Production Gradation Report

PLANT #: P-101 Contractor:

Sample Date: 1/24/22 DM Concrete Grade: Dates Test Represents: 1/25/2022 1/31/2022 through

Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.5
26A	71-47	Presque Isle	260	1.59	2.62	8.9
2NS	75-051	Mid-Michigan	1150	6.93	2.66	39.5
		Total Wt	2910	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

	rotar we	2010 17.00		100.0	< voing and n	umber 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"	98.3	100.0	100.0	99.1	0.9	0.9	
3/4"	83.3	100.0	100.0	91.4	7.7	8.6	
1/2"	37.4	98.2	100.0	67.6	23.8	32.4	
3/8"	21.1	88.1	100.0	58.3	9.3	41.7	*
#4	3.7	18.9	98.5	42.5	15.7	57.5	*
#8	2.2	4.7	83.3	34.5	8.0	65.5	no
#16	1.9	1.9	68.3	28.1	6.3	71.9	*
#30	1.8	1.5	53.3	22.1	6.0	77.9	no
#50	1.7	1.3	29.2	12.5	9.6	87.5	*
#100	1.6	1.2	7.3	3.8	8.7	96.2	a 2
LBW	1.5	1.2	0.6	1.1	2.7	98.9	
Production G	radation O Batch Plant Grada	tions Aggregate Supplier Gra	adations	Adjusted WF	Initial Producti	on Sample (IP	S)

*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	adations Aggregate Supplier Gradations	Adjusted \
Coarseness Factor:	64	Workability Factor: 34	37.0
45 45, 44 45, 44 45, 33 Operating Zone Boundary 25	52, 41	JMF Zone 57, 39 68, 38 75, 39 60, 3\beta_S 6763,131 75, 28	
40 45 ActionLimits Boundary =	50	55 Coarseness Factor (%) 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"	95.0	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

PLANT #: P-102

Sample Date:

Production Gradation

1/24/22 DM Concrete Grade: 1/25/2022 1/31/2022

Contractor:	

MDOT No.:

Dates Test F	Represents:	1/25/2022	through	1/31/2022		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1400	8.34	2.69	47.4
26A	58-003	Stoneco	405	2.41	2.69	13.7
2NS	63-114	Highland	1150	6.95	2.65	38.9
		Total Wt	2955	17.71		100.0

	שועו
%	
ntribution	
47.4	
13.7	
38.9	



--- Verify this number is 100%

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

37.7

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

	i otai vvt	2900	17.71		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"	100.0	100	.0	100.0	100.0	0.0	0.0
3/4"	81.4	100	.0	100.0	91.2	8.8	8.8
1/2"	44.3	98.	9	100.0	73.5	17.7	26.5
3/8"	19.2	70.	9	100.0	57.7	15.7	42.3
#4	1.8	9.3	3	99.6	40.9	16.8	59.1
#8	1.0	3.4	ļ.	88.1	35.2	5.7	64.8
#16	0.8	2.1		70.2	28.0	7.2	72.0
#30	0.6	1.8	3	48.2	19.3	8.7	80.7
#50	0.5	1.7	,	19.3	8.0	11.3	92.0
#100	0.4	1.5	5	2.8	1.5	6.5	98.5
LBW	0.3	1.4		0.6	0.6	0.9	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:	65	Workability Factor:	35	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	40 67 40 68, 38 Production G 60,186 67,32, 31		
Boundary 25 40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75, 28	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

61

PREPARED BY: SM, LLC Technical Service Approved By:

PLANT #: P-32

Sample Date:

Dates Test Represents:

Production Gradation

1/24/22 DM Concrete Grade: 1/25/2022 1/31/2022

Contractor:	
_	

Adjusted WF Intial Production Sample (IPS)

37.8

MDOT No.:

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1555	9.51	2.62	53.5
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	2905	17.69		100.0

through

%	
ntribution	
53.5	
6.9	
39.6	



<---- Verify this number is 100%

Coarseness Factor:

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"	80.0	100.0	100.0	89.3	10.7	10.7
1/2"	37.1	97.1	100.0	66.1	23.2	33.9
3/8"	21.0	88.6	100.0	56.9	9.2	43.1
#4	3.3	29.7	96.9	42.2	14.8	57.8
#8	1.9	9.3	85.1	35.3	6.8	64.7
#16	1.6	4.6	70.3	29.0	6.3	71.0
#30	1.5	2.8	49.6	20.6	8.4	79.4
#50	1.4	2.3	23.8	10.3	10.3	89.7
#100	1.3	2.1	6.8	3.5	6.8	96.5
LBW	1.0	1.6	1.2	1.1	2.4	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.

62

*% 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:	35	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	68, 38 68, 38 60 duction 68, 38 68, 31	JMF Zone 75, 39 Gradation 75, 28	
40 45 ActionLimits Boundary =	50 5	Coarseness Factor (%) ⁷⁰	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"	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

PLANT #: P-35

Sample Date:

Dates Test Represents:

Production Gradation

1/24/22 DM Concrete Grade: 1/25/2022 1/31/2022 through

Contractor:		

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

35.5

Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1450	8.64	2.69	49.1
26A	58-003	Stoneco	405	2.41	2.69	13.7
2NS	81-019	Pleasant Lake	1100	6.65	2.65	37.2
		Total Wt	2955	17.70		100.0

%	
tribution	
49.1	
13.7	
37.2	



<---- Verify this number is 100%

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

	Total Wi	2000 17.70		100.0	< verily tills if	umber 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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	81.4	100.0	100.0	90.9	9.1	9.1
1/2"	44.3	98.9	100.0	72.5	18.4	27.5
3/8"	19.2	70.9	100.0	56.4	16.2	43.6
#4	1.8	9.3	97.7	38.5	17.8	61.5
#8	1.0	3.4	86.0	33.0	5.6	67.0
#16	0.8	2.1	70.7	27.0	6.0	73.0
#30	0.6	1.8	52.4	20.0	7.0	80.0
#50	0.5	1.7	22.0	8.7	11.4	91.3
#100	0.4	1.5	4.5	2.1	6.6	97.9
LBW	0.3	1.4	1.7	1.0	1.1	99.0

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.

61

*% 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:	33	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41 56, 52, 34	■ 60 ₁₁ β€ ■ Production Gr	JMF Zone 75, 39 adation 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"	89.1	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 Approved By:

PLANT #: P-39 Sample Date: 1/24/22

DM Concrete Grade:

36.1

Dates Test F	Represents:	1/25/2022	through	1/31/2022		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific	%
Agg. Class	FIL#	Source	weight (SSD)	IL	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

MDOT No.:



Contractor:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

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

	i otai 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"	98.3	10	0.0	100.0	99.1	0.9	0.9
3/4"	83.3	10	0.0	100.0	90.8	8.3	9.2
1/2"	37.4	98	3.2	100.0	65.3	25.5	34.7
3/8"	21.1	88	3.1	100.0	55.6	9.7	44.4
#4	3.7	18	3.9	97.9	40.4	15.2	59.6
#8	2.2	4.	.7	84.6	33.6	6.8	66.4
#16	1.9	1.	.9	68.4	27.1	6.5	72.9
#30	1.8	1.	.5	49.8	20.0	7.1	80.0
#50	1.7	1.	.3	24.4	10.3	9.7	89.7
#100	1.6	1.	.2	4.0	2.5	7.8	97.5
LBW	1.5	1.	.2	0.5	1.1	1.4	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.

Coarsene	ss Factor:	67	Workability Factor:	34	
ability Factor (%) 20 30 30 30 30 30 30 30 30 30	45, 33 Operating Zone Boundary	52, 41	56, 40 68, 38 Floduction G 50, 22 68,832	75, 39 Gradation	
25 40 ActionLimits Be	45 oundary =	50 5	5 Coarseness Factor (%)	75	80

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"	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

P-02

PLANT #:

Sample Date: 1/24/22 DM Concrete Grade: 1/31/2022 through

_		
	MDOT	No

Contractor:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

34.3

Dates Test Represents:		1/25/2022	through	1/31/2022		
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	200	1.22	2.62	6.9
2NS	63-115	Ray Rd	1100	6.65	2.65	37.9
	Total Wt			17.69		100.0

--- Verify this number is 100%

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

	i Otai Wt	2903 17.09		100.0	< verily this ii	uniber 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"	82.2	100.0	100.0	90.2	9.4	9.8
1/2"	35.3	97.1	100.0	64.1	26.1	35.9
3/8"	18.0	88.6	100.0	53.9	10.1	46.1
#4	3.8	29.7	96.7	40.8	13.2	59.2
#8	2.3	9.3	78.9	31.8	9.0	68.2
#16	2.0	4.6	63.0	25.3	6.5	74.7
#30	1.9	2.8	45.4	18.4	6.8	81.6
#50	1.8	2.3	24.2	10.3	8.1	89.7
#100	1.7	2.1	5.1	3.0	7.3	97.0
LBW	1.3	1.6	1.1	1.2	1.8	98.8
Production Gra	adation O Batch Plant Grada	tions Aggregate SupplierGra	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.

63

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

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

Coarseness F	actor: 68	Workability Factor:	32	
No Boo	52, 41 52, 34 33	58, 39 68, 39 68, 39 68, 38 Production 689, 38	75, 39 on Gradation	
40 ActionLimits Bounda		55 Coarseness Factor (%)	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