary =	80

PREPARED BY: SM, LLC Technical Service Approved BY:

Total Wt

PLANT #: P-12 Contractor: Sample Date: 7/27/20 DM Concrete Grade:

17.69

Dates Test Represents: 7/28/2020 8/3/2020 through Specific % ft<sup>3</sup> Agg. Class Pit# Weight (SSD) Source 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 63-115 Ray Rd 1150 6.95 2.65 39.6

2905

MDOT No.:



<---- Verify this number is 100%

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					· · · · · · · · · · · · · · · · · · ·	uiiiboi io 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"	97.2	100.0	100.0	98.5	1.5	1.5	
3/4"	72.4	100.0	100.0	85.7	12.8	14.3	
1/2"	31.6	98.2	100.0	64.4	21.3	35.6	
3/8"	18.3	80.1	100.0	56.0	8.4	44.0	*
#4	4.5	19.5	98.3	42.9	13.0	57.1	*
#8	2.4	7.3	80.7	33.8	9.1	66.2	nc
#16	2.1	4.0	63.3	26.5	7.3	73.5	*
#30	2.0	3.4	47.3	20.1	6.4	79.9	nc
#50	1.9	3.1	24.8	11.1	9.0	88.9	*
#100	1.7	2.9	4.7	3.0	8.1	97.0	a :
LBW	1.3	2.6	0.3	1.0	2.0	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 8% for the 1" sieve when

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

Production Gradation	Batch Plant Grad	dations    • Aggregate Supplier Gradations	Adjusted WF	Intial Production	on Sample (IPS	)
Coarseness Factor:	67	Workability Factor: 34	36.3	Coars	eness Factor:	
45			$\neg \top$	Work	ability Factor:	
45, 44		JMF Zone	7 I I	Sieve	Cumulative	
	52, 41	5 26.10	<b>-</b>	Sieve	% Passing	
40		57, 40 68, 40		2"	100.0	
∣ଢ଼ି		68, 38		1.5"	100.0	
- 1		!		1"	99.3	
Factor (%)		■ 60, to Ploduction Gradation		3/4"	89.0	
35		i	- 11	1/2"	70.3	_
1 7	52, 34	<u> </u>		3/8"	59.9	
Morkapility 30 - 45, 33 Operating Zone Boundary		22		#4	41.9	
<del>2</del> 30		<del>37, 22</del> 68, 32	- 11	#8	35.9	
Operating Zone	$\neg$			#16	27.8	
Boundary		75, 28		#30	18.9	
<b>&gt;</b> 25   <b>L</b>				#50	6.3	_
40 45	50 55	5 _ 60 _6570 75	80	#100	1.7	
		Coarseness Factor (%) 75		LBW	1.0	
ActionLimits 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

7/27/20

PLANT #: P-20

Sample Date:

DM Concrete Grade:

MDOT No.:

Contractor:

**Coarseness Factor:** 

36.2

Dates Test F	Represents:	7/28/2020	through	8/3/2020		
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1605	9.82	2.62	55.2
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

--- Verify this number is 100%

SUPERIOR

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

				10010		
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	99.1	0.9	0.9
3/4"	84.5	100.0	100.0	91.4	7.7	8.6
1/2"	42.5	97.3	100.0	68.0	23.4	32.0
3/8"	21.6	89.1	100.0	55.9	12.1	44.1
#4	2.5	23.1	97.4	39.9	16.1	60.1
#8	1.6	3.8	86.0	33.7	6.1	66.3
#16	1.5	2.0	72.3	28.3	5.4	71.7
#30	1.5	1.8	51.0	20.3	8.1	79.7
#50	1.4	1.6	18.3	7.8	12.5	92.2
#100	1.4	1.6	1.9	1.6	6.2	98.4
LBW	1.3	1.4	0.4	1.0	0.6	99.0
Production Gradation	Batch Plant Gradation	ns	dations	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.

\*% 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:	66	Workability Factor:	34	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41	68, 40 68, 38 68, 38 ■ 60, ♠ P oduction G	JMF Zone 75, 39 Gradation	
40 45  ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

Work	Workability Factor:		
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"	89.2	10.8	10.8
1/2"	68.4	20.8	31.6
3/8"	59.9	8.6	40.1
#4	43.0	16.9	57.0
#8	35.9	7.1	64.1
#16	29.0	6.8	71.0
#30	21.3	7.7	78.7
#50	9.9	11.4	90.1
#100	2.4	7.5	97.6
LBW	1.2	1.2	98.8

PLANT #: P-32

Sample Date:

7/27/20 DM Concrete Grade: 8/3/2020

Contractor:

36.7

Dates Test F	Represents:	7/28/2020	through	8/3/2020		
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1305	7.98	2.62	44.9
26A	71-47	Presque Isle	450	2.75	2.62	15.5
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	2905	17.69		100.0

MDOT No.:

---- Verify this number is 100%

**Coarseness Factor:** 

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	ı
1.5"	100.0	100.0	100.0	100.0	0.0	0.0	ı
1"	97.6	100.0	100.0	98.9	1.1	1.1	1
3/4"	76.0	100.0	100.0	89.2	9.7	10.8	l
1/2"	31.0	98.2	100.0	68.7	20.5	31.3	l
3/8"	12.4	80.1	100.0	57.6	11.2	42.4	*
#4	1.9	19.5	96.6	42.1	15.5	57.9	1
#8	1.5	7.3	81.9	34.2	7.9	65.8	no
#16	1.4	4.0	65.5	27.2	7.0	72.8	4
#30	1.4	3.4	45.0	19.0	8.2	81.0	nc
#50	1.3	3.1	19.1	8.6	10.3	91.4	*
#100	1.2	2.9	3.8	2.5	6.1	97.5	а
LBW	0.9	2.6	0.4	1.0	1.5	99.0	I
Production (	Gradation O Batch Plant Grad	ations    Aggregate Supplier Grad	dations	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.

\*% 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:	65	Workability Factor:	34	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	6, 40 67, 40 68, 38 68, 38 Production Grada 68, 38	JMF Zone 75, 39	
25 40 45  ActionLimits Boundary =	50 58	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

62

PLANT #: P-35 Contractor:

Sample Date: 7/27/20 Concrete Grade: DM

Dates Test Represents: 7/28/2020 through 8/3/2020 MDOT No.:

Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1500	8.94	2.69	50.8
26A	58-003	Stoneco	355	2.11	2.69	12.0
2NS	81-093	Burmeister	1100	6.65	2.65	37.2
		Total Wt	2955	17.70		100.0

----- Verify this number is 100%

Adjusted WF Intial Production Sample (IPS)

**Coarseness Factor:** 

36.9

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

	i otai vvt	2955 17.70		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	86.1	100.0	100.0	92.9	7.1	7.1
1/2"	41.4	99.1	100.0	70.1	22.8	29.9
3/8"	18.7	85.0	100.0	56.9	13.2	43.1
#4	2.5	13.0	98.0	39.3	17.6	60.7
#8	1.2	4.0	89.4	34.4	4.9	65.6
#16	0.9	2.3	63.2	24.3	10.1	75.7
#30	0.8	2.0	41.6	16.1	8.1	83.9
#50	0.7	1.8	14.7	6.0	10.1	94.0
#100	0.6	1.7	2.5	1.4	4.6	98.6
LBW	0.6	1.3	0.7	0.7	0.7	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.

 $^{\star}\%$  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.

Coarsene	ss Factor:	66	Workability Factor:	34	
40	5, 44	52, 41	6, 40	JMF Zone 75, 39	
Workability Factor (%)	45, 33	52, 34	Froduction G	7	
	Operating Zone Boundary	50	<b>67, 84</b> , 31	75, 28	
25 40 ActionLimits Be	45 oundary = <b></b>	50 5	Coarseness Factor (%)	75	 80 

O Batch Plant Gradations

**Production Gradation** 

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

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PREPARED BY: SM, LLC Technical Service Approved By

7/28/2020

O Batch Plant Gradations

**PLANT #:** P-36

Sample Date:

Dates Test Represents:

**Production Gradation** 

7/27/20 DM Concrete Grade: 8/3/2020

Contractor:
•

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

**Coarseness Factor:** 

37.1

Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	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	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

through

%	
tribution	
51.8	
10.3	
37.9	

<---- Verify this number is 100%

Superior Materials, I	<u>.LC</u>
30701 W. 10 Mile Rd.	
Suite 500	
Farmington Hills, MI 48	336

		2000			Tomy time mamber to 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"	97.2	100.0	100.0	98.5	1.5	1.5	
3/4"	72.4	100.0	100.0	85.7	12.8	14.3	
1/2"	31.6	98.2	100.0	64.4	21.3	35.6	
3/8"	18.3	80.1	100.0	55.6	8.8	44.4	
#4	4.5	19.5	97.4	41.2	14.4	58.8	
#8	2.4	7.3	86.0	34.6	6.7	65.4	
#16	2.1	4.0	72.3	28.9	5.7	71.1	
#30	2.0	3.4	51.0	20.7	8.2	79.3	
#50	1.9	3.1	18.3	8.2	12.5	91.8	
#100	1.7	2.9	1.9	1.9	6.3	98.1	
LBW	1.3	2.6	0.4	1.1	0.8	98.9	

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:	68	Workability Factor: 3	5	
45 45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41		75, 39	
Boundary 25 40 45	50	55 60 65 70 7 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"	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

PLANT #: P-39 Contractor: 7/27/20 DM Sample Date: Concrete Grade:

Dates Test Represents:		7/28/2020	through	8/3/2020			
	Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	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	44-051	Krake Willis Rd	1150	6.95	2.65	39.6

MDOT No.:

SUPE	RIOR

#### **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.

	Total Wt	2905	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"	97.6	10	0.0	100.0	98.7	1.3	1.3
3/4"	77.2	10	0.0	100.0	87.4	11.3	12.6
1/2"	33.6	97	7.7	100.0	63.2	24.2	36.8
3/8"	20.4	88	3.5	100.0	55.4	7.8	44.6
#4	2.9	22	2.1	95.8	40.7	14.8	59.3
#8	1.5	6	.4	81.6	33.5	7.2	66.5
#16	1.3	2	.7	65.8	26.9	6.6	73.1
#30	1.3	2	.0	51.0	21.0	5.9	79.0
#50	1.2	1	.9	26.2	11.1	9.9	88.9
#100	1.2	1	.7	7.6	3.8	7.4	96.2
LBW	1.1	1	.7	1.2	1.2	2.6	98.8

Aggregate Supplier Gradations O Batch Plant Gradations **Production Gradation** Coarseness Factor: 67 **Workability Factor:** 33 36.0 **Coarseness Factor:** 

Adjusted WF Intial Production Sample (IPS)

Workability Factor (%)	45 7 40 7 35 7 30 7	45, 44  45, 33  Operating Zone Boundary	52, 41	58, 40 60,	36 <b>→</b> IPS ■ P	68, 32 68, 38 oduction Gra	75, 39 adation 75, 28	
	25 + 4( ctionLin	) 45 nits Boundary =	50 55 	Coarsene	ss Factor (	<b>%)</b> <sup>70</sup>	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"	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

PLANT #: P-O2
Sample Date: Contractor: \_\_\_\_\_\_

Contractor: \_\_\_\_\_

M

Dates Test F	Represents:	7/28/2020	through	8/3/2020		
Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	Specific	%
Agg. Glass	"	Course	Weight (OOD)	11.	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	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, 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"	97.2	100.0	100.0	98.5	1.5	1.5
3/4"	72.4	100.0	100.0	85.7	12.8	14.3
1/2"	31.6	98.2	100.0	64.4	21.3	35.6
3/8"	18.3	80.1	100.0	56.0	8.4	44.0
#4	4.5	19.5	98.3	42.9	13.0	57.1
#8	2.4	7.3	80.7	33.8	9.1	66.2
#16	2.1	4.0	63.3	26.5	7.3	73.5
#30	2.0	3.4	47.3	20.1	6.4	79.9
#50	1.9	3.1	24.8	11.1	9.0	88.9
#100	1.7	2.9	4.7	3.0	8.1	97.0

0.3

1.0

36.3

2.0

Adjusted WF Intial Production Sample (IPS)

2.6

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.

 $^{\star}\%$  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:	67	Workability Factor:	34	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41	58, 39 68, 39 68, 39 68, 38 Ploductio	JMF Zone 75, 39 n Gradation	
25 40 45  ActionLimits Boundary =	50 55	Coarseness Factor (%) <sup>70</sup>	75	80

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

99.0

**Coarseness Factor:** 

PREPARED BY: SM, LLC Technical Service

1.3

O Batch Plant Gradations

LBW

**Production Gradation** 

Approved By