Production Gradation Report

PLANT	#:	P-101					Contractor:				
Sample Date	e:	10/23/23		С	oncrete Grade	: DM, 4500HP				•	
ates Test F	Represents:	10/24/2023	through	10/30/2023			MDOT No.:				
lgg. 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				SUP	ERIOR
		Total Wt	2900	17.63		100.0	< Verify this n	umber is 100%	1		RIALS
Sieve		6AA	26	Ā	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior N</u> 30701 W. 1	Materials, LLC LO Mile Rd.
2"	1	100.0	100	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		100.0	100		100.0	100.0	0.0	0.0	1	Farmingtor	n Hills, MI 48336
1"		98.8	100	0.0	100.0	99.4	0.6	0.6	1		
3/4"		81.5	100		100.0	90.8	8.7	9.3			
1/2"		38.6	96	.0	100.0	68.9	21.9	31.1			
3/8"		24.2	86	.4	100.0	60.7	8.2	39.3	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		3.7	20		95.8	42.0	18.7	58.1	*Any two adja	icent sieves must ea	qual 10% except max.
#8		2.1	4.	-	79.4	33.0	9.0	67.0	nom. max., #10	00 and #200 sieves.	
#16		1.9	2.		63.5	26.3	6.6	73.7			for each sieve except
#30		1.8	1.		48.1	20.1	6.2	79.9	· · · · ·	00 and #200 sieves.	
#50		1.8	1.		24.4	10.7	9.4	89.3			for the 3/4" sieve whe
#100 LBW		1.7 1.4	1.		6.5 0.8	3.6 1.1	7.1 2.4	96.4 98.9	a 1.5" max. siz	e (nom. Max. 1.0") a	aggregate is used.
	Non-stations	Batch Plant Gra		. <i>2</i> regate Supplier Grad			-				
roduction G		-	0 55	cability Factor:		35.5		ion Sample (IPS	<i>.</i>		
Coarsen	ess Factor:	59	WARV	a hility Factory	33	26.6			62		
				ability ractor.		33.3		eness Factor:			
45 -								ability Factor:	35		
45	45, 44				JMF Zone			ability Factor: Cumulative	35 %	Cumulative	
45 <u>-</u>	45, 44						Work Sieve	ability Factor: Cumulative % Passing	35 % Retained	% Retained	
40 -	45, 44	52, 41	57, 32	67, 39	JMF Zone		Work Sieve 2"	ability Factor: Cumulative % Passing 100.0	35 % Retained 0.0	% Retained 0.0	
40 -	45, 44		57, 39	67, 39	JMF Zone		Work Sieve 2" 1.5"	ability Factor: Cumulative % Passing 100.0 100.0	35 % Retained 0.0 0.0	% Retained 0.0 0.0	
40 -	45, 44		57, 39	67, 39 68, 38	JMF Zone		Work Sieve 2" 1.5" 1"	ability Factor: Cumulative % Passing 100.0 100.0 100.0	35 % Retained 0.0 0.0 0.0	% Retained 0.0 0.0 0.0	
40 -	45, 44		57, 39	67, 39	JMF Zone		Work Sieve 2" 1.5" 1" 3/4"	ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0	35 % Retained 0.0 0.0 0.0 5.0	% Retained 0.0 0.0 0.0 5.0	
40 -	45, 44		57, 39	67, 39 68, 38	JMF Zone		Work Sieve 2" 1.5" 1" 3/4" 1/2"	ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0 70.5	35 % Retained 0.0 0.0 0.0 5.0 24.5	% Retained 0.0 0.0 0.0 5.0 29.5	
40 -	45, 44	52, 41	57, 39	67, 39 68, 38	JMF Zone		Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8"	ability Factor: Cumulative % Passing 100.0 100.0 100.0 95.0 70.5 60.0	35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5	% Retained 0.0 0.0 0.0 5.0 29.5 40.0	
40 -		52, 41	57, 39	67, 39 68, 38	75, 39		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4	ability Factor: Cumulative % Passing 100.0 100.0 95.0 70.5 60.0 44.4	35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5 15.6	% Retained 0.0 0.0 5.0 29.5 40.0 55.6	
40 -	45, 33	52, 41	57, 39	67, 39 68, 38 098Gradation	75, 39		Work Sieve 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	ability Factor: Cumulative % Passing 100.0 100.0 95.0 70.5 60.0 44.4 35.5	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 20.0 29.5 40.0 55.6 64.5	
40 -	45, 33 Operating Zone	52, 41	57, 39	67, 39 68, 38 098Gradation	75, 39		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4	ability Factor: Cumulative % Passing 100.0 100.0 95.0 70.5 60.0 44.4	35 % Retained 0.0 0.0 0.0 5.0 24.5 10.5 15.6	% Retained 0.0 0.0 5.0 29.5 40.0 55.6	
Norkability Factor (%)	45, 33	52, 41	57, 39	67, 39 68, 38 098Gradation	JMF Zone		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	ability Factor: Cumulative % Passing 100.0 100.0 95.0 70.5 60.0 44.4 35.5 28.5	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 0.0 29.5 40.0 55.6 64.5 71.5	
40 -	45, 33 Operating Zone	52, 41	57, 39	67, 39 68, 38 098Gradation	JMF Zone 75, 39 1 75, 28		Work 2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	ability Factor: Cumulative % Passing 100.0 100.0 95.0 70.5 60.0 44.4 35.5 28.5 21.5	35 % Retained 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 20.5 40.0 55.6 64.5 71.5 78.5	

Approved By: Mart 1. Ball

	#:	P-102					Contractor:				
Sample Date		10/23/23			Concrete Grade	: DM, 4500HP					
Dates Test R	•	10/24/2023	through	10/30/2023	Specific	%	MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Gravity	Contribution					
6AA	58-003	Stoneco	1500	8.94	2.69	50.8					
26A	58-003	Stoneco	300	1.79	2.69	10.2					
2NS	81-019	Pleasant Lake Total Wt		6.95 17.68	2.65	39.0 100.0	< Vorific this p	umborio 100%			ERIOR
			2950	17.00			< Verify this n		1	MATE	RIALS
Sieve		6AA	26	6A	2NS	Cumulative	% Retained	Cumulative		Superior I	Materials, LLC
O leve					2110	% Passing	/o notanica	% Retained		30701 W. 1	10 Mile Rd.
2"	1	00.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"	1	00.0	10	0.0	100.0	100.0	0.0	0.0	1	Farmingtor	n Hills, MI 48336
1"	1	00.0	10		100.0	100.0	0.0	0.0			
3/4"		84.8	-	0.0	100.0	92.3	7.7	7.7			
1/2"		40.4	99		100.0	69.6	22.7	30.4			
3/8"		17.7	88	-	100.0	56.9	12.7	43.1			above the 3/8" sieve.
#4	4 2.1		9.6		98.3	40.4	16.6	59.6		*Any two adjacent sieves must equal 10% e	
	#8 1.3		3.2 2.3		85.6	34.4	6.0	65.6	nom. max., #100 and #200 sieves. *% Retained must be at least 4% for each sieve exc		
#16 #30		<u>1.1</u> 1.0	2.	-	68.3 48.1	27.4 19.5	6.9 8.0	72.6 80.5			
#30 #50		1.0	1.	-	23.5	9.9	9.6	90.5	,	00 and #200 sieves	o for the 3/4" sieve whe
#100		0.9	1.		4.9	2.6	7.3	97.4		e (nom. Max. 1.0")	
LBW		0.8	1.		0.5	0.8	1.8	99.2	a 1.5 max. 312		aggregate is used.
Production G	and at an	Batch Plant Gra	adations 💽 Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	2)		
TOQUCLION G	radation										
	ess Factor:	<u> </u>	Work	ability Factor:	34	36.9		eness Factor:	61		
Coarsene		<u> </u>	Work	cability Factor:	34		Coars	eness Factor:	ć		
Coarsene	ess Factor:	<u> </u>	Work	ability Factor:			Coars Work		61	Cumulative	
Coarsene		66	Worł	cability Factor:	34 JMF Zone		Coars	eness Factor: ability Factor:	61 36		
45 4	ess Factor:	<u> </u>	Work	cability Factor:			Coars Work Sieve 2"	eness Factor: ability Factor: Cumulative	61 36 %	Cumulative % Retained 0.0	
Coarsene	ess Factor:	66	Work	e7.40			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:	66	Worl	68, 38	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 0.7	% Retained 0.0 0.0 0.7	
Coarsene	ess Factor:	66	Work	68, 38	JMF Zone		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 0.7 10.1	% Retained 0.0 0.0 0.7 10.8	
Coarsene	ess Factor:	66		68, 38	JMF Zone		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	
Eactor (%)	ess Factor:	66		68, 38	JMF Zone		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 % Retained 0.0 0.0 0.7 10.1 18.5 10.0	% Retained 0.0 0.7 10.8 29.3 39.3	
Eactor %	ess Factor:	66		67.40	JMF Zone 75, 39 Gradation		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	
Eactor (%)	45, 33	66 52, 41 52, 34 52, 34 56		68, 38	JMF Zone 75, 39 Gradation		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 0.7 10.8 29.3 39.3 55.6 64.1	
Eactor (%)	45, 44 45, 33 Operating Zone	66 52, 41 52, 34 52, 34 56		67.40	JMF Zone 75, 39 Gradation		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 0.7 10.8 29.3 39.3 55.6 64.1 72.7	
Eactor (%)	45, 33	66 52, 41 52, 34 52, 34 56		67.40	JMF Zone 75, 39 Gradation		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 0.7 10.8 29.3 39.3 55.6 64.1 72.7 80.9	
Coarsene 45 40 40 35 35 40 40	45, 44 45, 33 Operating Zone	66 52, 41 52, 34 52, 34 56	• 60 F36	67.40	JMF Zone 75, 39 Gradation 75, 28		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 0.7 10.8 29.3 39.3 55.6 64.1 72.7	

Approved By:

PLANT # Sample Date		P-103		~	oncrete Grade		Contractor:				
Sample Date Dates Test R		10/24/2023	through	10/30/2023	oncrete Grade		MDOT No.:				
Agg. Class	Pit #	Source	through Weight (SSD)	ft ³	Specific	%	MDOT NO				
			_	-	Gravity	Contribution					
6AA	58-003	Stoneco	1500	8.94	2.69	50.8					
26A	58-003	Stoneco	300 1150	1.79 6.95	2.69	10.2					
2NS	81-019	Pleasant Lake Total Wt	2950	6.95 17.68	2.65	39.0 100.0	< Verify this n	umber is 100%		SUP	ERIOR
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			Materials, LLC
2"	1	00.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"	1	00.0	10).0	100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"		00.0	10	0.0	100.0	100.0	0.0	0.0			
3/4"		84.8	10		100.0	92.3	7.7	7.7			
1/2"		40.4	99		100.0	69.6	22.7	30.4			
3/8"		17.7	88		100.0	56.9	12.7	43.1			above the 3/8" sieve.
#4		2.1	9.	-	98.3	40.4	16.6	59.6			qual 10% except max.,
#8 #16		1.3	3		85.6	34.4 27.4	6.0 6.9	65.6 72.6	,	00 and #200 sieves	
#16 #30		1.1 1.0	2		68.3 48.1	19.5	6.9 8.0	72.6 80.5			for each sieve except
#30 #50		1.0	1		23.5	9.9	9.6	90.1	-	00 and #200 sieves	o for the 3/4" sieve wher
#100		0.9	1.	-	4.9	2.6	7.3	97.4		e (nom. Max. 1.0")	
LBW		0.8	1		0.5	0.8	1.8	99.2	a 1.5 max. 312		aggregate is used.
Production G	Gradation	O Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	3)		
	ess Factor:	66	Work	ability Factor:	34	36.9		eness Factor:	, 61		
				,				ability Factor:	36		
45	-				JMF Zone			Cumulative	%	Cumulative	
	45, 44				JIVIF ZONE		Sieve	% Passing	Retained	% Retained	
1		52, 41	40	67 40			2"	100.0	0.0	0.0	
-				68, 38	75, 39		1.5"	100.0	0.0	0.0	
G ⁴⁰					ľ		1"	99.3	0.7	0.7	
۶ ⁴⁰		1		🔲 🗖 an de settere d	Gradation		3/4"	89.2	10.1	10.8	
tor (%)			■ 60µ β	Production (oradation						
actor (%)			∎ 60 1 8€	Production			1/2"	70.7	18.5	29.3	
/ Factor (%)		52, 34	■ 601B®				3/8"	60.7	10.0	39.3	
lity Factor (%) ²² ²⁶ ¹⁰	45, 33						3/8" #4	60.7 44.4	10.0 16.3	39.3 55.6	
ability Factor (%) ²⁰ ²⁰ ²⁰ ²⁰ ²⁰ ²⁰ ²⁰ ²⁰	45, 33	52, 34		67, 32 67, 32			3/8" #4 #8	60.7 44.4 35.9	10.0 16.3 8.5	39.3 55.6 64.1	
rkability Factor (%) 00 22 20 00	Operating Zone	56,					3/8" #4 #8 #16	60.7 44.4 35.9 27.3	10.0 16.3 8.5 8.6	39.3 55.6 64.1 72.7	
Norkability Factor (%) 00 01 02 02 02 02 02 02 02 02 02 02		56,			75, 28		3/8" #4 #8 #16 #30	60.7 44.4 35.9 27.3 19.1	10.0 16.3 8.5 8.6 8.2	39.3 55.6 64.1 72.7 80.9	
ability Factor (%)	Operating Zone	56,					3/8" #4 #8 #16	60.7 44.4 35.9 27.3	10.0 16.3 8.5 8.6	39.3 55.6 64.1 72.7	

Approved BY: Mary P. Bal

PLANT		14					Contractor:				
Sample Date	-	10/23/23			concrete Grade:	DM, 4500HP					
Dates Test F	Represents:	10/24/2023	through	10/30/2023	-		MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution				5	
6AA	58-003	Stoneco	1500	8.94	2.69	50.7					
26A	58-003	Stoneco	360	2.14	2.69	12.2				Ш	
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%	1		rst With Builders'
Sieve	e	AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Builders F</u> 30701 W. :	
2"	4	00.0	10		100.0	100.0	0.0	0.0		Suite 500	to while Ku.
2" 1.5"		00.0	100		100.0 100.0	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			.,
3/4"		34.8	10		100.0	92.3	7.7	7.7			
1/2"		0.4	99		100.0	69.7	22.6	30.3			
3/8"	1	7.7	88	.0	100.0	56.8	12.9	43.2	*Maximum %	Retained must be	above the 3/8" sieve.
#4		2.1	9.	-	100.0	39.4	17.4	60.6	*Any two adja	cent sieves must e	qual 10% except max.,
#8		1.3	3.		91.3	35.0	4.4	65.0	nom. max., #1	00 and #200 sieves	
#16		1.1	2.		71.5	27.4	7.6	72.6	*% Retained	must be at least 4%	for each sieve except r
#30		1.0	2.		47.5	18.4	9.0	81.6	· · ·	00 and #200 sieves	
#50		1.0	1.		15.5	6.5	11.9	93.5			for the 3/4" sieve when
#100 LBW		0.9 0.8	1.		2.5 0.3	1.6 0.7	4.9 0.9	98.4 99.3	a 1.5" max. siz	e (nom. Max. 1.0")	aggregate is used.
Production G		Batch Plant Gra		regate Supplier Gra				on Sample (IPS	2)		
	ess Factor:	66	0 55	ability Factor:	35	37.5		eness Factor:	63	l	
Coarsen		00	WOIN	ability Factor.		37.5			36		
⁴⁵	•					\neg	WORK	ability Factor: Cumulative	30 %	Cumulative	
	45, 44				JMF Zone		Sieve	% Passing	70 Retained	% Retained	
		52, 41					2"	100.0	0.0	0.0	
2 ⁴⁰			21,40	68,40	75, 39		1.5"	100.0	0.0	0.0	
త 1				68, 38			1"	99.3	0.7	0.7	
J I			6 0, 36		Gradation		3/4"	89.0	10.3	11.0	
5 35			- 00, 30				1/2"	70.3	18.7	29.7	
Ш́ 1		52, 34	- <u>i</u>				3/8"	59.9	10.4	40.1	
~ 1	45, 33						#4	41.9	18.0	58.1	
lity	1	_		68, 32 68, 31			#8	35.9	6.0	64.1	
³⁰							#16 #30	27.8 18.9	8.2 8.8	72.2 81.1	
³⁰	Operating Zone						# (1)	18.9	I 88	811	
Vorkability	Operating Zone Boundary				75, 28						
Workability Factor (%)					75, 28		#50	6.3	12.6	93.7	
		 	60 60	$rac{65}{65}$ Factor (%)	75, 28	80					

Approved By: Mart 1. Ball

PLANT i Sample Date		12 10/23/23		C	oncrete Grade	DM. 4500HP	Contractor:			
Dates Test R		10/24/2023	through	10/30/2023			MDOT No.:			
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution				
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9				
26A	71-47	Presque Isle	305	1.87	2.62	10.5				
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6				GUI
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%		SUF M A T
Sieve	(6AA	26	6A	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"		00.0	10		100.0	100.0	0.0	0.0		Farmingto
1"		98.0		0.0	100.0	99.0	1.0	1.0		
3/4"		76.3	10		100.0	88.2	10.8	11.8		
1/2"		30.3	96		100.0	64.9	23.3	35.1		
3/8"		13.6	89		100.0	55.8	9.1	44.2	*Maximum %	Retained must b
#4		3.1	23		96.4	42.2	13.6	57.8		icent sieves mus
#8		2.2	5		80.5	33.6	8.6	66.4	-	00 and #200 sie\
#16		1.9	2		64.4	26.7	6.9	73.3		must be at least
#30		1.8	2		48.4	20.3	6.4	79.7	-	00 and #200 siev
#50		1.7	2		24.1	10.6	9.7	89.4		must be at least
#100 LBW		<u>1.6</u> 1.3	1		5.2 0.8	3.1 1.1	7.5 1.9	96.9 98.9	a 1.5" max. siz	e (nom. Max. 1.0
Production G	radation	Batch Plant Grav	-	regate Supplier Grad				on Sample (IPS	:)	
	ess Factor:	67		ability Factor:	34	36.1		eness Factor:	63	
45		01		lubility i uotori	0.			ability Factor:	36	
_	45, 44				JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
10		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
<u>ိ</u>			i	00, 30			1"	99.3	0.7	0.7
Į Į			6 0, 36	IPS 📕 Poductio	n Gradation		3/4"	89.0	10.3	11.0
e 35							1/2"	70.3	18.7	29.7
Ľ		52, 34		i			3/8"	59.9	10.4	40.1
E I	45, 33		57.22				#4	41.9	18.0	58.1
Workability Factor (%)			,	68, 32 68, 31			#8	35.9	6.0	64.1
ž [Operating Zone	7					#16	27.8	8.2	72.2
ō	Boundary				75, 28		#30	18.9	8.8	81.1
>	Doanaary						#50	6.3	12.6	93.7

75

80

#100

LBW

1.7

1.0

4.6

0.7

98.3

99.0



aterials, LLC Mile Rd. Hills, MI 48336

ove the 3/8" sieve. ual 10% except max., or each sieve except max., or the 3/4" sieve when gregate is used.

PREPARED BY: SM, LLC Technical Service

50

55

 $\mathbf{Coarseness} \ \mathbf{Factor} \ \mathbf{(\%)}^{70}$

45

ActionLimits Boundary = - - - - -

25

40

Approved By: Mart 1. Ball

% ve ed	MATE	
ve	MATE	
ve	MATE	ERIOR
		ERIALS
		Materials, LLC 10 Mile Rd.
	Suite 500	
	Farmingtor	n Hills, MI 48336
		•
		•
(IPS)		
	٦	
	-1	
ve %	Cumulative	
5.0	5.0	
22.8	27.7	
11.8	39.6	
17.8	57.4	
6.6	64.0	
	70.5	
6.5		4
6.5 9.2	79.7	
6.5	79.7 90.5 96.6	
	*Any two ad nom. max., # *% Retained nom. max., # *% Retained a 1.5" max. si (IPS) ctor: 62 ctor: 62 ctor: 36 tive % ing Retained 0 0.0 0 0.0 00	*Maximum % Retained must be a *Any two adjacent sieves must e nom. max., #100 and #200 sieves *% Retained must be at least 4% nom. max., #100 and #200 sieves *% Retained must be at least 4% a 1.5" max. size (nom. Max. 1.0") (IPS) ctor: 62 ctor: 36 tive % Cumulative ing Retained % Retained 0 0.0 0.0 0.0 0

Approved By:

Mart 1. Ball

PLANT a		P-32		-			Contractor:				
Sample Date					oncrete Grade						
Dates Test R		10/24/2023	through	10/30/2023	Specific	%	MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Gravity	Contribution					
6AA	71-47	Presque Isle	1355	8.29	2.62	46.6					
26A	71-47	Presque Isle	400	2.45	2.62	13.8					
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6				SUP	FRIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	1	MATE	RIALS
Ciava		6AA	26	•	2NS	Cumulative	% Retained	Cumulative		Superior	Materials, LLC
Sieve		DAA	20	A	2115	% Passing	% Retained	% Retained			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"		96.7	10		100.0	98.5	1.5	1.5			
3/4"		74.9	10		100.0	88.3	10.2	11.7			
1/2"		32.0	96		100.0	67.9	20.4	32.1			
3/8"		14.4	89		100.0	58.7	9.2	41.3			above the 3/8" sieve.
#4		2.5	23		96.7	42.7	15.9	57.3			qual 10% except max.,
#8 #16		1.7 1.7	5		85.4 70.6	35.4 29.1	7.3 6.3	64.6 70.9		00 and #200 sieves	
#10		<u>1.7</u> 1.6	2		52.2	29.1	7.4	70.9		must be at least 4% 00 and #200 sieves	6 for each sieve except
#50		1.4	2		24.8	10.7	11.0	89.3			6 for the 3/4" sieve wher
#100		1.3	1		7.6	3.9	6.9	96.1		e (nom. Max. 1.0")	
LBW		1.0	1.	.7	1.7	1.4	2.5	98.6			
Production G	Gradation	O Batch Plant Gra	idations 💿 Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	- S)		
Coarsene	ess Factor:	64	Work	ability Factor:	35	37.9		eness Factor:	62		
				•			Work	ability Factor:	36		
45					JMF Zone		0	Cumulative	%	Cumulative	
	45, 44				JIVIF 2011e		Sieve	% Passing	Retained	% Retained	
4.0		52, 41 5 6	i. 40	67,40			2"	100.0	0.0	0.0	
হ ⁴⁰				68 38	75, 39		1.5"	100.0	0.0	0.0	
<u>ຍ</u>			i	68, 38 Production Grad	dation		1"	100.0	0.0	0.0	
<u> </u>			■ 60,38E	s !			3/4"	95.0 72.3	5.0 22.8	5.0 27.7	
to			i	i			1/2" 3/8"	60.4	11.8	39.6	
³⁵	\rightarrow	52, 34		!				42.6	17.8	57.4	
Ê Î	45 33						#8	36.0	6.6	64.0	
	45, 33	50	, 32	VI&∂4,			-	29.5			
			, 32	67 _{68,31}			#16	29.5	0.5	70.5	
	45, 33 Operating Zone Boundary	56	, 32	• ⁷ 68,31	75.28		#16 #30	29.5	6.5 9.2	70.5 79.7	
Workability	Operating Zone		, 32	68,31	75, 28		#30 #50				
	Operating Zone	50 55	, 32	⁶⁵ Factor (%) ⁷⁰	75, 28	80	#30	20.3	9.2	79.7	

Approved By:

		P-35		-			Contractor:				
Sample Date		10/23/23	through		Concrete Grade						
Dates Test R Agg. Class	Pit #	Source	through Weight (SSD)	10/30/2023 ft ³	Specific Gravity	% Contribution	MDOT No.:				
6AA	58-003	Stoneco	1500	8.94	2.69	50.8					
26A	58-003	Stoneco	300	1.79	2.69	10.2					
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%		MATE	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"		00.0	100		100.0	100.0	0.0	0.0			
3/4" 1/2"		84.8	100		100.0	92.3	7.7 22.7	7.7			
3/8"		40.4 17.7	99 88		100.0 100.0	69.6 56.9	12.7	30.4 43.1	*Moving 0/	Potoinad must be	above the 3/8" sieve.
3/0 #4		2.1	9.	-	98.3	40.4	12.7	43.1 59.6			above the 3/8" sieve. qual 10% except max.,
#4		1.3	3.		85.6	34.4	6.0	65.6		00 and #200 sieves	•
#16		1.1	2.		68.3	27.4	6.9	72.6			6 for each sieve except
#30		1.0	2.		48.1	19.5	8.0	80.5		00 and #200 sieves	-
#50		1.0	1.	9	23.5	9.9	9.6	90.1	*% Retained	must be at least 4%	6 for the 3/4" sieve whe
#100		0.9	1.		4.9	2.6	7.3	97.4	a 1.5" max. siz	e (nom. Max. 1.0")	aggregate is used.
LBW		0.8	1.	7	0.5	0.8	1.8	99.2			
Production G	Gradation	O Batch Plant Gra	dations 💿 Aggr	egate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	5)		
Coarsene	ess Factor:	66	Work	ability Factor:	34	36.9	Coars	eness Factor:	61		
			<u> </u>	•			Work	ability Factor:	36		
45					JMF Zone		0	Cumulative	%	Cumulative	
1 1	45, 44				JIMF 2011e		Sieve	% Passing	Retained	% Retained	
		52, 41					2"	100.0	0.0	0.0	
् ⁴⁰		50,		68, 38	75, 39		1.5"	100.0	0.0	0.0	
<u>ව</u>					I		1"	99.3	0.7	0.7	
			■ 60, ₁ 36	Production	Gradation		3/4"	89.1	10.2	10.9	
to				!			1/2"	70.5	18.6	29.5	
35 actor		52, 34	<u>i</u>	i			3/8" #4	60.5 44.1	10.0 16.4	39.5 55.9	
ц Ц	A5 22						#4 #8	35.6	8.5	55.9 64.4	
	45, 33		31				<i>m</i> O		0.0	07.7	
		56,	31	67, 88 , 31			#16	27 7	79		
	Operating Zone	56,	31	67, 89 , 31	75 00		#16 #30	27.7 20.6	7.9 7.1	72.3	
ility		56,	31	67, 68 , 31	75, 28		#16 #30 #50	27.7 20.6 8.7	7.9 7.1 11.8		
	Operating Zone	56,		67, 28 31	75, 28	80	#30	20.6	7.1	72.3 79.4	

Approved By:

PLANT #		P-36		-			Contractor:				
Sample Date		10/23/23			concrete Grade:	DM, 4500HP					
Dates Test R	epresents:	10/24/2023	through	10/30/2023	Specific	0/	MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution					
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9					
26A	71-47	Presque Isle	305	1.87	2.62	10.5					
2NS	63-92	Grange Hall	1150	6.95	2.65	39.6				SIIP	ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			RIALS
Ciaura		AA	26	•	0110	Cumulative		Cumulative		Superior	Materials, LLC
Sieve		DAA	20	А	2NS	% Passing	% Retained	% Retained			10 Mile Rd.
2"	1	00.0	10) ()	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"		98.0	10		100.0	99.0	1.0	1.0			
3/4"		76.3	10	-	100.0	88.2	10.8	11.8			
1/2"		30.3	96		100.0	64.9	23.3	35.1			
3/8"		13.6	89		100.0	55.8	9.1	44.2			above the 3/8" sieve.
#4		3.1	23		96.9	42.4	13.4	57.6			qual 10% except max.,
#8 #16		2.2 1.9	5.		83.6 69.2	34.8 28.6	7.6 6.2	65.2 71.4		00 and #200 sieves	
#10		1.9 1.8	2.		48.4	20.0	8.3	71.4		must be at least 4% 00 and #200 sieves	6 for each sieve except
#50		1.7	2.		21.6	9.6	10.7	90.4			6 for the 3/4" sieve whe
#100		1.6	1.		4.0	2.6	7.0	97.4		e (nom. Max. 1.0")	
LBW		1.3	1.	7	1.2	1.3	1.3	98.7			
Production G	Gradation	O Batch Plant Gra	idations 💿 Agg	egate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	- 5)		
Coarsene	ess Factor:	68	Work	ability Factor:	35	37.3		eness Factor:	63		
				ž			Work	ability Factor:	35		
45					JMF Zone			Cumulative	%	Cumulative	
- 4	45, 44				JIVIF ZOILE		Sieve	% Passing	Retained	% Retained	
		52, 41					2"	100.0	0.0	0.0	
			58, 39	68, 38	75, 39		1.5"	100.0	0.0	0.0	
v 1			ļ		ction Gradation		1"	99.1	0.9	0.9	
(%)			■ 60, 36				3/4"	90.3 69.2	8.8	9.7	
tor (%			i i	IPS			1/2" 3/8"	59.2 59.1	21.1 10.1	30.8 40.9	
actor (%	\rightarrow				•				17.3	40.9 58.2	
Eactor		52, 34		İ			#4	418	11.0		
Eactor	45, 33	52, 34					#4 #8	41.8 35.1			
Eactor		52, 34	58, 31	68 ,31			#8	35.1	6.6	64.9 71.5	
Eactor	45, 33 Operating Zone Boundary	52, 34	58, 31							64.9	
bility Factor	Operating Zone	52, 34	58, 31	68,31	75, 28		#8 #16 #30 #50	35.1 28.5	6.6 6.6	64.9 71.5	
Eactor	Operating Zone	52, 34	· · · · · · · · · ·	Factor (%) ⁷⁰			#8 #16 #30	35.1 28.5 21.2	6.6 6.6 7.3	64.9 71.5 78.8	

Approved By: Mary 1. Ball

		P-38		~	an anata One de		Contractor:				
Sample Date		10/23/23		10/30/2023	oncrete Grade	DINI, 4500FF	MDOT No.:				
Dates Test R			through		Specific	%				-	
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Gravity	Contribution					
6AA	58-003	Stoneco	1500	8.94	2.69	50.8					
26A	58-003	Stoneco	300	1.79	2.69	10.2					
2NS	81-019	Pleasant Lake Total Wt	1150 2950	6.95 17.68	2.65	39.0 100.0	< Vorific this p	umborio 100%			ERIOR
			2330	17.00		100.0	< Verify this n			MATE	FRIALS
Sieve		6AA	26	Δ	2NS	Cumulative	% Retained	Cumulative		Superior	Materials, LLC
0.010					2.10	% Passing	/o notaniou	% Retained		30701 W.	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		100.0	100.0	0.0	0.0			
3/4"		34.8	100		100.0	92.3	7.7	7.7			
1/2"		40.4	99		100.0	69.6	22.7	30.4			
3/8" #4		17.7 2.1	88		100.0 98.3	56.9 40.4	12.7 16.6	43.1 59.6			above the 3/8" sieve.
#4 #8		<u>2.1</u> 1.3	9.		98.3 85.6	40.4 34.4	6.0	59.6 65.6			qual 10% except max.
#0 #16		<u>1.3</u> 1.1	2.		68.3	27.4	6.9	72.6		00 and #200 sieves	6. 6 for each sieve except
#10		1.0	2.		48.1	19.5	8.0	80.5		00 and #200 sieves	•
#50		1.0	1.	-	23.5	9.9	9.6	90.1	,		" 6 for the 3/4" sieve whe
#100		0.9	1.		4.9	2.6	7.3	97.4		e (nom. Max. 1.0")	
LBW		0.8	1.	7	0.5	0.8	1.8	99.2			
Production G	Gradation	O Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	5)		
Coarsene	ess Factor:	66	Worl	ability Factor:	34	36.9		eness Factor:	61		
				,	-			ability Factor:	36		
45					JMF Zone			Cumulative	%	Cumulative	
	45, 44				JIVIF ZOILE		Sieve	% Passing	Retained	% Retained	
		52, 41					2"	100.0	0.0	0.0	
		50,		68, 38	75, 39		1.5"	100.0	0.0	0.0	
~ 1							1"	99.3	0.7	0.7	
Š	1		■ 60,j ĝ6	Production (radation		3/4" 1/2"	89.1 70.5	10.2	10.9	
tor (%							1/2" 3/8"	70.5 60.5	18.6 10.0	29.5 39.5	
actor (%	A							44.1	16.4	55.9	
Ê Î	45.33	52, 34	<u> </u>								
ility Factor (%	45, 33		1 31				#8	35.6	8.5	64.4	
00 ability Factor (%		56,	31	67, 89 , 31			#8 #16	35.6 27.7	8.5 7.9	64.4 72.3	
orkability Factor (%	45, 33 Operating Zone Boundary	56,	31	67 , 89 , 31	75.28		#8 #16 #30		8.5 7.9 7.1	64.4 72.3 79.4	
Workability	Operating Zone	56,	31	67, 63 , 31	75, 28		#16 #30 #50	27.7	7.9	72.3	
Workability Factor (%	Operating Zone	56,		67, eq. 31	75, 28	80	#16 #30	27.7 20.6	7.9 7.1	72.3 79.4	

Approved By: Mary 1. Ball

PLANT #		P-39					Contractor:				
Sample Date		10/23/23			concrete Grade	: DM, 4500HP					
Dates Test R	epresents:	10/24/2023	through	10/30/2023			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	44-051	Krake Willis Rd		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		Superior I 30701 W. 2	<u>Materials, LLC</u> 10 Mile Rd.
2"		100.0	100).0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		100.0	100	-	100.0	100.0	0.0	0.0		Farmingtor	n Hills, MI 48336
1"		98.8	100		100.0	99.4	0.6	0.6			
3/4"		81.5	100		100.0	90.4	9.0	9.6			
1/2" 3/8"		38.6	96		100.0	67.8 59.3	22.6 8.5	32.2	*****	Detained 11	- h
3/8 #4		24.2 3.7	86 20		100.0 98.8	41.4	8.5 17.9	40.7 58.6			above the 3/8" sieve.
#4		2.1	4.1		98.8 84.6	33.6	7.9	66.4		00 and #200 sieves	qual 10% except max.,
#0		1.9	4.		68.9	27.3	6.3	72.7			for each sieve except
#10		1.8	1.	-	50.2	20.1	7.2	79.9		00 and #200 sieves	
#50		1.8	1.4		21.6	9.3	10.9	90.7			5 for the 3/4" sieve whe
#100		1.7	1.4		4.5	2.7	6.5	97.3		e (nom. Max. 1.0")	
LBW		1.4	1.	2	0.7	1.1	1.6	98.9			
Production G	radation	O Batch Plant Gra	dations 💿 Aggr	egate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	5)		
Coarsene	ss Factor:	61	Work	ability Factor:	34	36.1		eness Factor:	63		
					-			ability Factor:	36		
45	-				[Cumulative	%	Cumulative	
- 4	5, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
-		52, 41					2"	100.0	0.0	0.0	
			58,40		75, 39		1.5"	100.0	0.0	0.0	
2				68, 38	I		1"	100.0	0.0	0.0	
<u> </u>			I ■ 60P360	luction Gradution			3/4"	89.7	10.3	10.3	
2							1/2"	70.3	19.4	29.7	
35 -		52, 34					3/8"	59.1	11.2	40.9	
/ Facto							#4 #8	42.8 35.5	16.3 7.3	57.2	
lity Facto	45, 33		1		, I				/ 3		
ability Facto			58, 22	688883	2					64.5	
rkability Facto	Operating Zone	2	58, 22	68833			#16	29.0	6.5	71.0	
Norkability Facto		2	50, 22	688832	2 75, 28		#16 #30	29.0 21.2	6.5 7.7	71.0 78.8	
ability Fa	Operating Zone	2		68,83			#16	29.0	6.5	71.0	

Approved By: Mart 1. Ball

PLANT		P-02				BII (FAA) F	Contractor:				
Sample Date		10/23/23			oncrete Grade	: DM, 4500HP					
Dates Test F	Represents:	10/24/2023	through	10/30/2023	<u> </u>	<i></i>	MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific	%					
6AA	71-47	Presque Isle	1450	8.87	Gravity 2.62	Contribution 49.9					
26A	71-47	Presque Isle	305	1.87	2.62	10.5					
20/X	63-115	Ray Rd	1150	6.95	2.65	39.6					
		Total Wt		17.69		100.0	< Verify this n	umber is 100%	_	SUP MATE	ERIOR
Sieve	(6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior</u> 30701 W. :	Materials, LLC
2"	1	00.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		00.0	-	0.0	100.0	100.0	0.0	0.0		Farmingto	n Hills, MI 48336
1"		98.0		0.0	100.0	99.0	1.0	1.0			
3/4"		76.3		0.0	100.0	88.2	10.8	11.8			
1/2"		30.3	96	6.9	100.0	64.9	23.3	35.1			
3/8"		13.6	89		100.0	55.8	9.1	44.2	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.1	23		96.4	42.2	13.6	57.8	*Any two adja	cent sieves must e	qual 10% except max.,
#8		2.2	5		80.5	33.6	8.6	66.4	,	00 and #200 sieves	
#16		1.9	2		64.4	26.7	6.9	73.3			for each sieve except
#30		1.8		.2	48.4	20.3	6.4	79.7	,	00 and #200 sieves	
#50 #100		<u>1.7</u> 1.6	2	.0	24.1 5.2	10.6 3.1	9.7 7.5	89.4 96.9			for the 3/4" sieve whe
LBW		1.3	1	-	0.8	3.1 1.1	1.9	98.9	a 1.5° max. siz	e (nom. Max. 1.0")	aggregate is used.
		Batch Plant Gra		regate SupplierGrad			-		•		
Production C		-	0.11					on Sample (IPS	,	I	
Coarsen	ess Factor:	67	work	ability Factor:	34	36.1		eness Factor:	63		
45 T)	Work	ability Factor:	35	O and a time	
-	45, 44				JMF Zone		Sieve	Cumulative	% Deteined	Cumulative	
-		52, 41					2"	% Passing 100.0	Retained 0.0	% Retained 0.0	
4 0			58.39	68 39	75, 39		1.5"	100.0	0.0	0.0	
8				68, 39 68, 38	10, 39		1"	100.0	0.0	0.0	
2							3/4"	95.1	4.9	4.9	
5 35			■ 60, 36	i Froductio	on Gradation		1/2"	74.6	20.5	25.4	
<u>, o</u>	\rightarrow	52, 34	<u> </u>	i			3/8"	59.3	15.3	40.7	
-	45, 33			!			#4	42.1	17.2	57.9	
ity	1		58, 31	688,331			#8	35.1	7.1	64.9	
bility F							#16	29.2	5.9	70.8	
kability F	Operating Zone						#30	21.9	7.3	78.1	
/orkability F	Operating Zone Boundary				75, 28						
Worka	1 0				75, 28		#50	9.6	12.4	90.4	
Norkability F	1 0	50 55	5 60	5 Factor (%)	75, 28	80		9.6 2.4 0.9			

Approved By: