Aggregate Optimization Chart

Batch Plant Gradations

Production Gradation

Production Gradation Report

PLANT #: P-101

Sample Date: 5/23/22 Concrete Grade: DM, 4500HP Dates Test Represents: 5/24/2022 5/30/2022 through

24.00 . 001 .	100100011101		o a g	0,00,2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1460	8.93	2.62	50.2
26A	71-47	Presque Isle	300	1.83	2.62	10.3
2NS	75-051	Mid Michigan	1150	6.93	2.66	39.5
		Total Wt	2010	17 60		100.0

MDOT No.:

Contractor:

Adjusted WF Initial Production Sample (IPS)

Coarseness Factor:



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

	TOTAL WI	2910 17.09		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"	98.5	100.0	100.0	99.2	0.8	0.8
3/4"	84.0	100.0	100.0	92.0	7.3	8.0
1/2"	44.8	97.9	100.0	72.1	19.9	27.9
3/8"	24.4	86.3	100.0	60.7	11.4	39.3
#4	2.6	16.9	98.5	42.0	18.7	58.0
#8	1.8	4.5	83.3	34.3	7.7	65.7
#16	1.6	2.8	68.3	28.1	6.2	71.9
#30	1.5	2.4	53.3	22.1	6.0	77.9
#50	1.4	2.2	29.2	12.5	9.6	87.5
#100	1.4	2.0	7.3	3.8	8.7	96.2
LBW	1.2	1.8	0.6	1.0	2.8	99.0
	<u> </u>					

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:	60	Workability Factor:	34	36.8
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 4	57, 39 68, 38 Production Gradation 60, 3 ps 67, 31 67, 31	75, 39 75, 28	
40 45 ActionLimits Boundary =	50 5	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

Sample Date:

Production Gradation

5/23/22 Concrete Grade: DM, 4500HP

Dates Test Represents:		5/24/2022	through	5/30/2022		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1480	8.82	2.69	50.2
26A	58-003	Stoneco	320	1.91	2.69	10.8
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

35.0

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	i 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"	100.0	10	0.0	100.0	100.0	0.0	0.0
3/4"	73.3	10	0.0	100.0	86.6	13.4	13.4
1/2"	40.6	99).9	100.0	70.2	16.4	29.8
3/8"	14.1	86	5.4	100.0	55.4	14.8	44.6
#4	3.4	16	5.2	97.1	41.3	14.1	58.7
#8	1.0	5.	.4	80.5	32.5	8.8	67.5
#16	0.8	3	3	63.5	25.5	7.0	74.5
#30	0.6	2	5	46.3	18.6	6.9	81.4
#50	0.6	2	5	23.4	9.7	8.9	90.3
#100	0.4	2	.3	8.0	3.6	6.1	96.4
LBW	0.4	2	.1	1.7	1.1	2.5	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:	66	Workability Factor:	32	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	40 67 40 68, 38 Production 67 338, 31	JMF Zone 75, 39 Gradation	
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

Sample Date:

Production Gradation

5/23/22 Concrete Grade: **DM**, **4500HP**

Dates Test Represents:		5/24/2022	through	5/30/2022		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1480	8.82	2.69	50.2
26A	58-003	Stoneco	320	1.91	2.69	10.8
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

35.0



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	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"	73.3	100.0	100.0	86.6	13.4	13.4
1/2"	40.6	99.9	100.0	70.2	16.4	29.8
3/8"	14.1	86.4	100.0	55.4	14.8	44.6
#4	3.4	16.2	97.1	41.3	14.1	58.7
#8	1.0	5.4	80.5	32.5	8.8	67.5 r
#16	0.8	3.3	63.5	25.5	7.0	74.5
#30	0.6	2.5	46.3	18.6	6.9	81.4 r
#50	0.6	2.5	23.4	9.7	8.9	90.3
#100	0.4	2.3	8.0	3.6	6.1	96.4
LBW	0.4	2.1	1.7	1.1	2.5	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.

 $\ensuremath{^{*}\%}$ 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:	66	Workability Factor:	32	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	68, 38 60,138 Production Gra	75, 39 dation	
25 40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

Batch Plant Gradations

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"	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:

Sample Date:

Concrete Grade: DM, 4500HP 5/23/22

5/24/2022 5/30/2022 through

Dates Test F	Represents:	5/24/2022	through	5/30/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	255	1.56	2.62	8.8
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%

Contractor:

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

	i Otai VVt	2303 17.03		100.0	C Verify this number is 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"	96.1	100.0	100.0	98.0	2.0	2.0
3/4"	78.4	100.0	100.0	88.8	9.1	11.2
1/2"	39.3	93.7	100.0	68.1	20.7	31.9
3/8"	21.9	81.3	100.0	58.0	10.1	42.0
#4	3.6	17.3	96.7	41.7	16.4	58.3
#8	1.6	3.2	79.8	32.7	9.0	67.3
#16	1.5	1.8	63.0	25.9	6.8	74.1
#30	1.4	1.7	47.0	19.5	6.4	80.5
#50	1.3	1.6	24.6	10.6	8.9	89.4
#100	1.3	1.5	4.3	2.5	8.0	97.5
LBW	1.0	1.4	0.7	0.9	1.6	99.1

*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:	62	Workability Factor:	33	35.2	Coars	seness Factor:
45				\neg	Worl	kability Factor:
45, 44	52, 41		JMF Zone]	Sieve	Cumulative % Passing
_ 40 -	57,4	68, 40			2"	100.0
3	i	68, 38	75, 39		1.5"	100.0
35		1			1"	99.3
		■ 60, 36PS ■ Production G radation			3/4"	89.0
35 -	i	Production Gradation			1/2"	70.3
4 7	52, 34				3/8"	59.9
45, 33	37-2	2			#4	41.9
30 -	,-	68, 32 68, 31			#8	35.9
30 - 45, 33 Operating Zone Boundary	1		_		#16	27.8
Boundary			75, 28		#30	18.9
25					#50	6.3
40 45	50 55 _	60 65 70	75	80	#100	1.7
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	oarseness Factor (%) ⁷⁰		*	LBW	1.0

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

through

Weight (SSD)

1505

250

1150

5/24/2022

Source

Presque Isle

Presque Isle

Smelter Bay

PLANT #: P-32

Pit#

71-47

71-47

95-013

Sample Date:

Agg. Class

6AA

26A

2NS

Dates Test Represents:

**Production Gradation** 

5/23/22 Concrete Grade: DM, 4500HP

ft³

9.21

1.53

6.95

5/30/2022

Specific

Gravity

2.62

2.62

2.65



39.6

37.3

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

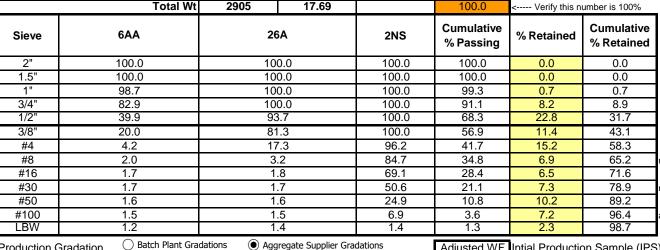
Coarseness Factor:

Contractor:



<---- Verify this number is 100%

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.

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:	66	Workability Factor:	35	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	68, 38  68, 38  60, 38S  68, 31	JMF Zone 75, 39 Gradatior 75, 28	
40 45 ActionLimits Boundary =	50 5	Coarseness Factor (%) ⁷⁰	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

Sample Date:

**Production Gradation** 

5/23/22 Concrete Grade: **DM**, **4500HP** 

Dates Test F	Represents:	5/24/2022	through	5/30/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1480	8.82	2.69	50.2
26A	58-003	Stoneco	320	1.91	2.69	10.8
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0
		Total Wt	2950	17.68		100.0

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

**Coarseness Factor:** 

35.0



---- Verify this number is 100%

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

	i otai vvt	2930 17.00		100.0	< verify this n	lumber 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"	73.3	100.0	100.0	86.6	13.4	13.4
1/2"	40.6	99.9	100.0	70.2	16.4	29.8
3/8"	14.1	86.4	100.0	55.4	14.8	44.6
#4	3.4	16.2	97.1	41.3	14.1	58.7
#8	1.0	5.4	80.5	32.5	8.8	67.5
#16	0.8	3.3	63.5	25.5	7.0	74.5
#30	0.6	2.5	46.3	18.6	6.9	81.4
#50	0.6	2.5	23.4	9.7	8.9	90.3
#100	0.4	2.3	8.0	3.6	6.1	96.4
LBW	0.4	2.1	1.7	1.1	2.5	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.

 $\ensuremath{^{*}\%}$  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:	66	Workability Factor:	32	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41 56, 52, 34	68, 38 ■ 60 ₁ β§	JMF Zone 75, 39 Gradation 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
0.11			
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

Sample Date:

Congreto Crado: DM 4500HP 5/23/22

	Concrete Grade:	DIVI, 4300111
5/30/2022		

Dates Test Represents:		5/24/2022	through	5/30/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1600	9.79	2.62	55.1
26A	71-47	Presque Isle	205	1.25	2.62	7.1
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

Contractor:

MDOT No.:

- Verify this number is 100%

34.4

**Coarseness Factor:** 

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

	i Otai Wt	2903	17.03		100.0	< verily trils it	uniber 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"	96.1	10	0.0	100.0	97.9	2.1	2.1
3/4"	78.4	10	0.0	100.0	88.1	9.7	11.9
1/2"	39.3	93	3.7	100.0	66.1	22.0	33.9
3/8"	21.9	81	.3	100.0	55.7	10.5	44.3
#4	3.6	17	<b>'</b> .3	97.2	40.0	15.7	60.0
#8	1.6	3	.2	81.2	31.9	8.2	68.1
#16	1.5	1.	.8	66.4	26.1	5.8	73.9
#30	1.4	1.	.7	48.8	19.4	6.7	80.6
#50	1.3	1.	.6	22.6	9.4	10.0	90.6
#100	1.3	1.	.5	2.5	1.8	7.6	98.2
LBW	1.0	1.	.4	0.4	0.8	1.0	99.2
Production Gradation	Batch Plant Grada	ations	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.

*% 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:	32	
30 - Op	55, 33 erating Zone Boundary	52, 41	58, 39 60, 36 lPS Production Gradat	75, 39 ion	
40 ActionLimits Bour	45	50 5	⁵ Coarseness Factor (%) ⁷⁰	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"	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

Krake Willis Rd

**Total Wt** 

PLANT #: P-39

Pit#

71-47

71-47

44-051

Sample Date:

Agg. Class

6AA

26A

2NS

Dates Test Represents:

5/23/22 Concrete Grade: DM, 4500HP

5/24/2022	through	5/30/2022		
Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
Presque Isle	1505	9.21	2.62	51.8
Presque Isle	300	1.83	2.62	10.3

6.65

17.69

2.65

37.9

100.0

Contractor:

MDOT No.:



<---- Verify this number is 100%

o	Cumulative
0/ Datai	 

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"	98.5	100.0	100.0	99.2	0.8	0.8
3/4"	84.0	100.0	100.0	91.7	7.5	8.3
1/2"	44.8	97.9	100.0	71.2	20.5	28.8
3/8"	24.4	86.3	100.0	59.4	11.8	40.6
#4	2.6	16.9	96.1	39.5	19.9	60.5
#8	1.8	4.5	79.7	31.6	7.9	68.4

**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.

Coarsen	ess Factor: 59	Workability Factor:	32	34.1	Coars	eness
Production (	Gradation O Batch Plant Gra	dations    Aggregate Supplier Grad	dations	Adjusted WF	Intial Production	on Sa
LBW	1.2	1.8	1.2	1.3	2.9	
#100	1.4	2.0	8.6	4.2	6.9	
#50	1.4	2.2	26.8	11.1	8.6	
#30	1.5	2.4	49.4	19.7	6.0	
#16	1.6	2.8	65.0	25.7	5.8	
#8	1.8	4.5	79.7	31.6	7.9	
#4	2.6	16.9	96.1	39.5	19.9	
3/8"	24.4	86.3	100.0	59.4	11.8	
1/2"	44.8	97.9	100.0	71.2	20.5	
3/4"	84.0	100.0	100.0	91.7	7.5	
	00.0			00.2	0.0	4

1100

2905

ample (IPS) ss Factor: 63 **Workability Factor:** 36

74.3

80.3

88.9

95.8

45 -	45, 44 JMF Zone				
(e 40 )	52, 41 58, 40 75, 39				
Workability Factor (%)	68, 38  • 60, 36 IPS  • Production Gradation  52, 34  • 688, 32				
Worka	Operating Zone Boundary 75, 28				
25 - 4	) 45 50 55 60 6570 75 80				
40 45 50 55 60 65 70 75 80 ActionLimits Boundary =					

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	

Sample Date:

Concrete Grade: DM, 4500HP

5/23/22 5/24/2022 5/30/2022 through

Dates Test Represents:		5/24/2022	through	5/30/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	255	1.56	2.62	8.8
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		Total Wt	2905	17.69		100.0

Contractor:

MDOT No.:



---- Verify this number is 100%

**Coarseness Factor:** 

**Workability Factor:** 

lative ained	Superior iviaterials, L					
	30701 W. 10 Mile Rd.					
.0	Suite 500					

Farmington Hills, MI 48336

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*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 35

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

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

	i otai vvt	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"	96.1	100.0	100.0	98.0	2.0	2.0
3/4"	78.4	100.0	100.0	88.8	9.1	11.2
1/2"	39.3	93.7	100.0	68.1	20.7	31.9
3/8"	21.9	81.3	100.0	58.0	10.1	42.0
#4	3.6	17.3	96.7	41.7	16.4	58.3
#8	1.6	3.2	79.8	32.7	9.0	67.3
#16	1.5	1.8	63.0	25.9	6.8	74.1
#30	1.4	1.7	47.0	19.5	6.4	80.5
#50	1.3	1.6	24.6	10.6	8.9	89.4
#100	1.3	1.5	4.3	2.5	8.0	97.5
LBW	1.0	1.4	0.7	0.9	1.6	99.1

 Batch Plant Gradations Aggregate SupplierGradations **Production Gradation** Adjusted WF Intial Production Sample (IPS) **Workability Factor:** 33 35.2 **Coarseness Factor:** 62 45 JMF Zone 45, 44

% 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" 20.5 25.4 74.6 3/8' 59.3 15.3 40.7 #4 42.1 57.9 17.2 #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 99.1

