Aggregate Optimization Chart

PLANT		P-103		-			Contractor:			-		
Sample Date		4/14/25			oncrete Grade	: DM, 4500HP	MDOTH					
Dates Test R	Represents:	4/15/2025	through	4/21/2025	Specific	%	MDOT No.:			-		
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Gravity	⁷⁰ Contribution						
6AA	58-003	Stoneco	1600	9.53	2.69	54.2						
26A	58-003	Stoneco	200	1.19	2.69	6.8						
2NS	63-114	Highland	1150	6.95	2.65	39.0				SUP	EBIOR	
		Total Wt	2950	17.68		100.0	< Verify this n	umber is 100%	1	MATE	RIALS	
Sieve	(AA	26A		2NS	Cumulative % Passing	% Retained	Cumulative % Retained	Superior Materials, LLC 30701 W. 10 Mile Rd.			
1.5" 10 1" 10		00.0	100.0		100.0	100.0	0.0	0.0	Suite 500			
		00.0	100	-	100.0	100.0	0.0	0.0	Farmington Hills, MI 48336			
		00.0	100.0		100.0	100.0	0.0	0.0				
3/4" 90.0			100	-	100.0 100.0	94.6 72.5	5.4 22.0	5.4 27.5				
3/8"	1/2" 49.4 2/8" 28.6				100.0	60.6	12.0	39.4	*Maximum 0/ Datained must be about the O/O		above the 2/8" sieve	
3/8 #4			89.5 12.3		99.3	41.5	12.0	58.5	*Maximum % Retained must be above the 3/8" siev *Any two adjacent sieves must equal 10% except n			
#8			2.0		85.9	34.5	7.0	65.5	nom. max., #100 and #200 sieves.			
#16		1.1	1.6 1.4 1.3 1.2		68.7	27.5 20.2	7.0	72.5	*% Retained must be at least 4% for each sieve exce nom. max., #100 and #200 sieves. *% Retained must be at least 4% for the 3/4" sieve w			
#30		1.0			50.2		7.3	79.8				
#50		0.9			22.2	9.2	11.0	90.8				
#100		0.9			3.3	1.9	7.4	98.1	a 1.5" max. size (nom. Max. 1.0") aggrega		aggregate is used.	
LBW		0.9	1.:		0.6	0.8	1.1	99.2				
Production G	Gradation	Batch Plant Gra	dations 💿 Aggr	egate Supplier Gra	dations	Adjusted WF	Intial Production	on Sample (IPS	S)	_		
Coarsene	ess Factor:	60 Workability Factor:			34	37.0	Coarseness Factor:		61			
4E							Workability Factor:		36			
45	45, 44				JMF Zone		Sieve	Cumulative	%	Cumulative		
1	-5,							% 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		
× 1			Produc				1"	99.3	0.7	0.7		
r (%	I		■ 	tion Gradation			3/4" 1/2"	89.2 70.7	10.1 18.5	10.8 29.3		
stor (%			İ	i			3/8"	60.7	18.5	29.3 39.3		
actor (%	\rightarrow	F0.0.	-1	• •				44.4	16.3	55.6		
E Ea	45.33	52, 34							8.5			
oility Factor (%	45, 33	52, 34 56 ,	32	67,32 31			#8	35.9	0.0	64.1		
(ability Factor (%			52	67,3 2,31			#8 #16	35.9 27.3		64.1 72.7		
orkability Factor (%	45, 33 Operating Zone Boundary		32	67, 32 , 31	75. 28		#8 #16 #30		8.6 8.2			
Workability	Operating Zone		32	67, 3 28, 31	75, 28		#16 #30 #50	27.3 19.1 7.4	8.6 8.2 11.7	72.7		
Workability Factor (%	Operating Zone			67,328,31 Factor (%) ⁷⁰	75, 28	80	#16 #30	27.3 19.1	8.6 8.2	72.7 80.9		

PREPARED BY: SM, LLC Technical Service

Approved BY: Mart 1. Ball

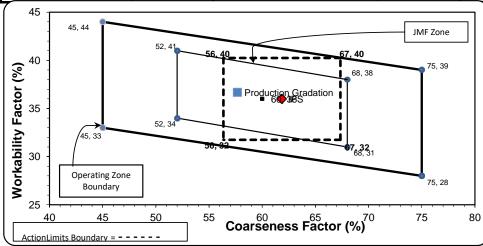
Aggregate Optimization Chart

PLANT #	#:	p11					Contractor:			
Sample Date	:	4/14/25			Concrete Grade:	DM, 4500HP				•
Dates Test R	epresents:	4/15/2025	through	4/21/2025			MDOT No.:			
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution]			•
6AA	71-47	Presque Isle	1600	9.79	2.62	55.1				
26A	71-47	Presque Isle	155	0.95	2.62	5.3				
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6				EI.
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%	_	SL
Sieve		6AA	26	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		<u>Supe</u> 30701
2"	1	00.0	10	0.0	100.0	100.0	0.0	0.0	1	Suite
1.5"	1	00.0	10	0.0	100.0	100.0	0.0	0.0		Farmi
1"	9	99.5	10	0.0	100.0	99.7	0.3	0.3		
3/4"		86.2	10	0.0	100.0	92.4	7.3	7.6		
1/2"		49.6	95	5.7	100.0	72.0	20.4	28.0		
3/8"	:	32.7	83.3 18.2 5.6 3.4		100.0	62.0	10.0	38.0	*Maximum %	Retained mu
#4		6.4			98.9	43.6	18.4	56.4	*Any two adjacent s nom. max., #100 and	acent sieves n
#8		3.0			81.4	34.2	9.5	65.8		00 and #200 s
#16		2.7			66.2	27.9	6.3	72.1	*% Retained	must be at lea
#30		2.6	2.	9	50.2	21.5	6.4	78.5	nom. max., #1	00 and #200 s
#50		2.5	2		25.0	11.4	10.0	88.6	*% Retained	must be at lea
#100		2.4	2		4.6	3.3	8.1	96.7	a 1.5" max. siz	e (nom. Max.
LBW		2.0	2.	.1	0.8	1.5	1.7	98.5		
Production G	iradation	O Batch Plant Gra	idations 💿 Aggi	regate Supplier (Gradations	Adjusted WF	Intial Production	on Sample (IPS	8)	
Coarsene	ess Factor:	58	Work	ability Facto	or: 34	36.7	Coars	eness Factor:	62	
45						\neg	Workability Factor		36	
	45, 44	52 41			JMF Zone		Sieve	Cumulative % Passing	% Retained	Cumulati % Retain
40		52, 41 5 6	6.40	67, 40			2"	100.0	0.0	0.0
् ⁴⁰				68	75, 39		1.5"	100.0	0.0	0.0



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 4% for the 3/4" sieve when 1.5" max. size (nom. Max. 1.0") aggregate is used.



Coars	seness Factor:	62			
Worl	kability Factor:	36			
Sieve	Cumulative	%	Cumulative % Retained		
Sleve	% Passing	Retained			
2"	100.0	0.0	0.0		
1.5"	100.0	0.0	0.0		
1"	100.0	0.0	0.0		
3/4"	95.0	5.0	5.0		
1/2"	72.3	22.8	27.7		
3/8"	60.4	11.8	39.6		
#4	42.6	17.8	57.4		
#8	36.0	6.6	64.0		
#16	29.5	6.5	70.5		
#30	20.3	9.2	79.7		
#50	9.5	10.8	90.5		
#100	3.4	6.1	96.6		
LBW	1.3	2.1	98.7		

PREPARED BY: SM, LLC Technical Service



Mary P. Ball

Aggregate Optimization Chart

PLANT #	#:	P-02					Contractor:					
Sample Date		4/14/25		C	oncrete Grade	: DM, 4500HP						
Dates Test R	epresents:	4/15/2025	through	4/21/2025			MDOT No.:					
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravitv	% Contribution						
6AA	71-47	Presque Isle	1600	9.79	2.62	55.1						
26A	71-47	Presque Isle	155	0.95	2.62	5.3						
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6				SUP	FRIOR	
		Total Wt	2905	17.69		100.0	< Verify this n	umber is 100%		MATE	RIALS	
Sieve		6AA	26	Ą	2NS	Cumulative % Passing	% Retained	Cumulative % Retained		Superior 30701 W. 2	<u>Materials, LLC</u> 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		100.0	100.0	0.0	0.0	Farmington Hills, MI 48336			
1"		99.5	100.0		100.0	99.7	0.3	0.3				
3/4"		86.2	100	-	100.0	92.4	7.3	7.6				
1/2" 49.6		95.		100.0	72.0	20.4	28.0					
	3/8" 32.7		83.3		100.0	62.0	10.0	38.0	*Maximum % Retained must be above the 3/8" si			
#4		6.4	18.2		98.9	43.6	18.4	56.4	*Any two adjacent sieves must equal 10% except			
#8 #16	#8 3.0		5.6 3.4		81.4 66.2	34.2 27.9	9.5	65.8 72.1	nom. max., #100 and #200 sieves.			
#16 #30		2.7 2.6	2.9 2.7		50.2	21.5	6.3 6.4	72.1	*% Retained must be at least 4% for each sieve exce nom. max., #100 and #200 sieves.			
#50		2.5			25.0	11.4	10.0	88.6				
#100		2.4 2.5			4.6	3.3	8.1	96.7	a 1.5" max. size (nom. Max. 1.0") aggregate is used.			
LBW		2.0	2.		0.8	1.5	1.7	98.5			-999	
Production G	radation	O Batch Plant Gra	dations 💿 Aggr	egate SupplierGrad	ations	Adjusted WF	Intial Production	on Sample (IPS	6)			
Coarsene	ess Factor:	58	Work	Workability Factor:		36.7	Coarseness Factor: Workability Factor:		63			
									35			
45					JMF Zone		0:	Cumulative	%	Cumulative		
_ 4	45, 44				JIVII ZOIIE		Sieve	% Passing	Retained	% Retained		
		52, 41					2"	100.0	0.0	0.0		
_ 40 -			57, 39	68, 39	75, 39		1.5"	100.0	0.0	0.0		
<u>ت</u>			i				1"	100.0	0.0	0.0		
(%)							3/4"	95.1	4.9	4.9		
tor (%)			Production G 60, 36	radation			1 (0)			<u> </u>		
actor (%)			Production G 60, 36	radation PS			1/2"	74.6	20.5	25.4		
Factor (%)		52, 34	Production G 60, 36	radation PS			3/8"	59.3	15.3	40.7		
Factor (%)	45, 33			PS			3/8" #4	59.3 42.1	15.3 17.2	40.7 57.9		
Factor (%)			57, 31	radation PS 68,31			3/8" #4 #8	59.3 42.1 35.1	15.3 17.2 7.1	40.7 57.9 64.9		
Factor (%)	Operating Zone			PS			3/8" #4 #8 #16	59.3 42.1 35.1 29.2	15.3 17.2 7.1 5.9	40.7 57.9 64.9 70.8		
ability Factor (%)				PS	75, 28		3/8" #4 #8 #16 #30	59.3 42.1 35.1 29.2 21.9	15.3 17.2 7.1 5.9 7.3	40.7 57.9 64.9 70.8 78.1		
Factor (%)	Operating Zone		57, 31	PS 68,31	75, 28		3/8" #4 #8 #16	59.3 42.1 35.1 29.2	15.3 17.2 7.1 5.9	40.7 57.9 64.9 70.8		

PREPARED BY: SM, LLC Technical Service

Approved By: Mary 1. Ball