Production	Gradation	Report
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										11040	
PLANT #	#:	P-101					Contractor:				
Sample Date	:	3/14/22		(Concrete Grade	: DM, 4500HP				-	
Dates Test R		3/15/2022	through	3/21/2022			MDOT No.:				
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				SUD	FRIOR
		Total Wt	2910	17.69		100.0	< Verify this n	umber is 100%	-	MATE	RIALS
Sieve	(6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior I</u> 30701 W. 1	Materials, LLC 10 Mile Rd.
2"	1	00.0	100).0	100.0	100.0	0.0	0.0		Suite 500	
1.5"	1	00.0	100	0.0	100.0	100.0	0.0	0.0		Farmingtor	n Hills, MI 48336
1"	9	98.9	100).0	100.0	99.4	0.6	0.6			
3/4"		34.0	100		100.0	92.0	7.5	8.0			
1/2"	;	38.9	95	.8	100.0	68.9	23.1	31.1			
3/8"		18.9	83		100.0	57.6	11.4	42.4	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		3.0	14		98.5	41.9	15.7	58.1	*Any two adja	icent sieves must eo	qual 10% except max.,
#8		1.7	4.		83.3	34.3	7.6	65.7	nom. max., #10	00 and #200 sieves.	
#16		1.5	3.	-	68.3	28.1	6.2	71.9			for each sieve except n
#30		1.4	2.		53.3	22.0	6.0	78.0	-	00 and #200 sieves.	
#50		1.4	2		29.2	12.5	9.5	87.5			for the 1" sieve when
#100 LBW		1.3 1.2	2.2		7.3 0.6	3.8	8.7 2.7	96.2 99.0	a 2" max. size	(nom. Max. 1.5") ag	gregate is used.
LDVV		1.2	Ζ.	J	0.0	1.0	Z.1	99.0			
		Batch Plant Gra	dations 🕥 Agar	ogato Supplior Cra	adations		linitial Durations				
		Batch Plant Grad	©	regate Supplier Gra	1			on Sample (IPS		1	
	eradation ess Factor:	Batch Plant Gra 65	©	regate Supplier Gra ability Factor:	1	Adjusted WF 36.8	Coars	eness Factor:	62		
	ess Factor:	0	©	• • •	34		Coars	eness Factor: ability Factor:	62 35	Cumulativo	
Coarsene		0	©	• • •	1		Coars	eness Factor: ability Factor: Cumulative	62 35 %	Cumulative	
Coarsene	ess Factor:	0	©	• • •	34		Coars Work Sieve	eness Factor: ability Factor: Cumulative % Passing	62 35 % Retained	% Retained	
45 40	ess Factor:	65	©	ability Factor:	34 JMF Zone	36.8	Coars Work Sieve 2"	eness Factor: ability Factor: Cumulative % Passing 100.0	62 35 % Retained 0.0	% Retained 0.0	
45 40	ess Factor:	65	©	• • •	34 JMF Zone	36.8	Coars Work Sieve 2" 1.5"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0	62 35 % Retained 0.0 0.0	% Retained 0.0 0.0	
45 40	ess Factor:	65	57, 39	Broduction	34 JMF Zone 75, 39	36.8	Coars Work Sieve 2" 1.5" 1"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 100.0	62 35 % Retained 0.0 0.0 0.0	% Retained 0.0 0.0 0.0	
45 40	ess Factor:	65	©	Broduction	34 JMF Zone 75, 39	36.8	Coars Work Sieve 2" 1.5" 1" 3/4"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0	62 35 % Retained 0.0 0.0 0.0 5.0	% Retained 0.0 0.0 0.0 5.0	
45 40	ess Factor:	65	57, 39	Broduction	34 JMF Zone 75, 39	36.8	Coars Work Sieve 2" 1.5" 1" 3/4" 1/2"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0 70.5	62 35 % Retained 0.0 0.0 0.0 5.0 24.5	% Retained 0.0 0.0 0.0 5.0 29.5	
45 40	ess Factor:	65	57, 39	Broduction	34 JMF Zone 75, 39	36.8	Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0 70.5 60.0	62 35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5	% Retained 0.0 0.0 0.0 29.5 40.0	
45 40	45, 44	65 52, 4 52, 34	57, 39	Broduction	JMF Zone 38 Gradation	36.8	Coars Work Sieve 2" 1.5" 1" 3/4" 1/2"	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0 70.5	62 35 % Retained 0.0 0.0 0.0 5.0 24.5	% Retained 0.0 0.0 0.0 5.0 29.5	
45 40	45, 44 45, 33	65	57, 39	Production O	JMF Zone 38 Gradation	36.8	Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0 70.5 60.0 44.4	62 35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5 15.6 9.0	% Retained 0.0 0.0 0.0 29.5 40.0 55.6	
Coarsene 45 40	45, 44	65	57, 39	Production O	JMF Zone 38 Gradation	36.8	Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4	eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 95.0 70.5 60.0 44.4 35.5	62 35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5 15.6	% Retained 0.0 0.0 0.0 29.5 40.0 55.6 64.5	
Norkability Factor (%)	45, 44 45, 33 Operating Zone	65	57, 39	Production O	34 JMF Zone 38 Gradation 31	36.8	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 95.0 70.5 60.0 44.4 35.5 28.5	62 35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5 15.6 9.0 7.0	% Retained 0.0 0.0 5.0 29.5 40.0 55.6 64.5 71.5	
	45, 44 45, 33 Operating Zone	65 52, 41 52, 34	57, 39 60, 3 57, 39	Production O	34 JMF Zone 38 Gradation 31 75, 28	36.8	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 95.0 70.5 60.0 44.4 35.5 28.5 21.5	62 35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5 15.6 9.0 7.0 7.0	% Retained 0.0 0.0 0.0 29.5 40.0 55.6 64.5 71.5 78.5	

PREPARED BY: SM, LLC Technical Service

ActionLimits Boundary = - - - - -

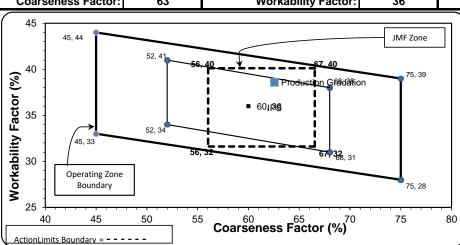
Approved By:

PLANT :	#:	P-102					Contractor:			
Sample Date):	3/14/22		C	Concrete Grade	: DM, 4500HP				
Dates Test R	Represents:	3/15/2022	through	3/21/2022			MDOT No.:			
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				SUP
		Total Wt	2955	17.71		100.0	< Verify this n	umber is 100%		MATI
Sieve	e	6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior</u> 30701 W.
2"	1	00.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500
1.5"	1	00.0	100	0.0	100.0	100.0	0.0	0.0		Farmingto
1"		99.1	100		100.0	99.6	0.4	0.4		
3/4"		79.0	10		100.0	90.1	9.5	9.9		
1/2"		40.8	99	-	100.0	71.9	18.2	28.1		
3/8"		22.0	77		100.0	60.0	11.9	40.0		Retained must be
#4		5.1	15		99.7	43.3	16.7	56.7		cent sieves must
#8		1.8	7. 4.		87.8	36.1 27.7	7.2	63.9 72.3	-	00 and #200 sieve
#16 #30		1.4 1.2	4.		67.8 47.0	19.3	8.4 8.4	80.7		must be at least 4
#50		1.2	3.	-	19.5	8.5	10.8	91.5		00 and #200 sieve must be at least 8
#100		1.0	2		3.3	2.1	6.4	97.9		(nom. Max. 1.5") a
LBW		1.0	2.		1.0	1.2	1.0	98.8	a 2 max. 5120	(1011: Max: 1.0) (
Production G	Gradation	O Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	5)	
Coarsene	ess Factor:	63	Work	ability Factor:	36	38.6	Coars	eness Factor:	61	
45							Work	ability Factor:	36	
-	45, 44				JMF Zone		Ciaura	Cumulative	%	Cumulative
	-0, -4				JIVIF ZONE		Sieve	% Passing	Retained	% Retained
		52, 41	40	67 40			2"	100.0	0.0	0.0
(%)					75, 39		1.5"	100.0	0.0	0.0
<u>ි</u>			i =	Production Gradatio			1"	99.3	0.7	0.7
				• 1			0/4			40.0



Materials, LLC 10 Mile Rd. Hills, MI 48336

above the 3/8" sieve. qual 10% except max., for each sieve except max., for the 1" sieve when ggregate is used.



	Coars	eness Factor:	61	
	Work	ability Factor:	36	
	Sieve	Cumulative	%	Cumulative
	Sleve	% 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
1				

Approved By: Mart P. Ball

PLANT #	#:	P-103	_				Contractor:			_	
Sample Date	:	3/14/22	_	С	oncrete Grade	: DM, 4500HP				-	
Dates Test R	epresents:	3/15/2022	through	3/21/2022			MDOT No.:				
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				SUP	ERIOR
		Total Wt	2955	17.71		100.0	< Verify this n	umber is 100%			RIALS
Sieve	e	6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior I</u> 30701 W. 1	<u>Materials, LLC</u> L0 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		Farmingtor	n Hills, MI 48336
1"	ç	99.1	100).0	100.0	99.6	0.4	0.4			
3/4"		79.0	100	0.0	100.0	90.1	9.5	9.9			
1/2"	2	40.8	99	.6	100.0	71.9	18.2	28.1			
3/8"	2	22.0	77	.9	100.0	60.0	11.9	40.0	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		5.1	15		99.7	43.3	16.7	56.7	*Any two adja	icent sieves must eo	qual 10% except max.,
#8		1.8	7.		87.8	36.1	7.2	63.9	nom. max., #10	00 and #200 sieves.	
#16		1.4	4.		67.8	27.7	8.4	72.3	*% Retained I	must be at least 4%	for each sieve except
#30		1.2	3.	-	47.0	19.3	8.4	80.7		00 and #200 sieves.	
#50		1.1	3.	-	19.5	8.5	10.8	91.5			for the 1" sieve when
#100 LBW		1.0 1.0	2.		3.3 1.0	2.1	6.4 1.0	97.9 98.8	a 2" max. size	(nom. Max. 1.5") ag	gregate is used.
		Batch Plant Gra		regate Supplier Grad	-		-				
roduction G	nadation			egute Supplier Grat				on Sample (IPS	<i>,</i>		
-											
Coarsene	ess Factor:	63	Work	ability Factor:	36	38.6		eness Factor:	61		
Coarsene	ess Factor:	63	Work	ability Factor:	36	38.6		ability Factor:	36		
45	ess Factor:	63	Work	ability Factor:	JMF Zone	38.6		ability Factor: Cumulative	36 %	Cumulative	
45			Work	ability Factor:		38.6	Work Sieve	ability Factor: Cumulative % Passing	36 % Retained	% Retained	
45		63	Work	ability Factor:	JMF Zone	38.6	Work Sieve 2"	ability Factor: Cumulative % Passing 100.0	36 % Retained 0.0	% Retained 0.0	
45 4			,40	£7.40	JMF Zone		Work Sieve 2" 1.5"	ability Factor: Cumulative % Passing 100.0 100.0	36 % Retained 0.0 0.0	% Retained 0.0 0.0	
45 4			,40	Production	JMF Zone		Work Sieve 2" 1.5" 1"	ability Factor: Cumulative % Passing 100.0 100.0 99.3	36 % Retained 0.0 0.0 0.7	% Retained 0.0 0.0 0.7	
45 4			,40	£7.40	JMF Zone		Work Sieve 2" 1.5" 1" 3/4"	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2	36 % Retained 0.0 0.0 0.7 10.1	% Retained 0.0 0.0 0.7 10.8	
45 4		52, 41 56 ,	40	£7.40	JMF Zone		Work Sieve 2" 1.5" 1" 3/4" 1/2"	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7	36 % Retained 0.0 0.0 0.7 10.1 18.5	% Retained 0.0 0.0 0.7 10.8 29.3	
Factor (%)	45, 44		40	£7.40	JMF Zone		Work 2" 1.5" 1" 3/4" 1/2" 3/8"	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7	36 % Retained 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	
Factor (%)		52, 41 56 ,	40	Production Greadship	JMF Zone		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4	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	
Factor (%)	45, 44	52, 41 56 ,	40	£7.40	JMF Zone	38.6	Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7	36 % Retained 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	
Factor (%)	45, 44	52, 41 56 ,	40	Production Greadship	JMF Zone		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9	36 % Retained 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	
Workability Factor (%)	45, 33 Operating Zone	52, 41 56 ,	40	Production Greadship	JMF Zone		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9 27.3	36 % Retained 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	
Factor (%)	45, 33 Operating Zone	52, 41 56 ,	40 60) B8	Production Greadship	JMF Zone	80	Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	ability Factor: Cumulative % Passing 100.0 100.0 99.3 89.2 70.7 60.7 44.4 35.9 27.3 19.1	36 % Retained 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	

Approved BY: Mary 1. Ball

PLANT #	#:	P-12					Contractor:				
Sample Date	:	3/14/22	-	C	Concrete Grade	: DM, 4500HP					
Dates Test R	epresents:	3/15/2022	through	3/21/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	71-47	Presque Isle	1400	8.56	2.62	48.2					
26A	71-47	Presque Isle	355	2.17	2.62	12.2					
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	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			Materials, LLC
2"	1	00.0	100		100.0	100.0	0.0	0.0		30701 W. 1 Suite 500	U MIIE Rd.
2 1.5"		00.0	100		100.0	100.0	0.0	0.0			n Hills, MI 48336
1.5		00.0	100		100.0	100.0	0.0	0.0	1	i ai i i ingtoi	
3/4"		31.8	100		100.0	91.2	8.8	8.8			
1/2"		31.6	95	.7	100.0	66.5	24.7	33.5	1		
3/8"		13.3	82	.4	100.0	56.1	10.4	43.9	*Maximum %	Retained must be	above the 3/8" sieve.
#4		2.6	23	.5	96.9	42.5	13.6	57.5	*Any two adja	icent sieves must e	qual 10% except max.,
#8		2.1	7.		80.2	33.7	8.8	66.3	nom. max., #10	.	
#16		2.0	3.		64.4	26.9	6.9	73.1	*% Retained	must be at least 4%	6 for each sieve except r
#30		1.9	2.		48.0	20.2	6.7	79.8	nom. max., #10	00 and #200 sieves	5.
#50		1.8	1.	-	25.8	11.3	8.9	88.7			6 for the 1" sieve when
#100 LBW		<u>1.7</u> 1.3	1.		4.5 1.0	2.8	8.5 1.6	97.2 98.8	a 2" max. size	(nom. Max. 1.5") ag	ggregate is used.
Production G		Batch Plant Gra		o regate Supplier Gra				on Sample (IPS	. 3)		
	ess Factor:	66		ability Factor:	34	36.2		eness Factor:	63		
45	.331 40101.	00		ability ractor.	54	50.2		ability Factor:	36		
1	15, 44						WORK	Cumulative	%	Cumulative	
1	10, 11				JMF Zone		Sieve	% Passing	Retained	% Retained	
- 40		52, 41	57, 40	<u>68,</u> 40			2"	100.0	0.0	0.0	
ເຂີ 1				68, 38	75, 39		1.5"	100.0	0.0	0.0	
Ľ							1"	99.3	0.7	0.7	
<u>ទ្</u> ធ			60, 36	PS Productio	n Gradation		3/4"	89.0	10.3	11.0	
Factor (%)							1/2"	70.3	18.7	29.7	
	45, 33	52, 34		9			3/8"	59.9	10.4	40.1	
ii ii	-0,00		37,22	68, 32			#4	41.9	18.0	58.1	
g ³⁰ [_		_		38, 31			#8	35.9	6.0	64.1	
Workability	Operating Zone				75, 28		#16	27.8	8.2	72.2	
Š L	Boundary				73, 20		#30 #50	18.9	8.8	81.1	
25		· · · · · · · · ·					#50 #100	6.3 1.7	12.6 4.6	93.7 98.3	
40	45	<u>50</u> 55	5 Coarseness	Factor (%) ⁷⁰	75	80	LBW	1.7	4.6	98.3	
ActionLimits	Boundary =		00013011033	1 40101 (70)				1.0	0.7	33.0	

PREPARED BY: SM, LLC Technical Service

ActionLimits Boundary = - - - - -

Approved By:

PLANT #	#:	P-32					Contractor:				
Sample Date		3/14/22	•	C	Concrete Grade	DM, 4500HP					
Dates Test R	epresents:	3/15/2022	through	3/21/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific 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	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	00.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	10		100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"		98.8	10	0.0	100.0	99.4	0.6	0.6			
3/4"		37.6	100		100.0	93.6	5.8	6.4			
1/2"		48.6	95		100.0	73.0	20.6	27.0			
3/8"		29.5	82		100.0	62.0	11.0	38.0	*Maximum %	Retained must be	above the 3/8" sieve.
#4		5.9	23		96.0	43.1	18.9	56.9	*Any two adja	cent sieves must e	qual 10% except max.,
#8		2.3	7.	-	83.4	34.9	8.2	65.1	,	00 and #200 sieves	
#16		1.8	3.	-	68.0	28.1	6.7	71.9			6 for each sieve except r
#30		1.6	2.		48.3	20.1	8.0	79.9		00 and #200 sieves	
#50		1.5	1.		24.0	10.4 3.9	9.7	89.6			6 for the 1" sieve when
#100 LBW		1.5 1.2	1.		7.4	3.9	6.6 2.5	96.1 98.6	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
Production G	Gradation	Batch Plant Gra		regate Supplier Gra				on Sample (IPS	5)		
	ess Factor:	58	Work	ability Factor:	35	37.4		eness Factor:	62		
								ability Factor:	36		
45	-							Cumulative	%	Cumulative	
	45, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
1		52, 41	5.40 V	67.40			2"	100.0	0.0	0.0	
					75, 39		1.5"	100.0	0.0	0.0	
Factor (%)				68, 38			1"	100.0	0.0	0.0	
b l			 Production 60, 38 	•			3/4"	95.0	5.0	5.0	
5 35			- 00, 30	° !			1/2"	72.3	22.8	27.7	
		52, 34	-i				3/8"	60.4	11.8	39.6	
<u>i</u>	45, 33		!				#4	42.6	17.8	57.4	
Workability			,	67, 32 68, 31			#8	36.0	6.6	64.0	
Å	Operating Zone						#16	29.5	6.5	70.5	
õ	Boundary				75, 28		#30	20.3	9.2	79.7	
<							#50	9.5	10.8	90.5	
							#100	3.4	6.1	96.6	
25 <u>40</u>	45	50 55	5 60	Factor (%) ⁷⁰	75	80	LBW	1.3	2.1	98.7	

Approved By:

PLANT :		P-35 3/14/22			Concrete Grade		Contractor:				
Sample Date Dates Test R		3/15/2022	through	3/21/2022	Concrete Grade	DM, 4300HP	MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution	WEOT NO				
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				SUP	
		Total Wt	2955	17.70		100.0	< Verify this n	umber is 100%		MAT	EI
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior</u> 30701 W.	
2"	1	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	1	Farmingto)n l
1"		99.1	10		100.0	99.6	0.4	0.4	1		
3/4"		79.0	10		100.0	89.7	9.9	10.3	1		
1/2"		40.8	99		100.0	70.9	18.8	29.1	1		
3/8"		22.0	77	.9	100.0	58.7	12.2	41.3	*Maximum %	Retained must be	ab
#4		5.1	15	.3	99.4	41.6	17.1	58.4	*Any two adja	cent sieves must e	эqı
#8		1.8	7.	8	85.5	33.8	7.8	66.2	nom. max., #10	00 and #200 sieve	s.
#16		1.4	4.		67.7	26.5	7.2	73.5	*% Retained	must be at least 4%	% f
#30		1.2	3.		48.8	19.2	7.3	80.8	nom. max., #10	00 and #200 sieve	s.
#50		1.1	3.		23.8	9.8	9.4	90.2	*% Retained	must be at least 8%	% f
#100		1.0	2.		6.5	3.3	6.5	96.7	a 2" max. size	(nom. Max. 1.5") a	ıgg
LBW		1.0	2.	-	2.0	1.5	1.8	98.5			
Production G	Gradation	O Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	adations	Adjusted WF	Intial Production	on Sample (IPS	3)	_	
Coarsene	ess Factor:	62	Work	ability Factor	: 34	36.3	Coars	eness Factor:	61		
45					-		Work	ability Factor:	36		
45	45, 44				JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
		52, 41	40	ez 40			2"	100.0	0.0	0.0	1
२ ⁴⁰				68, 38	75, 39		1.5"	100.0	0.0	0.0	1
ຍ							1"	99.3	0.7	0.7	
<u>ā</u>			■ 60, 13 €	Production Gradati	on		3/4"	89.1	10.2	10.9	
e 35			100	′ !			1/2"	70.5	18.6	29.5	1
Workability Factor (%)		52, 34	i				3/8"	60.5	10.0	39.5	1
i i	45, 33	56.	!	===á			#4 #8	44.1	16.4	55.9	-
ig 30 -			31	67, 88, 31	1		#8 #16	35.6 27.7	8.5 7.9	64.4 72.3	1
ž	Operating Zone	2					#16 #30	20.6	7.9	72.3	1
l S ∣ L	Boundary				75, 28		#30 #50	8.7	11.8	91.3	1
> ₂₅							#30	1.6	7.1	91.3	1
40	45	50 55	60	65 70) 75	80	#100	1.0	1.1	30.4	4

75

80



ials, LLC Rd. MI 48336

ne 3/8" sieve. % except max., ch sieve except max., 1" sieve when is used.

1.1

LBW

0.6

98.9

40 45 50 ActionLimits Boundary = - - - - -

> PREPARED BY: SM, LLC Technical Service

55

Coarseness Factor (%)⁷⁰

Approved By: Marthe Ball

PLANT #	t:	P-36					Contractor:				
Sample Date:		3/14/22		C	Concrete Grade	: DM, 4500HP				-	
Dates Test Re		3/15/2022	through	3/21/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	71-47	Presque Isle	1400	8.56	2.62	48.2					
26A	71-47	Presque Isle	405	2.48	2.62	13.9					
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9					ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	1	MATE	FIALS
Sieve	(SAA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior</u> 30701 W. 1	Materials, LLC 10 Mile Rd.
2"	1	00.0	100	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"	1	00.0	100	0.0	100.0	100.0	0.0	0.0	1	Farmingto	n Hills, MI 48336
1"		00.0	100		100.0	100.0	0.0	0.0			
3/4"		31.8	100		100.0	91.2	8.8	8.8			
1/2"		31.6	95		100.0	66.4	24.8	33.6			
3/8"		13.3	82		100.0	55.8	10.7	44.2	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		2.6	23		97.8	41.6	14.2	58.4			qual 10% except max.,
#8		2.1	7.8		84.5	34.1	7.5	65.9	nom. max., #100 and #200 sieves.		
#16		2.0	2.2		68.0	27.2	6.9 7.5	72.8			for each sieve except n
#30 #50		<u>1.9</u> 1.8	2.		48.7 20.9	19.7 9.0	7.5 10.6	80.3 91.0	· · · · ·	00 and #200 sieves	5 for the 1" sieve when
#100		1.7	1.	-	3.8	2.5	6.5	97.5		(nom. Max. 1.5") ag	
								01.0	a 2 max. 5120	(1011. Max. 1.0) ag	ggregate is used.
LBW		1.3	1.	5	0.6	1.1	1.4	98.9	1		
LBW				5 regate Supplier Gra				98.9 on Sample (IPS	3)	_	
LBW Production G		1.3	dations 💿 Agg	-	adations		Intial Production		6 3	1	
LBW Production Gr Coarsene	radation	1.3) Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	adations	Adjusted WF	Intial Productio	on Sample (IPS	,		
LBW Production G Coarsene	radation ss Factor:	1.3) Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	adations 34	Adjusted WF	Intial Productio Coars Work	on Sample (IPS eness Factor:	63	Cumulative	l
LBW Production G Coarsene	radation	1.3) Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	adations	Adjusted WF	Intial Productio	on Sample (IPS eness Factor: ability Factor:	63 35	Cumulative % Retained	
LBW Production Gi Coarsene	radation ss Factor:	1.3) Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	adations 34	Adjusted WF	Intial Productio Coars Work Sieve 2"	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0	63 35 % Retained 0.0	% Retained 0.0	
LBW Production Gi Coarsene	radation ss Factor:	1.3 O Batch Plant Gra 67	dations 💿 Agg	regate Supplier Gra ability Factor:	adations 34	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5"	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0	63 35 % Retained 0.0 0.0	% Retained 0.0 0.0	
LBW Production Gi Coarsene	radation ss Factor:	1.3 O Batch Plant Gra 67	dations 💿 Agg	regate Supplier Gra	JMF Zone	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1"	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1	63 35 % Retained 0.0 0.0 0.0 0.9	% Retained 0.0 0.0 0.9	
LBW Production Gi Coarsene	radation ss Factor:	1.3 O Batch Plant Gra 67	dations 💿 Agg	regate Supplier Gra ability Factor: 68, 38 Roduct	JMF Zone	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4"	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3	63 35 % Retained 0.0 0.0 0.0 0.9 8.8	% Retained 0.0 0.0 0.9 9.7	
LBW Production Gi Coarsene	radation ss Factor:	1.3 Batch Plant Gra 67 52, 41	dations Agg Work 58, 39	regate Supplier Gra cability Factor:	JMF Zone	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2"	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2	63 35 % Retained 0.0 0.0 0.9 8.8 21.1	% Retained 0.0 0.0 0.9 9.7 30.8	
LBW Production Gi Coarsene 45 40 40 40 35	radation ss Factor:	1.3 O Batch Plant Gra 67	dations Agg Work 58, 39	regate Supplier Gra ability Factor: 68, 38 Roduct	JMF Zone	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8"	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2 59.1	63 35 % Retained 0.0 0.0 0.9 8.8 21.1 10.1	% Retained 0.0 0.0 0.9 9.7 30.8 40.9	
LBW Production Gi Coarsene 45 40 40 40 35	radation ss Factor:	1.3 Batch Plant Gra 67 52, 41	dations	PB, 99 68, 38 IPS	JMF Zone 75, 39 tion Gradation	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2 59.1 41.8	63 35 % Retained 0.0 0.0 0.9 8.8 21.1 10.1 17.3	% Retained 0.0 0.9 9.7 30.8 40.9 58.2	
LBW Production Gi Coarsene 45 40 40 40 35	radation ss Factor:	1.3 Batch Plant Gra 67 52, 41 52, 34	dations Agg Work 58, 39	regate Supplier Gra ability Factor: 68, 38 Roduct	JMF Zone 75, 39 tion Gradation	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2 59.1 41.8 35.1	63 35 % Retained 0.0 0.0 0.9 8.8 21.1 10.1 17.3 6.6	% Retained 0.0 0.0 0.9 9.7 30.8 40.9 58.2 64.9	
LBW Production Gi Coarsene 45 40 40 40 40 40 40 40 40 40 40 40 40 40	radation ss Factor:	1.3 Batch Plant Gra 67 52, 41 52, 34	dations	PB, 99 68, 38 IPS	Idations 34 JMF Zone 75, 39 tion Gradation	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2 59.1 41.8 35.1 28.5	63 35 % Retained 0.0 0.0 0.9 8.8 21.1 10.1 17.3 6.6 6.6	% Retained 0.0 0.9 9.7 30.8 40.9 58.2 64.9 71.5	
LBW Production Gi Coarsene 45 40 40 40 40 40 40 40 40 40 40 40 40 40	radation ss Factor:	1.3 Batch Plant Gra 67 52, 41 52, 34	dations	PB, 99 68, 38 IPS	JMF Zone 75, 39 tion Gradation	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2 59.1 41.8 35.1	63 35 % Retained 0.0 0.0 0.9 8.8 21.1 10.1 17.3 6.6	% Retained 0.0 0.0 0.9 9.7 30.8 40.9 58.2 64.9	
LBW Production Gi Coarsene 45 45 40 40 40 40 40 40 40 40 40 40 40 40 40	radation ss Factor:	1.3 Batch Plant Gra 67 52, 41 52, 34	dations	PB, 99 68, 38 IPS	tion Gradat on Tripped and the second secon	Adjusted WF	Intial Production Coars Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	on Sample (IPS eness Factor: ability Factor: Cumulative % Passing 100.0 100.0 99.1 90.3 69.2 59.1 41.8 35.1 28.5 21.2	63 35 % Retained 0.0 0.0 0.9 8.8 21.1 10.1 17.3 6.6 6.6 7.3	% Retained 0.0 0.0 0.9 9.7 30.8 40.9 58.2 64.9 71.5 78.8	

Approved By:

PLANT #	#:	P-39					Contractor:				
Sample Date	:	3/14/22		C	oncrete Grade	: DM, 4500HP					
Dates Test R	epresents:	3/15/2022	through	3/21/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	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				SUD	ERIOR
		Total Wt	2905	17.69		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"	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		Farmingtor	n Hills, MI 48336
1"		98.9	100	0.0	100.0	99.4	0.6	0.6			
3/4"		84.0	100		100.0	91.7	7.7	8.3			
1/2"		38.9	95	.8	100.0	67.9	23.8	32.1			
3/8"		18.9	83	.0	100.0	56.2	11.7	43.8	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		3.0	14		97.8	40.0	16.2	60.0	*Any two adja	cent sieves must e	qual 10% except max.,
#8		1.7	4.		84.5 68.0	33.4	6.7	66.6	nom. max., #10	00 and #200 sieves	
#16		1.5		3.0 2.6		26.8	6.5	73.2	*% Retained r	must be at least 4%	for each sieve except
#30		1.4			48.7	19.4	7.4	80.6		00 and #200 sieves	
#50		1.4	2.		20.9	8.9	10.5	91.1			for the 1" sieve when
#100 LBW		1.3 1.2	2.		3.8 0.6	2.3	6.5 1.3	97.7 98.9	a 2" max. size	(nom. Max. 1.5") ag	gregate is used.
		Batch Plant Gra	-	o regate Supplier Grad							
Production G		Ŭ		•				on Sample (IPS		1	
Coarsene	ess Factor:	66	Work	ability Factor:	33	35.9		eness Factor:	63		
45)	Work	ability Factor:	36		
4	5, 44				JMF Zone		Sieve	Cumulative	%	Cumulative	
-		52, 41					0"	% Passing	Retained	% Retained	
40			-58-40		_		<u>2"</u> 1.5"	100.0 100.0	0.0	0.0	
- 40 1									0.0	0.0	
% ⁴⁰				68, 38	75, 39				0.0	0.0	
(%) J							1"	100.0	0.0	0.0	
ctor (%)			■ 60, 36	68, 38			1" 3/4"	100.0 89.7	10.3	10.3	
Factor (%)		52 34	■ 60, 36				1" 3/4" 1/2"	100.0 89.7 70.3	10.3 19.4		
ty Factor (%)	45, 33	52, 34	• 60, 36				1" 3/4" 1/2" 3/8"	100.0 89.7	10.3 19.4 11.2	10.3 29.7	
oility Factor (%)	45, 33	52, 34	• 60, 36		Gradation		1" 3/4" 1/2"	100.0 89.7 70.3 59.1	10.3 19.4	10.3 29.7 40.9	
(ability Factor (%) 000 000 000 000 000 000 000 000 000 00			• 60, 36	IPS Production (Gradation		1" 3/4" 1/2" 3/8" #4	100.0 89.7 70.3 59.1 42.8	10.3 19.4 11.2 16.3	10.3 29.7 40.9 57.2	
orkability Factor (%)	45, 33 Operating Zone Boundary		• 60, 36	IPS Production (Gradation		1" 3/4" 1/2" 3/8" #4 #8	100.0 89.7 70.3 59.1 42.8 35.5	10.3 19.4 11.2 16.3 7.3	10.3 29.7 40.9 57.2 64.5	
Workability Factor (%)	Operating Zone		• 60, 36	IPS Production (Gradation		1" 3/4" 1/2" 3/8" #4 #8 #16 #30 #50	100.0 89.7 70.3 59.1 42.8 35.5 29.0	10.3 19.4 11.2 16.3 7.3 6.5	10.3 29.7 40.9 57.2 64.5 71.0	
Workability Factor (%)	Operating Zone		50, 22	IPS Production (Gradation		1" 3/4" 1/2" 3/8" #4 #8 #16 #30	100.0 89.7 70.3 59.1 42.8 35.5 29.0 21.2	10.3 19.4 11.2 16.3 7.3 6.5 7.7	10.3 29.7 40.9 57.2 64.5 71.0 78.8	

Approved By: Mart P. Ball

PLANT a	#:	P-O2	_				Contractor:			_	
Sample Date	e:	3/14/22	-		Concrete Grade:	DM, 4500HP					
Dates Test R	Represents:	3/15/2022	through	3/21/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution				_	
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1					
26A	71-47	Presque Isle	350	2.14	2.62	12.0					
2NS	63-115	Ray Rd	1100	6.65	2.65	37.9				SUD	ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	•		ERIALS
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			Materials, LLC 10 Mile Rd.
2"	1	00.0	10	0.0	100.0	100.0	0.0	0.0	1	Suite 500	
1.5"	1	00.0	10	0.0	100.0	100.0	0.0	0.0]	Farmingto	n Hills, MI 48336
1"		00.0	: E	0.0	100.0	100.0	0.0	0.0			
3/4"		81.8	-	0.0	100.0	90.9	9.1	9.1			
1/2"		31.6	95		100.0	65.2	25.7	34.8			
3/8"		13.3		2.4	100.0	54.5	10.8	45.5			above the 3/8" sieve.
#4		2.6	-	8.5	96.9	40.8	13.6	59.2	*Any two adja	icent sieves must e	equal 10% except max.
#8		2.1	7.8 3.3		80.2	32.4	8.5	67.6		00 and #200 sieves	
#16		2.0			64.4	25.8	6.6	74.2			6 for each sieve except
#30		1.9	2		48.0	19.4	6.4	80.6		00 and #200 sieves	
#50		1.8	1.		25.8	10.9	8.5	89.1			6 for the 1" sieve when
#100 LBW		1.7 1.3	1.	.8 .5	4.5	2.8 1.2	8.1 1.6	97.2 98.8	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
Production G	radation	Batch Plant Gra		.5 regate SupplierGra			-	on Sample (IPS	3)		
	ess Factor:	67		ability Factor		34.9		eness Factor:	T		
			•				Work	ability Factor:	35		
45	45, 44				JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
1		52, 41					2"	100.0	0.0	0.0	
			58, 39	68, 39	75, 39		1.5"	100.0	0.0	0.0	
<u>ک</u>				68, 38			1"	100.0	0.0	0.0	
ō			• 60.26	. !			3/4"	95.1	4.9	4.9	
5 35			■ 60, 36	IPS Produ	ction Gradation		1/2"	74.6	20.5	25.4	
ц,	\rightarrow	52, 34	-i	i			3/8"	59.3	15.3	40.7	
- E	45, 33						#4	42.1	17.2	57.9	
iq 30		_	58, 31	6 6 83.331	1		#8	35.1	7.1	64.9	
g i	Operating Zone						#16	29.2	5.9	70.8	
	Boundary				75, 28		#30	21.9	7.3	78.1	
Workability Factor (%)	, 						#50	9.6	12.4	90.4	
	45		5 60	65 Factor (%)) 75	80	#50 #100 LBW	9.6 2.4 0.9	12.4 7.2 1.5	90.4 97.6 99.1	

PREPARED BY: SM, LLC Technical Service

ActionLimits Boundary = - - - - -

Approved By: