Production	Gradation	Report
------------	-----------	--------

PLANT #	#:	P-101					Contractor:			
Sample Date	э:	4/24/23	_	(Concrete Grade:	DM, 4500HP				
Dates Test R	<pre>tepresents:</pre>	4/25/2023	through	5/1/2023			MDOT No.:			
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution				
6AA	71-47	Presque Isle	1450	8.87	2.62	50.0				
26A	71-47	Presque Isle	300	1.83	2.62	10.3				
2NS	75-051	Mid Michigan	1150	6.93	2.66	39.7				SU
		Total Wt	2900	17.63		100.0	< Verify this n	umber is 100%	-	MAT
Sieve		6AA	26	6A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superio</u> 30701 V
2"	í · · · ·	100.0	10	0.0	100.0	100.0	0.0	0.0	1	Suite 50
1.5"		100.0		0.0	100.0	100.0	0.0	0.0	1	Farming
1"		100.0		0.0	100.0	100.0	0.0	0.0	1	
3/4"		84.2	10	0.0	100.0	92.1	7.9	7.9	l	
1/2"	i <u> </u>	44.2		5.0	100.0	71.7	20.4	28.3	l	
3/8"		27.9		7.2	100.0	62.6	9.1	37.4	*Maximum %	Retained must
#4		5.2		1.1	97.9	43.6	19.0	56.4	*Any two adja	cent sieves mu
#8		2.4		.4	83.1	34.6	9.0	65.4		00 and #200 sie
#16		2.1		4	68.7	28.5	6.1	71.5	*% Retained r	must be at least
#30		2.0		.0	53.5	22.4	6.1	77.6		00 and #200 sie
#50		1.9		.9	28.5	12.4	10.0	87.6		must be at least
#100		1.9		.8	8.5	4.5	7.9		a 2" max. size	(nom. Max. 1.5
LBW		1.6	1.		1.1	1.4	3.1	98.6	l	
Production G	radation	 Batch Plant Gra 	dations 💽 Agg	gregate Supplier Gra	adations	Adjusted WF	Initial Product	ion Sample (IPS	3)	
Coarsenc	ess Factor:	: 57	Worl	kability Factor:	: 35	37.1	Coars	eness Factor:	62	
45							Work	ability Factor:	35	
	45, 44				JMF Zone		Sieve	Cumulative	%	Cumulativ
1	10, 11	50.44			5111 20110	!	Sieve	% Passing	Retained	% Retaine
		52, 41	$ \rightarrow $				2"	100.0	0.0	0.0
् ⁴⁰			57, 39	67, 39 68, 3	75, 39		1.5"	100.0	0.0	0.0
<u>ျပီ</u>			Production 0				1"	100.0	0.0	0.0
l đ			■ Fioduction C				3/4"	95.0	5.0	5.0
35 g							1/2"	70.5	24.5	29.5
		52, 34		i			3/8"	60.0	10.5	40.0
Workability Factor (%)	45, 33		57, 31	67 ₆ 8,13	h.		#4	44.4	15.6	55.6
ig 30			51,51	01 68,3	31		#8	35.5	9.0	64.5
ž	Operating Zone	e					#16	28.5	7.0	71.5
♀ ∟	Boundary				75, 28		#30	21.5	7.0	78.5
> ₂₅				 			#50	10.2	11.3	89.8

80

75

60 **Coarseness Factor (%)**

#100

LBW

3.1

1.3

7.1

1.8

96.9

98.7



erior Materials, LLC 01 W. 10 Mile Rd. 500 ington Hills, MI 48336

st be above the 3/8" sieve. nust equal 10% except max., sieves. ast 4% for each sieve except max., sieves. ast 8% for the 1" sieve when .5") aggregate is used.

Approved By:

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ActionLimits Boundary = - - - - -

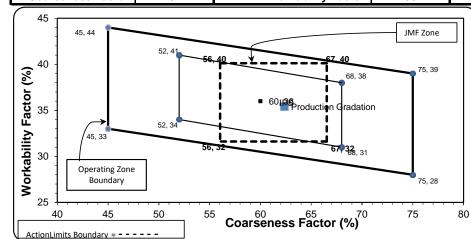
45

PLANT	#:	P-102					Contractor:				
Sample Date	e:	4/24/23		C	Concrete Grade	DM, 4500HP					
Dates Test F	Represents:	4/25/2023	through	5/1/2023			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	58-003	Stoneco	1550	9.23	2.69	52.5					
26A	58-003	Stoneco	250	1.49	2.69	8.5					
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0				SUP	F
		Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%		MATI	ER
Sieve		6AA	26	6A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior</u> 30701 W.	
2"		100.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		100.0		0.0	100.0	100.0	0.0	0.0		Farmingto	n Hi
1"		99.4		0.0	100.0	99.7	0.3	0.3			
3/4"		86.8	-	0.0	100.0	93.1	6.6	6.9			
1/2"		49.1		9.8	100.0	73.2	19.8	26.8			
3/8"		22.4		7.5	100.0	58.2	15.1	41.8		Retained must be	
#4		2.1	-	.6	97.6	39.6	18.5	60.4		cent sieves must e	· ·
#8		1.0		.8	82.7	32.9	6.7	67.1	,	00 and #200 sieves	
#16		0.6		.5 .3	65.7 46.5	26.1	6.9 7.6	73.9 81.5		must be at least 4%	
#30 #50		0.5		. <u>.</u> .3	22.7	18.5 9.2	9.3	90.8		00 and #200 sieves must be at least 8%	
#30		0.5		. <u>3</u>	6.6	2.9	6.3	97.1		(nom. Max. 1.5") a	
LBW		0.6	1		1.3	0.9	2.0	99.1	a 2 111ax. 3126	(1011. Max. 1.5) a	Jaie
Production G	Gradation	O Batch Plant Gra	dations () Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	5)		
Coarsen	ess Factor:	62	Worl	ability Factor:	33	35.4	Coars	eness Factor:	61		
45							Work	ability Factor:	36		
	45, 44				JMF Zone		Sieve	Cumulative	%	Cumulative	
1		50.44						% Passing	Retained	% Retained	
40		52, 41 	40	67_40			2"	100.0	0.0	0.0	
😴 [‡]]				68, 38	75, 39		1.5"	100.0	0.0	0.0	
ctor (%)			Ì				1"	99.3	0.7	0.7	
2			■ 60 ,13 €	Production Gradatio	n		3/4" 1/2"	89.2 70.7	10.1 18.5	10.8 29.3	
Ü 35			-	- iouuuuuu	•••		1/2"	/0/	185	74.3	4



aterials, LLC Mile Rd. Hills, MI 48336

ove the 3/8" sieve. al 10% except max., or each sieve except max., or the 1" sieve when egate is used.



Coar	seness Factor:	61	
Wor	kability 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

Approved By: Mart P. Ball

PLANT #	#:	P-103					Contractor:			_	
Sample Date:	:	4/24/23		C	Concrete Grade	DM, 4500HP					
Dates Test R	epresents:	4/25/2023	through	5/1/2023			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	58-003	Stoneco	1550	9.23	2.69	52.5					
26A	58-003	Stoneco	250	1.49	2.69	8.5					
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0				SUP	ERIOR
		Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%			RIALS
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior I</u> 30701 W. 1	<u>Materials, LLC</u> 10 Mile Rd.
2"		00.0	100	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	100		100.0	100.0	0.0	0.0		Farmingtor	n Hills, MI 48336
1"		99.4	100	0.0	100.0	99.7	0.3	0.3			
3/4"		86.8	100		100.0	93.1	6.6	6.9			
1/2"		49.1	99	.8	100.0	73.2	19.8	26.8			
3/8"		22.4	87	.5	100.0	58.2	15.1	41.8	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		2.1	5.		97.6	39.6	18.5	60.4	*Any two adja	icent sieves must eo	qual 10% except max.,
#8		1.0	1.		82.7	32.9	6.7	67.1	nom. max., #10	00 and #200 sieves.	
#16		0.6	1.		65.7	26.1	6.9	73.9	*% Retained I	must be at least 4%	for each sieve except
#30		0.5	1.		46.5	18.5	7.6	81.5		00 and #200 sieves.	
#50		0.5	1.		22.7	9.2	9.3	90.8			for the 1" sieve when
#100 LBW		0.5	1.		6.6 1.3	2.9 0.9	6.3 2.0	97.1 99.1	a 2" max. size	(nom. Max. 1.5") ag	gregate is used.
		0.0		1	1.0	0.9	2.0	33.1			
		_		regate Cuantier Cra	dationa		1	•			
	radation	Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	5)		
Production G	radation ess Factor:	_		regate Supplier Gra ability Factor:	dations 33	Adjusted WF 35.4		on Sample (IPS eness Factor:	5) 61		
Production G Coarsene		O Batch Plant Gra		• •			Coars		<i>,</i>		
Production G Coarsene	ess Factor:	O Batch Plant Gra		• •	33		Coars Work	eness Factor:	61 36 %	Cumulative	
Production G Coarsene		Batch Plant Gra 62		• •			Coars Work Sieve	eness Factor: ability Factor: Cumulative % Passing	61 36 % Retained	% Retained	
Coarsene	ess Factor:	O Batch Plant Gra		• •	33		Coars Work Sieve 2"	eness Factor: ability Factor: Cumulative % Passing 100.0	61 36 % Retained 0.0	% Retained 0.0	
Coarsene	ess Factor:	Batch Plant Gra 62		ability Factor:	33		Coars Work Sieve 2" 1.5"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0	61 36 % Retained 0.0 0.0	% Retained 0.0 0.0	
Coarsene	ess Factor:	Batch Plant Gra 62		• •	33 JMF Zone		Coars Work Sieve 2" 1.5" 1"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3	61 36 % Retained 0.0 0.0 0.0 0.7	% Retained 0.0 0.0 0.7	
45 40	ess Factor:	Batch Plant Gra 62	Work	sability Factor:	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2	61 36 % Retained 0.0 0.0 0.0 0.7 10.1	% Retained 0.0 0.0 0.7 10.8	
Coarsene	ess Factor:	Batch Plant Gra 62 52, 41 56	Work	ability Factor:	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7	61 36 % Retained 0.0 0.0 0.7 10.1 18.5	% Retained 0.0 0.0 0.7 10.8 29.3	
45 40 40 40 40 40 40 40 40 40 40 40 40 40	PSS Factor:	Batch Plant Gra 62	Work	sability Factor:	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7	61 36 % <u>Retained</u> 0.0 0.0 0.7 10.1 18.5 10.0	% Retained 0.0 0.0 0.7 10.8 29.3 39.3	
Harcton G Coarsene 45 40 40 40 40 35 40 40 40 40 40 40 40 40 40 40	ess Factor:	Batch Plant Gra 62 52, 41 56	Work	ez 40 68, 38 Production Gradatio	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4	61 36 % Retained 0.0 0.0 0.7 10.1 18.5 10.0 16.3	% Retained 0.0 0.7 10.8 29.3 39.3 55.6	
45 40 40 40 40 40 40 40 40 40 40 40 40 40	45, 33	Batch Plant Gra	Work	sability Factor:	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9	61 36 % Retained 0.0 0.0 0.7 10.1 18.5 10.0 16.3 8.5	% Retained 0.0 0.0 0.7 10.8 29.3 39.3 55.6 64.1	
45 40 40 40 40 40 40 40 40 40 40 40 40 40	45, 33 Operating Zone	Batch Plant Gra	Work	ez 40 68, 38 Production Gradatio	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9 27.3	61 36 % Retained 0.0 0.0 0.7 10.1 18.5 10.0 16.3 8.5 8.6	% Retained 0.0 0.0 0.7 10.8 29.3 39.3 55.6 64.1 72.7	
Lactor (%)	45, 33	Batch Plant Gra	Work	ez 40 68, 38 Production Gradatio	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9 27.3 19.1	61 36 % <u>Retained</u> 0.0 0.0 0.7 10.1 18.5 10.0 16.3 8.5 8.6 8.2	% Retained 0.0 0.0 0.7 10.8 29.3 39.3 55.6 64.1 72.7 80.9	
Application G Coarsene 45 40 40 40 40 40 40 40 40 40 40	45, 33 Operating Zone	Batch Plant Gra	Work	ez 40 68, 38 Production Gradatio	33 JMF Zone 75, 39		Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9 27.3	61 36 % Retained 0.0 0.0 0.7 10.1 18.5 10.0 16.3 8.5 8.6	% Retained 0.0 0.0 0.7 10.8 29.3 39.3 55.6 64.1 72.7	

Approved BY: Mary P. Ball

PLANT :	#: _	14					Contractor:			-	
Sample Date	:	4/24/23		C	Concrete Grade	DM, 4500HP					
Dates Test R	epresents:	4/25/2023	through	5/1/2023			MDOT No.:			_	
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	58-003	Stoneco	1560	9.29	2.69	52.7					
26A	58-003	Stoneco	300	1.79	2.69	10.1				LI .	
2NS	19-04	Schlegel	1100	6.60	2.67	37.2				Bui	Iders'
		Total Wt	2960	17.68		100.0	< Verify this n	umber is 100%	7		irst With Builders'
Sieve	6	AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		Builders 30701 W.	Redi-Mix 10 Mile Rd.
2"	1(0.00	100	0.0	100.0	100.0	0.0	0.0	-	Suite 500	
1.5"	10	0.0	100	0.0	100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"	9	9.4	100		100.0	99.7	0.3	0.3			
3/4"	-	6.8	100		100.0	93.0	6.6	7.0			
1/2"		9.1	99	-	100.0	73.2	19.9	26.8			
3/8"		2.4	87	-	100.0	57.8	15.3	42.2	*Maximum %	Retained must be	above the 3/8" sieve.
#4		2.1	5.	-	99.9	38.8	19.0	61.2	*Any two adja	icent sieves must e	equal 10% except max.,
#8		1.0	1.		90.1	34.2	4.6	65.8	nom. max., #100 and #200 sieve		
#16		0.6	1.		69.4	26.3	7.9	73.7			6 for each sieve except
#30 #50		0.5 0.5	1.		44.5	16.9 5.7	9.3	83.1		00 and #200 sieves	
#50 #100).5).5	<u> </u>		14.3 2.7	5.7	11.2 4.3	94.3 98.6			6 for the 1" sieve when
LBW).6	1.		0.2	0.5	0.9	98.6 99.5	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
Production G		Batch Plant Gra		egate Supplier Gra	-	_		on Sample (IPS	J 3)		
	ess Factor:	64		ability Factor:	34	36.7		eness Factor:	ŕ		
45	•				•		Work	ability Factor:	36		
	45, 44				JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
40		52, 41	57, 40	68, 40			2"	100.0	0.0	0.0	
२ ⁴⁰				68, 38	75, 39		1.5"	100.0	0.0	0.0	
Workability Factor (%)			i				1"	99.3	0.7	0.7	
<u>ī</u>			■ 60, 36	Production Grad	dation		3/4"	89.0	10.3	11.0	
5 35			i				1/2"	70.3	18.7	29.7	
<u>ь</u>		52, 34					3/8"	59.9	10.4	40.1	
i i	45, 33		57,22	68,32			#4 #8	41.9 35.9	18.0 6.0	58.1 64.1	
		-		- 68, 31			#8 #16	35.9 27.8	6.0 8.2	64.1 72.2	
¥	Operating Zone						#16	18.9	8.8	81.1	
š [L	Boundary				75, 28		#50	6.3	12.6	93.7	
25							#100	1.7	4.6	98.3	
40	45	50 55	5 60	65 70	75	80			0.7	00.0	

75

80

LBW

1.0

0.7

99.0

PREPARED BY: SM, LLC Technical Service

45

ActionLimits Boundary = - - - - -

50

40

Coarseness Factor (%)⁷⁰

Approved By: Mart P. Ball

PLANT :		12					Contractor:				
Sample Date		4/24/23 4/25/2023	through		Concrete Grade	DM, 4500HP					
Dates Test R Agg. Class	Pit #	Source	through Weight (SSD)	5/1/2023 ft ³	Specific Gravity	% Contribution	MDOT NO				
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	63-115	Ray Rd	1150	6.95	2.65	39.6				CUD	
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%		MATE	RI
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior N</u> 30701 W. 1	
2"	1	00.0	100).0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	100		100.0	100.0	0.0	0.0		Farmington	i Hills,
1"		00.0	100		100.0	100.0	0.0	0.0		Ū	
3/4"		88.3	100).0	100.0	93.7	6.3	6.3			
1/2"		45.1	95	.3	100.0	70.3	23.4	29.7			
3/8"	:	26.3	84	.4	100.0	59.5	10.8	40.5	*Maximum %	Retained must be a	above
#4		3.1	17	.3	96.5	41.1	18.4	58.9	*Any two adja	cent sieves must e	qual 10
#8		1.5	4.	7	80.3	32.9	8.1	67.1	nom. max., #10	00 and #200 sieves	
#16		1.4	2.	4	65.2	26.7	6.2	73.3	*% Retained r	must be at least 4%	o for ea
#30		1.3	1.		49.8	20.5	6.2	79.5	nom. max., #10	00 and #200 sieves	
#50		1.3	1.		26.1	11.2	9.4	88.8	*% Retained r	must be at least 8%	o for th
#100		1.2	1.		3.7	2.2	8.9	97.8	a 2" max. size	(nom. Max. 1.5") ag	Jgrega
LBW		1.1	1.	5	0.5	0.9	1.3	99.1			
Production G	Gradation	O Batch Plant Gra	dations 💿 Agg	regate Supplier G	radations	Adjusted WF	Intial Production	on Sample (IPS	5)		
Coarsene	ess Factor:	60	Work	ability Factor	: 33	35.4	Coars	eness Factor:	63		
45						\neg	Work	ability Factor:	36		
	45, 44	52, 41			JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
40			57, 40	68, 40	75.00		2"	100.0	0.0	0.0	1
8				68, 38	75, 39		1.5"	100.0	0.0	0.0	l
			-	ſ			1"	99.3	0.7	0.7	1
5 35			60, 36	PS ction Gradation			3/4"	89.0	10.3	11.0	l
L E		52, 34					1/2"	70.3	18.7	29.7	l
2	45, 33	52, 34					3/8"	59.9	10.4	40.1	l
Workability Factor (%)	,		57,22	68,3	2		#4	41.9	18.0	58.1	l
g ³⁰ _		_		00, 3			#8	35.9	6.0	64.1	l
5	Operating Zone				75, 28		#16	27.8	8.2	72.2	ł
IŽ IL	Boundary				73,20		#30	18.9	8.8	81.1	ł
25							#50	6.3	12.6	93.7	i i

80

75

 $\mathbf{Coarseness} \ \mathbf{F_{actor}^{65}} (\mathbf{\%})^{70}$



ials, LLC Rd. MI 48336

the 3/8" sieve. 0% except max., ach sieve except max., e 1" sieve when te is used.

98.3

99.0

1.7

1.0

4.6

0.7

#100

LBW

PREPARED BY: SM, LLC Technical Service

50

55

45

ActionLimits Boundary = - - - - -

25

Approved By: Mart P. Ball

PLANT #		p11	-				Contractor:				
Sample Date		4/24/23	-		Concrete Grade:	DM, 4500HP					
Dates Test R	epresents:	4/25/2023	through	5/1/2023			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4					
26A	71-47	Presque Isle	350	2.14	2.62	12.0					
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6				SUP	ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			FRIALS
Sieve	(6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			<u>Materials, LLC</u> 10 Mile Rd.
2"	1	100.0	100	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"	1	100.0	100	0.0	100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"	(98.0	100	0.0	100.0	99.0	1.0	1.0			
3/4"		82.5	100		100.0	91.5	7.5	8.5			
1/2"		35.5	95		100.0	68.2	23.3	31.8			
3/8"		21.1	84		100.0	60.0	8.3	40.0	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.7	17		96.8	42.2	17.8	57.8	*Any two adja	cent sieves must e	equal 10% except max.,
#8		1.7	4.		84.9	35.0	7.2	65.0	,	00 and #200 sieves	
#16		1.4	2.		69.3	28.4	6.6				
#30		1.3	1.		50.6	20.9	7.5	79.1	nom. max., #100 and #200 sieves.		
#50 #100		1.3 1.2	<u> </u>	-	24.9 6.7	10.7 3.4	10.2	89.3 96.6			6 for the 1" sieve when
LBW		1.2	1.		1.2	3.4	7.3 2.3	96.6	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
Production G		Batch Plant Gra		gregate Supplier G				on Sample (IPS	3)		
	ess Factor:	62	Work	ability Factor	: 35	37.5		eness Factor:	62		
45	.331 40101.	02		ability ractor	. 35	57.5		ability Factor:	36		
_	45, 44						WORK	Cumulative	30 %	Cumulative	1
1 '	15, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
1		52, 41 5	6. 40	67, 40			2"	100.0	0.0	0.0	
ू ⁴⁰ ।				68, 38	75, 39		1.5"	100.0	0.0	0.0	
<u>ې</u>			i 🔳 Pr	oduction Gradation			1"	100.0	0.0	0.0	
Factor (%)			■ 60, 3 B	•			3/4"	95.0	5.0	5.0	
ö 35 -				!			1/2"	72.3	22.8	27.7	
NO	\rightarrow	52, 34	+	i			3/8"	60.4	11.8	39.6	
	45, 33		!				#4	42.6	17.8	57.4	
		50	,	67, 32 68, 31	1		#8	36.0	6.6	64.0	
							#16	29.5	6.5	70.5	
		x					110	=0.0		70.5	
	Operating Zone Boundary	<u>;</u>			75, 28		#30	20.3	9.2	79.7	
Workability	Operating Zone	;			75, 28		#30 #50	20.3 9.5	9.2 10.8	79.7 90.5	
	Operating Zone	50 55	<u> </u>	5 Factor (%)		80	#30	20.3	9.2	79.7	

Approved By:

PLANT 7	#:	P-32					Contractor:				
Sample Date):	4/24/23	•		Concrete Grade:	DM, 4500HP					
Dates Test R	epresents:	4/25/2023	through	5/1/2023			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4					
26A	71-47	Presque Isle	350	2.14	2.62	12.0					
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6				SUP	ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			FIALS
Sieve		6AA	26	Α	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			<u>Materials, LLC</u> 10 Mile Rd.
2"	1	00.0	100	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	100		100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"		98.0	100	0.0	100.0	99.0	1.0	1.0			
3/4"		32.5	100		100.0	91.5	7.5	8.5			
1/2"		35.5	95		100.0	68.2	23.3	31.8			
3/8"		21.1	84		100.0	60.0	8.3	40.0	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.7	17		96.8	42.2	17.8	57.8	*Any two adja	cent sieves must e	qual 10% except max.,
#8		1.7	4.		84.9	35.0	7.2	65.0		00 and #200 sieves	
#16		1.4	2.		69.3	28.4	6.6	71.6			6 for each sieve except n
#30		1.3	1.		50.6	20.9	7.5	79.1		00 and #200 sieves	
#50 #100		1.3 1.2	1.		24.9 6.7	10.7 3.4	10.2 7.3	89.3 96.6			6 for the 1" sieve when
LBW		1.0	1.		1.2	1.1	2.3	98.9	a z max. size	(nom. Max. 1.5") a	ggregate is used.
Production G	Gradation	Batch Plant Gra	-	regate Supplier Gr				on Sample (IPS	5)		
Coarsene	ess Factor:	62	Work	ability Factor	: 35	37.5	Coars	eness Factor:	62		
							Work	ability Factor:	36		
⁴⁵ .					JMF Zone		0.1	Cumulative	%	Cumulative	
	45, 44				JIVIF ZONE		Sieve	% Passing	Retained	% Retained	
1		52, 41	6.40	67.40			2"	100.0	0.0	0.0	
्र ⁴⁰]					75, 39		1.5"	100.0	0.0	0.0	
Factor (%)				68, 38 oduction Gradation			1"	100.0	0.0	0.0	
j j			60, 3	•			3/4"	95.0	5.0	5.0	
5 35							1/2"	72.3	22.8	27.7	
		52, 34		i			3/8"	60.4	11.8	39.6	
E	45, 33						#4	42.6	17.8	57.4	
Workability			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	67, 32, 68, 3			#8	36.0	6.6	64.0	
ž	Operating Zone						#16 #30	29.5 20.3	6.5 9.2	70.5 79.7	
	Boundary				75, 28		#30 #50	20.3 9.5	9.2	90.5	
> ₂₅							#50	9.5 3.4	6.1	90.5	
40	45	<u>50</u> 55	Coarseness	_65) 75	80	LBW	1.3	2.1	98.7	

Approved By:

PLANT :	#:	P-35					Contractor:				
Sample Date	e:	4/24/23		(Concrete Grade:	DM, 4500HP	_				
Dates Test R	Represents:	4/25/2023	through	5/1/2023			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	58-003	Stoneco	1550	9.23	2.69	52.5					
26A	58-003	Stoneco	250	1.49	2.69	8.5					
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0				SUP	ERIOR
		Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%			RIALS
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			Materials, LLC 10 Mile Rd.
2"	1	00.0	100).0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	100		100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"		99.4	100		100.0	99.7	0.3	0.3			
3/4"		86.8	100		100.0	93.1	6.6	6.9			
1/2"		49.1	99	-	100.0	73.2	19.8	26.8			
3/8"		22.4	87		100.0	58.2	15.1	41.8			above the 3/8" sieve.
#4		2.1	5.		97.6	39.6	18.5	60.4			qual 10% except max.,
#8		1.0 0.6	1.		82.7 65.7	32.9 26.1	6.7 6.9	67.1 73.9		00 and #200 sieves	
#16 #30		0.6	<u> </u>		46.5	18.5	7.6	73.9 81.5			6 for each sieve except
#30 #50		0.5	1.		40.5	9.2	9.3	90.8		00 and #200 sieves	6 for the 1" sieve when
#30 #100		0.5	1.		6.6	2.9	6.3	97.1		(nom. Max. 1.5") a	
LBW		0.6	1.		1.3	0.9	2.0	99.1	a 2 111ax. 5126	(1011. Max. 1.5) a	ggregate is used.
Production G		Batch Plant Gra		egate Supplier Gra			Intial Production	on Sample (IPS	5)		
Coarsene	ess Factor:	62	Work	ability Factor:	33	35.4	Coars	eness Factor:	61		
				•			Work	ability Factor:	36		
45		_			JMF Zone			Cumulative	%	Cumulative	
1	45, 44				JIVIF Zone		Sieve	% Passing	Retained	% Retained	
-		52, 41					2"	100.0	0.0	0.0	
a ⁴⁰		56,			75, 39		1.5"	100.0	0.0	0.0	
ð i			1		I		1"	99.3	0.7	0.7	
ţ			■ 60-36				3/4"	89.1	10.2	10.9	
5 35			, <mark>12</mark> \$	roduction Gradati	on		1/2"	70.5	18.6	29.5	
Ë 1		52, 34	÷	!			3/8"	60.5	10.0	39.5	
lif)	45, 33			i			#4	44.1	16.4	55.9	
ig 30]		56,	31	67, 3 8, 31			#8	35.6	8.5	64.4	
ž	Operating Zone						#16	27.7	7.9	72.3	
	Boundary				75, 28		#30 #50	20.6 8.7	7.1 11.8	79.4 91.3	
\$ ∟							#50 #100	8.7 1.6	7.1	91.3	
Workability Factor (%)											
8 <u>1</u>	45	<u> </u>	5 60	Factor (%)	75	80	LBW	1.1	0.6	98.9	

Approved By:

PLANT #	#:	P-36	_				Contractor:			_	
Sample Date		4/24/23	_		Concrete Grade	DM, 4500HP					
Dates Test R	epresents:	4/25/2023	through	5/1/2023			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	63-92	Grange Hall	1150	6.95	2.65	39.6				SUP	ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			FRIALS
Sieve	(6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			Materials, LLC 10 Mile Rd.
2"	1	00.0	100).0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	100	-	100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"		00.0	100).0	100.0	100.0	0.0	0.0			
3/4"		88.3	100).0	100.0	93.7	6.3	6.3			
1/2"	4	45.1	95	.3	100.0	70.3	23.4	29.7			
3/8"		26.3	84		100.0	59.5	10.8	40.5	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.1	17		97.9	41.6	17.9	58.4	*Any two adja	cent sieves must e	equal 10% except max.,
#8		1.5	4.		86.0	35.2	6.4	64.8	-	00 and #200 sieves	
#16		1.4	2.		71.6	29.3	5.9	70.7			6 for each sieve except r
#30		1.3	1.		50.7	20.9	8.4	79.1		00 and #200 sieves	
#50		1.3	1.	-	18.2	8.0	12.9	92.0			6 for the 1" sieve when
#100 LBW		<u>1.2</u> 1.1	1.		2.9 0.6	1.9 0.9	6.1 1.0	98.1 99.1	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
Production G		Batch Plant Gra	-	egate Supplier Gra				on Sample (IPS	5)		
	ss Factor:	63	Work	ability Factor:	35	37.7		eness Factor:	63		
_			-				Work	ability Factor:	35		
45								Cumulative	%	Cumulative	
- 4	15, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
1		52, 41	$ \longrightarrow $				2"	100.0	0.0	0.0	
			58, 39	68, 39	75, 39		1.5"	100.0	0.0	0.0	
Factor (%)				Production Gradatio			1"	99.1	0.9	0.9	
5			6 0, 36	la la			3/4"	90.3	8.8	9.7	
2 35 -			- 00, 30	IPS			1/2"	69.2	21.1	30.8	
	\rightarrow	52, 34		l			3/8"	59.1	10.1	40.9	
<u>i</u> t	45, 33						#4	41.8	17.3	58.2	
ig 30		_	58, 31	68,33	1		#8	35.1	6.6	64.9	
	Operating Zone						#16 #30	28.5 21.2	6.6 7.3	71.5 78.8	
ō	Boundary				75, 28		#30 #50	21.2 8.7	12.5	78.8 91.3	
> ' -							#50 #100	8.7 1.8	7.0	91.3	
A 25 40	45	50 55	5 60	Factor (%)	75	80	LBW	0.7	1.0	99.3	

Approved By:

PLANT :	#:	P-38					Contractor:				
Sample Date):	4/24/23	-	(Concrete Grade:	DM, 4500HP					
Dates Test R	Represents:	4/25/2023	through	5/1/2023			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	58-003	Stoneco	1550	9.23	2.69	52.5					
26A	58-003	Stoneco	250	1.49	2.69	8.5					
2NS	81-019	Pleasant Lake	1150	6.95	2.65	39.0				SUP	ERIOR
		Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%	•		RIALS
Sieve		6AA	26	Α	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			<u>Materials, LLC</u> 10 Mile Rd.
2"	-	100.0	100	0.0	100.0	100.0	0.0	0.0	1	Suite 500	
1.5"		100.0	100		100.0	100.0	0.0	0.0	1	Farmingto	n Hills, MI 48336
1"		99.4	100	0.0	100.0	99.7	0.3	0.3]		
3/4"		86.8	100		100.0	93.1	6.6	6.9]		
1/2"		49.1	99	.8	100.0	73.2	19.8	26.8			
3/8"		22.4	87	.5	100.0	58.2	15.1	41.8	*Maximum %	Retained must be	above the 3/8" sieve.
#4		2.1	5.	-	97.6	39.6	18.5	60.4	*Any two adja	cent sieves must e	qual 10% except max.,
#8		1.0	1.		82.7	32.9	6.7	67.1	nom. max., #10	00 and #200 sieves	
#16		0.6	1.		65.7	26.1	6.9	73.9			for each sieve except
#30		0.5	1.		46.5	18.5	7.6	81.5		00 and #200 sieves	
#50		0.5	1.		22.7	9.2	9.3	90.8			for the 1" sieve when
#100 LBW		0.5	1.		6.6 1.3	2.9 0.9	6.3 2.0	97.1 99.1	a 2" max. size	(nom. Max. 1.5") ag	ggregate is used.
		2			_				1		
Production G		 Batch Plant Gra 	idations 🕑 Agg	regate Supplier Gr	1	,	Intial Production	on Sample (IPS	<i>,</i>		
Coarsene	ess Factor:	62	Work	ability Factor	: 33	35.4	Coars	eness Factor:	61		
45							Work	ability Factor:	36		
-	45, 44				JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
		52, 41					2"	100.0	0.0	0.0	
2 ⁴⁰		56,	#	07,40	75, 39		1.5"	100.0	0.0	0.0	
8 1				68, 38			1"	99.3	0.7	0.7	
5 I			- 60.00	!			3/4"	89.1	10.2	10.9	
Factor (%)				Production Gradati	on		1/2"	70.5	18.6	29.5	
	\rightarrow	52, 34	+	•			3/8"	60.5	10.0	39.5	
it d	45, 33						#4	44.1	16.4	55.9	
Workability		56,	31	67, 8 8, 31			#8	35.6	8.5	64.4	
¥	Operating Zone	2					#16	27.7	7.9	72.3	
5 1	Boundary				75, 28		#30	20.6	7.1	79.4	
9 11		_					#50	8.7	11.8	91.3	
8 1 40	45	50 55	5 60	Factor (%)) 75	80	#100 LBW	1.6 1.1	7.1 0.6	98.4 98.9	

Approved By: Mart P. Ball

PLANT a	#:	P-39					Contractor:					
Sample Date	e:	4/24/23	-		Concrete Grade:	DM, 4500HP						
Dates Test R	Represents:	4/25/2023	through	5/1/2023			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	250	1.53	2.62	8.6						
2NS	44-051 Krake Willis Rd				2.65	37.9			SUPERIOR			
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			RIALS	
Sieve		6AA	26	6A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained	<u>Superior Materials, I</u> 30701 W. 10 Mile Rd.			
2"		100.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500		
1.5"		100.0	10		100.0	100.0	0.0	0.0	Farmington Hills, MI 48336			
1"	100.0		100.0		100.0	100.0	0.0	0.0				
3/4"		84.2	10		100.0	91.5	8.5	8.5				
1/2"		44.2		5.0	100.0	69.8	21.8	30.2				
3/8"			87.2		100.0	60.3	9.5	39.7	*Maximum % Retained must be above the 3/8" sieve.			
	#4 5.2		21.1		95.2	40.6	19.7	59.4	*Any two adjacent sieves must equal 10% except max			
#8			4.4		81.6	32.6	8.1	67.4	nom. max., #100 and #200 sieves. *% Retained must be at least 4% for each sieve excep nom. max., #100 and #200 sieves.			
#16			2.4		66.6	26.5	6.0	73.5				
#30 #50	2.0		<u>2.0</u> 1.9		50.4 24.0	20.3 10.3	6.2 10.1	79.7 89.7				
#50 #100			1.9		6.8	3.7	6.5	96.3	*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.			
LBW		1.6	1	-	1.1	1.4	2.3	98.6		(1011. Wax. 1.5) aç	ggregate is used.	
Production G	Gradation	Batch Plant Gra		regate Supplier Gr				on Sample (IPS	5)			
Coarseness Factor: 59			Work	ability Factor	33	35.1		eness Factor:	63			
							Workability Factor:		36	1		
45								Cumulative	%	Cumulative		
	45, 44				JMF Zone		Sieve	% Passing	Retained	% Retained		
-		52, 41					2"	100.0	0.0	0.0		
a ⁴⁰			58,40		75, 39		1.5"	100.0	0.0	0.0		
2				68, 38	³		1"	100.0	0.0	0.0		
Factor (%)			∎ 60 36				3/4"	89.7	10.3	10.3		
5 35			Productio	n Gradation			1/2"	70.3	19.4	29.7		
Щ I		52, 34					3/8"	59.1	11.2	40.9		
E I	45, 33						#4	42.8	16.3	57.2		
Workability		_	50, 24	688 ₈	32		#8	35.5	7.3	64.5		
ž	Operating Zone	2					#16 #30	29.0	6.5	71.0		
₽ L	Boundary				75, 28		#30 #50	21.2 9.8	7.7 11.5	78.8 90.2		
> ₂₅							#50 #100	9.8 3.7	6.1	90.2 96.3		
40	45	50 55	60	Factor (%)	0 75	80	LBW	1.2	2.5	98.8		
40												

Approved By:

PLANT #	#:	P-02					Contractor:					
Sample Date):	4/24/23			Concrete Grade:	DM, 4500HP	_			•		
Dates Test R	epresents:	4/25/2023	through	5/1/2023			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	63-115	Ray Rd	1150	6.95	2.65	39.6				SUD	ERIOR	
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	-		RIALS	
Sieve		6AA	26A		2NS	Cumulative % Passing	% Retained	etained Cumulative % Retained			Superior Materials, LLC 30701 W. 10 Mile Rd.	
2"	1	00.0	100.0		100.0	100.0	0.0	0.0	1			
1.5"	1	00.0	100.0		100.0	100.0	0.0	0.0	Farmington Hills, MI 48336			
1"		00.0	100	-	100.0	100.0	0.0	0.0]			
3/4"		88.3	100		100.0	93.7	6.3	6.3				
1/2"		45.1	95		100.0	70.3	23.4	29.7				
3/8"		26.3	84		100.0	59.5	10.8	40.5	*Maximum % Retained must be above the 3			
#4		3.1	17		96.5	41.1	18.4	58.9	*Any two adjacent sieves must equal 10% exce		qual 10% except max.	
#8		1.5	4.7		80.3	32.9	8.1	67.1	nom. max., #100 and #200 sieves.			
#16		1.4	2.		65.2	26.7	6.2	73.3	*% Retained must be at least 4% for each sieve except			
#30		1.3	1.		49.8	20.5	6.2	79.5	nom. max., #100 and #200 sieves.			
#50		1.3	1.		26.1	11.2	9.4	88.8	*% Retained must be at least 8% for the 1" sieve			
#100 1.2 LBW 1.1		1.2	1.7		3.7 0.5	2.2 0.9	8.9 1.3	97.8 99.1	a 2" max. size (nom. Max. 1.5") aggregate is used.			
				-			-]			
Production G		O Batch Plant Gra	0.00	egate SupplierG				on Sample (IPS	<i>.</i>			
Coarseness Factor: 60		Workability Factor:		r: 33	35.4	Coarseness Factor:		63				
45							Work	ability Factor:	35			
1	45, 44				JMF Zone		Sieve	Cumulative	%	Cumulative		
-		52, 41					0"	% Passing	Retained	% Retained		
40		52, 4	↓				2"	100.0	0.0	0.0		
%			58, 39	68, 3 68, 3	75, 39		1.5" 1"	100.0 100.0	0.0	0.0		
ž			1				3/4"	95.1	4.9	4.9		
5 35			60, 36 Produ	etion Gradation			3/4 1/2"	74.6	20.5	25.4		
Factor (%)	\rightarrow	52, 34					3/8"	59.3	15.3	40.7		
	45, 33	52, 34		i			#4	42.1	17.2	57.9		
i	-,		58. 31		BM		#8	35.1	7.1	64.9		
	Operating 7am			000	M'		#16	29.2	5.9	70.8		
Workability	Operating Zone Boundary				75, 28		#30	21.9	7.3	78.1		
ĭ 1∟	20000. y				10,20		#50	9.6	12.4	90.4		
25							#100	2.4	7.0	07.6		

80

75

Coarseness Factor (%)⁷⁰

#100

LBW

7.2

1.5

97.6

99.1

2.4

0.9



PREPARED BY: SM, LLC Technical Service

50

55

45

ActionLimits Boundary = - - - -

25