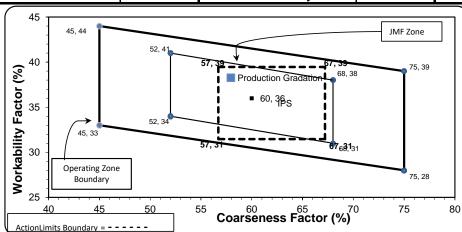
Production	Gradation	Report
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PLANT #	#:	P-101					Contractor:			
Sample Date	:	10/3/22			Concrete Grade:	DM, 4500HP	_			•
Dates Test R	epresents:	10/4/2022	through	10/10/2022			MDOT No.:			
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% 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				é
		Total Wt	2910	17.69		100.0	< Verify this n	umber is 100%		S
Sieve		6AA	26	6A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Sup</u> 307
2"	1	100.0	10	0.0	100.0	100.0	0.0	0.0		Suite
1.5"	1	100.0	10	0.0	100.0	100.0	0.0	0.0		Farn
1"		97.9	10	0.0	100.0	98.9	1.1	1.1		
3/4"		86.5	10	0.0	100.0	93.2	5.7	6.8		
1/2"		48.4	94	l.1	100.0	73.5	19.7	26.5		
3/8"		29.9	80).1	100.0	62.8	10.7	37.2	*Maximum %	Retained m
#4		5.5	23	3.7	99.0	44.3	18.5	55.7	*Any two adja	icent sieves
#8		2.6	7.	.7	85.2	35.8	8.6	64.2	nom. max., #10	00 and #200
#16		2.1	4	.1	69.1	28.8	7.0	71.2	*% Retained	must be at le
#30		1.9	3		51.2	21.5	7.3	78.5	nom. max., #10	00 and #200
#50		1.8	2		23.0	10.3	11.2	89.7	*% Retained I	must be at le
#100		1.7	2		5.8	3.4	6.9	96.6	a 2" max. size	(nom. Max.
LBW		1.6	2	.5	1.0	1.5	2.0	98.5		
Production G	radation	Batch Plant Gra	dations 💿 Agg	regate Supplier Gra	adations	Adjusted WF	Initial Producti	on Sample (IPS	S)	_
Coarsene	ess Factor:	58	Work	ability Factor	36	38.3		eness Factor:	62	
45							Work	ability Factor:	35	
	45, 44				JMF Zone		Sieve	Cumulative	%	Cumula
		52, 41						% Passing	Retained	% Retai
40		52, 4	57, 39	67			2"	100.0	0.0	0.0
?"			Production		75, 39		1.5"	100.0	0.0	0.0
(%) 35			Production				1"	100.0	0.0	0.0
			■ 60, 3	ies I			3/4"	95.0	5.0	5.0
ບ 35 -		I	•				1/2"	70.5	24.5	29.5



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., m. max., #100 and #200 sieves. % Retained must be at least 4% for each sieve except max., m. max., #100 and #200 sieves. % Retained must be at least 8% for the 1" sieve when 2" max. size (nom. Max. 1.5") aggregate is used.



	Coars	seness Factor:	62	
	Work	ability Factor:	35	
Г	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
Г	3/4"	95.0	5.0	5.0
	1/2"	70.5	24.5	29.5
Г	3/8"	60.0	10.5	40.0
	#4	44.4	15.6	55.6
Г	#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

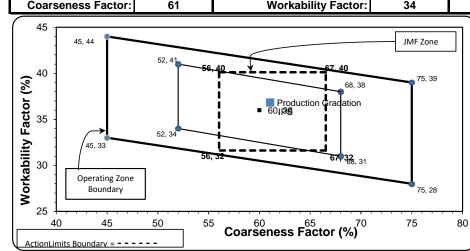
Approved By: Mart 1. Ball

PLANT #	#:	P-102					Contractor:			
Sample Date	:	10/3/22			Concrete Grade	: DM, 4500HP				-
Dates Test R	epresents:	10/4/2022	through	10/10/2022			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
		Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%	-	MATE
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Superior N</u> 30701 W. 10
2"	-	100.0	10	0.0	100.0	100.0	0.0	0.0		Suite 500
1.5"	1	100.0	10	0.0	100.0	100.0	0.0	0.0		Farmington
1"		99.7	-	0.0	100.0	99.8	0.2	0.2		
3/4"		88.1	-	0.0	100.0	93.7	6.1	6.3		
1/2"		49.8	99		100.0	73.6	20.1	26.4		
3/8"		26.2	84		100.0	59.9	13.7	40.1		Retained must be a
#4		5.4	20	-	98.9	43.1	16.8	56.9	*Any two adja	acent sieves must eq
#8		2.7	-	.6	83.2	34.3	8.8	65.7	· · ·	00 and #200 sieves.
#16		2.7	3		65.5	27.2	7.1	72.8		must be at least 4%
#30		2.3	2		47.2	19.8	7.4	80.2		00 and #200 sieves.
#50		2.0	2		23.9	10.6	9.2	89.4		must be at least 8%
#100 LBW		1.6 1.0	2	.2	7.3	3.9 1.2	6.7 2.6	96.1 98.8	a 2" max. size	(nom. Max. 1.5") ago
Production G	radation	Batch Plant Gra		regate Supplier Gi				on Sample (IPS	3)	
	ess Factor:	61	Work	ability Factor	: 34	36.8		eness Factor:	61	1
				•			Work	ability Factor:	36	1
	15, 44 				JMF Zone			Cumulative	%	Cumulative
1 4 4	i, 44				JIVIF ZONE		Sieve	0/ Danalara	Detained	0/ Deteined



Naterials, LLC 0 Mile Rd. Hills, MI 48336

pove the 3/8" sieve. ual 10% except max., for each sieve except max., for the 1" sieve when regate 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: Mary 1. Ball

PLANT #	#:	P-103					Contractor:				
Sample Date:	:	10/3/22	_	C	Concrete Grade	: DM, 4500HP					
Dates Test R	epresents:	10/4/2022	through	10/10/2022			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	Materials, LLC LO Mile Rd.
2"		100.0	100	0.0	100.0	100.0	0.0	0.0		Suite 500	
1.5"		100.0	100	0.0	100.0	100.0	0.0	0.0		Farmingtor	n Hills, MI 48336
1"		99.7	100	0.0	100.0	99.8	0.2	0.2			
3/4"		88.1	100		100.0	93.7	6.1	6.3			
1/2"		49.8	99		100.0	73.6	20.1	26.4			
3/8"		26.2	84		100.0	59.9	13.7	40.1	*Maximum %	Retained must be a	above the 3/8" sieve.
#4		5.4	20		98.9	43.1	16.8	56.9			qual 10% except max.,
#8		2.7	5.		83.2	34.3	8.8	65.7		00 and #200 sieves.	
#16		2.7	3.		65.5	27.2	7.1	72.8			for each sieve except
#30		2.3	2.		47.2	19.8	7.4	80.2	,	00 and #200 sieves.	
#50 #100		2.0	2.	-	23.9	10.6	9.2 6.7	89.4			for the 1" sieve when
LBW		1.6 1.0	2.		7.3	3.9 1.2	2.6	96.1 98.8	a 2" max. size	(nom. Max. 1.5") ag	igregate is used.
		1.0	۷. ۲.	0	1.4	1.2	2.0	50.0			
Production G	radation	Batch Plant Gra	dations	regate Supplier Grad	dations	Adjusted WE	Intial Production	on Sample (IPS	3)		
		Batch Plant Gra		•		Adjusted WF		on Sample (IPS	<i>,</i>	I	
	radation ess Factor:	Batch Plant Gra		regate Supplier Grad	dations 34	Adjusted WF 36.8	Coars	eness Factor:	61		
		-		•		,	Coars	eness Factor: ability Factor:	61 36	Cumulating	
Coarsene		-		•		,	Coars	eness Factor:	61	Cumulative % Retained	
45 4	ess Factor:	-		•	34	,	Coars Work	eness Factor: ability Factor: Cumulative	61 36 %		
45 40 40	ess Factor:	61		cability Factor:	34	,	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	
45 40 40	ess Factor:	61	Work	sability Factor:	34 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	
45 40 40	ess Factor:	61	Work	sability Factor:	34 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 0.0 0.7 10.1	% Retained 0.0 0.0 0.7 10.8	
45 40 40	ess Factor:	61	Work	cability Factor:	34 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	
45 40 40	255, 44	61	Work	sability Factor:	34 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 0.0 0.7 10.8 29.3 39.3	
45 40 40	ess Factor:	61	Work	cability Factor:	34 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 % <u>Retained</u> 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	45, 33	61 52, 41 52, 34 52, 34 55, 56	Work	sability Factor:	34 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 0.7 10.8 29.3 39.3 55.6 64.1	
Coarsene	45, 33 Operating Zono	61 52, 41 52, 34 52, 34 55, 56	Work	cability Factor:	34 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 % <u>Retained</u> 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	
Coarsene	45, 33	61 52, 41 52, 34 52, 34 55, 56	Work	cability Factor:	34 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	
ability Factor (%)	45, 33 Operating Zono	61 52, 41 52, 34 52, 34 55, 56	Work	cability Factor:	34 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 % <u>Retained</u> 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: Mary P. Ball

PLANT :	#:	P-14	_				Contractor:				
Sample Date	- -	10/3/22			Concrete Grade:	DM, 4500HP					
Dates Test R	epresents:	10/4/2022	through	10/10/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution				Γ	
6AA	58-003	Stoneco	1600	9.53	2.69	54.1					
26A	58-003	Stoneco	260	1.55	2.69	8.8				L	
2NS	19-55	Schlegel	1100	6.60	2.67	37.2				Bui	lders'
		Total Wt	2960	17.68		100.0	< Verify this n	umber is 100%	-	REI Finish F	DI-MIX
Sieve	6	AA	26	Α	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Builders I</u> 30701 W.	Redi-Mix 10 Mile Rd.
2"	1	00.0	100).0	100.0	100.0	0.0	0.0	1	Suite 500	
1.5"	1	00.0	100).0	100.0	100.0	0.0	0.0]	Farmingto	n Hills, MI 48336
1"	-	9.7	100		100.0	99.8	0.2	0.2]		
3/4"	-	38.1	100		100.0	93.6	6.3	6.4			
1/2"		9.8	99		100.0	72.8	20.7	27.2			
3/8"		26.2	84		100.0	58.7	14.1	41.3	*Maximum %	Retained must be	above the 3/8" sieve.
#4		5.4	20		100.0	41.9	16.9	58.1	*Any two adja	cent sieves must e	qual 10% except max.,
#8		2.7	5.	-	91.3	35.9	6.0	64.1	· · · ·	00 and #200 sieves	
#16		2.7	3.		71.6	28.3	7.5	71.7			for each sieve except
#30		2.3	2.		47.8	19.2	9.1	80.8		00 and #200 sieves	
#50		2.0	2.		15.8	7.2	12.1	92.8			for the 1" sieve when
#100 LBW		1.6 1.0	2. 2.		3.2 0.5	2.2 0.9	4.9 1.3	97.8 99.1	a 2" max. size	(nom. Max. 1.5") ag	ggregate is used.
Production G		Batch Plant Gra	-	egate Supplier Gr				on Sample (IPS	J S)		
	ess Factor:	64	Work	ability Factor	: 36	38.4		eness Factor:	1		
								ability Factor:			
45								Cumulative	%	Cumulative	
1 '	45, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
		52, 41	57, 40	68, 40			2"	100.0	0.0	0.0	
ू ⁴⁰					75, 39		1.5"	100.0	0.0	0.0	
<u>ی</u>			i	Production 6	adation		1"	99.3	0.7	0.7	
Į			6 0, 36	PS			3/4"	89.0	10.3	11.0	
Factor (%)		Ţ					1/2"	70.3	18.7	29.7	
		52, 34	- <u>i</u>	i			3/8"	59.9	10.4	40.1	
Workability	45, 33		22		, I		#4	41.9	18.0	58.1	
ig 30	1	_	01,0	68 , 3	f		#8	35.9	6.0	64.1	
ž	Operating Zone						#16	27.8	8.2	72.2	
<u> </u>	Boundary				75, 28		#30 #50	18.9 6.3	8.8 12.6	81.1 93.7	
> !!								6.7			

75

80

#100

LBW

1.7

1.0

4.6

0.7

98.3

99.0

Approved By: Mart P. Ball

PREPARED BY: SM, LLC Technical Service

50

55

Coarseness Factor (%)⁷⁰

45

ActionLimits Boundary = - - - - -

25

40

PLANT #	#:	P-12					Contractor:				
Sample Date	:	10/3/22		C	Concrete Grade:	DM, 4500HP					
Dates Test R	epresents:	10/4/2022	through	10/10/2022			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	63-115	Ray Rd	1150	6.95	2.65	39.6				SUD	FRIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			ERIOR TRIALS
Sieve	(6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained			Materials, LLC
2"	1	00.0	100	0	100.0	100.0	0.0	0.0		30701 W. 1 Suite 500	U MIIE Ra.
2 1.5"		00.0	100		100.0	100.0	0.0	0.0			n Hills, MI 48336
1.0		97.6	100		100.0	98.8	1.2	1.2		i anningtor	
3/4"		76.3	100		100.0	87.7	11.0	12.3			
1/2"		32.5	96		100.0	64.7	23.0	35.3			
3/8"		15.9	88	.3	100.0	55.4	9.3	44.6	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.5	27	.7	96.9	42.6	12.9	57.4	*Any two adja	cent sieves must e	qual 10% except max.,
#8		2.1	8.	2	79.9	33.4	9.1	66.6	nom. max., #10	00 and #200 sieves	5.
#16		1.9	3.	4	64.5	26.8	6.6	73.2	*% Retained	must be at least 4%	5 for each sieve except r
#30		1.8	2.	6	49.2	20.6	6.2	79.4	nom. max., #10	00 and #200 sieves	5.
#50		1.7	2.		26.8	11.7	8.9	88.3	*% Retained I	must be at least 8%	6 for the 1" sieve when
#100		1.6	2.		6.5	3.6	8.1	96.4	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
LBW		1.3	1.	-	0.8	1.2	2.4	98.8			
Production G	radation	Batch Plant Grade	dations 💿 Agg	regate Supplier Gra	adations	Adjusted WF	Intial Production	on Sample (IPS	S)	_	
Coarsene	ess Factor:	67	Work	ability Factor:	33	35.9	Coars	eness Factor:	63		
45							Work	ability Factor:	36		
4	15, 44				JMF Zone		Ciava	Cumulative	%	Cumulative	
-		52, 41			JIVII ZOITE		Sieve	% Passing	Retained	% Retained	
40			57, 40	68, 40	_		2"	100.0	0.0	0.0	
%				68, 38	75, 39		1.5"	100.0	0.0	0.0	
ž I			!				1"	99.3	0.7	0.7	
9			60, 36	PS 📕 roduct	ion Gradation		3/4"	89.0	10.3	11.0	
B 35			i				1/2"	70.3	18.7	29.7	
Ъ		52, 34					3/8"	59.9	10.4	40.1	
	45, 33		57,22	68, 32			#4	41.9	18.0	58.1	
Workability Factor (%)		_		-68, 31			#8	35.9	6.0	64.1	
2	Operating Zone						#16	27.8	8.2	72.2	
N 1	Boundary				75, 28		#30	18.9	8.8	81.1	
25		<u> </u>					#50	6.3	12.6	93.7	
40	45	<u> </u>	60	Factor (%) ⁷⁰	75	80	#100	1.7	4.6	98.3	
		1	Loarseness				LBW	1.0	0.7	99.0	

ActionLimits Boundary = - - - - -

Approved By:

PLANT #		11					Contractor:				
Sample Date	2	10/3/22		(Concrete Grade:	DM, 4500HP					
Dates Test R	epresents:	10/4/2022	through	10/10/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific 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				SUD	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	100	0.0	100.0	100.0	0.0	0.0	1	Suite 500	
1.5"	1	00.0	100	0.0	100.0	100.0	0.0	0.0]	Farmingto	n Hills, MI 48336
1"		99.2	100		100.0	99.6	0.4	0.4]		
3/4"		83.4	100		100.0	92.3	7.4	7.7			
1/2"		41.9	96		100.0	72.4	19.8	27.6			
3/8"		20.5	88		100.0	61.3	11.1	38.7	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.7	27		96.1	43.6	17.7	56.4	*Any two adja	cent sieves must e	equal 10% except max.,
#8		2.1	8.		84.4	35.5	8.1	64.5	nom. max., #10	00 and #200 sieves	3.
#16		1.9	3.		69.8	29.0	6.5	71.0	*% Retained I	must be at least 4%	6 for each sieve except
#30		1.8	2.		50.8	21.3	7.7	78.7	· · · ·	00 and #200 sieves	
#50		1.7	2.		24.9	11.0	10.3	89.0			6 for the 1" sieve when
#100		1.6	2.		7.3	3.9	7.0	96.1	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
LBW		1.3	1.	.9 gregate Supplier Gr	1.4	1.4	2.5	98.6]		
Production G	Jauation	Batch Plant Gra			1			on Sample (IPS	,		
Coarsene	ess Factor:	60	Work	ability Factor:	36	38.0		eness Factor:	62		
⁴⁵ T						-)	Work	ability Factor:	36		
1	45, 44						Sieve	Cumulative	%	Cumulative	
- 4					JMF Zone					0/ Detained	
- 4		52, 41			JMF Zone			% Passing	Retained	% Retained	
40		52, 41 56	ù. 40	67, 40			2"	100.0	0.0	0.0	
40		52, 4 1 56	h 40	68, 38	75, 39		<u>2</u> " 1.5"	100.0 100.0	0.0 0.0	0.0	
40		52, 41 56		68, 38 ction Gradation			2" 1.5" 1"	100.0 100.0 100.0	0.0 0.0 0.0	0.0 0.0 0.0	
40		52, 4 1 5£	60, 40 Produce 60, 38	68, 38 ction Gradation			2" 1.5" 1" 3/4"	100.0 100.0 100.0 95.0	0.0 0.0 0.0 5.0	0.0 0.0 0.0 5.0	
40		56		68, 38 ction Gradation			2" 1.5" 1" 3/4" 1/2"	100.0 100.0 100.0 95.0 72.3	0.0 0.0 0.0 5.0 22.8	0.0 0.0 5.0 27.7	
40	45, 33	52, 41 56		68, 38 ction Gradation			2" 1.5" 1" 3/4" 1/2" 3/8"	100.0 100.0 95.0 72.3 60.4	0.0 0.0 5.0 22.8 11.8	0.0 0.0 5.0 27.7 39.6	
40	45, 33	56		ction Gradiention			2" 1.5" 1" 3/4" 1/2" 3/8" #4	100.0 100.0 95.0 72.3 60.4 42.6	0.0 0.0 5.0 22.8 11.8 17.8	0.0 0.0 5.0 27.7 39.6 57.4	
40	45, 33	56		68, 38 ction Gradation			2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8	100.0 100.0 95.0 72.3 60.4 42.6 36.0	0.0 0.0 5.0 22.8 11.8 17.8 6.6	0.0 0.0 5.0 27.7 39.6 57.4 64.0	
40	Operating Zone	52, 34		ction Gradiention	75, 39		2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	100.0 100.0 95.0 72.3 60.4 42.6 36.0 29.5	0.0 0.0 5.0 22.8 11.8 17.8 6.6 6.5	0.0 0.0 5.0 27.7 39.6 57.4 64.0 70.5	
(ability Factor (%) 00 10 10 10 10 10 10 10 10 10		52, 34		ction Gradiention			2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16 #30	100.0 100.0 95.0 72.3 60.4 42.6 36.0 29.5 20.3	0.0 0.0 5.0 22.8 11.8 17.8 6.6 6.5 9.2	0.0 0.0 5.0 27.7 39.6 57.4 64.0 70.5 79.7	
40	Operating Zone	52, 34	• 60, 38	ction Gradiention	75, 39		2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	100.0 100.0 95.0 72.3 60.4 42.6 36.0 29.5	0.0 0.0 5.0 22.8 11.8 17.8 6.6 6.5	0.0 0.0 5.0 27.7 39.6 57.4 64.0 70.5	
40	Operating Zone	52, 34		ction Gradiention	75, 39		2" 1.5" 1" 3/4" 1/2" 3/8" #4 #8 #16	100.0 100.0 95.0 72.3 60.4 42.6 36.0 29.5	0.0 0.0 5.0 22.8 11.8 17.8 6.6 6.5	0.0 0.0 5.0 27.7 39.6 57.4 64.0 70.5	

Approved By: Mart P. Ball

PLANT #	#:	P-32					Contractor:				
Sample Date	:	10/3/22	-	C	Concrete Grade	: DM, 4500HP					
Dates Test R	epresents:	10/4/2022	through	10/10/2022			MDOT No.:				
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific 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				SIIP	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 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		Farmingto	n Hills, MI 48336
1"		99.2	100).0	100.0	99.6	0.4	0.4			
3/4"		33.4	100		100.0	92.3	7.4	7.7			
1/2"		41.9	96		100.0	72.4	19.8	27.6			
3/8"		20.5	88		100.0	61.3	11.1	38.7			above the 3/8" sieve.
#4		3.7	27		96.1	43.6	17.7	56.4			qual 10% except max.,
#8		2.1	8.		84.4	35.5	8.1	64.5		00 and #200 sieves	
#16		1.9	3.		69.8	29.0	6.5	71.0			for each sieve except
#30 #50		1.8 1.7	2.		50.8 24.9	21.3 11.0	7.7 10.3	78.7 89.0	,	00 and #200 sieves	
#30 #100		1.6	2.		7.3	3.9	7.0	96.1			for the 1" sieve when
LBW		1.3	1.		1.4	1.4	2.5	98.6	a 2 max. size	(nom. Max. 1.5") ag	ggregate is used.
Production G	radation	Batch Plant Gra		egate Supplier Gra				on Sample (IPS	5)		
Coarsene	ess Factor:	60	Work	ability Factor:	36	38.0	Coars	eness Factor:	62		
			-					ability Factor:	36		
⁴⁵ .								Cumulative	%	Cumulative	
- 4	15, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
-		52, 41	6. 40	67, 40			2"	100.0	0.0	0.0	
3 ⁴⁰					75, 39		1.5"	100.0	0.0	0.0	
<u>ک</u>			Produc	68, 38 tion Gradation	Ĭ		1"	100.0	0.0	0.0	
Į Į			6 0, 3 B	s i			3/4"	95.0	5.0	5.0	
5 35 -		Ţ	1				1/2"	72.3	22.8	27.7	
Щ I		52, 34	+	i			3/8"	60.4	11.8	39.6	
lity	45, 33						#4	42.6	17.8	57.4	
Workability Factor (%)			,	67, 32 68, 31			#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	9.5	9.2	90.5	
> ₂₅							#30	9.5 3.4	6.1	96.6	
	45	50 55	Coarseness	65 70	75	80	LBW	1.3	2.1	98.7	
40	40	<u> </u>				00			Z. 1	30.7	

Approved By: Mary 1. Ball

PLANT #	#:	P-35	_				Contractor:			_	
Sample Date	:	10/3/22	_		Concrete Grade:	DM, 4500HP				-	
Dates Test R	epresents:	10/4/2022	through	10/10/2022			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%	1	MATI	ERIALS
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	1	Farmingto	n Hills, MI 48336
1"		99.7	100	0.0	100.0	99.8	0.2	0.2]		
3/4"		88.1	100	-	100.0	93.7	6.1	6.3]		
1/2"		49.8	99		100.0	73.6	20.1	26.4			
3/8"		26.2	84		100.0	59.9	13.7	40.1	*Maximum %	Retained must be	above the 3/8" sieve.
#4		5.4	20	-	98.9	43.1	16.8	56.9	*Any two adja	acent sieves must e	equal 10% except max.,
#8		2.7	5.		83.2	34.3	8.8	65.7	· · · ·	00 and #200 sieves	
#16		2.7	3.		65.5	27.2	7.1	72.8			6 for each sieve except
#30		2.3	2.		47.2	19.8	7.4	80.2		00 and #200 sieves	
#50		2.0	2.		23.9	10.6	9.2	89.4			6 for the 1" sieve when
#100 LBW		1.6 1.0	2.		7.3	3.9 1.2	6.7 2.6	96.1 98.8	a 2" max. size	(nom. Max. 1.5") a	ggregate is used.
Production G	radation	Batch Plant Gra		egate Supplier Gra				on Sample (IPS	3)		
	ess Factor:	61		ability Factor		36.8		eness Factor:	61	1	
				,				ability Factor:	-		
45	45, 44				JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulative % Retained	
1		52, 41					2"	100.0	0.0	0.0	
		56,	40		75, 39		1.5"	100.0	0.0	0.0	
ک ا			!	68, 38			1"	99.3	0.7	0.7	
D I			Proc	luction Gradation			3/4"	89.1	10.2	10.9	
Factor (%)				i			1/2"	70.5	18.6	29.5	
ш́ į		52, 34					3/8"	60.5	10.0	39.5	
Workability	45, 33						#4	44.1	16.4	55.9	
ig 30 1		56,	31	67, 88 , 31			#8	35.6	8.5	64.4	
k	Operating Zone						#16	27.7	7.9	72.3	
<u>s</u>	Boundary				75, 28		#30	20.6	7.1	79.4	
> 25							#50 #100	8.7 1.6	11.8 7.1	91.3 98.4	
20 1	15	50 54	5 60	65 70	75	80	#100	1.0	7.1	98.4	

75

80

LBW

1.1

0.6

98.9



PREPARED BY: SM, LLC Technical Service

50

45

ActionLimits Boundary = - - - - -

40

Coarseness Factor (%)⁷⁰

55

Approved By: Marthe Ball

PLANT #	#:	P-36	_				Contractor:			_	
Sample Date		10/3/22	_	C	Concrete Grade	DM, 4500HP				-	
Dates Test R	Represents:	10/4/2022	through	10/10/2022			MDOT No.:			_	
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	305	1.87	2.62	10.5					
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9				SUP	ERIOR
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	1	MATE	ERIALS
Sieve		6 A A	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		Suite 500	
1.5"		00.0	10		100.0	100.0	0.0	0.0	1	Farmingto	n Hills, MI 48336
1"		97.6	10	0.0	100.0	98.8	1.2	1.2	1		
3/4"		76.3	10		100.0	87.8	11.0	12.2]		
1/2"		32.5	96	6.5	100.0	64.8	23.0	35.2]		
3/8"		15.9	88	-	100.0	55.3	9.4	44.7	*Maximum %	Retained must be	above the 3/8" sieve.
#4		3.5	27		97.2	41.5	13.8	58.5	*Any two adja	icent sieves must e	equal 10% except max.,
#8		2.1	8		82.7	33.3	8.3	66.7		00 and #200 sieves	
#16		1.9	3.		69.2	27.5	5.7	72.5			6 for each sieve except m
#30		1.8	2		52.3	21.0	6.5	79.0		00 and #200 sieves	
#50		1.7		4	22.2	9.5	11.5	90.5			6 for the 1" sieve when
#100 LBW		1.6 1.3	2		4.4	2.7 1.3	6.8 1.4	97.3 98.7	a 2" max. size	(nom. Max. 1.5") ag	ggregate is used.
Production G	Gradation	Batch Plant Gra		regate Supplier Gra		-		on Sample (IPS	. 3)		
	ess Factor:	67	Work	ability Factor:	33	35.8		eness Factor:	63	1	
		0.						ability Factor:	35		
45 T	•							Cumulative	%	Cumulative	
1 4	45, 44				JMF Zone		Sieve	% Passing	Retained	% Retained	
1		52, 41					2"	100.0	0.0	0.0	
~ ⁴⁰			58, 39	6 8, 99	75, 39		1.5"	100.0	0.0	0.0	
8				68, 38			1"	99.1	0.9	0.9	
5							3/4"	90.3	8.8	9.7	
			∎ ■ 60, 36	IPS Foducti	on Gradation		1/2"	69.2	21.1	30.8	
ž 35		1	i				3/8"	59.1	10.1	40.9	
ц Ц	\rightarrow	52, 34					#4	41.8	17.3	58.2	
	45, 33	52, 34									
	45, 33	52, 34	58, 31				#8	35.1	6.6	64.9	
	45, 33 Operating Zone		58, 31	68,31			#8 #16	35.1 28.5	6.6	71.5	
			58, 31	68,31	75, 28		#8 #16 #30	35.1 28.5 21.2	6.6 7.3	71.5 78.8	
Workability	Operating Zone		58, 31	68,31			#8 #16 #30 #50	35.1 28.5 21.2 8.7	6.6 7.3 12.5	71.5 78.8 91.3	
	Operating Zone			65 Factor (%)		80	#8 #16 #30	35.1 28.5 21.2	6.6 7.3	71.5 78.8	

Approved By:

PLANT #		P-39			_	BII (F	Contractor:					
Sample Date		10/3/22			Concrete Grade:	DM, 4500HP						
Dates Test R	epresents:	10/4/2022	through	10/10/2022	-		MDOT No.:			-	- A	
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution						
6AA	71-47	Presque Isle	1605	9.82	2.62	55.2						
26A	71-47	Presque Isle	200	1.22	2.62	6.9						
2NS	44-051	Krake Willis Rd		6.65	2.65	37.9				SUP	ERIOR	
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%			RIALS	
Sieve 6		6AA	26A		2NS	Cumulative % Passing	% Retained Cumulative % Retained		Superior Materials, LLC 30701 W. 10 Mile Rd.			
2"	100.0		100.0		100.0	100.0	0.0	0.0	Suite 500			
1.5"		100.0	100.0		100.0	100.0	0.0	0.0	Farmington Hills, MI 48336			
1"		97.9	100.0		100.0	98.8	1.2	1.2]			
3/4"			100.0		100.0	92.5	6.3	7.5				
1/2"		48.4	94		100.0	71.1	21.5	28.9	_			
3/8"			80.1		100.0	59.9	11.2	40.1	*Maximum % Retained must be above the 3/8" sieve. *Any two adjacent sieves must equal 10% except max nom. max., #100 and #200 sieves.			
#4			23.7		96.2	41.1	18.8	58.9				
#8			7.7		80.6	32.5	8.6	67.5				
	#16 2.1		4.1 3.2		65.9	26.4	6.1	73.6	*% Retained must be at least 4% for each sieve exce			
#30 #50	#30 1.9 #50 1.8		3.2		50.9 27.6	20.5 11.6	5.9 8.9	79.5 88.4	nom. max., #100 and #200 sieves.			
		1.7	2.9		8.4	4.3	7.3	95.7	*% Retained must be at least 8% for the 1" sieve who a 2" max. size (nom. Max. 1.5") aggregate is used.			
LBW		1.6	2		1.6	4.3	2.6	98.3	a z max. size	(nom. max. 1.5) a	ggregate is used.	
Production G	radation	Batch Plant Gra		regate Supplier Gra	_	Adjusted WF		on Sample (IPS	5)			
Coarseness Factor: 59			Work	ability Factor:	32	35.0	Coarseness Factor:		63			
		00					Workability Factor:		36			
⁴⁵]	•							Cumulative	%	Cumulative		
4	15, 44				JMF Zone		Sieve	% Passing	Retained	% Retained		
1		52, 41					2"	100.0	0.0	0.0		
				08, 40	75, 39		1.5"	100.0	0.0	0.0		
8			i –	68, 38			1"	100.0	0.0	0.0		
2			I ■ 60.26				3/4"	89.7	10.3	10.3		
2 35 -			Producti	IPS on Gradation			1/2"	70.3	19.4	29.7		
й I		52, 34					3/8"	59.1	11.2	40.9		
ji ji	45, 33						#4	42.8	16.3	57.2		
Workability Factor (%)		_	50, 22	68,83	2		#8	35.5	7.3	64.5		
ka	Operating Zone	e					#16	29.0	6.5	71.0		
ō	Boundary				75, 28		#30	21.2	7.7	78.8		
25							#50	9.8	11.5	90.2		
			· · · · · · · · · · · · · · · · · · ·			80	#100	3.7	6.1	96.3		
23 40	45	50 55	60	Factor (%)	75	80	LBW	1.2	2.5	98.8		

Approved By: Mart P. Ball

PLANT :	#:	P-O2	_				Contractor:			_		
Sample Date	e:	10/3/22	-	(Concrete Grade:	DM, 4500HP				-		
Dates Test R	Represents:	10/4/2022	through	10/10/2022			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	63-115 Ray Rd		1150 6.95		2.65	39.6			SUPERIOR			
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	-		ERIALS	
Sieve 6		6AA	26A		2NS	Cumulative % Passing	% Retained	6 Retained Cumulative 9 Retained			Materials, LLC 10 Mile Rd.	
2"		00.0	10	0.0	100.0	100.0	0.0	0.0	Suite 500			
1.5"		00.0	100.0		100.0 100.0	100.0	0.0	0.0	Farmington Hills, MI 48336			
1"		97.6		100.0		98.8	1.2	1.2]			
3/4"		76.3	-	0.0	100.0	87.7	11.0	12.3	_			
1/2"		32.5		5.5	100.0	64.7	23.0	35.3	4			
3/8"		15.9	88.3		100.0 96.9	55.4	9.3	44.6	*Maximum % Retained must be above the 3/8" sie			
#4		3.5		27.7		42.6	12.9	57.4	*Any two adjacent sieves must equal 10% except m			
#8	2.1		8.2		79.9	33.4	9.1	66.6	nom. max., #100 and #200 sieves.			
#16	1.9		<u>3.4</u> 2.6		64.5	26.8	6.6	73.2	*% Retained must be at least 4% for each sieve exce nom. max., #100 and #200 sieves.			
#30 #50		1.8		-	49.2 26.8	20.6 11.7	6.2 8.9	79.4 88.3	· ·			
#30 #100	1.7 1.6		2.4 2.2		6.5	3.6	8.1	96.4	*% Retained must be at least 8% for the 1" sieve whe a 2" max. size (nom. Max. 1.5") aggregate is used.			
LBW			1.9		0.8	1.2	2.4	98.8		(noni. wax. 1.5) a	ggregate is used.	
Production G	Fradation	Batch Plant Gra	_	regate SupplierGrad				on Sample (IPS	3)			
	ess Factor:	67		ability Factor:		35.9		eness Factor:	63	1		
Coarsen	ess i actor.	07	Workability Factor. 55			33.3		ability Factor:	35			
45 T	-)	WORK	Cumulative	35 %	Cumulative		
	45, 44	5, 44					Sieve	% Passing	Retained	% Retained		
1		52, 41		_			2"	100.0	0.0	0.0		
4 0 -			58.39	68 39	75, 39		1.5"	100.0	0.0	0.0		
58 , 39 68 , 39 68 , 39 75 , 39 68 , 39 75 , 39 76 , 39 76 , 39 77 , 39 78 , 39 79 , 79 , 79 79 , 79 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 , 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 , 7 7 , 7 , 7 7 , 7 , 7 , 7						1"	100.0	0.0	0.0			
						3/4"	95.1	4.9	4.9			
5 35			6 0, 36	IPS	tion Gradation		1/2"	74.6	20.5	25.4		
	\rightarrow	52. 34					3/8"	59.3	15.3	40.7		
E Ea	45, 33	02, 04	1				#4	42.1	17.2	57.9		
ty Fa	45, 33		58. 31				#8	35.1	7.1	64.9		
oility Fa	45, 35		30, 31				#16	29.2	5.9	70.0		
kability Fa			56, 51	00,01			#10	23.2	5.5	70.8		
orkability Fa	Operating Zone Boundary		56, 51	00,01	75, 28		#10	21.9	7.3	70.8		
Workability Fa	Operating Zone		30, 31		75, 28			21.9 9.6	7.3 12.4	78.1 90.4		
A0 Kability Fa	Operating Zone	50 55		65 Factor (%)		80	#30	21.9	7.3	78.1		

PREPARED BY: SM, LLC Technical Service

ActionLimits Boundary = - - - - -

Approved By: Mart P. Ball